Aspects of archaeobotanical methodology applied to the sediments of archaeological wetland deposits

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1. Introduction

1.1 The importance of lakeshore settlements within archaeological research

Due to the excellent preservation conditions for organic material in prehistoric lakeshore settlements, they represent an invaluable source of information for archaeologists (Hafner, 2012; Menotti, 2012; Menotti and O'Sullivan, 2013). But while the detailed study of lakeshore settlement layers, including various scientific analyses, has deepened our understanding of those past societies in the last decades, the formation of these layers remains a mystery for the most part (Bleicher and Schubert, 2015). The 'Pfahlbauproblem' (whether houses were built directly on the ground on the shore or on platforms supported by piles above standing water) is not such a controversially discussed matter anymore, because most archaeologists accept the fact that there have been different possibilities of building houses at lakeshores (Hafner and Suter, 2005; Dieckmann *et al.*, 2006, p. 207). However, there is still no consent about the ground below the houses. In many former publications and site reports, a lowering lake level at the onset of the settlement activity and a rising lake level at the end was postulated based on archaeobotanical and also micromorphological investigations (e.g. Jacomet-Engel, 1980; Jacomet, 1985; Brombacher, 1986; Dick, 1988; Brombacher and Hadorn, 2004; Ismail-Meyer *et al.*, 2013; Jacomet *et al.*, 2004). Such decennial lake level fluctuations were thought to be connected to climatic variability during the Holocene (e.g. Magny, 2013). Recently, this has been challenged by Bleicher (2013; Bleicher, 2015; Bleicher *et al.*, 2017) and is currently vigorously discussed among lakeshore settlement researchers. We also still don't know which proportion of the originally deposited material in a lakeshore settlement is still preserved. This understanding of taphonomic processes, however, would be crucial for the interpretation of the remaining parts of these prehistoric settlements in order to reconstruct their economy and ecology based on plant remains (e.g. Willerding, 1991; Jones, 2000). However, there is a lack of conclusive facts and also of experimental work concerning wetland sites (Dieckmann *et al.*, 2006).

1.2 Framework of the project

This Ph.D. was done as a part of the project "Formation and taphonomy of archaeological wetland deposits: two transdisciplinary case studies and their impact on lakeshore archaeology" funded by the Swiss National Science Foundation (project nr. CR30I2_149679/1), under the direction of project leader PD Dr. Philippe Rentzel in collaboration with Prof. Dr. Stefanie Jacomet and Dr. Stefan Hochuli (research plan by P. Rentzel, S. Hochuli and S. Jacomet in collaboration with E. Gross and G.F. Schaeren, Rentzel *et al.*, unpublished). This project's main focus was the transdisciplinary, micro-archaeological study of layer formation, preservation and degradation processes in prehistoric lakeshore settlements. Subjects of investigation were two recently excavated lakeshore settlements, which were extensively sampled using state-of-the-art methods: Zug-Riedmatt (chapter 2.1) and Zürich-Parkhaus Opéra (chapter 2.4), which both included well-preserved occupation layers of the Late Neolithic (last quarter of the 4th millennium BC).

Natural and anthropogenic factors influencing the deposition dynamics and the duration of deposition processes in occupation layers were to be investigated. We also intended to create an 'indicator group database', which would allow us to differentiate in more detail between the many traces of activity represented in an occupation layer, including natural influences of e.g. the lake. Concerning the archaeobotanical part, methodological basic research was to be undertaken in order to set a suitable general framework for the analysis of such sites. If analytical methods are not standardized, comparisons with other sites are hindered.

1.3 State of research

In the following, the state of research, with a focus on archaeobotany, at the start of the project is very briefly summarized. More information can be found in the research plan of the SNF-project (Rentzel *et al.*, unpublished) and in the cited literature.

1.3.1 Methodology

It is clear that the use of different methodological procedures complicate direct comparisons of sites. Research about this topic has therefore been conducted regularly, although almost never in a systematic way. For the archaeobotany of wetland sites, the most important known facts were the following:

Sampling of an occupation layer: During the last decennia, it was established that archaeobotanical research should not be restricted to the vertical or horizontal sampling of a site but should ideally include both, or the sampling strategy should depend on the investigation target (for a compilation of the problematic see Jacomet and Brombacher, 2005 and literature cited therein). How to combine surface (horizontal) and profile (vertical) sampling in an ideal way, and how to 'disentangle' complicated stratigraphies however was not solved.

Sample volumes: Sample size calculations, allowing a representative estimation of proportions of different plant remains, were done e.g. by van der Veen and Fieller (1982) and Thompson (1987). Hosch and Jacomet (2001) adopted this for the extremely rich (in terms of numbers of remains, but also diversity) samples from wetland sites; they suggested treating each fraction of a sample independently regarding sample sizes. Therefore, as few sieving fractions as possible should be applied (usually 2 or 3). Also, it became clear that the adequate recording of large-seeded items was not possible in small-sized samples (Hosch and Jacomet, 2001). However, it was not known to which extent this influences the results.

Recovery techniques (incl. pre-treatment of samples): Wash-over sieving (after Kenward *et al.*, 1980) turned out to be the only viable recovery technique to preserve fragile plant remains (Hosch and Zibulski, 2003; Tolar *et al.*, 2009). As a pre-treatment in order to facilitate the sieving process without destroying plant remains, freezing and defrosting of the sediment was found to be the best method (Vandorpe and Jacomet, 2007).

Defined counting units, recording of material classes: Jacomet *et al.* (2004) found that the use of defined counting units (based on Jones, 1991, and discussions in the Basel archaeobotany lab during the 90ies incl. suggestions by M. van der Veen) is important in order to not count the same item more than once. Using a database is also essential for the recording and sharing of plant remains (some years ago, the Basel archaeobotany lab started using ArboDat (©Kreuz and Schäfer 2016)). In addition, for the numerical recording of material classes, the use of an objective system is necessary (following Bullock *et al.*, 1985).

1.3.2 Preservation parameters

The good preservation of subfossil macroremains in waterlogged contexts can be explained by fast embedding in a permanently anaerobic, wet sediment which hinders destruction through bacteria or fungi (e.g. Retallack, 1984). It is known since some decennia that even in well-preserved wetland sediments, the preservation of the remains might be variable (and that these remains are therefore suitable to judge the degradation of wet archaeological deposits). Therefore, preservation parameters have been investigated by some research groups, including the Basel archaeobotany group (Murphy and Wiltshire, 1994; Vernimmen, 2002; van Beurden, 2004; Kenward and Hall, 2004, 2006; Brinkkemper, 2006; Jones *et al.*, 2007; Pollmann, 2014). However, the knowledge about the physical degradation of different organic materials is still poor and there is a lack of experimental data (e.g. Kenward *et al.*, 2008).

1.3.3 Natural influences (pre-, syn- and postdepositional) on wetland settlement layers

1.3.3.1 Pre- and postdepositional situations

As mentioned in chapter 1.1, archaeobotanical studies from the 1970s onwards concentrated on lake level fluctuations and the characteristics of limnic, eulittoral and bog sediments. A lowering lake level at the onset of building activities and therefore the movement of the settled zone from the sub- to the eulittoral zone was often reconstructed based on an actualistic interpretation of the changing seed content of the sediments (e.g. Jacomet-Engel, 1980; Jacomet, 1985; Schlichtherle, 1985; Brombacher, 1986; Dick, 1988; Maier, 2001; Brombacher and Hadorn, 2004; Ismail-Meyer *et al.*, 2013; Jacomet *et al.*, 2004). These studies, however, did not consider the changing sedimentation rate between natural (low sedimentation rate, a few mm/year) and anthropogenic (very high sedimentation rate, more than several cm per year) sediments. Based on the same analyses, transgressions in the post-occupational phase and also between settlement phases were reconstructed in both archaeobotanical and micromorphological research (e.g. Jacomet, 1985; Brombacher, 1986; Brombacher and Hadorn, 2004; Ismail-Meyer and Rentzel, 2004; Huber and Ismail-Meyer, 2012).

1.3.3.2 Syndepositional situations

Botanical macroremains of bog sediments in the Federsee region (SW-Germany) suggested that the Neolithic wetland settlements were established on wet, peaty ground in eutrophic conditions, as plants like *Urtica dioica* and *Myosoton aquaticum* grew locally in the organic occupation layers (Maier, 1995, 2011). Other evidence that the settled areas were not constantly covered by water was provided by small heaps of berry seeds interpreted as human excrements at Lake Constance (e.g. Maier, 2001). Wetland plant spectra within a Pfyn-culture settlement layer at Zürich AKAD-Seehostrasse suggested that this layer was formed in the eulittoral zone and not under permanent water (Jacomet 1985).

As mentioned in chapter 1.3.3.1, evidence for (temporary) flooding events during the settling period could also be found (e.g. Jacomet, 1985; Schlichtherle, 1985; Brombacher, 1986; Maier, 2001; Brombacher and Hadorn, 2004). These events were indicated by diaspores of aquatic plants, mollusc shells, caddis fly larvae cases etc. Drier phases were identified based on poorer preservation of plant remains in some fine layers within a Late Bronze/Early Iron Age Lake dwelling stratigraphy at lake Luokesa in Lithuania (Pollmann, 2014).

Despite the evidence for flooding events, a small-scale patchwork of different materials in the occupation layers and signs for undisturbed in situ preservation was often present (e.g. Jacomet, 1985; Jacomet *et al.*, 2004). However, at some sites, aquatic plants were widespread in all fine layers of the occupation phase (Bollinger, 1994), indicating a sedimentation below water, a regular flooding of the settlement area or a mixing of different sediments after the settlement phase.

In order to differentiate between material which was brought into sites naturally or anthropogenically, studies of contemporary natural seed banks (e.g. Bollinger, 1981; Bonis and Grillas, 2002) and experiments (Nichols *et al.*, 2000; Schöbel, 2011) are important. However, there are only very few such studies.

1.3.4 The composition of anthropogenic wetland sediments

1.3.4.1 General aspects

It is clear that the main components of occupation layers in archaeological wetland sites accumulated through activities by humans or their domestic animals. The different ways of entry of anthropogenic plants remains into deposits are summarized in van der Veen (2007) and for wetland sediments in particular by Jacomet (2013). Finding spatial distributions and assigning them to different areas of activities is complicated by syn- and postdepositional transformations. However, if such transformations can be sufficiently separated from other effects, the organisation within sites can be reconstructed (e.g. Jacomet *et al.*, 2004; Jacomet and Brombacher, 2005; Schlichtherle, 2011). Unfortunately, such reconstructions sometimes rely heavily on untested assumptions.

1.3.4.2 Lines of activities represented in occupation layers

Lines of architectural activities

Large amounts of wood chips and twigs could often be found at the base of occupation layers (e.g. Maier, 1995; Leuzinger, 2000). Leaves of brackenfern (*Pteridium aquilinum*) and moss pads seem to be connected to building in timber (Schlichtherle, 1985; Dickson, 2000; Maier, 2001, 2004, 2011; Dieckmann *et al.*, 2006).

Lines of nutritional activities

Lakeshore settlement layers can contain indicators of *storage*, *processing* of cultivated and gathered plants, including animal fodder and *cooking residues* (e.g. Maier, 1995, 2004, 2011; Brombacher and Jacomet, 1997; Favre, 2002; Jacomet *et al.*, 2004; Zibulski, 2010; Antolín, 2013), of *herbivore dung* (e.g. Rasmussen, 1989, 1993; Akeret and Jacomet, 1997; Akeret *et al.*, 1999; Akeret and Rentzel, 2001; Maier, 2004; Herbig, 2009; Kühn and Wick, 2010; Kühn *et al.*, 2013) and omnivore dung (e.g. Maier, 1995, 2001, 2004, 2011).

Lines of artefacts

A summary of archaeobiological residues of different activities and their indicator groups can be found in Hall and Kenward (2003). In lakeshore settlements, it was only rarely attempted to find distinct patterns of artisanal activities. Exceptions are the residues of fibre production from flax (e.g. Herbig, 2009; Zibulski, 2010; Maier, 2011) and the working of yew (Favre and Jacomet, 1998).

1.3.4.3 Important facies of occupation layers and their interpretation

Loam (clay) layers

Layers containing loam are assigned to a wide range of events and functions, e.g. house floors, hearths, collapsed walls, house repairs, loam refuse accumulations (e.g. Ebersbach, 2002; Dieckmann *et al.*, 2006). No consistent interpretation of loamy structures was possible at the beginning of the project. Botanical macroremains usually have lower densities in loamy sediments (Jacomet, 1985; Brombacher, 1986; Bollinger, 1994; Favre, 2002; Maier, 2004), with the exception of heterogeneuous loam deposits, which may be rich in charred plant remains, pointing to food processing (e.g. Jacomet, 1985; Favre, 2002), though it is often not clear if these structures are found in situ or not.

Refuse accumulations

Refuse accumulations or middens are characterized by higher densities of bones, fish remains, charred remains and organic remains like hazelnuts, acorns or sloes (Jacomet, 1981; Märkle, 2000; Favre, 2002; Maier, 2004). At Zug-Riedmatt, such an accumulation containing mainly slaughter waste of red deer (Billerbeck-Braschler, 2016) and large amounts of ash, moss and fish scales was found (the so called ‘bone midden’, in the NW-corner of the excavated surfaces, see Fig. 3). It can be very difficult to distinguish between rubbish heaps and loam refuse accumulations.

Organic layers

Organic deposits consist mainly of organic material and often almost exclusively of subfossil plant remains (e.g. Jacomet *et al.*, 1989; Maier, 2001, 2011). They usually consist of a mixture of different activities performed during settling and can have very different characteristics. They may also contain higher amounts of ruminant dung. However, no detailed information about their depositional environments was available at the beginning of the project.

Ash layers

Ashes are very fragile and can easily be washed away by rain, yet they are often found in archaeological contexts (Braadbaart *et al.*, 2012), also in waterlogged sites (e.g. Huber and Ismial-Meyer, 2012). Especially in the so-called 'bone midden' from Zug-Riedmatt, large amounts of ashes were present. The reason for their preservation are not yet entirely clear.

Burnt layers

Burnt layers are rich in charcoal and charred plant remains (e.g. Jacomet *et al.*, 1989; Maier, 2001) and they can be snapshots of the material present in a settlement at the time of a fire.

1.3.4.4 Seasonal aspects of occupation layers

Through dendrochronological dating, it was found that lakeshore settlements were usually occupied only for short time spans (e.g. a few years to a max. of two decades in the 4th millennium BC, Bleicher, 2009; Ebersbach, 2012). At the same time, well-preserved sites can have very thick occupation layers (often over 20 cm), which should allow the analysis of annual or even seasonal events. Despite that fact, very few microstratigraphic analyses of seasonal processes have been done. Only through pollen analysis done at Lac de Clairvaux, where a 35 cm thick occupation layer corresponding to 10 years of occupation was finely sampled, an annual rhythm was found (Richard, 1993). However, despite an identical sampling strategy, no such result could be found at Lac de Chalain.

1.4 Aims of the project

Based on the state of the art compiled in the previous chapter, the main aims of this Ph.D. thesis in the framework of the project, were as follows:

Concerning **methodology**, it should be attempted to contribute to an establishment of standard procedures for:

- the influence of sieving by different operators,
- the measurement techniques of sample volumes,
- the definition of optimal sample volumes for the analysis of large macroremains,
- (sub-)sampling strategies,
- the recording of preservation parameters.

This methodological research was done in collaboration with the other archaeobotanists involved in the project (S. Jacomet, F. Antolín) and with the statistician of the project (W. Vach). Additionally, methodological aspects for the reconstruction of layer formation processes were explored: evaluation methods were systematized and proxies were used in a new way.

Concerning **natural factors influencing the deposition of occupation layers**, we wanted to look at hydrodynamic characteristics of flooding events by lake and river within a lake-to-land transect, look for evidence of drier phases, erosion or hiatus in occupation layers and see under what conditions the preservation of subfossil remains in these layers took place. The main aim was to uncover the natural depositional environment of organic layers by means of preservation parameters and other proxies.

Concerning **anthropogenic factors influencing the deposition of occupation layers**, at the Zug-Riedmatt site in particular, we wanted to look at the duration of deposition processes of occupation layers. Can we find fine strata of similar composition overlaying each other (representing several years), can we recognize characteristic sequences of cyclical events (through different preservation etc.) and can we identify seasonal or yearly deposition patterns?

We also wanted to shed light on specific activities done within the settlement by developing a botanical indicator group database, but the buildup of this database is still ongoing and questions in the research plan regarding this topic are therefore not subject of the Ph.D. thesis and are not discussed here.

Final aims of the whole transdisciplinary project were to synthetize archaeological, archaeobotanical and micromorphological knowledge of lakeshore sites and present a new, methodologically-based understanding of the interactions of biological and cultural factors operating in a wetland site (Gross *et al.*, in prep.). The transdisciplinary evaluation is, however, still in progress and far from being finalised. Therefore, this Ph.D. thesis mainly concentrates on the methodological aspects of archaeobotany in wetland research (see research papers 3.1, 3.2), considering both study sites. In addition, partly in the frame of this Ph.D., other methodological aspects were explored (Antolín *et al.*, 2015, appendix 7.2; Antolín *et al.*, 2017b, appendix 7.3). Concerning other research questions, we have concentrated on the evaluation of preservation parameters (research paper 3.3), and on natural factors influencing the layer formation of the study site Zug-Riedmatt (research paper 3.4 and chapter 4). In addition, we present here a short evaluation of the economy and environment of the Zug-Riedmatt site (chapter 4; for the Zürich-Parkhaus Opéra site, this was done by other project members (see Antolín *et al.*, 2017a). A continuation of these studies, including also animal bones, is in progress.

2. Material and Methods

2.1. Zug-Riedmatt (ZGRI)

2.1.1 Site

The Late Neolithic lakeshore settlement Zug-Riedmatt (canton of Zug, Switzerland; UNESCO World Cultural Heritage Site; Fig. 1) is typologically dated to 3250-3100 cal. BC (Horgen period, dendrochronological dating was not yet possible, personal comm. E. Gross). The occupation layer was up to 1.3m thick (Fig. 3), comprising two or three settlement phases. The duration of the whole occupation phase is not known yet, but it could have been more than 50 years (personal comm. E. Gross). The preservation of the site at the excavated part was excellent, due to the fact that it was buried beneath 6m of limnic and fluvial sediments and located below the groundwater table since then. This is in contrast to most other Neolithic occupation layers at Lake Zug, which usually do not lie in the waterlogged zone anymore due to a late medieval lake level lowering of approx. 2.5 m (Amman, 1993) and are therefore usually much less well preserved (or even completely destroyed).

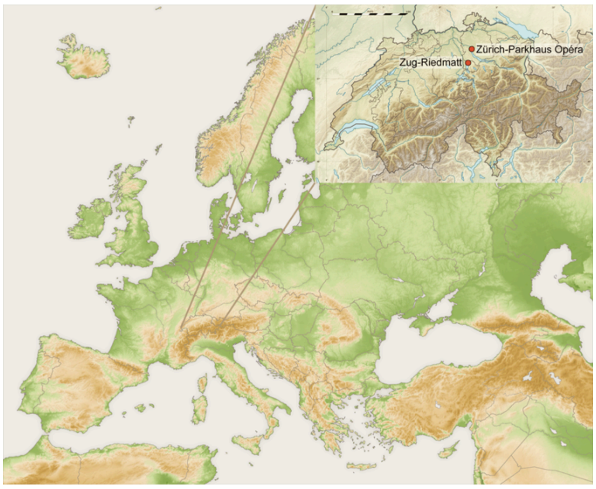

Fig. 1. Locations of the sites Zug-Riedmatt and Zürich-Parkhaus Opéra within Europe and Switzerland. (Maps by San Jose (Europe), Eric Gaba and NordNordWest (Switzerland).)

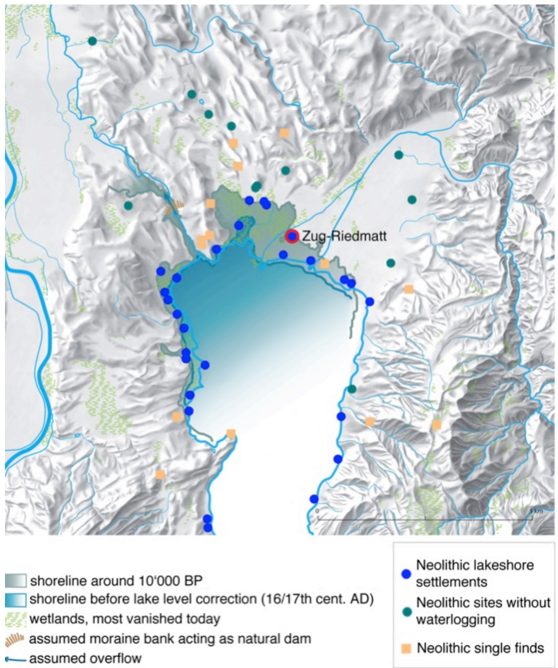

Fig. 2. Lake Zug with former shorelines and Neolithic sites. Zug-Riedmatt was located at the northern shore in a former delta situation where the river Lorze entered lake Zug. (©Amt für Denkmalpflege und Archäologie des Kantons Zug, Direktion des Innern (Archiv Archäologie); by R. Huber and E. Gross; geological data after Ammann, 1993; wetlands after the historical waterbody map of the canton of Zug, 1993)

The whole site covers approximately 2500m^2 (estimation based on a core drilling survey) and was located at the Northern shore of lake Zug. Its location today is at a distance of approximately 530m from the shoreline of lake Zug, but formerly it used to be situated at the lakeshore and close to the channel of the river Lorze, within a bird-foot delta created by this river (Fig. 2). Within this former bay, 'Steinhauser Bucht', several other, though not similarly dated sites were discovered as well (see e.g.

Steinhausen-Sennweid (different Neolithic and Bronze Age periods; Röder and Huber, 2007) or the special case of Steinhausen-Chollerpark (Bronze Age; Eberschweiler, 2004)).

The small-area rescue excavation of Zug-Riedmatt, which was performed in 2008 by the Cantonal Archaeological Service of Zug (directed by G. Schaeren), was extremely densely sampled. From an area of only 64m², 607 large-volume surface samples, numerous wooden piles, animal bones, archaeological artefacts and organic finds were collected. Most importantly, 110 profile columns (monolith samples, usually 56 x 12 x 10 cm) were taken from the cleaned profile walls (Fig. 3). They covered the occupation layer as well as the over- and underlying limnic and fluvial sediments. Due to the thick occupation phase, the complex layer structure and the good preservation, Zug-Riedmatt was very well-suited to showcase how an elaborate sampling strategy could advance the evaluation of the site.

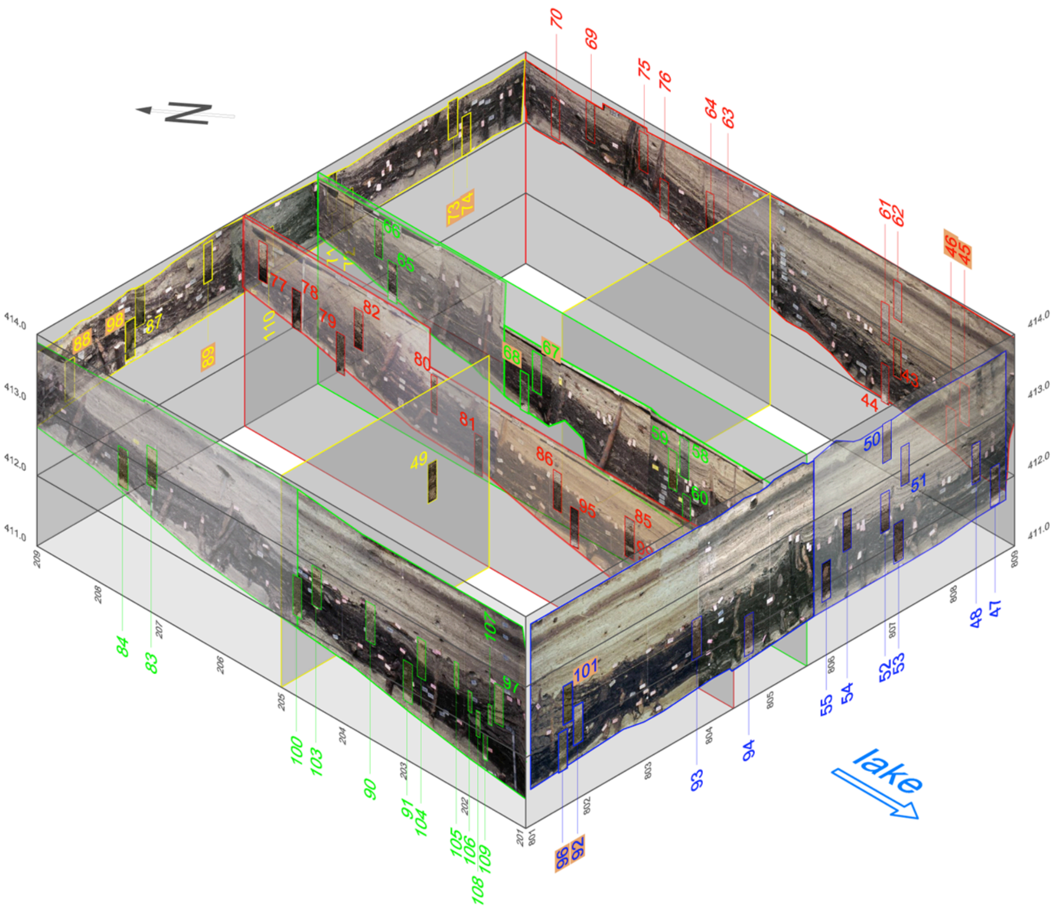

Fig. 3. 3D model of the excavated area of Zug-Riedmatt with all profile walls and the positions of all profile columns. Reference profile columns are highlighted in orange. (©Amt für Denkmalpflege und Archäologie des Kantons Zug, Direktion des Innern (Archiv Archäologie); by S. Hlavová). The large midden-like structure ('bone midden') is situated in the NW-corner of the excavated area (see profile 88 and 98).

The archaeological feature evaluation of the site is not yet done, and it is therefore not known how many houses were situated in the excavated area (not more than two). The duration of the occupation phase is also not exactly known, but it might have been several decennia, as the occupation phase can be separated into two or three different settlement layers. However, stratigraphical units could be established by a trans-disciplinary collaboration in the lab (see chapter 2.1.3).

2.1.2 Sample preparation

78 profile columns were available for scientific analysis at the IPAS. All of these profile columns were described in a transdisciplinary way, as planned in the SNF-project proposal (see chapter 1). Each profile was cleaned, photographed, macroscopically described (sediment types, see Tab. 1, well-visible components, etc.). An objective nomenclature for describing the sediment types was introduced (in contrast to the system used during the excavation, which had strong implications for the origin of the layers, we stopped using terms like e.g. installation horizon and the term micrite was used instead of 'lake marl'; see Tab. 1). Based on these sediment types, the profiles were grouped into layers in a close collaboration of archaeology (E. Gross), micromorphology (K. Ismail-Meyer) and archaeobotany. The aim was to separate even the finest layers (eg. layers of sand) in order to have different deposition processes separated. 49 of these profile columns were separated into archaeobotanical (macroremain) samples following the aforementioned layer classification after samples for micromorphology and palynology (A. Heitz-Weniger) had been taken (for the detailed methodological procedure, see Gross *et al.*, in prep and Ismail-Meyer *et al.*, in prep). If layers could not be separated clearly, the overlapping material was sampled separately or it was discarded. The result was the large quantity of 921 samples, from which 197 samples (equalling five continuous profile sequences, hence called the reference profile sequences) were chosen for analysis (Fig. 3).

The reference profile sequences were the following: 46 and 45; 68 and 67; 74 and 73; 88 and 89 (and 98); 96, 92 and 101 (Tab. 2). There was one from every corner of the excavated area and one from the middle of the excavated area (see Fig. 3.), enabling lake-land, but also shore parallel transects. All five reference profile sequences spanned almost the entire stratigraphy (micrite beneath - settlement layer sequence - micrite above).

Another three profile samples from profile 50 above the cultural layer were analysed as well; they represent naturally accumulated sediment (Tab. 2). This layer was C14-AMS-dated to the Middle Bronze Age (between 1450-1300 cal. BC).

M	micrite (‚lake marl')
MO	organic micrite
O1	organic heterogeneous
O2	organic homogeneous
OL	loamy-organic
L	loam
OS	sand-rich organic
S	sand
A	ash
ALSO	mixture of ash, loam, sand and organic

Table 1. Sediment types recorded in the stratigraphy of Zug-Riedmatt. The types are going to be explained in more detail in Ismail-Meyer *et al.* (in prep.)

Additionally, four large-volume surface samples (taken as scatter samples) were analysed (Tab. 3). Surface samples could not clearly be assigned to the according fine stratigraphic layers in most instances. This is the reason why only very few such samples were analysed so far; they come from the already mentioned special midden-like structure (the so called 'bone midden') in the NW-corner of the excavated surface, but they are not discussed further because of the low number of analysed samples.

	type	profile sequences	number of samples	total volume analysed (l)
Zug-Riedmatt (ZGRI)	occupation layers (and over-/underlaying natural layers)	46 - 45	55	15.82
		68 - 67	26	6.9
		74 - 73	29	11.07
		88 - 89 (- 98)	34 (+10)	20.35
		96 - 92 - 101	43	25.11
	natural layers	(53 - 52 - 51 -) 50	3	1.45
Zug-Riedmatt Riedpark III (ZGRI RIII)		123 - 122 - 121	5	7.5

Table 2. Analysed profile samples. For their location in the excavation see Fig. 3. For ZGRI RIII, see chapter 2.2. In addition to samples from profile sequence 88 - 89, some samples from profile 98 (situated close to profile 88) were analysed as well because of the 'bone midden'. Profile sequence 53 - 52 - 51 - 50 includes occupation and natural layers, but only natural ones from profile 50, dating to the Middle Bronze Age, were analysed so far.

	type	samples	number of samples	total volume analysed (l)
Zug-Riedmatt (ZGRI)	occupation layers	1452.A, 1655.A, 1672.A, 1711.A	4	18.5
Zug-Schützenmatt (ZGSCH)	natural layers (some with anthropogenic influence)	3, 9, 15, 20, 21	5	9

Table 3. Analysed surface and core samples. For ZGSCH, see chapter 2.3.

2.1.3 Classification of samples into stratigraphical units

Because the archaeological feature evaluation could not be done yet, the definition of stratigraphical units was done recently in the lab in a joint effort of the responsible archaeologist (E. Gross), micromorphologist (K. Ismail-Meyer), palynologist (A. Heitz-

Weniger) and botanical macroremain analysts (B. L. Steiner, S. Jacomet), using polished sections of all sampled profiles (Fig. 4, Tab. 4). The goal was to assign the finely separated layers in the different profile columns to larger stratigraphical units which could be found in all (or most) profile sequences, because the occupation layer was very thick. Such a layer assignation was not done earlier because of two reasons: the layer structure was quite complex and was only better understood during ongoing analyses, and the interpretative system which was used during the excavation, though an important model, was confounding first attempts.

In order to define stratigraphical units, we mostly relied on visible traits of the sediment (on photos and in the polished sections) and on our description during the separation of the layers. In case of doubt, we sometimes consulted the results of the disciplines micromorphology and botanical macroremains, which were already available at that time (but only to confirm or reject the presence of organic micrite). The organic micrite layers were used as marker horizons (see Fig. 4), as they could usually be clearly seen in all profile columns (except in some cases towards the land side of the excavation). Using statistical reclassification of the units' contents, we could later test if our system of units made sense and if samples could be reclassified using objective criteria. A high amount of samples were reclassified correctly (W. Vach, using Stata), which shows that the system of units is suitable to evaluate the samples.

U14	micrite (‚lake marl') above the occupation layer
U13	‚mixed', micrite mixed with coarse organic material
U12	5th organic micrite
U11	3rd loam
U10	4th organic micrite
U9	2nd loam
U8	3rd organic
U7	3rd organic micrite
U6	2nd organic
U5	1st loam
U4	2nd organic micrite
U3	1st organic
U2	1st organic micrite
U1	micrite (‚lake marl') below the occupation layer

Table 4. Stratigraphic units and their sediment composition (for sediments see Tab. 1).

There are two possibilities concerning the composition of the occupation phase: either three settlement layers (U3-5, U6-7 and U8-12) or two settlement layers (U3-5 and U6-U12) are represented within it. Concerning feature archaeology, it is not yet clear which option is more likely (it will be discussed later which option is more likely concerning botanical macroremains, see chapter 5.3.1.2).

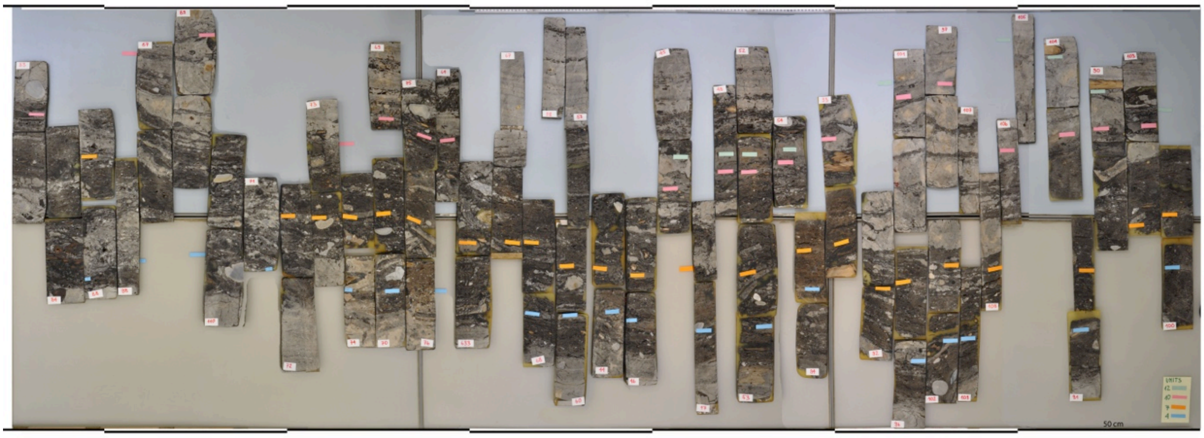

Figure 4. Polished sections of the 47 profile columns which were used for the classification of stratigraphical units. For location of the columns see Fig. 3. Organic micrite units are indicated with colours. (©K. Ismail-Meyer, Integrative Prehistory and Archaeological Science (IPAS), University of Basel).

2.1.4 Recovery, analysis and evaluation of the samples

After the separation of the fine layers in the profile columns, each retrieved sample was submersed in water in a plastic bag, which was then sealed. The bags were stored in a walk-in refrigerator at a temperature <5 degrees C. Freezing and thawing was used as pre-treatment of the samples, especially in order to facilitate the disintegration of loamy sediments (Vandorpe and Jacomet, 2007). The 197 selected reference profile samples were then sieved using the wash-over technique (Kenward *et al.*, 1980; Hosch and Zibulski, 2003; research paper 3.1). With the exception of four samples, all were sieved by the same operator (G. Di Stefano) and without subsampling prior to sieving. Mesh sizes of 4mm, 2mm and 0.35mm were used for the wash-over sieving of the organic fractions. The sample volumes as well as the volumes of the resulting fractions were measured using the 'classical' volume measurement technique (measuring the upper limit of the sediment in water, as opposed to the displacement volume measurement, Antolín *et al.*, 2015, appendix 7.2). The sieved samples were again sealed in bags and stored in the same refrigerator until, during and after analysis.

Analysis of the samples was done using a Leica/Wild M3Z stereo microscope (magnification 6.5-40x). Four people analysed samples, but two only looked at a few samples (Ö. Akeret: 43; F. Antolín: 4; B. L. Steiner: 143; P. Vandorpe: 11). Seed and fruit remains were sorted and quantified following previously established counting criteria (research paper 3.1, table 1, but with needles and small seeds/fruits being fully quantified in all fractions). Various other macroscopic sediment components and preservation parameters were semiquantified (research paper 3.3). Due to the small sample sizes (0.4l in average, individual volumes of samples can be found in the appendix 7.9), it was often not possible to obtain the desirable sample size of 400 items from the two larger fractions in order to give a reliable representation of the most important taxa (after van der Veen and Fieller, 1982, modified by Hosch and Jacomet, 2001). The large-seeded taxa might therefore be underrepresented, as is known for smaller (profile) samples (Hosch and Jacomet, 2004; Jacomet, 2013; Antolín *et al.*, 2017b, appendix 7.3). Therefore, the 4mm-fraction was always, the 2mm-fraction almost always fully analysed (except in two cases). The 0.35mm-fraction was usually subsampled. The subsampling was done after sieving (which should provide a more homogeneous mixture of remains, see research paper 3.2), by the analyser using a grid, and one or more subsamples were analysed in order to reach a certain number of remains (roughly 400). For the identification of plant remains, the IPAS seed reference collection and selected literature (e.g. Körber-Grohne, 1964; Jacomet *et al.*, 1989; Cappers *et al.*, 2006) was used. Sorted waterlogged plant remains were stored in a conserving agent containing thymol, ethanol, glycerine and water, charred objects were air-dried and stored in dry state. Insect, mollusc and small animal remains were also sorted and stored in purified water.

All data were entered into the database ArboDat (©Kreuz and Schäfer 2016), but the classification into ecological groups roughly followed Brombacher and Jacomet (1997, and literature cited there) and was adjusted several times (following Oberdorfer, 2001, http://www.infoflora.ch, http://www.pfaf.org and own experience). Taxa were first and foremost classified according to their main ecological amplitude and not always their complete one, so care must be taken when interpreting the data as the ecological amplitudes of the plant species can be wide. We tested the actualistic classification of the taxa through statistical correlations and refined some of the classifications based on these tests (W. Vach). The following taxa were subsequently sorted into another ecological group based on their statistical correlations: *Veronica sp.* (from various unassigned plants to wet grassland), *Myosoton aquaticum/Stellaria nemorum* (from wetland plants unassigned to shoreline pioneers), *Epilobium sp.* (from various unassigned plants to woodland clearing edge, hedge, bush plants). These reclassifications cannot be generalized for other sites. The ecological evaluation is based on uniformitarianism, considering plant habitats of today.

Nomenclature of scientific plant names follows the National Data and Information Center of the Swiss Flora (http://www.infoflora.ch).

Correspondence analysis was performed using the program PAST3 (Ø. Hammer). Other statistical analyses were done by W. Vach using Stata (StataCorp LP).

2.2 Site Zug-Riedmatt Überbauung Riedpark III (ZGRI RIII)

Approximately 80m upstream of the lakeshore settlement Zug-Riedmatt, fluvial sediments were found and sampled with a profile sequence during construction work (Gross *et al.*, 2015). Despite their position at a higher altitude than the occupation layer of Zug-Riedmatt, they were C14-AMS-dated to the first quarter of the 5th millennium BC, and were therefore clearly older than the occupation layer of Zug-Riedmatt (see chapter 2.1).

The whole profile sequence was described and sampled in a transdisciplinary way as described for the site Zug-Riedmatt (see chapter 2.1.2). Botanical macroremains of five of the more organic samples in this sequence were examined (see Tab. 2) in order to see what plant materials were included in naturally accumulated (mostly fluvial) sediments (see also appendix 7.4). Analysis and evaluation were done in the same way as for samples from Zug-Riedmatt (see chap. 2.1.4). At the same time, the sequence was also palynologically analysed (by A. Heitz-Weniger).

2.3 Site Zug-Schützenmatt (ZGSCH)

In a distance of a mere 2km to the east of Zug-Riedmatt, another lakeshore settlement, Zug-Schützenmatt, is located. This site also dates to the Horgen culture (dendrodated to 3161-3154 cal. BC) and could have existed contemporaneously with Zug-Riedmatt, but the preservation of its occupation layer is not as good (for reasons mentioned above) and it was never fully excavated (see also Elbiali, 1989; Hochuli and Sormaz, 1993). Some cores from east of the already excavated parts were taken during a coring campaign in 2015 in order to investigate the extent of the cultural layer (Reinhard *et al.*, 2016). Five core samples, from different locations and dated differently (see appendix 7.5 and Reinhard *et al.*, 2016), were sampled in a transdisciplinary way (see chapter 2.1.2) and macrobotanically analysed (Tab. 3). As most of them did not contain any occupation layer material or only small amounts, we also used them for investigating differences between naturally and anthropogenically accumulated layers.

Analysis and evaluation were done in the same way as for samples from Zug-Riedmatt (see chapter 2.1.4).

2.4 Zürich-Parkhaus Opéra (ZHOPE)

2.4.1 Site

From the Late Neolithic lakeshore settlement Zürich-Parkhaus Opéra (Fig. 1), the occupation layer mainly considered here (layer 13) is dendrodated to 3176 to 3153 cal. BC (Horgen period; see Bleicher and Burger, 2015). The preservation of this occupation layer, which was up to 0.37m thick (much thinner than the occupation layer at Zug-Riedmatt; Bleicher and Ruckstuhl, 2015, p. 53), was good. In the 19th century, several meters of sediment were dumped on the existing sediment (Wurst and Rick, 2015, p. 27-39) and it is not yet clear how this event affected the underlying sediments. The site comprised approximately 3000m^2 and was excavated almost entirely (see Bleicher and Ruckstuhl, 2015), in contrast to the site Zug-Riedmatt. The site is located at the Northern shore of lake Zürich near the lake outlet of the river Limmat.

The sampling of the large-area rescue excavation of Zürich-Parkhaus Opéra, which was conducted in 2010/2011, was somewhat different from the one of Zug-Riedmatt. The surface was systematically sampled by a large number of large-volume surface samples (taken as scatter samples) from every second square metre. 2514 samples were taken in total, and from those, 256 samples from layer 13 were chosen for analysis (in total almost 1000l of sediment). They were more or less evenly distributed over the surface of the layer (see Fig. 37 in Antolín *et al.*, 2017a). During the ongoing analyses, house floor plans were determined (Bleicher and Burger, 2015, for layer 13 p. 127). In the future, more samples of layer 13 will be analysed in order to have a good representation of most of the excavated houses, but also the spaces in between them.

For this work, samples of Zürich-Parkhaus Opéra were only used for methodological research (see research papers 3.1-3), but general results of this site are published by Antolín *et al.* (2017a).

2.4.2 Sample preparation

After the samples had been subsampled for different microremains (e.g. parasite eggs; see Maicher and Le Bailly, 2017) and their main components semiquantitatively described, they were separated into a larger (A-sample, ca. 4 litres) and a smaller sample (B-subsample, 300ml). This separation was done in order to save time during the sieving and analysing process. The influence of this subsampling process was then evaluated in order to find out whether it influenced the results (see research paper 3.2). The goal was to elaborate recommendations for future similar work, and also to see how well excavations from which only small samples were analysed (like for Zug-Riedmatt) are comparable with excavations from which large-volume samples were taken (for results see Antolín *et al.*, 2017b, appendix 7.3).

2.4.3 Classification of samples into (rough) stratigraphical units

Samples could roughly be classified according to their position within the occupation layer if it was thick enough (Antolín *et al.*, 2017a). Three classes, top, intermediate and base, were used in these cases. If the layer was thin, only one class, single, was used. This system was used in order to see whether plant spectra and preservation parameters changed within layer 13 (stratigraphically and spatially).

2.4.4 Recovery, analysis and evaluation of the samples

Analysis and evaluation were basically done in the same way as for samples from Zug-Riedmatt. Differences were the following: A- and B-samples were also sieved using the wash-over method (Hosch and Zibulski, 2003; research paper 3.1) with freezing and thawing as pre-treatment (Vandorpe and Jacomet, 2007), but different mesh sizes were used. For A-samples, only 8mm and 2mm and for B-samples only 2mm and 0.35mm mesh sizes were utilized for the organic fractions. Four different operators with the same instructions sieved the samples. In order to make sure that their methods were comparable, a test comparing them was conducted (see research paper 3.1). The sample volumes and the volumes of the resulting fractions were almost all measured using both the displacement volume measurement method and the 'classical' volume measurement method (for 212 samples from layer 13 and for 84 samples from layer 14). In this way, both methods could be compared (Antolín *et al.*, 2015, appendix 7.2). The 2mm- and the 0.35mm-fraction were usually subsampled by the sievers, using exact guidelines. The sieved samples were packed in plastic containers and stored in a walk-in refrigerator (<5 degrees C) until, during and after analysis. Sample volumes of A-samples were large (in average 3.8 litres), ensuring a reliable representation of large-seeded plant taxa (Hosch and Jacomet, 2001; see also Antolín *et al.*, 2017b, appendix 7.3). The classification into ecological groups followed Brombacher and Jacomet (1997, and the literature cited there) and was not modified.

3. Research Papers

3.1 Testing of the consistency of the sieving (wash-over) process of waterlogged sediments by multiple operators

Steiner BL, Antolín F, Jacomet S

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Testing of the consistency of the sieving (wash-over) process of waterlogged sediments by multiple operators

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A B S T R A C T

The sieving process has a considerable influence on the subsequently retrieved archaeobotanical data. As known from earlier work, the wash-over method is the most suitable method to extract plant macroremains from waterlogged sediments. This paper presents an experiment in which it was tested if different sievers using this method produced comparable results.

Some systematic differences between sievers were found in the larger fractions (≥2 mm), namely the varying presence of small remains. This problem can be avoided if detailed instructions are given to the sievers and guidelines for counting remains are used during analysis. In the small fraction (>0.35 mm), differences between sievers were not substantial anymore. In addition to differences caused by the sieving technique we could also show that the patchy pattern of clumpy waterlogged sediments complicates a statistically relevant subsampling. We can state that only large differences between samples should be interpreted in palaeoeconomic terms, but that it is no disadvantage if several sievers work on the same project.

It is our purpose to raise awareness of the fact that the methodology has a strong impact on the results obtained and should therefore always be revealed on a detailed level, especially if data from one site will later be used for comparisons with other sites.

1. Introduction

Waterlogged sediments allow the preservation of waterlogged (subfossil uncharred) plant remains, which would otherwise disappear from the archaeological record due to natural decay (e.g. Jacomet, 2013). Usually, plant remain densities are extremely high (over 10,000 remains per litre of sediment) and the diversity is considerable (on average over 40 taxa per sample; e.g. Hosch and Jacomet, 2004; Jacomet et al., 1989; Maier, 2001; Vandorpe and Jacomet, 2011). Nevertheless, these remains are fragile and can easily be damaged or lost if recovery methods are not appropriate. In order to recover plant macroremains from waterlogged sediments, several methods like wet-sieving, wash-over and flotation have been used (Kenward et al., 1980; Pearsall, 2000). Depending on the sieving method and the siever who processes the material, large differences in the botanical macroremain composition can arise (Hosch and Zibulski, 2003). But in large-scale projects or in situ sieving, if a large amount of sediment has to be processed within a restricted period of time, it is necessary to employ several sievers. In an experiment, Hosch and Zibulski (2003) compared samples of a Neolithic lake dwelling cultural layer wet-sieved by different operators and used an analysis of variance to identify the taxa which were influenced by the wet-sieving methods of the different sievers. They identified several taxa which were eliminated completely or partly if the wet-sieving process was too intensive. The wash-over technique, where organic material is gently separated from the inorganic, has proved to be a more appropriate method (Badham and Jones, 1985; Tolar et al., 2009; Zibulski, 2010). For this method (as described in Kenward et al., 1980 and slightly modified), the sediment is processed in portions in a small bucket or bowl. A moderate stream of water is applied and the bucket/bowl is swirled. The supernatant (consisting mainly of suspended organic remains and fine mud) is drained onto sieves of desired mesh sizes. Gentle stirring by hand can be applied if the sediment is hard to disaggregate even after pre-treatment by freezing and thawing (Vandorpe and Jacomet, 2007). This process is repeated until no further organic particles are carried off and only inorganic material and, occasionally, bones remain. Then the process is repeated for the next portion of sediment until the whole sample is processed. After packing the organic fraction, the collected inorganic fraction can be wet-sieved. For the wash-over method, the density of organic finds is greatly improved (eg. Badham and Jones, 1985), but the effect of different sievers has not yet been tested.

To fill this gap of knowledge, we designed an inter-siever-variability study, where different sievers treated subsamples of the same samples

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2352-409X/

using the wash-over method in order to identify potential differences in the final archaeobotanical composition that could be due to the action of each operator. This work therefore aims to fill an essential gap in the methodological basis of archaeobotany. The results will be of importance for archaeobotanical research on wetland sites of all time periods.

2. Material & methods

Samples from the Neolithic lake dwelling site of Zürich–Parkhaus Opéra (Zürich, Switzerland), which was excavated during 2010 and 2011, were used in this experiment. The samples studied were taken from layer 13 (Horgen culture, dendrodated to c. 3160 BC, Bleicher personal communication). This so-called cultural layer consists of different sediment types (mostly organic sediments) of varying thickness (Fig. 1). Large-volume surface samples (5–7 l) were taken in a systematic way (for sampling of lakeshore settlements see Jacomet and Brombacher, 2005). Previous work has demonstrated that such large samples are needed in order to have a good representation of large-seeded items (e.g. Jacomet, 2013). Nevertheless, the sieving of such large volumes using a 0.35 mm mesh size would be extremely time-consuming and would produce considerable amounts of organic residues that cannot be investigated in everyday archaeobotanical work. Therefore, it was decided to take a small subsample (of 0.3 l) using the grid method (Veen van der and Fieller, 1982) to be sieved with a smaller mesh size (Fig. 2). As a result, the large subsample (3–5 l, called A-samples) was sieved only using sieves of 8 mm and 2 mm mesh sizes to recover a sufficient amount of remains of large-seeded taxa. The small subsample (called B-samples) was sieved at a later stage, using sieves of 2 mm and 0.35 mm mesh sizes. From previous work, it was known that the small-volume B-samples contained more than enough remains for reaching the required number of items in the small fraction (Hosch and Jacomet, 2001).

For the Parkhaus Opéra project, it was necessary to sieve around 450 samples within a span of 2 years. For this, several sievers were needed. Being aware of differences found in previous projects due to the inconsistency of sieving technique performed by different operators (Hosch and Zibulski, 2003; Zibulski, 2010), it was considered necessary to check whether the results obtained by all the sievers within our project were fully comparable. For this purpose, we split four samples into four A-subsamples, the so-called siever-A-samples (Fig. 2). In addition, we

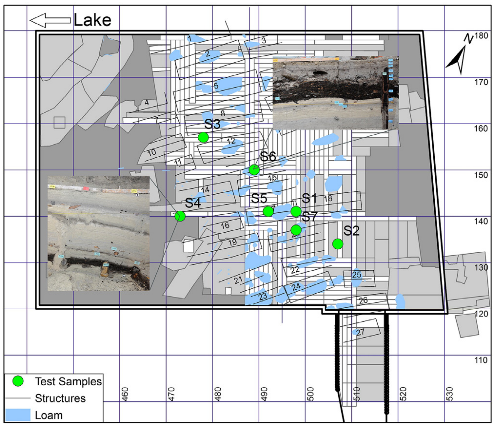

Fig. 1. Site plan of the lake dwelling site Parkhaus Opéra (Zürich, Switzerland) with the location of the examined samples and pictures showing two sections of the cultural layer in two different locations. (Picture credit to the Office for Urbanism, City of Zürich.)

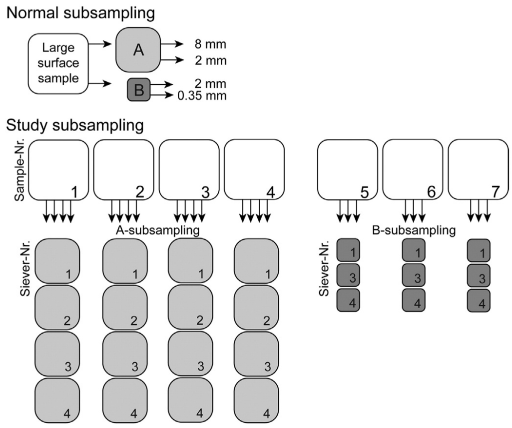

Fig. 2. Subsampling strategy used for the project in general and for this study.

took three B-samples each from three other samples, the so-called siever-B-samples. For both we used the grid method (Veen van der and Fieller, 1982) (see the location of the samples on the site plan in Fig. 1). This method should ensure a random subsampling of the contents of the sample, making the two inter-siever-variability studies largely comparable (at least for the best-represented taxa). However, chances for producing subsamples with a diverse composition are relatively high, given that the nature of the cultural layers in waterlogged context is very patchy and the sediment is usually found in clumps, which cannot be disaggregated without damaging the contents before freezing, thawing and sieving. It is for this reason that another study was carried out, so as to observe the effects of subsampling in wet sediments and this will not be discussed in detail here.

Cultural layers at lakeshores contain different sediment types like strongly organic layers of different compositions, charcoal layers, loamy sediments etc. (see e.g. Ismail-Meyer et al., 2013; Jacomet et al., 1989). This was also the case for layer 13 of the Zürich-Parkhaus Opéra site (Fig. 1). Therefore sediment samples of different nature were chosen for this inter-siever-variability study. Siever-A- and siever-B-samples were not taken from the same samples because these two parts of the study were separated chronologically for reasons of practicality (feedback was given to the sievers after the first study with the siever-A-samples).

After a process of description of the composition of the sediment sampled and the subsampling of it, A- and B-samples were sieved using the wash-over technique combined with freezing and thawing as pre-treatment (Vandorpe and Jacomet, 2007) to facilitate the disintegration of the highly clumpy material. Four operators sieved one subsample of each of the four siever-A-samples and three operators sieved one subsample of each of the three siever-B-samples, all following the same precise instructions (besides a training session with one of the more experienced sievers, there were also written guidelines about how to handle obvious fragile materials, when to empty the sieves into bigger bowls so that there is no overflow, how to subsample the fractions etc.). The subsequent 2 mm-fraction of the A-samples and 0.35 mm-fraction of the B-samples were subsampled with the grid method in order to minimize the time needed for analysis. Then, in both cases, one or more subsamples were analysed in order to reach 384 items (per fraction), which is the amount of remains considered to give a reliable representation of the most important taxa in the right proportions and not targeting a maximum number of taxa (following Veen van der and Fieller, 1982, modified by Hosch and Jacomet,

Table 1
Guidelines for the recording of botanical macroremains used in the analysis of Parkhaus Opéra, established before the inter-siever-variability study (based on guidelines published in Hosch and Jacomet (2001)).

Taxa/type of remain	State of preservation	Counting unit	Quantification	
			2 mm	0.35 mm
Cereal grains	Charred	With embryo	Full	Full
Cereal bran	Waterlogged	>2 mm with hilum	Full	Full
Cereal chaff	Waterlogged and charred	Glume bases (glume wheat) or rachis segments (naked wheat and barley)	Full	Full
Flax (*Linum usitatissimum*) capsules	Waterlogged and charred	≥2 capsule fragments, with apex	Full	Full
Flax seeds	Waterlogged and charred	With hilum	Full	Full
Opium poppy (*Papaver somniferum*) seeds	Waterlogged and charred	Whole seeds or halves	p/a	Full
Amorphous charred objects	Charred	>5 mm	Full	Full
Rubus/*Fragaria*/*Najas*	Waterlogged and charred	Whole seeds or >1/2 for Najas	Full	Full
Corylus/*Fagus* /*Quercus* pericarp	Waterlogged and charred	5 × 5 mm	Full	Full
Malus/*Pyrus* pericarp	Waterlogged and charred	3 × 4 mm	Full	Full
Large seeds/fruits	Waterlogged and charred	Whole or >1/2	Full	Full
Needles of coniferous trees	Waterlogged and charred	Needles with apical ending	p/a	p/a
Smaller seeds/fruits	Waterlogged and charred	Whole or >1/2	p/a	Full

2001). Based on earlier experience with similar materials, a time limit of c. 12 h was established as a maximum time considered as efficient to spend with one sample. If the target population was not reached within this time, no more subsamples were sorted.

Seed and fruit remains were sorted and quantified following previously established criteria (see Table 1), so the influence of the person analysing the sample should be negligible.

In order to compare the results between subsamples, several variables were taken into consideration: the overall density based on displacement volume measurement technique (where a defined volume of water is added to the sample in a measuring vessel until the material is fully covered, then the overall volume is read off the upper rim of the water and the volume of water is substracted from the overall volume to give the displacement volume of the sample; as recommended in Antolin et al., submitted; see also Jacomet and Kreuz, 1999), the botanical diversity (number of taxa), and the cleanliness (degree of turbidity, amount of undissolved concretions) of the resulting sieved fractions. Additionally, we classified the remains into fragile or robust groups according to guidelines which were already established in a previous work by Hosch and Zibulski (2003). We used their classification, but additionally separated these remains into large and small groups (see Table 2) and calculated concentration values for fragile large and small as well as robust large and small remains based on these taxa only.

For the examination of large- and small-seeded taxa, another classification of the seed and fruit remains into clearly >2 mm and clearly <2 mm sizes was done, where much more taxa than the ones listed before were considered, while some which can appear both in the 2 mm- and the 0.35 mm-fractions, like cereal chaff and flax seeds (which were present in most of the subsamples anyway), were left out. This different classification was used to determine the numbers of taxa present, because only relatively few and common taxa were used for the calculation of concentration values of relevant large- and small-seeded taxa (as listed in Table 2, after Hosch and Zibulski, 2003).

We compared the proportions of some species (occurring in a reasonably high amount of ≥10% in the samples) in the different subsamples to see if they represented a similar proportion of the total of remains (as should be expected according to the work of Veen van der and Fieller (1982)) and, if not, if the differences observed could be due to the sieving process.

Nomenclature of scientific plant names follows the National Data and Information Center of the Swiss Flora (http://www.infoflora.ch).

Table 2
List of fragile and robust remains which were used for the evaluation of the inter-siever-variability study and their classification into large and small groups.

	Large	Small
Fragile	*Fagus sylvatica* pericarps *Linum usitatissimum* larger capsule fragments (≥2 parts) *Malus*/*Pyrus* pericarps *Malus sylvestris* seeds *Papaver somniferum* capsule fragments *Quercus* sp. pericarps *Viscum album* berries	*Cerastium* sp. seeds *Cerealia* pericarps *Cerealia* chaff (including: *Hordeum vulgare*, *Triticum aestivum*/*durum*/*turgidum*, *T. dicoccon*, *T. monococcum* and *T.* cf. *spelta*) *Linum usitatissimum* seeds
Robust	*Corylus avellana* nutshells *Prunus spinosa* stones *Rosa* sp. nutlets	*Alnus* sp. nutlets *Brassica rapa* seeds *Fragaria vesca* nutlets *Lapsana communis* achenes *Moehringia trinervia* seeds *Physalis alkekengi* seeds *Prunella vulgaris* nutlets *Rubus fruticosus* and *R. idaeus* stones *Verbena officinalis* mericarps

3. Results

3.1. General

The subsamples of siever-A-samples, which had a volume between 0.9 and 1.5 l, allowed the recovery of 1300–2700 remains per total A-sample. The size of the analysed fraction volume ≥2 mm varied between 75 and 150 ml, which was between $\frac{1}{4}$ and $\frac{2}{3}$ of the fraction (Table 3). In 9 out of 16 subsamples this was enough to reach the required target population of 384 remains within the time limit established. Only seven subsamples did not reach this value, but they all contained more than 250 remains.

A list of all remains found in siever-A-samples can be found in the appendix (Table A).

All siever-B-samples had a volume of 0.3 l and they rendered between 1400 and 2600 remains per total B-sample. For reaching the target populations in the 0.35 mm-fraction, only 10–15 ml had to be analysed, which was not more than $\frac{1}{4}$ of the fraction. In only three samples, the target population in the 0.35 mm-fraction was not reached, but all contained more than 300 remains (Table 4).

Table 3
General information about the siever-A-samples. Samples where the target population was not reached are marked with an asterisk. The 8 mm-fraction was always completely analysed. Concretions (conc.) are compactions of organic and inorganic materials (which could also contain seeds/fruits).

	Sample 1				Sample 2				Sample 3				Sample 4			
Siever	1	2	3	4	1*	2	3	4	1*	2	3*	4*	1*	2	3*	4*
Volume (l)	1	0.9	1.2	1.1	1.5	1.1	1.2	1.3	1.1	1.3	1.4	1.1	1.2	1.25	1.2	1.2
Part of 2 mm-fraction analysed	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{2}{3}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Volume of 2 mm-fraction analysed (ml)	100	100	100	100	150	100	117	150	75	125	125	150	140	150	100	100
Remains found (8 mm- + 2 mm-fractions)	545	415	862	629	255	836	835	780	284	438	273	339	319	441	349	268
Cleanliness	Clean	Cloudy	Clean	Clean	Clean	Cloudy	Clean	Clean	Clean	Cloudy	Clean	±Clean	Cloudy (conc.)	Cloudy (conc.)	Cloudy (conc.)	Clean
Sediment type	Strongly organic				Organic with loam and dung[1]				Organic with loam				Organic with lake marl and molluscs, some dung			

[1] Based on earlier investigations, dung was recognized by its typical smell, consistency and the light brown colour (see also Robinson and Aaby, 1994; Kenward and Hal, 2012; Kühn et al., 2013).

Table 4
General information about the siever-B-samples. The samples where the target population was not reached are marked with an asterisk.

	Sample 5			Sample 6			Sample 7		
Siever	1	3	4	1	3*	4	1*	3*	4
Volume (l)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Volume of 0.35 mm-fraction analysed (ml)	10	10	10	10	10	10	15	15	15
Remains found (2 mm-fraction)	100	401	135	82	237	33	38	84	172
Remains found (0.35 mm-fraction)	726	602	663	541	351	477	318	325	483
Cleanliness	Clean	Clean	Clean	Clean	Clean	Clean	Clean	Clean	Clean
Sediment type	Organic with charcoal			Organic with loam, lake marl and molluscs			Strongly organic with some dung[2]		

[2] See Table 3 for definition.

A list of all remains found in siever-B-samples can be found in the appendix (Table A).

3.2. Average concentration

The concentrations of the siever-A-samples ranged between 325 and 2763 remains/l of sediment (r/l, Fig. 3). Sample 1 (richly organic) and sample 2 (organic with loam and dung) were richer in botanical macroremains (>1400 r/l > 2 mm on average) than sample 3 (organic with loam) and sample 4 (organic with lake influence indicators; <500 r/l > 2 mm on average), but differences within samples were sometimes higher than between samples.

There were systematic differences between sievers. Siever 1 always had the lowest concentration of botanical macroremains in her/his subsamples (up to >100% of difference compared to other sievers). Siever 3 had an unusually high concentration of remains in his/her subsample of sample 1, but in all other samples, siever 2 produced the highest concentration of remains. However, there were no pronounced unsystematic differences between the samples of the different sievers, the ranking of the samples was the same for all sievers except for siever 3.

The concentrations of the siever-B-samples ranged between 4763 and 20,382 r/l (Fig. 4). Subsamples of sample 5 (organic with charcoal) had the highest average concentration of remains >0.35 mm (>17,000 r/l). Subsamples of sample 6 (organic with loam and lake influence indicators) and 7 (strongly organic with dung) had lower concentrations (both <8000 r/l > 0.35 mm). In general, differences within samples were much smaller than in siever-A-samples.

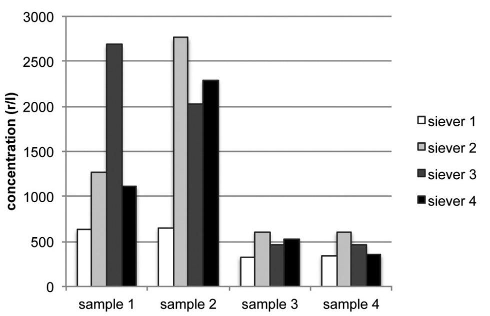

Fig. 3. Concentrations (r/l) of all subsamples of the siever-A-samples.

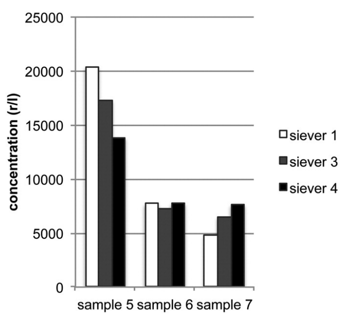

Fig. 4. Concentrations (r/l) of all siever-B-samples.

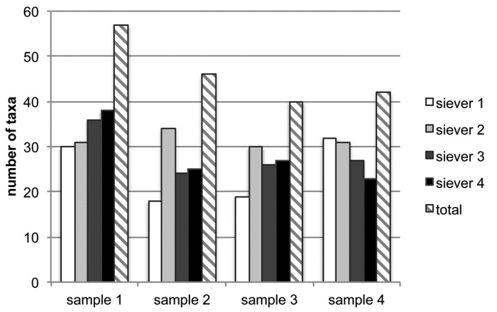

Fig. 5. Number of taxa in all subsamples of the siever-A-samples and in total.

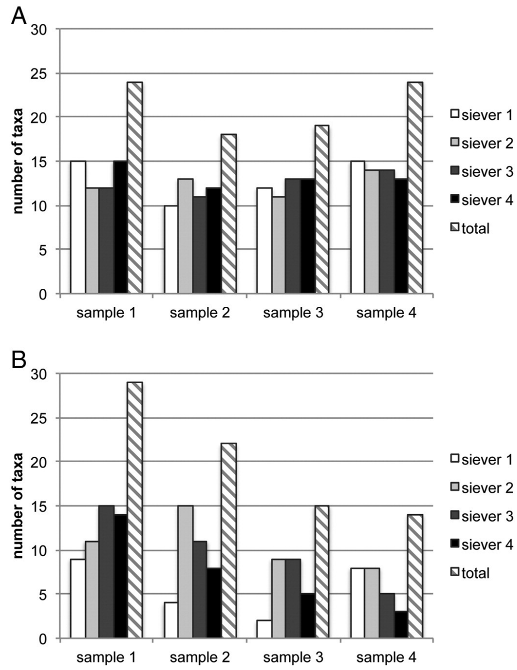

Fig. 6. Number of A) large- and B) small-seeded taxa in all subsamples of the siever-A-samples and in total.

Differences between sievers were not very pronounced. The ranking was the same for all sievers.

3.3. Number of taxa

There were between 18 and 30 taxa in each siever-A-sample, but in total, all samples had 40 or more taxa (Fig. 5). Therefore, in none of the subsamples, all taxa were present, which was expected as our goal was not to record maximum taxa diversity. The richest subsample of each study sample yielded between 10 and 15 taxa less than the total. Sample 1 (described as strongly organic) had the highest total number of taxa (57).

Differences between sievers were mainly systematic. Siever 1 usually produced the lowest number of taxa except in sample 4, where this siever obtained the highest number of taxa. Siever 2 had the highest average number of taxa. Some unsystematic differences were present as well.

The number of large-seeded taxa obtained in the subsamples of each siever-A-sample was very similar (the difference between the richest and the poorest subsample was never larger than 3; Fig. 6A). However, even for the large-seeded taxa, the total amount of taxa per sample was not reached in any of the subsamples. Larger differences could be observed in the number of small-seeded taxa (between 5 and 9 taxa of difference between the richest and the poorest subsamples within each sample; Fig. 6B). The largest differences were obtained in samples 2 and 3.

There was a systematic difference between sievers for small-seeded taxa (Fig. 6B). Siever 1 always obtained the lowest amounts in all samples except in sample 4, while sievers 2 and 3 usually had the highest amounts in their subsamples (in their samples, taxa with very small propagation organs like *Juncus* sp., *Origanum* sp., *Chara* sp. or *Brassica rapa* could sometimes be found in the 2 mm-fraction). The ranking of the samples of siever 1 was also different from the other sievers. The values for large-seeded taxa were much more balanced (Fig. 6A).

Considering the relation between the number of taxa and the number of remains studied, it should be noted that samples where the target population had not been reached (see Table 3) usually had a lower number of taxa. However, as can be seen in Fig. 6A, large-seeded taxa were not affected by this in siever-A-samples.

In each of the three siever-B-samples, more than 20 taxa could be found in each subsample and more than 45 taxa in total (Fig. 7). In none of the subsamples, all taxa were found. In fact at least 30% of the total taxa per siever-B-sample were missing in all subsamples.

Differences between the sievers were small. Only in sample 6, siever 1 had a slightly higher number of taxa than the other sievers.

The number of taxa in the siever-B-samples where the target population had not been reached was largely comparable to the other siever-B-samples.

Differences between siever-B-samples were similar in both large- (Fig. 8A) and small-seeded taxa (Fig. 8B). As expected, there were more small-seeded taxa present because the 0.35 mm fraction was analysed. At least 10% of the large-seeded taxa and 30% of the small-seeded taxa were missing in each subsample.

Siever 1 always had the highest number of large-seeded taxa in his/her subsamples, but in samples 6 and 7, differences between sievers concerning large-seeded taxa were very small. For small-seeded taxa, siever 1 also had the highest number of taxa in samples 5 and 6, but differences were also small in this type of remains.

3.4. Concentration of robust seed and fruit remains

Concerning the robust large remains in siever-A-samples (Fig. 9A), the range around the average concentration obtained in different subsamples was 63% (see Table B.1). Concentrations obtained by different sievers were more or less similar in each sample, although siever 3 had the lowest values in samples 1, 2 and 3 (and on average).

Concerning the robust small seed and fruit remains in siever-A-samples (Fig. 9B), the range around the average concentration obtained in different subsamples was 102% (see Table B.1). The very high concentration in the subsample of sample 1 processed by siever 3 was caused by the high concentration of *Rubus fruticosus* and *Rubus idaeus* stones. Without considering this subsample, the systematic differences between sievers were still quite substantial. In three out of four samples,

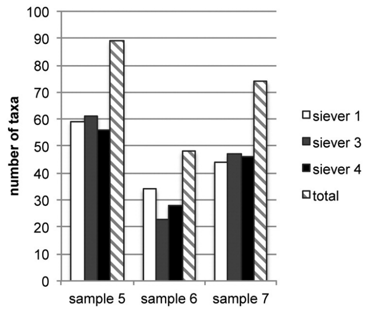

Fig. 7. Number of taxa in all siever-B-samples and in total.

siever 1 had a considerably lower concentration of robust small taxa than the other sievers while siever 3 had the highest values in all cases. However, no unsystematic differences between the samples of the different sievers could be detected, except that siever 1 had a different ranking of samples.

Concerning the robust small seed and fruit remains in siever-A-samples (Fig. 9B), the range around the average concentration obtained in different subsamples was 102% (see Table B.1). The very high concentration in the subsample of sample 1 processed by siever 3 was caused by the high concentration of *Rubus fruticosus* and *Rubus idaeus* stones. Without considering this subsample, the systematic differences between sievers were still quite substantial. In three out of four samples, siever 1 had a considerably lower concentration of robust small taxa than the other sievers while siever 3 had the highest values in all cases. However, no unsystematic differences between the samples of the different sievers could be detected, except that siever 1 had a different ranking of samples.

Only very few robust large remains could be found in the siever-B-samples (Fig. 10A). The range around the average concentration obtained in different subsamples was 66% (see Table B.2), while the bigger differences were mainly caused by sample 7, with two out of three subsamples containing no robust large remains. The differences between the sievers for this type of remains were not very big.

Robust small remains were well-represented in all siever-B-samples (Fig. 10B). On average only 11% of variance between subsamples could be detected (see Table B.2). The differences between sievers were small.

3.5. Concentration of fragile seed and fruit remains

Concerning the concentration of fragile large remains in siever-A-samples (Fig. 11A), the range around the average concentration was 34% (see Table B.3). The concentrations of fragile large remains between sievers were similar. In samples 1 and 2, siever 1 had lower concentrations in her/his subsamples, and in all but sample 4, siever 3 also had lower values than sievers 2 and 4.

Regarding the concentrations of fragile small remains (Fig. 11B), the range around the average concentration obtained in the different subsamples was 55% (see Table B.3). There seemed to be a considerable systematic difference between sievers. Siever 1 always had the lowest concentrations in his/her subsamples. However, unsystematic differences were not present.

The concentration of fragile large remains was similar in all siever-B-samples (Fig. 12A). The range around the average concentration obtained in different subsamples was 57% (see Table B.4). Sample 7 presented the largest percentages for large items, like with robust remains.

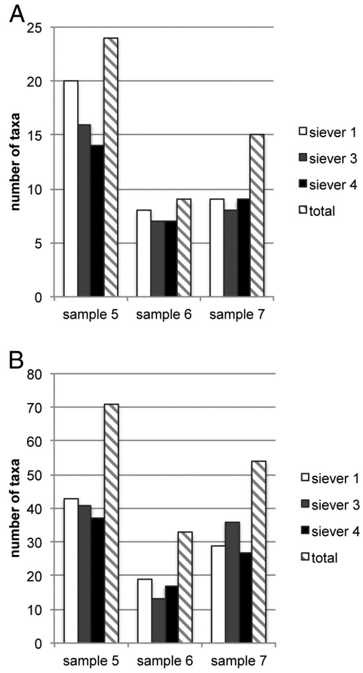

Fig. 8. Number of A) large- and B) small-seeded taxa in all siever-B-samples and in total.

Differences between sievers were not very pronounced. The ranking of the samples of different sievers was sometimes different.

Sample 7 had the highest concentration of fragile small remains, but the other two samples had concentrations almost as high (Fig. 12B). The range around the average concentration obtained in the different subsamples was 30% (see Table B.4). Differences between sievers were not very distinct, but the ranking of samples differed in some cases.

3.6. Comparison of proportions of the best-represented taxa

In siever-A-samples, 8 types of remains had a proportion of ≥10% in at least one of the subsamples (Table 5). According to the work of Veen van der and Fieller (1982), the proportions obtained for each of these types of remains in each subsample should have an accuracy of ±5%. We compared the results obtained in each subsample with a mean percentage between all of them in order to look for systematic inconsistencies that could have been produced by the sievers. Sievers 1 and 2 had extreme values in more cases (Table 5). Siever 3 had a very high concentration of *R. idaeus* in sample 1, in exchange low concentrations of most of the remaining materials were found. Siever 4 had less extreme values. All things considered, the proportions of the different sievers were more or less comparable with a few exceptions (shaded in grey in Table 5).

In siever-B-samples, 9 types of remains (partly different ones than in the A-samples) had a proportion of ≥10% in any of the samples (Table 6). The proportions of the different sievers were similar in siever-B-samples and the most frequently occurring species were the same in most subsamples.

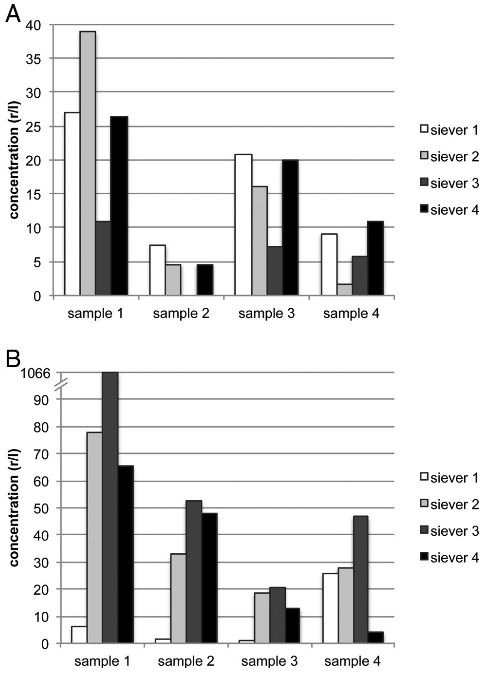

Fig. 9. Concentration (r/l) of robust A) large and B) small seed and fruit remains in all siever-A-samples.

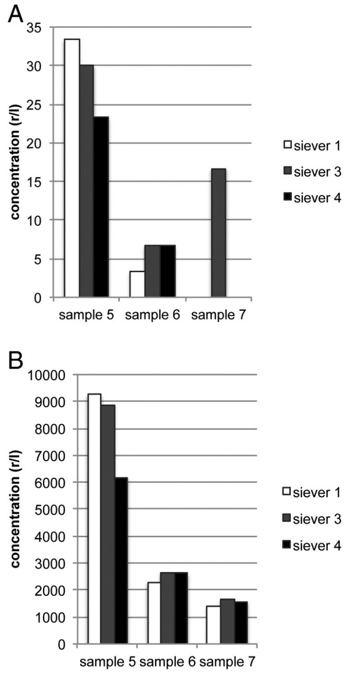

Fig. 10. Concentration (r/l) of robust A) large and B) small seed and fruit remains in all siever-B-samples.

4. Discussion

4.1. Differences intermingling with the effects of sievers

Even though it is not the aim of this paper to discuss the subsampling methods that have been used, it is important to give some hints to the differences between subsamples that have been observed and that not necessarily depend on the action of the sievers. This mainly concerns large-sized and robust remains in the A- and B-samples, and also small-sized robust remains in B-samples, which should not be deeply affected by the process of sieving.

The differences in robust large-seeded taxa within A- and B-samples were low in terms of number of taxa (6 or less taxa of difference between subsamples, see Section 3.4). However, differences of concentration values were also present, and these are most likely caused by differences in the contents of the subsamples and are not related to the sieving method, as these types of remains are very resistant to damage (Hosch and Zibulski, 2003; Tolar et al., 2009). One example for this is the case of siever 3 in sample 1, where much higher concentration values were observed only for this particular subsample. The differences were mainly caused by the significant presence of fruits of *Rubus*, possibly representing a cluster in this subsample, and may not be related to the sieving method. Maybe a coprolite was recorded in this sample, as clusters of *Rubus* may point to the presence of human faeces (Maier, 2001). So there must have been some variations of small-seeded taxa within the samples due to subsampling as well. Therefore, a relatively large margin of error of 63–66% in the concentration should be assumed for this category of remains if subsampling of samples of c. 1 l of sediment out of larger samples from clumpy wetland deposits is carried out in the laboratory. In the smaller B-samples, differences in robust small-seeded taxa could also have been heavily influenced by the subsampling strategy. Here, a margin of error of at least 11% should be assumed when taking subsamples. Some unsystematic differences between sievers in the B-samples could also be explained by the subsampling. So, we clearly see that at least a part of the variation in concentrations is caused by the extremely patchy nature of anthropogenic wetland deposits, which makes the splitting of the samples in a statistically appropriate way almost impossible. Such differences should not be interpreted as differences between sievers, and this is especially the case for large remains.

All in all, it seems to be impossible to representatively subsample clumpy sediments before they have been sieved even when effort to breaking up clumps is made (which should be avoided as this could also damage larger fragile remains). This problem could probably be avoided by taking subsamples after the sieving process of the whole sample of several litres; however, this would be a time-consuming method and therefore not practicable in daily work. Another solution would be to take larger subsamples (at least 3 l (classical volume) for A-samples, as recommended by Hosch and Jacomet (2001)). The latter was in fact done for most of our A-samples as the average volume of the A-samples was around 3.84 l out of up to 7.2 l.

The sediment type of the samples also influenced concentration values of certain remains. Organic samples containing only loam tended to have lower margins of error in the concentrations of seeds and fruits. At the same time, these types of samples also had lower concentrations of remains compared especially to the mainly organic ones (excluding

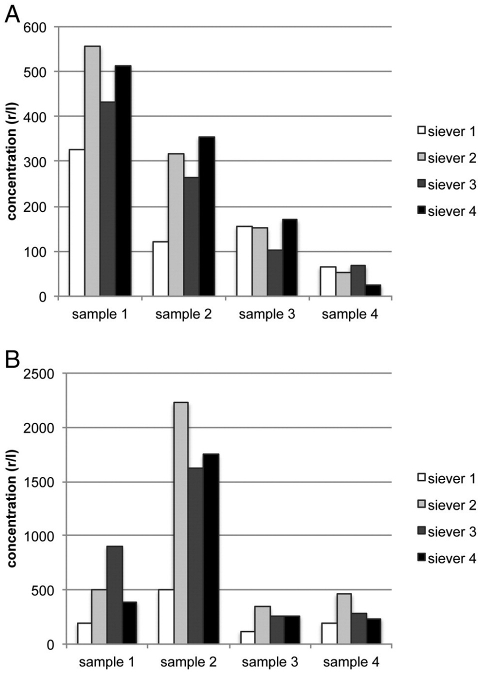

Fig. 11. Concentration (r/l) of fragile A) large and B) small seed and fruit remains in all subsamples of the siever-A-samples.

one strongly organic sample containing dung, which had rather low concentrations). Strongly organic samples usually had the widest botanical diversity. One could speculate that loamy samples had less clumps of organic remains that might result in subsamples of different compositions. Therefore, organic samples might be more prone to produce unreliable subsamples due to the uncontrollable presence of concentrations of particular taxa. This is more obvious with large-seeded items, while small seeded items tend to be more equally represented in all sediment types, at least in terms of proportions. There may, however, be exceptions (especially *Rubus* seeds or flax remains).

The remaining differences in the concentration of robust as well as fragile small-seeded taxa in A-samples could have been caused mainly by the sieving technique and will be discussed below.

4.2. Differences between the sievers

4.2.1. A-samples

The differences between sievers were mainly of a systematic nature and can be explained by how the sievers treated their samples.

Siever 1 had a lower concentration of botanical macroremains in all her/his subsamples and in three out of four cases also a lower number of taxa. However, when taxa were separated into large- and small-seeded ones, it became clear that large-seeded taxa were as well-represented in subsamples of siever 1 as in subsamples of the other sievers and only small-seeded taxa were under-represented. It is then evident that it was the action of the siever which eliminated most of the small-sized remains in the fractions ≥2 mm. Fragile remains like cereal chaff or flax seeds were underrepresented in some subsamples. His/her samples were mostly clean.

Siever 2 had an overall high concentration of botanical macroremains as well as a high number of taxa in her/his samples. However, the differences in the number of taxa were sometimes based on the presence of very small-seeded taxa, which are usually found in the smallest fraction (0.35 mm) only. This siever also often had the highest concentrations of fragile small remains. But there were no such differences for robust small-seeded taxa or for large-seeded taxa. The fractions of siever 2 were always described as cloudy. Therefore, it seems that siever 2 was very careful, but did not always clean the samples thoroughly and, as a result, more plant remains were found, especially those which were not meant to be found in the 2 mm-fraction due to their smaller size.

Siever 3 had similar results to siever 2, with the concentration and number of taxa usually being slightly lower on average and the concentration of small-seeded robust taxa being especially high in all samples, not just sample 1 where a cluster must have been hit. Unlike siever 2, the sieving fractions of siever 3 were mostly clean and proportions rarely deviated more than 5% from the average value per sample.

Siever 4 had all classes of remains well-represented. The concentration of remains and the number of taxa in her/his samples were comparable to those of sievers 2 and 3. The sieving fractions were always clean, even for sample 4, when the rest of the sievers produced partly "dirty" fractions (maybe for this reason the results of this siever for this particular sample were worse than for the rest). Like for siever 3, this siever also rarely produced proportions that deviated more than 5% from the average value per sample.

Fragile classes of material and fragile large remains were still well-represented in most subsamples of all sievers, meaning that the differences that were clearly present did not affect the quality of the sieving except concerning the small remains.

4.2.2. B-samples

In the B-samples, the results were much more balanced. Siever 1 now had results which were much more comparable to the other two sievers, especially concerning the small remains. No general trends could be detected anymore and differences between subsamples could not be attributed to differences between sievers. Even the proportions of well-represented taxa only rarely deviated more than 5%. Of course the fact that only three instead of four sievers were compared could have had an impact on the results, but probably not such a strong one, as there were other important factors. One of these could be the growing experience of the sievers. The study for B-samples was done almost a year after the one for A-samples and sievers were given a detailed feedback after the first inter-siever-variability study. Another very important factor was the fraction size. In B-samples, less small remains could get lost due to the smaller mesh size of the sieves. It seemed like the sieving process of different operators could be more or less consistent if at least a part of the samples was sieved to a small fraction of 0.35 mm or less.

A potential source for inconsistency could then still be the remains which end up in different fractions depending on the sievers (e.g. *Linum usitatissimum* seeds partly being in the 2 mm-fraction in one siever's subsample while fully being in the 0.35 mm-fraction in another siever's subsample). If a fraction is only partly analysed and a factor of extrapolation has to be used to calculate the concentration in one or more fractions, numbers could vary depending on the siever. In the B-samples, the large (≥2 mm) fraction is always fully analysed whereas from the 0.35 mm-fraction, only a rather small subsample (around 10–15 ml) is analysed for reaching the target population (see Table 4). As a result, values are higher in subsamples of the siever whose remains tend to end up in the 0.35 mm-fraction. We roughly checked the consequences of such effects. There were indeed differences between sievers, even though they were generally not very pronounced (see Table 7 for some examples). Siever 1 had more medium-sized remains in

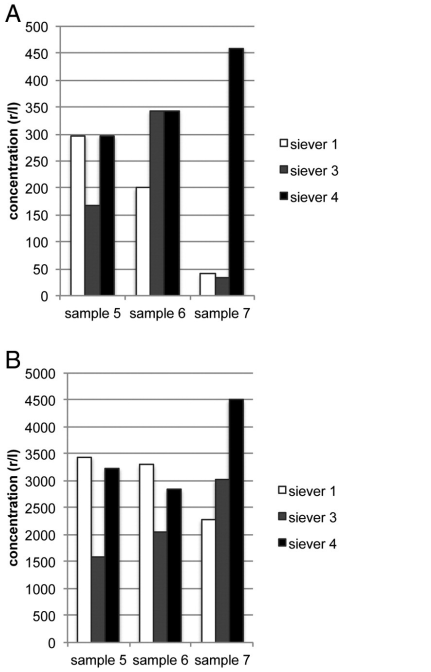

Fig. 12. Concentration (r/l) of fragile A) large and B) small seed and fruit remains in all siever-B-samples.

Table 6
Remains from siever-B-samples which had a proportion of ≥10% in any of the examined B-samples (all values are given in % based on concentration values, values of >5% above and below the average are marked in grey, the subsamples where the target population had not been reached are marked with an asterisk).

	Sample 5				Sample 6				Sample 7			
	Siever 1	Siever 3	Siever 4	Mean	Siever 1	Siever 3	Siever 4	Mean	Siever 1	Siever 3	Siever 4	Mean
Chara sp. oogonia	2.94	2.77	1.68	2.47	6.49	0.00	5.67	4.05	10.50	14.68	0.17	8.45
Hordeum vulgare chaff	1.60	0.06	2.21	1.29	1.17	0.00	1.80	0.99	11.20	9.01	13.67	11.29
Triticum dicoccum chaff	4.33	2.70	7.75	4.93	4.76	3.52	8.12	5.46	11.55	13.59	15.29	13.48
T. durum/turgidum chaff	0.00	0.02	1.01	0.34	1.82	0.00	0.13	0.65	10.22	4.02	4.02	6.08
Cerealia pericarp	2.13	0.00	1.85	1.33	13.23	0.00	5.41	6.21	0.42	3.91	8.43	4.25
Linum usitatissimum seeds	2.96	3.01	4.38	3.45	16.69	18.69	17.14	17.51	7.21	9.37	9.04	8.54
L. usitatissimum capsule fragments	6.56	5.36	5.75	5.89	26.11	36.47	34.66	32.41	14.70	13.18	17.17	15.01
Papaver somniferum seeds	38.78	47.51	38.76	41.68	21.18	23.67	21.95	22.27	21.41	17.66	17.86	18.98
Potentilla sp. nutlets	10.63	8.32	9.26	9.41	0.13	0.00	0.00	0.04	0.35	2.99	0.00	1.11

the 0.35 mm-fraction of his/her B-samples, e.g. *Najas marina/intermedia* and *L. usitatissimum* seeds, but also larger-sized remains like larger fragments of *Corylus avellana* shells and *Malus/Pyrus* pericarps, while it was exactly the other way around for siever 3. The results for siever 4 were somewhere in between. Detailed feedback for the sievers should help to avoid this problem, but one should be aware of it when using an extrapolation factor.

4.3. Practical implications of the results

4.3.1. Advice for other projects with multiple sieving operators

It is important to be aware of the fact that large differences in the overall concentration of archaeobotanical remains can arise from the sieving method or other factors like subsampling, and to understand why. Exact details about the sieving process should be given for every project and one should be very careful when comparing results from different sites.

In our case study, all sievers were instructed in the same way and worked at the same place. Nevertheless, the presented results show, in some occasions, considerable differences. By testing the results on one or more samples like in this paper, potential differences can be seen and a detailed feedback to the different sievers can be given, which can help to adjust the techniques further, as observed in the subsequent second inter-siever-variability study of B-samples. In any project which requires the work of several sievers, such a short study should be done in the beginning of the project in order to be able to give according feedback, which can help to reduce the differences between sievers. It is unlikely that differences can be removed completely, but as long as they are mainly systematic, it is no disadvantage to have several sievers in one project. To minimize the impact of the remaining differences on the results of any investigation, it would be wise to randomize the sievers over the samples of a site. In any case, the impact can be reduced by taking siever effects into

Table 5
Remains from siever-A-samples which had a proportion of ≥10% in any of the examined subsamples (all values are given in % based on concentration values, values of >5% above or below the average are marked in grey, subsamples where the target population had not been reached are marked with an asterisk).

	Sample 1					Sample 2					Sample 3					Sample 4				
	Siever 1	Siever 2	Siever 3	Siever 4	Mean	Siever 1	Siever 2	Siever 3	Siever 4	Mean	Siever 1	Siever 2	Siever 3	Siever 4	Mean	Siever 1	Siever 2	Siever 3	Siever 4	Mean
Hordeum vulgare chaff	10.11	5.54	1.61	8.36	6.41	10.19	3.32	5.69	5.91	6.28	0.00	3.43	7.04	2.25	3.18	8.60	5.57	5.81	19.38	9.84
Triticum dicoccum chaff	8.21	12.40	8.07	13.52	10.55	38.33	56.60	45.79	45.30	46.50	12.29	13.21	17.06	19.90	15.62	19.90	45.09	33.03	24.11	30.53
T. aestivum/durum/turgidum chaff	0.00	7.12	2.73	0.00	2.46	19.57	7.80	16.21	12.77	14.09	12.29	4.19	5.16	8.65	7.57	15.23	10.34	9.08	12.77	11.86
Linum usitatissimum seeds	2.53	7.74	8.57	6.88	6.43	4.89	9.02	9.16	9.04	8.03	6.70	20.97	17.53	10.04	13.81	6.39	9.28	9.80	5.20	7.67
L. usitatissimum capsule fragments	8.69	7.92	3.60	10.66	7.72	8.56	6.68	10.15	10.25	8.91	12.29	8.90	2.97	6.58	7.68	5.16	2.92	3.99	5.67	4.44
Malus sylvestris seeds	3.32	3.69	1.74	2.46	2.80	2.04	1.32	0.87	0.71	1.23	15.64	7.37	4.70	6.75	8.61	2.95	1.33	1.81	2.60	2.17
Malus/Pyrus perikarp	35.23	30.08	10.59	30.98	26.72	5.30	3.36	1.98	3.46	3.52	18.99	8.13	14.09	18.17	14.84	9.58	3.85	7.44	9.69	7.64
Rubus idaeus stones	0.16	1.85	25.09	1.72	7.20	0.10	0.79	1.73	1.38	1.00	0.00	0.13	0.31	0.00	0.11	4.42	2.39	6.53	0.00	3.34

Table 7
Total number of items in the different fractions of B-samples after extrapolation, showing only the results of four medium-sized remains.

	Sample 5						Sample 6						Sample 7					
Siever	Siever 1		Siever 3		Siever 4		Siever 1		Siever 3		Siever 4		Siever 1		Siever 3		Siever 4	
Fraction (mm)	2	0.35	2	0.35	2	0.35	2	0.35	2	0.35	2	0.35	2	0.35	2	0.35	2	0.35
Linum usitatissimum seeds	1	180	21	135	0	182	6	380	66	343	3	396	1	124	7	175	11	196
Triticum dicoccon chaff	5	260	14	126	7	315	0	110	21	56	3	186	3	197	1	263	16	334
Malus/*Pyrus* pericarp	8	4	18	0	3	0	4	1	4	1	3	1	2	0	0	0	2	0
Najas marina/*intermedia* seeds	5	80	71	2	45	98	3	0	2	1	1	0	1	0	3	0	0	1

Table 8
Guidelines for the recording of botanical macroremains currently used in the analysis of Parkhaus Opéra for A-samples (≥2 mm).

Taxa/type of remain	State of preservation	Counting unit	Quantification	
			2 mm	0.35 mm
Cereal grains	Charred	With embryo	Full	Full
Cereal bran	Waterlogged	>2 mm with hilum	Full	Full
Cereal chaff	Waterlogged and charred	Glume bases (glume wheat) or rachis segments (naked wheat and barley)	Semi; quantification of the proportion of whole spikelet forks and multi-unit rachis segments	Full
Flax (*Linum usitatissimum*) capsules	Waterlogged and charred	≥2 Capsule fragments, with apex	Full	Full; single capsule fragments with apical ending
Flax (*Linum usitatissimum*) seeds	Waterlogged and charred	With hilum	Semi (present, some, many)	Full
Opium poppy (*Papaver somniferum*) seeds	Waterlogged and charred	Whole seeds or halves	p/a	Full
Amorphous charred objects	Charred	>5 mm	Full	Full
Rubus/*Fragaria*/*Najas*	Waterlogged and charred	Whole seeds or >1/2 for Najas	Semi (present, some, many)	Full
Corylus/*Fagus*/*Quercus*	Waterlogged and charred	5 × 5 mm	Full	Full
Malus/*Pyrus* pericarp	Waterlogged and charred	3 × 4 mm	Full	Full
Large seeds/fruits	Waterlogged and charred	Whole or >1/2	Full	Full
Needles of coniferous trees	Waterlogged and charred	Needles with apical ending	Semi (present, some, many)	Semi (present, some, many)
Smaller seeds/fruits	Waterlogged and charred	Whole or >1/2	p/a	Full

account in the statistical analysis, e.g. by adding "siever" as an additional factor in an ANOVA.

Whereas inter-siever-variation-studies and corresponding training can minimize siever differences within a study, they do not directly solve the problem of comparability across different investigations. This can only be achieved by establishing international standards and cross-investigation siever training.

4.3.2. What can be done to make the results of A-samples comparable?

The differences in the sieving techniques render a direct comparison of the results of all sievers for smaller-seeded taxa in A-samples impossible. This is not very problematic as the main goal of analysing the A-samples was to record the presence of large-seeded taxa anyway. As a result, it was decided to only fully quantify larger-seeded (>2 mm) remains and semi-quantify smaller remains. An overview of the changes applied after this inter-siever-variability study can be seen in Table 8 (as compared to the initial methods listed in Table 1). We propose the use of these or similar guidelines, especially if time is a limiting factor in the analyses of samples and the target population cannot always be reached. In our opinion, it is still reasonable to count remains instead of only doing a rough semi-quantification. However, it has to be controlled which remains are recorded.

5. Conclusion

After carrying out an inter-siever-variability study, some systematic and unsystematic differences were observed. Unsystematic differences (e.g. a concentration of nutlets of *R. fruticosus* in one of the subsamples) might be the result of the impossibility to produce equal subsamples from clumpy organic sediments with good preservation of uncharred material as well as dung. Nevertheless, the identification of systematic differences (lower concentration of small-seeded fragile taxa in several subsamples of the same siever) indicated differences in the technique of different sieving operators. These differences were more pronounced in the first phase of the study (A-samples, only sieved with 8 mm and 2 mm mesh sizes). One siever used a different method; almost all concretions in his/her subsamples were loosened carefully but completely, resulting in a lower concentration of small-seeded botanical macroremains and a lower number of taxa in the 2 mm-fraction, but fragile large-seeded remains were still present and the samples were clear and easy to sort. The other sievers did not always loosen concretions completely and therefore had a higher concentration of small-seeded botanical macroremains and a higher number of taxa in the 2 mm-fraction. This result shows that small-seeded taxa in the 2 mm-fraction of A-samples cannot be compared directly and one should use strict guidelines about the quantification in this fraction (see Table 8). However, in the second phase of the study (B-samples, sieved with 2 mm and 0.35 mm mesh size), these problems were not very relevant anymore, as most small remains are retained.

It should be noted that large unsystematic differences were rare, and could often be explained by external factors not related to the siever. Hence there is no evidence that different sievers would obtain different results beyond quantitative differences. For example, the ranking of the samples were often rather stable between different sievers, in spite of distinct quantitative differences.

With a detailed instruction and feedback to the sievers and guidelines for the quantification of remains in the different fractions, the wash-over sieving process is a reliable method to extract botanical macroremains from archaeological wetland-samples even if different operators work on the same site. However, a considerable margin of error (on average 50% for large items and 20% for small items) due to different factors should always be taken into account when evaluating the concentration of plant remains in samples, and only clearly large differences should be interpreted in palaeoeconomic terms.

We conclude that the sieving method must always be clearly stated in archaeobotanical works and that a study similar to ours should be done if multiple sievers work on the same project (otherwise, a warning remark should be expressed).

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3.2 Subsampling of large-volume samples in waterlogged sediments. A time-saving strategy or a source of error?

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Subsampling of large-volume samples in waterlogged sediments. A time-saving strategy or a source of error?

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ABSTRACT

For the archaeobotanical analysis of waterlogged sediments, which are usually very rich in organic remains, subsampling is often necessary. Subsampling strategies for this kind of material are mostly based on non-empirical experience and have rarely been tested. In this paper, we compare results from small-volume subsamples with those from the large-volume residue of the master sample subsamples were drawn from. The extra-variability caused by lumpiness of the unprocessed waterlogged sediment was quantified in order to find out how much the necessary sample sizes need to increase for this type of sediment.
We found that subsampling of unprocessed waterlogged material in general should only be done if it is indispensable, as it can introduce a bias. We propose methods to adapt sample sizes based on random sampling for unprocessed waterlogged sediment (where random sampling is impossible) so that the proportions or also the diversity of plant species can be estimated with sufficient precision in these sediments. However, it would be best to use an appropriate sieving method first and then subsample the processed residues of the material. We also think that it is important to clearly present the methods used for subsampling in publications and that more detailed tests about subsampling should be performed.

1. Introduction

Sampling is essential in all research fields. It is widely recognized that it is not necessary (or efficient) to study the totality of reality in order to have a reliably quantified expression of it. This is also the case in archaeology, and particularly in archaeobotany, given that the recovery of the true totality of plant remains found in an archaeological site is not possible for multiple reasons (starting with the limitations of the archaeological method and the diverse nature of archaeological sites, and ending with the fact that not all plant remains survive in an identifiable form). There is a consensus that samples should be representative of the target population, which in our case equals the sampled population (remains which survived the time since they were embedded in the soil (after Orton, 2000, pp. 16–18; see more precise definitions for archaeobotanical remains in van der Veen, 1985, p. 167)). Two issues are of basic importance: the sampling (extraction of sediment samples at an excavation) and subsampling (extraction of a part of a sediment sample or of a sieved fraction of a sample for analysis) techniques and the sample size (the number of items to be studied per sample).

1.1. Sampling techniques in archaeobotany, with an emphasis on wetland sites

The main objectives of the archaeobotanical sampling of an archaeological site are (after Orton, 2000, pp. 150) (1) to estimate the proportions of various plant species in the sampled population (which can be defined at the scale of the site, a feature or a stratigraphic unit) with a chosen level of precision (see also van der Veen and Fieller, 1982) and (2) to assess the number of different species in this population, and hence the botanical diversity in the chosen unit of analysis. Sampling should be performed so that each element of the population has an equal opportunity to be included in a study and we should have an idea of how accurate this is likely to be the case (Orton, 2000, pp. 8, 15, 20; van der Veen, 1985, p. 166). There is plenty of literature written on sampling sites, particularly after the introduction of large-scale sieving methods developed from the 1960s onwards (see Orton, 2000, pp. 5–6, for history of research). Valuable results are obtained by different procedures, mainly by probabilistic (e.g. random) and interval (systematic) sampling (we cite here some relevant overviews like van der Veen and Fieller, 1982; van der Veen, 1985; Jones, 1991; Lennstrom and Hastorf, 1992, 1995; more recently Buxó and Piqué, 2003; Reitz and Shackley, 2012; D'Alpoim Guedes and Spengler, 2014; Pearsall, 2015).

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In this paper, we deal exclusively with waterlogged deposits. It is usually thought that waterlogged samples, with their richness of plant taxa and their high concentration of excellently preserved remains (>95% in subfossil, uncharred state), constitute a blessing for archaeobotanists. However, in some aspects, they can also be a curse because their recovery and analysis are extremely laborious. Different sampling attempts were described specifically for prehistoric lakeshore settlements with waterlogged preservation, taking into account factors like a huge richness in plant macroremains (for an overview see Jacomet and Brombacher, 2005; see also Kenward and Hall, 1995; Hall and Kenward, 1990), and relying on the general knowledge about sampling (see literature cited in the previous paragraph).

From previous research with large-volume surface samples in wetland sites, we know the following: Firstly, Hosch and Jacomet (2001, pp. 62, 66) defined a grid of quadrants and took surface samples from randomly and systematically chosen quadrants of this grid in the lakeshore settlement Arbon Bleiche 3. For most of the taxa considered, the proportions calculated on the basis of these two different sampling methods yielded no significant differences (fig. 6 in Hosch and Jacomet, 2001, p. 166). Djindjian (1991, pp. 52–60) described the same result for other archaeological finds that were selected with corresponding sampling strategies. This showed that both strategies were adequate for sampling waterlogged cultural layers. Secondly, it was detected that in order to record large-seeded plant macroremains (>2 mm) in a representative manner, large-volume samples of around 3 l are needed (Hosch and Jacomet, 2001; Hosch and Jacomet, 2004; Jacomet, 2013; see also Antolín et al., 2017b).

During our work with (a very large amount of) waterlogged surface samples over the last years, the question arose if there is a possibility to combine large- and small-volume samples in one. This could be done e.g. by subsampling larger samples (if a surface sampling strategy is applied) in order to study the >2 mm-fraction (where large-sized remains can be found) of a larger volume of sediment and the 0.35 mm-fraction of a much smaller volume of sediment. A subsample of the 0.35 mm-fraction should be representative of the whole sample in regard to small-sized remains (see also Antolín et al., 2017b). The important goal of such a (sub-)sampling strategy was to keep the resulting workload down to a manageable volume. This allows not only to reduce the sorting time, but also the sieving time, which is a laborious task for large-volume samples of waterlogged sediments containing large amounts of (often very fragile) plant remains (the wash-over technique is the only choice for recovering fragile organic remains, see Hosch and Zibulski, 2003). Much of the sampling theory also focuses on obtaining the best possible estimates for a given input of time and money (Cochran, 1977, pp. 1–2; Orton, 2000, p. 18).

1.2. Subsampling techniques in archaeobotany, with an emphasis on wetland sites

The subsampling of samples or sieving fractions must also be performed in a way which ensures the presence of representative proportions of the different species and the botanical diversity. The representativeness of a subsample is of crucial importance for the interpretation of the archaeological record (as already stated by van der Veen and Fieller, 1982), and inadequate subsampling strategies might introduce biases into the results, which could then render inter-site comparisons of environmental and economic evaluations impossible (e.g. Limp, 1974; Schaaf, 1981). Therefore, one has to follow a rigorous methodology that must be defined in advance. Despite the fact that sampling sites or features for archaeobotanical remains were very often discussed in the literature (see citations above), this is most surprisingly not the case for subsampling. This situation might be due to the fact that wetland sites are more rarely excavated and sampled than dryland sites or that the high amounts of remains recovered (in comparison to dry sites) give a sense of confidence to researchers who realise that the results obtained give new information in any case, no matter what the quality of the information. Another reason for this may be that the scientific community thinks that the problems of subsampling have been solved since van der Veen and Fieller discussed this topic in 1982 (and then van der Veen in 1985). They tested several different subsampling methods: the spoon, the riffle-box and the grid method, the latter two randomised. They found that the spoon method showed a deviation from randomness, while the other two methods seemed reliable, but they also stated that the grid method needed to be tested further due to its higher susceptibility to bias (see also Pearsall, 2015, p. 105). They recommended the riffle-box method. However, the authors did not subsample unprocessed sediment, but a large concentration of loose carbonized material (with an addition of modern seeds), which is a very common sieving residue in everyday archaeobotanical work but completely different in handling from waterlogged, unprocessed sediment.

Another reason for a lack of discussion of this topic for wetlands might be that we are dealing mostly with rescue (or commercialised) archaeology where there is usually no time to perform such tests. However, there were early attempts to systematize sampling to some degree. For instance, from the 70s onwards, large, complex waterlogged sites with an enormous number of contexts were excavated in York (see Dobney et al., 1992; Hall and Kenward, 1990; Kenward and Hall, 1995, p. 451). There, GBA (general biological analysis)-samples with a weight of 5–10 kg were introduced, which were subdivided into subsamples for insect, plant, small bone, parasite etc. analyses (Hall and Kenward, 1990, p. 94). However, nothing was written about the way the GBA-samples were subsampled. Kenward et al. (1985) mentioned only once (on p. 166) “one possible solution to overcome the sample heterogeneity is to mix the material in the bag – at risk of damage to fossils”. They also wrote on p. 171 that they were focusing on (among other aspects) “homogeneising bagfulls of sample before subsampling”. Reitz and Shackley (2012, p. 93) warned that “with careful coordination, it is possible for labs to draw subsamples from a master sample, but each time the container is handled, opened, or shipped, the probability of contamination, damage, and loss increases.” A solution for this problem was, however, not presented.

A basic challenge in generating representative subsamples of remains lies in the lumpy nature of the sediment samples. We can picture such a sediment sample as a patchy collection of lumps varying in size, shape and composition (e.g. loamy aggregates or excrements rich in berry seeds, e.g. Maier, 2001). Subsampling can only be performed at the level of such lumps, even if we may perform some type of preparation to divide lumps into smaller lumps. Size, shape and composition of the lumps may be associated with the composition of remains (for example, we may find some types of remains typically in large (loam) lumps, and others mainly as single pieces). Consequently, unbiasedness of the sampled remains requires subsampling from the sediment sample in a way that does not prefer lumps of a certain size, shape or composition. At the same time, it means that any sampling based on lumpy sediment makes it difficult to get close to a random sample, which would require picking up single remains independently from each other. As a result, we have to expect a larger sampling variability than in the case of a random sample.

As van der Veen (1985, p. 167) admits, the use of a riffle-box to subsample sediments (or even whole features) is not a realistic option when sediments are not loose. The second challenge in generating subsamples in a lumpy sediment therefore lies in the need to do it “manually”, i.e. by a way involving unintentional subjective decisions about which lumps to include in the sample. This implies the danger to perform a selection depending on size/shape/composition of the lumps, i.e. of introducing bias. Also using mechanical tools as part of the process (e.g. a spoon) may imply a preference of lumps of a certain size, shape and/or composition.

As it is not possible to homogenize waterlogged sediment samples mechanically before sieving, as this would destroy some remains due to their fragile structure, we need some type of subsampling procedure for waterlogged sediment samples which generates samples of remains with good statistical properties. These properties are firstly unbiasedness (or representativeness) in the sense that the composition of the subsample with respect to different remains is expected to be the same as in the remains from the whole sample, and secondly low sampling variability, i.e. different subsamples should be as similar as possible, and as close as possible to a true random sample. Both aims are challenging.

Until today, to our knowledge no tests dealing with the subsampling of waterlogged sediments were published which discuss problems connected to the procedure and define appropriate subsample volumes containing the required number of remains to be counted for both aims mentioned above, despite the recommendation by Schaaf (1981) to always include a detailed description of the recovery techniques used in archaeobotanical research and the one by Reitz and Shackley (2012, p. 89) to conduct site-specific subsampling experiments. There is also no standardized method for subsampling waterlogged sediments across Europe so far.

1.3. Sample size in archaeobotanical research of wetland sites

In our practical archaeobotanical work with waterlogged samples, the sample size, which is the number of remains to be studied per sample, is a very important parameter. In waterlogged sediments, there is not only a huge quantity of preserved organic remains incl. seeds, chaff etc. (often more than 10,000 remains per litre of sediment; e.g. Antolín et al., 2017a; Zibulski, 2010), but also a very high diversity of plant taxa (usually far over 40 taxa per sample, see below, or e.g. also Antolín et al., 2017a; Hosch and Jacomet, 2004). This makes it difficult 1) to be sure to have all taxa recorded in the sample (this is hardly ever a problem in dry sites) and 2) to have rare taxa represented in proportions that fit our expectations of accuracy. The richness of such samples faces us immediately with the second important aim of archaeobotanical sampling mentioned above, to assess the diversity in a statistically sound way — a unique opportunity we only have with such well preserved materials.

The most important reference work done on sample size in archaeobotany is that of van der Veen and Fieller (1982). Their formula and tables (1982, table 4 or p. 295) can be used by archaeobotanists as guidelines. They show the amount of remains that have to be counted for reconstructing the proportion of the most important taxon (with a true proportion of at least 10%; a proportion of 50% is considered to be the worst-case scenario) in a site, a feature or a sample with a given accuracy, assuming that the proportion of the remaining taxa will most probably be calculated with an acceptable accuracy, except for "one or two taxa", as the authors mention. The authors do not consider having samples with dozens of taxa of proportions well below 10% of the total of the sample (this threshold of a proportion below 10% is used to define "rare items", e.g. Cochran, 1977, p. 77). A step in this direction is given by the work of Thompson (1987), who considers the aim to estimate several proportions with a desirable overall precision simultaneously. Whereas van der Veen and Fieller (1982) demonstrated that a sample size of 384 is sufficient to ensure that a single proportion is estimated with a deviation of maximally 5% points from the truth with 95% probability, Thompson (1987) found a necessary sample size of 510 to ensure this probability to hold simultaneously for all estimated proportions. This is an increase of almost 25% of the sample size. However, it should be noted that these numbers refer to absolute deviations. Considering proportions of varying magnitude simultaneously, it would be more relevant to control the relative deviation, i.e. a percentage of the true value. However, Thompson (1987) already pointed out that in this case "no sample size will be sufficient for all possible parameter values, since the necessary size increases without bound as any of the parameters approach zero".

The formulas of van der Veen and Fieller (1982) and Thompson (1987) also assume a random subsampling, which is not possible in unprocessed waterlogged sediments due to their lumpiness mentioned in the sections above. This consequently leads to a larger sample size in order to reach the same accuracy. This extra amount can be determined, if the degree of lumpiness is known. To our knowledge, there is no study investigating this degree of lumpiness, and hence this will be approached in our investigations.

The lack of knowledge about the number of seeds in an unprocessed sample implies a practical problem to apply sample size formulas for waterlogged material. The natural solution is a sequential approach, i.e. to analyse an additional part of the sample if the first subsample was not rich enough. This strategy was actually applied in one part of our study.

1.4. Scope and aims of the paper

Based on the problematic issues delineated above the main aims of our paper were:

1) To assess the comparability of small-volume subsamples with the master sample they are drawn from by comparison with the large-volume residue of the same master sample.
2) To quantify the extra variability caused by subsampling from lumpy material compared to drawing a random sample.
3) To discuss the necessary sample sizes for waterlogged sediments based on combining formulas for random samples with the results of 2) as well as studying the stability of the observed diversity in a cumulative manner.

This paper will therefore provide valuable insights into the problematic of subsampling of unprocessed waterlogged sediments for the first time and will end with a recommendation if subsampling of such sediments should be done at all (aim 4). It is therefore an important supplement to the subsampling considerations published by van der Veen and Fieller (1982), and tries to contribute to setting up a standard methodology for the subsampling of waterlogged sediments in archaeobotany.

2. Material and methods

Our study site was the Late Neolithic lake dwelling site Zürich-Parkhaus Opéra (Zürich, Switzerland), which was excavated in 2010 (Bleicher and Harb, 2015). The main cultural layer which was analysed was layer 13 (phase 3), which is dendrodated to the middle Horgen culture (ca. 3176 to 3153 BC; Bleicher and Harb, 2015). The sediment of this cultural layer consisted mostly of strongly organic sediments, often mixed with some loam, sand and lake marl (Fig. 1). It was a rather thin deposit (max. 32 cm), and so a surface sampling strategy (instead of a profile sampling strategy) was applied.

During the excavation, large-volume surface samples (4.5–7 l) were taken from quadrants in regular intervals (every second m^2, in a systematic way), so that the whole excavation surface was covered by a dense network of samples (nearly what in other publications is called blanket (Pearsall, 2015, p. 74) or total (Jones, 1991, p. 57) sampling). For the evaluation, we assigned samples to meaningful subgroups like houses, rubbish heaps, lower/intermediate/upper part of the layer, etc., so a stratified sampling strategy was performed (in a statistical sense after Orton, 2000; for details see Antolín et al., 2017a). Archaeologists were instructed to collect each surface sample as a so-called scatter sample (or pinch or composite sample; e.g. Pearsall, 2015, p. 76; Reitz and Shackley, 2012, pp. 87; Lennstrom and Hastorf, 1992); by taking small amounts (pinches) of matrix from several places in a square meter and combining these into a single sample bucket.

The goal of this sampling strategy was to record intra-site patterning (>20 houses were excavated, see Fig. 1). Following previous research (see Section 1.1; Hosch and Jacomet, 2001, 2004), we decided to sieve and analyse more than 250 large-volume samples in order to record

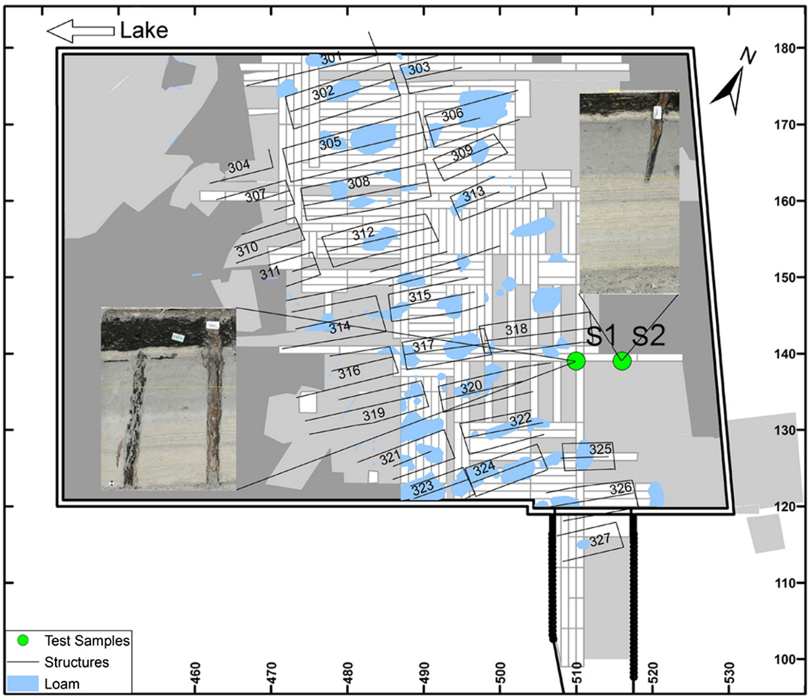

Fig. 1. Site plan of layer 13 in the lake dwelling site Parkhaus Opéra (Zürich, Switzerland) with house plans and the locations of loam lumps (in blue). The location of the examined samples (sample 1 (s1), sample 2 (s2)) is indicated in green and pictures show the profile sections of the cultural layer in these two locations (picture credit to the Office for Urbanism, City of Zürich). u(For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

large-seeded taxa in a representative way for as many houses as possible (Antolín et al., 2017a, see also e.g. Leuzinger and Jacomet, 2004). Since the cost of sieving this large amount of sediment (ca. 1000 l) with the wash-over method down to 0.35 mm-fraction would have been too high, we decided to apply subsampling before sieving, as suggested in former studies (Hosch and Jacomet, 2004). It was decided to take from every sample a small-volume subsample of 0.3 l (the so-called B-subsample). This subsample was sieved with two mesh sizes (namely >2 mm and 0.35 mm) in order to analyse the smallest fraction (around 120 of these B-subsamples were analysed for the evaluation of the site, so approx. half of the master samples were not sieved down to 0.35 mm-fraction, hence saving a considerable amount of time). The remaining sediment of several litres was considered a large-volume subsample (the so-called A-sample) and was sieved only with a large mesh size (>2 mm).

For this case study, we chose two of the surface samples from layer 13 (henceforth called sample 1 (s1) and sample 2 (s2)); for their location in the settlement see Fig. 1. The two samples were strongly organic and very lumpy. The sediment of sample 2 was more compact than that of sample 1. A simple description of the matrix and recognizable admixtures of organic and inorganic objects (e.g. wood chips, bark, charcoal, bones) was made (according to e.g. recommendations in the literature like Hall and Kenward, 1990; Dobney et al., 1992; but mainly based on our own experience and in close collaboration with geoarchaeologists, e.g. Pollmann, 2014). Both samples contained small amounts of dung, but unlike sample 1, sample 2 also contained some loam and lake marl. Initially both samples consisted of ca. 4.5 l of sediment.

Each study master sample was distributed as evenly as possible in a rectangular tray (62 × 50 cm; Fig. 2aA). We tried to "homogenize" the sediment, but due to the fragile nature of most remains, only large lumps could be broken. A grid (mesh size 10 × 10 cm) was overlaid, dividing the sample into squares of similar volume by projecting the grid squares vertically throughout the sample in the tray. This way, we can expect that randomly chosen squares give us on average a representative picture of the original sediment sample with respect to the distribution of the size/shape/composition of the lumps and consequently with respect to the composition of the remains. But we still have to expect a not negligible variation from square to square and the lumpy nature of the sediment sample. In particular few large lumps may mainly determine the contents of some squares.

The samples were then subsampled. For each sample we performed 8 subsamplings labelled in the following as S1, S2, X1, X2, Y1, Y2, T1, and T2. Different subsampling techniques were used: random square sampling (two adjacent squares of the grid were selected randomly per subsample) and stratified grid sampling (a small, similar amount from each square was selected). These techniques are explained in detail and are compared with respect to unbiasedness (representativity) and sampling variability in Appendix A. Since we removed some of the material in any sampling, we could not exclude a sequencing effect. To diminish the impact of such a sequencing effect on the interpretation, we applied X, Y and T in a different order in each replication and in the two samples. As the random square sampling (S) removed the full material of the squares chosen, a stratified grid sampling under the same conditions would

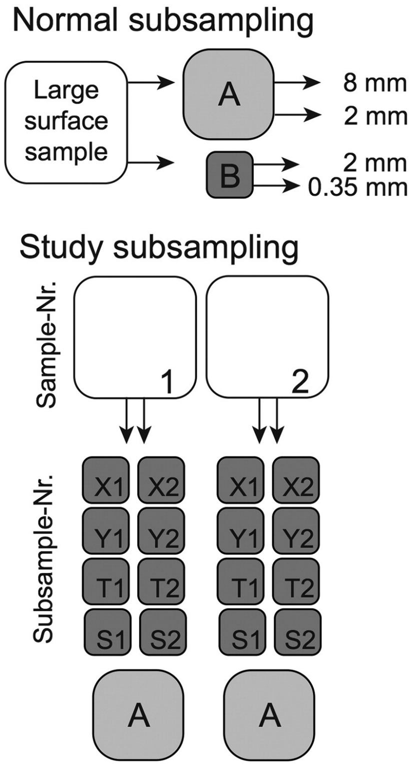

Fig. 2. Scheme of the subsampling in the main project (normal subsampling) and during the subsampling experiment (study subsampling).

not have been possible afterwards. Hence random square sampling was always done at the end.

The rest of the samples after taking all subsamples were considered to be the A-sample in this case study (so they were smaller than usual). Normally, only the >2 mm-fractions of the A-samples and the 0.35 mm-fraction of the B-subsamples would be analysed (Fig. 2). For our case study (and in some other instances, see Antolín et al., 2017b), the >2 mm-fraction of the small B-subsamples was analysed, too, in order to compare it with the contents of the >2 mm-fraction in the large A-samples. For the comparison of the large A-samples and the small B-subsamples, only taxa that were fully-quantified in A-samples were included in this fraction (see Steiner et al., 2015, table 8, with full quantification in the >2 mm-fraction).

All volume measurements (of the resulting fractions, but also of the unprocessed samples) were taken using the displacement volume (Antolín et al., 2015; all volume quantities mentioned henceforth were measured using this technique). Sieving was performed using the wash-over method in order to not destroy fragile items (see Kenward et al., 1980; adapted for lakeshore settlements, see Hosch and Zibulski, 2003; Tolar et al., 2010; for details about the sieving techniques see Steiner et al., 2015). We used a graded bank of two sieves as also recommended in the literature (e.g. Pearsall, 2015; Reitz and Shackley, 2012; Jacomet and Kreuz, 1999). All subsamples were sieved by the same siever in order to avoid an increase of variability of the results (Steiner et al., 2015).

A sub-subsampling of the 0.35 mm-fraction was done by the siever as well. This fraction is rarely fully analysed because it usually contains much more than the required minimum of items for estimating the proportions of the most common taxa with a given accuracy, according to van der Veen and Fieller (1982). The sub-subsampling was done by stratified grid sampling. Much like the sample for the subsampling test, the 0.35 mm-fraction was spread in a tray, the material was homogenized as far as possible (which was much easier in this case because the material was already sieved) and a grid was overlaid. Several sub-subsamples of 5 ml were extracted by taking bits of material from each grid (or each 2nd, 3rd, …, depending on the quantity of the material). Former experiences have shown that 10–15 ml of the fraction are enough to reach a sample size of 400 remains or more, so for this test, two 5 ml subsamples were analysed. However, it was allowed to analyse a third 5 ml subsample in the case of an insufficient number of remains, but this strategy was actually only applied in sample 1.

Also, in order to avoid further bias, all subsamples of one sample were analysed by the same person (one sample done by FA and one by BS). In addition, we used strict guidelines for the quantification of remains in each fraction (as detailed in Steiner et al., 2015, table 8, but with full quantification of all remains in the small fraction).

Nomenclature of scientific plant names follows the National Data and Information Centre of the Swiss Flora (http://www.infoflora.ch). As database we used ArboDat (©Kreuz and Schäfer 2016) with its ecological plant groupings.

For the statistical analysis, we considered three different outcomes as the result of each subsampling and the subsequent sieving and analysis:

- the (extrapolated) concentration (also called density; no. of remains per litre of sediment)
- the number of taxa
- the percentage of specific cultivated plants among all cultivated plants in the 0.35 mm-fraction/the percentage of specific gathered plants among all gathered plants in the >2 mm-fraction
- the number of taxa within ecological groups.

The exact procedures used for the statistical analysis are described in Appendix B.

3. Results

3.1. General results

The volumes of the small B-subsamples analysed and the number of remains found in each subsample and fraction can be seen in Table 1.

In the 0.35 mm-fraction, only one taxon (*Papaver somniferum* Linnaeus, seeds) had a proportion of ≥10% in all examined subsamples and one taxon (Cerealia, chaff) had a proportion of 10% in one subsample of sample 2. All other taxa in the small fraction had proportions of <10%. In the >2 mm-fraction, 5 taxa (*Linum usitatissimum* Linnaeus, capsules, *Malus sylvestris* (Linnaeus) Miller, seeds, *Malus*/*Pyrus* Miller/Linnaeus, pericarp, *Quercus* sp. Linnaeus, pericarp and *Rosa* sp. Linnaeus, seeds) had proportions of ≥10% in any of the examined subsamples.

3.2. Concentration (0.35 mm-fraction)

The concentration values of the small fraction of B-subsamples in sample 1 were in average 13,184.0 remains per litre (r/l), and they varied between 11,126.7 and 18,576.7 r/l (Fig. 3). B-subsamples in sample 2 had a lower concentration of in average 9027.9 r/l, with a variation between 6636.7 and 10,709.7 r/l. When looking at the cumulative graph, it can be seen that the average concentration was closely approached after about three subsamples were sorted in both samples, corresponding to

Table 1
Displacement volumes of the A-sample and the B-subsamples and their sieved fractions in ml and the number of remains counted in each fraction of the subsamples. The subsamples are ordered by the sequence in which they were taken. Subsample names are explained in Appendix A, Table A1.

	Sample 1 (s1)									Sample 2 (s2)								
Subsample	A	T1	Y1	X1	T2	X2	Y2	S1	S2	A	X1	Y1	T1	Y2	X2	T2	S1	S2
Vol of the sediment (ml)	2000	300	300	300	320	320	320	300	300	2300	325	310	300	300	300	300	300	300
Vol >2 mm-fraction (ml)	750	90	110	100	110	120	100	90	130	700	90	80	90	100	90	100	100	100
Number of items found in >2 mm-fraction	138	158	70	107	99	134	88	110	115	152	54	66	81	55	27	53	91	41
Vol 0.35 mm-fraction (ml)	–	100	90	110	90	100	90	90	90	–	120	120	100	120	100	100	100	90
Vol sub-subsample 0.35 mm-fraction (ml)	–	10	15	15	10	10	10	10	10	–	10	10	10	10	10	10	10	10
Number of items found in subsample of 0.35 mm-fraction	–	640	660	535	515	493	571	542	450	–	326	339	270	323	339	316	301	316
Number of items found in total (both fractions)	138	798	730	642	614	627	659	652	565	152	380	405	351	378	366	369	392	357

1835 (sample 1) and to 935 (sample 2) remains respectively (Fig. 3, Table 1).

3.3. Concentration (>2 mm-fraction)

In the >2 mm-fractions of the B-subsamples, large-seeded remains had an average concentration of 370.5 r/l in sample 1 and values varied between 240 and 536.7 r/l (Fig. 4). Astonishingly, the A-sample 1 had a very low concentration of 98.5 r/l, lower than the average of all B-subsamples (2.45 l) despite having a similar volume (2 l). The >2 mm-fractions of the B-subsamples of sample 2 had a concentration of in average 204.7 r/l with a variation between 93.3 and 356.7 r/l. The A-sample 2 had a concentration of 96.5 r/l, which was slightly higher than the lowest concentration in the subsamples, but clearly lower than the mean of all B-subsamples (2.44 l) despite having a similar volume (2.3 l). When looking at the cumulative graph, it can be seen that the average concentration in both samples is reached after about three subsamples, corresponding to 335 (sample 1) and 201 (sample 2) remains respectively, were sorted (though there is more fluctuation in sample 2, Fig. 4, Table 1).

3.4. Number of taxa (0.35 mm-fraction)

In sample 1, 41 taxa could be found in average with 33 being the lowest, 45 the highest number of taxa found (Fig. 5). In sample 2, in average 38 taxa could be found with 31 being the lowest, 45 the highest number of taxa found. However, the total number of taxa found across all B-subsamples was much higher for both samples, as could be expected. Ecological groups were generally well-represented in all subsamples and only in one subsample, one group was missing entirely (winter cereal weeds in sample 1, Y1; Table 2). Cultivars (with the exception of a few rare ones) were recorded in all subsamples.

In a cumulative frequency analysis, it could be seen how many new taxa were added by each new B-subsample analysed in the sequence (Fig. 6). In sample 1 (Fig. 6A), the number of taxa seemed to stabilize quite soon, the new taxa after the third subsample (1835 remains or 40 ml of material) were mainly just rare ones appearing in only one or two subsamples (compare with Table 1). In sample 2 (Fig. 6B) there was more fluctuation, but after the fourth/fifth subsample (between 1258 and 1597 remains or 40–50 ml of material) new taxa also mainly consisted of rare ones.

3.5. Number of taxa (>2 mm-fraction)

The number of large-seeded taxa of the large fraction of the B-subsamples did vary a lot (Fig. 7). In sample 1, it was in average 12.5 taxa and varied between 9 and 16 taxa. The number of taxa found in the large A-sample 1 was higher than in all individual B-subsamples, but was lower than in the B-subsamples in total. The latter is unexpected, as even though the A-sample (2 l) was smaller than all B-subsamples together (2.45 l), we would not expect such a difference in samples already this large. In sample 2, an average of 9.5 large-seeded taxa could be found and the numbers varied between 6 and 11 taxa. The number of taxa found in the large A-sample 2 was higher than the one in all B-subsamples in total, even though the A-sample (2.3 l) was also slightly smaller than all B-subsamples together (2.44 l). When splitting the taxa into eight ecological groups, we can of course not expect to find all groups represented in each individual subsample. Table 3 depicts this additional aspect. B-subsamples lacked between 1 and 3 out of the ecological groups present in the whole sample (7 in sample 1 and 8 in sample 2).

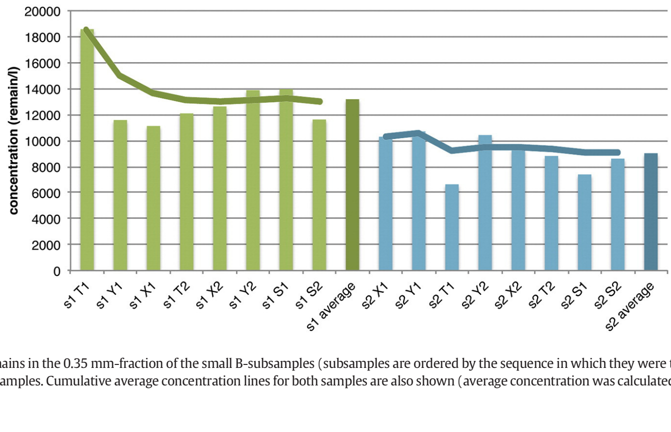

Fig. 3. Concentration of plant remains in the 0.35 mm-fraction of the small B-subsamples (subsamples are ordered by the sequence in which they were taken) and the average value of all subsamples in the two analysed samples. Cumulative average concentration lines for both samples are also shown (average concentration was calculated after each subsample analysed in sequence).

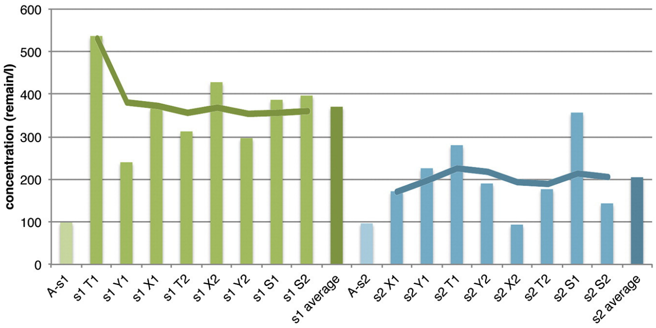

Fig. 4. Concentration of plant remains in the >2 mm-fraction of the two large volume A-samples and of the >2 mm-fractions of the small B-subsamples (subsamples are ordered by the sequence in which they were taken) and the average of all subsamples (without A-samples). Cumulative average concentration lines for both samples are also shown (average concentration was calculated after each subsample was analysed in sequence).

Interestingly, in sample 1, the A-sample seemed to cover the spectrum less well than all B-subsamples together.

In a cumulative frequency analysis of the large-seeded remains in the >2 mm-fractions of the B-subsamples, it could be seen how many new taxa were added by each new subsample analysed in the sequence (Fig. 8). In both samples, numbers rose steeply in the beginning, in sample 2 more continuously than in sample 1, with mostly only rare taxa being added after the third subsample for sample 1 (335 remains or 300 ml of material) or the fourth for sample 2 (256 remains or 360 ml of material, compare with Table 1). In sample 1, there was a leap in numbers with the fifth subsample, X2, but the added taxa were only rare ones mostly appearing only once and only in this subsample, which was generally quite rich. Otherwise numbers were very stable after the second subsample.

3.6. Proportions of cultivated plants (0.35 mm-fraction)

Remains of cultivated plants appeared mostly in the small (0.35 mm-) fraction. These were mostly opium poppy seeds (being one of the most common cultivars during the Horgen culture), cereal chaff and cereal bran (mostly subfossil) and flax capsule fragments (single flax capsule segments, which were counted separately from flax capsules, larger parts of or even whole capsules, for counting units see Steiner et al., 2015, table 8). Therefore, we looked at their proportions in more detail in the 0.35 mm-fractions of the small B-subsamples. The proportions of cultivated plants stayed more or less the same in all subsamples, although there were some larger fluctuations (Fig. 9). Barley chaff (*Hordeum vulgare* Linnaeus) was not found in all subsamples of sample 1 (due to very small proportions). But in general the average mean was already established more or less firmly in the third subsample analysed (Fig. 10).

In Fig. 10, we could see that the average proportion was reached after three (sample 1) or four (sample 2) subsamples or in average 1500 sorted remains.

3.7. Proportions of gathered plants (>2 mm-fraction)

Large-seeded wild fruits, which were most likely gathered for consumption (as many previous investigations have shown, e.g. Hosch and Jacomet, 2001, 2004; Zibulski, 2010; Antolín et al., 2016), can be found mainly in the larger (>2 mm-) fractions. Therefore we compared some of the most frequently occurring ones in the >2 mm-fraction of the large A-samples and of the B-subsamples (Fig. 11). As the overall number of remains was much smaller in the >2 mm-fraction than in the 0.35 mm-fraction, it was not surprising that we observed a higher fluctuation in proportions compared to the previous chapter. In particular, some of the rarer taxa like sloe (*Prunus spinosa* Linnaeus) could not be found in all small B-subsamples.

No systematic differences between the different subsampling techniques could be detected, the B-subsamples taken with the same technique sometimes differed more among each other than subsamples taken with different techniques (Fig. 11). In Fig. 12, we could see that the average proportion was reached after four (sample 1) or five (sample 2) subsamples or in average 360 sorted remains.

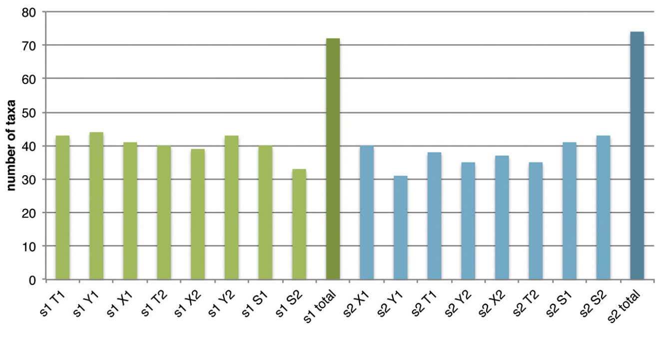

Fig. 5. Number of taxa in the 0.35 mm-fractions of the small B-subsamples (subsamples are ordered by the sequence in which they were taken) and the total number of taxa in all subsamples.

Table 2
Number of taxa of the different ecological groups appearing in the 0.35 mm-fractions of the B-subsamples and of all B-subsamples together (total). The subsamples are ordered by the sequence in which they were taken. Subsample names are explained in Appendix A, Table A1.

	Sample 1 (s1)									Sample 2 (s2)								
Subsample	T1	Y1	X1	T2	X2	Y2	S1	S2	Total	X1	Y1	T1	Y2	X2	T2	S1	S2	Total
Water/lakeshore vegetation	3	4	3	4	4	4	2	3	11	6	1	3	1	1	2	1	3	7
Meadow-like vegetation	2	4	2	1	2	3	2	1	5	1	1	1	1	1	2	3	1	3
Ruderals	3	6	4	4	3	3	3	3	6	2	3	2	4	5	3	2	4	9
Cultivars	6	6	5	5	6	6	6	5	6	6	6	6	7	6	6	6	6	7
Spring cereal and root/row-crop weeds	9	5	8	6	6	7	7	5	12	6	6	4	6	8	4	5	9	14
Winter cereal weeds	1	0	2	2	3	2	1	3	3	1	1	3	1	1	2	2	2	4
Woodland and brush	9	8	8	8	8	8	9	7	13	7	6	8	8	9	8	11	10	15
Others	10	11	9	10	7	10	10	6	16	11	7	11	7	6	8	11	8	15

3.8. Deviation from random sampling

For proportions, the expected standard deviations under random sampling can easily be computed (see Appendix A, second to last paragraph) and can be compared with the observed standard deviations. The results of such comparisons are shown in Table 4 for cultivated plants in the 0.35 mm-fraction and Table 5 for gathered plants in the >2 mm-fraction. As expected, the ratios of the observed to the expected standard deviations tended to be above 1. Comparing the geometric means of these ratios, we could generally observe a higher value in sample 2 compared to sample 1. We observed smaller geometric means for the >2 mm-fraction compared to the 0.35 mm-fraction. In the 0.35 mm-fraction, we observed the highest ratios for glume wheat chaff (mainly *Triticum monococcum* Linnaeus, *Triticum dicoccon* Schrank), unidentified cereal chaff and bran. In contrast, barley chaff, flax seeds and capsules seemed to appear as single pieces more often, as their ratios were the smallest (except for small capsule fragments in sample 2). Poppy seeds showed a high ratio in sample 1, and a low one in sample 2.

4. Discussion

4.1. Methodological limitations of this study

As previous observations showed, for large-seeded items larger samples are needed than for the small-seeded ones (Hosch and Jacomet, 2001; compilation of Jacomet, 2013; Antolín et al., 2017a). Therefore, the need for subsampling unprocessed sediment arises in order to keep workload resulting from the large samples down to a manageable volume, as stated in the Introduction (and cited literature there). This need inspired this study, but also posed several limitations faced in its implementation:

(1) Firstly, the scope of the test was rather small with only two different samples being compared. It can be seen as a “pre-test”. Orton (2000, pp. 167) recommends to perform such pilot studies to “get some idea of the variability in our population, and hence the size and design we shall need for our main survey”.

(2) Secondly, this test was already very time consuming to perform (which is the main reason why such tests are hardly ever done). Power calculations performed at the start of this test (WV) suggested that at least six more samples would have been needed for statistically robust results with respect to identification of differences between subsampling techniques. This would have added the analysis of 64 more subsamples (8 subsamples of 6 large samples more) and would have required an enormous amount of time (>750 h of work). We therefore forwent a formal statistical analysis and examined the data in a descriptive way instead, which already provided some important information to allow judging the suitability of the techniques used and checking the sample sizes needed for waterlogged samples.

Despite these limitations of our study, we think that our results are of common interest and have a certain significance, as to our knowledge, no such systematic subsampling tests with waterlogged materials were published until now. We have therefore decided to share our experiences with the archaeobotanical community, discuss them critically and draw conclusions for future investigations.

4.2. Are small-volume subsamples comparable to their master sample? (aim 1)

To check whether subsampling introduces a bias making the subsamples different from the master sample, we compared the contents of the small-volume subsamples with the large-volume residue drawn from the same master sample. Our results suggest a systematic difference. In the large-volume A-samples, we saw distinctly lower average concentrations in the >2 mm-fraction than in all B-subsamples together (Fig. 4). This indicates that subsampling introduces a bias in the sense that it enriches the material with respect to the number of remains. There are at least two different possible explanations for this bias. First, this may result from the manual and hence somewhat subjective selection of the material in each grid or the manual definition of the contents of a square. Second, despite using counting guidelines, the smaller

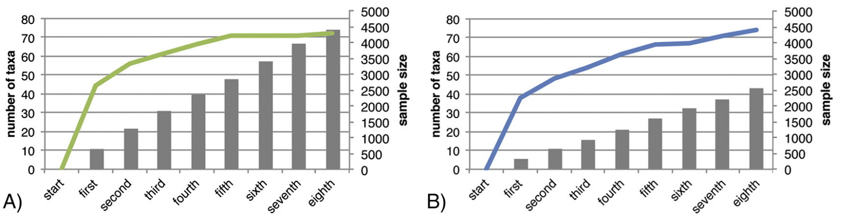

Fig. 6. Cumulative frequency graphs of the 0.35 mm-fraction of the B-subsamples showing the total number of taxa and the sample size in A) sample 1 and B) sample 2. Horizontal axes represent the different B-subsamples numbered in the order of their extraction from the sample, vertical axes on the left represent the number of taxa (only new ones were added with each new subsample) and vertical axes on the right represent the sample size (nr of remains counted).

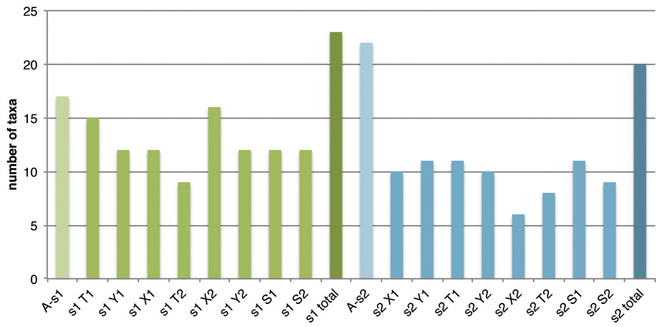

Fig. 7. Number of taxa in the >2 mm-fractions of the 2 A-samples and of the >2 mm-fraction of the small B-subsamples (subsamples are ordered by the sequence in which they were taken) and the total number of taxa of all B-subsamples (without A-samples).

volumes of B-subsamples may involuntarily induce a more careful sieving and/or examination. Systematic differences could also be observed for the proportions of single species among all gathered plants for one of the two samples.

Of course, with respect to the number of taxa and the representation of ecological groups, we have to expect substantial differences between small subsamples and the large residual A-sample, as both variables increase with sample size. This could be corroborated in our analyses of the >2 mm-fractions, which gave more complete representations in the large A-samples compared to the single B-subsamples (Fig. 7). The ecological group of woodland and brush was particularly well-represented in one A-sample (Table 3, sample 2), because their representatives often have large seeds which might be underrepresented in small subsamples (Jacomet et al., 2004; Jacomet, 2013; Antolín et al., 2017b).

Overall, these results suggest that subsampling can be a source of bias, cannot be recommended in general and should only be used if necessary.

4.3. How large is the extra variability in subsampling caused by lumpiness of the sediment? (aim 2)

With respect to proportions, we were able to obtain a quantification of this extra variability by lumpiness, but we expected a similar effect with respect to concentrations. Tables 4 and 5 suggest that standard deviations increased on average by a magnitude of 30–50% for the small fraction and between 0 and 30% for the large fraction. However, for single species, the increase may be much higher. We suppose that these (partly very large) deviations are in direct connection with the lumpiness of the sediment. This is corroborated by the fact that sample 2 shows a higher geometric mean of the ratio observed/expected SD, which can be explained by a higher number of loam lumps having led to a larger lumpiness in this sample. The smaller geometric means for the >2 mm-fraction may reflect a tendency of large remains to lump less than small remains, although there were differences between single taxa. In the 0.35 mm-fraction, the highest ratios were found for unidentified cereal chaff, glume wheat chaff, cereal bran and opium poppy (particularly in sample 1), reflecting the tendency of these remains to appear in lumps. In contrast, barley chaff, naked wheat chaff (particularly in sample 1), flax seeds and flax capsules (particularly in sample 2) seemed to appear as single pieces more often, as their ratios were the smallest. This observation fits very well with the fact that the remains of the second group show different surface distribution than the first group; we think that they were more likely deposited as single remains (and then also transported by water), whereas the first group could have been deposited within coprolites or also within loamy sediment, therefore more likely appearing in lumps (see Antolín et al., 2017a). Their different taphonomic background is obviously also visible within the single samples. In the >2 mm-fraction, differences in the ratios were less pronounced, but the high ratio for wild roses in sample 2 may reflect a lumpy occurrence.

All in all, we could observe on average a moderate increase of the standard deviations of the estimated proportions. So we could corroborate that it is not possible to draw random subsamples by the subsampling techniques considered. The most likely explanation for this is the lumpiness in unprocessed waterlogged sediments (as we already assumed in the Introduction). Therefore, we cannot simply adopt the sample sizes calculated for loose carbonized material (van der Veen and Fieller, 1982) without adjustment (see below, Section 4.5, for more details).

4.4. Which (sub-)sample size is needed to obtain reliable quantification of proportions and diversity in a waterlogged lumpy sample? (aim 3)

Ignoring for a moment the bias introduced by subsampling, by looking at the average ratios of observed and expected standard deviations, we can estimate the impact of the lumpiness on sample variation within the examined samples. We observed for the >2

Table 3
Number of taxa of the different ecological groups appearing in the >2 mm-fractions of the large A-samples, of the single B-subsamples and of all B-subsamples together (total, without A-sample). The subsamples are ordered by the sequence of subsamples taken. Subsample names are explained in Appendix A, Table A1.

	Sample 1 (s1)										Sample 2 (s2)									
(Sub-)sample	A	T1	Y1	X1	T2	X2	Y2	S1	S2	Total	A	X1	Y1	T1	Y2	X2	T2	S1	S2	Total
Aquatic/wetland plants	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Grassland plants	1	0	1	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0	0	1
Ruderals	2	1	1	1	1	1	0	1	1	1	2	1	0	1	1	0	1	0	1	1
Cultivars	4	2	2	2	2	4	2	2	2	4	4	2	3	3	2	2	2	3	3	3
Spring crop annual weeds	1	0	1	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1
Winter crop annual weeds	0	1	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0	1	0	2
Woodland and brush plants	7	9	6	8	5	7	8	7	7	10	12	5	6	6	5	3	4	6	3	11
Others	2	2	1	1	1	2	1	1	1	2	2	1	0	0	0	0	1	0	1	1

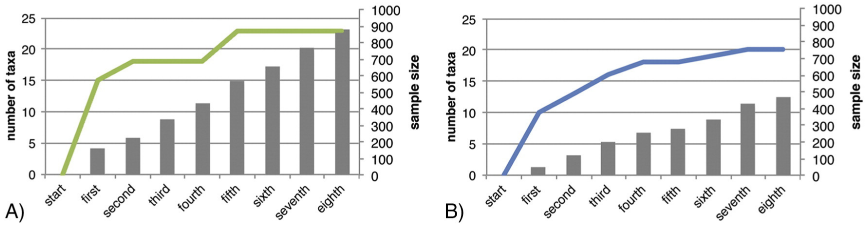

Fig. 8. Cumulative frequency graphs of the large (>2 mm-) fraction of the small B-subsamples showing the total number of taxa and the sample size in A) sample 1 and B) sample 2. Horizontal axes represent the different B-subsamples numbered in the order of their extraction from the sample, vertical axes on the left represent the number of taxa (only new ones were added with each new subsample), and vertical axes on the right represent the sample size (nr of remains counted). A-samples were excluded here.

mm-fractions on average ratios of about 1.15, and for the 0.35 mm-fraction ratios of about 1.4 (Tables 4, 5). If we want to compensate for the lumpiness in unprocessed waterlogged samples by increasing the sample size, the necessary increase is given by the squares of these numbers, i.e. about a factor of 1.32 for the >2 mm-fractions and about 1.96 for the 0.35 mm-fraction. Based on the numbers of van der Veen and Fieller (1982), this means counting a minimum of 507 (384 × 1.32) predefined remains in the >2 mm-fraction and of 753 (384 × 1.96) remains in the 0.35 mm-fraction if we want to know the proportions of the most important plants in a sample with a given accuracy of ±5% points with 95% probability. However, these numbers refer to the average increase in variation. For single species with a high tendency to occur in lumps, the necessary sample sizes may be larger.

With respect to diversity, we can take a look at the cumulative analyses for the number of taxa. There, we empirically examined at which point the smaller B-subsamples became representative of the mean generated by all subsamples together. We aimed at a good representation not only of the proportion of the most important taxa, but of all taxa and therefore also of the full diversity. In this cumulative analysis, we found in both the smaller and the larger fraction that at first, the number of taxa grew with each subsample analysed, as was found in previous experiments (Green, 1979; Pearsall, 2015). However, after analysing approximately 1630 remains in the small fraction (0.35 mm; 30–40 ml of the fractions' total content) and 300 remains in the large fraction (>2 mm; or 300–400 ml of the fractions' total content), newly found taxa were mostly rare ones and the mean proportions of ecological groups were already established. The concentration was then also already close to the mean concentration of all subsamples. In order to representatively analyse the diversity in a single individual waterlogged sample, our results therefore suggest to analyse ca. 2000 remains, if subsampling prior to sieving is applied. These numbers are different from those derived above with respect to proportions, which might reflect that the overall number of taxa and the occurrence of rare taxa is smaller in the large fraction than in the small fraction.

Which of these numbers may provide some guidance depends on the aim of the study. Assessing the full diversity of any sample is advisable if not only the economy but also environment and taphonomy are to be studied (e.g. Antolín et al., 2017a; see also Behre and Jacomet, 1991), as then no ecological group should be missed for methodological reasons. However, in some analyses, it might be sufficient to obtain a full picture of diversity across several samples, such that the necessary sample size is only reached for the sum over several samples (Vach, ongoing work, see also Lee, 2012, 2014).

In summary, we could confirm that the analysis of waterlogged samples requires an increase in sample size when subsampling prior to sieving is used. Consequently, we have to invest considerably more time in analysis (+approx. 10 h or more), which may outweigh the saved time from not fully sieving the small fraction. If we do not follow this advice, we may miss taxa or have rather unreliable estimates of concentrations or proportions of species which tend to appear in lumps in the material.

It should be mentioned that our samples were scatter samples, and hence already homogenized to some degree. Starting with unscattered ('bulk') samples may imply that the sample size needs to be increased further.

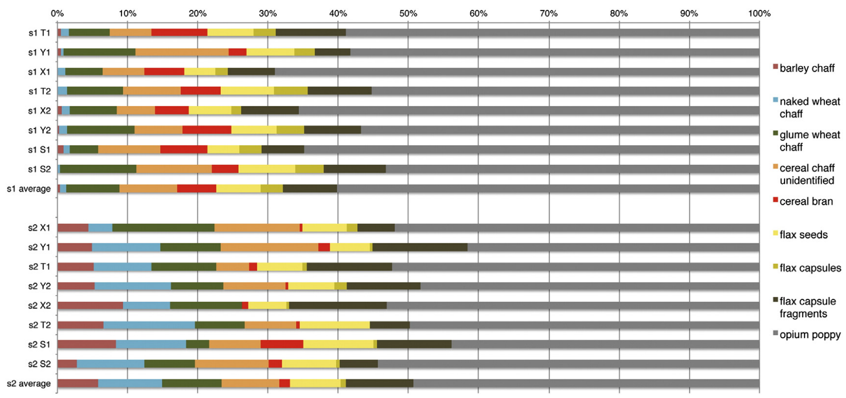

Fig. 9. Proportions (%) of cultivar remains in the 0.35 mm-fraction of the B-subsamples (only subfossil remains shown, charred remains are not shown because they had an extremely low percentage of <0.1%). The average of all subsamples is also shown. The subsamples are ordered by the sequence in which they were taken. The average values of all subsamples together are also shown.

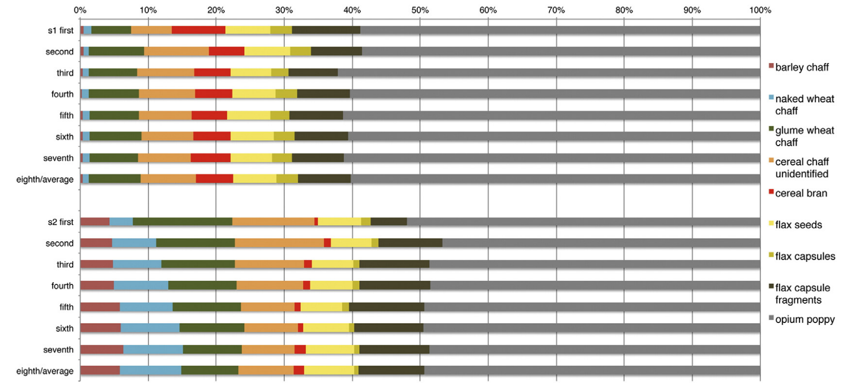

Fig. 10. Proportions (%) of cultivar remains in the 0.35 mm-fraction shown in a cumulative way as subsequent means after adding each new sample to the previously studied (first is the first sample studied on its own, second is the mean of the first two, third is the mean of the first three etc.). The sequence is the same as listed in Fig. 9. Eighth also corresponds to average overall values of B-subsamples together.

4.5. *Is subsampling sediment prior to sieving a reliable strategic choice? (aim 4)*

Comparing the contents of small-volume subsamples with each other, as well as with a large-volume residual sample drawn from the same master sample of unprocessed sediment, shows that subsampling introduces bias as well as considerable variation. The potential bias seems to be substantial. Consequently, subsampling of raw lumpy sediment should be avoided if possible. It seems to be the better choice to take subsamples from the fractions after sieving. This way, the sample's contents would be homogenized to a large degree before taking subsamples for analysis. In theory, material in sieved fractions of waterlogged sediment should behave like material from dry, non-lumpy sediment and a random subsampling seems to be feasible. However, we still need to choose concrete techniques for subsampling after sieving, and it is still to be investigated which specific technique should be preferred based on assessing their bias and variation.

Using this strategy, the sieving might take longer, but in order to eliminate the lumpiness of a waterlogged sediment, it should well be worth the effort, because as a consequence, we do not have to enlarge the sample size to take the (unknown) degree of lumpiness into account. We can rely on the tables and formulas provided by van der Veen and Fieller (1982) and Thompson (1987), which hold for all species, whereas potential correction factors would vary from species to species. Subsampling after sieving is already used in several archaeobotanical labs (e.g. personal communication L. Lodwick), but it is not always possible due to the large size of the master samples (in certain cases well above 15 l of sediment (personal communication C. Rößner)). A careful consideration of the balance between longer sieving times and longer analysis/counting times is required to determine if budgetary limitations are an argument to not sieve a sample before subsampling. It might also be necessary to draw one or several subsample(s) before sieving in order to investigate other remains like pollen or parasites, but then the remaining major part should be sieved before further analysis.

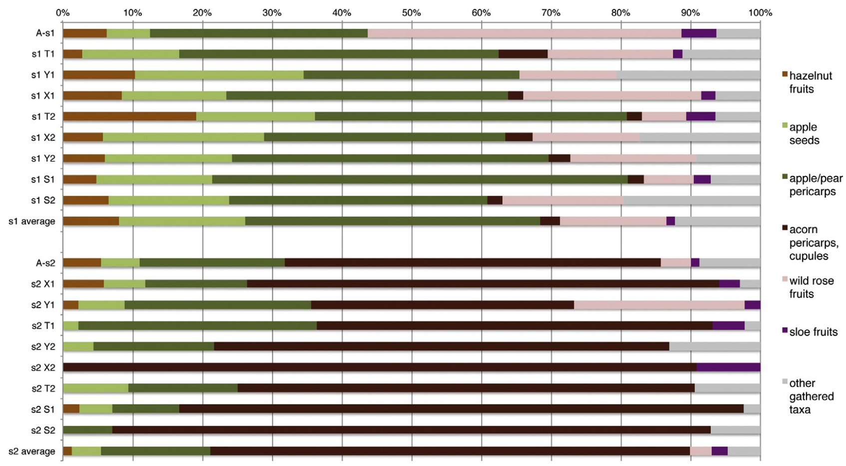

Fig. 11. Proportions (%) of gathered large-seeded wild plants in the >2 mm-fractions of the large A-samples and of the small B-subsamples (only subfossil remains shown, charred remains hardly present). The average of all subsamples (without A-samples) is also shown. The subsamples are ordered by the sequence in which they were taken. The average values of all subsamples together are also shown.

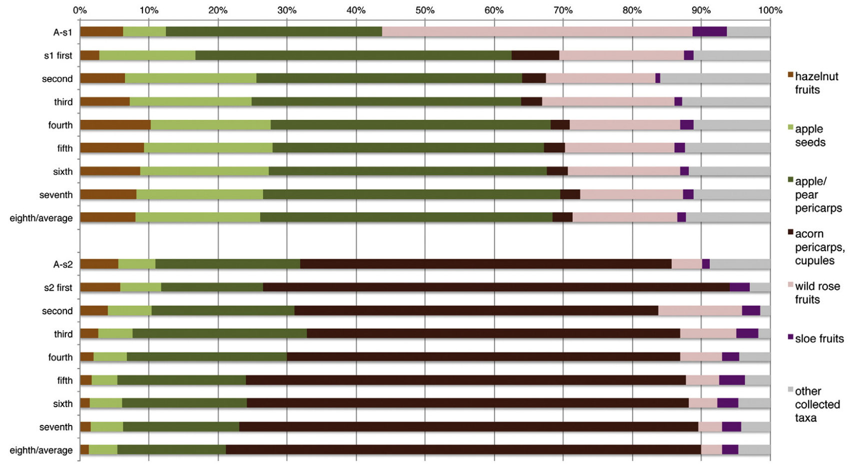

Fig. 12. Proportions (%) of gathered large-seeded wild plants in the large (>2 mm-) fractions of the A-samples and the small B-subsamples, shown in a cumulative way as subsequent means after adding each new sample to the previously studied (first is the first sample studied on its own, second is the mean of the first two, third is the mean of the first three etc.). The sequence is the same as listed in Fig. 11. Eighth also shows values of all B-subsamples together. A-samples are shown separately.

If samples are sieved without prior subsampling, one possible time saving-strategy could also be the collection of smaller samples on the site of excavation. Our previous, but also the present, study shows clearly that the volume of the samples for obtaining a good representation of the large-seeded botanical items from rich waterlogged sediments can be reduced to 3 l or even less (instead of 10 l or more, see Hosch and Jacomet, 2001). But we recommend in any case to first determine the average density of botanical remains per unit of volume in a pre-test at the beginning of an excavation, using a few larger-volume samples. Given a required sample size for the remains, the required volume of the samples could easily be calculated and, during the continuation of the excavation, only samples of the desired volume could be taken. If a pre-test is not possible, we recommend taking samples of at least 3 l as already recommended by Hosch and Jacomet (2001), which should work for a lot of sites with waterlogged preservation.

To summarize, even though our test was small, we can emphasize one important result that might be of general validity, because it seems to corroborate former ideas (which were never before underlined by experiments): in order to avoid producing errors in the results due to the lumpy nature of the sediment, it is definitively better to invest more time in sieving complete samples with no prior subsampling with appropriate methods (as already described in Hosch and Zibulski, 2003 or Tolar et al., 2010) in order to homogenize the sediment (and in this way eliminate the lumps), and then take subsamples from the fractions' contents.

5. Conclusions

A first result of this paper is that subsampling of lumpy organic waterlogged sediment prior to sieving should only be done if really indispensable. Subsampling can introduce a bias, especially concerning concentration values. However, due to the richness of organic remains in waterlogged samples, subsampling is usually necessary, especially in the smallest fraction. In those cases, we found that it is better to invest more time in the appropriate (wash-over) sieving of undivided samples (ideally of a predefined size) in order to eliminate lumps as far as possible (homogenizing effect) before taking subsamples out of the fractions' contents. The time investment for sieving can be regained when analysing the samples. This is based on the fact that we also found that when subsampling from unsieved, lumpy sediment, sample sizes

Table 4
Mean proportions, observed SDs, expected SDs under random sampling and the ratios of observed and expected SDs as well as the geometric means of the ratios for the cultivated plants in the 0.35 mm-fraction of the two samples. The remain type 'flax capsule' encompasses larger parts (or even whole) capsules, whereas 'flax capsule fragments' are single capsule segments.

	Sample 1				Sample 2			
	Mean proportion	Observed SD	Expected SD	Ratio observed/expected SD	Mean proportion	Observed SD	Expected SD	Ratio observed/expected SD
Barley chaff	0.3	0.3	0.3	1.1	5.8	2.2	1.6	1.3
Naked wheat chaff	0.9	0.4	0.5	0.7	9.0	2.9	2.0	1.5
Glume wheat chaff	7.6	2.5	1.4	1.8	8.5	3.2	1.9	1.7
Cereal chaff unidentified	8.2	2.7	1.5	1.9	8.1	4.4	1.9	2.3
Cereal bran	5.5	1.8	1.2	1.5	1.6	1.9	0.9	2.2
Flax seeds	6.4	1.3	1.3	1.0	7.3	1.8	1.8	1.0
Flax capsules	3.2	1.2	0.9	1.3	0.7	0.6	0.6	1.0
Flax capsule fragments	7.7	1.7	1.4	1.2	9.6	3.6	2.0	1.8
Opium poppy	60.2	5.6	2.6	2.2	49.4	4.6	3.4	1.3
	Geometric mean			1.3	Geometric mean			1.5

Table 5
Mean proportions, observed SDs, expected SDs under random sampling and the ratios of observed and expected SDs as well as the geometric means of the ratios for the gathered plants in the >2 mm-fraction of the two samples.

	Sample 1				Sample 2			
	Mean proportion	Observed SD	Expected SD	Ratio observed/expected SD	Mean proportion	Observed SD	Expected SD	Ratio observed/expected SD
Hazelnut fruits	8.0	5.1	4.1	1.2	1.3	2.1	2.3	0.9
Apple seeds	18.2	3.6	5.9	0.6	4.2	3.3	4.1	0.8
Apple/pear pericarps	42.3	8.8	7.5	1.2	15.6	10.8	7.4	1.5
Acorn pericarps, cupules	2.8	2.0	2.5	0.8	68.8	17.1	9.5	1.8
Wild rose fruits	15.2	6.2	5.5	1.1	3.1	8.6	3.5	2.5
Sloe fruits	1.3	1.6	1.7	0.9	2.3	3.2	3.1	1.0
Other gathered taxa	12.2	6.1	5.0	1.2	4.6	4.7	4.3	1.1
	Geometric mean			1.0	Geometric mean			1.3

need to be much larger than if lumps are eliminated through sieving. Our test samples suggest that an increase of a factor of 1.32 for the large (>2 mm-) fraction and of 1.96 for the small (0.35 mm-) fraction is needed in order to have proportions of the most important taxa appropriately represented on average, compared to sample size suggestions based on random subsampling (e.g. van der Veen and Fieller, 1982; Thompson, 1987). With respect to single species or to evaluate the diversity in the small fraction, even larger sample sizes are needed. These higher sample sizes result in a high amount of time additionally needed for analysis. The sample size can be decreased if results from several samples can be pooled in the later analyses, for example in very densely sampled sites with many samples showing similar behavioural episodes. However, this applies to both subsampling prior to sieving as well as subsampling after sieving. We did not discuss here rapid-screening methodologies, but this might be a choice for large-scale projects of waterlogged settlements (Kenward et al., 1985; Kenward and Hall, 1995; Vandorpe, 2010; Perego, 2015).

Acknowledgements

We would like to thank Ruth Sahli for sieving all the subsamples, Raül Soteras who helped taking the different subsamples, Niels Bleicher for the possibility to use material from Zürich-Parkhaus Opéra for the test, Tim Wehrle for producing the GIS plan of the site, Eda Gross for helpful comments while planning the test and the archaeobotanists at the IPAS for their assistance with problematic identifications. We also thank Julie Jones, Núria Rovira, Laurent Bouby, Otto Brinkkemper, Mans Schepers, Lisa Lodwick, Caroline Vermeeren, Małgorzata Latałowa and Rachel Ballantyne for discussing the problematics with us and two anonymous reviewers for their helpful comments.

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Appendix A. Addition to the main article: differences between subsampling techniques

A.1. Introduction

Different subsampling techniques were examined to see how subsampling influenced the outcome of the analyses. Aim was to get first insights into differences between different subsampling techniques performed by different operators in lumpy wetland sediments before sieving with respect to unbiasedness (representativity) and sampling variability.

A.2. Material and methods

The samples were subsampled in two different ways and the amount of the subsamples was in each case chosen to obtain a sample of the same volume (the setup is summarized in Table A1):

Random square sampling: two adjacent squares of the grid were selected randomly and their content (forming a block, see Orton, 2000, fig. 2.4) was used as the subsample. To avoid edge effects, we only considered squares that were neither at the edge of the sample nor in the inner part (see Fig. A1A and B).

Stratified grid sampling: the squares were regarded as a stratification of the sediment sample and we manually sampled a small, similar amount from each square using a spoon (Fig. A1B, Table A1). If necessary, big lumps were divided in this subsampling process. We considered two different operators to perform the stratified grid sampling separately or simultaneously as a team (which is consequently the fastest method) in order to check if the operator could have any influence on the resulting subsamples. As a result, we had for each sample three variants of the stratified grid sampling:

1) Stratified grid sampling performed by operator X;
2) Stratified grid sampling performed by operator Y;
3) Stratified grid sampling performed by X and Y together as a team.

Table A1
Set-up of the case study subsampling. This table can also be used to differentiate between the subsamples in the figures of the main article.

Sampling strategy	Random square sampling		Stratified grid sampling					
Abbreviation	S		G					
Operator	One person (X)		X		Y		Team (X + Y)	
Run	1	2	1	2	1	2	1	2
Subsample name	S1	S2	X1	X2	Y1	Y2	T1	T2

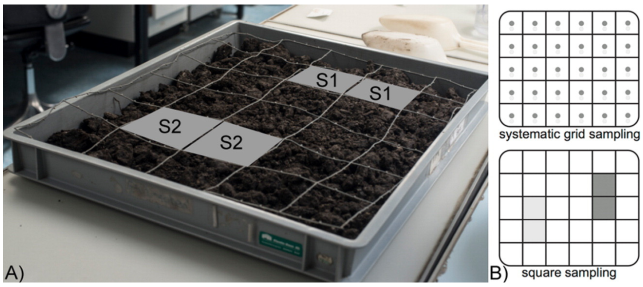

Fig. A1. A) Location where the two subsamples of the random square sampling were taken. B) Scheme of the two techniques used for subsampling (the extraction of one square subsample is shown). Grey colour marks the areas where material was taken in the subsampling process.

All 4 sampling techniques (the random square sampling and the 3 stratified grid sampling techniques) were applied twice in each of the two samples. Consequently, for each sample we performed 8 subsamplings labelled in the following as S1, S2, X1, X2, Y1, Y2, T1, and T2. Since we removed some of the material in any sampling, we could not exclude a sequencing effect. To diminish the impact of such a sequencing effect on the interpretation, we applied X, Y and T in a different order in each replication and in the two samples. As the random square sampling removed the full material of the squares chosen, a stratified grid sampling under the same conditions would not have been possible afterwards. Hence random square sampling was always done at the end.

The expected advantage of the stratified grid sampling is the reduction of the sampling variability: if there is a substantial variation in the composition of the remains from square to square, we can reduce this variability by averaging. The basic disadvantage of stratified grid sampling is the subjective component in drawing a sample manually from each square (see discussion above). In addition, since we were interested in sampling a small amount from each sample, this step required each operator having a strategy to divide larger lumps. Note that random square sampling also was not completely free from subjective components. The vertical projection of the squares had to be performed manually, and also sometimes required to divide lumps.

A.3. Results

A.3.1. Concentration (0.35 mm-fraction)

Sample 1: Subsample T1, which was gathered by stratified grid sampling as the first one in the sequence, had a much higher concentration than all the other subsamples (Fig. 3).

Sample 2: Subsample T1, the third one gathered, had the lowest concentration, while both Y subsamples (Y1, Y2) had a high concentration compared to the other subsamples (Fig. 3).

A.3.2. Concentration (>2 mm-fraction)

Sample 1: The highest concentration could be found in subsample T1 (Fig. 4).

Sample 2: The highest concentration could be found in subsample S1, the second highest in T1 (Fig. 4).

A.3.3. Means and standard deviations of concentrations (both fractions) in regard to subsampling techniques

The results of the concentration values in respect to the basic characteristics of the examined sampling techniques are shown in Fig. A2. No common tendencies of average values could be observed. Overall, the standard deviations for X, Y and S were of comparable magnitude, but team stratified grid sampling produced the highest standard deviations in three out of four cases.

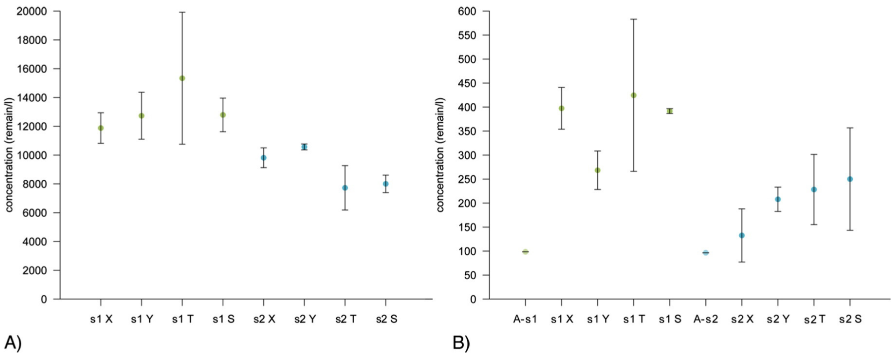

Fig. A2. Mean ± standard deviations of concentrations of plant remains in B-subsamples A) in the 0.35 mm-fraction and B) in the >2 mm-fraction (A-samples are also shown here). Samples are sorted by subsampling strategies. The values of the runs are averaged, subsample names are explained in Table A1. s1: sample 1, s2: sample 2.

A.3.4. Number of taxa (0.35 mm-fraction)

The number of taxa did not differ much between the different B-subsamples (Fig. 5).

A.3.5. Number of taxa (>2 mm-fraction)

Only in two cases (sample 1, T1, X2), the number of taxa found in a subsample exceeded half of the total taxa found in all subsamples (Fig. 7).

A.3.6. Means and standard deviation of numbers of taxa (both fractions) in regard to subsampling techniques

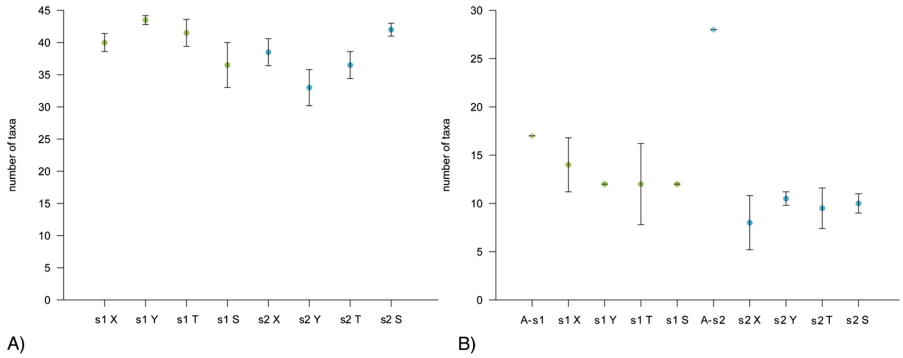

Fig. A3. Mean ± standard deviation of numbers of taxa of plant remains in B-subsamples A) in the 0.35 mm-fraction and B) in the >2 mm-fraction (A-samples are also shown here). Subsamples are sorted by subsampling strategies. The values of the runs are averaged, subsample names are explained in Table A1. s1: sample 1, s2: sample 2.

The results of the number of taxa in respect to the basic characteristics of the examined sampling techniques are summarized in Fig. A3. The differences in the average values were rather small, and hence it is not surprising that we cannot identify any common pattern. The same applies to the standard deviations, but we would like to note that team stratified grid sampling again tended to produce large standard deviations.

A.3.7. Proportions of cultivated plants (0.35 mm-fraction)

In one B-subsample of sample 2 produced by random square sampling (S1), there was a much higher percentage of cereal bran than in all other B-subsamples of sample 2 (Fig. 9). Percentages sometimes varied in subsamples produced by this technique, but so did they in samples produced by stratified grid sampling. In sample 1, higher amounts of naked wheat (*Triticum durum/turgidum* Desfontaines/Linnaeus) chaff were found in the subsamples produced by stratified grid sampling in a team (T1, T2), but there was some variation present in all B-subsamples which were taken by stratified grid sampling techniques.

A.3.8. Proportions of gathered plants (>2 mm-fraction)

Some subsamples differed substantially from the average: subsamples X2 and S2 in sample 2 contained less than half of all present taxa, and subsample T2 in sample 1 contained many more hazelnut (*Corylus avellana* Linnaeus) shell fragments than the other subsamples (Fig. 11).

A.3.9. Means and standard deviation of proportions (both fractions) in regard to subsampling techniques

The results of the proportion values in respect to the basic characteristics of the examined sampling techniques are summarized in Fig. A4. No tendencies could be detected in the average values. The standard deviations tended to be highest for random square sampling in the most common taxa, but not in all cases.

A.4. Discussion: is any of the four examined subsampling techniques particularly more accurate than others?

Between the four subsampling techniques (comparing the different types of small-volume subsamples), some differences in terms of number of taxa, proportions and densities were observed, but it was impossible to differentiate between random fluctuations and real trends. When comparing means and standard deviations of each method in regard to these parameters (Appendix B), no method could be observed to produce higher standard deviations or outliers more often than others. However, due to the aforementioned limitations, this topic would benefit from further examination.

The proportions of different species within a specific group were surprisingly similar in all small B-subsamples (Figs. 10, 12), as opposed to the overall concentrations. Overall concentrations seemed to be more prone to subsampling variation (Figs. 3, 4). We cannot decide whether this is due to setting a species in relation to a subgroup of all species or whether this is due to the extra variation in using the sample volume for standardization. However, this observation is in line with considerations by Wright (2010) and Miller (1988), but see also Kadane (1988). Further work is necessary to develop recommendations for the use of these different approaches in analysing waterlogged sediments.

A.5. Conclusion

When comparing different subsampling techniques for large unprocessed waterlogged samples, no systematic differences with respect to bias and variation could be established. This would facilitate comparisons between sites where different subsampling strategies have been used. But as the generality of our results is debatable, we would like to particularly stress again the importance of site-specific subsampling tests and the need for a clear statement about the methods used.

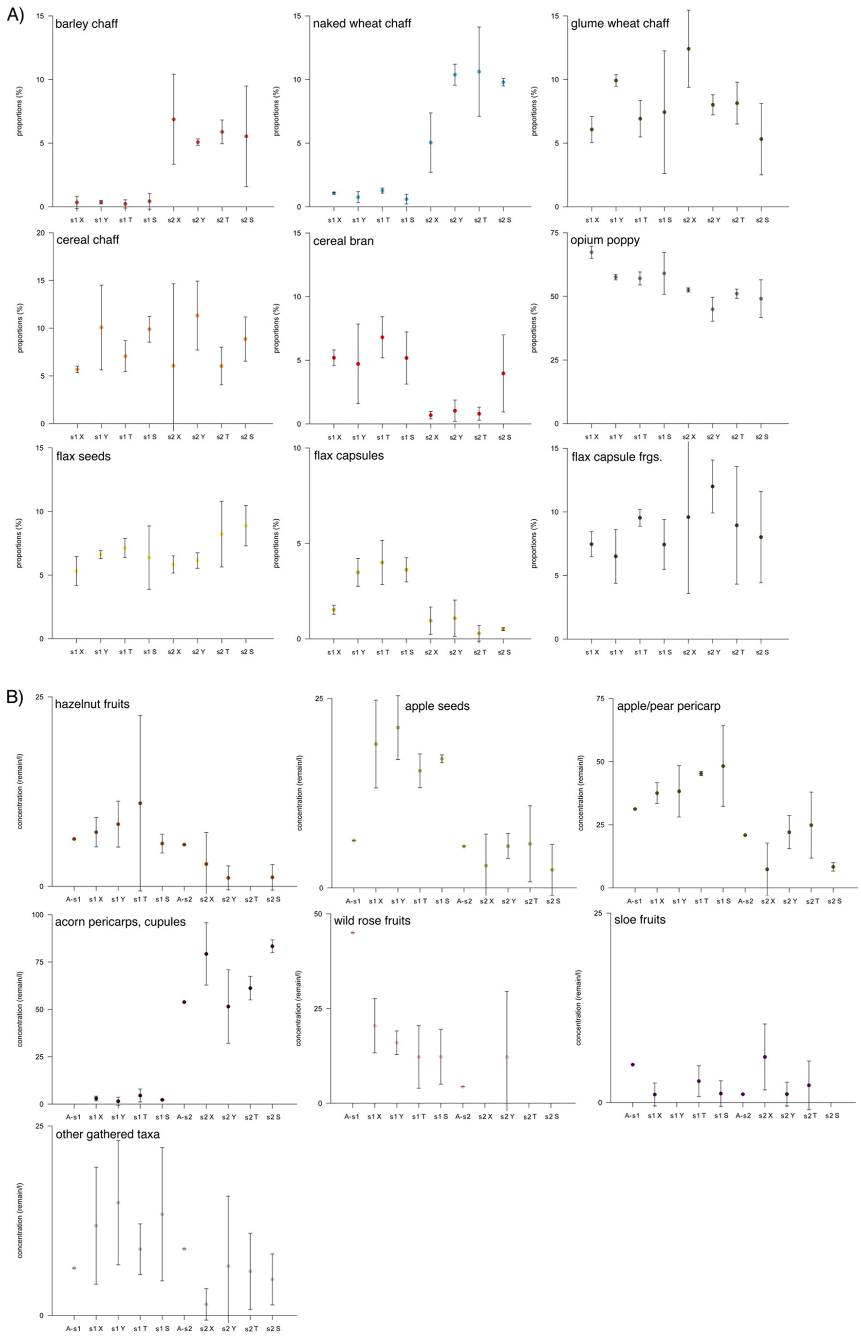

Fig. A4. Mean ± standard deviation of proportions of taxa in B-subsamples A) of cultivated plants in the 0.35 mm-fraction and B) of large-seeded gathered plants in the >2 mm-fraction (A-samples are also shown here). Samples are sorted by subsampling strategies. The values of the runs are averaged, subsample names are explained in Table A1. s1: sample 1, s2: sample 2. Colours correspond to Figs. 10 and 12 respectively.

Appendix B. Addition to Section 2: detailed description of procedures used for the statistical analysis

In the >2 mm-fraction, concentrations per litre were calculated by dividing the number of remains by the sediment volume of the subsample. In the 0.35 mm-fraction, the number of remains in the sub-subsample was first extrapolated to the subsample by multiplication with the ratio of the volume of the whole 0.35 mm-fraction and the volume of the sub-subsample.

First of all we present the raw results, i.e. the outcome observed in each of the two runs for each subsampling technique separately for the two master samples. Within each sample, the order in which the subsamples have been taken is also used to present results in tables and figures. In addition, the development of the outcome is shown by calculating the cumulative means from all preceding subsamples and the current one in order to obtain an idea at which sample size stability may be reached. However, for the number of taxa we present cumulative results based on pooling the samples. Results from the A-sample are added if available.

To obtain first insights into the behaviour of the four subsampling techniques, we also present averages and standard deviations over the two runs. Large differences in averages may hint to a systematic difference between two subsampling techniques when analysing the same sample. Differences in standard deviations may hint to differences in sampling variability. These results are shown in parallel for the two samples in order to facilitate the judgement whether systematic differences are similar across the two samples.

For proportions, we also took a closer look at the overall variability over all four subsampling techniques and the two runs within each sample. We present here the observed mean values and the observed standard deviations. In addition, we compare the observed standard deviations with those we would expect if the subsamples would have been true random samples, and report the corresponding ratio. This factor reflects the degree of lumpiness of the sample. The square of this number tells us how much we need to increase the sample size to obtain the same precision of our estimates as in the case of random subsampling. To get a first idea of the magnitude of this increase, we report the geometric mean of the ratios. We prefer here geometric means over the arithmetic means, as they are less sensitive to the skewed nature of the distribution of ratios.

The expected standard deviations were computed using the following formula to obtain the variance for the estimated proportion in the single subsample i: $v_i = p * (1 - p) / n_i$. Here n_i denotes the overall number of cultivated/gathered plant remains in subsample i and p is the average proportion observed over all subsamples. The variance of a randomly chosen subsample is then approximately the average of these variances, and the expected standard deviation is the root of this variance.

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3.3 Studying the preservation of plant macroremains from waterlogged archaeological deposits for an assessment of layer taphonomy

Antolín F, Steiner BL, Akeret Ö, Brombacher C, Kühn M, Vandorpe P, Bleicher N, Gross E, Jacomet S

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Studying the preservation of plant macroremains from waterlogged archaeological deposits for an assessment of layer taphonomy

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ABSTRACT

Layer taphonomy is one of the major questions in the archaeological research of lakeshore settlements. How fast did these deposits develop? Were they exposed to periodic droughts and decay? Which amount of the originally deposited remains survived until present? Plant macroremains have a great potential as indicators of preservation quality, since they are short-lived and particularly sensible to changes in preservation conditions. This paper reviews previous attempts to use similar proxies to understand layer taphonomy and provides a compilation of almost 50 variables (that include plant macroremains and other remains found in sediment samples) as indicators for preservation quality. Two late Neolithic lakeshore sites located in Central Switzerland were used as tests and more than 100 samples per site were investigated. Samples were grouped into meaningful groups (according to sediment type or their location in the stratigraphy, etc.) and ubiquities were calculated for each variable in each group of samples. Correspondence Analysis was applied in order to establish connections between groups of variables and groups of samples. GIS was used in one of the cases to look at preservation at a site scale. The method proved to be useful and differences in preservation conditions were observed in both sites, not only regarding the location of the samples in the stratigraphy and in relation to their proximity to the lake, but also in connection to sediment type. It is suggested that such studies are necessary before any palaeoeconomic analysis is undertaken.

1. Introduction

1.1. Aims and objectives of this study, studied sites

Anthropogenic deposits in wetland sites are mainly characterized by the presence of archaeological artefacts and organic remains. The latter include accumulations of dung and other organic debris like leftovers of food preparation and of building activities (Jacomet, 2013). They also contain parts of their natural environment, e.g. in form of water- or bog-living organisms. Their preservation in a subfossil (uncharred) form depends on the sustained existence of optimal conditions of preservation over time. It is clear that more or less anoxic conditions, water saturation and rather low water temperatures are needed for the survival of subfossil organic plant parts (Retallack, 1984; Bleicher and Schubert, 2015). When anoxic conditions are disturbed, corrosion (damage slowly produced on material by chemical action and/or the activities of microorganisms) begins. In addition, wetland sites which are situated at the shores of lakes can also suffer erosive mechanical processes that can be related to both natural (lake influence) and human action. These can cause mostly fragmentation of organic remains, as well as surface degradation, and transport and re-deposition. Disentangling the different factors influencing preservation, and reconstructing which factors played a major role for preservation of cultural layers at lake shores is a challenging task. In this paper we propose an approach to this issue by taking the state of preservation of plant macroremains as indicators.

In theory, wetland sites represent almost ideal examples for palaeoeconomic research as much more material – including subfossil/uncharred plant remains – is preserved than in dryland sites. But their interpretation is not as straightforward as it looks at first glance because until today their taphonomic histories remain rather enigmatic. There are several long-lasting questions in wetland research in connection to the taphonomy of cultural layers. The first question addresses *syndepositional processes*, that is, under which circumstances were the layers deposited. This question was already formulated in the first half of the XXth century with the attempts of researchers to contribute to

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the so called "Pfahlbauproblem" (Vogt, 1954), that is to say, the long-lasting question regarding the type of construction of houses (stilted – above open water – or not — on a dried up shore); in close correlation with this are questions concerning the "in-situ-ness" of the materials deposited (see a recent approach to these issues in Bleicher, 2013; Bleicher and Schubert, 2015). The second question concerns *postdepositional processes* that take place during and after the occupation of the settlement like water influence, erosion etc. and how to disentangle those from the syndepositional ones. Finally, the third question is *how much of the organic components* that were once present at the site *have remained until the present*, i.e. the representativeness of the materials preserved and their potential for answering palaeo-economical questions (see a recent paper on this issue Bleicher and Schubert, 2015). This question can only be targeted when the two previous ones are solved to some extent.

For answering the questions mentioned above, a transdisciplinary approach is mostly desirable. Nevertheless, progress in individual disciplines is still needed for a more robust interpretation of the data. For this reason, in this paper we focus on the study of plant macroremains or, more precisely, on indicators of preservation quality in the plant macroremains. Our aim is to use the large amounts of subfossil (uncharred) plant macroremains in such anthropogenic layers (together with other remains found in the samples) for an assessment of layer taphonomy. As it is known from former studies, plant remains are among the most fragile remains in such sediments (e.g. Brinkkemper, 2006; Jones et al., 2007) and therefore ideal candidates for answering taphonomic questions. A systematic compilation of the existing parameters for such a characterization, however, does not exist until today and the methodologies are heterogeneous. Furthermore, as most authors recognize, there is an important gap of knowledge in the understanding of the degradation of botanical macroremains (and this means at the same time that it is very difficult to disentangle syn- and postdepositional influences). With this study we try to fill this gap to some degree. We compiled the variables mentioned in previous literature on this topic (see below, Section 1.2) and added those identified from own observations. In addition we propose a faster yet effective recording method (in comparison to previous fully-quantitative approaches like in Jones et al., 2007) for everyday archaeobotanical studies.

We applied our methodology in two different case studies of late Neolithic occupation phases in lakeshore settlements in central Switzerland: Zürich-Parkhaus Opéra (Lake Zürich; from now on called ZHOPE) and Zug-Riedmatt (Lake Zug; from now on called ZGRI). For the former, a large number of surface samples (over 250) taken from m^2-quadrants (interval sampling; e.g. Jones, 1991) that span along 3000 m^2 were studied in great detail, taking into account the inner stratigraphy of the layer defined during fieldwork. For the latter, several profile columns (monoliths; e.g. Orton, 2000) from a small excavated area of only 64 m^2 were investigated paying particular attention to micro-stratigraphy, defined post-excavation, and located along lake-land-transects, with a transdisciplinary methodology and in a systematic way.

Our specific questions are: can we detect different preservation conditions in a site? Are these of spatial or stratigraphic nature? Can our results prove or reject any of the models of layer formation proposed by Bleicher and Schubert in previous research (Bleicher and Schubert, 2015)? Other questions of methodological nature were also in the background of this paper: Can we put forward a list of the most interesting indicators (i.e. those with greater potential to provide information referring to taphonomic processes) and those which could be neglected in future studies? Which parameters are good indicators of preservation and which are not? Is it worth to (semi-)quantify them or could their presence/absence be recorded with similar results?

1.2. Research history

Research on the identification of preservation parameters for archaeobotanical remains of sites located in wetlands started towards the seventies of the 20th century. It is based on earlier works, starting in the first half of the 20th century in the course of palaeoecological investigations of natural deposits (like e.g. the NW-European tradition of sediment (incl. peat) characterization, which aside from seedy remains also includes other sediment components (see references to "*Materialklassen*" in e.g. Troels-Smith, 1955; Grosse-Brauckmann, 1961; Overbeck, 1975). Subfossil remains were used as indicators for corrosion and preservation conditions, and it was attempted to disentangle the local natural components of the samples from those that were considered to be clear indicators of human activities. One of the first archaeobotanical studies where the degree of degradation of the surface of the most frequent taxa was used as an indicator for processes of corrosion or the quality of the conditions of preservation was the study of a profile column of the site of Yverdon-Avenue des Sports (Schlichtherle, 1985). Different taxa and types of remains that could be used as indicators for good preservation conditions were also identified in later works (Jacomet et al., 1989, table 9). Worth mentioning for such types of evaluations are the works of Jacomet (1985) in Lake Zurich or the research carried out in SW-Germany, at Federsee (Maier, 1995; Maier and Herbig, 2011) or at Lake Constance (Maier, 2001).

The first attempt to record the state of preservation of several types of plant macroremains in a systematic way was proposed by Murphy and Wiltshire, who designed a list of remains to describe with scores at a sample level (Murphy and Wiltshire, 1994). A similar approach was performed by other researchers like Vernimmen (2002), van Beurden (2004), Brinkkemper (2006), Jones et al., 2007 and recently (Brunning, 2013). In these cases, as in previous work of Kenward and others (Kenward and Hall, 2000), the aim was to perform rapid evaluations of the quality of preservation of wetland deposits found in large surveys, and establish whether action must be taken in order to protect these contexts from decay (as a basis for decision making for politicians). In many occasions, no contextual information was available (Vernimmen, 2002: 141).

Other criteria have been used to describe the quality of the state of preservation of wetland deposits. Based on the taxa-spectra of seed and fruit remains, it was possible to calculate a species richness factor for assessing the preservation (Brinkkemper, 2006) or the ratio of charred to non-charred remains (Vernimmen, 2002), as well as the concentration of plant diaspores per litre of sediment (Schlichtherle, 1985; Jacomet et al., 1989).

In recent PhD works (Pollmann, 2014; Antolín, 2016), both preservation parameters as well as sediment components were recorded in order to combine them for taphonomic analyses. It was particularly in the work of Pollmann (2014) where some new variables were added to the analyses, like the presence of sponges as limnic indicators, and indicators for corrosion or mechanical damages of waterlogged remains (e.g. sensu Brinkkemper, 2006). Here, the variables were also more clearly grouped as indicator groups (sensu Hall and Kenward, 2003; Kenward and Hall, 1997). In the present study we will also use such a combined approach. Other mentioned methods of evaluation like species richness will not be used in our evaluation, since these indexes only allow general approaches (i.e. good-medium-bad preservation) and our aims are more specific. In fact, we know that the preservation of both investigated sites is generally very good because they show very high densities of subfossil remains of by far >10.000/l of sediment (Antolín et al., 2017a; Steiner et al., 2017).

2. Materials and methods

2.1. Compilation of indicators

We compiled a total of 47 variables as potential indicators of preservation, based on the above-mentioned literature and the references that can be found in Fig. 1, Table 1 and ESM 1 (a more detailed version). Among the selected variables, there are 24 which belong to plant remains of Spermatophyta and 6 to Pteridophyta/Bryophyta, one to

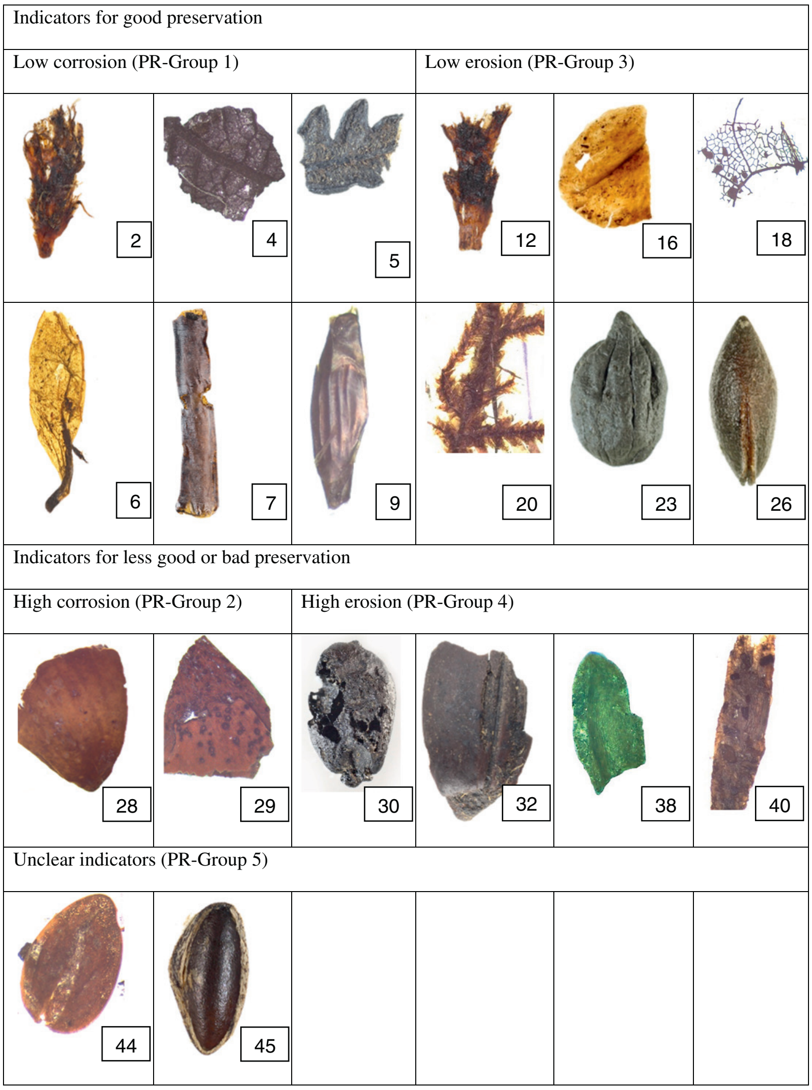

Fig. 1. A selection of the indicators compiled in Table 1 and considered in this work. The numbers correspond to those in Table 1.

Fungi, and 12 to animal remains, including invertebrates (N: 7), fishes (N: 2) and mammals (N: 3). Some of them are of clear terrestrial origin (N: 36), mostly anthropogenic, while others are of clearly limnic origin (N: 8). Their classification into anthropogenic or natural origin is based on actualistic assumptions (the composition of natural sediments like micrite – "lake marl" –, peat, etc.), as well as results of former studies on lake dwelling cultural layers, taking into account possible multiple existing routes of entry.

Variables were classified into indicators for better or worse preservation and indicators for corrosion or erosion on the basis of existing literature (see citations on Table 1) and own observations. As visible on Table 1, many of the studied variables can respond to multiple factors and their interpretation cannot be done straightforward. Corrosion can take place through several processes including aerial desiccation or digestion. Fragmentation can be both due to anthropic activities and due to erosion or sedimentary pressure. Our premise is that most of the recorded indicators show syndepositional processes that took place during the occupation of each settlement phase studied, at least for samples belonging to the lower and intermediate part of a cultural layer. The upper part of a cultural layer can have suffered more important postdepositional processes (see e.g. Bleicher and Schubert, 2015).

Table 1
List of variables used as indicators for preservation quality (PR = preservation groups), type of scale used, interpretation concerning preservation and bibliographical references (1-3-9 refers to our scale and B1-3-9 to Bullocks' scale).

	Preservation indicators	PR-grouping	Group of remain	Represented part	origin (Ecol./Econ.)	Type of scale	Fractions described	High (1) or low (2) sensitivity to corrosion	High (1) or low (2) sensitivity to mechanical erosion	Origin (anthropogenic A/natural N) (AN:?)	Good preservation (almost no corrosion/ mechanical erosion)	Excellent preservation (no corrosion/ mechanical erosion)	Bad preservation due to oxygen (= signs of corrosion)	Bad preservation due to mechanical action	Postdepositional bioturbation	References (if nothing indicated, own hypothesis)
PR-groups 1 and 3: Indicators for good to excellent preservation (and different anthropogenic activities OR aquatic influence)																
1	Cerealia chaff (all taxa)	1	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	B1-3-9	2 + 0.35 mm	1	1	AN	X					[1]E.g. Kühn and Hadorn (2004), Valamoti (2013), 2Baudais et al. (1997), Maier (2001), 3Maier (1995), Favre (2002), Zibulski (2010), 4Maier (2001)
2	*Hordeum* rachis with hairs	1	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	*1-3-9*	2 + 0.35 mm	1	1	AN		X				Adapted from Märkle (2000), Vernimmen (2002), Brinkkemper (2006)
3	*Cereal bran, small fragments*	1	*Plant (Spermatophyta)*	*Seed/fruit*	*Terrestrial: cereal*	B1-3-9	0.35 mm	1	1	AN	X					[1]Maier, 2004; Herbig, 2009 2 Alonso et al. (2014)
4	Leaves of deciduous trees frg., blade preserved	1	Plant (Spermatophyta)	Leaves	Terrestrial	*1-3-9*	2 mm	1	1	AN		X[1]				1Murphy and Wiltshire (1994), Pollmann (2014), 2 Rasmussen (1989a, 1989b), Robinson and Rasmussen (1989)
5	Leaves of ferns	1	Plant (Pteridophyta, Bryophyta)	Leaves	Terrestrial	*1-3-9*	2 + 0.35 mm	1	1	AN	X					1Bräker (1979), Schlichtherle (1985), 2For *Pteridium aquilinum*: Schlichtherle (1985), Dieckmann et al. (2006), Maier (2001a), Maier (2004), Maier and Herbig (2011), 3Schlichtherle (1985)
6	*Viscum* leaves (*C. minimum* 5 × 5 mm)	1	Plant (Spermatophyta)	Leaves	Terrestrial	*1-3-9*	8 + 2 mm	1	1	AN	X					Haas (2004), Kühn and Hadorn (2004), Kühn et al. (2013)
7	Bark of *Viscum album*	1	*Plant (Spermatophyta)*	*Bark*	*Terrestrial*	*B1-3-9*	8 + 2 mm	2?	2?	AN	X					Haas (2004), Kühn et al. (2013)
8	Twigs of *Viscum album (ZGRI)*	1	*Plant (Spermatophyta)*	*Twigs*	*Terrestrial*	*1-3-9*		2?	2?	AN	X					
9	Invertebrates	1	*Animal: invertebrates*	Insects	Terrestrial	*1-3-9*	All	1	1	N	X[1]				X[3]	1 Lemdahl (2004), 2Borojevic et al. (2010), Morales et al. (2014), 3Gasser and Adams (1981)
10	*Sphagnum*, leaves	1	Plant (Pteridophyta, Bryophyta)	*Leaves*	*Peaty?*	*1-3-9*	2 + 0.35 mm	1		N		X[1]				1Jacomet (1980), Pollmann (2014), 2Schoch and Schweingruber (1980)
11	*Chironomids*	1	*Animal:*	Insects	Limnic	*1-3-9*	2 + 0.35	1	1	N	X?					Ruiz et al., 2006

(continued on next page)

Table 1 (*continued*)

	Preservation indicators	PR-grouping	Group of remain	Represented part	origin (Ecol./Econ.)	Type of scale	Fractions described	High (1) or low (2) sensitivity to corrosion	High (1) or low (2) sensitivity to mechanical erosion	Origin (anthropogenic A/natural N) (AN:?)	Good preservation (almost no corrosion/ mechanical erosion)	Excellent preservation (no corrosion/ mechanical erosion)	Bad preservation due to oxygen (= signs of corrosion)	Bad preservation due to mechanical action	Postdepositional bioturbation	References (if nothing indicated, own hypothesis)
			invertebrates				mm									
12	*Hordeum vulgare*, rachis frg. with several nodes	3	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	*1-3-9*	2 + 0.35 mm	1	1	AN		X				
13	*Triticum nudum*, rachis frg. with several nodes	3	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	*1-3-9*	2 + 0.35 mm	1	1	AN		X				
14	*Triticum dicoccum*, complete spikelet fork	3	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	*1-3-9*	2 + 0.35 mm	1	1	AN		X				
15	*Triticum monococcum*, complete spikelet fork	3	*Plant (Spermatophyta)*	*Chaff*	*Terrestrial: cereal*	*1-3-9*	2 + 0.35 mm	1	1	AN		X				
16	Maloideae, whole pericarps	3	*Plant (Spermatophyta)*	*Seed/fruit*	*Terrestrial: useful*	*1-3-9*	8 + 2 mm	1	1	AN		X[1]				[§] Vernimmen (2002), Brinkkemper (2006), [2]Maier, 2001
17	Fish scales, complete	3	*Animal: fish*	*Scales complete*	*Terrestrial*	*1-3-9*	All	1	1	AN	X	X				Hall and Kenward, 2003, Hüster-Plogmann (2004)
18	*Leaves of deciduous trees frg., only veins preserved*	3	Plant (Spermatophyta)	Leaves	Terrestrial	*1-3-9*	2 mm	1	1	AN	X[1]			X?		1Murphy and Wiltshire (1994), Pollmann (2014), 2Rasmussen (1989a, 1989b), Robinson and Rasmussen (1989)
19	Complete buds	3	Plant (Spermatophyta)	Leaves	Terrestrial	*1-3-9*	2 mm	1	1	AN	X[1]					1 Murphy and Wiltshire (1994), 2Maier (2004), Zibulski (2004)
20	*Neckera crispa*, stems with leaves	3	Plant (Pteridophyta, Bryophyta)	*Stems with leaves*	*Terrestrial*	*1-3-9*	2 mm	1	1	N		X[1]				1 Schlichtherle (1985), 2Murphy and Wiltshire (1994), 3Hochuli (2002)
21	Moss stems with leaves (ZGRI)	3	Plant (Pteridophyta, Bryophyta)	Stems with leaves	Terrestrial	*1-3-9*	8 + 2 mm	1	1	N		X				Murphy and Wiltshire (1994), Pollmann (2014)
22	Twigs with bark (ZGRI)	3	*Plant (Spermatophyta)*	*Twigs*	*Terrestrial*	*1-3-9*	8 + 2 mm	1	1	AN	X					
23	Dung of sheep/goat	3	Animal: mammals	Dung	Terrestrial	*1-3-9*	8 + 2 mm	1	1	N	X[2]	X[2]				1 E.g. Rasmussen (1993), 2Retallack (1984)
24	Dung (summed)	3	Animal: mammals	Dung	Terrestrial	*B1-3-9*	8 + 2 mm	1	1	N	X	X				E.g. Akeret and Rentzel (2001)
25	Dung of small animals (rodents)	3	Animal: mammals	Dung	Terrestrial	*1-3-9*	All	1	1	N					X	Gasser and Adams, 1981
26	*Najas intermedia/marina*, complete fruits (ZHOPE)	3	*Plant (Spermatophyta)*	*Seed/fruit*	*Limnic*	*1-3-9*	2 + 0.35 mm	2	1	N		X				Brinkkemper (2006)
27	*Cristatellidae* with appendixes	3	*Animal: invertebrates*	*Bryozoa*	Limnic	*1-3-9*	2 + 0.35 mm	1	1	N	X					1Schmidt (2011), 2Pollmann (2014)
	PR-groups 2 and 4: Indicators for less good or bad preservation (including anthropogenic activities OR aquatic influence)															

28	*Corylus* shells frg., surface presenting holes	2	*Plant (Spermatophyta)*	*Seed/fruit*	*Terrestrial: useful*	*1-3-9*	8 + 2 mm	1		N			X			Schlichtherle (1985), Jones et al. (2007)
29	*Sclerotia* on plant remains	2	*Fungi*	*Sklerotia*	*Terrestrial?*	*1-3-9*	All	?	?	N			X		X	Schoch and Schweingruber (1980)
30	*Cerealia grains (CHARRED) with degraded surface (ZHOPE)*	4	*Plant (Spermatophyta)*	*Cereals*	*Terrestrial*	*1-3-9*	2 mm	1	1	AN				X		Antolín and Buxó (2011), Antolín (2016)
31	*Cerealia* grain fragments (CHARRED) (ZHOPE)	4	*Plant (Spermatophyta)*	*Cereals*	*Terrestrial*	*1-3-9*	2 mm	1	1	AN				X		Antolín and Buxó (2011), Antolín (2016)
32	*Corylus* shells frg., eroded surface	4	*Plant (Spermatophyta)*	*Seed/fruit*	*Terrestrial: useful*	*1-3-9*	8 + 2 mm	2	2	AN			X	X		Schlichtherle (1985), Brinkkemper (2006)
33	*Fish scales, fragmented*	4	*Animal: fish*	*Scales, fragments*	*terrestrial*	*1-3-9*	All	1	1	AN				X		Hüster-Plogmann (2004)
34	*Bud scales (ZGRI)*	4	plant (Spermatophyta)	leaves	*terrestrial*	*1-3-9*	All		1	AN				X		Murphy and Wiltshire (1994)
35	*Moss stems without leaves (ZGRI)*	4	Plant (Pteridophyta, Bryophyta)	Stems only	Terrestrial	*1-3-9*	8 + 2 mm	1	1	AN			X[1]			1Murphy and Wiltshire (1994), Pollmann (2014), 2Akeret et al. (1999), Kühn and Wick (2010)
36	*Moss leaves (ZGRI)*	4	Plant (Pteridophyta, Bryophyta)	Leaves	Terrestrial	*1-3-9*	All	1	1	AN				X		Murphy and Wiltshire (1994)
37	*Twigs without bark (ZGRI)*	4	*Plant (Spermatophyta)*	*Twigs*	*Terrestrial*	*1-3-9*	8 + 2 mm	2	1	AN					X	[1]Zibulski (2004)
38	*Najas* seed frag. Smaller than 1/2	4	*Plant (Spermatophyta)*	*Seed/fruit*	*Limnic*	*1-3-9*	2 + 0.35 mm	2	2	N				X		Adapted from Schlichtherle (1985), Jones et al. (2007)
39	*Cristatellidae* without appendixes	4	*Animal: invertebrates*	*Bryozoa*	Limnic	*1-3-9*	2 + 0.35 mm	1	1	N			X	X		1Schmidt (2011), 2Pollmann (2014)
40	*Cases of larvae caddis fly (Trichoptera) – eroded*	4	*Animal: invertebrates*	Insects	Limnic	*1-3-9*	All	1	1	N				X		
41	*Molluscs with a holey surface*	4	*Animal: invertebrates*	*Shells*	*Limnic*	*1-3-9*	8 + 2 mm	2	2	N			X	X		Thew (2004), Ismail-Meyer et al. (2013), Pollmann (2014)
PR-group 5: Unclear indicators (probably of bad preservation conditions but also other factors)																
42	Sclerotia (*Cenococcum* etc.)	5	*Fungi*	*Sklerotia*	*Terrestrial*	*1-3-9*	All	2	2	N			X[1]		X[2]	Schoch and Schweingruber (1980), Pollmann (2014), 2Alonso and López Reyes (2005)
43	Acari	5	*Animal: invertebrates*	*Insects*	*Terrestrial*	*1-3-9*	2 + 0.35 mm	1	2	AN			X			Baker (2009), Pollmann (2014)
44	Golden dust on macroremains	5	*Mineral*	*Anorganic*	*Terrestrial*	*1-3-9*	All	?	?	N						Oral comm. by Christine Pümpin: strongly anoxic situation
45	*Najas intermedia/marina*, halves	5	*Plant (Spermatophyta)*	*Seed/fruit*	*Limnic*	*1-3-9*	2 + 0.35 mm	2	2	N	X			X (if not natural)		Brinkkemper (2006)
46	Rhizomes (ZGRI)	5	*Plant*	*Stems*		*1-3-9*	4 + 2 mm			N					X	Pollmann (2014)
47	Roots (ZGRI)	5	*Plant*	*Roots*		*B1-3-9*	All			N					X	Pollmann (2014)

2.2. Recording methods used for the present study

A review of the methods used for recording preservation parameters in previous work can be found in ESM 2. For this study, variables were semi-quantified. Two scales of semi-quantification were used (Tables 1 and 2). The **first** was developed by us, and aimed to record the presence and abundance of preservation parameters. It should

1) record materials, which were rare but significant (e.g. well-preserved leaf fragments) in a fraction, or
2) the significance of a particular type of remain within the totality of remains of a taxon (e.g. complete spikelet forks of *Triticum dicoccon* among the total chaff remains of this taxon).

This semi-quantification was done in a scale of 1-3-9, where 1 = a few (1–3 items), 3 = more than a few and 9 = a lot (dominant within the fraction or taxon). We did not look at the single items in detail (in contrast to some previous studies). This method is similar to the one used by other authors to semi-quantify the abundance of plant macroremains in samples (Kenward and Hall, 1995: 459).

A **second** type of scale based on the Bullock scale (Bullock et al., 1990) was established. This scale aimed to give to each component an approximate proportion of the total fraction. For this reason, it was only useful for components which were quite frequent in the samples. Three degrees of semi-quantification were defined, where 1 = up to 5%; 3 = 6–30%; 9 = >30%. After running some initial tests (Jacomet, unpublished), it was decided not to use more precise semi-quantification scales in order to avoid inconsistencies between different analysers or even by the same researcher from sample to sample. Not taking such margins of error into consideration would be unrealistic.

The semi-quantification was done under the binocular, and checked several times during the analysis. Some variables were only recorded in one of the fractions (SEM 1, Table 1). When one variable was recorded in two different fractions, different values were sometimes obtained. In such cases, the highest number was taken when using our own scale and the most relevant fraction was used when using the Bullock's scale (Table 1).

2.3. Evaluation methods and illustration of the results used in the present study

For this paper, in order to present the results in a comprehensive manner, variables were classified into four preservation-groups (from now on called PR-groups) according to their relation to corrosion processes (PR-groups 1 and 2) or erosion agents (PR-groups 3 and 4). PR-groups 1 and 3 are considered indicators of good preservation, while PR-groups 2 and 4 are considered to show bad preservation (Table 1). For plant remains, only the content of the organic "light" fraction was investigated, not the heavy inorganic fraction. The recorded insect remains were analysed more in detail by M. Schäfer (IPAS) (Schäfer, 2017) but they were included in our list of variables to test if a rough recording could help to define meaningful trends in preservation conditions.

All data were entered in the ArboDat database (© Kreuz & Schäfer, 2016), by adding new codes for preservation parameters and sediment component classes. Ubiquity (percentage of the total amount of samples in which a variable was recorded) was calculated for each variable according to the different classification criteria of samples (see below). First, ubiquity was based on the sole presence of a variable; secondly, only variables described as abundant (with a 3 or a 9 score) were taken into consideration. Variables that appeared less than 10 times (either taking presence/absence or abundance into account) were not considered for calculations for being too rarely recorded. The resulting tables can be found in ESMs 3, 4, 5 and 6.

The ubiquity of the recorded variables was calculated after the following sampling grouping (S-groups) criteria:

- sediment type (mainly organic, loamy, sandy, micrite, or organic micrite (organic sediment mixed with micrite)) (see sediment types in Ismail-Meyer et al., 2013);
- location within the settlement (lake-side Vs. land-side (for ZGRI also middle), and only for ZHOPE: north vs. south, inside vs. outside constructed features); and
- location within the stratigraphy (ZHOPE: base, medium, top of the occupation phase, representing one settlement layer; for ZGRI three sequences of base, medium and top samples were defined in the three superimposed settlement layers separated by organic micrite layers (possibly flooding events) composing altogether one occupation phase).

Correspondence Analysis (CA) of the ubiquity values calculated for each variable and considering the different S-groups mentioned above was used as a tool to explore the correspondence between these and single variables, as well as between PR-groups and the actual distribution of the variables (used to define new CA-groups). It was considered that the whole methodology would be more powerful in identifying trends according to S-groups than studying samples separately, particularly taking into account that each sample contains a different set of remains and therefore some variables can be quantified and others cannot. First the analysis was done based on presence/absence of the variables to maximize the number of samples considered and at a second stage with only variables described as abundant in order to make more precise interpretations of the most clear trends. The preliminary preservation groupings (PR-groups) were used to interpret the association between variables and S-groups (top, base, organic, loam, etc.) but the CA was used to redefine these groups too (CA-groups), by observing how variables grouped in the graph in both sites. The software used was Past (Hammer et al., 2001). Detrended Correspondence Analysis (DCA) was also produced with the software Past in order to prove that there was no major arch effect affecting the interpretation of the second axis of CA graphs (ESM 7).

2.4. Specific methodology used for Zürich-Parkhaus Opéra (ZHOPE), layer 13

The Neolithic lake dwelling site of ZHOPE (Zürich, Switzerland) was excavated during 2010 and 2011 (Bleicher and Harb, 2015). This study is based on the samples from layer 13 (Horgen culture, dendrodated to 3176–3153 BC, representing one settlement phase of no more than 25 years (Bleicher and Burger, 2015). This so-called cultural or settlement layer consisted of different sediment types (mostly organic sediments, but also loam-rich samples, samples with micrite or sand are present, as well as samples from a burnt layer) and its thickness (between 8 and 32 cm) is not homogeneous across the site, being much thinner towards the northwest (Fig. 2). The surface of the excavated area was around 3000 m^2. A total number of 27 constructed features and a fence were identified through dendrochronological analyses (Bleicher and Burger, 2015). It must be highlighted, though, that the sampling and partly the analysis were done before the origin of the samples, the location of archaeological features and house plans were known (Fig. 4).

Table 2
Two semi-quantification scales used in this work.

Semi-quantification scales		
Value	Own scale	Scale based on "Bullock's scale"
1	A few (1–3 items)	Up to 5%
3	More than a few	10–30%
9	A lot	Over 40%

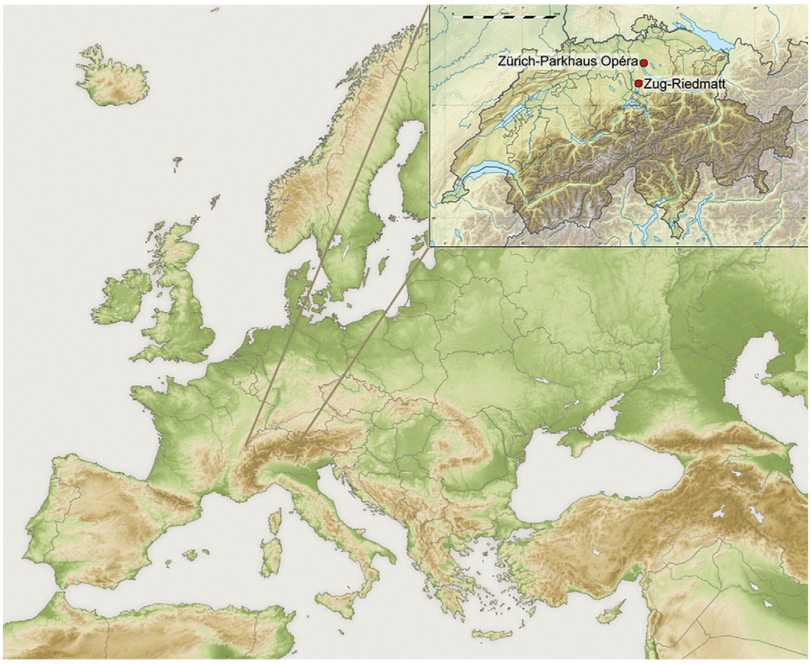

Fig. 2. Location of the sites (maps by San Jose (Europe), Eric Gaba and NordNordWest (Switzerland)).

The sampling and sieving strategy was described in previous publications (Antolín et al., 2015, 2016, 2017a, b; Steiner et al., 2015, Steiner et al., 2017). Large surface samples were taken from all over the excavated surface, following a m^2 grid (interval sampling). These samples followed the inner stratigraphy of the cultural layer only roughly (in contrast to ZGRI, see Section 2.5) and were therefore assigned to different parts of the layer (base, intermediate and top position) after their recovery, relying on the field documentation (a sort of rough SU – stratigraphic units – were given to the different parts of the cultural layer). In total, 256 samples with a total volume of almost 1000 l were investigated (average sample volumes of 3.8 l) (Fig. 4). All volume measurements were taken with the displacement method, as recommended in a previous work (Antolín et al., 2015). The samples were sieved using the wash-over method (Hosch and Zibulski, 2003) after a freeze–thaw pre-treatment (Vandorpe and Jacomet, 2007). Sieve mesh sizes were >2 mm (for all samples) and 0,35 mm for 123 of them.

ArcGis (ESRI, 2010) was used to represent on the site plan the semiquantified values of the studied variables to allow a more accurate approach to their distribution within the site.

2.5. Specific methodology used for Zug-Riedmatt (ZGRI)

The Neolithic lake dwelling site of ZGRI was discovered 2006 in a depth of about 6 m under the present-day surface. The site was situated next to the lake Zug and in the delta of the river Lorze (Zug, Switzerland, Fig. 2). In 2008, a small part of only 64 m^2 of the settlement (which is estimated to have had an extension of 2600–3500 m^2 in total) was excavated because of planned building activities. The occupation phase is so far only roughly dated to 3250–3100 BC (Horgen culture) and the exact duration of the occupation phase is not exactly known, but it might be more than 50 years (pers. comm. E. Gross). The stratigraphy consists of three “cultural or settlement layers” (representing 2 or 3 settlement phases) which are separated by organic micrite layers. It is in total up to 1.3 m thick and contains a complex sequence of organic, loam, sand and ash layers and it is embedded in micrite (Ismail-Meyer et al., submitted for publication) (Fig. 5). The location of houses (or parts of houses within the small excavated area) is not yet determined because until now no dendrodates are available; therefore our investigations concentrated more on the stratigraphic sequence and its taphonomy. Worth mentioning is a special feature, a bone midden, found within the excavated area, most probably lying below a house (Billerbeck et al., 2014).

In contrast to ZHOPE, the analysis was mainly based on samples of profile columns (monoliths), which are the most suitable sampling strategy when a thick stratigraphy is present (e.g. Jacomet, 2013). The profile columns were taken in narrow intervals over the exposed surface (Fig. 5). Five stratigraphic sequences were chosen for analysis, located in each corner and in the middle of the excavated area (Fig. 5) and stretching along a transect from lake to the land. The profile columns were then separated into (micro-)layers in the most detailed way possible in the laboratory, in close transdisciplinary collaboration with soil micromorphologists, palynologists and archaeologists (Ismail-Meyer et al., submitted for publication). In total, 12 profile columns were fully or partly analysed, resulting in 197 samples of varying sizes (0.02–3.5 l; total sample volume was 79.25 l). The sieving and analysing strategies were kept as close as possible to the ones of ZHOPE (see above). However, some differences existed because the analysis of ZGRI was started earlier. The volume measurements were taken with the “classical method” (compare to Antolín et al., 2015), the sieving was performed with mesh sizes of 4, 2 and 0.35 mm (compare to Steiner et al., 2015) but was otherwise done in the same way.

The organic part of the fraction's contents (4, 2, 0.35 mm) of all 197 samples was analysed. Samples consisting only of micrite or loam without organic component were excluded from this evaluation in order to make the results comparable to ZHOPE. Midden sediments were also mostly excluded because they could not clearly be associated with a settlement phase analogous to ZHOPE due to their position in between the first and second phases. As a result, only 126 samples were used in the analyses for this paper. Some indicators were not recorded at the beginning of the analysis. Therefore, in this evaluation, for each variable we only included samples where the corresponding variable was recorded.

In analogy to ZHOPE we then classified our samples into base, intermediate and top layers within the three single 'settlement layers' found to be forming part of the occupation phase. As this division of the occupation layer proved to be extremely difficult, this classification has to be seen as tentative, but very likely. Organic micrite represents the top of these 'settlement layers'. The organic layers at the base and below any loam layers/aggregates were defined as "base" while organic samples above loam layers/aggregates were defined as "intermediate" (both in analogy to ZHOPE). This resulted in three 'settlement layers' with a sequence of base–intermediate–top right on top of each other.

The organic micrite below the first purely organic sample was defined as "below the occupation phase" (and below the first settlement phase) and might represent in-wash of organic material sedimented nearby.

3. Results

3.1. Associating groups of variables to groups of samples at ZHOPE

3.1.1. CA based on presence/absence of variables

The ubiquity values for each variable according to S-groups can be found in tables in ESMs 3 and 4. A first CA was done based on the ubiquity of the variables according to presence/absence (ESM 3). Samples coming from a burnt layer at the top of the stratigraphy, associated with the variables of charred grain with eroded surface and fragmented charred grain, appeared as clear outliers (graph not shown) and this column was consequently excluded from the analysis. The resulting graph (Fig. 6) showed some clear patterns in the distribution of the PR-groups (see Section 2.3). To the negative side of the horizontal axis, samples located at the base of the stratigraphy and single layer samples were observed, together with organic, mixed and samples inside house limits. Samples to the north and the south of the settlement and to the lake side were found very close to the centroid of the graph. Samples to the land side appeared in this area of the graph too, showing that samples within these groups were rather similar in composition and that their composition represents the average of the total analysed in the graph. Apart from these groups of samples, micrite-rich samples were also in this negative side of the horizontal axis. To the positive side of the horizontal axis, samples found at the top and intermediate parts of the layer were found, together with samples outside house limits. Loamy and sandy samples appeared in this part of the axis too. To the positive side of the vertical axis, lake-marl samples were observed, opposed to the rest of groups of samples. Sandy samples, as well as samples in an intermediate position and samples outside house limits also were on the positive side of the vertical axis.

The distribution of the variables in the CA (Fig. 7) allowed the definition of five CA-groups (Table 3), taking into account our a priori classification in Table 1. To the negative side of Axis 1 we found a number of variables that indicate good preservation conditions and particularly low corrosion (CA-group 1, red circle). Within this group, remains of Acari (PR-group: unknown) were also found. A second CA-group was found to the positive side of Axis 1 (pink circle). Indicators for low erosion were often present in this area (e.g. large fragments of rachis of naked wheat, large pieces of apple pericarp). At the end of the negative side of Axis 2 another group of variables was observed (CA-group 3, dark blue circle). This included seeds of *Najas* in different states of preservation (from different PR-groups) and badly preserved statoblasts of *Cristatella*, all indicators for aquatic influence. At the positive end of Axis 1, but on the negative side of Axis 2, several variables related to bad preservation conditions (CA-group 5, purple circle), both corrosion and erosion, were found, together with the presence of "gold dust" on plant remains (PR-group: unknown). Finally, some other variables were scattered around on the positive side of both Axes 1 and 2 and at the positive end of Axis 2 (yet on the negative side of Axis 1), mostly related to erosion (eroded hazel nutshells, eroded larvae cases of Trichoptera, fragmented fish scales) with indicators for lack of erosion (dung of rodents) (CA-group 4, light blue circle).

Table 3
Groups of variables observed in the CA based on p/a data (Fig. 7). Codes next to the variables correspond to those in Table 1 and Figs. 6 and 7.

Groups of variables observed in the Correspondence Analysis (Fig. 7)				
CA-group 1 — red circle	CA-group 2 — pink circle	CA-group 3 — dark blue circle	CA-group 4 — light blue circle	CA-group 5 — purple circle
Hordeum rachis wl with hairs (2)	(Dung of sheep/goat) (23)	*Najas* seed frag. smaller than ½ (38)	*Corylus* shells frg., eroded surface (32)	*Corylus* shells frg., surface presenting holes (28)
Triticum dicoccon, complete spikelet fork (14)	Leaves of deciduous trees frg., only veins preserved (18)	Bryozoa without appendixes (39)	Cases of larvae caddis fly — eroded (40)	Sclerotia on plant remains (29)
Acari (43)	*Neckera crispa*, stems with leaves (20)	*Najas intermedia*/*marina*, halves (45)	Dung of small animals (rodents) (25)	Cerealia grains with degraded surface (30)
Leaves of deciduous trees frg., blade preserved (4)	Buds (19)	*Najas intermedia*/*marina*, complete fruits (26)	(Fish scales, fragmented) (33)	Cerealia grain fragments (31)
Leaves of ferns (5)	Dung summed (24)			Golden dust on macroremains (44)
Viscum album leaves (6)				(Sclerotia (*Cenococcum* etc.)) (42)
Bark of *Viscum album* (7)				
Chironomids (11)				
(Insects/-fragments/Arachnida) (9)				
Cereal bran, small fragments (3)				
Triticum nudum, rachis frg. with several nodes (13)				
Cristatellidae with appendixes (27)				
Hordeum vulgare, rachis frg. with several nodes (12)				
Maloideae, whole pericarps (16)				
Cerealia chaff (all taxa) (1)				

When looking at the correspondence between variables and groups of samples, one can see several trends. According to the position in the stratigraphy, S-groups are clearly distinctly distributed in the CA graph. Samples at the base of the stratigraphy are clearly connected to CA-group 1 (red circle), that is to say, indicators for low corrosion. Samples in an intermediate position are both connected to the group of indicators for lack of erosion (CA-group 2, pink circle) and presence of erosion (CA-group 4, light blue circle), showing therefore mixed indicators. Samples at the top of the stratigraphy are more connected to the indicators of lake influence (CA-group 3, dark blue circle) and corrosion (CA-group 5, purple circle), as well as lack of erosion (CA-group 2, pink circle). The so-called single samples appear close to the indicators for lack of corrosion (CA-group 1, red circle) but influenced by the lake indicators (CA-group 3, dark blue circle).

Concerning samples located inside or outside house limits, samples located inside tend to group with indicators for low corrosion (CA-group 1, red circle), while samples located outside house limits are found closer to indicators for erosion (CA-group 4, light blue circle) but also indicators for low erosion (group 2, pink circle). Samples to the north and to the south of the site did not show any particular differences, being grouped within CA-group 1 (red circle). A similar observation can be done for samples located to the lake or to the land side of the settlement, although samples located to the land side of the settlement are also influenced by CA-group 3 (dark blue circle), showing some lake influence.

Finally, the distribution of the samples according to sediment type showed that organic samples are grouped in CA-group 1, with indicators of low corrosion (red circle), while loamy, sandy and micrite rich samples are in more extreme positions in the graph. Only sandy samples show a rather clear connection to indicators of corrosion (CA-group 5, purple circle). Mixed samples group with organic samples.

3.1.2. CA based on the abundance of variables

The same operation was carried out based on the semi-quantified values of ESM 4 (Figs. 8 and 9). Samples rich in sand and micrite appear far from the centroid of the graph, indicating a clearly different composition to the rest of S-groups (Fig. 6). Organic and mixed samples are located to the negative side of the horizontal axis, but much nearer to the centre, close to loamy samples and samples in an intermediate part of the stratigraphy (the latter are almost located on the centroid of the graph). To the negative part of the vertical axis, one can find samples in the northern part of the settlement and the so-called single samples. Samples at the base of the stratigraphy appear close to samples inside house limits, and land-side samples, all of them being to the negative side of the vertical axis and the positive side of the horizontal one. In a similar location but on the positive side of the vertical axis one can find samples located at the top of the stratigraphy and in the southern part of the settlement.

Concerning the variables, again 5 CA-groups could be distinguished (Fig. 9, Table 4). The central part of the axes concentrates all indicators of good preservation, based on our a priori classification on Table 1. Indicators for low corrosion (CA-group 1, red circle) seem to concentrate to the positive part of both axes, while *Najas* seeds (wholes and halves; numbers 26 and 45, respectively) concentrate on the negative end of Axis 2 (CA-group 3, dark blue circle). Indicators for bad preservation (light blue, CA-group 4 and purple circles (CA-group 5)) are each towards the positive and the negative ends of Axis 1, respectively. Cereal bran fragments (number 3) appear separated from other variables, possibly grouping with indicators for low erosion (CA-group 2, pink circle). In general, the CA-groups that were defined roughly match those identified with the help of p/a data in Table 3 (shadowed in grey in Table 4), particularly for CA-groups 1 and 3. Some of the indicators that were grouped differently in Table 4 actually matched better our initial expectations as PR-groups (see Table 1). This would be the case of well-preserved chaff remains of emmer and naked wheat, as well as the statoblasts of Bryozoa with appendixes. Others did not, like complete buds, which were now associated with CA-group 1 instead of CA-group 2, which would fit better our expectations.

Looking at the correspondence between variables and groups of samples, we can see that samples located at the base of the stratigraphy coincide with variables showing low corrosion (CA-group 1, red circle). Samples in an intermediate position were grouped with indicators of low erosion (CA-group 2, pink circle), while those in the upper part of the stratigraphy were linked to indicators for corrosion (CA-group 5, purple circle). The so-called single samples were connected to indicators of lake influence (CA-group 3, dark blue circle). Samples in and out of house limits were not strongly separated in the graph, being

Table 4
Groups of variables observed in the CA (Fig. 8). Codes next to the variables correspond to those in Table 1 and Figs. 8 and 9. Grey shadows indicate coincidence with p/a data (see Table 3).

Groups of variables observed in the Correspondence Analysis (Fig. 8)				
CA-group 1 — red circle	CA-group 2 — pink circle	CA-group 3 — dark blue circle	CA-group 4 — light blue circle	CA-group 5 — purple circle
Hordeum rachis wl with hairs (2)	Leaves of deciduous trees frg., only veins preserved (18)	*Najas intermedia/marina*, halves (45)	Cerealia grains with degraded surface (30)	Acari (43)
Viscum album leaves (6)	*Triticum nudum*, rachis frg. with several nodes (13)	*Najas intermedia/marina*, complete fruits (26)	Cerealia grain fragments (31)	*Najas* seed frag. smaller than ½ (38)
Bark of *Viscum album* (7)	*Neckera crispa*, stems with leaves (20)		Sclerotia (*Cenococcum* sp.) (42)	Golden dust on macroremains (44)
Leaves of deciduous trees frg., blade preserved (4)	*Triticum dicoccon*, complete spikelet fork (14)		(Cases of larvae caddis fly — eroded) (40)	
Maloideae, whole pericarps (16)	(Cereal bran, small fragments) (3)		Dung of sheep/goat (23)	
(Sclerotia (*Cenococcum* etc.)) (42)	(Insects/-fragments/Arachnida) (9)		*Corylus* shells frg., eroded surface (32)	
Hordeum vulgare, rachis frg. with several nodes (12)	(Chironomids) (11)			
Complete buds (19)	Sklerotia on plant remains (29)			
Leaves of ferns (5)				
Dung of small animals (rodents) (25)				
Cerealia chaff (all taxa) (1)				
Bryozoa with appendixes (27)				

both within CA-group 1 (red circle) but samples outside house limits were also grouped with lake influence indicators (CA-group 3, dark blue circle). Samples to the north of the site and where the layer is thinner have a stronger link to CA-group 3 (dark blue circle), too, and therefore to lake influence indicators, while samples to the south of the site are more connected to indicators of corrosion (CA-group 5, purple circle).

Samples to the lake and the land side of the settlement were closely located in the graph, with indicators of low corrosion (CA-group 1, red circle) although samples to the lake side where somewhat closer to indicators of lake influence (CA-group 3, dark blue circle).

Samples grouped according to sediment type were more clearly classified in this graph. Organic and mixed samples were grouped within CA-group 2 (pink circle), the indicators of low corrosion, while loamy and micrite rich samples were linked to indicators of erosion (CA-group 4, light blue circle). Sandy samples were linked to indicators for corrosion (CA-group 5, purple circle).

3.2. ZHOPE: representation of indicator groups on the site plan

One of the variables of each of the groups identified in the CA (Table 4) that were present in the same CA-group in both analyses was plotted with GIS on the site plan in order to see the horizontal distribution of each variable (Fig. 10). The results are presented in three plans, one with samples located at the base and in parts of the site where the layer is thin ("single" samples), one with samples located in an intermediate part and one with the samples located at the top of the cultural layer. This was done on the basis of the similarities observed between the first two groups in the CA (Figs. 7 and 9).

Differences in the horizontal and vertical distribution of each variable are clear. In general, variables belonging to CA-groups 1 and 2 (good preservation, low corrosion and low erosion) are more abundant at the base of the layer, while the variables of CA-group 4 (signs for erosion) and CA-group 5 (signs of corrosion) were less often detected yet more abundant at the top of the layer. CA-groups 1 and 2 are also more often present in the southern part of the settlement in all parts of the stratigraphy. The variable of CA-group 3 (lake influence) was more abundant at the base (particularly where the layer is thinner) and at the top of the layer (particularly towards the lake side).

3.3. Associating groups of variables to groups of samples at ZGRI

3.3.1. CA based on presence/absence of variables

For data from ZGRI, we also performed a Correspondence Analysis with the presence/absence data (ESM 5) and with the semiquantified data (ESM 6) as in the case of ZHOPE.

The results of the CA for the presence/absence data can be seen in Fig. 11. Regarding S-groups, to the negative side of the horizontal axis but the positive side of the vertical, samples from below the occupation phase and from the top of each settlement layer could be found, as well as organic micrite and sandy samples (the latter very close to the centroid of the graph). Samples situated towards the lake side could be found at the negative side of both axes. To the positive side of both the horizontal and vertical axes, far away from the centre, samples from the base of each settlement layer could be found. Samples towards the area closer to the land-side of the excavated area could also be found there, but closer to the centre. To the positive side of the horizontal axis and the negative side of the vertical axis, samples with organic or loamy content could be found, as well as samples from intermediate contexts and samples situated in the middle of the excavated area.

Based on the distribution of the variables, five CA-groups could be formed (Fig. 12; Table 5). These groups consider our a priori classifications in Table 1 (PR-groups). Variables indicating lake influence (CA-group 3, dark blue circle) were grouped at the negative side of the horizontal axis and the positive side of the vertical axis of the graph. The majority of variables indicating low erosion (CA-group 2, pink circle) mainly concentrated at the centre of the graph on the positive side of the vertical axis. Variables indicating low corrosion (CA-group 1, red circle) were mainly grouped at the positive side of the horizontal axis. Variables indicating both erosion and corrosion (CA-group 4, purple circle) were grouped at the negative side of the both axes. One final group of three variables relating to erosion and corrosion (CA-group 4, light blue circle) could be found at the positive side of both vertical and horizontal axes.

Table 5
Groups of variables observed in the CA based on p/a data (see Fig. 12). Variables in bold correspond with results for p/a data of ZHOPE (see Table 3).

Groups of variables observed in the Correspondence Analysis (Fig. 12)				
CA-group 1 — red circle	CA-group 2 — pink circle	CA-group 3 — dark blue circle	CA-group 4 — light blue circle	CA-group 5 — purple circle
Bark of *Viscum album* (7)	*Triticum nudum*, rachis frg. with several nodes (13)	***Najas intermedia/marina*, complete fruits (26)**	**Cases of larvae caddis fly (Trichoptera) — eroded (40)**	Fish scales, fragmented (33)
Dung (24)	*Hordeum vulgare*, rachis frg. with several nodes (12)	Molluscs with a holey surface (41)	*Cristatellidae* without appendixes (39)	*Acari* (43)
***Viscum album* leaves (6)**	Moss, only leaves (36)	***Najas intermedia/marina*, halves (45)**	*Corylus* shells frg., surface presenting holes (28)	**Sclerotia (42)**
Leaves of ferns (5)	*Triticum dicoccon*, complete spikelet fork (14)	***Najas* seed frag. smaller than ½ (38)**		Roots (47)
(Sclerotia on plant remains) (29)	***Neckera crispa*, stems with leaves (20)**	*Cristatellidae* with appendixes (27)		*Rhizomes* (46)
Sphagnum leaves (10)	Fish scales complete (17)	(Leaves with blade preserved) (4)		Moss stems without leaves (35)
Dung of small animals (rodents) (25)	Twigs, with bark (22)			
***Maloideae*, whole pericarps (16)**	**Leaves of deciduous trees frg., only veins preserved (18)**			
Twigs without bark (37)	Bud scales (34)			
Complete buds (19)	Insects (9)			
Cereal bran (3)	Moss, stems with leaves (21)			
Twigs of *Viscum album* (8)	Cerealia chaff (all taxa) (1)			
***Hordeum* rachis wl with hairs (2)**	Chironomids (11)			
Dung of sheep/goat (23)				

The CA-groups of variables coincide partly with the distribution of the S-groups of samples. Concerning the stratigraphic location of the samples, samples below the occupation phase and at the top of each 'settlement layer' fall within the distribution of indicators of lake influence (CA-group 3, dark blue circle), while samples located in an intermediate position in the single 'settlement layers' group with indicators for corrosion and erosion (CA-group 5, purple circle) and of low corrosion (CA-group 1, red circle), thus showing mixed indicators. Samples at the base of each 'settlement layer' appear separate from the rest. They are probably linked to indicators of good preservation conditions (CA-group 1, red circle) and indicators for erosion (CA-group 4, light blue circle), but the connection is not as clear as for the rest of the CA-groups. Regarding the location of the samples in relation to the lake, samples on the land side grouped with indicators for high erosion (CA-group 4, light blue circle), while samples from the middle grouped with indicators for corrosion and erosion (CA-group 3, purple circle) but also with good preservation (CA-group 1, red circle), while samples towards the lake side grouped only with indicators of corrosion and erosion (CA-group 5, purple circle). Sediment types were also distinctly distributed in the graph, with a clear difference between organic micrite samples and to a lesser extent sandy samples, which grouped more with indicators of lake influence (CA-group 3, dark blue circle), and organic, which grouped more with indicators for low corrosion (CA-group 1, red circle). Loamy samples grouped with indicators of corrosion and erosion, as well as with indicators of good preservation (CA-group 1, red circle).

3.3.2. CA based on the abundance of variables

The results of the CA, based on the semiquantified data can be seen in Fig. 13. Concerning S-groups, to the positive side of the vertical axis and the negative side of the horizontal axis, again far away from the centre, samples from the base of each 'settlement layer' could be found. To the negative side of both axes, samples from below the occupation phase and from the top of each 'settlement layer' could be found, as well as samples consisting of organic micrite and samples situated more towards the lake. To the positive side of both horizontal and vertical axes, land-side, loamy and organic samples could be found. To the negative side of the horizontal axis but the positive side of the vertical axis, sandy and intermediate samples and samples situated towards the middle of the excavated area could be found.

Based on the distribution of the variables, four clear CA-groups could be formed, while the fifth "group" was only represented by one indicator (Fig. 14; Table 6). These groups take into consideration our a priori classifications in Table 1 (PR-groups). Variables indicating lake influence (CA-group 3, dark blue circle) were grouped at the negative side of both axes of the graph. Variables indicating low erosion (CA-group 2, pink circle) mainly concentrated at the centre of the graph at the negative side of the vertical axis. Variables indicating low corrosion (CA-group 1, red circle) were mainly grouped at the positive side of both axes. Variables indicating corrosion (CA-group 5, purple circle) were grouped at the negative side of the horizontal but the positive side of the vertical axis. A last "group" with only one variable related to erosion (CA-group 4, light blue circle with a dashed line) could be found at the positive side of the horizontal but negative side of the vertical axis.

The five CA-groups of variables aligned with slightly different patterns to those observed with the help of p/a in Fig. 12 and with a much better correspondence between S-groups (Fig. 14, Table 6). Regarding the stratigraphic position of the samples, samples below the occupation phase and at the top of each 'settlement layer' showed a good correspondence with CA-group 3 (dark blue circle, indicators for lake influence), while samples in the intermediate parts of the cultural layers are both connected to indicators for corrosion (CA-group 5, purple circle) and good preservation (CA-group 1, red circle) thus showing

Table 6
Groups of variables observed in the CA (Fig. 14), based on semi-quantitative data. Codes next to the variables correspond to those in Table 1 and Fig. 14. Variables in bold correspond with the results of ZHOPE for sq. data (Table 4), variables that are shadowed in grey correspond to the results for p/a data in ZGRI (Table 5).

Groups of variables observed in the Correspondence Analysis (Fig. 14)				
CA–group 1— red circle	**CA–group 2 — pink circle**	**CA–group 3 — dark blue circle**	**CA–group 4 — light blue circle**	**CA–group 5 — purple circle**
***Viscum album* leaves (c. minimum 5 x 5 mm) (6)**	***Triticum nudum*, rachis frg. with several nodes (13)**	***Najas intermedia/marina*, complete fruits (26)**	*Cristatellidae* without appendixes (39)	Moss, stems without leaves (35)
Leaves of ferns (5)	*Hordeum vulgare*, rachis frg. with several nodes (12)	***Najas intermedia/marina*, halves (45)**		*Acari* (43)
Cerealia chaff (all taxa) (1)	**Chironomids (11)**	*Cristatellidae* with appendixes (27)		Moss, only leaves (36)
Sphagnum leaves (10)	***Triticum dicoccon*, complete spikelet fork (14)**			Bud scales (34)
***Hordeum* rachis wl with hairs (2)**	***Neckera crispa*, stems with leaves (20)**			**Fish scales, fragmented (33)**
***Maloideae*, whole pericarps (16)**	Complete buds (19)			Roots (47)
Dung (24)	Twigs, with bark (22)			**Sclerotia (42)**
	Leaves of deciduous trees frg., only veins preserved (18)			
	Twigs without bark (37)			
	Insects (9)			
	Moss, stems with leaves (21)			
	Cerealia bran (3)			

mixed indicators. Samples at the base of each settlement layer correspond with low erosion (CA-group 5, pink circle) but also one indicator for erosion (CA-group 4, light blue circle). Sample groups according to their location in relation to the lake grouped differently. Samples situated more closely towards the lake grouped more with indicators for low erosion (CA-group 2, pink circle). Samples situated in the middle of the excavated area grouped with CA-group 5 (purple circle, corrosion) and samples situated towards the land grouped with CA-group 1 (red circle, good preservation conditions). Sediment types provided clearly differentiated groups: organic and loamy samples grouped with indicators for low corrosion (CA-group 1, red circle), while sandy samples showed a correspondence with indicators for corrosion (CA-group 5, purple circle) and organic micrite samples grouped with indicators for lake influence (CA-group 3, dark blue circle).

4. Discussion

4.1. Preservation indicator groups: a first proposal

We presented two case studies that yielded partly different results, but several coincidences. Of the 47 variables considered, 30 of them appeared to provide consistent links to certain groups of variables (CA-groups) that can be used to understand layer formation processes at a site scale (Table 7). The most stable variables of CA-group 1 (Table 7) belong mostly to the variables included in PR-group 1 as indicators for low corrosion in our a priori classification (Table 1). The only exceptions are, on the one hand, complete pericarps of Maloideae, which were initially considered to be more likely indicators of low erosion but might be in fact also indicators for low corrosion conditions; and, on the other hand, the presence of dung of herbivores, which despite being initially classified in PR-group 3 (low erosion), was connected to this group in both sites.

CA-group 2 was mostly associated with variables connected to PR-group 3, that is to say, indicators for low erosion. The only exception were insect remains (including chironomids), both originally grouped in PR-group 1 (low corrosion). It is difficult to explain why insect remains were grouped with the low erosion group of variables. The most likely explanation is that they probably indicate both, low erosion and low corrosion.

CA-group 4 was only characterized by one variable in a consistent way: eroded cases of larvae of caddis fly (originally in PR-group 4, with indicators of high erosion). Eroded hazelnut shells (in ZHOPE) and statoblasts of *Cristatellidae* without appendixes, also originally in PR-group 4, were also found in this CA-group 4. It seems therefore likely that the presence of CA-group 4 speaks for some kind of erosion, maybe by wave action, but, in general, this group seemed to be difficult to define (esp. in the case of ZGRI).

CA-group 5 was characterized by 5 variables, most of them belonging to the PR-group of unknown indicators, along with one variable of PR-group 4 (connected to high erosion), which is moss stems without leaves. We therefore consider that Sclerotia of Fungi, Acari, Roots and Golden dust on macroremains should be grouped with PR-group 2, as indicators of presence of corrosion. Hazel nutshells with a surface presenting holes (PR-group 2) were also linked to this group according to presence/absence data at ZHOPE but this variable was relatively rarely recorded at both sites and so it could not be included in the rest of the analyses. This means that both investigated layers were too well preserved for the presence of this type of remains. However, we still would like to consider corroded hazelnut shells as signs for strong corrosion. In a previous investigation at a Late Neolithic lakeshore site in Risch (near the Riedmatt-site at Lake Zug) we found that this variable is a good indicator for the drying out of an originally wet layer (Jacomet, unpublished). In this case study parts of a formerly well-preserved organic settlement layer became dry because the level of Lake Zug was lowered artificially up to 2 m in 1591. We could observe there the influence of different degrees of dryness on hazelnut remains, which appeared more eroded landwards.

Charred cereal grains with a degraded surface were originally in PR-group 4, considered indicators of erosion. They grouped with CA-group 5 according to presence/absence analysis at ZHOPE but the use of semiquantified data allowed reclassifying these variables as indicators of erosion (in CA-group 4). Charred grains were underrepresented in the samples of ZGRI, probably because of their small volume (see Antolín et al., 2017b) and therefore the variables related to them were not included in the statistical analyses. Charred grains and corroded hazel nutshells should continue to be recorded in future analyses of sites where large-volume samples (>3 l of sediment) were taken, even though they were not able to provide relevant patterns in these two case studies.

Finally, as already observed in the chapter of results, another CA-group (CA-group 3) was identified at both sites. Some indicators that had to do with aquatic factors (Table 2), namely seeds of *Najas* and statoblasts of Bryozoa (sometimes well-preserved ones, other times badly preserved ones), formed a group themselves (CA-group 3). That is clearly a sign of aquatic influence (presence of water and possibly of erosion by water). The types of aquatic plant seeds (namely *Najas*: wholes, halves and fragments >1/2) seem not to play different roles, in contrast to our expectations (e.g. fragmented *Najas* = more erosion). This means that in the future parameters regarding the remains of aquatic plants do not need to be recorded as indicators because they

Table 7
List of variables consistently grouped in the same CA-groups of variables in ZHOPE and ZGRI. Variables in brackets were only consistently found in the same group in one of the sites.

Groups of variables defined at ZHOPE and ZGRI with the use of Correspondence Analysis				
Group 1 — red circle (low corrosion)	Group 2 — pink circle (low erosion)	Group 3 — dark blue circle (water influence)	Group 4 — light blue circle (erosion present)	Group 5 — purple circle (corrosion present)
Bark of *Viscum album* (7)	*Neckera crispa*, stems with leaves (20)	*Najas intermedia/marina*, complete fruits (26)	Cases of caddis fly larvae (Trichoptera) — eroded (40)	Acari (43)
Viscum album leaves (c. minimum 5 × 5 mm) (6)	Leaves of deciduous trees frg., only veins preserved (18)	*Najas* seed frag. smaller than ½ (38)	(*Corylus* shells frg., eroded surface) (32)	Sclerotia (42)
Leaves of ferns (5)	*Triticum nudum*, rachis frg. with several nodes (13)	*Najas intermedia/marina*, halves (45)	(*Cristatellidae*, without appendixes) (39)	(Roots) (47)
Cerealia chaff (all taxa) (1)	*Triticum dicoccon*, complete spikelet fork (14)	(*Cristatellidae* with appendixes) (27)		(Golden dust on macroremains) (44)
Hordeum rachis wl with hairs (2)	Insects (9)			(Moss, stems without leaves) (35)
Maloideae, whole pericarps (16)	(Chironomids) (11)			(charred cereal grains with eroded surface)
(*Sphagnum* leaves) (10)	(*Hordeum vulgare*, rachis frg. with several nodes) (12)			(*Corylus* shells, holey surface)
(Dung) (24)	(Moss, stems with leaves) (21)			

are already recorded as diaspores (fully quantified) and they do not seem to contribute to understand processes of erosion/corrosion, but other important taphonomic processes such as water as taphonomic agent — as already supposed in earlier works based on "traditional" groupings (e.g. Jacomet, 1985; in the case of ZGRI there might in addition be an influence of the river Lorze but we are not yet able to well define "typical" riverbank associations).

The list of variables and indicator groups presented in Table 7 (excluding CA-group 3 if plant macroremains are analysed at the site) might be the most useful ones in future studies, together with corroded hazel nutshells and eroded charred grains (variables 28, 30 and 31 of Table 1). This needs to be proven on a site scale and adapted if necessary.

4.2. Which is the best method to quantify the variables?

Two recording methods were used to calculate ubiquity percentages of each variable to evaluate taphonomic processes (erosion and corrosion) affecting the anthropogenic layers of ZHOPE and ZGRI. Values based on presence/absence allowed including more variables than by using the semi-quantitative method, since some variables were never recorded as abundant or very abundant.

By having a look at Fig. 15, we can observe some similarities, but also some discrepancies in the associations between groups of samples (S-groups) and groups of variables obtained from the CA performed. On most of the occasions, the results between both methods of quantification were comparable. Nevertheless, presence/absence analysis did not always work out satisfactorily at ZHOPE, since two sample groups (loamy and micrite-rich samples) were not possible to associate with any CA-group of variables, while the semiquantitative evaluation did yield better links between S-groups and CA-groups. In general, semi-quantitative values gave more straightforward patterns. This was also evident at ZGRI. We also used semiquantitative data for the representation of the results at sample level in GIS plans (Fig. 10); and we also performed in a previous publication a preliminary evaluation of several samples organized in transects for ZHOPE, which allowed a comparison of single samples (instead of sample groups) and single variables (instead of PR-groups or CA-groups) (Antolín et al., 2017a). The potential of the methodology here is therefore much larger than what has been presented here, and semiquantification has been useful for this purpose. Semiquantification is also important when evaluating the data using statistics. As the effort of semiquantification and recording presence/absence is similar, we would suggest the use of the former method, which can easily be simplified should it be necessary in order to include more variables. Our recording method is time saving compared to other methodologies known from the literature (based on recording individual items, e.g. Jones et al., 2007). Our results show that it yields nevertheless excellent results.

4.3. Preservation at a site scale: disentangling the cultural layer

The presented results clearly show that the preservation of the cultural layers in both sites was, in general, extremely good (as already mentioned), but not homogeneous. In this sense, indicators for good preservation conditions usually clustered around the centroid of the CA graphs, which means that these indicators were common to most sample groups. Nevertheless, indicators of more variable preservation conditions were found in connection to certain sample groups. We will now compare both case studies with the aim of identifying some common trends that can help us to better understand preservation in organic cultural layers like the ones we are dealing with. However, it is possible that the differences observed between both sites are also due to the fact that the stratigraphy at ZHOPE was not considered in such a detail as in ZGRI (see Sections 2.4 and 2.5).

Taking the position of the samples in the stratigraphy into account, we could observe some coincidences between the results of ZHOPE and ZGRI (Fig. 15). At ZGRI, samples right below the first settlement layer of the whole occupation phase were analysed because they were found to contain cultivars and other anthropogenic indicators (Steiner, 2017). These were clearly associated with CA-group 3, which is mainly consisting of indicators of aquatic influence. This proves that these layers were more strongly influenced by water, most probably the lake (and not the river). The cultivars and other plants of anthropogenic origin could have arrived to this spot transported by water, or they could simply correspond to a first settlement horizon.

Samples at the base of the three 'settlement layers' at ZGRI and at the base of the cultural layer 13 at ZHOPE were primarily connected to CA-group 1 (indicators for low corrosion) at ZHOPE and ZGRI, but at least partly also to CA-group 4 (indicators for erosion) and CA-group 2 (indicators for low erosion) at ZGRI; the latter are mainly connected to the presence of water (e.g. *Cristatellidae* without appendixes and eroded larvae cases of *Trichoptera*). In ZGRI, only the lowermost part of the first of the three settlement layers contains higher amounts of aquatic indicators (Steiner et al., 2017). Therefore, it remains unclear if these should be interpreted as presence of some erosion in this part of the stratigraphy at ZGRI. If so, this would show different kinds of formation processes at the beginning of a settlement phase, at least in one of the settlement layers at ZGRI.

Intermediate layers within the whole cultural layer 13 at ZHOPE were associated with CA-group 2 (indicators for low erosion) and partly to CA-group 4 (indicators for erosion), while in the 3 settlement layers at ZGRI, they were more clearly linked to CA-group 1 (indicators for lack of corrosion) and CA-group 5 (indicators for corrosion). This opens at least two possibilities regarding the formation of intermediate layers in such deposits: firstly, the appearance of contradictory indicators could show that intermediate layers are not as well preserved, in general, as layers at the basis of a 'settlement layer' and that more corrosion/erosion takes place. Secondly, it could also be showing that intermediate layers are more difficult to interpret as indicators for preservation because they can partly integrate a lot of remains that were originally part of the construction walls of the houses or material lying on the floors of houses for some time, together with deposits that can be considered more similar to those that produced the basis of the cultural layer at this particular spot.

Layers at the top of the stratigraphy of settlement layer 13 at ZHOPE were clearly connected to CA-group 5 (corrosion indicators; but also partially to CA-groups 2 (low erosion) and 3 (water influence)), while the top of the 3 settlement layers at ZGRI the correspondence was stronger with CA-group 3 (water influence). In any case, in both instances there is evidence that the surface of the settlement layers was affected by different agents (e.g. the lake) that could have impoverished the preservation conditions of the layer (more erosion/corrosion). This might be in connection to the abandonment of the site and the lack of new material being deposited on the cultural layer, leaving the surface of the layer exposed to erosion from the lake (see also Bleicher et al., 2017) or – in the case of ZGRI – by the river Lorze.

The last group of samples regarding stratigraphy concerns the samples at ZHOPE that came from parts of the site where layer 13 was thinner (in the northern part; see Figs. 3 and 10). These samples show a connection to CA-group 3 (aquatic influence) and also partly to CA-group 1 (low corrosion). This proves that the preservation of this part of the layer is good (similar to the samples at the base of the layer) but at the same time there are indicators of lake influence. This could be due to several reasons: contamination from the upper layer of micrite (due to the rather rough sampling method applied); or due to an erosion event (or more than one) of presumably fluvial origin that affected this part of the site and eroded the upper part of the layer, which would explain why the layer is thinner yet well-preserved at the same time (as suggested in Bleicher, 2017; see also below).

Regarding preservation according to the location of the samples within the site, we could work out some interesting conclusions, too:

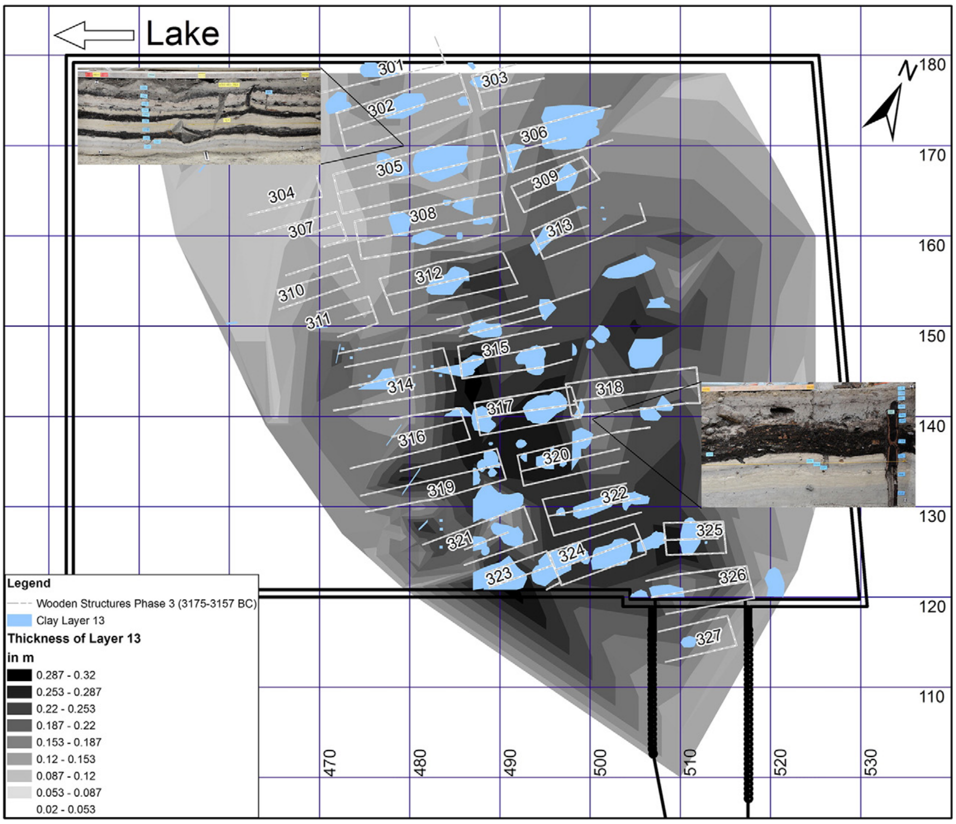

Fig. 3. House plans and thickness of layer 13 of ZHOPE (Antolín et al., 2016).

Concerning ZHOPE, samples located within the limits of constructed features were connected to CA-group 1 (low corrosion), while samples located outside of these limits presented mixed indicators of erosion and corrosion (but also of good preservation conditions). This could indicate that samples outside of these constructed features were more prone to suffer erosion and corrosion in comparison to samples within the limits of these constructions. This could be due to several reasons. The piles of the houses could have contributed to the protection of the remains against some processes like erosion; or maybe the rates of deposition of rubbish where much higher underneath house floors than around them, which ended up in a much faster embedding of the remains and their better preservation (see also Bleicher, 2017).

Differences between samples located to the north or to the south of the site were not very pronounced, although samples to the north seemed to be more influenced by the lake (this is the part where the layer is thinner) and samples to the south seem to have suffered more corrosion, since they are also connected to CA-group 5 (corrosion indicators; Fig. 12).

Samples were classified according to their location with respect to the lake for both ZHOPE and ZGRI. Samples to the lake side showed a greater connection to CA-group 3 (the limnic indicators) at ZHOPE, which is in accordance to our expectations. At ZGRI, lake-side samples were more connected to CA-group 5 (corrosion) and CA-group 1 (lack of corrosion). These apparent discrepancies might be due to the small area investigated at Zug-Riedmatt. Samples to the land site of the settlement showed a correspondence to CA-group 1 (low corrosion) for both sites, but also to CA-group 4 (presence of erosion) at ZGRI and to CA-group 3 (aquatic influence) at ZHOPE. Indicators of lake influence landwards at ZHOPE have been recently interpreted as signs of the existence of a driftline that crossed the site from north to south (Bleicher et al., 2017). This means that more corrosion could have taken place in this part of the settlement of ZHOPE, which could suggest a different dynamic to that observed to the lake side, maybe indicating short episodes of decay — maybe during phases of lower lake level in winter (see also Bleicher et al., 2017).

Concerning sediment types, organic samples were linked to CA-groups 1 (low corrosion) and 2 (low erosion) at ZHOPE and CA-group 1 (low corrosion) at ZGRI (Fig. 12). This is the sediment type that shows the best preservation conditions at both sites, which fits with our expectations. In contrast, loamy and sandy samples (particularly the latter) were connected mostly to CA-group 5 (high corrosion) at both sites. Loamy samples were also connected to CA-group 1 (low corrosion) at ZGRI and CA-group 4 (erosion) at ZHOPE. These samples seem to present worse preservation conditions in a consistent way. Sand might represent transformed layers (drying?) or even influence by a river. Sand is also typically accumulated in littoral zones, where preservation conditions are worse (Ismail-Meyer et al., 2013). Loam could give mixed signals because it was exposed to open air conditions

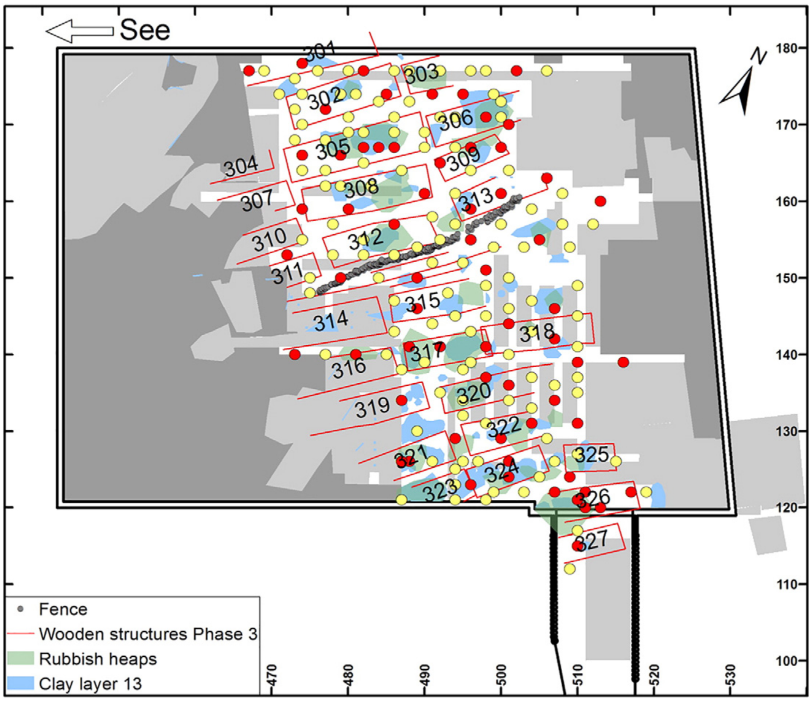

Fig. 4. Distribution of the analysed samples (yellow and red dots) from layer 13. Red dot samples were analysed until 0,35 mm. In several cases, more than one sample from the same square was analysed, representing different parts of the cultural layer (Antolín et al., 2017b).

for a longer time and could contain more degraded plant material, but at the same time, remains embedded in loam are sealed from oxygen quickly.

Mixed samples at ZHOPE show good conditions of preservation. These were organic samples with an important content of micrite. This mixture could be due to the contamination of the layer with over- or underlying layers of micrite during sampling. They can be treated as organic samples in any case concerning preservation conditions.

Finally, samples rich in micrite at ZHOPE are linked to CA-group 4, indicating a connection with erosive processes. Since many of the micrite-rich samples are found in the uppermost part of the layer, one should not discard the possibility that we are not only documenting an increase of erosion but a sudden decrease in the deposition rate. Instead, the so-called organic micrite samples of ZGRI show a correspondence with CA-group 3, they contain more aquatic plants than other layers (Steiner et al., 2017). This would suggest that these layers could be the result of flooding episodes or hiatuses, during which more natural components could enter the sediment (e.g. due to less anthropogenic organic input).

4.4. Preservation indicator groups as tools to approach the dynamics of layer formation processes

With this information, what can be said about the formation of the cultural layer at ZHOPE and ZGRI? Following the models for layer-formation proposed by Bleicher and Schubert, 2015; see Table 8), one could speculate that our case study would resemble the fifth scenario, also called the "Pfahlbau-scenario", i.e. with houses located on permanently present shallow water. This idealised scenario deliberately denies postdepositional effects in order to focus on the chemical questions of preservation. According to this model, by a constant supply of high amounts of nutrients, mainly organic household refuse (vegetable materials, but also bones, fleshy parts etc.) anoxia below and in between the houses is developed soon (during the first years) and continues during the whole period of occupation of the settlement. This would involve excellent preservation of the plant material dropped into the water and it would mean that once anoxia developed, almost all years of settlement would be represented and well-preserved in the layer. It also would explain why aquatic plants (also such of very eutrophic stands like *Ceratophyllum demersum*) are very regularly present in the settlement layers (except maybe in intermediate layers containing building/refuse material dropped in bulk). This is indeed the case for ZHOPE, but not consistently for ZGRI. In the latter case, only in the lowermost settlement layer, we see comparably high amounts of aquatic plants, whereas the two upper settlement layers don't show this pattern; they instead contain large amounts of plants typical for the eulittoral zone of the lake's shore, pointing to the fact that the settlement was located more landward of the zone of permanent water (Steiner et al., 2017). Such a pattern was also observed e.g. at the AKAD-Seehofstrasse site (Jacomet, 1985). This fact would then rather fit with the 4th scenario of Bleicher and Schubert (2015; Table 8). However, aside from the organic micrite layers, we could not detect intermediate horizons of heavy decay as supposed in this scenario. Such horizons have been observed in other lakeshore settlement investigations at Luokesa Lake (Lithuania) (Pollmann, 2014: 115–118). Maybe it is necessary to consider also alternative scenarios from peat accumulation research (see e.g. Ismail-Meyer et al., 2013); such scenarios are not included in Bleicher & Schubert's models, but might make sense

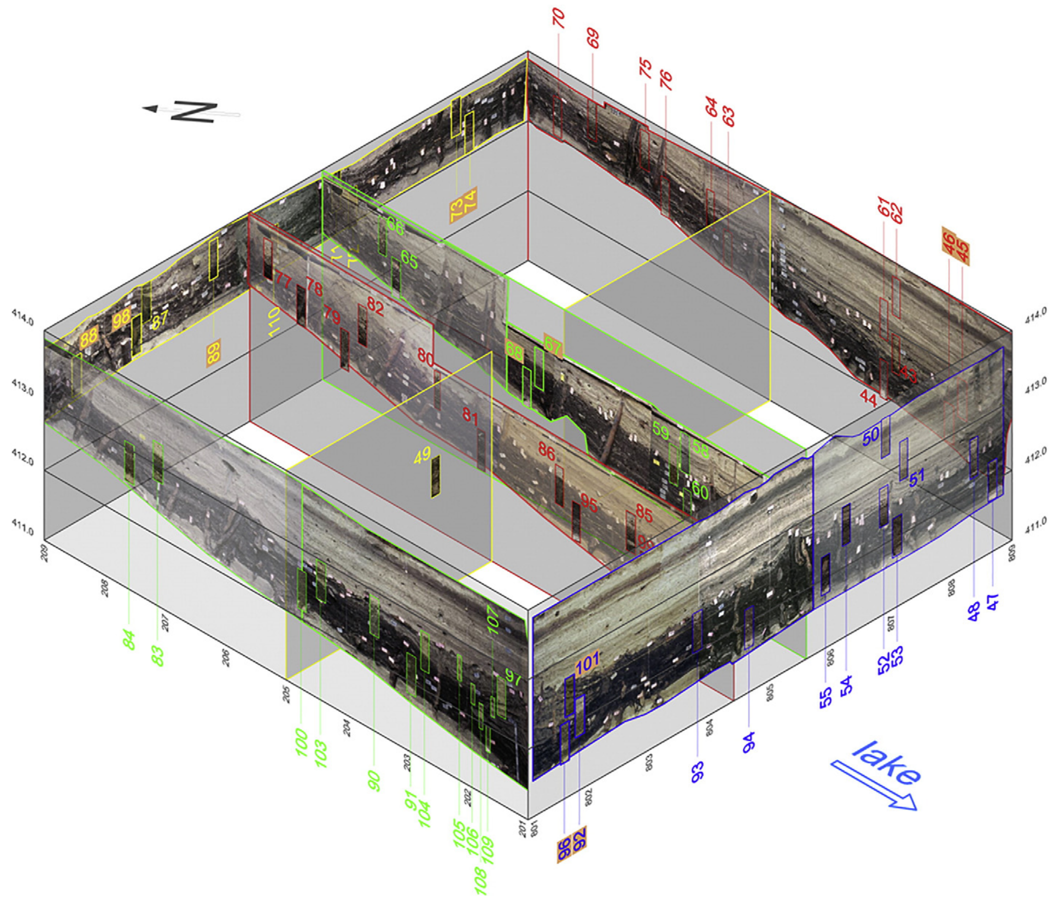

Fig. 5. Location of the analysed stratigraphic sequences of ZGRI in the 3D model of the excavation with all sampled profile columns indicated. The profile numbers with underlying orange background indicate the fully or partly analysed profile columns (ADA Zug, Silvia Hlavová).

too, considering what we know from archaeobotanical research (e.g. in the Federsee area in SW-Germany; e.g. Maier, 1995; Maier and Herbig, 2011). As long as no better interpretation bases exist (in terms of modern experiments, which are empirically evaluated) we cannot find a general explanation for the formation processes of cultural layers at lakeshores. We see, however, that different scenarios have most probably to be taken into account when looking at these settlements.

Our results show also that preservation conditions were not totally the same for all deposits, since it was observed that sandy samples were exposed to other taphonomic factors, partly connected to their previous history before being deposited on the bottom of the lake (either use as construction material or being transported by wave action or a river). We also observed different degrees of aquatic influence in the samples according to their location in the site and in the stratigraphy. Probably very soon after abandonment, erosive processes affected the upper part of the cultural layers (including the 3 superimposed settlement layers at ZGRI) at both sites, but we cannot calculate to what extent this affected the upper part of the layer. Similar observations have been done in other lakeshore settlement investigations, like at Luokesa Lake (Pollmann, 2014, 114–115). Although we cannot give an exact time span for this, we can say that at ZHOPE it must have happened soon after the abandonment of the site because a relatively thick layer of micrite (of ca. 15 cm) was formed on top of this cultural layer within about 60 years, before the next settlement phase documented at the site (Bleicher et al., 2017). It is clear, then, that erosive processes could have taken place after the development of anoxia, affecting the representativeness of the years of occupation to the preserved cultural layer (as presented in Table 8). This is unfortunately not predicted in the model of Bleicher and Schubert and one option to overcome this difficulty is to study the cultural layer in detail and try to identify the best preserved parts, which could be the ones which would better fit the model. And this is what we did in our study. It is difficult to calculate at the present state of research how much of the material was eroded due to lake action after the abandonment of each of the settlements, but it remains clear that a large part of the original layer did not survive until the present, at least at ZHOPE. This can be concluded on the one hand by comparing parts of layer 13 at ZHOPE where it is thicker with those parts

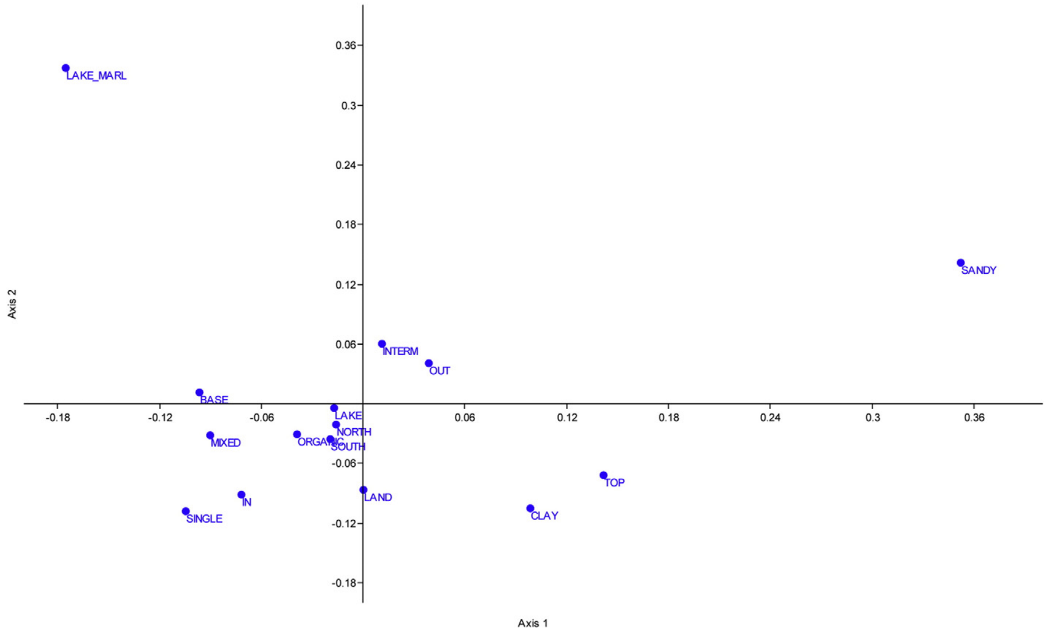

Fig. 6. CA-graph based on ESM 3 with ubiquity values per variable based on presence/absence data showing the distribution of S-groups of ZHOPE. Accumulated inertia of Axes 1 and 2: 57.3%.

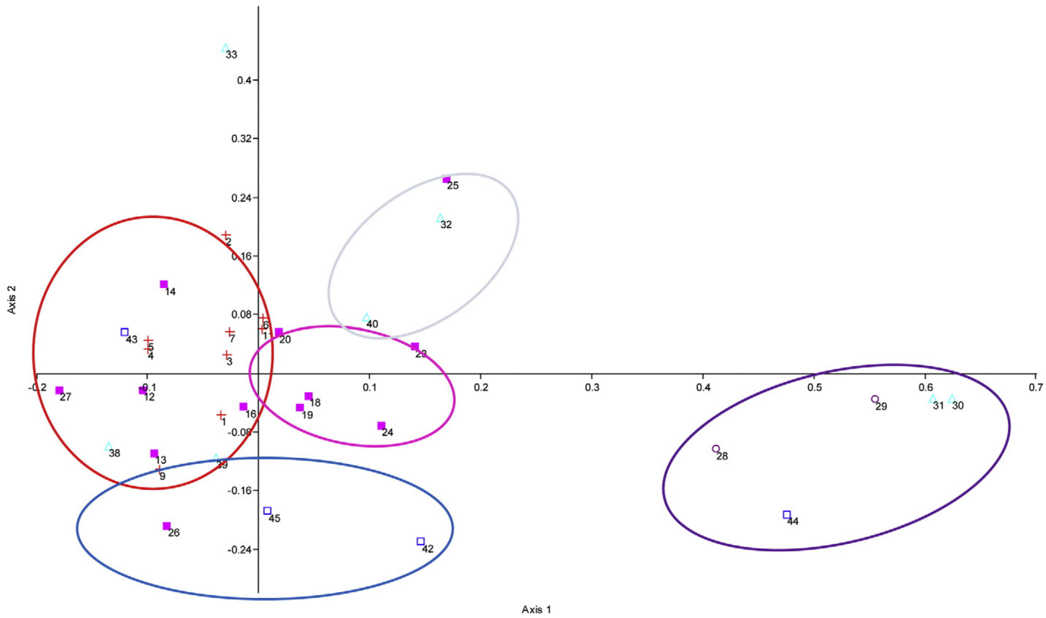

Fig. 7. Same graph as Fig. 6, variables classified according PR-groups (red cross: indicators for absence of corrosion, 2 pink square: indicators for absence of erosion, 3 purple circle: indicators for presence of corrosion, 4 blue triangle: indicators for presence of erosion; 5 blue square: unclear indicators). Numbers correspond to Tables 1 and 3. Circles define the areas corresponding to the CA-groups in Table 3: red circle: group 1; pink circle: group 2; blue circle: group 3; light blue circle: group 4; purple circle: group 5.

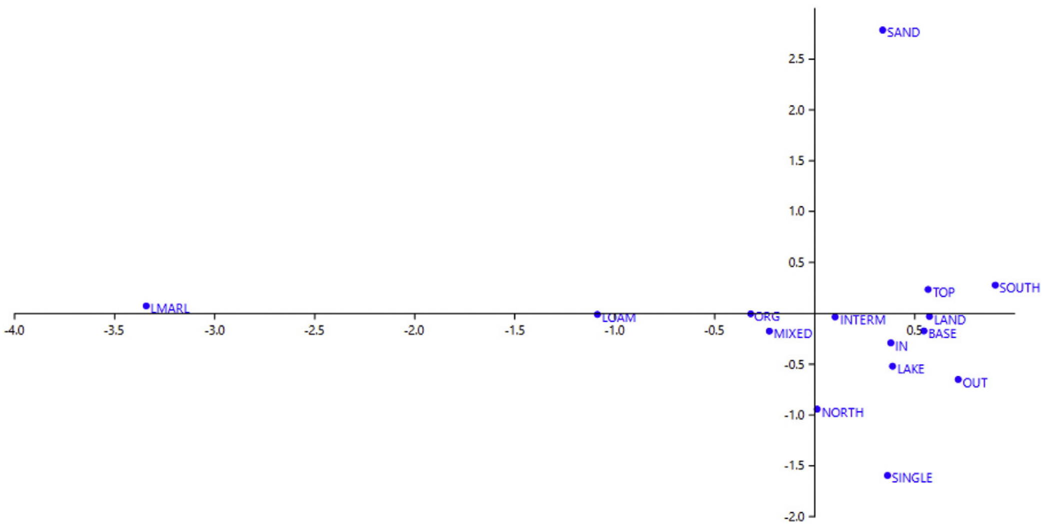

Fig. 8. CA-graph based on ESM 4 with ubiquity values per variable based on semiquantified data showing the distribution of S-groups of ZHOPE. Accumulated inertia of Axes 1 and 2: 67.47%.

where only a single organic layer has remained. Based on this, at ZHOPE at least 2/3 of the layer are eroded in the northern part of the excavation (Bleicher, 2017). On the other hand we know of extremely thick packages of organic layers found in other lakes in this region (like ZGRI, but also other sites like Pfäffikon-Burg, see Eberli, 2010) which may give us an impression how thick the layers must have been originally.

The site of ZGRI most probably experienced short flooding or hiatus episodes that allowed the formation of mostly-natural layers (organic micrite). This could explain the identification of organic micrite layers (which are rather uniform over the entire excavated area), that seem to separate three different settlement layers (the stratigraphical units) inside a thick occupation phase that on first sight looked like one single layer. Their duration is, however, not known, but might be short, given

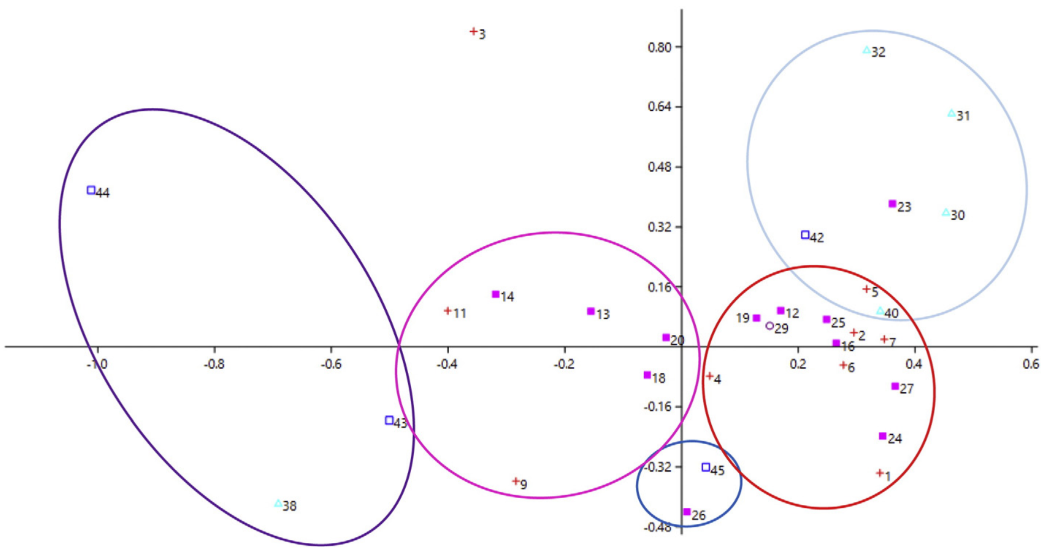

Fig. 9. Same graph as Fig. 8, with variables classified according to our PR-groups. For details see legend to Fig. 7.

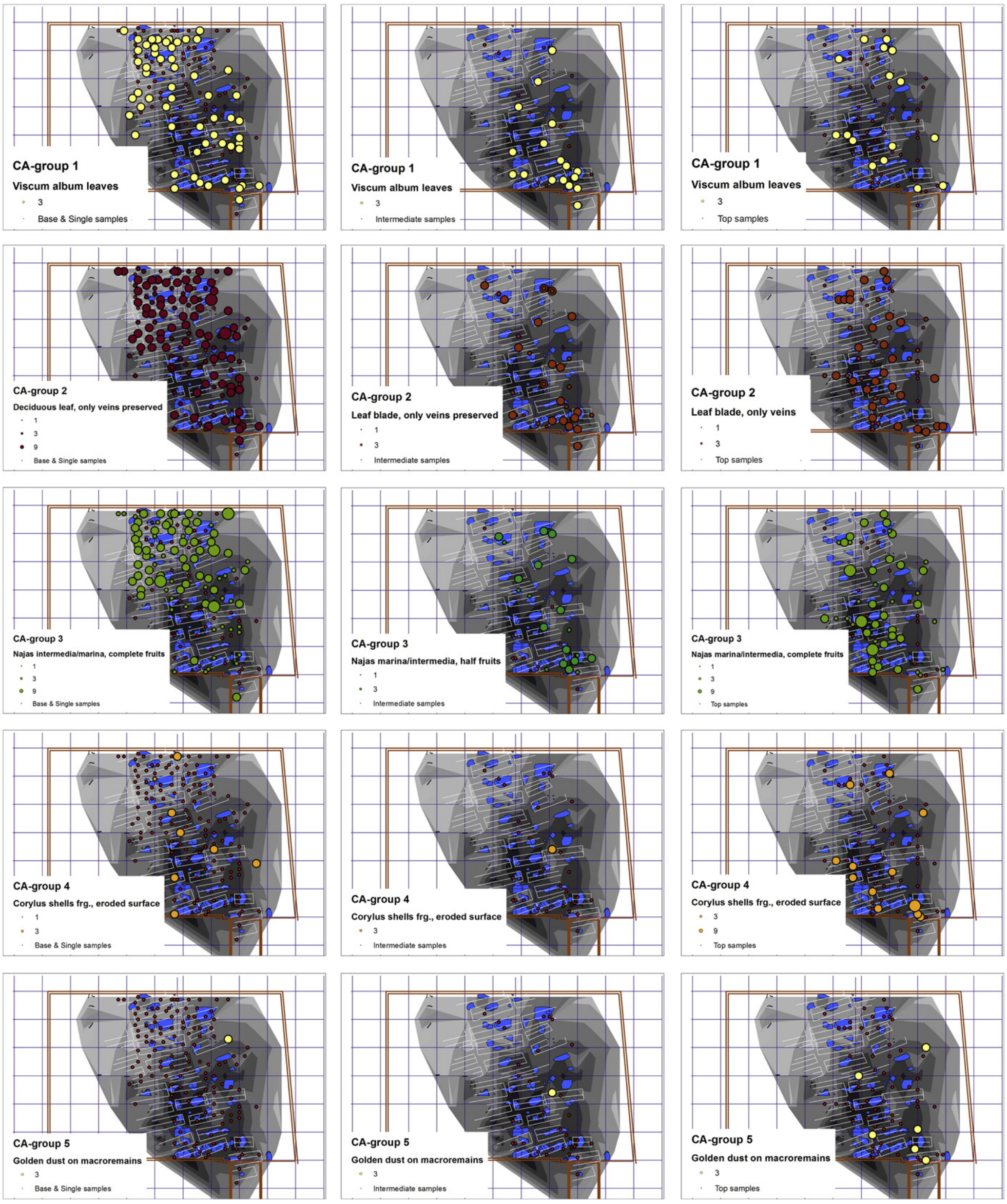

Fig. 10. Representation of selected semiquantified variables representing indicator groups defined with CA (Table 4) on the site plan.

that the duration of the occupation phase is considered to be between 50 and 100 years.

If scenarios 4 or 5 are applicable for our case studies, one could calculate that 20–45% of the total cellulose mass once present in the layer survived until present times. Depending on e.g. the time that elapsed until anoxia developed it might even be more. This sets an important threshold to the representativeness of the archaeobotanical data recovered. Nevertheless, this is at the moment still a speculation: more modelling and experimental work is needed as well as a closer collaboration between soil micromorphology and pollen analyses to

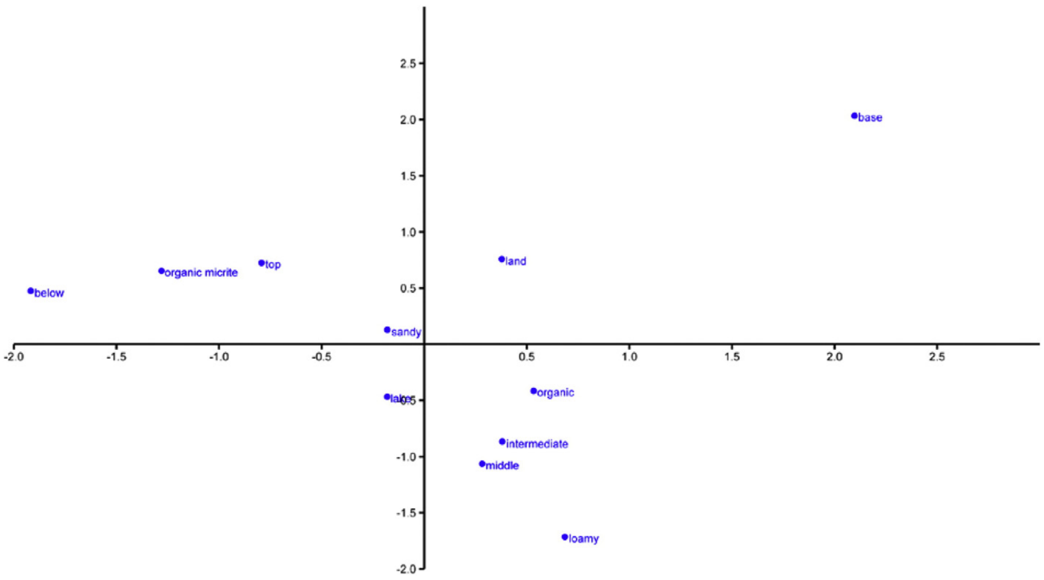

Fig. 11. CA-graph based on ESM 5 with ubiquity values per variable based on presence/absence data showing the distribution of S-groups of ZHOPE. Accumulated inertia of Axes 1 and 2: 62.8%.

identify yearly deposits and sedimentation dynamics. On the other hand, the organic samples that arrived to us show excellent preservation conditions, which indicates that they have a high potential for palaeoeconomic interpretations, always taking into account the complexity of the taphonomic history of the settlement.

One question remains open. The fine stratigraphic work performed at ZGRI allowed the identification of organic micrite layers that seem to be either flooding events or settlement hiatuses (or both). These were not identified at ZHOPE, where no comparably detailed stratigraphic work was performed. We cannot exclude that such episodes

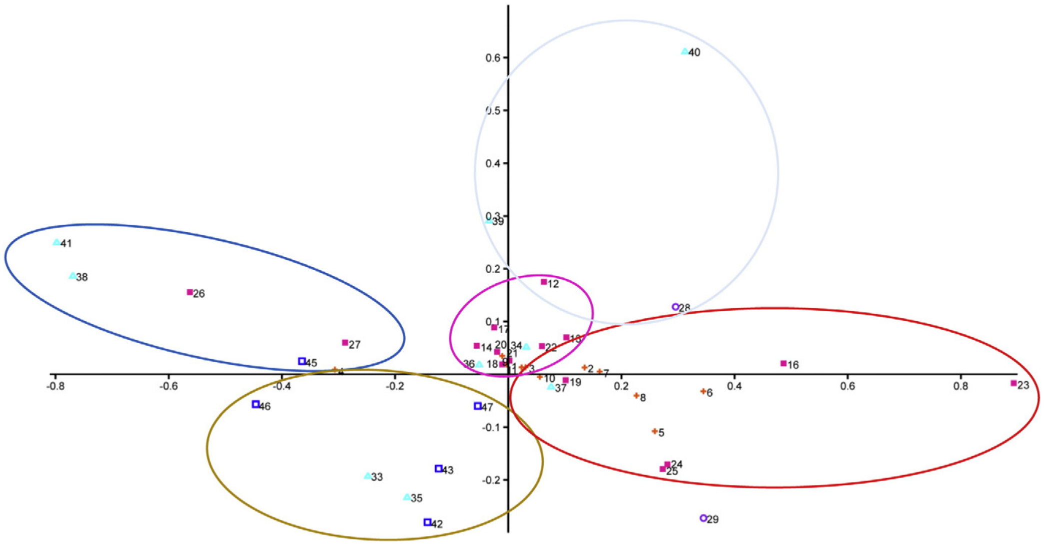

Fig. 12. Same graph as Fig. 11 with variables classified according to PR-groups. For further details see legend to Fig. 7.

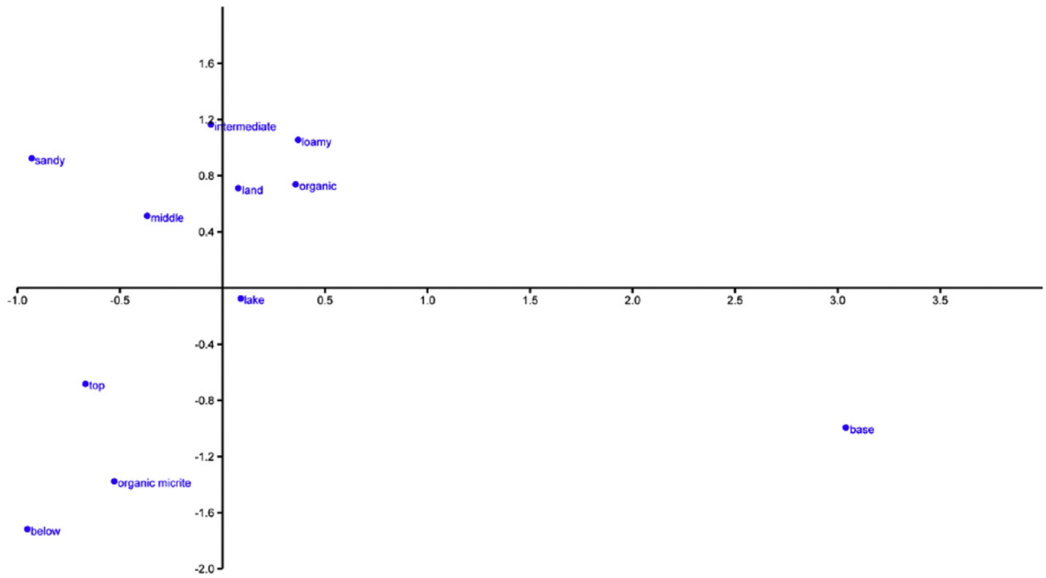

Fig. 13. CA-graph based on ESM 6 with ubiquity values per variable based on semiquantified data showing the distribution of S-groups of ZGRI. Accumulated inertia of Axes 1 and 2: 60.7%.

also took place at ZHOPE and that they were not detected in the large surface samples, but they were also not identified in the soil micromorphology analyses (Pümpin et al., 2015), which probably confirms that they were not present at the site. Micrite layers were identified lakewards of the settlement during fieldwork (Bleicher and Harb, 2015, 68, fig. 56). These, however, have been deposited well below the

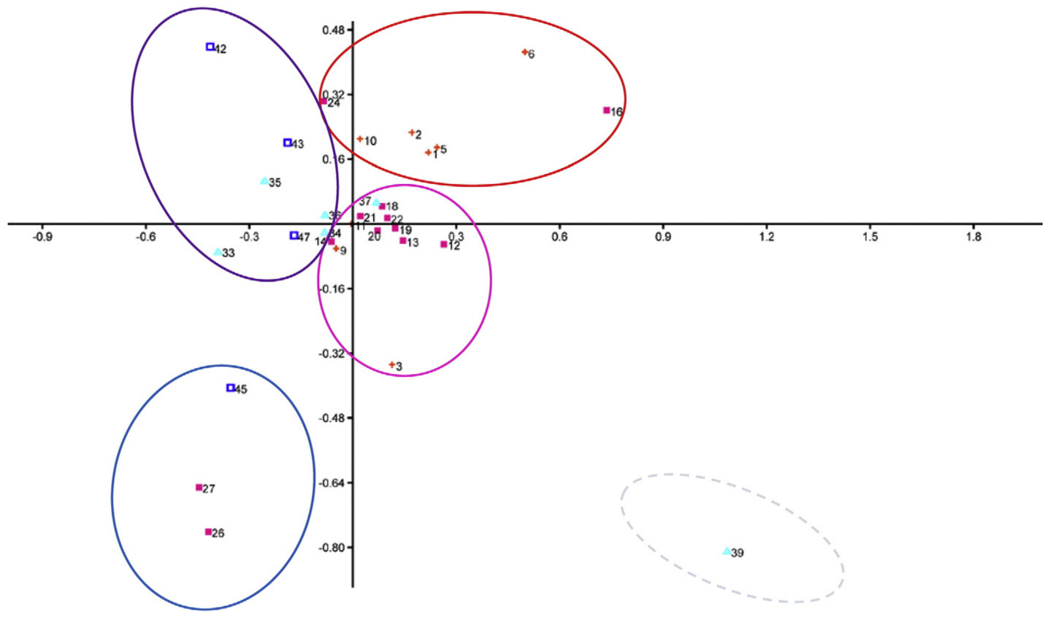

Fig. 14. Same graph of Fig. 13, with variables classified according to our PR-groups. For further details see legend to Fig. 7. The circle with a dashed line indicates a hypothetical "group" of one single variable.

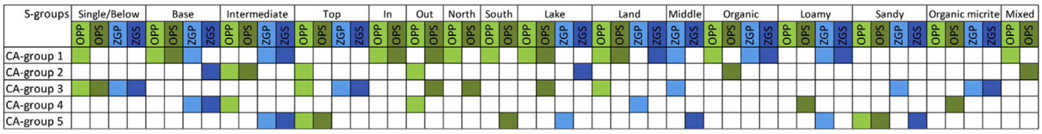

Fig. 15. Synthesis of the correspondence between groups of variables and sample groups observed in the different CA graphs performed for ZHOPE (OP, in green shades) and ZGRI (ZG, in blue shades) with presence/absence (P) and semiquantified values (S). CA1: low corrosion; CA2: low erosion; CA3: aquatic influence; CA4: erosion present; CA5: corrosion present.

water table and there is no indication of a settlement hiatus, since the settlement history has been studied in detail. In any case, these deposits are not comparable to the organic micrite units found in ZGRI, so we can conclude that similar potential short hiatuses such as those detected in ZGRI did not take place in ZHOPE and that this is not an artefact of the sampling strategy.

5. Conclusions

In the study presented here, preservation attributes of plant macroremains were used to approach in a systematic way layer formation and preservation quality of two waterlogged occupation layers at the shores of Lake Zurich and Lake Zug, dating to the late 4th mill. BC cal. The two sites were rather different: one (ZGRI) included a multi-layered, rather long lasting (several decennia) occupation phase, the other (ZHOPE) a single, short term (20 years) settlement layer. Whereas the excavation at ZGRI was very small (64 m^2), the site of ZHOPE was very large (3000 m^2) and allowed detailed insights into the variation of variables over a large surface. We compiled a series of 47 variables as possible preservation indicators, based on the existing literature (Table 1) and recorded them systematically (by p/a and in a semiquantitative way) during the analyses of the two sites. The results were evaluated with the help of multivariate statistics (CA).

Our results clearly show, that it is really worth to record such parameters, even if we do not exactly understand their taphonomy (for this, modern experimental work is urgently needed). They give us important insights to detect differences in the formation processes and the preservation of the settlement layers, and have important implications for future work. For instance, the results show that plant macroremains found in intermediate layers (particularly those in so called loam-lense features, probably remains of house construction remnants), in samples of sandy nature and in samples located at the top of the settlement layer(s) signs of corrosion and/or erosion are shown, and are therefore not reliable for detailed palaeoeconomic studies (e.g. for calculating calories consumed by the inhabitants of the settlement). Archaeobotanical research should be based on the results of organic (and mixed, with high organic content) samples located at the base of a settlement layer, even when the layer is rather thin like at ZHOPE, avoiding also loam and sand-rich samples. These types of samples turned out to be the best preserved ones, showing very low or even lacking signs of corrosion and/or erosion. The rest of the samples can only be used to target particular questions (i.e. the contents of each loam-rich feature) and they might actually contribute unique information, e.g. if accumulations of certain remains are found (like, in the case of ZHOPE, fish scales or acorns in the zones of rubbish heaps).

With these evaluations of preservation parameters we could also target important questions regarding the formation processes of the investigated layers. Following previous models (Bleicher and Schubert, 2015) and considering peat formation studies, we could propose that in some parts of the investigated sites, the organic material preserved is at least between 20 and 45% of the originally deposited material. This sets a threshold for future reconstructions of the diet and the economy of these groups.

We strongly recommend that this type of analyses is performed in sites with waterlogged deposits before any further evaluation of the palaeoeconomy of the site is carried out. A reduced list of ca. 30 variables (Table 7) is considered to provide reliable information regarding presence or absence of erosion and corrosion at the site and should allow detecting better- and worse-preserved areas within it. Recording should be semi-quantitative.

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.revpalbo.2017.06.010.

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Table 8
Summary of scenarios of formation of cultural layers in lake settlements modelled by Bleicher and Schubert (2015).

Scenarios of formation of cultural layers in lake settlements	Location of houses	Development of anoxia	% of cellulose preserved until present times (approx.)	Years of the occupation that contribute the most to the preserved layer	Stratigraphic implications
1st scenario	On dry ground, at the shore	Starting ca. 15 years after occupation (rise of lake level)	7–17%	Last ca. 3 years	Heavy-decayed lower part of the profile (horizon of inorganic finds at the bottom)
2nd scenario	On dry ground, at the shore	Starting ca. 10 years after occupation	0–2%	Last ca. 3 years	
3rd scenario	At the shore, seasonally flooded (summer: decay in water)	Immediately after occupation (?)	0–1%	Last year	
4th scenario	At the shore, seasonally flooded (summer: anoxia)	More or less constantly low decay (and flooding after occupation?)	25–45%	Similar from the start of the occupation (optimally preserved at the top)	It might show good conditions of preservation during the whole occupation, but fluctuations should be expected, and therefore intermediate horizons of heavy decay
5th scenario "Pfahlbau"-scenario	Houses on shallow permanent water	Soon after the start of the occupation (arbitrary: 3 years)	20–40%	Similar for all years after the development of anoxia	Good preservation of the complete layer (there could be a horizon without cellulose at the base)

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3.4 Layers rich in aquatic and wetland plants within complex anthropogenic stratigraphies and their contribution to disentangling taphonomic processes

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Layers rich in aquatic and wetland plants within complex anthropogenic stratigraphies and their contribution to disentangling taphonomic processes

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Abstract There is an ongoing discussion about how organic material is preserved in settlement layers on lakeshores. Different scenarios have been suggested; was a permanent water cover needed at all times, or were there episodical water level fluctuations? In this paper, we use aquatic and wetland plants to shed light on layer formation processes of complex anthropogenic stratigraphies of the Neolithic lakeshore settlement Zug-Riedmatt (Central Switzerland). Botanical macroremains from the microarchaeologically investigated occupation layer were analysed and compared to modern analogue data from two lakes. Results suggest that the excavated area of the settlement was in a first phase located in the sublittoral zone (below water), with a massive input of anthropogenic waste material contributing to the layer formation, but then in a second phase, the shoreline shifted so that the excavated part of the settlement was located in the eulittoral zone and in a third phase probably even landwards of a reed belt. In a comparison with two previously investigated Neolithic lakeshore sites, we found that at least in one of these sites, such 'drier' conditions could also be found. This shows how important it is to know which part of the littoral zone is represented in an excavation, as conditions can differ within a settlement, and that there is very likely no universally valid 'Pfahlbau scenario'.

Keywords Lakeshore settlement · Layer formation processes · Botanical macroremains · Neolithic · Profile sampling

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Introduction

Lakeshore settlement layer formation: an on-going debate

Circum-Alpine lakeshore settlements are among the best preserved archaeological sites worldwide. They usually consist of mostly thick organic layers (in the following called occupation phase) with wooden piles and a wealth of other (often) organic findings, embedded in lake sediments and preserved in waterlogged conditions for thousands of years. Because of their usually excellent conditions of preservation, they are ideally suited for various scientific analyses and therefore allow a detailed insight into the past (Menotti 2012; Pétrequin 2013). However, while the elaborate study of lakeshore settlement layers in the last decades has greatly deepened our understanding of those past societies, their formation remains for the most part a mystery (Bleicher and Schubert 2015). For a long time it was discussed controversially whether houses were built directly on the ground or if they were built on platforms supported by piles, either above a seasonally dry shore or above permanent water ("Pfahlbauproblem"—Menotti 2001; Dieckmann et al. 2006). There is still no consensus about the ground below the houses and about layer formation processes. In many former publications and site reports, a lowering lake level at the onset of the settlement activity and a

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rising lake level at the end was postulated based on archaeobotanical and also geoarchaeological investigations (e.g. Jacomet-Engel 1980; Jacomet 1985; Brombacher 1986; Dick 1988; Brombacher and Hadorn 2004; Ismail-Meyer et al. 2013; Jacomet et al. 2004). Such decennial lake level fluctuations were said to be connected to climatic variability during the Holocene (e.g. Magny 2013). Recently, this has been challenged by Bleicher (2013, 2015) and Bleicher et al. (2017) and is currently vigorously discussed among lakeshore settlement researchers.

One reason for the ongoing debate concerning the mystery of layer formations in lakeshore sites is a surprising lack of contemporary experimental work done to support assumptions based on archaeological feature evaluations (Dieckmann et al. 2006). Although it is difficult to recreate the exact conditions of past layer formation (Bleicher and Schubert 2015), due for example to eutrophication, wave action caused by boat traffic in lakes or different shore topography (Jacomet 1985), such experiments are desperately needed. There are also very few valuable modern analogue studies concerning seed transport along shore transects (like e.g. Bollinger 1981; Cappers 1993), although they could give valuable insight into past processes influencing layer formation from a botanical point of view.

State of research, main hypotheses and aims of this paper

From the 1980s onward, botanical macroremains from many lakeshore sites were analysed by using profile columns along lake-land transects, based on insight from palaeoecology. At Lake Zürich, two sites could be analysed in detail using profile columns, Zürich-AKAD Seehofstrasse (Jacomet 1985) and Zürich-Mozartstrasse (Brombacher 1986; Dick 1988). Other work of this period includes Schlichtherle (1985, at Lake Neuchâtel in W-Switzerland) and Maier (1995, at Federsee in SW-Germany). More recently, the analysis of profile sequences was combined with (partly large-volume) surface samples (Brombacher and Hadorn 2004; Hosch and Jacomet 2004; Maier 2001; Pollmann 2014). For archaeobotanical methodologies, shifting research questions etc., we refer to Jacomet and Brombacher (2005). Only rarely was such research performed in a transdisciplinary way, combining plant macroremains, microremains (such as pollen, NPPs etc.), soil micromorphology (as in Arbon Bleiche 3, Jacomet et al. 2004) and invertebrates at the same location (the latter were included for the first time in Bleicher and Harb 2017 and Heiri et al. 2017, although not systematically compared to macroremain data from the same profiles).

There are two main hypotheses as to how settlement layers at lakeshores were formed (the main facts as well as the bibliography are compiled in Table 1): the first is that organic layers could have formed in a peaty environment; the second is that they could only form under water. In this paper, we test which of these hypotheses fit our archaeobotanical data best. As a test case we use the lakeshore settlement Zug-Riedmatt in Central Switzerland (for location see Fig. 1) which was excavated in 2008, using up-to-date methodology. The research at this site had a microarchaeological focus (finely separated profile samples were analysed in order to disentangle the stratigraphy) and is therefore suitable to complement the aforementioned work to re-evaluate layer formation processes in lakeshore settlements based on archaeobotanical data. The research was performed in a transdisciplinary way, including pollen (Heitz, ongoing work), soil micromorphology (Ismail-Meyer, ongoing work) and also invertebrates like chironomids (Schäfer, ongoing work). In this paper however, we focus on plant macroremains and will discuss their role in layer formation processes (a transdisciplinary evaluation is planned for the future as analyses are still ongoing). We use densities of aquatic and wetland plants for testing the hypotheses referred to, and also use contemporary data from naturally deposited sediments along shore transects from lake Zürich and Greifensee (Bollinger 1981) as interpretation aids [in the following called 'modern analogue samples' (MAS)].

Our main research questions are the following:

- Can we determine whether the ground of the settlement was permanently flooded (Hypothesis 2, Table 1), or wet but only temporarily flooded (Hypothesis 1, Table 1)? Was this the same for all three settlement layers of the occupation phase?
- Can we see differences between lake and landward profiles/zones?
- Can we draw conclusions about the level of eutrophication?

Materials and methods

Site Zug-Riedmatt

The Late Neolithic lakeshore settlement Zug-Riedmatt (canton of Zug, Switzerland; UNESCO World Heritage Site; Fig. 1) stretched over approximately 2,500 m^2 (estimation based on a core drilling survey) and was located at the Northern shore of lake Zug (Fig. 2). Its location today is at a distance of approximately 530 m from the shoreline of Lake Zug, but formerly it used to be situated on the lakeshore and close to the river channel of the river Lorze, within a bird-foot delta created by this river (Fig. 2). The preservation of the occupation layer, which was up to 1.3 m thick (Fig. 3), was excellent (it was buried beneath 6 m of

Table 1 Main hypotheses of settlement layer formation processes at lakeshores

Hypothesis 1	Hypothesis 2
Cause for preservation of organic material	
Ground was always wet and acted similarly to peat (acrotelm-catotelm model, e.g. Ismail-Meyer et al. 2013; Ismail-Meyer and Rentzel 2017)	Ground was always covered by water, anoxia developed quickly (Bleicher and Schubert 2015)
Cause for absence of aquatic plants in settlement layers	
Episodical water level fluctuations in lakes (based on e.g. Magny 2004, 2013)	1. Aquatic plant diaspores could not enter the sediment because of palisades/piles acting as a barrier 2. Aquatic plant diaspores could not enter the sediment because they did not grow inside and around the settlement (e.g. due to highly eutrophic conditions and a lack of sunlight below the houses) 3. The sediment only accumulated when aquatic plant diaspores were not present in the water (e.g. during winter, changes in the vegetation) 4. The sediment of the settlement layers accumulated very quickly (and maybe waste was thrown into the water in larger "lumps"), not allowing aquatic plant diaspores to mix with it
Literature	
'Traditional' view following Behre and Jacomet (1991; see also Jacomet-Engel 1980; Jacomet 1985; Brombacher 1986; Dick 1988; Brombacher and Hadorn 2004; Jacomet et al. 2004)	Sedimentation rate as the main impact on layer formation was not considered in previous archaeobotanical studies, but see modelling work by Bleicher and Schubert (2015); and Antolín et al. (in press)
Indicators	
Presence of (parts of) a succession of aquatic plants—reed bed plants—sedge swamp plants—shoreline pioneers—wet grassland—alluvial woodland until or during onset of settling activities (Jacomet 1985)	Absence (or only low concentrations) of shoreline pioneers, weeds or wetland plants as well as ruderal plants growing directly at the site
Presence of shore weeds and ruderal plants preferring wet conditions growing directly at the site during and after settling activities (e.g. *Urtica dioica, Polygonum hydropiper*)	Presence of mainly eutrophic aquatic plants right after the discontinuation of settling activities

limnic and fluvial sediments) because it was constantly located below the groundwater table. The site is typologically dated to 3200–3100 BC (Horgen period, dendrochronological dating has not yet been possible, E. Gross personal communication).

A small-area (64 m^2) rescue excavation was performed in 2008. The site was extremely densely sampled. Among other things, 110 profile columns (monolith samples, usually 56 × 12 × 10 cm) were taken from the cleaned profile walls (Fig. 3). They covered the 'occupation layer' as well as the under- and overlying sediments.

Sample documentation

78 profile columns were chosen for scientific analyses at the IPAS, and all of them were described in a transdisciplinary way. Each profile was cleaned, photographed, macroscopically described (sediment types, see Table 2, clearly visible components, etc.) and subdivided into fine layers, in close collaboration by archaeologists, micromorphologists and archaeobiologists. Later on, these layers were ascribed to stratigraphic units, based mainly on a correlation of the single fine layers with the help of 82 polished sections of 47 of the profile columns from all parts of the excavation (Fig. 4; Table 3). The organic micrite layers (Table 3) were used as stratigraphic markers, as they formed continuous layers, and could therefore be clearly seen in all profile columns (except in some cases towards the land side of the excavation; see Fig. 4, left-hand side).

49 profile columns were finally separated into samples for larger archaeobiological remains (incl. botanical macroremains), following the aforementioned layer classification, after samples for micromorphology and palynology had been taken (for the detailed methodological procedure see Gross et al. ongoing work and Ismail-Meyer et al. ongoing work). The result was the large quantity of 921 samples, of which 197 (equalling five continuous profile sequences, hence called the reference profile sequences) were chosen for analysis (profile columns 46 and 45; 68 and 67; 74 and 73; 88 and 89; 96, 92 and 101, Fig. 3). The reference profile sequences were chosen in a way that enabled lake-land, but also shore parallel transects. All five reference profile sequences spanned almost the entire stratigraphy [micrite ('lake marl') beneath—occupation layer—micrite ('lake marl') above].

Sample analysis and evaluation

The 197 selected reference profile samples were sieved using the wash-over technique (Kenward et al. 1980; Hosch

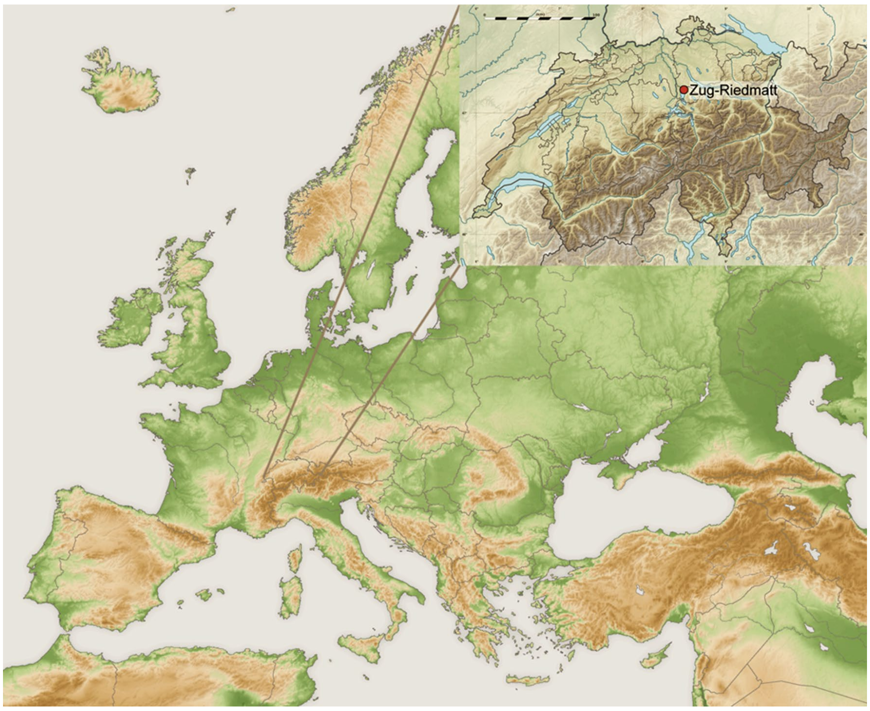

Fig. 1 Position of Zug-Riedmatt within Europe and Switzerland [maps by San Jose (Europe), Eric Gaba and NordNordWest (Switzerland)]

and Zibulski 2003; Steiner et al. 2015). Almost all samples were sieved by the same operator and without subsampling prior to sieving (Steiner et al. in press). Freezing and thawing was used as pre-treatment in order to facilitate the disintegration of loamy sediments (Vandorpe and Jacomet 2007). Mesh sizes of 4, 2 and 0.35 mm were used for the wash-over sieving of the organic fractions. The sample volumes as well as the volumes of the resulting fractions were measured using the "classical" (manual) volume measurement technique (Antolín et al. 2015). The sieved samples were stored in a refrigerator.

Analysis of the samples was done using a Leica/Wild M3Z stereo microscope (magnification 6.5–40×). Seed and fruit remains (but also other biological remains like fish and invertebrates) were sorted and quantified following previously established counting criteria (Table 1 in Steiner et al. 2015, but with needles and small seeds/fruits being fully quantified in all fractions). Various other macroscopic sediment components (like wood chips, charcoal, twigs etc.) and preservation parameters were semiquantified (Antolín et al. in press).

From each fraction (the large, 2 and 4 mm together, and the small, 0.35 mm) we targeted a sample size of around 400 remains (see van der Veen and Fieller 1982, as modified by; Hosch and Jacomet 2001). This number was rarely reached in the large fraction (for problems relating to this see Hosch and Jacomet 2004; Jacomet 2013; Antolín et al. 2017b), while the small fraction was usually subsampled. On average, 800 remains were counted from each sample (all fractions together).

For the identification of plant remains, the IPAS seed reference collection and selected literature (e.g. Körber-Grohne 1964; Jacomet et al. 1989; Cappers et al. 2006) were used.

All data were entered into the database ArboDat (©Kreuz and Schäfer 2016). The classification into ecological groups roughly followed Brombacher and Jacomet (1997) with some reclassifications (following Oberdorfer 2001; http://www.infoflora.ch; http://www.pfaf.org/ and our own experience, ESM). We tested the classification of taxa through statistical correlations and refined some of the classifications based on these tests

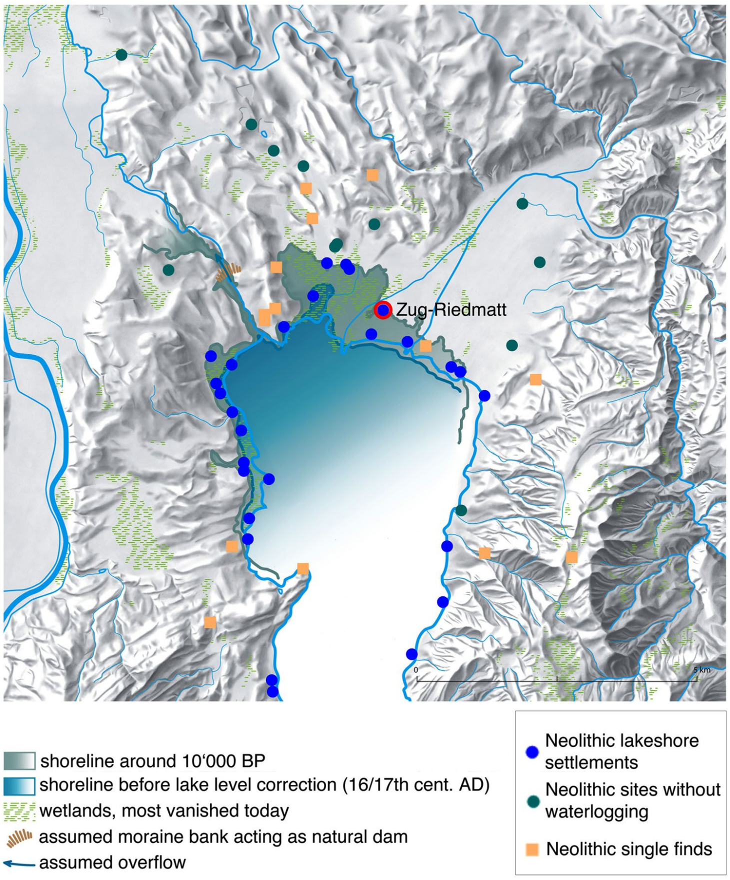

Fig. 2 Lake Zug with its former shorelines and Neolithic sites. Zug-Riedmatt was located at the northern shore in a former delta situation where the river Lorze entered lake Zug [©Amt für Denkmalpflege und Archäologie des Kantons Zug, Direktion des Innern (Archiv Archäologie); done by R. Huber and E. Gross; geological data after Ammann (1993); wetlands after the historical waterbody map of the canton of Zug from the year 1993]

(done by Werner Vach, using Stata, ©StataCorp LP). Aquatic plants formed the most clearly definable ecological group in statistical correlations. We attributed the Characeae to aquatic plants favouring oligotrophic conditions because a lot of their representatives prefer such conditions (Auderset Joye and Schwarzer 2012). Unfortunately, it was not possible to identify the Characeae oospores in more detail within the short project time.

Nomenclature of scientific plant names follows the National Data and Information Centre of the Swiss Flora (http://www.infoflora.ch).

Correspondence analysis (CA) was performed using the program PAST3 (Ø. Hammer).

Results

In general, plant remains were excellently preserved. Most of them (>98%) were preserved in a subfossil state. In total, almost 160,000 plant remains from 194 taxa were counted. They encompassed cultivars, gathered plants and a lot of wild plants from woodland and open land (see Steiner 2017). Like in other lakeshore settlements, the organic layers consisted of many different remains of former daily life, including excrement (see Jacomet 2013). Here, we only discuss the rather small groups of aquatic and lakeshore vegetation (61 Taxa).

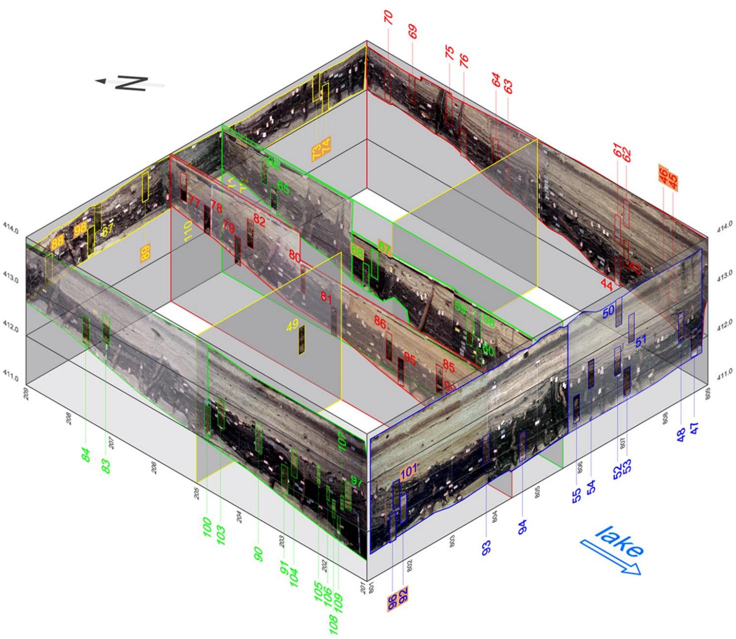

Fig. 3 3D model of the excavated area of Zug-Riedmatt with all profile walls and the positions of all profile columns. Reference profile columns are highlighted in *orange* [©Amt für Denkmalpflege und Archäologie des Kantons Zug, Direktion des Innern (Archiv Archäologie); by S. Hlavová]

Table 2 Sediment types

Code	Sediment
M	Micrite ('lake marl')
MO	Organic micrite
O1	Organic heterogeneous
O2	Organic homogeneous
OL	Loamy-organic
L	Loam
OS	Sand-rich organic
S	Sand
A	Ash
ALSO	Mixture of ash, loam, sand and organic

The term micrite was used as a more neutral term for 'lake marl'

Aquatic plants

Aquatic plants could be found in most stratigraphic units. However, they appeared in much lower concentrations in the organic units or were sometimes completely missing from organic samples (Figs. 5, 6, 7, 8, 9).

Aquatic plants favouring oligotrophic conditions (Table 4) appeared in high densities in the micrite below and above the occupation phase (units 1 and 14) as well as within the mixed unit 13 and the organic micrite unit 10. In contrast, they were very rare in the organic units 6 and 8 and the organic micrite unit 7. On a sample level (Figs. 5, 6, 7, 8, 9), their concentration usually declined gradually from unit 1 to unit 2 (or 3, 4) and did rise again gradually from unit 9 (or later) onwards.

Aquatic plants favouring meso- to eutrophic conditions (Table 4) reached their highest densities in the organic micrites (in units 4, 10 and 12; exceptions are units 7 and 2), as well as in unit 13. They were rarest in unit 14 (in contrast to aquatic plants favouring oligotrophic conditions) and unit 8. On a sample level (Figs. 5, 6, 7, 8, 9), they were often not only found in organic micrites, but also or only in the organic layers below or above organic micrites [e.g. in samples 68.13 (Fig. 6), 46.9/10/13 (Fig. 5)].

Wetland plants

Wetland plants reached highest densities in units 6, 8 (organic sediments), 10 (organic micrite) and the 'mixed' unit 13, consisting mainly of micrite and coarse organic material (Table 4).

Reed bed and sedge swamp plants (Table 4) occurred in highest densities in the organic units 6 and 8 as well as in units 12 (organic micrite) and 13 ('mixed'). On a sample

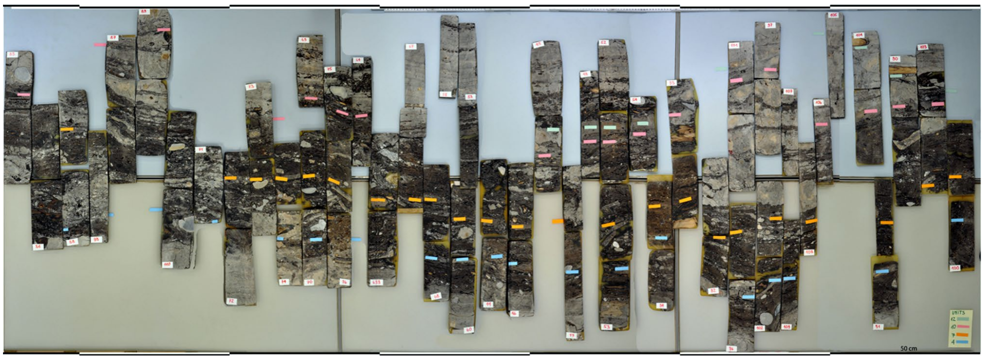

Fig. 4 Polished sections of the 47 profile columns which were used for the classification of stratigraphical units. Organic micrite units are indicated with *colours* [©K. Ismail-Meyer, Integrative Prehistory and Archaeological Science (IPAS), University of Basel]

Table 3 Stratigraphic units and their description, as well as the number of samples and their volumes in each unit

Unit	Description	Samples (*n*)	Vol. (l)
U14	Micrite above occupation layer	6	3.8
U13	'Mixed', micrite mixed with coarse organic material	14	3.4
U12	5th organic micrite	3	1.4
U11	3rd loam	4	1.7
U10	4th organic micrite	7	2.9
U9	2nd loam	23	12.3
U8	3rd organic	45	17.8
U7	3rd organic micrite	6	1.9
U6	2nd organic	34	10.1
U5	1st loam	16	8.7
U4	2nd organic micrite	7	2.7
U3	1st organic	15	5.6
U2	1st organic micrite	9	2.7
U1	Micrite below occupation layer	8	4.4

level (Figs. 5, 6, 7, 8, 9), there was much variation with highest values in units 6 and 8. Unusually high densities could be found in unit 13 in the lakeward profile 45 (Fig. 5, location see Fig. 3).

Wet grassland plants appeared in highest densities in the organic units 6 and 8 as well as in organic micrite units 10 and 12 (Table 4). On a sample level (Figs. 5, 6, 7, 8, 9), they usually do not appear in densities above 20 remains/l before unit 6 (with exception of three samples in unit 3 and one sample in unit 5). Highest densities could be found in profiles 68/67 (in the centre of the excavation surface).

Shoreline pioneers and shore weeds appeared in highest densities in the organic units 3, 6 and 8 and in the organic micrite unit 10 (Table 4). On a sample level (Figs. 5, 6, 7, 8, 9), they could be found throughout almost the entire sequence in between micrite layers, but in varying densities. In the landward profiles 74/73, they were especially numerous in one sample of the organic micrite unit 10.

Riparian woodland and carr plants appeared most numerously in the uppermost units 13 and 14, and also in units 2 and 6 (Table 4). Their densities were especially high in unit 13 of the lakeward profile 45 (Fig. 5), but appeared in small amounts almost throughout the entire profile sequence (Figs. 5, 6, 7, 8, 9).

Comparison of Zug-Riedmatt samples with modern analogue samples (MAS)

In Fig. 10a, the positioning of the ecological groups in the CA based on MAS (Bollinger 1981) and archaeobotanical samples from Zug-Riedmatt is shown. Aquatic plants favouring oligotrophic conditions clearly separate from all other ecological groups on the negative side of axis 1. Aquatic plants favouring meso- to eutrophic conditions, riparian woodland and carr plants as well as reed bed and sedge swamp plants form another group on the positive side of axis 1, and the negative side of axis 2. Wet grassland plants as well as shoreline pioneers group at the positive sides of both axes.

In Fig. 10b, the positioning of each individual archaeological sample (dots, coloured according to stratigraphical units) is shown, based on their content of aquatic and wetland plants, in comparison to the MAS (squares, coloured according to sample location). Samples from the same stratigraphical unit usually clustered more or less closely together. If compared to the upper part of Fig. 10, samples from units 1, 14 (micrite), 13 (mixed), 11 (loam) and 2 (organic micrite) were associated with aquatic plants favouring oligotrophic

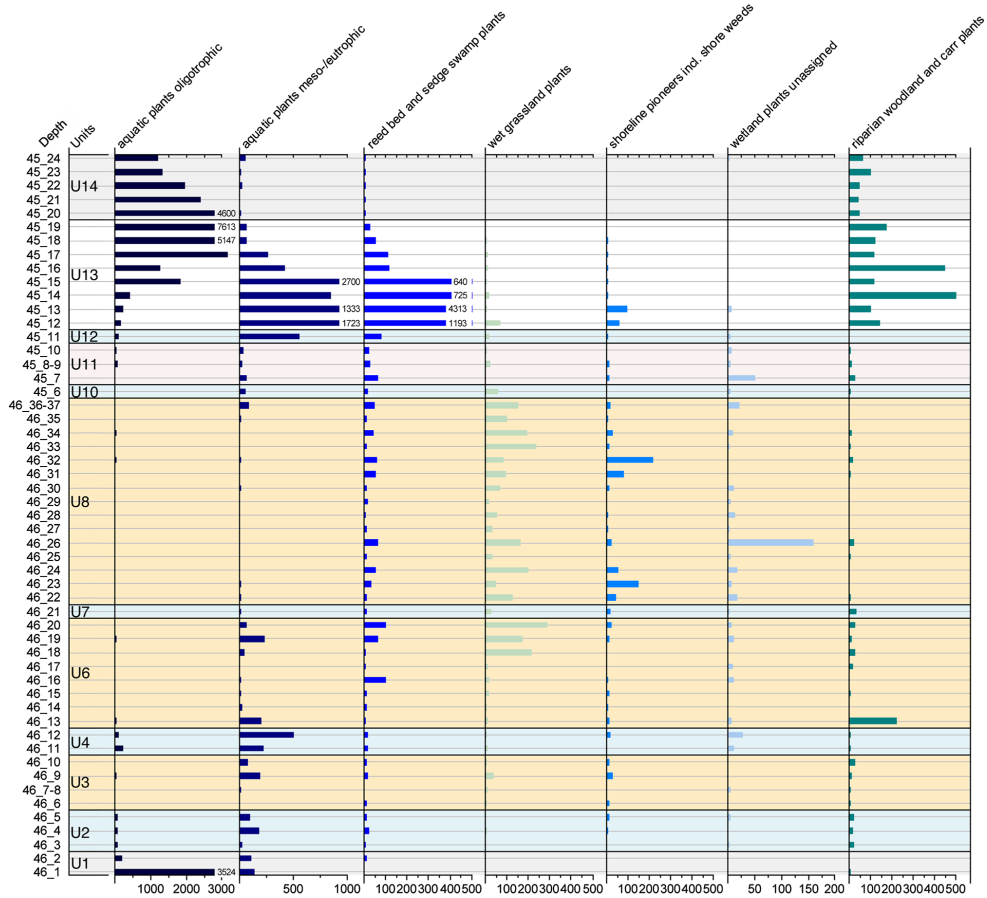

Fig. 5 Densities of aquatic and wetland plants (sorted into ecological groups) of all samples of the profile sequence 46–45. Units are *coloured* according to Table 3. For the location of the columns within the excavation see Fig. 3

conditions. Some of the MAS from lakewards of the *Phragmites* stands also grouped here. Units 4 and 10 (both organic micrite) were mostly associated with aquatic plants favouring meso- to eutrophic conditions and with riparian woodland and carr plants, with some samples scattering to the negative side of the axis 1 (associated with aquatic plants favouring oligotrophic conditions). Many MAS from the *Phragmites* stands, some MAS from lakewards of these stands and one from landwards grouped with reed bed and sedge swamp plants. The rest of the MAS were scattered towards the shoreline pioneer group and the wet grassland plants. Samples from units 8 and 6 (organic), as well as some from unit 3 (organic) also grouped here. Samples from unit 7 (organic micrite) were scattered in the middle and could not be assigned to an ecological group, but most of these samples were distributed more to the positive side of axis 1 than organic micrite samples from other units. Samples from units 5 and 9 (loam) could not be clearly associated with a particular ecological group.

Vertical distribution patterns of aquatic and wetland plants

Based on Figs. 5, 6, 7, 8 and 9 and Table 4, we can observe how the densities of aquatic and wetland plants changed in the different units. These results are summarized in Table 5.

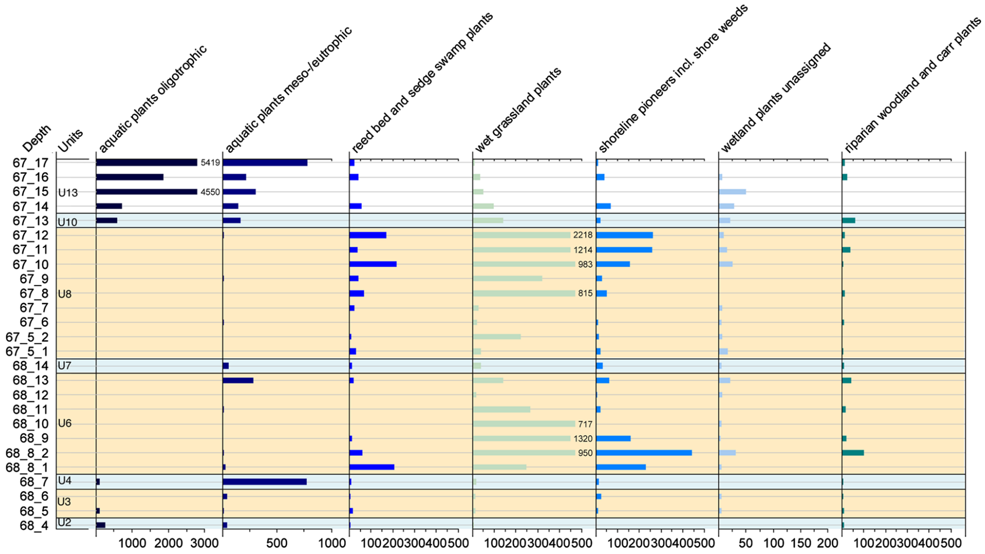

Fig. 6 Densities of aquatic and wetland plants (sorted into ecological groups) of all samples of the profile sequence 68–67. Units are *coloured* according to Table 3. For the location of the columns within the excavation see Fig. 3

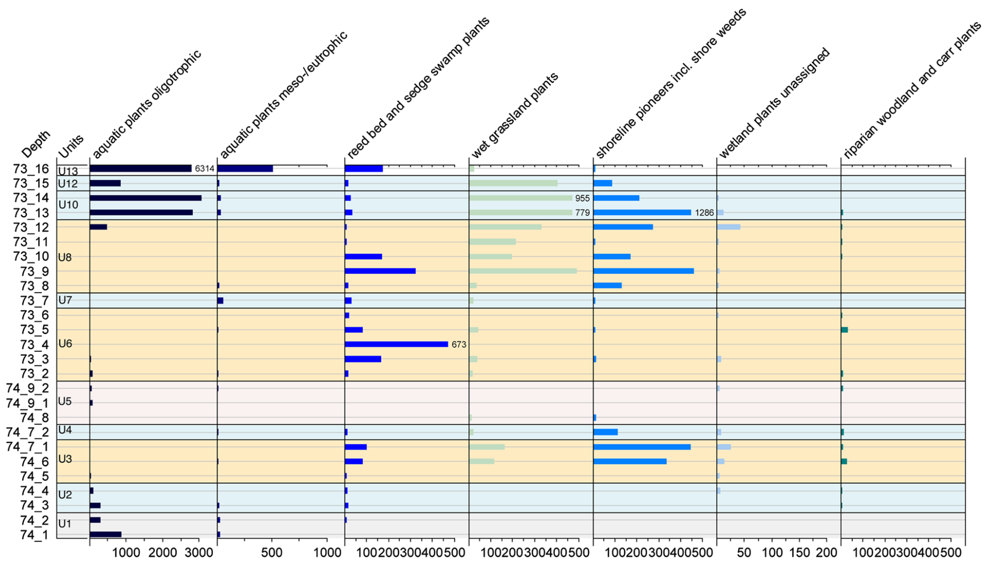

Fig. 7 Densities of aquatic and wetland plants (sorted into ecological groups) of all samples of the profile sequence 74–73. Units are *coloured* according to Table 3. For the location of the columns within the excavation see Fig. 3

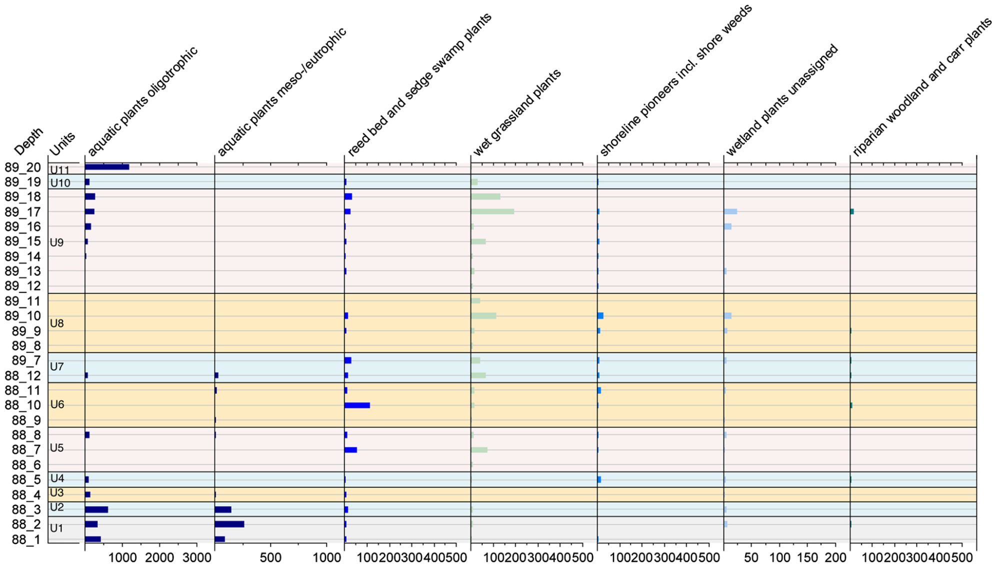

Fig. 8 Densities of aquatic and wetland plants (sorted into ecological groups) of all samples of the profile sequence 88–89. Units are *coloured* according to Table 3. For the location of the columns within the excavation see Fig. 3

Discussion

Absence of aquatic plants in certain samples

For hypothesis 2 (Table 1), it is assumed that the settlements were located in the sublittoral zone (built on open water). In the eyes of Bleicher and Schubert (2015), this is the only possibility for organic material to be preserved in an excellent state, as is the case for most of the lakeshore settlement layers (see Antolín et al. in press). If this was really the case, then the presence of aquatic plants plays a crucial role in interpreting layer formation. In the case of Zug-Riedmatt, units consisting of organic sediment (units 3, 6 and 8) of anthropogenic origin contained much lower densities of aquatic plants than units consisting of micrite of natural origin. One sample from unit 6 and some samples in unit 8 were even completely free from aquatic plant remains. How can this be the case if we assume that the settlements were built above open water? In the following, we discuss the reasons for the possible absence of aquatic plants and propose interpretations for layer formation at Zug-Riedmatt in regard to our results.

Aquatic plant diaspores could not enter the sediment because of palisades/piles acting as a barrier

Charophyte oospores are very small, some species are even <0.5 mm long (Haas 1994), and should therefore be able to invade even the smallest gaps if the ground was fully covered by water and no other obstacles (e.g. palisades without any small gaps) were present. However, because it is possible that palisades and piles slowed down the water flow velocity, it is likely that aquatic plants would appear in lower densities, but would not completely lack in any layers. We can therefore exclude this possibility as an explanation for the lack of aquatic plants.

Aquatic plant diaspores could not enter the sediment because they did not grow inside and around the settlement (e.g. due to highly eutrophic conditions and a lack of sunlight below the houses)

Aquatic and wetland plant diaspores are not necessarily deposited only at the places of their growth. If seed input from adjacent areas is possible, seeds of plants not growing at a site can be found in the ground as well (De Winton and

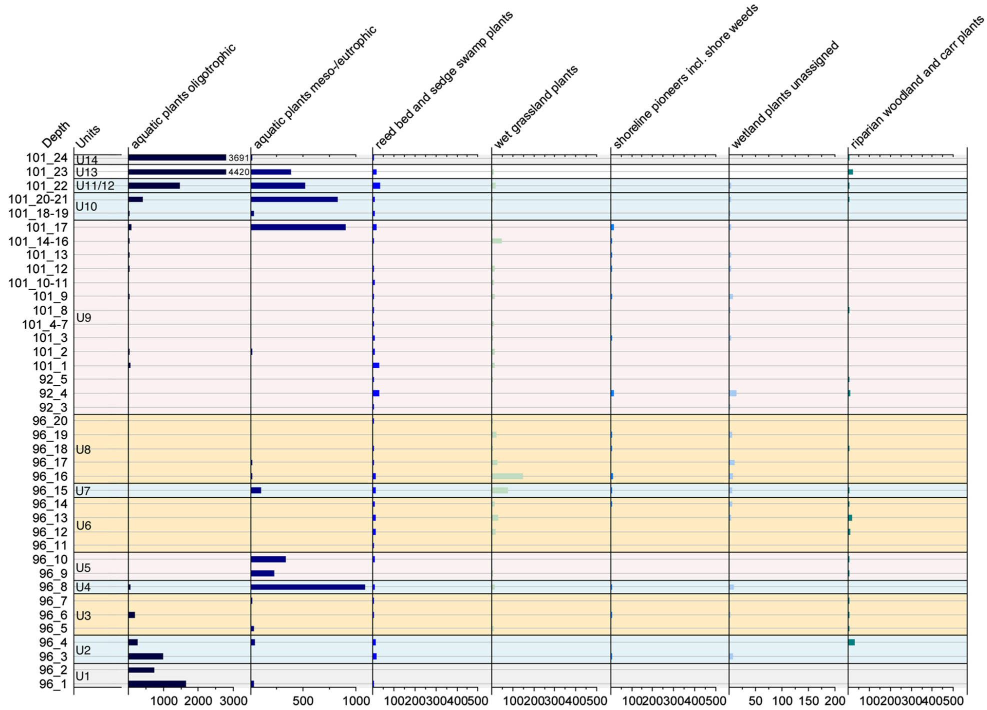

Fig. 9 Densities of aquatic and wetland plants (sorted into ecological groups) of all samples of the profile sequence 96-92-101. Units are *coloured* according to Table 3. For the location of the columns within the excavation see Fig. 3

Clayton 1996; see also MAS in Bollinger 1981, where e.g. aquatic plants became entangled in reed bed stands which acted as a trap). In several cases, it was shown that there is little correlation between abundance in the seed bank and in the established vegetation (Kautsky 1990; Wilson et al. 1993; Capon and Brock 2006). Robertson and James (2007) recorded some species (among them *Nitella* sp.), not observed in the actual vegetation, in the seed bank in irregularly flooded Australian floodplain wetlands. For charophytes, these relationships are less obligatory even though spatial variability is usually present (Bonis and Grillas 2002 and references therein). For example, van den Berg et al. (2001) found that while there is a negative correlation between oospore density and distance to a *Chara aspera* meadow, oospores could still be found in samples at a distance of almost 3 km from the plants in a permanent waterbody. Often there was no relationship found between charophyte oospore abundance and plant biomass of the established vegetation (Grillas et al. 1993; Blindow et al. 2016). It therefore seems unlikely that the absence of aquatic plants at the place of the settlement is responsible for a lack of their diaspores in settlement layers.

The sediment only accumulated when aquatic plant diaspores were not present in the water (e.g. during winter, or due to changes in the vegetation)

Results from palynological and macrobotanical analyses suggest that materials from several seasons are mixed in the settlement layers of Zug-Riedmatt (Heitz personal communication). Looking at the complete plant (but also animal) spectra we can assume that the settlement was not only inhabited in winter (as established for many other lakeshore settlements, e.g. Figure 445 in Jacomet et al. 2004). Therefore, we can clearly state that not only the cold season is represented in the settlement layers.

Changes in the local aquatic vegetation during the occupation phase also seem unlikely to have caused the absence of aquatic plant diaspores at Zug-Riedmatt. We do in fact see a change from aquatic plants favouring oligotrophic to

Table 4 Average density of aquatic and wetland plants (sorted into ecological groups) of all samples shown in Figs. 5, 6, 7, 8 and 9, separated by units

Units	Aquatic plants oligotrophic	Aquatic plants meso-/eutrophic	Reed bed and sedge swamp plants	Wet grassland plants	Shoreline pioneers incl. shore weeds	Wetland plants unassigned	Riparian woodland and carr plants
U14	2,524.8	17.1	2.8	0.2	0.2	0.3	50.5
U13	3,076.1	694.9	534.1	23.8	21.0	6.4	125.5
U12	794.3	360.5	42.1	145.5	31.0	1.7	1.2
U11	317.3	29.6	26.6	6.7	5.6	14.9	10.2
U10	998.0	160.9	12.8	280.2	217.7	5.9	10.4
U9	47.6	43.7	8.3	26.4	4.0	3.4	1.6
U8	15.7	5.3	41.0	238.9	66.2	11.3	4.2
U7	10.4	38.8	16.4	43.4	12.9	2.6	8.2
U6	7.8	35.5	62.6	169.3	37.8	4.6	20.8
U5	29.9	71.8	8.8	12.8	2.9	1.2	2.5
U4	91.6	428.9	8.8	10.6	25.8	9.0	5.4
U3	40.8	29.3	19.0	27.9	66.5	4.4	8.1
U2	299.3	58.2	11.5	1.6	2.5	2.5	11.5
U1	998.8	81.1	4.1	1.3	0.3	0.7	1.8

Units are coloured according to Table 3. For units 11 and 12, only few samples were available, so average values might not be reliable

such favouring meso- to eutrophic conditions at the base of the occupation layer. But based on the results of van den Berg et al. (2001), referred to in the previous scenario, it seems unlikely that this happened due to Characeae disappearing completely from a part of the lake and reappearing again after some time, especially since they were present in rather high numbers in the natural sediments. In our opinion, these reasons therefore cannot explain the lack of aquatic plants in some samples of the occupation layer at Zug-Riedmatt.

The sediment of the settlement layer accumulated very quickly (and maybe waste was thrown into the water in larger "lumps"), not allowing aquatic plant diaspores to mix with it

This possibility seems to be the most likely out of the four "aquatic scenarios" of hypothesis 2 (Table 1). However, nobody has ever tested how such organic lumps/middens would act under water: do they remain intact or are they disaggregated and mixed with natural vegetation at the site? Another open question would be how loam aggregates could have been conserved below water.

In a settlement layer investigated in parallel to Zug-Riedmatt (Zürich-Parkhaus Opéra layer 13), we have found good evidence for a deposition of some plant materials in such larger 'lumps' (Antolín et al. 2017a). This showed that (1) not all plant remains follow the same deposition 'rules' and (2) the zone of the shore which is excavated has an influence on the plant spectrum.

In any case, it would seem likely that there would be at least some remains of aquatic organisms in between lumps/middens of organic material if the whole settlement was built above water. This was the case in the above-mentioned settlement Zürich-Parkhaus Opéra, layer 13 (Bleicher et al. 2017). For Zug-Riedmatt, this scenario could be assumed for unit 3 (the lowermost organic layer), where we found some aquatic plants (even ones favouring oligotrophic conditions) in higher densities compared to other organic units. However in our eyes, this does not explain the complete lack of aquatic plants in some samples of unit 8 in all profile columns, of one sample of unit 6 in profile 68 and a generally very low density of aquatic plants in units 6 and 8 (especially in the middle of the organic layers). This will be discussed further in the next section.

Layer formation processes at Zug-Riedmatt based on aquatic and wetland plant spectra

In Table 6, the layer formation processes of the different units are discussed. Micrite and organic micrite units were all clearly influenced by water. Loamy units were always only locally found and we will not discuss them in detail. Organic units, however, behaved differently.

In unit 3, organic, anthropogenic material was deposited in high quantities. The lower quantity of aquatic plants was

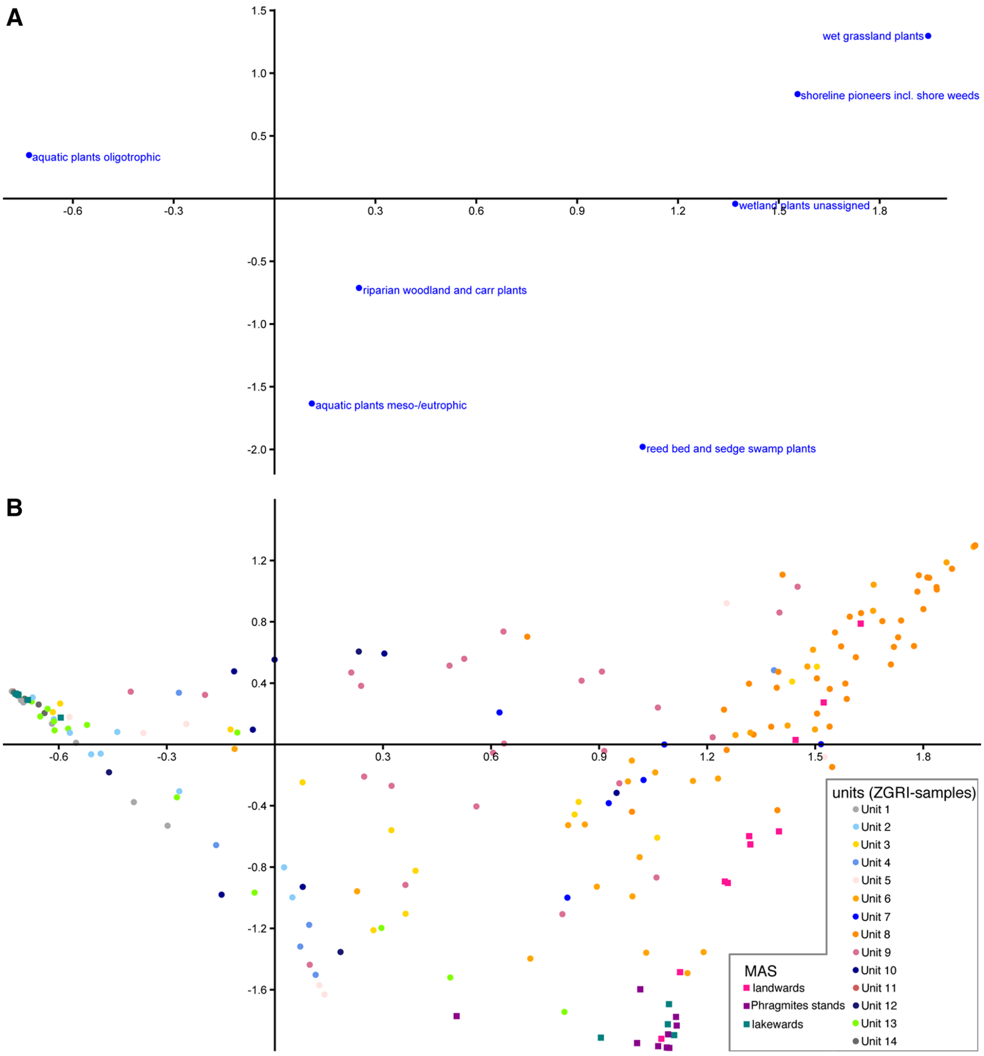

Fig. 10 CA-graph based on density values of ecological groups of aquatic and wetland plants in samples from Zug-Riedmatt and MAS (Bollinger 1981). **a** Columns, **b** rows. Accumulated intertia of axes 1 and 2: 64%

possibly caused by a rise in the sedimentation rate while the excavated area was still covered by water. Shoreline pioneers appearing in this unit could point to somewhat drier conditions compared to the units before, if they grew at the excavated area. We cannot exclude, however, that these plant remains were somehow brought into the site or washed in from nearby shore-areas. The latter is very possible, as it seems that there was not yet a reed bed present (almost complete lack of caryopses of *Phragmites australis*) to stop inwash of seeds from the land into the lake and vice versa (Bollinger 1981). We therefore think that the excavated surface was still positioned in the sublittoral, but nearer to the zone of the yearly lake shore fluctuations than before.

Table 5 Vertical distribution patterns of aquatic and wetland plants in the different units of Zug-Riedmatt

Unit	Sediment	Densities of aquatic and wetland plants
14	Micrite	Mostly contained oligotrophic aquatic plants; very few other plants, but comparably higher densities of riparian woodland and carr plants
13	'Mixed'	Highest densities of both oligotrophic and meso-/eutrophic aquatic plants; two wetland plant ecological groups reached highest densities in this unit (reed bed (mostly represented by *Schoenoplectus lacustris*) and riparian woodland and carr plants)
12	Organic micrite	Only represented by few samples
11	Loam	Only represented by few samples
10	Organic micrite	Aquatic plant densities increased drastically (especially oligotrophic ones); some wetland plants also occurred in high densities, especially wet grassland plants and shoreline pioneers
9	Loam	Slightly increased aquatic plant densities (oligo- and meso-/eutrophic); wetland plant densities decreased substantially
8	Organic	Few aquatic plants; very high densities of all wetland plant groups, esp. wet grassland plants (and with exception of riparian woodland and carr plants)
7	Organic micrite	Almost no oligotrophic aquatic plants, low (but slightly higher than unit 6) densities of meso-/eutrophic aquatic plants; lower densities of wetland plants
6	Organic	Virtually no oligotrophic aquatic plants; low densities of meso-/eutrophic aquatic plants; high densities of wetland plants (especially wet grassland and reed bed plants)
5	Loam	Some aquatic plants (more meso-/eutrophic than oligotrophic ones); wetland plants all with very low densities
4	Organic micrite	Rather high density of meso-/eutrophic aquatic plants; comparatively high densities of shoreline pioneers (but in total less wetland plants than unit 3)
3	Organic	Very low densities of aquatic plants (comparatively more oligotrophic ones than units 6 and 8); high densities of shoreline pioneers and some other wetland plants
2	Organic micrite	Some oligo- as well as meso-/eutrophic aquatic plants; slightly more wetland plants (riparian woodland and carr with higher densities)
1	Micrite	Mostly oligotrophic aquatic plants, some meso-/eutrophic aquatic plants; virtually no wetland plants

Units are coloured according to Table 3

In unit 6, it is possible that a *P. australis* reed grew close to the site, as *Phragmites* caryopses were found in samples of this unit. These fruits have been found to be good indicators of close-by reed growth in MAS (Bollinger 1981; see also; Jacomet 1985). The excavated part of the settlement could therefore have been positioned in the eulittoral, the transition zone between land and water. Results of the CA, where some samples from this unit grouped with MAS from landwards of a *Phragmites* stand and some with MAS from *Phragmites* stands themselves, would fit this assumption very well (Fig. 10). For the site Hornstaad-Hörnle 1 A, Maier (2001) also assumed a location of the site in the transition zone between the eulittoral and sublittoral.

Aquatic plants were completely lacking in some parts of unit 8. In the CA (Fig. 10), most of the samples from this unit grouped with MAS from landwards of *Phragmites* stands (Bollinger 1981). Therefore, a position for all of the excavated part of the settlement landwards of a reed belt should be assumed for unit 8, at least temporarily. If the wetland plants present in these samples really grew in the settlement, the ground must have been wet/swampy. It could even have been temporarily flooded by waves, but the ground could not have been covered by water at all times and might have been even drier in some instances.

To summarise: while there could have been a full water coverage during the sedimentation of unit 3 at Zug Riedmatt, we assume that the excavated area of the settlement was at some point situated landwards of a reed belt (at least during sedimentation of unit 8), indicating changes of the lake level as assumed in previous studies (e.g. Jacomet 1985; Brombacher 1986; Dick 1988; Brombacher and Hadorn 2004). The results of a comparison of MAS (Bollinger 1981) with samples from Zug-Riedmatt support this assumption.

Comparison with other sites

In order to have a comparison to the data from Zug-Riedmatt, we re-evaluated data from two other suitably sampled Neolithic lakeshore site excavations at Lake Zürich, Zürich-AKAD Seehofstrasse (Jacomet 1985) and Zürich-Mozartstrasse (Neolithic part in Dick 1988 and in Brombacher and Jacomet 1997). Different occupation layers dating to the fourth millennium cal BC were included; Corded Ware culture and Bronze Age layers were excluded for reasons of lower preservation quality (see Jacomet et al. 1989). In some sub-layers of the anthropogenic occupation layers of these sites, a lack of aquatic plants was detected,

Table 6 Layer formation processes in units from Zug-Riedmatt based on aquatic and wetland plant spectra

Unit	Sediment	Layer formation processes
14	Micrite	Compared to unit 1, the river Lorze might have had a stronger influence on the excavation area (locally) after the time of the settlement; lack of meso-/eutrophic aquatic plants indicates change of water back to oligotrophic conditions after the end of the settlement (we cannot exclude a hiatus after the abandonment of the settlement)
13	'Mixed'	Strong indicators for (most likely limnic) water coverage of the excavated area during its sedimentation, but indicators of a reed belt and of fluvial influence also detectable; area of high water velocity, where river and lake joined; coarse organic components in this unit support this assumption; excavated area was now positioned lakewards of a reed belt, as *Schoenoplectus lacustris* fruits have good floating abilities and can spread beyond the reed bed itself (in contrast to *Phragmites australis* fruits; Bollinger 1981)
12	Organic micrite	Only represented by few samples
11	Loam	Only represented by few samples
10	Organic micrite	High densities of aquatic plants point to a formation of this unit which was most likely linked to water, possibly because the area was flooded again after unit 8 (and 9?) had formed
9	Loam	Only present at two locations within the excavated area, so it is not possible to make a general statement
8	Organic	Partial complete lack of aquatic plants and grouping of samples from this unit with MAS from landwards of *Phragmites* stands (Bollinger 1981) in the CA point to a position of (all of) the excavated part of the settlement landwards of a reed belt, at least temporarily; wetland plants could have been growing locally
7	Organic micrite	Higher densities of meso-/eutrophic aquatic plants compared to units 6 and 8, but lower than in units 4 and 10; impact of the change in the sedimentation process must have been weaker: either a possible flooding was shorter/washed in less material or the sedimentation of anthropogenic material on a massive scale was interrupted for a shorter time
6	Organic	Partial absence of aquatic plants; *Ph. australis* reed possibly grew close to the site (*Phragmites* caryopses are good indicators for close-by reed growth in MAS (Bollinger 1981; Jacomet 1985)); excavated part of the settlement could therefore have been positioned in the eulittoral
5	Loam	Could only be found at the landwards side of the excavation and at the western lakewards side; it is therefore difficult to make a general statement about this unit, but at one point, it must have been influenced by water
4	Organic micrite	Sudden increase of meso-/eutrophic aquatic plants; either because the sedimentation rate of anthropogenic material sank drastically during the formation of this unit (settlement activity gap?) Or the water level at the site rose, washing in more aquatic plant diaspores from either the lake or the river Lorze
3	Organic	Excavated area was possibly still covered by water; lower density of aquatic plants was caused by a sudden rise in the sedimentation rate; shoreline pioneers appearing in this unit could point to somewhat drier conditions compared to before
2	Organic micrite	Possibly, settlement activities began somewhere nearby the excavated area, organic material mixed with micrite if the excavated area was located under water at that time or the input of anthropogenic material at the excavated area was too low for organic material to accumulate
1	Micrite	Corresponds to what is to be expected in natural limnic sediments (e.g. Brombacher and Hadorn 2004), but more meso-/eutrophic plants present compared to unit 14 (already nutrient-richer environment before onset of settlement? Or sediments mixed later?)

Units are coloured according to Table 3

and wetland plants (especially shoreline pioneers and wet grassland plant remains) primarily occurred in organic sediments. For the CA, we grouped the samples of these sites into three sediment groups: (1) micrite and (2) (most likely) sand, both representing natural sediments, while (3) all other sediment types (organic, loam and charcoal) represent anthropogenically influenced sediments.

In the CA using the MAS from Bollinger (1981) as a reference, the occurring patterns were very similar to Zug-Riedmatt (Figs. 11, 12). The basic separation of MAS from lake- and landwards of *Phragmites* stands, as well as from the inside of *Phragmites* stands, could be found in both sites, though the separation was not as clear for settlement layers of Zürich-Mozartstrasse. For the site Zürich-AKAD Seehofstrasse, several archaeological samples clearly grouped with natural samples from landwards of *Phragmites* stands and from inside of *Phragmites* stands (Fig. 11), indicating that this site was probably not permanently flooded, whereas this was not as clear for the Mozartstrasse site (Fig. 12), which was located more lakewards compared to the AKAD-site, in a similar zone (and immediately adjacent) to the Parkhaus Opéra settlement area. In the latter, we have detected many aquatic plants in all layers of settlement layer 13 (dated to the Horgen culture), as well as water-living chironomids throughout the layer (see Antolín et al. 2017a; Heiri et al. 2017).

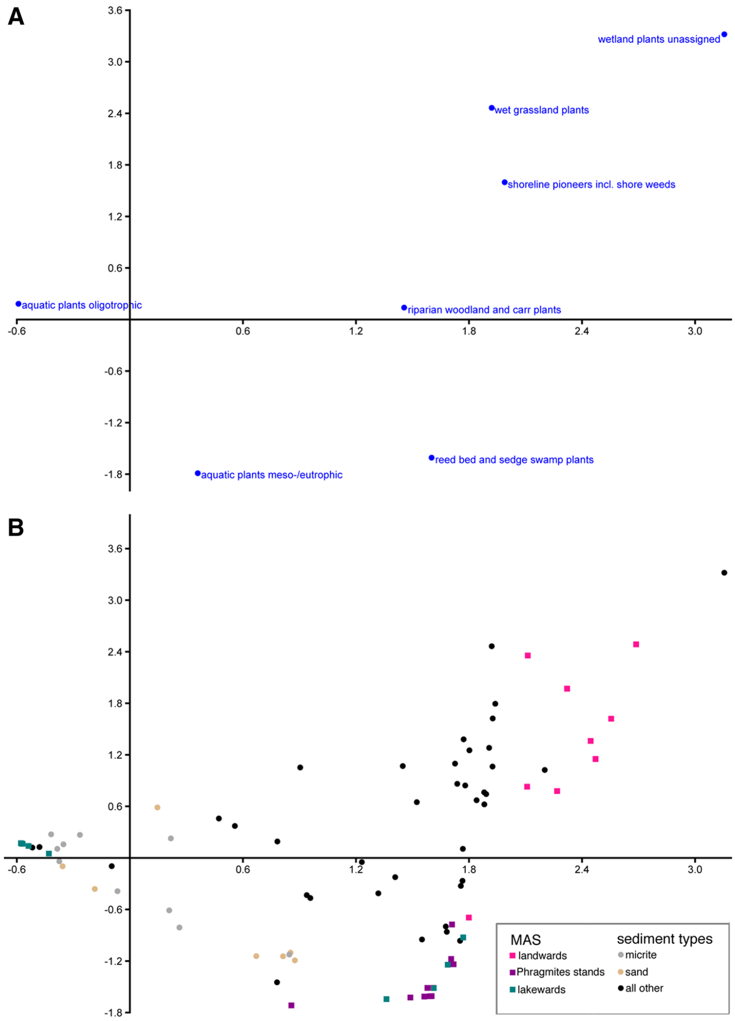

Fig. 11 CA-graph based on density values of ecological groups of aquatic and wetland plants in samples from Zürich-AKAD Seehofstrasse, layer J, Pfyn culture (ca. 3700 cal BC; Jacomet 1985) and MAS (Bollinger 1981). **a** Columns, **b** rows. Accumulated intertia of axes 1 and 2: 61.9%, shown here are axes 1 and 3: 55.6%

Conclusions

Aquatic and wetland plants from anthropogenic stratigraphies have proved to be a helpful tool for the evaluation of layer formation processes at Neolithic lakeshore sites for a long time, especially when used in combination with data from contemporary naturally deposited MAS (Bollinger 1981; Jacomet 1985). In the investigations at the site Zug-Riedmatt presented here, it was possible to see a change from permanently flooded conditions to temporarily much drier (but still swampy) conditions in the uppermost organic layer (unit 8). During the sedimentation of the middle organic layer (unit 6), the excavated part of the settlement might even have been situated exactly in the area between land and water, in the eulittoral zone. The organic micrite layers most likely represent layers with higher water levels in between settlement layers (during which water levels at least partly seem to have been lower). During settlement activities, the trophic conditions of the water must have changed, as aquatic plants favouring meso- to eutrophic conditions were more common than those favouring oligotrophic conditions during this period of time. A

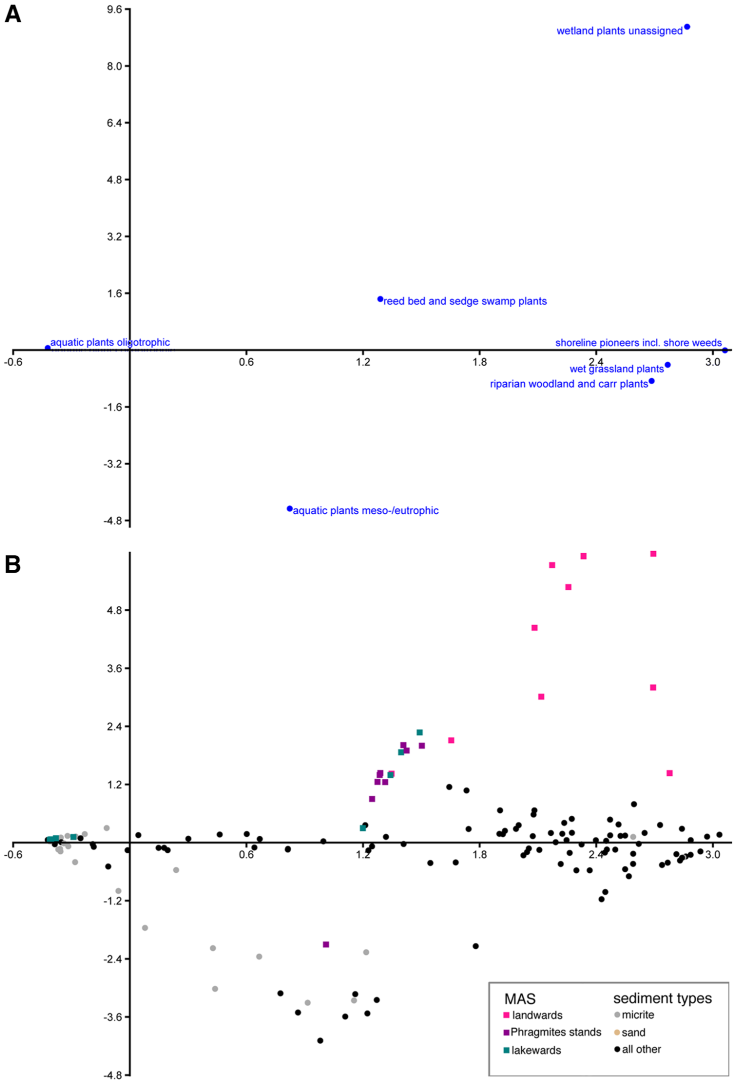

Fig. 12 CA-graph based on density values of ecological groups of aquatic and wetland plants in samples from Zürich-Mozartstrasse, layers 5/6, Cortaillod culture (ca. 3900 cal BC), layer 4, Pfyn culture (ca. 3600 cal BC) and layer 3, Horgen culture (ca. 3100 cal BC, Dick 1988; Brombacher and Dick 1987; Brombacher and Jacomet 1997; Ebersbach et al. 2015) and MAS (Bollinger 1981). **a** Columns, **b** rows. Accumulated intertia of axes 1 and 2: 56.5%

transdisciplinary evaluation of the results from Zug-Riedmatt (macroremains, pollen, invertebrates and micromorphology) is ongoing and will hopefully confirm what we have found based on archaeobotanical data alone.

In a comparison of Zug-Riedmatt with other Neolithic lakeshore sites as well as with MAS, we found varied results. Some samples of Zürich AKAD-Seehofstrasse seem to have formed under conditions similar to the uppermost organic layer of Zug-Riedmatt (corresponding to unit 8), when the site seems to have been situated landwards of a *Phragmites* belt. For samples from Zürich-Mozartstrasse, the situation was not completely clear. Maybe this site was in general more influenced by water (which would fit its more lakeward position compared to Zürich-AKAD Seehofstrasse), but more research including finely separated profile samples would need to be done to confirm this.

All in all, through our thorough microarchaeological research, it becomes obvious that conditions during the deposition of the settlement layers in lakeshore settlements were not always the same. Settlements seem to have been located in different parts of the former shores. It seems very likely that preservation of (a part of) the organic material was possible even without permanent flooding, which would contrast with the view of Bleicher and Schubert (2015). In our eyes, therefore, it should be investigated further if a scenario similar to peat (acrotelm-catotelm) could also lead to the formation of a well-preserved organic layer (this was not considered in the modelling work by Bleicher and Schubert (2015) in their approach). For at least two of the investigated sites, including Zug-Riedmatt, it is very probable that there were lake level fluctuations that led to temporarily drier (not permanently flooded) conditions at least in some areas of a settlement. What we can clearly see is the fact that conditions at a site need to be reconstructed case by case, and that it is important to investigate which part of the site—and therefore which part of the former shore—is represented in an excavation. There probably is not one universally valid ‘Pfahlbau scenario’ (Bleicher and Schubert 2015)—which partly explains the on-going discussions about the “Pfahlbauproblem”.

In the future, in palaeoecological investigations of lakeshore settlements, one should include the analysis of an even smaller fraction (0.25 mm) and a closer identification of the Characeae oospores; the latter would enable more precise statements about the trophic level of the water and water depths (see e.g. Brombacher and Hadorn 2004). More studies of natural sediments along shore transects (as modern analogues) from different sites are also desperately needed in order to be able to make more precise statements about formation processes of organic layers from lakeshore sites. Such studies should also include experiments about plant preservation and decay.

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4. Taphonomy, land use and environment of the Late Neolithic lakeshore settlement Zug-Riedmatt

4.1 Results Zug-Riedmatt (occupation layer and directly adjacent layers)

4.1.1 General results

Out of the 197 profile samples (in total 79.25l of sediment; sample volume in average 0.4l), 158'812 botanical macroremains (not extrapolated) of 193 different taxa from 54 plant families were sorted. Most of these remains were preserved in subfossil (uncharred) state. On average, <2% of plant remains were found in charred state, and even less in a semi-charred state. Most plant remains were extremely well-preserved. On average, 8'260 remains/litre (r/l) and 38 taxa could be found per sample, including all sample types (Tab. 1, the 14 purely micritic samples were not excluded here and in all following calculations because they are not necessarily the only samples from naturally accumulated sediments). The maximum density in organic samples was 68'750r/l (in sample 98.5 of unit 3), the highest number of taxa 75 (in sample 67.12 of unit 8).

In the following, results for the economically most important taxa and for all other plants not obviously used as staple foods (sorted into ecological groups) are described (for densities per unit across all samples, see Tab. 5). More information about aquatic and wetland plants can be found in research paper 3.4 (and Figs. 5-9 therein). Densities of other ecological groups per sample for each profile can be seen in Figs. 5-9 in this chapter. Tab. 6 lists the unit in which taxa appear in highest densities. Semi-quantified preservation parameters are discussed in research paper 3.3. A transdisciplinary evaluation of the results from micromorphology, palynology and botanical macroremains will be done at a later stage (Ismail-Meyer *et al.*, in preparation).

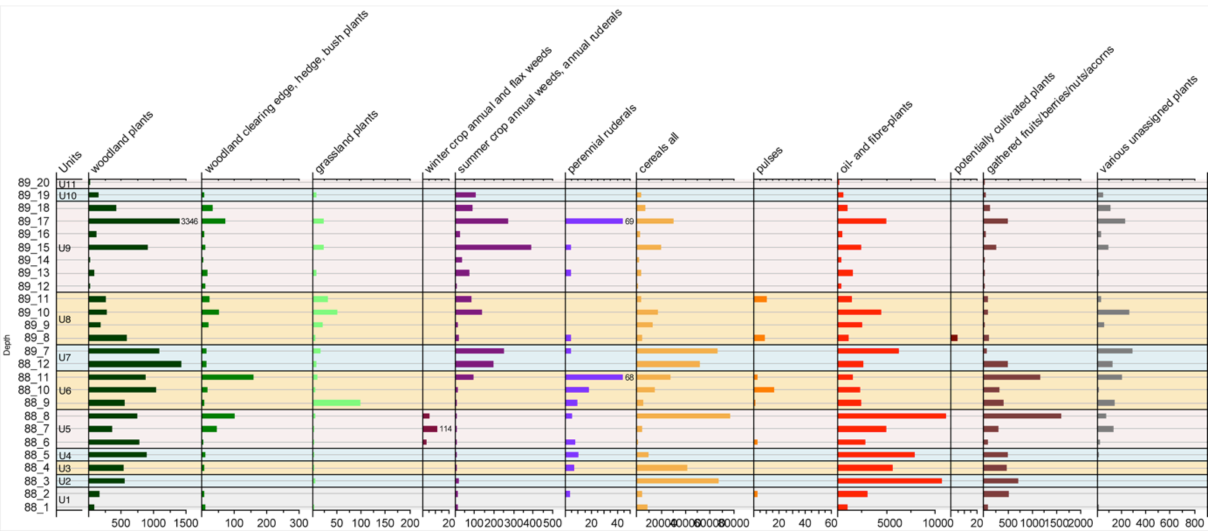

Figure 5. Densities (r/l) of the remains of the different ecological groups (except aquatic and wetland plants) of all samples of the profile sequence 88-89 (location within excavated area: landwards, NW). Stratigraphical units are coloured according to Tab. 4.

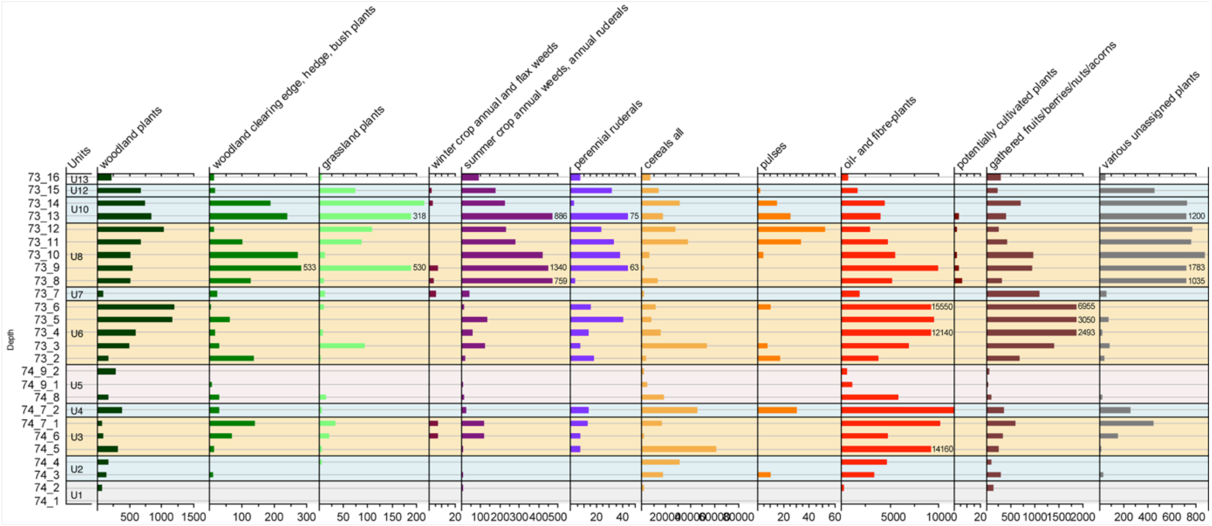

Figure 6. Densities (r/l) of the remains of the different ecological groups (except aquatic and wetland plants) of all samples of the profile sequence 74-73 (location within excavated area: landwards, SO). Stratigraphical units are coloured according to Tab. 4.

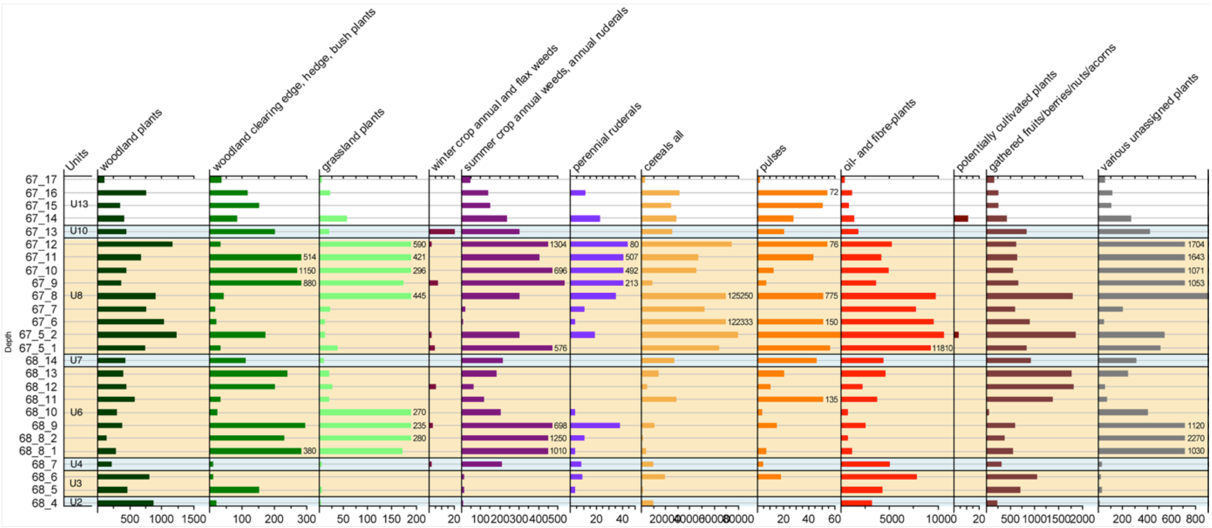

Figure 7. Densities (r/l) of the remains of the different ecological groups (except aquatic and wetland plants) of all samples of the profile sequence 68-67 (location within excavated area: middle). Stratigraphical units are coloured according to Tab. 4.

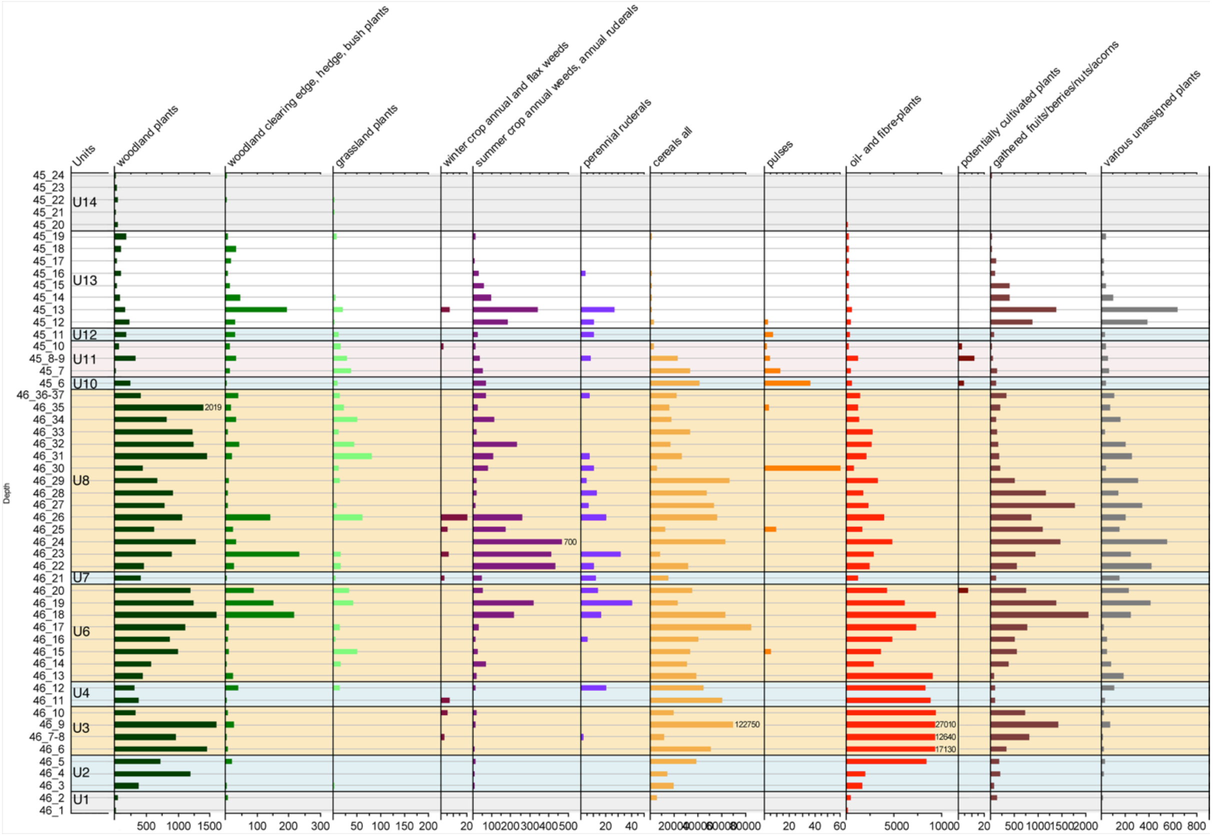

Figure 8. Densities (r/l) of the remains of the different ecological groups (except aquatic and wetland plants) of all samples of the profile sequence 46-45 (location within excavated area: lakewards, SO). Stratigraphical units are coloured according to Tab. 4.

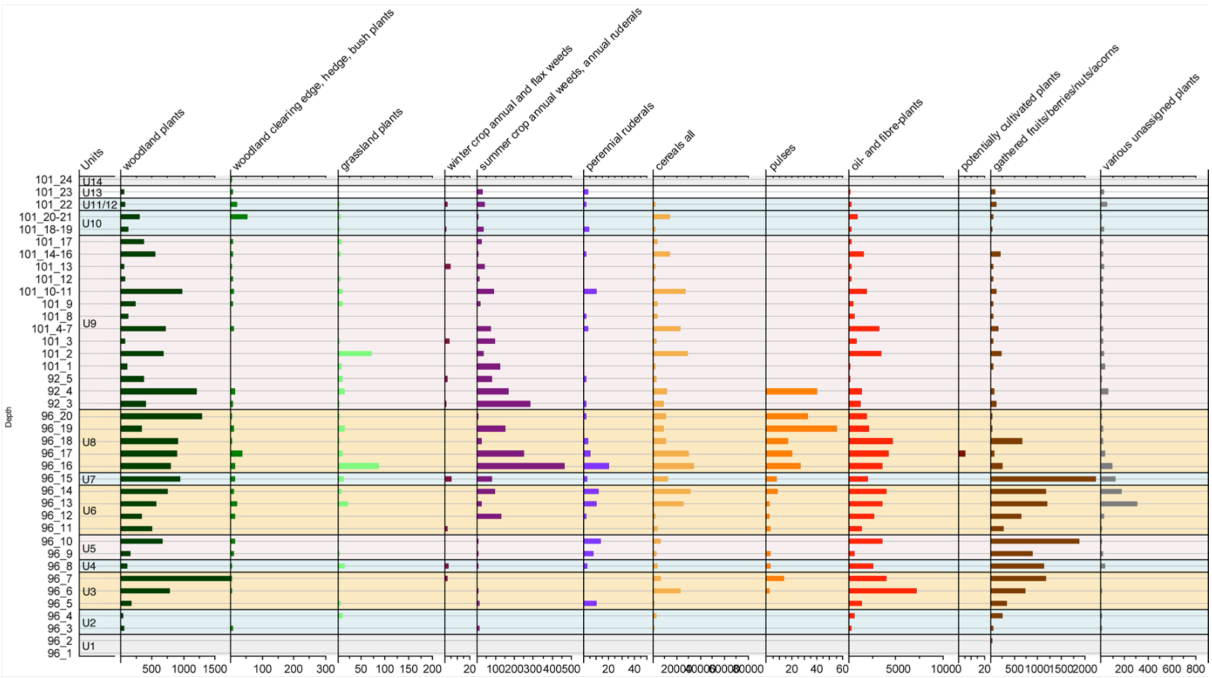

Figure 9. Densities (r/l) of the remains of the different ecological groups (except aquatic and wetland plants) of all samples of the profile sequence 96-92-101 (location within excavated area: lakewards, SW). Stratigraphical units are coloured according to Tab. 4.

	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14
aquatic plants oligotrophic	999	299	48	79	20	9	10	14	44	998	317	794	3076	2525
aquatic plants meso-/eutrophic	81	58	27	369	68	29	39	24	40	161	30	360	695	17
reed bed and sedge swamp plants	4	11	17	8	11	53	16	36	9	13	27	42	534	3
wet grassland plants	1	2	24	9	15	142	43	206	25	280	7	146	24	0
shoreline pioneers incl. shore weeds	0	3	58	22	2	31	13	57	4	218	6	31	21	0
wetland plants unassigned	1	3	4	8	1	4	3	10	3	6	15	2	6	0
riparian woodland and carr plants	2	11	8	5	2	17	8	4	2	10	10	1	126	51
woodland plants	48	452	806	357	228	694	723	762	499	400	99	307	196	21
woodland clearing edge, hedge, bush plants	2	7	38	16	38	84	31	116	10	121	14	23	55	1
grassland plants	0	3	4	6	3	43	9	71	9	82	20	29	9	1
winter crop annual and flax weeds	0	0	1	2	29	0	2	1	0	3	0	1	0	0
summer crop annual weeds, annual ruderals	4	8	23	38	22	172	138	272	91	232	24	79	100	0
perennial ruderals	0	0	4	10	7	11	3	101	4	12	2	14	6	0
cereals	243	2221	4974	3295	1459	2134	2869	3288	1111	1899	1449	523	711	2
pulses	0	1	2	5	1	9	9	36	4	14	5	3	11	0
oil- and fibre-plants	570	3810	11726	8620	4575	4420	3004	3945	1363	1753	438	681	438	5
potentially cultivated plants	0	0	0	0	0	0	0	1	0	1	3	0	1	0
gathered fruits, berries, nuts, acorns	112	223	737	466	539	1053	814	592	101	309	53	140	346	7
various unassigned plants	2	11	45	65	40	235	172	371	39	324	34	175	116	1

Table 5. Average density (r/l) of plant remains (taxa sorted into ecological groups) of all samples shown in Figs. 5-9 and also of overlapping samples which were not illustrated there, according to units. Units are coloured according to Tab. 3. For units 11 and 12, only few samples were available, so average values might not be reliable.

unit	most common plant remains, based on density
Unit 1	Nitella sp.; Najas flexilis; Betula pendula/pubescens
Unit 2	Alnus cf. glutinosa
Unit 3	Urtica dioica; Myosoton aquaticum/Stellaria nemorum; Chrysosplenium alternifolium; Abies alba, needles; Moehringia trinervia; Viscum album, leaves; Origanum vulgare; Cerealia, bran; Triticum mono-/dicoccon, chaff; Triticum dicoccon, chaff; Papaver somniferum; Linum usitatissimum; Linum usitatissimum, capsule frg.; Linum usitatissimum, capsule (>2 frg.); Fragaria vesca; Malus/Pyrus, pericarp; Rubus fruticosus/idaeus
Unit 4	Najas minor; Najas flexilis; Najas intermedia/marina; Eupatorium cannabinum; Cerealia, bran; Triticum dicoccon, chaff; Papaver somniferum; Linum usitatissimum; Linum usitatissimum, capsule frg.
Unit 5	Mentha arvensis; Silene cretica; Brassica cf. rapa; Malus sylvestris
Unit 6	Lycopus europaeus; Phragmites australis; Plantago major; Ranunculus cf. repens; Polygonum minus; Alnus cf. glutinosa; Rubus caesius; Abies alba, needles; Picea abies, needles; Moehringia trinervia; Viscum album, leaves; Hypericum perforatum; Origanum vulgare; Clinopodium vulgare; Prunella vulgaris; Arenaria serpyllifolia; Polygonum aviculare; Triticum durum/turgidum, chaff; Rubus idaeus; Fragaria vesca; Malus/Pyrus, pericarp; Rubus fruticosus; Rubus fruticosus/idaeus; Malus sylvestris; Fagus sylvatica, pericarp; Carex sp.
Unit 7	Abies alba, needles; Viscum album, leaves; Valerianella dentata; Sonchus asper; Cerealia, chaff; Triticum durum/turgidum, chaff; Linum usitatissimum, capsule (>2 frg.); Rubus idaeus; Rubus fruticosus/idaeus; Cerastium sp.
Unit 8	Lycopus europaeus; Phragmites australis; Plantago major; Ranunculus cf. repens; Veronica sp.; Myosoton aquaticum/Stellaria nemorum; Poa nemoralis/palustris; Abies alba, needles; Picea abies, needles; Taxus baccata, needles; Viscum album, leaves; Hypericum perforatum; Origanum vulgare; Lapsana communis; Clinopodium vulgare; Prunella vulgaris; Poa pratensis/trivialis; Trifolium sp.; Verbena officinalis; Arenaria serpyllifolia; Digitaria cf. ischaemum; Arctium sp.; Arctium sp., flower; Cerealia, chaff; Triticum dicoccon, chaff; Triticum durum/turgidum, chaff; Hordeum vulgare, chaff; Fabaceae, pod frg.; Rubus fruticosus/idaeus; Quercus sp., pericarp; Cerastium sp.; Fragaria/Potentilla
Unit 9	Digitaria cf. ischaemum
Unit 10	Chara sp., oogonia calcified; Najas minor; Plantago major; Ranunculus cf. repens; Veronica sp.; Myosoton aquaticum/Stellaria nemorum; Polygonum hydropiper; Polygonum minus; Prunus padus; Picea abies, needles; Moehringia trinervia; Milium effusum; Hypericum perforatum; Origanum vulgare; Epilobium sp.; Prunella vulgaris; Aphanes arvensis; Verbena officinalis; Digitaria cf. ischaemum; Polygonum aviculare; Polygonum persicaria; Stellaria media; Brassica cf. rapa; Prunus spinosa; Rosa sp.; Physalis alkekengi; Fragaria/Potentilla; Rumex sp.
Unit 11	Lycopus europaeus; Poa nemoralis/palustris; Chrysosplenium alternifolium; Alnus cf. glutinosa; cf. Agrostis sp.; Trifolium sp.; Apium graveolens
Unit 12	Chara sp., oogonia; Najas minor; Najas flexilis; Najas intermedia/marina; Plantago major; Ranunculus cf. repens; Myosoton aquaticum/Stellaria nemorum; Picea abies, needles; Prunella vulgaris; Triticum sp.,chaff; Fragaria/Potentilla
Unit 13	Chara sp., oogonia calcified; Chara sp., oogonia; Najas flexilis; Najas intermedia/marina; Schoenoplectus lacustris; Polygonum hydropiper; Poa nemoralis/palustris; Alnus cf. glutinosa; Alnus sp., cones; Betula pendula/pubescens; Hypericum perforatum; Rubus fruticosus; Corylus avellana; Fagus sylvatica, cupule; Sambucus sp.; Rosa sp.
Unit 14	Chara sp., oogonia calcified; Chara sp., oogonia; Alnus cf. glutinosa; Alnus sp., cones; Betula pendula/pubescens

Table 6. Plant remains from Zug-Riedmatt are listed according to the unit(s) where they reach their highest density. Colours roughly correspond to ecological groups. The type of remain is only listed if it is not a diaspore.

4.1.2 Cultivars

The most common cultivated plants found at Zug-Riedmatt were opium poppy (*Papaver somniferum*; Figs. A43, A44), flax (*Linum usitatissimum*; Figs. A49-51), emmer wheat (*Triticum dicoccon*; Figs. A55-58), tetraploid naked wheat (*Triticum durum/turgidum*; Fig. A60-62), barley (*Hordeum vulgare*, most likely the naked form; Figs. A52-54), garden pea (*Pisum sativum*; Figs. A45-48) and einkorn wheat (*Triticum monococcum*: Fig. 59; see Tab. 7). They represent all typically found cultivars of this time period. The potential spices celery (*Apium graveolens*; Fig. A25) and dill (*Anethum graveolens*) could also be found, but were rare and it is therefore questionable if they were cultivated.

Even though the densities fluctuated quite a bit between samples, some trends based on units could be seen. Cereals in general occurred in highest densities in the stratigraphical units 8 and 3 (both consisting of organic sediment) and also in units 7 and 4 (both consisting of organic micrite; see Tab. 6 and Figs. 5-9). Oil- and fibre-plants (opium poppy and flax) occurred in highest densities in units 3 (consisting of organic sediment) and 4 (consisting of organic micrite) and also in units 6 and 8 (both consisting of organic sediment). Pulses occurred in highest densities in units 8 (consisting of organic sediment) and 9 (consisting of loamy sediment) and also in units 13 (consisting of 'mixed' sediment) and 7 (consisting of organic micrite). However, pea pod fragments were only recorded from around the middle of the analyses onwards (we only then arrived to recognize them), so we have a much smaller pool of samples for pulses (88 instead of 197 samples that can be compared), which has to be kept in mind. The plants potentially used as spices were rare in general and occurred in highest densities in stratigraphical units 10 (consisting of organic micrite) and 11 (consisting of loamy sediment).

The most ubiquitous species (>90% across all profile samples), which also appeared in the highest densities (>500r/l on average across all profile samples), were opium poppy (seeds, occasionally fragments of the capsule lids), flax (seeds, capsule fragments, also stems) and cereal bran (unidentified testa fragments; Tab. 7). Chaff of emmer wheat, tetraploid naked wheat and to a lesser degree barley were also found in many samples and in high numbers, as was chaff which could only be determined to the level of genus (*Triticum sp.*) or to cereals in general (Cerealia indet.; Tab. 7). In the samples where they were recorded (once they were recognized as such), pea pod fragments were also ubiquitous.

As plant remains in general, cultivars were mostly present in subfossil (non-charred) state. Though charred chaff and grain of cereals (approx. 10%) and a few charred or semi-charred remains of pea, flax and opium poppy (<2%) could be found, they were generally rare. Opium poppy capsule fragments and pea pod fragments were not found in charred state at all.

species	type	state	ubiquity	density all units	density unit 3	density unit 6	density unit 8
cereals							
Hordeum vulgare	rachis segment	uncharred	58.33	38.1	7.6	20.1	97.7
Hordeum vulgare	rachis segment	semi-charred	0.98	0.1	0.0	0.1	0.1
Hordeum vulgare	rachis segment	charred	36.76	7.5	0.0	7.2	12.8
Hordeum vulgare	grain	charred	8.82	0.3	0.0	0.1	1.0
Triticum monococcum	glume basis	uncharred	13.24	2.2	1.7	1.5	4.9
Triticum cf. monococcum	glume basis	uncharred	1.47	0.1	0.1	0.0	0.0
Triticum monococcum	glume basis	charred	6.37	2.1	0.0	0.5	6.8
Triticum monocuccum/dicoccon	glume basis	uncharred	2.45	27.5	60.7	19.5	35.8
Triticum monococcum/dicoccon	glume basis	charred	3.92	3.1	0.0	0.0	10.0
Triticum dicoccon	glume basis	uncharred	81.86	240.0	292.1	227.0	352.2
Triticum dicoccon	glume basis	semi-charred	4.90	0.2	0.0	0.3	0.2
Triticum dicoccon	glume basis	charred	45.59	21.8	0.4	15.9	34.3
Triticum dicoccon	grain	charred	1.47	0.0	0.0	0.0	0.0
Triticum durum/turgidum	rachis segment	uncharred	70.59	121.8	60.5	157.4	201.4
Triticum durum/turgidum	rachis segment	semi-charred	3.92	0.3	0.0	0.3	0.7
Triticum durum/turgidum	rachis segment	charred	44.61	17.7	0.0	16.1	33.3
Triticum aestivum/durum/turgidum	grain	charred	3.92	0.1	0.0	0.2	0.2
Triticum spec.	chaff	uncharred	70.10	188.2	208.1	210.6	299.6
Triticum spec.	chaff	semi-charred	1.47	0.1	0.0	0.0	0.3
Triticum spec.	chaff	charred	34.31	12.7	1.0	5.7	32.7
Triticum spec.	grain	charred	0.49	0.1	0.0	0.3	0.0
Cerealia indet.	bran	uncharred	93.63	1587.9	4165.0	1324.6	1723.9
Cerealia indet.	chaff	uncharred	73.53	210.2	177.0	121.9	409.7
Cerealia indet.	chaff	semi-charred	0.98	0.0	0.0	0.1	0.0
Cerealia indet.	chaff	charred	16.67	9.2	0.0	3.6	28.5
Cerealia indet.	grain	charred	19.61	0.8	0.1	0.5	1.5
pulses							
Pisum sativum	seed	uncharred	2.03	0.1	0.0	0.1	0.4
Pisum sativum	pod fragment	uncharred	79.55	28.4	6.6	14.9	57.6
cf. Pisum sativum	pod fragment	uncharred	2.27	0.0	0.0	0.0	0.0
Pisum sativum	pod stem	uncharred	10.23	0.3	0.0	0.0	0.8
Pisum sativum	pod fragment	semi-charred	9.09	0.3	0.0	0.0	0.9
Pisum sativum	seed	charred	1.02	0.0	0.0	0.0	0.2
cf. Pisum sativum	seed	charred	0.51	0.0	0.0	0.0	0.1
oil- and fibre-plants							
Linum usitatissimum	seed	uncharred	97.97	679.3	1217.2	700.8	700.8
Linum usitatissimum	capsule (>2 frg.)	uncharred	65.99	26.7	56.0	30.2	25.2
Linum usitatissimum	capsule frg.	uncharred	93.40	299.0	442.8	239.8	239.8
Linum usitatissimum	seed	semi-charred	4.57	0.2	1.0	0.1	0.1
Linum usitatissimum	capsule (>2 frg.)	semi-charred	0.51	0.0	0.4	0.0	0.0
Linum usitatissimum	capsule frg.	semi-charred	3.05	0.1	0.0	0.0	0.1
Linum usitatissimum	seed	charred	7.61	0.6	0.9	0.1	1.4

Linum usitatissimum	capsule frg.	charred	3.55	0.3	0.0	0.0	0.8
Papaver somniferum	seed	uncharred	99.49	3443.8	10007.5	3448.5	2695.0
Papaver somniferum	capsule frg.	uncharred	4.57	0.3	0.4	0.3	0.5
Papaver somniferum	seed	charred	5.08	0.2	0.1	0.3	0.2
potentially cultivated plants							
Anethum graveolens	fruit	uncharred	1.02	0.1	0.0	0.2	0.0
cf. Anethum graveolens	fruit	uncharred	0.51	0.0	0.0	0.0	0.0
Apium graveolens	fruit	uncharred	5.58	0.1	0.0	0.0	0.5

Table 7. Ubiquity and average densities (r/l) per sample (across all profile samples, including naturally formed ones) of cultivars of Zug-Riedmatt. Pea pod fragments were only recorded in 88 out of 197 samples because they were not recognized in the beginning of analyses.

When only looking at the stratigraphical units consisting of organic sediment, 3, 6 and 8, different distribution patterns of cultivars could be seen (see Figs. 5-9 and Tab. 5). It cannot be decided at this point whether these differences represent overall trends, local circumstances within the small excavated area, or if they mainly mirror taphonomic conditions (see also chapter 4.3.1 in the discussion).

Uncharred remains of flax and seeds of opium poppy as well as cereal bran (and chaff which might be einkorn or einkorn/emmer wheat) appeared in highest densities in the lowermost unit 3. Chaff of emmer wheat, tetraploid naked wheat, barley, unidentified wheat and unidentified cereals appeared in highest densities in uppermost unit 8. Charred chaff as well as charred grain also appeared in highest densities in uppermost unit 8, with the exception of charred grain of unidentified wheat and tetraploid naked wheat, which appeared in highest numbers in unit 6. Pea pod fragments also appeared in highest numbers in unit 8.

4.1.3 Gathered plants (fruits, berries, nuts, acorns)

Some plants like hazelnuts and different types of berries were clearly gathered for their nutritional value as known from many other Neolithic settlements (e.g. Maier, 2001; Hosch and Jacomet, 2004). Others might have been gathered and consumed or fed to domestic animals. The list of gathered plants used here is not complete and explicitly does not include plants which might have been gathered for their vegetative parts or for other purposes than human consumption. Furthermore, it has to be noted that small samples out of single profiles are not well suited to determine the 'real values' of large-seeded plants (that make up a large proportion of the gathered plants) in different layers (Antolín *et al.*, 2017b, appendix 7.3), as these remains often occur in concentrations (e.g. due to faeces, disposal in middens) and are therefore not regularly spread over the settlement area. This should be kept in mind when their values are discussed.

In total, at least 14 taxa found in samples of the Zug-Riedmatt site could have been gathered fruits, berries, nuts, acorns (Tab. 8). They occurred in highest densities in units 6 (consisting of organic sediment), 7 (consisting of organic micrite) as well as 8 and 3 (both consisting of organic sediment; Tab. 6).

The most common gathered plants at Zug-Riedmatt in terms of ubiquity and density were wild strawberry (*Fragaria vesca*, fruits), crab apple (*Malus sylvestris*, seeds, pericarp, sometimes stems and rarely calyces) or pear (*Pyrus pyraster*, though no pear seeds were found, but pericarp cannot be differentiated), raspberry (*Rubus idaeus* fruits), blackberry (*Rubus fruticosus*, fruits), hazel (*Corylus avellana*, pericarp) and oak (*Quercus sp*., pericarp, sometimes bottom of fruit, rarely charred cotyledons). Other possibly gathered plants included rose (*Rosa sp.*, fruits; Fig. A11), Chinese lantern (*Physalis alkekengi*, seeds), European beech (*Fagus sylvatica*, pericarp, rarely cupules; Figs. A5, A6), elder (*Sambucus sp.*, seeds), sloe (*Prunus spinosa*, fruits) and European blueberry (*Vaccinium myrtillus*; Fig. A19) etc. (Tab. 6, 8).

species	**type**	**state**	**ubiquity**	**density all units**	**density unit 3**	**density unit 6**	**density unit 8**
Corylus avellana	seed/fruit	uncharred	65.99	9.89	7.99	11.43	14.16
Corylus avellana	seed/fruit	charred	4.57	0.09	0.00	0.27	0.01
Crataegus monogyna	seed/fruit	uncharred	1.52	0.07	0.00	0.12	0.18
Fagus sylvatica	pericarp	uncharred	24.37	3.45	0.41	12.52	1.16
Fagus sylvatica	cupule	uncharred	4.06	0.02	0.00	0.00	0.00
Fragaria vesca	seed/fruit	uncharred	90.36	193.04	293.71	382.22	167.91
Malus sylvestris	seed/fruit	uncharred	82.23	23.30	25.89	44.95	14.29
Malus sylvestris	fruit flesh	uncharred	4.57	0.20	0.00	0.26	0.44
Malus sylvestris	seed/fruit	charred	1.02	0.03	0.00	0.15	0.00
Malus/Pyrus	pericarp	uncharred	88.32	51.76	100.40	95.26	34.10
Malus/Pyrus	stem	uncharred	38.07	2.66	3.11	3.44	1.62
Malus/Pyrus	calynx	uncharred	1.52	0.07	0.22	0.00	0.00
Malus/Pyrus	stem	charred	1.52	0.10	0.83	0.12	0.00
Physalis alkekengi	seed/fruit	uncharred	37.56	2.84	1.33	2.90	5.60
Physalis alkekengi	seed/fruit	charred	0.51	0.06	0.00	0.00	0.22
Prunus spinosa	seed/fruit	uncharred	12.18	0.51	0.00	0.85	0.47
Quercus *sp.*	pericarp	uncharred	50.25	16.12	2.89	6.05	41.95
Quercus *sp.*	bottom of fruit	uncharred	11.68	1.51	0.28	0.49	4.32
Quercus *sp.*	cotyledon	charred	0.51	0.01	0.11	0.00	0.00
Rosa *sp.*	seed/fruit	uncharred	42.13	3.02	2.66	3.89	4.27
Rubus fruticosus	seed/fruit	uncharred	60.41	13.47	8.51	34.65	9.48
Rubus fruticosus	seed/fruit	charred	0.51	0.06	0.00	0.00	0.22
Rubus fruticosus/idaeus	seed/fruit	uncharred	50.76	35.02	45.54	49.38	49.00
Rubus idaeus	seed/fruit	uncharred	86.80	227.40	242.77	402.88	240.35
Rubus idaeus	seed/fruit	semi-charred	0.51	0.02	0.00	0.12	0.00
Sambucus *sp.*	seed/fruit	uncharred	22.84	0.90	0.37	1.02	1.99
Taxus baccata	seed/fruit	uncharred	2.03	0.03	0.13	0.07	0.00
Vaccinium *cf.* myrtillus	seed/fruit	uncharred	2.03	0.05	0.00	0.06	0.09
Vaccinium *sp.*	seed/fruit	uncharred	2.54	0.10	0.00	0.00	0.22

Table 8. Ubiquity and average densities (r/l) per sample (across all profile samples, including naturally formed ones) of the most likely gathered fruits, berries, nuts and acorns of Zug-Riedmatt. Some taxa are not listed here, as they are primarily assigned to other (ecological) groups, but they could have been gathered for consumption as well (in small quantities).

When only looking at the stratigraphic units 3, 6 and 8, all consisting of organic sediment, some different distribution patterns of gathered plants could be seen (Tab. 8). Remains of crab apple or pear appeared in lowest densities in unit 8. Berries like wild strawberry, raspberry, blackberry and even dewberry all appeared in highest densities in unit 6. Beech nuts were the only fat- and starch-rich fruits which were more common in unit 6. Hazelnuts and acorns were most common in unit 8. Chinese lantern, rose, wayfaring tree and elder also reached highest densities in unit 8. Regarding ubiquities, differences were sometimes not as big as for density.

4.1.4 Wild plants of no obvious use

4.1.4.1 Aquatic and wetland plants

In research paper 3.4, these plant groups were discussed in detail (corresponding figures are shown only there, see Figs. 5-9 in research paper 3.4). Reasons for the absence of aquatic plants in some samples are also discussed in research paper 3.4.

Oligotrophic aquatic plants, which were represented by two genera of stoneworts (*Chara sp.*, *Nitella sp.*, oospores), were most common in stratigraphic units 14 (at the top of the stratigraphy) and 1 (at the base of the stratigraphy), both consisting of micrite, as well as in units 13 (consisting of 'mixed' sediment, top of stratigraphy) and 10 (consisting of organic micrite, towards top of stratigraphy; Tabs. 5, 6).

Meso-/eutrophic aquatic plants, represented by 10 taxa, were most common in stratigraphic units mostly situated around the top of the stratigraphy: 12 (consisting of organic micrite) and 13 (consisting of 'mixed' sediment), and in one case in an organic micrite layer towards the bottom (unit 4; Tab. 5). The most common species in this group were different naiads: holly-leaved (*Najas marina/intermedia*), brittle (*N. minor*) and slender (*N. flexilis*) naiad, and they were represented mainly by seeds and less often by leaf fragments (Fig. A33-35; Tab. 6). Seeds/fruits of yellow water-lily (*Nuphar lutea)* and pondweed (*Potamogeton sp.*; Fig. A36, A38) could also be found is some samples, while spiked water milfoil (*Myriophyllum spicatum*, fruits) and water chestnut (*Trapa natans*, fruits; Fig. A13, A14) were only found two resp. three times.

Riparian woodland and carr plants, represented by 10 taxa, were most common in the uppermost stratigraphic units 13 (consisting of 'mixed' sediment) and 14 (consisting of micrite; Tab. 5). By far the most common species in this group was black alder (*Alnus cf. glutinosa*, fruits), represented by fruits and more rarely female cones (Fig. A4) or their scales (Tab. 6). Dewberry (*Rubus caesius* fruits) and bird cherry (*Prunus padus*, fruits) were the only other two taxa reaching an ubiquity of >10%.

Reed bed and sedge swamp plants, represented by 11 taxa, appeared in highest densities in stratigraphic units situated in different sections of the stratigraphy, in its uppermost parts (units 13, consisting of 'mixed' sediment, and 12, consisting of organic micrite), but also in the middle (unit 6, consisting of organic sediment; Tab. 5). The most common taxa in this group were gipsywort (*Lycopus europaeus*, fruits), common reed (*Phragmites australis*, fruits) and bulrush (*Typha sp.* seeds; Tab. 6). Common club-rush (*Schoenoplectus lacustris*, fruits) reached very high densities in some samples of stratigraphic unit 13 in the uppermost part of the stratigraphy, but was not very common in other samples. Other notable finds were cowbane (*Cicuta virosa*, fruits; Fig. A26), which was only present in one sample in stratigraphic unit 8 (67.8), but in a higher number as it seemed to line a Trichoptera larval case, and great fen sedge (*Cladium mariscus*, fruits; Fig. A37) in units 1 (96.1) and 5 (98.9; appendix 7.9).

All other wetland plants were more common in different parts of the stratigraphy; they seem to concentrate in organic sediments (in stratigraphic units 3, 6 and especially 8), but were also present in higher numbers in unit 10 (towards the top of the stratigraphy, consisting of organic micrite; Tab.s 5, 6). The following plants are included here: unassigned wetland plants (4 taxa, among them alternate-leaved golden saxifrage (*Chrysosplenium alternifolium*, seeds; Fig. A3), which has so far only rarely been found in Neolithic lakeshore settlements) and two ecological groups, the first wet grassland plants, represented by 14 taxa, with the most common taxa creeping buttercup (*Ranunculus cf repens*, fruits) and greater plantain (*Plantago major*, seeds; both with a broad ecological range, but they were classified into this group due to their preference of moist soil). Other notable finds in this group were square-stalked St. John's wort (*Hypericum tetrapterum*, seeds; Fig. A12) and marsh valerian (*Valeriana dioica*, fruits; Fig. A29). The other group was shoreline pioneers and shore weeds, represented by 12 taxa, with the most common, mainly nutrient-loving taxa water chickweed/wood stitchwort (*Myosoton aquaticum/Stellaria nemorum*; their seeds are difficult to differentiate, but due to the statistical correlations it is in this case more likely *Mysoton aquaticum*) and water pepper (*Polygonum hydropiper*, fruits). Common nettle (*Urtica dioica*, fruits) did not appear regularly, but reached high densities in stratigraphic unit 3, close to the bottom of the stratigraphy. Other notable finds in this group were trifid bur marigold (*Bidens tripartita*, fruits; Fig. A32) and nodding bur marigold (*Bidens cernua*, fruits; Fig. A31), distinguishable by the number of pappus bristles, which were in some cases preserved well enough to allow a distinction between the two species.

4.1.4.2 Woodland plants

Woodland plants appeared in highest densities in the stratigraphic units 3, 6 and 8, all consisting of strongly organic sediment, as well as in the organic micrite which forms stratigraphic unit 7 (Tabs. 5, 6). Despite these general trends concerning units, fluctuations between fine layers were sometimes quite large, e.g. in unit 9, exclusively loamy samples had lower densities than mostly organic intermediate layers (Figs. 5-9). The stratigraphic units consisting of organic sediments also contained the highest average numbers of taxa. In total, 19 woodland plant taxa were found (excluded are typically gathered plants growing in woodland, for those see chapter 4.1.3).

With a ubiquity of almost 97%, European silver fir (*Abies alba*, needles, seeds) was the most commonly appearing taxon of this group. Other frequently appearing woodland taxa (ubiquities of 30-55%) were Norway spruce (*Picea abies*, needles), European yew (*Taxus baccata*, needles), European mistletoe (*Viscum album* leaves, fruits, bark and twigs), birch (*Betula pendula/pubescens*, fruits and bracts) and three-veined sandwort

(*Moehringia trinervia*, seeds). The woodland moss *Neckera crispa* also appeared in many samples. Other mosses were not yet identified, but it has to be noted that in some samples, moss capsules (Fig. A42) were present as well, especially in stratigraphic unit 5 of profile 88. Other notable finds in this ecological group were yellow archangel (*Lamium galeobdolon*, fruits; Fig. A21) and wych elm (*Ulmus glabra*, fruit; Fig. A7).

4.1.4.3 Woodland clearing edge, hedge, bush plants

18 taxa growing in woodland clearing edges, hedges and bushes were found (excluded are gathered plants growing in these habitats, these were treated in chapter 4.1.3). These plants were most numerous in stratigraphic units 6 and 8 (both consisting of organic sediment), 10 (consisting of organic micrite) as well as in one of the uppermost stratigraphic units, 13 (consisting of 'mixed' sediment; Tabs. 5, 6). This ecological group was most numerous in profile sequence 68-67 (Fig. 7) and densities often fluctuated considerably between different fine layers (Figs. 5-9).

The most ubiquitous taxa were perforate St. John's wort (*Hypericum perforatum*, seeds), oregano (*Origanum vulgare*, fruits) and common nipplewort (*Lapsana communis*, fruits). Taxa with a ubiquity of >10% were willowherb (*Epilobium sp.*, seeds), wild basil (*Clinopodium vulgare*, fruits), wayfaring tree (*Viburnum lantana*, fruits) and common hemp-nettle (*Galeopsis cf. tetrahit*, fruits). Other notable finds were fragrant agrimony (*Agrimonia procera*, false fruits; Fig. A10) besides common agrimony (*Agrimonia eupatoria*, false fruits; Fig. A10) and a single find of hop (*Humulus lupulus*, fruit; Fig. A8) in sample 96.10 (stratigraphic unit 5).

4.1.4.4 Grassland plants

Grassland plants were represented by a total of 14 taxa. They appeared in highest densities in stratigraphic units 6, 8 (both consisting of organic sediment) and 10 (an organic micrite layer; Tabs. 5, 6). This ecological group was most numerous in stratigraphic unit 8 (consisting of strongly organic sediment) of profile sequences 68-67 and 74-73, though large fluctuations could be found here as well (Figs. 6, 7; for location of the profiles see Fig. 3). In other profile sequences, lower densities were found in general, with some fluctuations between fine layers (Figs. 5, 8, 9).

The most ubiquitous taxa, appearing in half of all samples, was smooth or rough meadow-grass (*Poa pratensis/trivialis*, fruits). Common self-heal (*Prunella vulgaris*, fruits) also appeared in many samples and clover (*Trifolium sp.*, petals) had a ubiquity of 16%. Other notable finds were star gentian (*Gentiana cruciata*, seeds; Fig. A20), hogweed (*Heracleum sphondylium*, fruit; Fig. A27) and laserwort (*Laserpitium siler*, fruits; Fig. A28). The last species nowadays usually grows in montainous regions and cannot be found close to the settlement (the closest location is at the southern tip of lake Zug), but it was also found in Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a).

4.1.4.5 Winter crop annual and flax weeds

Winter crop annual and flax weeds were represented by only 9 taxa of which none appeared in more than 10% of all samples, and they reached highest densities in stratigraphic unit 5 (consisting of loamy sediment) (Tabs. 5, 6; Figs. 5-9). This was especially due to one species, Cretan catchfly (*Silene cretica*, seeds; Fig. A18), which appeared in highest densities in samples from the so called 'bone midden' in the NW-corner of the excavated area (belonging to unit 5); but it was present in low densities also in samples of stratigraphic unit 4 (an organic micrite) of all profile sequences. Narrow-fruited cornsalad (*Valerianella dentata*, fruits) was the only other species with a ubiquity of >5%, but low overall densities.

4.1.4.6 Summer crop annual weeds, annual ruderals

With 16 taxa, summer crop annual weeds and annual ruderals were the better represented weed group at Zug-Riedmatt. This ecological group reached highest densities in stratigraphical units 6, 8 (both consisting of organic sediment) and 10 (an organic micrite; Tabs. 5, 6). It only appeared in very low densities in the lowermost stratigraphic units 1-3, except in profile sequence 74-73, where common vervain (*Verbena officinalis* fruits) already appeared in slightly higher densities in unit 3. Despite this general trend, some large fluctuations between fine layers could be found as well (Figs. 5-9).

Common vervain (*Verbena officinalis*, fruits) was the best-represented taxon in general, appearing in two thirds of all samples. Thyme-leaved sandwort (*Arenaria serpyllifolia*, seeds) appeared in half of all samples and was in one case even represented by a capsule filled with seeds. Wild turnip (*Brassica cf. rapa*, seeds), common knotgrass (*Polygonum aviculare*, fruits), redshank (*Polygonum persicaria*, fruits), prickly sow-thistle (*Sonchus asper*, fruits), common chickweed (*Stellaria media*, seeds) and smooth finger-grass (*Digitaria cf. ischaemum*, fruits) appeared in 20-40% of all samples. Hairy finger-grass (*Digitaria sanguinalis*; Fig. A39) was also found, but only in one sample (46.23).

4.1.4.7 Perennial ruderals

Perennial ruderal plants were represented by 11 taxa. They appeared in high densities in unit 8 (consisting of organic sediment, >100r/l; Tab. 6), especially in profile sequences 68-67 and 74-73 (Figs. 6,7). Otherwise they never reached average densities of >15r/l (Tab. 5; Figs. 5-9).

Only burdock (*Arctium sp.*, fruits and bracts) appeared with a higher ubiquity of almost 50%. Burdock bracts reached highest numbers in stratigraphic unit 8 (consisting of organic sediment), and especially in one sample (45.4), several almost whole flower heads (burs; Fig. A30) of the plant could be found. Another notable find was cat-mint (*Nepeta cataria*, fruits; Fig. A22).

4.1.4.8 Various unassigned plants

Many plants (23 taxa in total) could not clearly be ascribed to an ecological group, mostly because they were not identifiable to species level. Almost all of them were more numerous in the upper half of the occupation phase (esp. stratigraphic units 6, 8 and 10; Tabs. 5, 6) Large fluctuations could also be found in this group (Figs. 5-9). They will not be discussed in detail, but most numerous among them were mouse-ear chickweed (*Cerastium sp.*, seeds), sedge (*Carex sp.*, fruits), dock and/or sorrel (*Rumex sp.*, fruits) and strawberry/cinquefoil (*Fragaria/Potentilla*, fruits).

4.2 Results of samples from naturally accumulated sediments

The 13 samples from mostly naturally accumulated sediments from ZGRI RIII (see chapter 2.2), ZGSCH (see chapter 2.3) and the three samples from Zug-Riedmatt profile 50 (dating to the Middle Bronze Age, see chapter 2.1.2) gave a small plant spectrum of 71 taxa in total. The plant remains were almost exclusively preserved in waterlogged state, except for a fragment of hazelnut (*Corylus avellana*), which was found in charred state in one sample. When looking at the average densities per ecological group of all samples from (mostly) naturally accumulated sediments (Tab. 9), we can see that one group was well-represented compared to samples from Zug-Riedmatt (Tab. 5), while others were underrepresented. Riparian woodland and carr plants reached higher densities in the samples from naturally accumulated sediments than in any unit of Zug-Riedmatt except unit 13 (consisting of ‘mixed’ sediment). Wet grassland, grassland plants, summer crop annual and perennial weeds as well as cultivars had very low densities (or were not present in the case of perennial weeds) compared to most units of Zug-Riedmatt.

samples from naturally accumulated sediments (average density, r/l)	
aquatic plants oligotrophic	616.5
aquatic plants meso-/eutrophic	54.6
reed bed and sedge swamp plants	5.7
wet grassland plants	0.4
shoreline pioneers incl. shore weeds	4.9
wetland plants unassigned	0.8
riparian woodland and carr plants	55.4
woodland plants	291.5
woodland clearing edge, hedge, bush plants	4.2
grassland plants	0.1
winter crop annual and flax weeds	0.9
summer crop annual weeds, annual ruderals	0.3
cultivars	13.9
various unassigned plants	25.2

Table 9. Average density (r/l) of ecological groups in all analysed samples from (mainly) naturally accumulated sediments from ZGRI RIII, ZGSCH and Zug-Riedmatt profile 50.

In the appendix, the reports discussing the archaeobotanical results from ZGRI RIII (appendix 7.4) and from ZGSCH (appendix 7.5) can be found. There, it is mentioned that most samples could be sorted into two types: either they had high densities of aquatic plants, or they lacked them almost completely. For four samples from ZGRI RIII, the latter was the case, while the lowermost sample of the stratigraphy had very high amounts of aquatic plants. All three samples from Zug-Riedmatt profile 50 contained high amounts of aquatic plants. For samples from ZGSCH, this was less clear. One sample seemed to be mixed with material from a cultural layer, it was the only sample which contained a higher density of cultivars. Out of the other four samples, two contained no aquatic plants, while the other two did (but one more than the other).

4.3 Discussion

4.3.1 Limitations of this study

At Zug-Riedmatt, the analysed samples were primarily profile samples with small volumes (in average 0.4ml) from five locations within a small area of only 64m^2. While they covered the stratigraphy in a very detailed way, the surface was not well-represented, and only a very small part of the sediments of the occupation phases was analysed. This, however, was not the aim of the study, in which methodological issues and layer formation were the main focus, and this has to be kept in mind when the economy and environment of the site are discussed in general in the following chapters. As we have found out in the framework of the SNF project (and this Ph.D. thesis), in wetland sites, the position of the excavated part of a settlement within the shore area can have a large impact on the spectra (see e.g. research paper 3.4, Antolín *et al.*, 2017a). In addition, the small volume of the samples could also have caused a bias, as large-seeded remains are usually not represented in the same way as in large-volumed samples (e.g. Hosch and Jacomet, 2001; Maier, 2001; Antolín *et al.*, 2017b, appendix 7.3). Antolín *et al.* (2017b, appendix 7.3) suggest that a ubiquity of 50% for large-seeded plant remains in small-volumed samples can already indicate an important resource and ubiquities should not directly be compared to those of sites where large-volumed samples have been investigated.

The statistical analyses done for the botanical macroremain results in the framework of this study so far did not render results outreaching the results of a 'traditional' evaluation. They were therefore not considered in the following (except correlations done between ecological groups and the reclassification of units, as mentioned in the methods).

4.3.2 An attempt to reconstruct the formation of layers

4.3.2.1 Classification of the samples from naturally accumulated sediments

The analysis of samples from naturally accumulated sediments can be a very helpful tool to interpret archaeological sediments at shores, see e.g. Jacomet (1985), where the extensions of the settlement layer J of Zürich-AKAD Seehofstrasse outside of the settlement area were analysed. It can be established which remains ended up in the sediment naturally, and if the origin of the samples from naturally accumulated sediments is clear, they enable the reconstruction of the natural conditions at the time of the deposition.

Using the same set of data as for research paper 3.4 (only densities of aquatic and wetland plants), the results of the samples from mostly naturally accumulated sediments from ZGRI RIII, ZGSCH and the three samples from Zug-Riedmatt profile 50 (see chapter 4.2) were compared in a correspondence analysis to the rest of the samples from Zug-Riedmatt and natural modern analogue samples (Bollinger, 1981) taken from the indicator group database (Fig. 10).

As presented in research paper 3.4, oligotrophic aquatic plants clearly separated from all other ecological groups at the negative side of axis 1 (Fig. 10A). Meso-/eutrophic aquatic plants, riparian woodland and carr plants as well as reed bed and sedge swamp plants formed another group at the positive side of axis 1 and the negative side of axis 2. Wet grassland plants as well as shoreline pioneers grouped at the positive sides of both axes.

In research paper 3.4, the positioning of the archaeological and natural modern analogue samples is described. Here, the same pattern as in research paper 3.4 (Fig. 10B) could be found: archaeological samples from units 1(micrite at the basis of the stratigraphy), 14 (micrite at top of the stratigraphy), 13 ('mixed' sediment), 11 (loamy sediment) and 2 (consisting of organic micrite) and many natural modern analogue samples from lakewards of the *Phragmites* belt were associated with oligotrophic aquatic plants. The three natural samples from Zug-Riedmatt, profile 50, also grouped here, as did three samples from ZGSCH (3, 9, 15) and one sample from ZGRI RIII (123.2). Units 4 and 10 (both consisting of organic micrite) mostly associated with meso-/eutrophic aquatic and riparian woodland and carr plants, and so did the two remaining samples from ZGSCH (20, 21) and most of the samples from ZGRI RIII (121.8, 121.12, 122.11, 122.14). These results correspond to assumptions made in the discussions about results from ZGSCH (appendix 7.5) and ZGRI RIII (appendix 7.4). The fluvial sediments from ZGRI RIII grouping with riparian woodland and carr plants confirms the usability of this ecological group for interpretations. The lowermost sample of the analysed profile sequence apparently had quite a different composition, pointing more towards limnic influence. This was also the case in the three samples from Zug-Riedmatt, profile 50. Samples from ZGSCH grouped according to their contents: mixed. Two samples from one core which was taken slightly more to the south than the others were also fluvially influenced, possibly by the Aabach or the Siehbach which were located closely to the site in the past (Reinhard *et al.*, 2016).

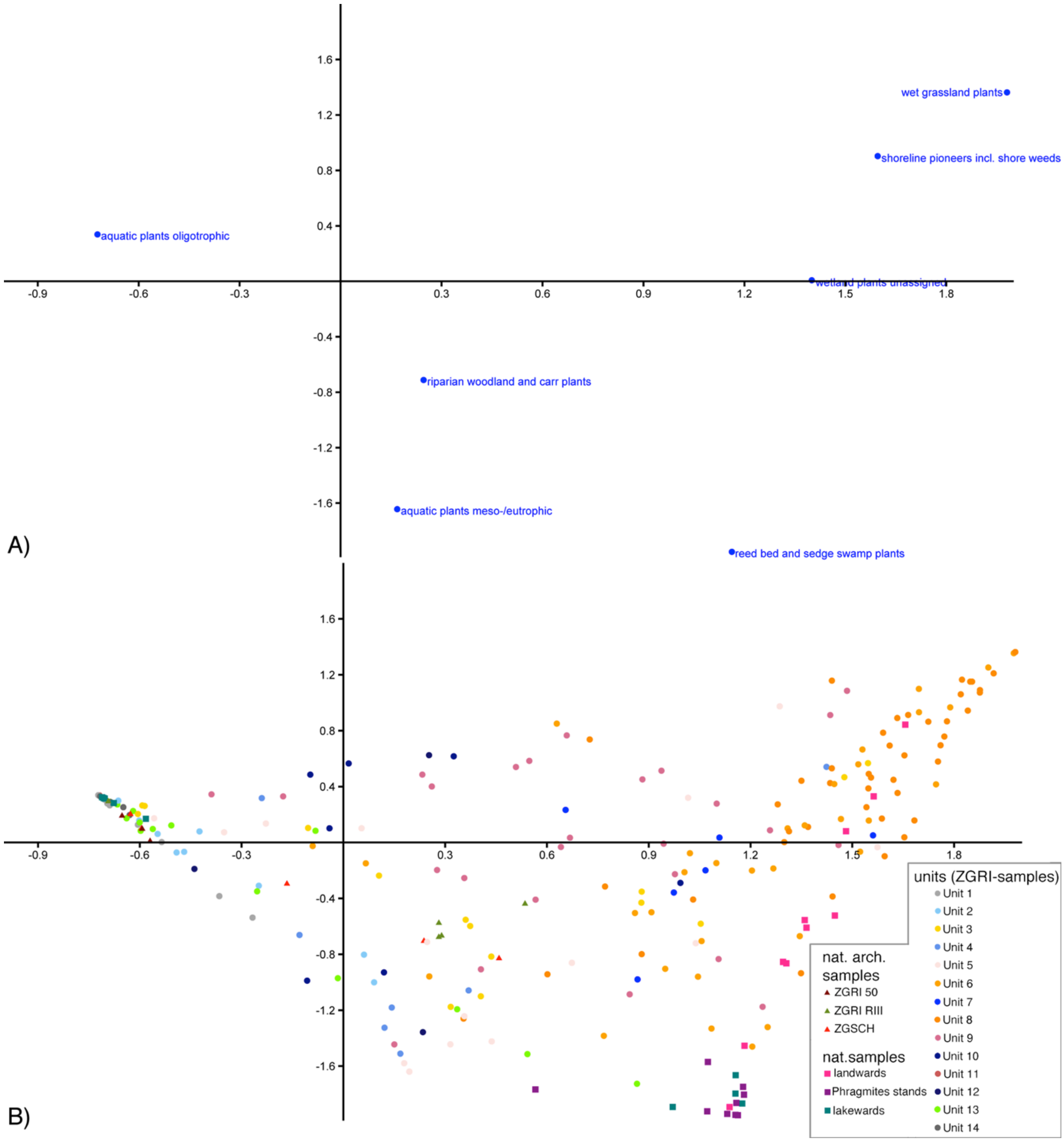

Figure 10. CA-graph based on density values of ecological groups of aquatic and wetland plants in samples from Zug-Riedmatt, contemporary natural samples (Bollinger, 1981) and samples from naturally accumulated sediments from Zug-Riedmatt profile 50 (ZGRI 50), Zug-Riedmatt Überbauung Riedpark III (ZGRI RIII) and Zug-Schützenmatt (ZGSCH). **A)** columns **B)** rows. Accumulated intertia of Axis 1 and 2: 61%.

4.3.2.2 The stratigraphy of Zug-Riedmatt

Based solely on macrobotanical findings (research paper 3.4 and chapter 3.2), the following assumptions about layer formation at Zug-Riedmatt can be made. In the near future, these results will be compared to results from micromorphology, palynology and entomology for validation, which will hopefully lead to advanced insights.

In the following, it is assumed that aquatic and wetland plants ended up in the sediment mostly due to natural causes like local growth (Maier, 1995, 2011) or flooding even though an intentional presence cannot be fully excluded.

Unit 1, the micrite layer under the occupation layer, corresponds to what is to be expected in natural sediments (e.g. Brombacher and Hadorn, 2004). Compared to the uppermost unit 14, the micrite layer above the occupation layer (and therefore also a natural sediment), more meso-/eutrophic plants (*Najas flexilis*) were present in unit 1, so it is possible that the environment of the excavated area before the onset of settling activities was nutrient-richer. Another possibility is that sediments were slightly mixed later (e.g. due to natural causes during the deposition of the overlaying unit) or that the depth of the lake was different. Birch fruits with their wings probably flew in from further away (Bollinger, 1981).

Something in the sedimentation process clearly changed between units 1 and 2, because the sediment became much more organic and the plant spectra broadened, including more cultivar and wild plant species. Interestingly, this change might have happened before the settlement of Zug-Riedmatt was placed exactly at the excavated area. Nearby settling activities can be supposed by the fact that the organic micrite sediment of **unit 2** did not yet consist of purely organic material and densities of cultivated plants were lower than in the strongly organic sediments of unit 3 above. It is therefore very likely that settlement activities began somewhere nearby the excavated area, as is well known from other lakeshore settlements; often, settling activities begin with the building of 1 or 2 'pioneering' houses and settlements then grow over the years (e.g. Arbon Bleiche 3, Leuzinger, 2000; Sutz-Lattrigen 'Riedstation', Hafner, 1992; Hafner and Suter, 2000). So, it is possible that organic material deposited nearby mixed with micrite if the excavated area was under water at that time and that the input of anthropogenic material was too low for organic material to accumulate in rather 'pure' form. In any case, the samples from stratigraphical unit 2 are still similar to the completely natural micritic ones of e.g. unit 1.

A further change in the sedimentation process must have happened between stratigraphic units 2 and 3. Organic, anthropogenic material (among it several cultivars and gathered plants) was suddenly deposited in high quantities during the deposition of stratigraphic **unit 3** (Figs. 5-9), which lets us suppose that settlement activities had reached the area of the excavation now. We assume that the excavated area was still covered by water, as there are still some aquatic plants present, but in lower quantities than before. This might be due to a sudden rise in the sedimentation rate. However, the shore line pioneers appearing in this unit could point to somewhat drier conditions compared to before, if they grew at the excavated area; we cannot exclude, however, that these plant remains were intentionally brought into the site (by humans or domestic animals with their dung) or washed in from nearby exposed/dry shore-areas. The latter is well possible, as it seems that there was not yet a reed bed present (almost complete lack of caryopses of *Phragmites australis*) to stop inwash of seeds from the land into the lake and the other way around (Bollinger, 1981).

In stratigraphic **unit 4** (consisting of organic micrite), there was a sudden increase of meso-/eutrophic aquatic plants. This could have had different reasons: Either the sedimentation rate of anthropogenic material sank drastically during the formation of this unit (settlement activity gap?) without a change of the water level or the water level at the site rose, washing in more aquatic plant diaspores from either the lake or the river Lorze. The trophic state of the water around the site had probably increased during the first phase of the settling activities, explaining the dominance of meso-/eutrophic aquatic plants in this stratigraphic unit. The continued presence of cultivars in this unit points to a mixture of influences. Low densities of Cretan catchfly (*Silene cretica*) in almost all samples of this unit point to a more uniform composition of this unit (compare to eg. unit 5).

Stratigraphic **unit 5** mostly consisted of loamy sediment and most samples from this unit contained at least some aquatic plants. This unit could only be found at some locations of the excavation surface (as usual for loamy areas, so-called 'Lehmstellen', see e.g. Bleicher and Ruckstuhl, 2015): at the landwards side of the excavation (profiles 88, 98 and 74, Figs. 5, 6) and at the western lakewards side (profile 96, Fig. 9). It is therefore difficult to make a general statement about this unit, but at one point, it must have been influenced by water. Some samples of this unit (the ones from profiles 88 and 98) came from a special archaeological structure, the 'bone midden' at the NW, landward site of the excavation (Fig. 3; see Billerbeck *et al.*, 2014, appendix 7.6, for transdisciplinary analysis). Higher densities of Cretan catchfly (*Silene cretica*), moss capsules and fish remains in this unit are most probably parts of this structure, which was most likely a big rubbish heap. The excellent preservation of remains in the 'bone midden' could have been partly caused by the loam cover sealing off the underlaying layers.

In stratigraphic **unit 6**, consisting again of strongly organic material of anthropogenic origin and showing partly an absence of water plants, it is possible that a *Phragmites australis* reed grew close to the site, as *Phragmites* caryopses were found in samples of this unit. These fruits have been found to be good indicators for close-by reed growth in modern analogue samples (Bollinger, 1981, see also Jacomet, 1985). The excavated part of the settlement could therefore have been positioned in the eulittoral, the transition zone between land and water. Numerous wetland plants appearing in higher densities in this unit support this assumption. Results of the CA, where some samples from this unit grouped with modern analogue samples from landwards of a *Phragmites* stand and some with modern analogue samples from *Phragmites* stands themselves, would also fit this assumption very well (see Fig. 10). For the site Hornstaad-Hörnle 1A, Maier (2001) also assumed a location of the site in the transition zone of the eulittoral and sublittoral. The numerous gathered plants and naked wheat chaff, which reached high densities in this stratigraphic unit as well, would point to a strong anthropogenic influence at the same time.

In contrast, in stratigraphic **unit 7** (consisting of organic micrite), higher concentrations of meso-/eutrophic aquatic plants could be observed again, either in the samples in unit 7 itself or immediately below unit 7 (explaining why densities of aquatic plants are not higher in this unit in general). However, the densities were much lower than in the organic micrite units 4 or 10 and the anthropogenic influence still was very strong, so the impact of the change in the sedimentation process must have been weaker. Either a possible flooding was shorter/washed in less material or the sedimentation of anthropogenic material on a massive scale was interrupted for a shorter time. Despite that, unit 7 was the most easily recognizable organic micrite layer throughout all profile sequences (Fig. 4).

Stratigraphic **unit 8**, again consisting of strongly organic sediment, is surely connected to a massive input of anthropogenic waste material at the excavated area, as high densities of cultivars and gathered plants could be found (Figs. 5-9). Aquatic plants were completely lacking in some parts of the organic sediment of this layer. In the CA (Fig. 10), most of the samples from this unit grouped with modern analogue samples from landwards of *Phragmites* stands (Bollinger, 1981). Therefore, a position of (all of) the excavated part of the settlement landwards of a reed belt should be assumed for unit 8, at least temporarily. If the wetland plants present in these samples really grew locally in the settlement, the ground must have been marshy. It could even have been temporarily flooded by waves, but the ground could not have been covered by water at all times and might have been even drier in some instances. It is not possible to decide whether the grassland plants and ruderals, which reached high densities in this unit, grew directly at the site during these times or not.

Stratigraphic **unit 9** (consisting of loam) was only present at two restricted locations within the excavated area (as is typical for loamy areas, the so-called 'Lehmstellen', in profiles 89 and 92/101, Figs. 5, 9), so it is not possible to make a general statement about it. The only plants reaching comparably high densities in this unit were smooth finger-grass (*Digitaria cf. ischaemum*, Tab. 6), a ruderal plant of humid places, also growing in shoreline pioneer-communities (Nanocyperion; Oberdorfer, 2001) and fern sporangia. Whereas the former could have grown at the site itself, the origin of the latter is not entirely clear.

Stratigraphic **unit 10**, consisting of organic micrite, had the highest density of oligotrophic aquatic plants compared to all previous units except the natural lake sediment (micrite) of unit 1. In addition, it contained a lot of meso-/eutrophic aquatic plants (though not as many as the organic micrite layer of unit 4). The formation of this unit was therefore most likely linked to water, possibly because the area was flooded again after unit 8 with its organic material had formed. However, a lot of plant remains which reached high densities in the organic sediments of unit 8 only slightly decreased in unit 10 (e.g. cultivars, mainly cereals and pulses; grassland plants; weeds). Also, dung of small animals (like rodents) as well as gemmules of freshwater sponges (which usually develop to outlast unfavourable conditions, Schletterer and Ols Eggers, 2006) might point to drier conditions or a mixture of different influences as well.

Stratigraphic **units 11 and 12** (consisting of loamy sediment resp. organic micrite) were also influenced by water (esp. unit 12), but no general statements are possible because they were both only represented by a few samples.

Better covered by samples was stratigraphic **unit 13**, a mixed layer containing natural micrite, but also coarse organic components. It showed strong indicators for (most likely limnic) water coverage of the excavated area during its sedimentation. But at the same time, indicators of a reed belt and of fluvial influence were also detectable. In the CA (Fig. 10), samples of this unit scattered over all three of these ecological groups as well.

This would point to an area of high water velocity, where river and lake joined. The coarse organic components (e.g. female cones of alder, cupules of beech) in this unit support this assumption. It is possible that the excavated area was now positioned lakewards of a reed belt, as *Schoenoplectus lacustris* fruits (which occurred in high densities in this unit) have good floating abilities and can spread beyond the reed bed itself (in contrast to *Phragmites australis* fruits, see Bollinger, 1981, Jacomet, 1985).

In the micrite above the occupation layer (stratigraphic **unit 14**), only oligotrophic aquatic plants and plants from riparian woodland and carr had a higher density compared to other units, suggesting that the river Lorze (locally) might have had a stronger influence on the excavation area after the time of the settlement than before. Meso-/eutrophic aquatic plants were not present anymore here, indicating a change of the water back to oligotrophic conditions at some point after the end of the settlement (we cannot exclude a hiatus after the abandonment of the settlement). Again, fruits of birch might have flown in from further away (Bollinger, 1982).

To summarise, the changes of the plant remain spectra between different units of Zug-Riedmatt were most probably caused by both water level fluctuations and changes in the sedimentation rate. During the deposition of unit 3, the excavated area could still have been under full water coverage. Later however, the conditions at the excavated part of the settlement must have changed, placing it in the eulittoral zone, during the deposition of unit 8 even landwards of a reed belt, which is shown by a comparison with modern analogue samples (Bollinger, 1982). This confirms conclusions about changing lake levels from previous studies (e.g. Jacomet, 1985; Brombacher and Hadorn 2004). In between, homogenized layers with higher densities of aquatic plants probably indicate floodings of the excavated part of the settlement or very low sedimentation rates (in units consisting of organic micrite).

4.3.3 The cultivar spectra of Zug-Riedmatt in comparison with other contemporaneous settlements

Results from Zug-Riedmatt were compared to results from other similarly dated lakeshore sites in order to get an overview of the importance of the main cultivars. For this, average densities based on 'classical' volume measurements were used (where not available, the conversion factor from Antolín *et al.*, 2015 was used). In the following, only results from the stratigraphical units 3, 6 and 8 of Zug-Riedmatt are compared, as their sediments were strongly organic and correspond most to what is usually defined as occupation layers. As the research of the last years at the IPAS and in the framework of the project has shown, only large differences between densities should be interpreted because of varying methodologies (e.g. sieving (research paper 3.1); pre-treatment (Vandorpe and Jacomet, 2007); counting units (Antolín *et al.*, 2017b, appendix 7.3).

Cereal bran densities for instance are hardly comparable, as different counting units were used in Zug-Riedmatt (>1mm) compared to e.g. Zürich-Parkhaus Opéra (>2mm), and in other sites, only its presence/absence was recorded (if at all). We can only see what was already mentioned in chapter 3.1.2: cereal bran appeared in very high densities in the strongly organic sediments of unit 3 at Zug-Riedmatt.

Chaff remains of barley appeared in higher densities than in most other sites (Fig. 11) except Zürich-Parkhaus Opéra, which might have methodological reasons (barley rachis segments are very fragile and might be destroyed by inappropriate sieving methods), as was already stated by Antolín *et al.* (2017a). However, such a high density was only found in the strongly organic sediments of stratigraphical unit 8 of Zug-Riedmatt, but this was the case in all profile columns except 74-73 (data not shown except raw data per sample in appendix 7.9). In the other two units consisting of organic sediment, densities were more comparable to Pfäffikon-Burg, suggesting maybe that barley became more important in the course of the time of occupation at Zug-Riedmatt, which might have covered several decennia (Fig. 11), but see chapter 4.3.4.

Densities of tetraploid naked wheat chaff remains were comparable to Arbon Bleiche 3, Zürich KanSan layer 3 and Zürich-Parkhaus Opéra layer 13, while densities in the somewhat younger layer 14 of Zürich-Parkhaus Opéra were much higher. Within the different stratigraphic units of Zug-Riedmatt, naked wheat seemed to gain importance with time like barley (and like naked wheat at Zürich-Parkhaus Opéra, Fig. 11).

Densities of emmer wheat chaff remains were comparable to all other sites except Zürich-Parkhaus Opéra layer 13, where they were higher (though it has to be mentioned that the average density in unit 4 (an organic micrite layer) of Zug-Riedmatt was >600 r/l). No very big differences between the different units consisting of organic sediments could be found. Emmer wheat was the cereal with the highest densities, leading to the assumption that it was an important cereal for inhabitants of Zug-Riedmatt throughout the whole occupation time. This is especially true during the formation of stratigraphic unit 3 (organic sediment), while other cereals possibly became more important with time compared to emmer wheat (Fig. 11), but see chapter 4.3.4.

Flax seed densities at Zug-Riedmatt were lower than in most other sites except Zürich-Parkhaus Opéra layer 13 and Horgen Scheller layer 3. As already mentioned in chapter 3.1.2, flax seed densities were highest in stratigraphic unit 3 of Zug-Riedmatt, consisting of organic sediment (Fig. 11).

Densities of opium poppy seeds in the stratigraphic units 6 and 8 of Zug-Riedmatt were comparable to densities in other sites. However, in unit 3, the density was much higher, 5000 r/l more than in all other sites. Except for profile sequence 68-67 (Fig. 7), this pattern could always be found, so it can be concluded that opium poppy was certainly a very important cultivar especially during the deposition of unit 3 at Zug-Riedmatt (Fig. 11).

Pea pod fragments were not recognized until recently (first description in Maier, 2001). Only whilst analysing samples of Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a) and Zug-Riedmatt, our lab started to record them systematically. They were therefore not systematically recorded and cannot be compared to other sites. Nevertheless, it is clear that in the Late Neolithic, pea was a much more important cultivar than previously thought based on the usually only scarcely present charred seeds.

The exotic, potentially cultivated or imported spices celery (*Apium graveolens*) and dill (*Anethum graveolens*) were found in other lakeshore settlements as well, but mostly in low numbers (Jacomet, 1988; 2006; 2009). At Zug-Riedmatt, they were probably not cultivated, as they only occur in low numbers above the units consisting of organic sediment.

All in all, the cultivar spectrum during the Horgen time period seems to be roughly similar in the region of Zug compared to the regions of Lake Constance and Zürich. The cultivar spectra of Zug Riedmatt fit well into the cultivar spectra of the second half of the 4th millennium BC (see e.g. the compilations of Jacomet, 2006, 2009; Jacomet and Maier, 2016).

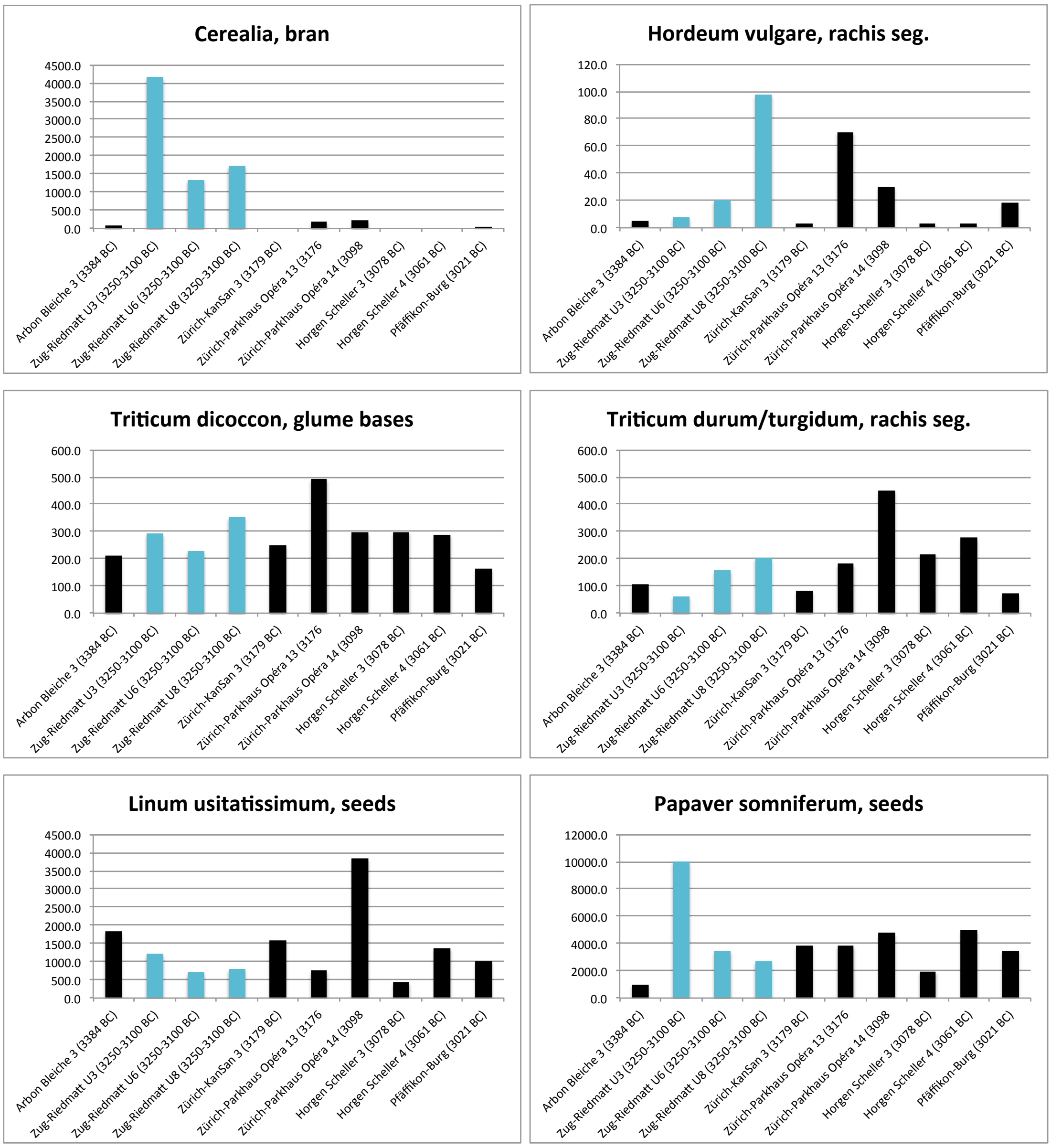

Figure 11. Densities of subfossil cultivar remains of lakeshore settlement Zug-Riedmatt, stratigraphic units 3, 6 and 8 (organic sediments; colored in blue and grouped together as the dating is not yet clear) and similarly dated sites like Arbon Bleiche 3 (Hosch and Jacomet, 2004; the dendrochronologically exact dating of this site is not clear anymore, Schweichel *et al.*, 2017), Zürich KanSan layer 3 (Brombacher and Jacomet, 1997), Zürich-Parkhaus Opéra layers 13 and 14 (Antolín *et al.*, 2017a), Horgen Scheller layers 3 and 4 (Favre, 2002) and Pfäffikon-Burg (Zibulski, 2010; all colored in black). Data were taken either from the original source if available (based on 'classical' volume measurement) or from Antolín *et al.*, 2017a and then transformed into density based on 'classical' volume measurement (using the factor proposed in Antolín *et al.*, 2015, appendix 7.2).

4.3.4 Activities connected with cultivars in the settlement of Zug-Riedmatt

The high numbers of remains of cultivars (see Tab. 7) - except celery, dill and maybe einkorn wheat - suggest that they were cultivated in the area. This is supported by the fact that from all of them, other plant parts besides grains or seeds were present. Since only a small part of the settlement was excavated and the sampling was quite selective, the spatial distribution of cultivars cannot be determined and is not discussed here. As the investigations in Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a) show, there might be considerable fluctuations inside a settlement.

Cereals were at least partly threshed and further processed at the site, which is shown by the numerous chaff remains found at the site, especially during the deposition of the organic sediments of stratigraphic unit 8, where all chaff remains of cereals reached their highest densities (Fig. 11). As already mentioned, emmer wheat chaff was already numerous in the lowermost stratigraphic unit 3 (consisting of organic sediment), while naked wheat and barley chaff densities gradually increased in the course of the settlement time, from unit 3 to unit 8. This could have two reasons: either the importance of the latter two taxa increased over time or the processing places of the cereals changed. The glume wheat emmer is usually stored in spikelets (see e.g. Alonso *et al.*, 2014), its chaff would therefore end up in the daily waste deposits of the settlement. Naked wheat and naked barley, in contrast, are free-threshing and are therefore not stored in spikelets. Their chaff would more likely end up at places where the threshing took place. Differences in the spatial distribution of the different chaff types were found e.g. in Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a). So there's a possibility that the threshing of naked wheat and naked barley was done closer to or within the settlement during the deposition of stratigraphic units 6 and especially 8 whereas before, it might have been done nearby, but not as close. Based on the available data, it is therefore rather suggested that it was not the importance of the cereals that changed, but rather the place of threshing and consecutive cleaning activities.

Cereal grains had a different distribution compared to chaff, and there was also a difference in the distribution of charred and waterlogged grain remains. Cereal bran (cereal grain fragments (rarely whole grains, but see Fig. A57) with waterlogged preservation) reached highest densities in the organic sediments of stratigraphic unit 3, while charred cereal grains (which were only present in low numbers anyways, see Tab. 7) reached highest densities in the uppermost unit 13, consisting of mixed sediment, and to a lesser degree in units 7 (an organic micrite layer) and 8 (consisting of organic sediment). This could point to different taphonomic processes acting during the deposition of the different units. Bran could represent residues of cereal grinding (at Zürich-Parkhaus Opéra, high densities of bran and mill stones were found in the same house; Bleicher and Harb, 2017, p. 269) or it could also originate from (human) faeces or dung (Robinson und Rasmussen, 1989; Maier, 2004; Herbig, 2009). Charred grains most likely represent cooking accidents. The latter are a quite robust type of remains and in unit 13, robust remains dominated in general. It is therefore a possibility that a taphonomic filter caused the comparatively higher densities of charred grains in samples of unit 13.

Flax was represented not only by seeds, single capsule fragments and larger pieces of capsules, but also by many fragments of their stems (though these were not fully quantified, they were present in >80% of all samples). This indicates that the whole plant was used (seeds for oil or as food, stems for fibres), that seeds might have been stored inside their capsules and that several steps of flax processing (see e.g. Pals and van Dierendonck, 1988) were done directly inside of the settlement. The deltaic area around the settlement with pools and fully or partly cut-off river channels might even have been very convenient for the retting of flax plants (von Reider, 1840). This must remain an assumption for Zug-Riedmatt as flax stems were not fully quantified. However, smaller pieces of stems (as they would appear after breaking of the stem) did appear regularely and in some samples in larger quantities (Fig. 12).

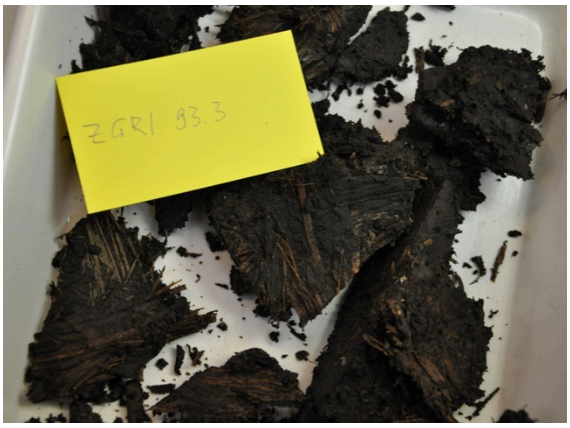

Figure 12. Layers of oriented flax (*Linum usitatissimum*) stems in a sample of Zug-Riedmatt (profile 93). (©Ö. Akeret, Integrative Prehistory and Archaeological Science (IPAS), University of Basel).

Opium poppy was primarily represented by its seeds. However, fragments of the capsules (more precisely the lid) were found in 9 samples (of different units) as well, revealing that probably whole poppy capsules were harvested and brought into the settlement (as is known from ethnographic sources; Tétényi, 1997). As in other sites, no whole capsules were found (they seem to be very fragile and obviously do not preserve well; only the lid is somewhat more robust, see also Antolín *et al.*, 2017a or Zibulski, 2010), so we cannot say for sure whether the plant was used for medicinal purposes as well (opiates are gained from the latex oozing from incisions made to the green seed capsules, but capsules can also be soaked in water or dried and ingested for a narcotic effect; Merlin, 1984). But the seeds were very likely consumed or pressed for oil extraction (or both). This is supported by the fact that in some samples, fragmented parts or halves of the seeds were more common than whole ones (e.g. 68.4). Opium poppy seeds appeared in much higher densities in samples of stratigraphic unit 3 (consisting of organic sediment) of Zug-Riedmatt than in any other (roughly) contemporary lakeshore settlement, leading to the assumption that it was a very important crop during this settlement phase - even though it has to be kept in mind that only a small part of the settlement was excavated and that poppy diaspores automatically appear in much higher numbers than e.g. the ones from cereals due to the high number of seeds which are produced in one capsule (several thousand).

As mentioned before, pea pod fragments were not representatively recorded in the beginning of the analyses. However, it is clear that they appeared regularly and sometimes also in high densities, showing the importance of this cultivar in Zug-Riedmatt, too (like also in Zürich-Parkhaus Opéra; Antolín *et al.*, 2017a). They also indicate that ripened peas were extracted from the pods in the settlement. The fact that seeds were much more scarce most likely has taphonomic reasons. Pea seeds seem to be very fragile, and especially if peas were also eaten in an unripe state (green, maybe still inside pods), chances for their preservation were very low. In that sense, the results of Zug-Riedmatt corroborate those of Zürich-Parkhaus Opéra and show that the importance of pea cannot be judged on the basis of charred seeds.

4.3.5 Aspects of land use based on the spectra of weeds and ruderals

4.3.5.1 Annual weeds and ruderals

The reconstruction of past weed communities is difficult, as they could have consisted of very different plant combinations compared to what we find today. Agricultural techniques were very different in the Neolithic, the agriculturally used landscape probably looked very different and finally many of the weedy taxa have a broad ecological amplitude (see synopses in Hosch and Jacomet, 2004 and Jacomet *et al.*, 2016). Therefore, it cannot be excluded that some taxa, which were assigned to another ecological group here, could have grown as weeds in the past as well. Open landscapes were probably much less common and woodland must have been much more extensive and strongly interconnected with the (probably rather small) fields. Weed diaspores in cultivar storages could shed light on these past weed communities, but at Zug-Riedmatt, no such storage samples were found. We therefore have to rely on results from other sites (e.g. Brombacher and Jacomet, 1997; Maier, 2001; Favre, 2002; Hosch and Jacomet, 2004; Antolín *et al.*, 2017a; see also the recent compilation of Jacomet *et al.*, 2016). These show that also in Neolithic times annual plants were strongly linked to cultivars.

In Zug-Riedmatt, nine taxa of annual winter crop and flax weeds were found. They were not very common. Only in stratigraphic units 5 (loamy sediment) and 8 (organic sediment), four taxa were found at the same time. The taxa spectrum was comparable to other contemporary sites, though somewhat less rich. What was special at Zug-Riedmatt were finds of Cretan catchfly (*Silene cretica*). This weed was commonly found in Neolithic lakeshore settlements (e.g. Brombacher and Jacomet, 1997) and it was a typical flax weed (Brombacher, 1993). At Zug-Riedmatt however, it mainly occurred in high densities in the loamy sediments of unit 5 of profiles 88 and 98, inside a rubbish heap (the so called 'bone midden'). It is therefore almost certain that this plant was deposited with cleaning residues of flax in this midden (though flax remains do not reach unusually high densities in unit 5 in total, they actually do appear in higher concentrations in samples which also contain high concentrations of Cretan catchfly, namely samples 88.7, 98.11 and 12, see appendix 7.9). This shows that the presence of plants may strongly depend on the type of structure the samples come from. In stratigraphic unit 4, an organic micrite layer, Cretan catchfly was also present in all profile columns, but in much lower densities. On the one hand, the presence of Cretan catchfly seeds proves a strong link between all samples of this unit. On the other hand, it's possible that its seeds somehow spread from the midden into the organic micrite layer. In other stratigraphic units, narrow-fruited cornsalad (*Valerianella dentata*) was the most commonly occuring winter crop annual weed, but it never occurred in high densities. We can therefore assume that the cultivation of winter crops was not significant or not practiced at all at Zug-Riedmatt.

The 16 taxa of summer crop annual weeds and annual ruderals were common in all stratigraphic units except the loamy sediments of unit 5. However, only from unit 6 upwards, they occurred in higher densities. This can be explained in different ways: Firstly, it could be linked to the increasing presence of cereals or to the increased deposition of their chaff in the settlement (Fig. 11). Secondly, it may have something to do with a different position of the excavated part of the settlement within the shore zone (eulittoral instead of sublittoral zone, see research paper 3.4), because plants of this group could grow locally at the site, too. It is possible that both reasons together caused the result. The most numerously appearing taxa, common vervain (*Verbena officinalis*) and thyme-leaved sandwort (*Arenaria serpyllifolia*), both have slightly different ecological demands, indicating that different types of soils were used for farming. While it is impossible to say which weed species grew next to which cultivar, the annual weed spectrum nonetheless shows the presence of continually disturbed sites during the settlement activities at Zug-Riedmatt. Such sites are necessary in order for annual plants to develop a weed flora, which points to permanent cultivation rather than slash-and-burn (for further discussion of this topic see the review by Jacomet *et al.*, 2016).

4.3.5.3 Perennial ruderals

Only 11 taxa of perennial ruderals were found at Zug-Riedmatt. Some of them could have grown on cultivated plots like annual weeds (which is proven by weed spectra of cultivar stocks, see e.g. Brombacher and Jacomet, 1997), they could have been brought into the settlement through animals (through dung or, in the case of burdock (*Arctium sp.*) and common cleavers (*Galium cf. aparine*) with their barbed diaspores through transport in fur of domestic animals) and finally some of them could even have grown directly at the site during periods when the excavated part of settlement was located landwards of the reed belt (see research paper 3.4 and former chapters). The last possibility is supported by the fact that this ecological group occurred in highest densities in the stratigraphic unit 8 (consisting of organic sediments). Particularly high densities could be found there in the profile sequences 68-67 and 74-73 (Figs. 6, 7). In contrast, in the organic sediments of stratigraphic unit 3, which was most likely located lakewards of a reed belt (see research paper 3.4), densities were very low. The most commonly appearing taxa, burdock (*Arctium sp.*), could even have been brought to the settlement on purpose, as it could have been used for the production of oil (Brombacher and Jacomet, 1997).

4.3.6 The gathered plant (fruit, berry, nut, acorn) spectra of Zug-Riedmatt in comparison with other contemporaneous settlements

As described in chapter 3.1.3, some differences in the abundance of gathered plants between the stratigraphic units 3, 6 and 8 (all consisting of organic sediment) existed, especially regarding densities. The results of a few very common taxa will shortly be compared to other roughly contemporary settlements according to Antolín *et al.* (2017a; Tab. 10).

density	Arbon Bleiche 3 (3384 BC)	Zug-Riedmatt U3 (3250-3100 BC)	Zug-Riedmatt U6 (3250-3100 BC)	Zug-Riedmatt U8 (3250-3100 BC)	Zürich KanSan 3 (3179 BC)	Zürich-Parkhaus Opéra 13 (3176 BC)	Zürich-Parkhaus Opéra 14 (3098 BC)	Horgen Scheller 3 (3078 BC)	Horgen Scheller 4 (3061 BC)	Pfäffikon-Burg (3021 BC)
Malus/Pyrus pericarp	98.7	100.4	95.3	34.1	46.7	52.7	95.3	162.0	16.7	138.0
Quercus sp. pericarp	7.3	2.9	6.0	42.0	38.0	10.0	1.3	35.3	14.0	0.7
Brassica rapa seeds	64.0	4.5	3.9	3.6	4.7	1.3	0.7	1.3	4.7	4.7
Fagus sylvatica pericarp	4.7	0.4	12.5	1.2	0.7	1.3	0.3	10.0	1.3	22.0
Prunus spinosa fruit	1.3	0.0	0.7	0.5	2.7	3.3	6.0	1.3	2.0	0.7
Rosa sp. fruit	3.3	2.7	3.9	4.3	6.0	3.3	0.7	44.0	3.3	0.7
Corylus avellana fruit	137.3	8.0	11.4	14.2	14.0	17.3	7.3	32.7	18.7	7.3
Fragaria vesca fruit	1250.0	293.7	382.2	167.9	286.0	234.0	125.3	215.3	52.7	534.0
Physalis alkekengi seed	17.3	1.3	2.9	5.6	8.7	16.0	0.7	4.7	2.0	3.3
Rubus fruticosus fruit	198.0	8.5	34.7	9.5	84.0	88.0	38.0	22.0	45.3	6.0
Rubus idaeus fruit	542.7	242.8	402.9	240.3	176.0	30.0	23.3	615.3	138.0	142.0
ubiquity										
Malus/Pyrus pericarp	100	100	94	98	96	98	96	100	100	100
Quercus sp. pericarp	88	27	59	60	64	87	51	95	100	19
Brassica rapa seeds	91	67	50	38	86	25	18	59	91	35
Fagus sylvatica pericarp	82	13	35	27	23	46	53	78	67	100
Prunus spinosa fruit	76	0	15	11	68	82	94	54	48	42
Rosa sp. fruit	73	53	44	47	82	89	59	83	86	64
Corylus avellana fruit	100	60	74	69	86	100	98	93	100	92
Fragaria vesca fruit	100	100	97	89	96	98	85	100	100	100
Physalis alkekengi seed	85	27	53	42	86	69	24	76	76	46
Rubus fruticosus fruit	100	60	76	60	96	77	64	98	100	58
Rubus idaeus fruit	100	100	94	93	96	57	18	100	100	96

Table 10. Densities and ubiquities of gathered fruit, berry, nut and acorn remains of lakeshore settlement Zug-Riedmatt, stratigraphic units 3, 6 and 8 (organic sediments; colored in blue and grouped together as the dating is not yet clear) compared to similarly dated sites like Arbon Bleiche 3 (Hosch and Jacomet, 2004; the dendrochronologically exact dating of this site is currently not clear anymore, Schweichel *et al.*, 2017), Zürich KanSan layer 3 (Brombacher and Jacomet, 1997), Zürich-Parkhaus Opéra layers 13 and 14 (Antolín *et al.*, 2017a), Horgen Scheller layers 3 and 4 (Favre, 2002)and Pfäffikon-Burg (Zibulski, 2010). Table was taken from Antolín *et al.* (2017a), but densities were transformed to values calculated based on 'classical' volume according to Antolín *et al.* (2015).

The apple or pear (*Malus/Pyrus*) pericarp density in stratigraphic unit 3 was comparatively high, with only layer 3 of Horgen-Scheller and Pfäffikon-Burg reaching higher densities, while in unit 8, a comparatively low density was recorded (but there was still a high ubiquity). Beech (*Fagus sylvatica*) nuts reached their highest density in stratigraphic unit 6, this was also the case in the comparison with other settlement layers (again, only Horgen-Scheller layer 3 and Pfäffikon-Burg reached higher values) and the ubiquity also reached its maximum in this unit. Wild strawberries (*Fragaria vesca*) and raspberries (*Rubus idaeus*) also reached comparatively high densities in stratigraphic unit 6 compared to other units of Zug-Riedmatt and settlement layers of other sites. The density of acorns (*Quercus sp.*) in stratigraphic unit 8 was comparatively very high, with only the density in Zürich KanSan layer 3 being higher. Ubiquities between units 6 and 8 were not that different though.

It can be concluded that at Zug-Riedmatt, most wild plants which can be regarded as gathered plants appeared in similar amounts as at roughly contemporary sites and that most of them were probably gathered in large amounts. However, it should also be mentioned that even though most gathered fruits, berries, nuts and acorns from Zug-Riedmatt reached their highest densities in the stratigraphic units 3, 6 and 8 (all consisting of organic sediment), there were some exceptions: fruits and seeds of sloe (*Prunus spinosa*), Chinese lantern (*Physalis alkekengi*) and rose (*Rosa sp.*) appeared in higher densities in stratigraphic unit 10, consisting of organic micrite in between the loamy sediments of stratigraphic units 9 and 11 . This could be explained either by these taxa entering the sediment more often due to natural causes or by taphonomic processes acting differently in the various units (all three taxa produce very robust lignified diaspores).

4.3.7 Activities connected with gathered plants (fruits, berries, nuts, acorns) in Zug-Riedmatt

Since only a small part of the settlement was excavated and since only relatively small profile samples were analysed, it is unclear how representative the results regarding gathered fruits, berries, nuts and acorns at Zug-Riedmatt are. Remains of this type of plants often appear in concentrations at certain locations in a settlement (see e.g. Antolín *et al.*, 2017a). If such concentrations are not recorded by samples, it is therefore not possible to reconstruct directly the use of a plant. Whether such concentrations are captured by a profile column is always a coincidence. Differences in average densities between different stratigraphic units could either reflect general changes in the use of different species, or they could simply show changes in single households. They could even have been produced by chance. Nonetheless, it is interesting to see the sometimes very large differences between the stratigraphic units consisiting of organic sediment (especially between units 6 and 8). Except for barley, cultivar densities were rather similar in these two units (see chapter 4.4.3), but for gathered plants, differences were comparatively more pronounced.

Some massive concentrations could point to a local processing, consumption, the feeding of animals or even remains of faeces/dung. We have found the following (the position of the profiles can be seen in Fig. 3):

- apple/pear pericarp in samples 98.5 (unit 5, consisting of loamy sediment, from the so-called ‘bone midden’) and 74.10 (unit 6, consisting of organic sediment): both 480 r/l,
- wild strawberries and raspberries in sample 73.6 (unit 6, consisting of organic sediment): 1858 resp. 4783r/l

- acorns in sample 67.8 (unit 8, consisting of organic sediment): 1240r/l
- beech nuts in sample 88.11 (unit 6, consisting of organic sediment): 325 r/l

Which use each taxon had cannot be decided in each case. But charred or semi-charred remains of some of the plants in this group that cannot directly be consumed without processing suggest that they were used as food. Charred cotyledons of acorns (sample 98.4) are a good example, as acorns contain bitter tannins and had to be processed in some way in order to get rid of them (Mason, 2000).

As already assumed before (e.g. Antolín *et al.*, 2016), high densities of wild fruits could point to their economic importance and the deliberate tending to wild growing plants bearing these edible fruits, berries, nuts and acorns in the area surrounding the settlement. Such insights, however, are only possible if a large surface of a settlement is excavated, if the places where the houses were built are known and if a whole, large surface is systematically sampled. As we do not have such a situation for Zug-Riedmatt (compared e.g. to Zürich-Parkhaus Opéra, Antolín *et al.*, 2017a), conclusions on this topic remain speculative.

There are also some rarely appearing edible plants which most probably did not grow in the immediate surroundings of the settlement. These are plants like European blueberries (*Vaccinium myrtillus*) with its specific demands concerning soils (nutrient-poor, humus-rich, acid), which might point to the intentional exploration and exploitation of such sites by the inhabitants of Zug-Riedmatt.

Many more wild plants found at Zug-Riedmatt could have been gathered for various purposes, e.g. wild carrot (*Daucus carota*) as root vegetable, goosefoot (*Chenopodium sp.*) as leaf vegetable, oregano (*Origanum vulgare*) as spice, burdock (*Arctium sp.*) as oil supply, perforate St. John's wort (*Hypericum perforatum*) as medicinal plant, common reed (*Phragmites australis*) as building material, meadowsweet (*Filipendula ulmaria*) for flavouring, to name only a few. But the importance of plants mainly gathered for their vegetative parts cannot be easily derived from the 'usual' macrobotanical findings (mainly disapores) only, as any plant which was not primarily gathered for its seeds/fruits is 'underrepresented' in the botanical macroremain record(in the sense that other than seeds and fruits, remains are often not identified), and its true occurrence and therefore also its use has to remain the subject of speculation, especially if palynological data is not available (see also Vandorpe and Wick, 2014). One example for Zug-Riedmatt is wild garlic (*Allium ursinum*), which was probably gathered for its leaves, and is therefore only visible in the palynological record (personal comm. A. Heitz-Weniger) as long as leaves are not identified. However, we know from ethnographic sources (e.g. Moerman, 1998) that the knowledge about the use of wild plants was probably very wide-spread.

4.3.8 The environment and its use

4.3.8.1 Woodland

Woodland plants were the most diverse ecological group at Zug-Riedmatt (19 taxa), even without considering the many gathered fruits, berries, nuts and acorns also growing in this habitat. It was also one of the few ecological groups which were well-represented in almost all stratigraphic units and where no differences between the 3 units consisting of strongly organic sediment (3, 6 and 8) could be found. The woodland was certainly a very important element of the landscape during the Horgen time period (Fig. 12), and must have provided numerous vital resources like food, material for construction work, for the building of weapons, tools and other things, for animal fodder etc. Its use was most likely one of the main reasons for its presence in the settlement layers, with maybe a few exceptions of light, winged fruits like the ones from birch (*Betula pendula/pubescens*).

Like in many other settlements of the 4th millennium BC, the plant with highest densities in this group was clearly European silver fir (*Abies alba*). It was represented primarily by needles, which could have been used e.g. as animal fodder (e.g. Akeret *et al.*, 1999; Akeret and Rentzel, 2001; Kühn and Wick, 2010). The same use is possible for Norway spruce (*Picea abies*), the many unidentified leaves of deciduous trees and European mistletoe (*Viscum album*). European yew (*Taxus baccata*) was also represented by needles (and seeds), but since almost all parts of the plant are poisonous (Wilson *et al.*, 2001), it is likely that only its wood was used. It might have been a very important resource for weapons and other devices (e.g. Favre and Jacomet, 1998; Harb, 2016). The moss *Neckera crispa* could have been used for various purposes like e.g. sealing, wrapping, cleaning etc. (Dickson, 2000 and references therein). These and other, less regularly occurring plants represent mostly closed, shadowy woodland. Other plants like birch represent more light – probably secondary - woodland. There are some plants like common holly (*Ilex aquifolium*) which point to a more open woodland due to interference by humans and their domestic animals. The trees used for construction work showed that intensive pollarding was done (personal comm. E. Gross, based on unpublished data of N. Bleicher). Riparian woodland and carrs, which were already discussed in research paper 3.4, were certainly also an important element in the provision of the settlement with various resources from the nearer surroundings (Fig. 12).

4.3.8.2 Woodland clearing edges, hedges and bushes

Through the opening of the woodland for various reasons, e.g. its intensive exploitation, different plants were promoted. This group was especially well represented by gathered fruits, berries and nuts like raspberry (*Rubus idaeus*), hazel (*Corylus avallana*) and wild strawberry (*Fragaria vesca*). Additionally, 16 taxa of not obviously gathered plants, preferably growing on such bushy, rather open spaces, have been found at Zug-Riedmatt. They concentrated mostly in the upper part of the occupation layer, in stratigraphic units 6, 8, and 10. This increase might have been caused by an intentional, gradual opening of the woodland during the settlement period of the site (which might have lasted several decennia). As a result, such semi-open habitats could have gained more space , and their deliberate tending might have been a factor for its more and more intense use (Fig. 12). Another factor for the spreading of such habitats might have been the animals grazing in those areas, keeping this type of landscape more open and transporting the remains of the plants growing in such environments into the settlement with their dung.

4.3.8.3 Grassland

In general, grassland plants were not very common in the samples of Zug-Riedmatt (14 taxa in total) compared to the roughly contemporaneous settlement Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a). Exceptions are stratigraphic units 6 and 8 (consisting of organic sediment) in profile sequences 68-67 and unit 8 in profile sequence 74-73, where higher densities of grassland plants could be detected (Figs. 6, 7). During the time of the settlement, we certainly cannot expect the existence of extensive grassland areas. More likely, these plants were brought into the settlement similarly to perennial ruderal plants. One possibility is through the dung of animals which roamed the nearer and farther surroundings of the settlement in search of such plants (see also Antolín *et al.*, 2017a). This could also explain the presence of plants like laserwort (*Laserpitium siler*), which most probably did not grow in the immediate surroundings of the settlement but in more mountainous, dry and steep environments. Laserwort might therefore point to a larger operating range (or e.g. frequent use of boats, as it can be found at the south of lake Zug). The Lorze delta might also have provided some less densely vegetated places where grassland could have developed and where inhabitants of Zug-Riedmatt might have brought their animals for feeding (Fig. 12). Some of the taxa with a broader ecological amplitude like common self-heal (*Prunella vulgaris*) might even have grown close to or within the settlement in times when it was located landwards of the reed belt and the shore might have been dry at times. Another possibility is the growth of grassland plants on fallow land.

Figure 12. One possible reconstruction of the settlement Zug-Riedmatt and its surroundings, based on the still ongoing transdisciplinary analysis. (©Amt für Denkmalpflege und Archäologie des Kantons Zug, Direktion des Innern (Archiv Archäologie); by E. Kläui).

5. Synthesis and future perspectives

The detailed results are described in the research papers (Steiner *et al.*, 2015; Steiner *et al.*, 2017a; Antolín *et al.*, 2017c; Steiner *et al.*, 2017b), in the appendix (Antolín *et al.*, 2015; Antolín *et al.*, 2017b) and in chapter 3. In the following, the main results of this Ph.D. thesis (see research papers), including other SNF-project results which were produced with my contributions (see appendices and cited literature) are summarized, examined in a wider context, and ideas for future research are developed.

5.1 Main results of the methodological research

Several methodological procedures used to process material for macrobotanical analyses of waterlogged material were examined in the framework of the project, mainly on samples of the Zürich-Parkhaus Opéra site (see Antolín *et al.*, 2017a; chapters 5.1.1 – 5.1.4). A clear result from all these studies was that the methodologies used can influence the results of archaeobotanical analyses to a very large extent. It should therefore always be documented clearly and in a detailed way which methods were used.

In the following, the methodological results are summarized in the order of their publication and future perspectives concerning methodological research are discussed.

5.1.1 Sieving

In a comparison of different operators using the same sieving method (wash-over, in German: 'Halbflotation'; Kenward *et al.*, 1980; Hosch and Zibulski, 2003) to process the same material (subsamples of the same samples), systematic and unsystematic differences were detected despite identical instructions (research paper 3.1). Unsystematic differences might have been the result of difficulties when producing equal subsamples from lumpy waterlogged sediment. Systematic differences however were caused by differences in the techniques of the sievers, and these differences were more pronounced for large volume samples (>3l; within the research project called A-samples; sieved with 8mm and 2mm mesh sizes): one siever loosened all concretions completely (but carefully), resulting in a lower density of small-seeded remains and in a lower number of taxa in the 2mm-fraction, but clear, easy-to-sort samples. The other sievers did not always loosen concretions completely, resulting in the inversed result of a higher density of small-seeded remains and a higher number of taxa in the 2mm-fraction, but sometimes more difficulties to sort samples due to their turbidity. For the small subsamples (0.3l; within the research project called B-samples; sieved with >2mm and 0.35mm mesh sizes), these differences were not relevant anymore, as most remains were detained in the smallest mesh.

Several important conclusions could be drawn from these results. Firstly, with very detailed instructions and constant feedback, wash-over sieving is a reliable method to extract botanical macroremains from waterlogged archaeological samples even if different sievers work on the same site (which is indispensable when investigating large-scale excavations). However, there should be clear guidelines as to which remains should be quantified in the large (2mm-) fraction. For Neolithic lakeshore settlements, we defined a list which can be found in research paper 3.1, table 8. In addition, a considerable margin of error should be taken into account when evaluating densities of plant remains in such samples.

5.1.2 Volume measurement

In a comparison of different volume measurement techniques, a systematic difference between the 'classical' and the displacement volume measurements was found which could be described by a proportionality factor of 1.5 (Antolín *et al.*, 2015, appendix 7.2). This factor gives a rough guiding value for the differences between the two measurement methods. It can be used if the sample volumes of different sites were measured in different ways, but need to be compared. There was also an unsystematic measurement error, which, however, could be neglected. The displacement volume measurement is regarded as the most objective measurement of the volume of waterlogged sediments.

5.1.3 Representativeness based on sample volume

In order to have a representative recording of large-sized botanical remains, large-volume samples are essential (Antolín *et al.*, 2017b, appendix 7.3). This is especially important if the economy of a site is to be evaluated, as many cultivars and gathered plants have large-sized remains. The representative recording of charred cereal grains for example is especially important in regard to comparisons with dryland sites, where only charred remains are preserved. Samples of around 3l (displacement volume measurement) of sediment are recommended for well-preserved Neolithic settlement layers in order to have large-sized remains representatively recorded, which corroborates earlier results (e.g. Hosch and Jacomet, 2001).

Average density values from small-volume samples might be comparable to those from large-volume samples (even for large-sized remains), while ubiquity values of large-sized remains will most likely be underestimated if derived from small-volume samples. In the latter case, ubiquity values above 30% and especially above 50% need to be considered as very high. Site plan distributions of large-sized remains based on small-volume samples are not representative either.

We could give recommendations about which remains of a taxon should be counted in which fraction. In any case, we could show that counting units need to be clearly defined for each fraction in order to avoid counting (fragments of) remains twice or several times.

5.1.4 Subsampling of the sediment prior to sieving

When evaluating the subsampling process of unprocessed waterlogged sediment, we found that the subsampling of lumpy, waterlogged material should only be done if indispensable, as it can introduce a bias (research paper 3.2). However, subsampling is usually needed for these kinds of sediment, as they are often very rich in well-preserved

plant remains. In that case it is better to properly sieve the samples (using wash-over sieving) without prior subsampling in order to eliminate the lumps of the sediment and take subsamples from the fractions after sieving. In that case, subsampling can be done in the same way as for non-lumpy material (using random subsampling, e.g. van der Veen and Fieller, 1982; Thompson, 1987). If subsampling is done prior to sieving, the sample sizes would have to be adapted to the fact that no random subsampling is possible due to lumps in the sediment (research paper 3.2). In that case, a factor of 1.32 for the large (>2mm) fraction and of 1.96 for the small (0.35mm) fraction would be needed in order to have the proportions of the most important taxa appropriately represented on average (based on numbers recommended by van der Veen and Fieller, 1982). This would result in a sample size of 500 items to count for the large fraction and 750 for the small fraction. With respect to rare species or in order to evaluate the diversity in the small fraction, even larger sample sizes would be needed. Higher sample sizes result in a higher amount of time for analysis. Therefore, sieving prior to subsampling is most likely always the most economical option for the processing of waterlogged sediments.
In a comparison of different subsampling methods (random square and stratified grid subsampling), no clear differences in respect to bias and variation between the methods could be found. However, the scope of the test was rather small (only two samples were compared, for statistically robust results, at least six more samples – equalling >750 hours of work – would have been needed), so this topic should be further examined.

5.1.5 Transdisciplinary sampling at Zug-Riedmatt

The careful, very detailed transdisciplinary sampling of the profile columns by all the researchers involved (micromorphologist, palynologist, macroremain archaeobotanist incl. the feature archaeologist) was very helpful in order to understand better the layer formation at the site. Such an approach is necessary if the succession of the stratigraphic units is not completely understood from the beginning, as already found some decennia ago (e.g. Jacomet, 1985). In this way, the layers can later be assigned to different stratigraphic units (or later: occupation phases) as soon as those are defined. In many excavations, no evaluation of archaeological features was/is done, mostly due to economical restrictions (as in the case of Zug Riedmatt), or it is done many decennia later (see e.g. the example of Zürich Mozartstrasse, Ebersbach *et al.*, 2015). If a detailed sampling approach is applied, we may assign the fine layers to relevant units even then. This assignation can also be done a priori based on a detailed examination of the profile sequences' stratigraphies as in the case of Zug-Riedmatt (see chapter 2.1.3 and Fig. 4).
However, a detailed separation of samples is not always necessary, as microlayers could not often be parallelised in different profile sequences due to the patchy composition of some of the layers and as seasonality or other cyclic successions (within layers) could not be detected. In these cases, a detailed separation of thicker layers (e.g. strongly organic ones) into several thinner samples would not have been absolutely necessary and it would have been enough to separate between the different stratigraphic units (if they are clearly separable from the beginning, see above). However, it would be

advisable to finely separate the layers in zones where the stratigraphy is not clear right from the start, while the separation would not have to be very detailed in zones where the stratigraphy is clear. But in both cases, it should be avoided to mix different sediment types. This has important implications for future research strategies (see chapter 5.3.5).
On the other hand, it has to be noted that the transdisciplinary way of working is much more time-demanding than others (Winiwarter, 2014, p.52). It is therefore advisable that the whole process is carefully planned and exactly coordinated between disciplines in future projects so that there is enough time for the scientific exchange between disciplines (e.g. for parallelising microlayers) and for the transdisciplinary evaluation. With such precautionary measures, transdisciplinarity is a very viable method to analyse lakeshore settlements and it should be encouraged as much as possible. It can greatly improve the understanding of complex lakeshore settlement stratigraphies.

5.1.6 Spreading methodological knowledge for waterlogged sediments and addressing other important methodological topics

Based on this research and also on previous research done by the archaeobotanical group at the IPAS, it is possible to define an optimal procedure to treat waterlogged samples for the study of botanical macroremains (see flow chart in appendix 7.7). In order to be able to spread this knowledge further, a synthesis was done in the form of a video describing the wash-over method with all essential pre-treatment methods. In addition to the results of the research papers mentioned above, the works of Hosch and Zibulski (2003) on wash-over sieving and Vandorpe and Jacomet (2007) on pre-treatment were also considered. The script of the video (English version) can be found in the appendix (7.8) and the video itself is available online (English version: https://youtu.be/UCa5oKgA0PM; German version: https://youtu.be/D91wZiieeOg). Using it for teaching and presenting it on international platforms will hopefully contribute to a standardisation of the methods used to treat waterlogged archaeological samples.
It should be aimed for a standardisation of the methodology used for waterlogged sediments in order to allow a quantitative comparison of different sites. For this, more research is needed to test if the results described above can be generalised for other waterlogged sites (e.g. the proportionality factor for volume measurements, the subsampling process). Concerning the target number of counted items per sample, a further evaluation using our data is already ongoing, where its interrelation with the number of samples analysed is examined (Vach *et al.*, in preparation). It is also planned to summarize and make available online guidelines for the optimal sampling method for lakeshore settlements (at the excavation and in the lab). It would also be important to look into other methodological aspects which might influence the archaeobotanical results, e.g. the impact of different extrapolation methods of archaeobotanical data or the subsampling method of the smallest sieved fraction (random or systematic; no difference was found for charred material (Veen and Fieller, 1982), but it has never been tested for waterlogged material).

5.2 Evaluation of layer formation processes at lakeshores

It is important to understand the layer formation at a site before e.g. economic aspects are interpreted, as it could have strongly influenced the composition of the resulting deposits. Examples of such influences are flooding episodes between or during settlement phases, which result in a very different input of material than anthropogenic activities, or the preservation conditions of organic components in the layers, which can affect the deposited spectrum. Different methods were used to approach different aspects of layer formation processes in the past, and archaeobotany was always an important tool for this (e.g. Jacomet, 1985; Schlichtherle, 1985; Jacomet *et al.*, 1989; Brombacher and Hadorn, 2004; Jacomet, unpublished data Risch-Oberrisch).

During the project, useful indicator-proxies (preservation parameters) for different depositional environments were defined based on existing literature (like e.g. Brinkkemper, 2006, Jones *et al.*, 2007) and earlier work at the IPAS (e.g. Pollmann, 2014).

The natural depositional environment of layers could be identified using aquatic and wetland plants, which are suitable because they primarily represent natural components, in combination with modern analogue data of natural seed banks (e.g. Bollinger, 1981). Using multivariate statistics, the natural depositional environment of layers can be identified in this way.

We tried to systematise and standardise the evaluation methods so that they are practicable, can be done routinely and can easily be compared in different sites. In the following, the results are summarized and future perspectives are discussed.

5.2.1 Reconstruction of layer formation processes using the preservation of plant macroremains

Forty-seven of the above mentioned preservation parameters were used to systematically assess layer formation and preservation quality of the two sites Zürich-Parkhaus Opéra and Zug-Riedmatt (research paper 3.3). Even though the taphonomy of these parameters is not always completely understood (modern experimental work is needed for this), they provided an important insight into differences in formation processes and their recording proved very helpful. They showed that organic samples from the base of the settlement layer show least signs of corrosion and/or erosion and archaeobotanical research should therefore mainly focus on them (especially if the economy of a site is the main focus of a study). Other samples could be used to target specific questions, e.g. content of loam-rich features or rubbish heaps.

As a result of this research, in studies of waterlogged deposits, the semi-quantitative recording of a reduced list of 27 preservation parameters is strongly recommended (e.g. preservation conditions of cereal chaff and apple/pear pericarp; see research paper 3.3). An objective semi-quantitative numerical recording (Bullock *et al.*, 1985, modified and own scale) can be used in order to reliably detect better- and worse-preserved parts of the stratigraphy or surface of an occupation layer before the economy of the site is evaluated.

Following the models in Bleicher and Schubert (2015), in research paper 3.3, it was proposed that at least between 20-45% of the originally deposited organic material was preserved at some parts of the investigated sites. This will help in future reconstructions of diet and economy.

Attempts to use the fragility or robustness of seeds and fruits as a proxy for the taphonomy of the layers were not successful so far (unpublished own data based on correlations between different groups of plant seeds/fruits). But this topic should be investigated further. Above all, it should be defined more clearly which seeds are suited for calculating a factor for their survival rate.

5.2.2 Disentangling natural and anthropogenic influences in waterlogged deposits using an indicator group database

Aquatic and wetland plants alike have always been used as a helpful tool for the evaluation of layer formation processes (e.g. flooding events, conditions within the settlement) at Neolithic lakeshore sites, especially in combination with data from contemporary naturally deposited modern analogue samples (Bollinger, 1981, see e.g. Jacomet, 1985). For making more readily accessible such modern analogue data during the project, the so called indicator group database was created in ArboDat, containing spectra of modern, but also subfossil analogue samples for defined assemblages (like reed belt, floodplain sediment etc.).

At Zug-Riedmatt, we compared data of modern analogue samples from lakeshores with the composition of samples from the Neolithic layers with the help of multivariate statistics (research paper 3.4). Using these proxies, we could see a change from permanently flooded conditions (lowermost unit consisting of organic material, unit 3) to temporarily much drier, but still wet conditions (uppermost unit consisting of organic sediment, unit 8). What became obvious (once more) from these comparisons was the fact that conditions during the deposition of settlement layers in lakeshore settlements were not always the same and settlements might have been located in different parts of the former shores. As in some cases, the settlement areas appeared to not have been permanently covered by water, it should be investigated further if a scenario similar to peat (acrotelm-catotelm; Ismail-Meyer *et al.*, 2013) could have led to the formation of well-preserved organic layers (this scenario was not considered in the models investigated by Bleicher and Schubert, 2015). Either way, conditions of layer formation in lakeshore settlements should be reconstructed case by case as there is probably no universally valid 'Pfahlbau scenario'. For more details concerning this topic at Zug-Riedmatt, see chapter 5.3.1 below).

Within the frame of this Ph.D. thesis, several samples from naturally accumulated sediments dated to the Neolithic and Bronze Age were investigated as well. They have provided valuable information about their formation and the natural composition of layers in floodplains or lakes. Some samples from Zug-Riedmatt, Überbauung Riedpark III for example could clearly be identified as fluvial sediments based on both palynological (personal comm. A. Heitz-Weniger) and macrobotanical results (based on results from chapter 4.3). They showed that a typical element of these samples are alder pollen and fruits and low densities of aquatic plants. It is therefore recommended to analyse such samples from naturally accumulated Holocene sediments if possible, and add their composition to the indicator group database. Like this, they can be used for a comparison with archaeological sediments. Similar data from other researchers were already inserted into the indicator group database (e.g. Kreuz *et al.*, 1998), but not yet evaluated.

5.2.4 The need for a larger indicator group database with more experimental and archaeological data

The biggest gap of knowledge that has been identified during the course of the project is the lack of reference data to use as reliable parallels. Now more than ever, it became clear that such data are indispensable, particularly when one intends to use multivariate statistics for the analysis. Two lines of experiments should be done in the future:

First, more information on the composition of samples from naturally accumulated sediments should be gahered. So far, we only have five sets of data for modern natural sediments along lake-land-transects at lake Zürich and Greifensee (Bollinger, 1981), and data on samples from naturally accumulated Holocene sediments in floodplains are also scarce (e.g. Kreuz *et al.*, 1998; own data, see chapter 5.2.2 above). In the future, we should therefore collect more modern analogue data from natural lakeshores in Central Europe, including strandlines and river floodplains. Also modern data from ponds and pools (e.g. modern fisheries, ponds of sewage sludge) should be considered. In addition, modern analogue samples from contemporary lakeshore settlements (e.g. Inle Lake) would be desirable. Environmental conditions have of course changed substantially since the Neolithic and it is sometimes difficult to find locations which are not artificially influenced in some way. But as shown in research paper 3.4, modern analogue samples can be very helpful for the interpretation of archaeological samples, and the effort of finding suitable locations is therefore justifiable. In addition, more samples from naturally accumulated Holocene sediments would also be a very helpful tool if they were C14-dated. Archaeological samples which can be clearly interpreted (e.g. storage contexts, ruminant dung) should also be used more often for evaluating the composition of mixed archaeological layers, e.g. in combination with multivariate statistics.

Second, experiments about decay, dislocation and sinking rates of organic material (more precisely plant remains) as in Schweingruber (1976, p. 21) and Nichols *et al.* (2000) would also be very helpful. More studies of plant (macro-)remains in modern assemblages would be useful as well, e.g. dung (Schepers and Van Haaster, 2015) or cereal processing (e.g. Hillman, 1984; Jones, 1990). Alternatively, processes like e.g. accumulation of organic matter in bogs and fens or decay in compost heaps could be used as analogies. In experiments and studies done so far, the results are often not described in as much detail as required for us, so a large part of the classifications used for botanical macroremains is based on experience rather than empirical data. This results in a lack of methodological transparency on the interpretation of botanical samples. It can only be avoided in the future by the use of well-recorded data in statistical evaluations of archaeobotanical samples. A comprehensive indicator group database could help us answering many of the questions which are still unanswered about accumulation, reduction and transformation of archaeological organic deposits. Expanding the indicator group database and making it accessible for the public should be an important goal for the future.

5.3 Evaluation of the Zug-Riedmatt site

Only 64m^2 of the former lakeshore settlement Zug-Riedmatt were excavated and from this area, the botanical macroremains of five profile sequences were analysed (see chapter 4). These analyses showed that the composition of the organic layers was quite patchy spatially. This means that the palaeoeconomical results from the excavated part might not or only carefully be generalised for the whole settlement (which stretches over 2500m^2, based on the results of corings). A maximum of only two houses could have been located (partially) within the excavated area. In contrast, the stratigraphy is optimally examined and can give a lot of evidence concerning natural and anthropogenic factors influencing the deposition of the occupation layer. In the following, both aspects and future perspectives will be discussed.

5.3.1 Layer formation processes based on the stratigraphical evaluation of Zug-Riedmatt

Based on the results from research papers 3.3, 3.4 and chapter 4.3.2, some natural and anthropogenic factors influencing layer formation processes at Zug-Riedmatt could be reconstructed. The results presented in this chapter are mostly based on the plant macroremain spectra and are therefore somewhat preliminary. However, we are aware of the fact that it is necessary to include results from as many disciplines as possible in order to get an integrated insight into the complex mixture of processes present in occupation layers of lakeshore settlements. We therefore expect a lot more results during the upcoming transdisciplinary evaluation of macroremain, pollen, micromorphological and some insect and palynofacies data (the latter two by M. Schäfer and D. Sebag). This evaluation could not yet be finalised but is ongoing (Ismail-Meyer *et al.*, in prep).

5.3.1.1 Natural factors influencing layer formation processes

While the lowermost unit consisting of organic sediment (stratigraphic unit 3) might have been sedimented when the excavated part of the settlement was still covered by water, the uppermost unit consisting of organic sediment (stratigraphic unit 8) was formed in at least temporarily drier, maybe marshy conditions (see research paper 3.4). During the formation of the intermediate unit consisting of organic sediment (stratigraphic unit 6), the excavated part of the settlement might even have been situated exactly between land and water (eulittoral zone). In between the organic settlement layers, organic micrite layers, most likely representing temporary flooding events, were deposited. They most likely represent natural cyclical events (like a lake level rise) in the sense that they were affected by different agents than the organic layers in between (the latter mainly represent high anthropogenic sedimentation rates); this could also be seen in the preservation parameters, where a group indicating water influence could be defined (research paper 3.3). Maybe the transdisciplinary approach will provide more information about the nature of these agents (lake, river, both or something else entirely).

5.3.1.2 Anthropogenic factors influencing layer formation processes

By comparing the composition of botanical macroremains of the stratigraphic units consisting of organic sediments (3, 6, 8), different densities and ubiquities of the plant taxa of the different ecological groups could be found. Although these differences were larger between unit 3 and units 6 and 8, differences between the latter two units were sometimes also substantial (e.g. for gathered fruits, berries, nuts, acorns). This supports the assumption of them representing three separate settlement layers within one occupation phase (see chapter 2.1.3), although this should first be confirmed by the analyses of the other disciplines.

The state of preservation of many plant remains was excellent or even outstanding compared to other lakeshore settlements (e.g. rosehip fruits with hair, moss capsules). The causes for this are not yet entirely clear. The fact that remains in the midden-like structure in the NW-corner of the excavated surface (the so called 'bone midden') seemed to be especially well-preserved in general (see also Billerbeck *et al.*, 2014, appendix 7.6) could have been linked to the loam layer on top of it acting as protection, quickly sealing the organic material in preferential conditions. The ongoing transdisciplinary evaluation will perhaps provide more insights (Ismail-Meyer *et al.*, in preparation), but in future experiments on decay of organic matter are needed to be able to judge this (as mentioned above).

It was also found that the local trophic conditions at the site changed during the settling activities, as meso- and eutrophic aquatic plants were more common than oligotrophic aquatic plants while the settlement activities were ongoing. This was most likely linked to rubbish dumping and/or dung deposition, which affected the water quality near the settlement.

No stratigraphic intermixture was found over larger areas of the profiles (there were many finely laminated parts with different macroremain and pollen spectra), and many stratigraphic units were present in the whole excavated area. Despite that, no seasonal deposition patterns could be found based on botanical micro- (personal comm. A. Heitz-Weniger) and macroremains despite very detailed analyses. This means that seasonality cannot always be recognized in lakeshore settlements despite careful analyses (see also Richard, 1993, where the same methods were used for two sites at small lakes in the French Jura region, revealing seasonality in one site but not the other). One reason for this might be the patchy composition of occupation layers (while naturally accumulated layers seem to be more uniform, see e.g. Cretan catchfly or brittle naiad distributions at Zug-Riedmatt).

5.3.2 Nutrition of the Neolithic population at Zug-Riedmatt

Emmer and tetraploid naked wheat, barley, garden pea, flax and opium poppy were most likely grown in the nearer surroundings of the settlement and at least partly processed directly at the site. This cultivar spectrum corresponds to what is normally found in contemporary lakeshore settlements (Brombacher and Jacomet, 1997; Favre, 2002; Hosch and Jacomet, 2004; Zibulski, 2010; Antolín *et al.*, 2017a). Opium poppy, flax and cereal bran were more numerous in the lowermost unit consisting of organic sediment (stratigraphic unit 3), while tetraploid naked wheat and barley were most numerous in the uppermost unit consisting of organic sediment (stratigraphic unit 8). Our results most likely show a local change of processing methods/locations at the excavated and analysed places rather than a change of the economy in the course of the whole occupation period (which might have lasted several decennia). Since only mixed deposits (thanatocoenoses) were found, it is not possible to interpret in detail the agricultural practices. The presence of an annual weed flora (e.g. common vervain, thyme-leaved sandwort and common knotgrass), however, could point to highly disturbed soil conditions on crop fields and therefore the use of permanent cultivation (Jacomet *et al.*, 2016).

Gathered plants must also have been an important component of the diet. A large range of edible plants were found, most numerous among them crab apple, wild strawberry and raspberry. It is not possible to say if such plants were tended with the intention of increasing their harvest based on the results of Zug-Riedmatt, but the amounts in which these plants were found correspond to the ones found in contemporary settlements, and therefore this seems to be likely.

In order to properly test all the statements above, it would be important to have more analysed samples. This will be discussed further in chapter 5.3.5.

5.3.3 Environment of Zug-Riedmatt and its possible use

Important elements of the natural environment of the settlement, in addition to lake Zug and the river Lorze, were mainly wetlands and woodlands. The latter probably provided many resources for building activities, artefacts and nutrition (for humans as well as animals) while the former probably strongly influenced life at the location of the settlement itself.

There were indicators for an increasing importance of grassland, weedy and ruderal communities and for a continuous opening of the woodland (clearings, hedges and bushes) during the existence of the settlement (see e.g. Fig. 3.1.4-3). Whether this was caused mainly by plants growing directly in the settlement (due to the ground becoming drier), by local changes in the excavated part of the settlement or by anthropo-zoogenically triggered changes in the landscape is difficult to determine based on the available results so far, but it would not be a surprising outcome of settling activities. If wild-growing useful plants were really tended, as was mentioned in the chapter before, an opening of the woodland could have been linked to such activities as well. Besides, several other settlements at lake Zug could have co-existed with Zug-Riedmatt (Huber and Schaeren, 2009), which could have increased the anthropogenic impact further.

5.3.4 The importance of assessing layer formation in waterlogged sediments by studying profile samples before studying surface samples for palaeoeconomical analyses

The evaluation of botanical macroremains from stratigraphic sequences can give valuable information about layer formation processes as shown clearly within our project. If possible, surface and profile samples should be combined, as was recommended by Brombacher and Jacomet (2005) and done in previous research, e.g. for Arbon Bleiche 3 (Brombacher and Hadorn, 2004, Hosch and Jacomet, 2004), Hornstaad-Hörnle IA (Maier, 2001) or Torwiesen II (Herbig, 2006, Maier, 2011).

As the analyses of Zug-Riedmatt showed, the stratigraphy of a site should definitely first be studied in detail using samples from profile columns in order to recognize differences in layer formation processes and preservation in the vertical and the horizontal axis. In this way, it is possible to see where the layer is best preserved and therefore suited for palaeoeconomic investigations. In addition, profile samples provide an excellent opportunity to define a stratigraphic unit system similar to the one used for Zug-Riedmatt. Based on the experiences gained at the Zug Riedmatt site, we can now see which layers are to be finely separated and analysed (of course, this also depends on the research questions). Unnecessary separations can be avoided and the volume of the profile samples will therefore be larger.

If surface samples can be analysed in addition to profile samples, it is important to parallelise those two sample types as closely as possible, especially if the stratigraphy is complex and includes several settlement layers within one occupation phase, as was the case for Zug-Riedmatt or Pfäffikon Burg (Zibulski, 2010). This was already recognized many years ago (Jacomet and Brombacher, 2005 and literature cited within), but until now, there are no satisfying solutions for an ideal sampling strategy, as the assignment of the excavated layers to occupations phases or units normally only happens (long) after the excavation is finished. This complicates the surface sampling enormously. At the moment, no viable option to avoid this problem can be given. We recommend having a dense network of profile columns from the excavated area, and ideally these profile columns should be as voluminous as possible so that all disciplines involved can sample the same columns and the samples are still large enough afterwards. Additionally, large-volume surface samples from locations where the stratigraphy can be clearly divided during the excavation (by clear changes of the sediment, e.g. loam, organic micrite or sediments like the 'bone midden') could be taken. If the stratigraphy is less complex and only includes one clearly separable occupation phases, surface sampling of the well-preserved parts of the occupation layer is a good choice, as was shown for Zürich-Parkhaus Opéra (Antolín *et al.*, 2017a).

5.3.5 Future archaeobotanical analyses at Zug-Riedmatt

Concerning the evaluation of Zug-Riedmatt, there is still a lot of material available which could be analysed.

Concerning stratigraphical information, there is one profile sequence which would be especially interesting to analyse: 53-52-51-50 (Fig. 2.1.1-3). It's located between the two analysed lakewards profiles and it spans the entire sequence from micrite below the occupation phases to the naturally accumulated layers covering them. Some samples from the uppermost profile 50 were already macrobotanically analysed (for the evaluation of samples from naturally accumulated sediments, see chapter 5.2.2) and dated to the Middle Bronze Age. Profiles 51 and 50 were also already palynologically analysed (by A. Heitz-Weniger). In this sequence, the post-settlement layer formation in profiles 51 and 50 could be analysed in a transdisciplinary way, giving additional insight into hiatuses and natural sedimentation from the Late Neolithic to the Middle Bronze Age. If the Horgen occupation phases from this sequence were analysed as well, it could be tested whether the stratigraphic unit descriptions fit other profiles. One interesting aspect would be to check whether units consisting of organic micrite are more uniform (more naturally influenced) than the units consisting of organic sediments (more anthropogenically influenced). A similar purpose is currently pursued in a Bachelor thesis (by N. Schäfer), where different organic micrite layers are archaebotanically analysed and the results are going to be compared to the current results using the method described in chapter 5.2.2.
Concerning palaeo-economical information, the comparison of densities and ubiquities of large-seeded taxa in large- and small-volumed samples from different sites with values from Zürich-Parkhaus Opéra (see Antolín *et al.*, 2017b, appendix 7.3) suggested to sample sites which are mainly analysed through small-volumed samples at ca. 40 spots in order to get a representative coverage of the whole site and its economy. It would therefore be desirable to analyse more samples from the excavated surface of Zug-Riedmatt (from the units consisting of organic sediment, 3, 6 and 8), because until now, only five spots were recorded, which might not really be representative for the site as a whole (as already mentioned in previous chapters).
In the case of Zug-Riedmatt, it would be especially interesting to analyse more surface samples in order to compare the results to those of Zürich-Parkhaus Opéra and also to compare results of profile samples to results of surface samples of the same site. Unfortunately, most surface samples cannot be assigned to units, but some samples of the stratigraphic units 3, 6 and 8 would be available.
If maybe a bigger part of the settlement is excavated one day, it should of course be attempted to analyse more samples. With the results we have so far, an optimal sampling strategy could be arranged for that purpose.

6. References

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7. Appendices

Appendix 7.1: Photographs of selected plant remains of Zug-Riedmatt

Wild plants, sorted after plant families

Fig. A1. *Pinus sp.*, seed

Fig. A2.*Taxus baccata*, seed

Fig. A3.*Chrysosplenium alternifolium*, seed

Fig. A4. *Alnus glutinosa*, cone

Fig. A5. *Fagus sylvatica*, fruit

Fig. A6. *Fagus sylvatica*, cupule

Fig. A7. *Ulmus glabra*, seed

Fig. A8. *Humulus lupulus*, fruit


Fig. A9. *Agrimonia eupatoria*, false fruit


Fig. A10. *Agrimonia procera*, false fruit

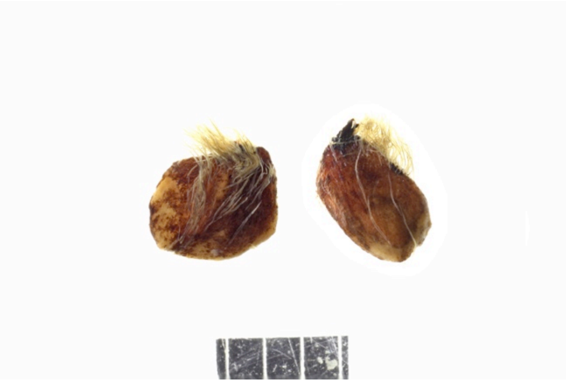
Fig. A11. *Rosa sp.*, fruits with hairs


Fig. A12. *Hypericum tetrapterum*, seed


Fig. A13. *Trapa natans*, fruit fragment


Fig. A14. *Trapa natans*, fruit fragment


Fig. A15. *Acer sp.*, fruit

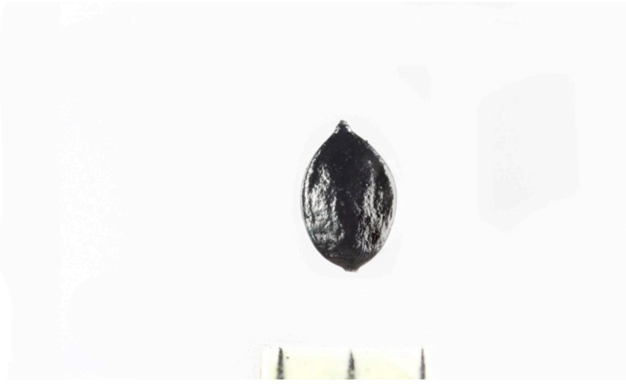
Fig. A16. *Polygonum minus*, fruit

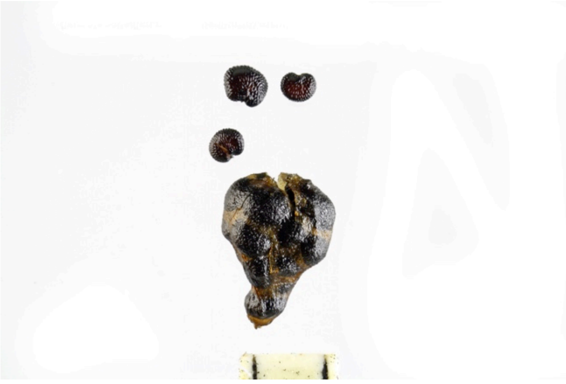
Fig. A17. *Arenaria serpyllifolia*, capsule & seeds


Fig. A18. *Silene cretica*, seeds


Fig. A19. *Vaccinium myrtillus*, seed

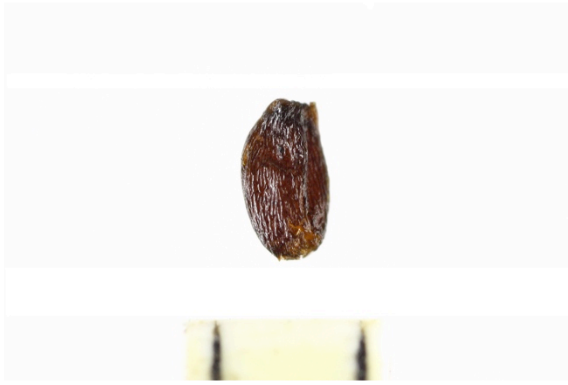
Fig. A20. *Gentiana cruciata*, seed


Fig. A21. *Lamium galeobdolon*, fruit

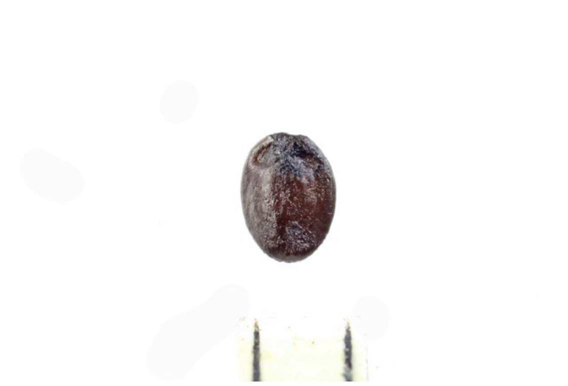
Fig. A22. *Nepeta cataria*, fruit


Fig. A23. *Euphrasia/Odontites*, seed


Fig. A24. *Ilex aquifolium*, fruit

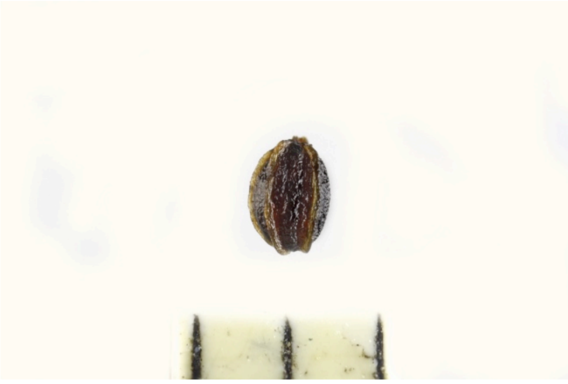
Fig. A25. *Apium graveolens*, fruit


Fig. A26. *Cicuta virosa*, fruit


Fig. A27. *Heracleum sphondylium*, fruit


Fig. A28. *Laserpitium siler*, fruit


Fig. A29.*Valeriana dioica*, fruit


Fig. A30. *Arctium sp.*, flower head


Fig. A31. *Bidens cernua*, fruit


Fig. A32. *Bidens tripartita*, fruit

Fig. A33. *Najas flexilis*, seed

Fig. A34. *Najas marina/intermedia*, seed

Fig. A35. *Najas minor*, seed

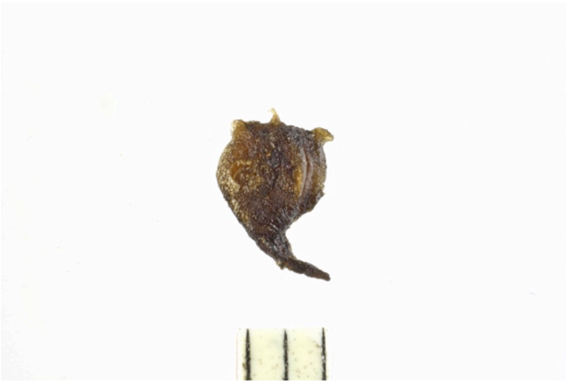

Fig. A36. *Potamogeton crispus*, fruit

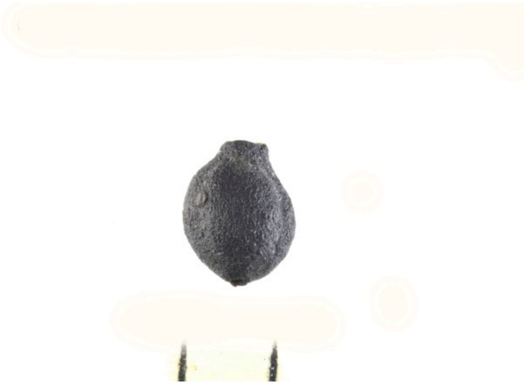

Fig. A37. *Cladium mariscus*, fruit

Fig. A38. *Potamogeton natans*, fruit

Fig. A39. *Digitaria sanguinalis*, floret

Fig. A40. *Echinochloa crus-galli*, floret

Various remains

Fig. A41. Freshwater sponge, gemmulae

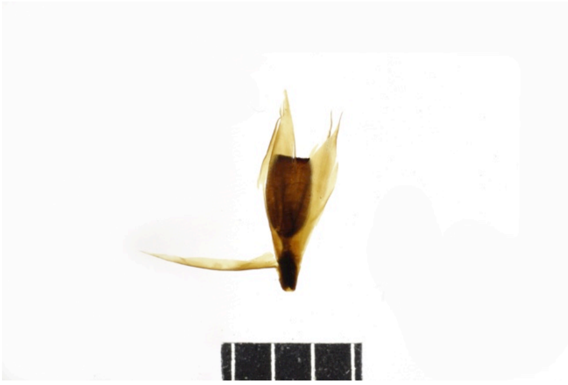

Fig. A42. Bryophyta, capsule

Cultivars, sorted after plant families

Fig. A43. *Papaver somniferum*, seed

Fig. A44. *Papaver somniferum*, fragment of the capsule lid

Fig. A45. *Pisum sativum*, fragment of the pod

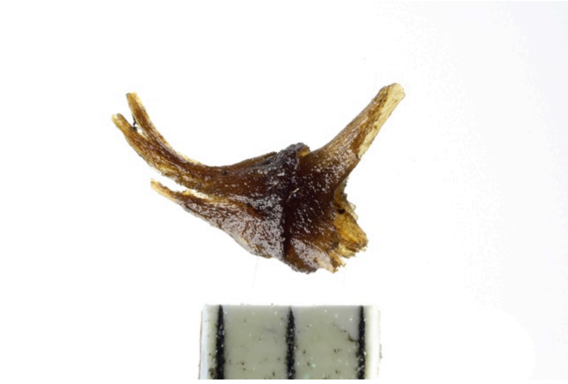

Fig. A46. *Pisum sativum*, stem of the pod

Fig. A47. *Pisum sativum,* seed

Fig. A48. *Pisum sativum*, seed (charred)

Fig. A49. *Linum usitatissimum,* seed

Fig. A50. *Linum usitatissimum*, capsule frg. & seeds

Fig. A51. *Linum usitatissimum,* capsule frg.

Fig. A52. *Hordeum vulgare*, grain (charred)

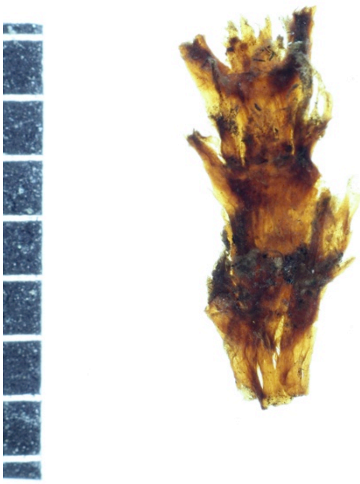

Fig. A53. *Hordeum vulgare,* rachis nodes

Fig. A54. *Hordeum vulgare*, rachis nodes (charred)

Fig. A55. *Triticum dicoccon,* glume basis

Fig. A56. *Triticum dicoccon*, glume basis (charred)

Fig. A57. *Triticum dicoccon,* glume basis & grain

Fig. A58. *Triticum dicoccon*, grain (charred)

Fig. A59. *Triticum monococcum*, glume basis (charred)

Fig. A60. *Triticum aestivum/durum/turgidum*, grain (charred)

Fig. A61. *Triticum durum/turgidum,* rachis nodes

Fig. A62. *Triticum durum/turgidum,* rachis nodes (charred)

Appendix 7.2. Research paper: What is a litre of sediment? Testing volume measurement techniques for wet sediment and their implications in archaeobotanical analyses at the Late Neolithic lake-dwelling site of Parkhaus Opéra (Zürich, Switzerland)

Antolín F, Steiner BL, Vach W, Jacomet S

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What is a litre of sediment? Testing volume measurement techniques for wet sediment and their implications in archaeobotanical analyses at the Late Neolithic lake-dwelling site of Parkhaus Opéra (Zürich, Switzerland)

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Waterlogged preservation

A B S T R A C T

Volume measurements in archaeobotany are not performed uniformly. The goal of this paper therefore is to test the different known methods and to define the obtained differences, in order to make the density values (remains per litre of sediment) for plant macroremains in the samples comparable between sites. Three methods of volume measurement were tested for a large number of samples of different sizes coming from two late Neolithic layers of the lakeshore site of Parkhaus Opéra (Zürich, Switzerland). The sampled layers were preserved in waterlogged conditions and there were samples rich in sand, loam, lake marl but mostly consisting of organic remains, including uncharred subfossil plant macroremains. In general, the classical volume (that is the upper limit of the sediment in water) measured before and after freezing as pre-treatment gave similar results. But a systematic difference was found between the classical volume measured after freezing and the displacement volume. This difference could be described by a proportionality factor of 1.5. This proportionality factor could be used to make data obtained with different methods of volume measurement comparable, although more evaluations are needed from other sites in order to test the generality of the factor proposed.

1. Introduction

The measurement of the amount of sediment sampled and processed for the retrieval of archaeological remains (including archaeobotanical or archaeozoological remains, among others) is considered essential, especially for taphonomic evaluations (e.g. Jacomet et al., 1989; van der Veen and Jones, 2006), mainly concerning the rate of deposition, but also for spatial palaeoeconomic interpretations (e.g. Alonso et al., 2008; Maier and Harwath, 2011), in order to identify activity areas. The reason for this is that samples from excavations always have different volumes. For making the values of macroremains out of the samples comparable we have to calculate densities of macroremains per a given volume (usually 1 L). Therefore, the method for measuring the volume of the sediments is crucial for the density value. Other standardization methods could be the use of proportions, which do not have such a strong dependence on the volume of the sample (see Jones, 1991). Both methods are in fact compatible and necessary for a better understanding of archaeobotanical assemblages.

Several measurement techniques are cited in the reference literature (Pearsall, 1989; Jacomet, Kreuz et al., 1999; Wright, 2005), mainly oriented to the recording of either sediment volume or weight. The difficulties of using one or another method were already pointed out in previous work (Jacomet, 1980). In general, the measurement of the volume is preferred: Pearsall recommended the use of calibrated buckets to measure the volume of the sediment (Pearsall, 2000: 35); Wright (2005) listed several inconsistencies derived from the recording of the weight, like the fact that results might vary due to differences in moisture content. The presence or absence of stones might be a problem as well. Jacomet and Kreuz (1999) also put a larger emphasis on the different possibilities of measuring volume, rather than weight. These are the main three methods of volume measurement mentioned by the authors (1999: 114–115):

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- Noting the upper limit of the sediment in a bucket with dry or slightly wet (soaked when waterlogged) sediment (so called classical volume), optimal for loose sediments;
- by calculating the dimensions (length, width and height) of the sample (when very compact square-shaped samples are to be analysed);
- by calculating the displacement volume, which is reported to give the most accurate results (following the Archimedes' Principle).

There is a logical inconvenience in the measurement of the classical volume. One cannot control the empty spaces that are encountered in between the components of the sample: the larger the components, the more possibilities of increasing the error in the measurement (Wright, 2005). But the displacement volume can be problematic too, since it should be measured when the samples have a similar degree of density and humidity for it to be comparable. Sediment density might be affected by factors like sediment pressure, which differ between sites. On the other hand, the measurement of the displacement volume has a better repeatability (several individuals would read the same volume). This is not clear for the classical volume, especially with waterlogged and organic-rich sediments, when the sediment volume is measured in water and the operators need to use their hand (pressing down all floating material) to measure the upper limit of the sediment.

Sediment samples from wetland deposits have been measured, in their vast majority, by using calibrated buckets or jars. Volumes are usually expressed in litres or millilitres. Weight and classical volume (after letting the sediment settle down in water during hours) were recorded in the analyses of sites from the Lake Zürich (Jacomet, 1985; Jacomet et al., 1989). Nevertheless, when core sampling has been applied, like in the case of Hornstaad Hörnle, some authors have preferred to calculate the dimensions of the sample using an arithmetic formula ($\pi \cdot r^2 \cdot L$) and the results are consequently expressed in cubic centimetres (Maier, 2001: 21). Given that 1 cm^3 is equivalent to 1 ml, the data should be easily comparable with other sites. In more recent work, like the Torwiesen II project, the displacement volume (also in cm^3) was measured instead (Herbig, 2009; Maier and Herbig, 2011). In fact, weight and displacement volume were recorded for all samples (Maier and Herbig, 2011: 83) but unfortunately never compared.

But are all these methods comparable? Do they show a linear relationship? Are there methods which suffer from a poor repeatability? These questions have not been systematically addressed in wetland sites, and for this reason a critical evaluation is needed. The only references to previous similar tests known to us are those performed by Wright and Lopinot (Wright, 2005 and references therein) in dry sites located in North America, where the authors compared the measurement of blocks of sediment (length, width and depth) to the later measurement of the volume using a calibrated bucket. The first method could produce similar results to the displacement volume, while the second should be considered as the classical volume. Wright concluded that very loose sandy sediments yielded a volume around 40% higher when using the classical volume, mainly due to the difficulties of measuring the sediment blocks in the field, while more compact sediments produced similar volumes with both techniques or a slightly larger classical volume in clayey sediments (25% in average). For this paper, the classical volume and the displacement volume of waterlogged sediments from the lake-dwelling site of Parkhaus Opéra (Zürich, Switzerland) will be compared. At the same time, it is also our aim to calculate a proportionality factor allowing the translation of results between different methods. Finally, the influence that different techniques might have on the final concentration values of the archaeobotanical data will be evaluated.

2. Methods used at Parkhaus Opéra (Zürich, Switzerland)

Excavations conducted in the car park of the Opera House of Zürich during 2010 uncovered several settlement phases of a large Neolithic lake-dwelling site. This paper is focused on the data obtained from the samples taken in layers 13 and 14, dendrodated to the years around 3160 BC and 3090 BC respectively (middle Horgen Culture; Bleicher and Harb, 2015). The cultural layer consists of organic debris, as well as loam heaps (presumably from hearths) and other mineral components (including sand or lake marl, presumably due to water influence). The archaeological layers under analysis suffered heavy sediment pressure by 4 m of modern infilling (maybe up to 10 tons/m^2, Bleicher, pers.com.). Three volume measurements were recorded at the site: the classical volume before (1) and after (2) freezing the samples as pre-treatment for facilitating the sieving (Vandorpe and Jacomet, 2007), and the displacement volume (3). Two types of samples were measured, the so-called A- and B-Samples. B-Samples are random subsamples of c. 500 ml (classical volume) taken (using the grid method) from the total content of A-Samples. A-Samples are usually of 4000–8000 ml (classical volume). A-Samples were sieved with sieves of 8 and 2 mm mesh size, for obtaining a representative reflection of large seeded items, while B-Samples were sieved with 2 and 0.35 mm meshes, with the goal of recovering here a representative amount of small seeded taxa). All fractions from the A-samples obtained after sieving were measured using the classical and the displacement volume. The majority of B-samples were not yet sieved when performing this evaluation and data on the volumes of the fractions are therefore not included in this paper. The measurements of the displacement volume and the classical volume before freezing were always carried out by the same person. The classical volume after freezing was measured by four different operators and only for A-samples.

For the evaluation of the concentration of remains per litre of sediment, which was calculated with ArboDat (©Kreuz and Schäfer 2013), only A-samples from layer 13 were taken into consideration, since a much larger number of samples were available ($N = 202$). The spatial representation of the data was carried out with ArcGIS (ESRI, 2010).

The composition of the samples was semi-quantified before sieving and values from 0 to 3 were given to indicate the abundance of several components in the samples. The presence of clay, sand and lake marl will be used to assess the effect of different sediment components on the outcome of the different volume measurements.

Scatterplots and Bland–Altman-plots were used to investigate the relation between different measurement procedures. Linearity of the relationship was assessed by adding a quadratic term to a regression model. Proportionality factors between two measurement procedures were determined by looking at the difference between the mean logarithmic values and exponentiating this number. Multiple Linear regression analysis was used to assess the influence of covariates on the difference between measurement methods (using the logarithmic values, except for the difference between the two classical volumes). The covariates considered simultaneously were the ordinally scaled presence of clay, lake marl, sand (as continuous covariates), the layer and the sievers. Stata (StataCorp, 2013) was used for the statistical evaluation of the data. The Bland–Altman-Plot was particularly designed to assess the degree of agreement between two methods of volume measurement which are not unequivocally correct (Bland and Altman, 1986).

3. Results

As already stated, three measurements were taken for A-samples (displacement and classical before and after freezing) and 2 for

B-samples (displacement and classical before freezing). We decided to analyse A- and B-samples separately because the amount of sediment is very different (A-samples are usually about 6–10 times larger than B-samples) and this could influence the results. The displacement and classical volume of the sieving fractions obtained after sieving A-samples were also measured and compared.

3.1. A-samples: sediment measures before sieving

The classical volume (measured before and after freezing) and the displacement volume from a total of 212 samples from layer 13 and 83 from layer 14 were compared (Fig. 1). There is a clear and consistent overestimation of the volume when using any of the classical volume measurements. The use of a logarithmic scale (Fig. 1) confirms that there is a tendency to a constant factor between the classical volume and the displacement volume. No evidence for a non-linear relationship could be found. We could estimate this factor as 1.56 for the volume before freezing and as 1.47 for the volume after freezing. No significant association between the presence of clay, sand or lake marl, the layers or the four sievers with the difference could be observed for both classical volume measurements, except for clay and the difference in volume after freezing ($p = 0.028$).

No systematic difference between the classical volume measured before and after freezing could be observed, although we can find substantial differences on the level of single samples up to more than 1000 ml (Fig. 2). In a regression analysis, we could observe a significant effect of the presence of clay (decreasing the difference by 125 ml from level to level, $p < 0.001$) as well as the siever (maximal difference 212 ml, $p = 0.004$). Fig. 3 illustrates these differences.

3.2. B-samples: displacement vs. classical before freezing

The results obtained for the B-samples are shown in Fig. 4. Due to the limited variation of the displacement volume, an investigation of the functional relationship was not possible. However, assuming proportionality, we could estimate the factor as 1.44. The regression analysis shows clear indications of an influence of clay ($p = 0.048$), lake marl ($p < 0.000$) and sand ($p < 0.0196$. These associations are illustrated in Fig. 5. The classical volume tends to overestimate the displacement volume to a lower degree when the samples are very rich in clay, lake marl or sand. As a result, the B samples of layer 14 (which are richer in clay, sand and lake marl) tend to have a lower classical volume (lower right panel in Fig. 5).

In the regressions analysis, layer was insignificant, suggesting that the different composition of the material could indeed explain the difference between the layers.

3.3. A-samples: measures of the volumes of the 8 mm and 2 mm fractions

The scatterplots produced for the 8 and 2 mm fractions of organic residues (Fig. 6) show a very similar tendency compared to the overall volumes (Fig. 1), but with a somewhat higher random variation, which can be explained by the lower magnitude of the

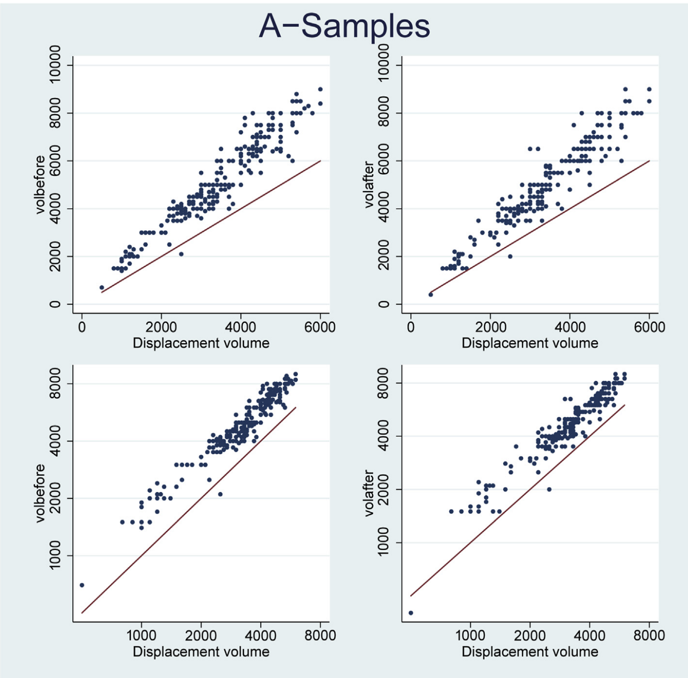

Fig. 1. Scatterplots showing the distribution of samples before (volbefore) and after (volafter) freezing in relation to the displacement volume. Original scale (top) and logarithmic scale (bottom) presented. The line visualizes perfect agreement, that means, identical values for volbefore and volafter.

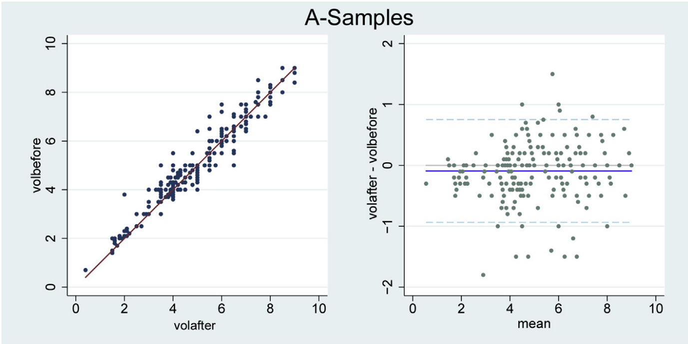

Fig. 2. Scatterplot (left) and BlandAltmanPlot (right) presenting the samples of layers 13 and 14 according to their classical volume before (volbefore) and after (volafter) freezing. The line in the scatterplot visualizes perfect agreement, that means, identical values for volbefore and volafter.

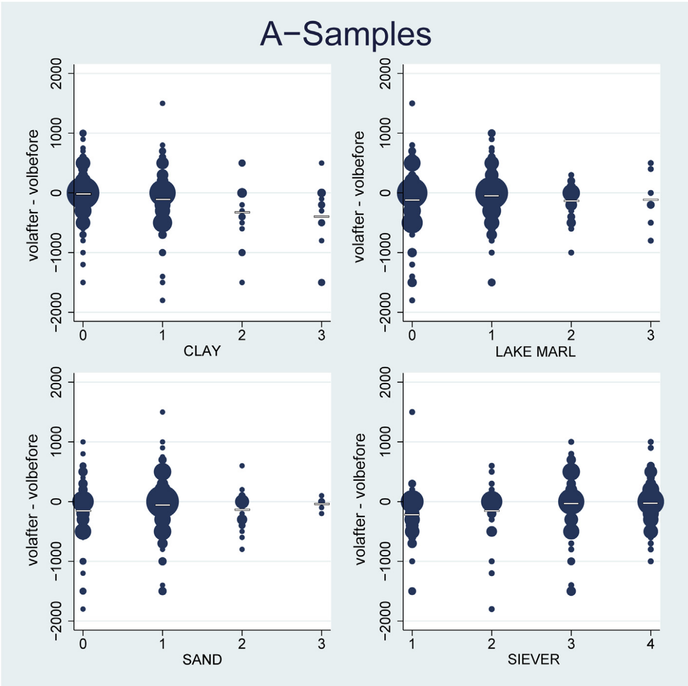

Fig. 3. Graphs showing the distribution of the difference between the classical volume after (volafter) and before (volbefore) freezing according to several variables. The dots are proportional to the number of observations with the specific combination. Mean values are shown as horizontal lines.

true volumes. For both techniques no deviation from linearity could be observed. The proportionality factors were estimated as 1.67 for the 2 mm fraction and as 1.97 for the 8 mm fraction. We could observe significant associations of the difference with the siever for both fractions ($p < 0.001$ in both cases), with the layer for the 2 mm fraction ($p = 0.003$), and with lake marl for the 8 mm fraction ($p < 0.001$).

3.4. *The density of plant macroremains in A-Samples using the displacement and the classical volume after freezing*

The use of different volume measurement techniques could have an effect on the archaeobotanical results, especially when presented in concentration values of remains/litre. For this reason, the densities obtained for a number of selected taxa (some which are very frequent

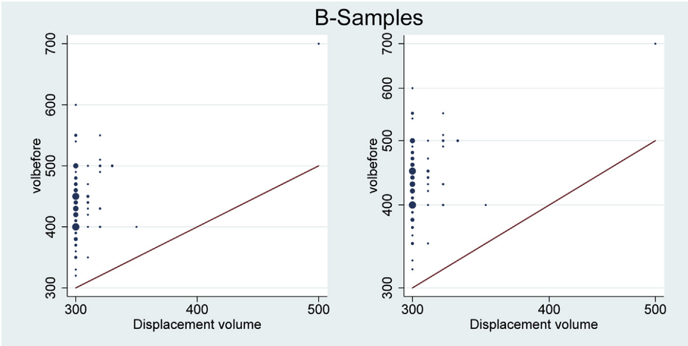

Fig. 4. Scatterplots presenting the B-samples according to the classical volume measured before (volbefore) freezing and the displacement volume. Ordinal scale on the left and logarithmic scale on the right. The line visualizes perfect agreement, that means, identical values for volbefore and displacement volume.

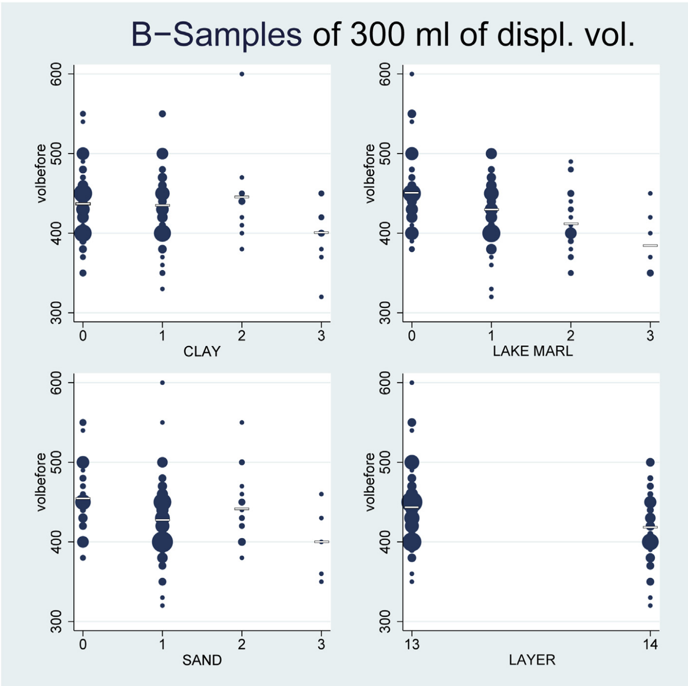

Fig. 5. Graphs showing the classical volume of the B-samples before (volbefore) freezing according to several variables and classified per layer. The dots are proportional to the number of observations with the specific combination. Mean values are shown as horizontal lines. Only B-samples with a displacement volume of 300 ml are included in the analysis.

and some which are rare) as well as the overall density of remains recovered in the A-samples of layer 13 were taken into consideration (Fig. 7). We should expect that densities are underestimated by a factor reciprocal to the factors observed above, as the volume enters the density in the denominator. This expectation could be met in all instances (Fig. 7). We further observe a much lower random fluctuation from sample to sample compared to the previous figures. This can be explained by the fact that the variation in density is so big that the measurement error in the volumes becomes negligible. However, we can observe that in some instances single measurements show a somewhat larger deviation, which is, however, still smaller than the overall variation we observed previously.

At a second stage, it was considered of interest to compare the results obtained when plotting the data with GIS using graduated

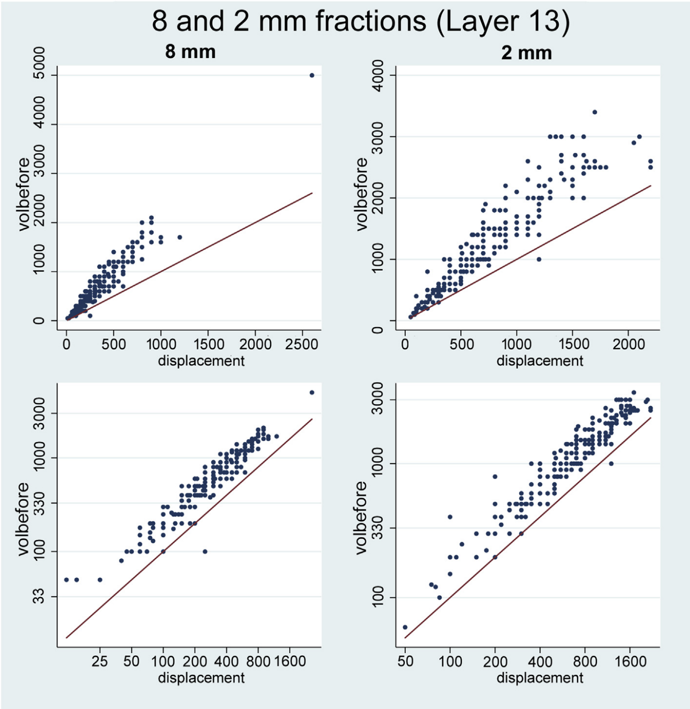

Fig. 6. Scatterplots presenting the 8 mm and 2 mm fraction from A-Samples from layer 13 according to the classical volume measured before (volbefore) freezing and the displacement volume. Original scale (top) and logarithmic scale (bottom) presented. The line visualizes perfect agreement, which means identical values for the classical and the displacement volume.

symbols according to the density of plant remains obtained with the displacement and the classical volumes. The size of the symbols was established with the Jenks natural breaks classification method (Fig. 8).

Among the remains observed, some produced almost identical plans using both methods, for instance *Quercus* sp. Some taxa presented less similarities, although the general plan was not radically transformed, that is the case of *Arctium* sp. Finally one particular taxon presented major differences: *Corylus avellana*. In this case, the use of ArcGIS with the density values calculated with the classical volume underestimates the importance of hazelnut shells (in comparison to those calculated with the displacement volume) in most parts of the cultural layer (Fig. 8). This is mainly due to the fact that the natural breaks method established the break values at 4.9%, 29.9% and 100%. In most of the remaining cases, these values were at around 10–15%, 40–50% and 100%.

4. Discussion

4.1. How do classical volume measurements applied before and after freezing interrelate, and how do they relate to the displacement volume?

On the one hand, we could prove that there is no systematic difference when comparing classical volume measurements before and after freezing. However, there can be large differences at a single sample level (Fig. 2). These differences seem to be influenced by the person who measures the volume and the presence of clay (Fig. 3). The latter is probably due to the fact that clay is largely disaggregated due to the freeze-thaw method and then the classical volume is reduced after freezing. These results confirm the tests performed by Vandorpe and Jacomet (2007), which concluded that this is the most effective pre-treatment method in order to disaggregate clayey and heavily compacted organic sediments without damaging fragile plant macroremains.

On the other hand, all classical volume measurements are error prone when compared to the displacement volume. There seems to be a systematic difference which can be described by a factor of around 1.4 to 1.5. The reciprocal of this factor can be used as correction factor to go from classical volume to the displacement volume. On top of this systematic difference, there seems to be a random measurement error varying from sample to sample, such that the ratio in a single sample may vary between 1.0 and 2.0 with a tendency to a larger spread of these ratios if the true volume is small. This decrease of the random measurement error in the case of larger volumes to be measured can explain why we could not demonstrate a dependence of the difference between the classical volume and the displacement volume on factors like the presence of clay, sand, lake marl or the siever who performed the measurement in the A-samples with large true volumes. When the volumes were smaller we could demonstrate such effects, in particular in the B-samples with true volumes of 300 ml, but also

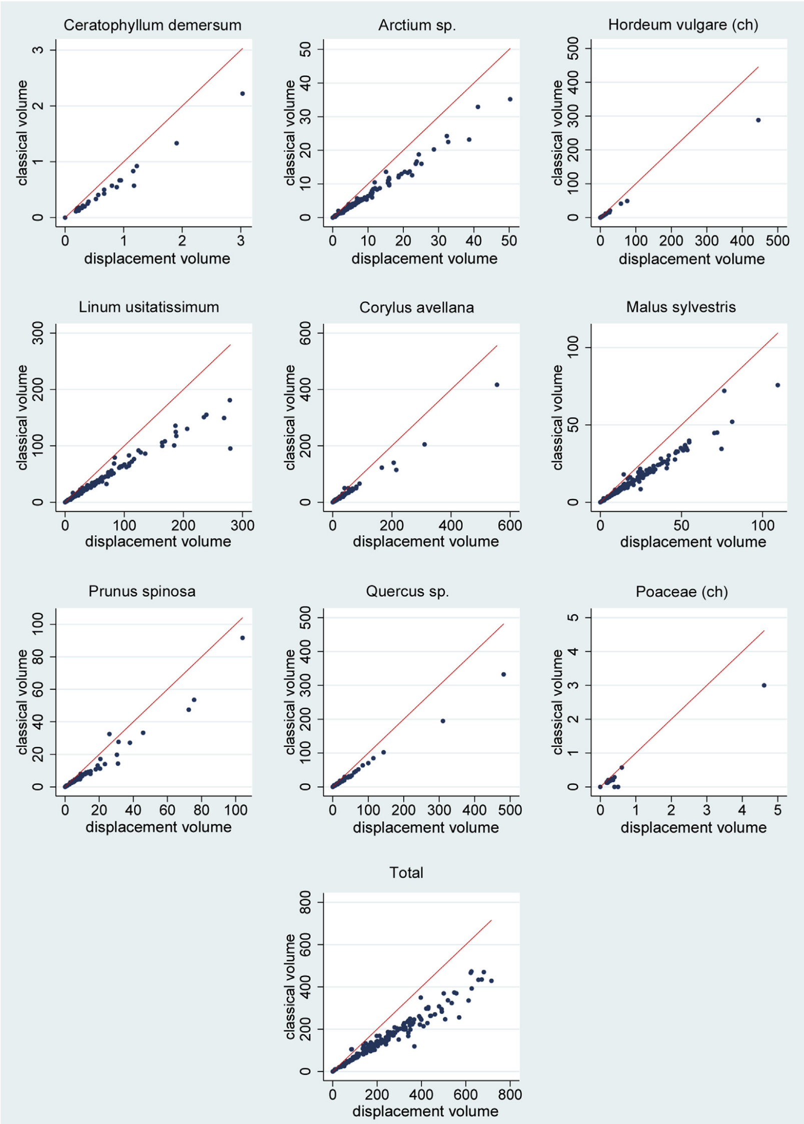

Fig. 7. Scatterplots presenting the density of remains per litre of certain taxa in A-Samples from layers 13 using the classical volume measured before freezing and the displacement volume. The line visualizes perfect agreement, which means identical values for the density values obtained using the classical and the displacement volume.

for the fractions. So in the case of smaller volumes, in the long run we may need different correction factors depending on the composition of the sample. In summary, classical volume measurements both before and after freezing show no systematic difference and are comparable in the magnitude of the random measurement error. Both show a systematic proportional relationship to the displacement volume and hence we can establish a correction factor. Consequently, both methods can be used. This is particularly true for large-sized samples, whereas small-sized samples are influenced by several variables (e.g. the dominant presence of clay, sand or lake marl) and hence may require more complicated rules to perform a correction.

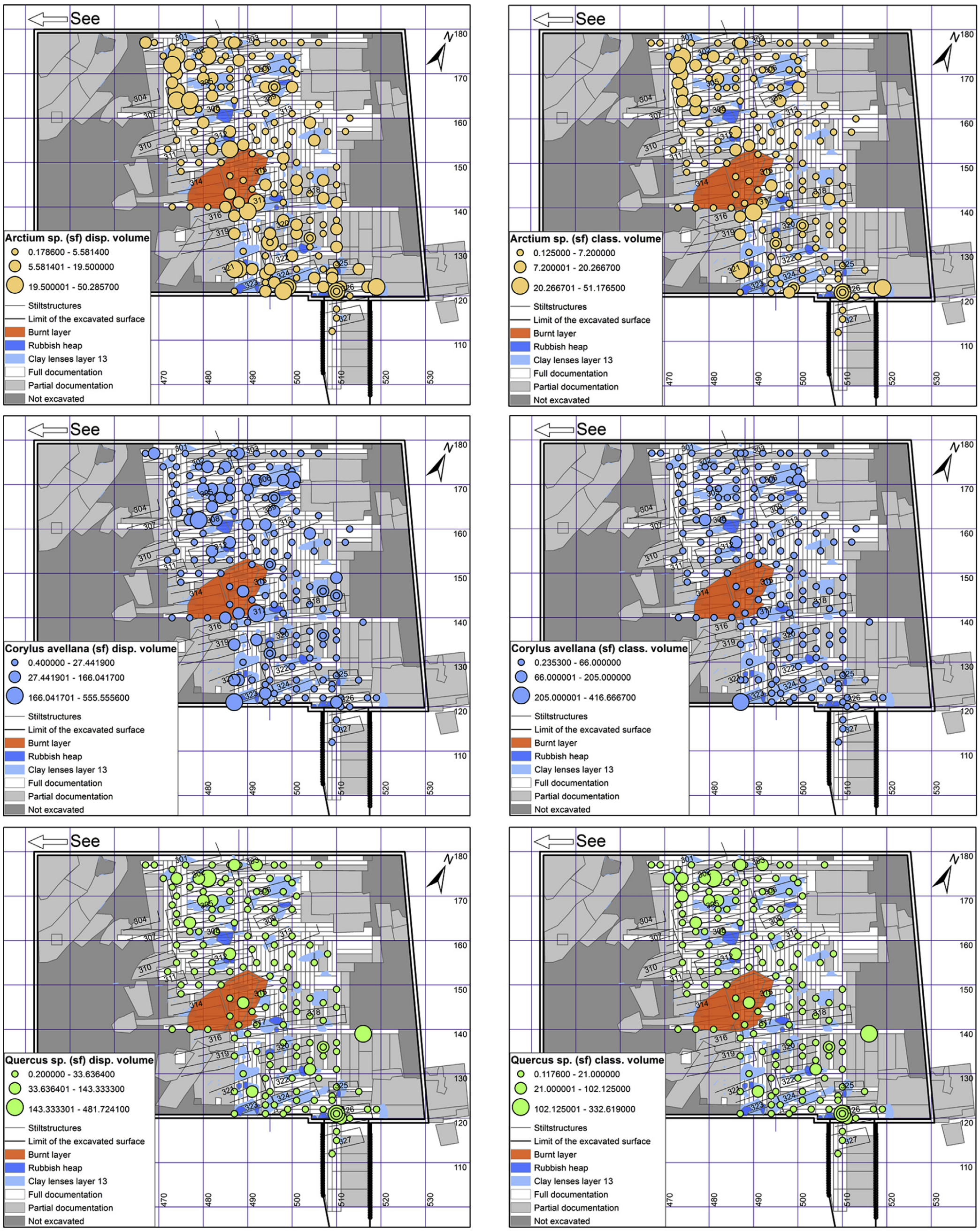

Fig. 8. GIS plans showing the density of remains selected taxa (*Arctium* sp., *Corylus avellana* and *Quercus* sp.) of layer 13 in Parkhaus Opéra, using the displacement volume (left side) and the classical volume (right side) and classifying the samples per graduated symbols and 3-size-categories classified according to Jenks natural breaks.

4.2. What influence does the use of the classical volume have on the final calculations of density of remains per sample?

When using volume measurements to compute densities of plant macroremains, the systematic difference in volume measurements translate into a systematic difference in the densities, just with a reciprocal factor. However, the random measurement error of the volume does not imply a substantial measurement error of the densities (at least in our data), as the variation in density is much more pronounced than the measurement error in the volumes.

In one example (*C. avellana*), in spite of only small differences in the density measurements, a GIS analysis resulted in two qualitatively very different visualizations of the data (Fig. 8). However, this seems to be more related to an instability in the algorithm to determine the breaks than to a change of the type of volume measurement.

4.3. Then … what method should be used for the recording of the volume of sediment samples and the different fractions?

It seems that the choice of the measurement procedure of the volumes has often (but not always) only a very limited impact on the results obtained within one site. However, great care is necessary when comparing numbers across sites, if different volume measurement methods have been used. The correction factors presented in this paper may help to make such numbers comparable, but we need similar investigations for other sites to judge the generality of these factors and to investigate more systematically the dependence of correction factors on external factors like the composition of the sample.

In any case, the displacement volume has to be regarded the most objective method to measure the volume of the samples of waterlogged sediments (where samples have a similarly high degree of wetness). It is a simple measurement that we can expect to have a very good repeatability. The only difficulty is to make sure that the samples or fractions have approximately the same degree of wetness when measured.

5. Conclusions

Three methods of volume measurement were compared in this experiment. Our starting hypothesis was to regard the displacement volume as the best system of volume measurement, and to contrast it with classical volume measurements – both before and after freezing. The systematic difference between classical and displacement volume measurements could be described by a proportionality factor of 1.5. A random measurement error could also be demonstrated, but its influence on the final density estimate was so small that it can be regarded as negligible in this context. However, significant qualitative differences were observed in one example when plotting in GIS the concentration of seed and fruit remains recovered in layer 13 (Late Neolithic) of the lake site of Parkhaus Opera (Zürich, Switzerland). Although there can be substantial differences in classical volume measurements before and after freezing, in general, similar results and patterns were obtained using any of these two methods. It is recommended to use our proportionality factor in case of a need for comparison of data between sites where different measuring techniques were used. Nevertheless, more evaluations are needed from other sites in order to test the generality of the factor proposed.

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Appendix 7.3. Research paper: The bigger the better? On sample volume and the representativeness of archaeobotanical data in waterlogged deposits

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The bigger the better? On sample volume and the representativeness of archaeobotanical data in waterlogged deposits

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ABSTRACT

This paper provides a reference to estimate the representation of large-sized items (seeds and fruits, mainly) in samples of larger and smaller volume in wetland sites with the aim of proposing a minimum sample size to recover these remains in a representative way. For this, almost 100 samples from a late Neolithic settlement phase found at the lakeshore site of Parkhaus Opéra (Zürich, Switzerland) were subsampled into one larger subsample (A-sample, of ca. 3 l of volume) and one smaller subsample (B-sample, of ca. 0.3 l of volume). We compared how large and small-sized items were represented in the different fractions of large and small subsamples on the basis of ubiquity, concentration and proportions between the taxa. Large-sized remains (like *Prunus spinosa* or charred fragments of *Corylus avellana*) and some medium-sized remains (*Najas*, *Aethusa cynapium*) were more often represented in larger subsamples and therefore are considered to be underrepresented in smaller samples. Average concentration values were similar in both groups of samples (and therefore comparable) but large differences were observed on a one-to-one sample basis, finding no positive monotonic correlation between them. Our observations also prove that in order to obtain data that are comparable to dryland sites concerning charred remains (including cereals and large-seeded wild fruits), large volume samples of at least ca. 3 l are needed. Counting units per taxon in each fraction were re-defined on the basis of the results obtained. Finally, some clues to interpret results concerning large-sized items in sites with samples of small volume are also proposed following our observations.

1. Introduction

Sampling in archaeobotany is a major issue, playing a key role in the interpretation of botanical assemblages. When designing a sampling strategy, one needs to take into consideration which contexts are sampled, their potential richness in botanical macroremains, the size of the samples and the number of contexts sampled per site, in order to have a dataset that can be considered representative of the total amount of botanical macroremains preserved until today. Above all, the scientific questions that are aimed for should be clearly stated beforehand in order to plan the sampling strategy accordingly (see overviews on this issue in e.g. d'Alpoim Guedes and Spengler, 2014; Filipović and Marić, 2013; Jones, 1991; Lennstrom and Hastorf, 1992; Pearsall, 2015; van der Veen, 1985). Archaeobotanical research in waterlogged deposits of prehistoric lakeshore settlements has some specificities. To start with, sampling is usually performed before any archaeological structure is identified with certainty, since this is mostly done at a second stage, after the conduction of dendrochronological analyses. This means that systematic or random sampling (see e.g. Hosch and Jacomet, 2001) is absolutely necessary to have different structures properly represented in the samples. Secondly, sample size is another important issue. When preservation conditions are good, plant macroremains appear in extremely high numbers (thousands in each sample). For this reason, a balance needs to be found between having samples large enough to have all kinds of fruits well-represented in them, and at the same time trying to analyse them in the most efficient way possible (Jacomet and Brombacher, 2005; Kenward and Hall, 1995: 454–455; Steiner et al., in press).

Most of the research in (mostly Neolithic) lakeshore settlements done in the seventies and the eighties of the XXth century was based on profile (monolith) samples (e.g. Jacomet, 1980; Jacomet et al., 1989; Maier, 1988; Schlichtherle, 1985), although there were some early exceptions of surface sampling (Jacomet, 1981). Profile sampling yielded samples of a relatively small volume (mostly below 0.3 l) and recommendations were done to take, in parallel, a certain amount of bulk samples (10–20 samples of >0.7 l per settlement phase) in order to record the large-sized items in a representative way (Jacomet et al., 1989: 82). The large research project carried out at Arbon Bleiche 3 in the early nineties made it possible to recover samples of a larger volume to test if large-sized items (those taxa with seeds of well above 2 mm in size or other items like spikelets or capsules) were better represented in

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them. It was soon observed that samples of ca. 0.3 l only allow a representative evaluation of small-sized items (below 2 mm) and that samples of at least 2 l were recommended for a fully representative analysis (Brombacher and Jacomet, 1997: 222). The goal was to reach a statistically representative amount of remains for a sample (sensu Van der Veen and Fieller, 1982). It was observed that ca. 400 remains per fraction (2 mm and 0.35 mm) were needed for a representative analysis of a sample, so that large-sized items were also representatively recorded (Hosch and Jacomet, 2001). This made it clear that larger samples were needed to reach this amount of large-sized remains in the 2 mm fraction. As methodological conclusions of the Arbon Bleiche 3 project, it was recommended (parallel to profile sampling, which remains as the optimal strategy to target layer formation processes in lakeshore settlements) to take large-volume samples (ca. 3 l, and a maximum of ca. 8 l) in a systematic way over the excavated surface of the settlement. From these large samples, small-volume subsamples (ca. 0.3 l) could be produced in a way that large samples only needed to be investigated for large-sized items (and therefore sieved with a mesh of 2 mm) and smaller samples for small-sized items (sieved with a mesh of 0.35 mm) (Hosch and Jacomet, 2001, 2004: 116). This time-saving strategy was finally applied to the recently excavated multi-phase site of Zürich-Parkhaus Opéra, our case study (Antolín et al., 2015, 2016, 2017; Bleicher and Harb, 2015) and recently also critically revised (Steiner et al., in presss).

In parallel to this line of research developed at the IPAS (Integrative Prehistory and Archaeological Science, University of Basel), other researchers developed alternative sampling strategies, like systematic coring (every meter). This type of sampling was usually performed within scientific research projects (not rescue excavations) and resulted in a large amount of samples of <0.3 l of volume in average, or occasionally more, like at Sipplingen (0.7 l in average) (Baudais et al., 1997; Maier, 2001; Maier and Herbig, 2011; Riehl, 2004). Sometimes, this type of sampling was combined with extensive coarse-sieving, which allowed observing some of the biases of small-volume samples (Maier, 2001).

The main reason why large-volume samples are rarely taken in wetland sites is that the archaeobotanical evaluation of the samples is very time consuming. Furthermore large-volume samples can pose problems in sites with very thick (superimposed) cultural layers that might respond to more than one settlement phase, since these samples are difficult to ascribe to a particular phase if this was not possible to identify during fieldwork (such a case was observed at Pfäffikon-Burg in Zibulski, 2010). On a more practical scale, large samples also involve storage difficulties, since they need to be stored in cool dark rooms (or even deep frozen) to avoid the degradation of the plant material present in them. Most sites where large samples were investigated usually had to reduce the number of samples analysed (see Fig. 1). Sites where small-volume samples were taken rarely reached 50 l of sediment sieved in total. For this reason, the sampling strategy applied at Zürich-Parkhaus Opéra (with ca. 1000 l of sediment processed) represents a milestone in archaeobotanical research in prehistoric lakeshore research and can be used as a reference point to review previous research.

The goals of this paper are:

1. testing the comparability of the ubiquity, the concentration values (density values), the proportion (relative percentage) and the spatial analysis (using GIS) of large-sized items obtained in the 2 mm fraction of subsamples of different volume taken from the same original sample;
2. assessing which taxa are more often represented in the 2 mm and the 0.35 mm fraction in large and small-volume subsamples taken from the same samples;
3. comparing the results of our test with those obtained from roughly contemporary investigated lakeshore settlements with different sampling strategies;
4. providing guidelines for the optimal procedures to efficiently record these plants in wetland sites and some final thoughts on the reliability of data obtained from samples of small volume (<0.5 l of sediment).

2. Materials and methods

Zürich–Parkhaus Opéra (Zürich, Switzerland) is a lakeshore site with several settlement phases which was excavated during 2010 and 2011 (Bleicher and Harb, 2015). This paper focuses on the methodological research carried out with samples from one settlement phase, layer 13 (Horgen culture, dendrodated to c. 3160 BCE, of ca. 20 years of

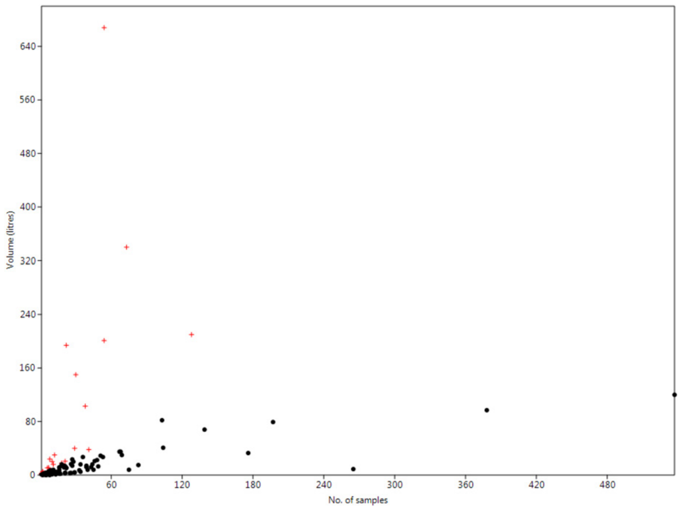


Fig. 1. Total volume of sediment (in litres) and number of samples sieved per settlement phase of Neolithic lakeshore sites in the Alpine Foreland. Crosses refer to sites where the average volume per sample was above 0.9 L. Data compiled by S. Jacomet (ESM 1).

duration (Bleicher and Burger, 2015)). The sampling strategy applied at the site has been explained in previous publications (Antolín et al., 2015, 2017; Steiner et al., 2015; Steiner et al., in press). Large-volume surface samples (5–7 l, the master samples) were taken in a systematic way. These were subsampled before processing in the laboratory into two subsamples: the so-called A- and B-samples. B-samples were of smaller-volume (of 0.3 l), were taken using the grid method taking sediment systematically from each square of the grid (see Steiner et al., in press) and sieved with meshes of 2 and 0.35 mm size. All B-samples yielded many more remains than those that we aimed to recover for a representative evaluation of small-sized items (ca. 400 remains, following Van der Veen and Fieller (1982) modified by Hosch and Jacomet (2001)). For this reason, the 0.35 mm fraction was always subsampled using the grid method (like for master samples) and sub-samples of ca. 5 ml were analysed until the target population was reached. In order to see what volume was necessary to sieve concerning A-samples to recover a sufficient amount of large-sized remains (ca. 400) in the 2 mm fraction, we performed an early evaluation of the data (unpublished). This volume was observed to be around 3 l. In consequence, A-samples were either the amount of sediment that remained after the subsampling process to obtain the B-sample or, if this was above 4 l of sediment, a subsample of it (always of above 3 l of volume). Therefore, A-samples usually had a larger volume of sediment (ca. 3–5 l). They were sieved with meshes of 8 and 2 mm size. The wash-over technique with freezing as pre-treatment was used for processing all samples (Kenward et al., 1980; Vandorpe and Jacomet, 2007). Over 250 A-samples and 120 B-samples were analysed completely. The 2 mm fraction was analysed in both A- and B-samples in 96 samples (see location in Fig. 2). This allowed a unique possibility to compare the results obtained in both. Nevertheless, since sediment was removed from the original sample to obtain the B-sample, we cannot exclude a sequencing effect in our test. We need to assume that since B-samples usually comprised <1/20 of the total amount of the master sample (of usually ca. 6 l of sediment), the impact should be of very low significance.

Quantification criteria were established in previous publications, so that certain remains were only quantified in one of the fractions (Hosch and Jacomet, 2004; Steiner et al., 2015) (Fig. 3). The aim of this was to restrict the number of remains to be counted in the 2 mm fraction to those taxa that are not found in the 0.35 mm fraction because of their larger size. This is an efficient time-saving strategy in the analysis of the 2 mm fraction and it is based on the assumption that the rare finding of smaller-size taxa in the 2 mm fraction (due to the sieving process, which does not perfectly separate both fractions) does not have a significant effect on the overall results for the sample. Taxa that were not to be counted in A-samples (that is to say, small-sized items) were described as present or absent in order to at least have their presence recorded in the fraction. This was particularly of interest for those samples for which no B-sample was analysed due to time and budgetary restrictions.

All sediment volume measurements presented in this paper refer to the displacement volume (Antolín et al., 2015). Nomenclature of scientific plant names follows the National Data and Information Center of the Swiss Flora (http://www.infoflora.ch).

We calculated the ubiquity values (number of samples in which one taxon was found) for large- and small- sized items per fraction in both kinds of subsamples in order to compare how samples of different volumes affect their representation in the record. The results of large-sized items found in the 2 mm fraction of A- and B-samples were represented in scatterplots with concentration values (number of remains per litre of sediment) and proportions (relative frequency or percentage of a taxon in relation to the total of remains of the sample) of objects counted in the 2 mm fraction in both kinds of subsamples. The software R (R CORE TEAM, 2016) was used for this. In addition to this we integrated both ubiquity and concentration of large-sized items by producing GIS Plans with ArcGis (ESRI, 2010) with the data obtained from both sets of subsamples. The size of the symbols was established with the Jenks natural breaks classification method (Jenks and Caspall, 1971). Anselin Local Morans I was used to calculate the clusters (Anselin, 1995).

3. Results

3.1. General results

Around 80.000 plant macroremains were found in the 8 and 2 mm fractions of the 96 A-samples included in this evaluation (in total, 371.75 l of sediment, av. volume of sample 3,7 l; av. density: 209.8 r/l), and around 7.000 in the 2 mm fraction of the B-samples (29.38 l; av. volume of sample around 0.3 l; av. density: 236.25 r/l). Over 45 taxa with large-sized diaspores were recovered in both types of subsamples. Only 5 taxa were found in one of the sample types exclusively. *Prunus padus*, *Rhamnus cathartica* and *Crataegus laevigata* were only recovered in A-samples, while *Tilia platyphyllos* and *Laserpitium siler* only

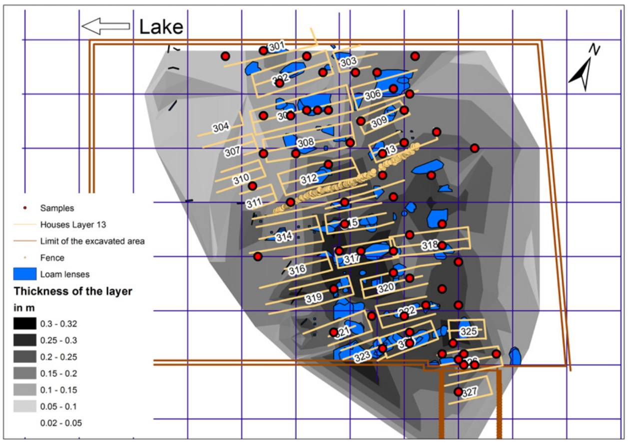


Fig. 2. Distribution of the points where both A- and B-samples from layer 13 at Zürich-Parkhaus Opéra. In several cases, more than one sample from the same square was analysed, representing different parts of the inner stratigraphy of the cultural layer.

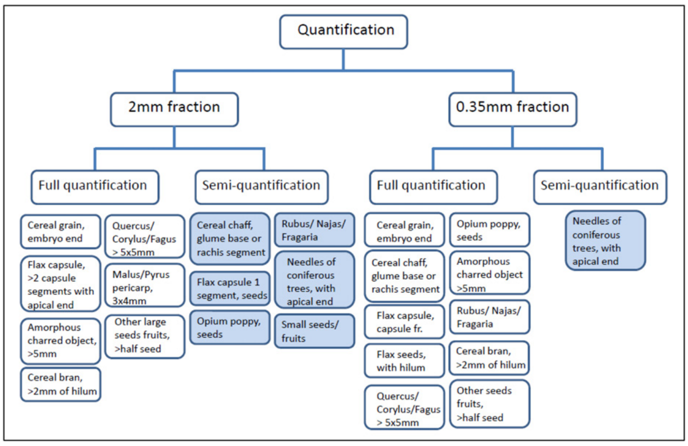


Fig. 3. Guidelines for the recording of botanical macroremains used in the analysis of Parkhaus-Opéra (Steiner et al., 2015).

in the B-samples.[1] Among the best-represented large-sized items in both types of samples one can find *Arctium* sp., *Corylus avellana*, *Galeopsis tetrahit*, *Linum usitatissimum* (large capsule fragments), *Malus sylvestris*, Maloideae (pericarp), *Prunus spinosa*, *Quercus* sp., *Rosa* sp. and *Viburnum lantana*. Common small- to medium-sized items found in both samples are *Najas intermedia*/*marina*, *Potentilla* sp., *Fragaria vesca*, chaff remains of *Triticum aestivum*/*durum*/*turgidum* (or *T. "nudum"*), *Triticum dicoccon* and *Hordeum vulgare*, as well as other taxa like *Chenopodium album*, *Polygonum persicaria* or *Sonchus asper*.

3.2. Ubiquity

All of the large-sized items were found in higher ubiquity values in A-samples (Table 1). For some taxa, the differences were not qualitatively significant, because they were present in almost all samples. This would be the case of *Corylus avellana*, *Linum usitatissimum* (large capsule fragments), *Malus sylvestris* and pericarp fragments of Maloideae. On the other hand, large differences of above 30 samples (ca. 1/3 of the total) were found for other taxa like *Agrimonia eupatoria*, *Fallopia convolvulus*, charred grains of *Hordeum vulgare*, *Prunus spinosa*, *Rosa* sp. and *Viburnum lantana*.

Small-sized items were semi-quantified or only indicated as present in A-samples (see Section 2). We also compared the ubiquity values obtained in both types of subsamples to check if this semiquantification provided relevant information (Table 2). It was observed in several cases that taxa that were found in the 2 mm fraction of A-samples were more rarely found in the 2 mm fraction of B-samples and, instead, they were mostly recovered in the 0.35 mm fraction. This is the case of many taxa like: *Carex* sp., rachis fragments of *Hordeum vulgare*, charred seeds of *Linum usitatissimum*, seeds of *Papaver somniferum*, *Valerianella dentata*, *Brassica rapa*, *Chenopodium album*, *Malva sylvestris*, *Polygonum aviculare*, *Polygonum persicaria* and *Ranunculus repens*. Other (clearly small-sized) taxa were found only rarely in the 2 mm fraction of both kinds of subsamples and mostly in the 0.35 mm fraction of B-samples: *Potentilla* sp., *Lycopus europaeus*, seeds without wings of *Betula pendula*/*pubescens*, among others. There were only a few cases of very abundant taxa which were found to show similar ubiquity values in all fractions of all subsample types: uncharred chaff remains of *Hordeum vulgare*, *Triticum dicoccon*, *Triticum durum*/*turgidum* and seeds of *Linum usitatissimum*. Unexpectedly, a few other medium-sized items were more often found in A-samples. These include: *Najas marina*/*intermedia* (complete and half seeds), charred chaff remains of *Triticum dicoccon* and *Triticum durum*/*turgidum* and seeds of *Aethusa cynapium* as well as *Ranunclus repens.*

[1] We would like to note that these taxa were found in other A-samples of the same settlement phase not included in this evaluation.

Table 1
Ubiquity (percentage of samples) in which the large-sized items appear in A- and B-samples. Dark grey-shadowed taxa showed similarly high ubiquity values in both types of subsamples. If no indication is given, remains are preserved in an uncharred state.

	A-Samples	B-Samples
Abies alba	32.3	11.5
Acer spec.	21.9	14.6
Agrimonia eupatoria	57.3	16.7
Alnus glutinosa, Catkin	11.5	2.1
Arctium spec.	94.8	68.8
Asteraceae, Flower	29.2	17.7
Betula pendula/*pubescens*, Cone scale	43.8	25
Ceratophyllum demersum	14.6	1
Cerealia indet., Bran frag. (unch)	66.7	37.5
Cerealia indet., Grain (ch)	53.1	22.9
Clematis vitalba	36.5	9.4
Cornus sanguinea	26	5.2
Corylus avellana (ch)	31.3	8.3
Corylus avellana (unch)	100	88.5
Fagus sylvatica, Cupule	26	4.2
Fagus sylvatica, Pericarp	45.8	22.9
Fallopia convolvulus	57.3	20.8
Frangula alnus	16.7	2.1
Galeopsis tetrahit	81.3	52.1
Hordeum vulgare undiff., Grain (ch)	60.4	28.1
Linum usitatissimum, Capsule fr. (unch)	97.9	88.5
Malus sylvestris, seed	100	86.5
Malus/*Pyrus*, Pedicel (unch)	43.8	21.9
Malus/*Pyrus*, Pericarp (unch)	99	91.7
Malva sylvestris	26	2.1
Papaver somniferum, Capsule fr. (unch)	12.5	2.1
Prunus spinosa	86.5	53.1
Quercus spec.	52.1	24
Quercus spec., Pericarp (unch)	89.6	62.5
Rosa spec.	87.5	50
Sambucus nigra/*racemosa*	16.7	1
Triticum aestivum s.l./*durum*/*turgidum*, Grain (ch)	35.4	11.5
Triticum dicoccon, Grain (ch)	36.5	11.5
Viburnum lantana	79.2	32.3
Viscum album s.l.	25	14.6

Table 2
Ubiquity (percentage of samples) in which the (small-sized) taxa that were semi-quantified in A-samples appear in A- and B-samples (2 mm and 0.35 mm fractions separately). Light grey-shadowed taxa showed higher ubiquity values in one of the fractions or subsample types. *Rubus species were usually not identified to species level in the A-samples.

			A-Samples (2 mm fraction)	B-Samples (2 mm fraction)	B-Samples (0.35 mm fraction)
Hordeum vulgare undiff.	Rachis segment	unch	72.9	59.4	66.7
Aethusa cynapium	Seed/fruit	unch	19.8	3.1	0
Alnus sp.	Seed/fruit	unch	19.8	0	16.7
Arenaria serpyllifolia agg.	Seed/fruit	unch	2.1	0	80.2
Betula pendula/pubescens, seeds with wings	Seed/fruit	unch	16.7	2.1	57.3
Betula pendula/pubescens, seeds without wings	Seed/fruit	unch	25	0	22.9
Brassica rapa	Seed/fruit	unch	17.7	0	22.9
Carex spec. bicarpellat	Seed/fruit	unch	11.5	3.1	19.8
Carex spec. tricarpellat	Seed/fruit	unch	40.6	4.2	52.1
Cerastium spec.	Seed/fruit	ch	1	0	1
Cerastium spec.	Seed/fruit	unch	1	0	40.6
Chenopodium album	Seed/fruit	unch	22.9	3.1	39.6
Fragaria vesca	Seed/fruit	unch	41.7	7.3	92.7
Hypericum perforatum	Seed/fruit	unch	2.1	2.1	1
Lapsana communis	Seed/fruit	unch	16.7	4.2	45.8
Linum usitatissimum	Seed/fruit	ch	18.8	2.1	15.6
Linum usitatissimum	Seed/fruit	unch	93.8	80.2	95.8
Lycopus europaeus s.l.	Seed/fruit	unch	14.6	2.1	44.8
Malva sylvestris	Seed/fruit	unch	26	2.1	13.5
Najas intermedia/marina	Seed/fruit	unch	77.1	58.3	35.4
Najas intermedia/marina	Fruit	unch	65.6	46.9	30.2
Origanum vulgare	Seed/fruit	unch	4.2	0	60.4
Papaver somniferum	Seed/fruit	unch	66.7	14.6	94.8
Physalis alkekengi	Seed/fruit	unch	63.5	14.6	66.7
Polygonum aviculare agg.	Seed/fruit	unch	37.5	0	59.4
Polygonum hydropiper	Seed/fruit	unch	16.7	3.1	13.5
Polygonum lapathifolium/persicaria	Seed/fruit	unch	2.1	3.1	11.5
Polygonum persicaria	Seed/fruit	unch	52.1	8.3	43.8
Potentilla spec.	Seed/fruit	unch	14.6	4.2	81.3
Prunella vulgaris	Seed/fruit	unch	24	5.2	50
Ranunculus cf. *repens*	Seed/fruit	unch	62.5	11.5	43.8
Rubus fruticosus agg.	Seed/fruit	unch	13.5	44.8	75
Rubus fruticosus/idaeus	Seed/fruit	unch	87.5	15.6	68.8
Rubus idaeus	Seed/fruit	unch	17.7	8.3	51
Rumex spec.	Seed/fruit	unch	10.4	3.1	24
Sambucus ebulus	Seed/fruit	unch	24	3.1	5.2
Schoenoplectus lacustris	Seed/fruit	unch	33.3	7.3	25
Solanum nigrum	Seed/fruit	unch	8.3	4.2	20.8
Sonchus asper	Seed/fruit	unch	25	3.1	65.6
Stellaria media agg.	Seed/fruit	unch	18.8	2.1	32.3
Torilis japonica	Seed/fruit	unch	9.4	2.1	5.2
Triticum dicoccon	Glume base	ch	30.2	6.3	7.3
Triticum dicoccon	Glume base	unch	85.4	74	84.4
Triticum durum/turgidum	Rachis segment	ch	17.7	9.4	6.3
Triticum durum/turgidum	Rachis segment	unch	76	67.7	85.4
Urtica dioica	Seed/fruit	unch	11.5	2.1	70.8
Valerianella dentata	Seed/fruit	unch	15.6	4.2	21.9
Verbena officinalis	Seed/fruit	unch	18.8	2.1	86.5

3.3. Concentration values and proportions

Differences between A- and B-samples in the mean concentration of large-sized items were not significant (Table 3).

Scatterplots were produced in order to show the relationship (on a one-to-one basis) between A- and B-samples concerning the density of the most-commonly-found taxa in A-samples (Fig. 4). Secondly, the proportion of these taxa in relation to the total of the sample were also plotted for comparison (ESM 2). All scatterplots are much skewed. In both cases (Fig. 4 and ESM 2), at least two different patterns were observed. A few taxa yielded a better distribution of a part of the samples along the line, indicating perfect match between both subsample types, while a number of outliers is always present. This is the case of shell fragments of *Corylus*, seeds of *Malus sylvestris*, pericarp fragments of Maloideae and large capsule fragments of *Linum usitatissimum*. The rest of the taxa showed no clear pattern.

A Spearman's correlation was run to determine the relation between the values per taxon of A and B subsamples both using concentration values and proportions and a strong positive correlation was only determined for two taxa in both cases: *Agrimonia eupatoria* and *Ranunculus repens* (Table 4).

Table 3
Mean concentrations of large-sized items in A- and B-samples (2 mm fraction).

	A-SAMPLES	B-SAMPLES
Hordeum vulgare undiff., Grain (ch)	1.8	2.2
Triticum aestivum s.l./*durum/turgidum*, Grain (ch)	0.4	0.6
Triticum dicoccon, Grain (ch)	0.4	0.4
Cerealia indet., Grain (ch)	1.0	0.9
Cerealia indet., Bran frag. (unch)	5.8	3.5
Linum usitatissimum, Capsule fr. (ch)	3.7	2.1
Linum usitatissimum, Capsule fr. (unch)	44.2	30.7
Papaver somniferum, Capsule fr. (unch)	0.1	0.1
Asteraceae (flower)	0.3	0.9
Abies alba	0.1	0.9
Acer spec.	0.1	0.5
Agrimonia eupatoria	0.3	0.6
Alnus glutinosa (catkin)	0.1	0.3
Arctium spec., seeds	5.9	8.1
Betula pendula/pubescens (cone scale)	0.4	1.2
Ceratophyllum demersum	0.1	0.0
Clematis vitalba	0.3	0.5
Cornus sanguinea	0.1	0.2
Corylus avellana (ch)	0.2	0.3
Corylus avellana (unch)	23.9	27.9
Fagus sylvatica, Cupule	0.1	0.1
Fagus sylvatica, Pericarp	1.8	1.7
Fallopia convolvulus	0.8	0.8
Frangula alnus	0.0	0.1
Malus sylvestris, seed	16.2	14.3
Malus/Pyrus, Pericarp (unch)	76.4	89.3
Malus/Pyrus, Pedicel (unch)	0.5	1.3
Malva sylvestris	0.4	0.1
Prunus spinosa	4.8	4.6
Quercus spec.	1.2	2.4
Quercus spec., Pericarp (unch)	13.1	18.8
Ranunculus repens	0.2	1.1
Rosa spec.	4.3	4.9
Sambucus nigra/racemosa	0.1	0.0
Viburnum lantana	1.0	1.4
Viscum album s.l.	0.1	0.8

3.4. GIS mapping of concentration values

Taxa that were fully quantified in A- and B- samples were represented in GIS maps using the Jenks natural breaks to define the size of the circles to avoid taking differences on a sample-to-sample basis, and focus on the trends observed of samples with "low", "medium" or "high" density, and, in addition to this, pointing out statistically significant clusters to compare the information provided by both datasets (see a summary of selected taxa in Fig. 5 and a more complete list of taxa in ESM 2). For some large-seeded taxa, like pericarp fragments of Maloideae, higher densities were found to be more widespread in the A-samples, and therefore clustering was better identified (instead of outliers, which were detected in the B-samples). Clustering was also better identified for *Arctium* seeds and *Viburnum lantana* in the A-samples. On the other hand, charred grain of *Triticum "nudum"* and large

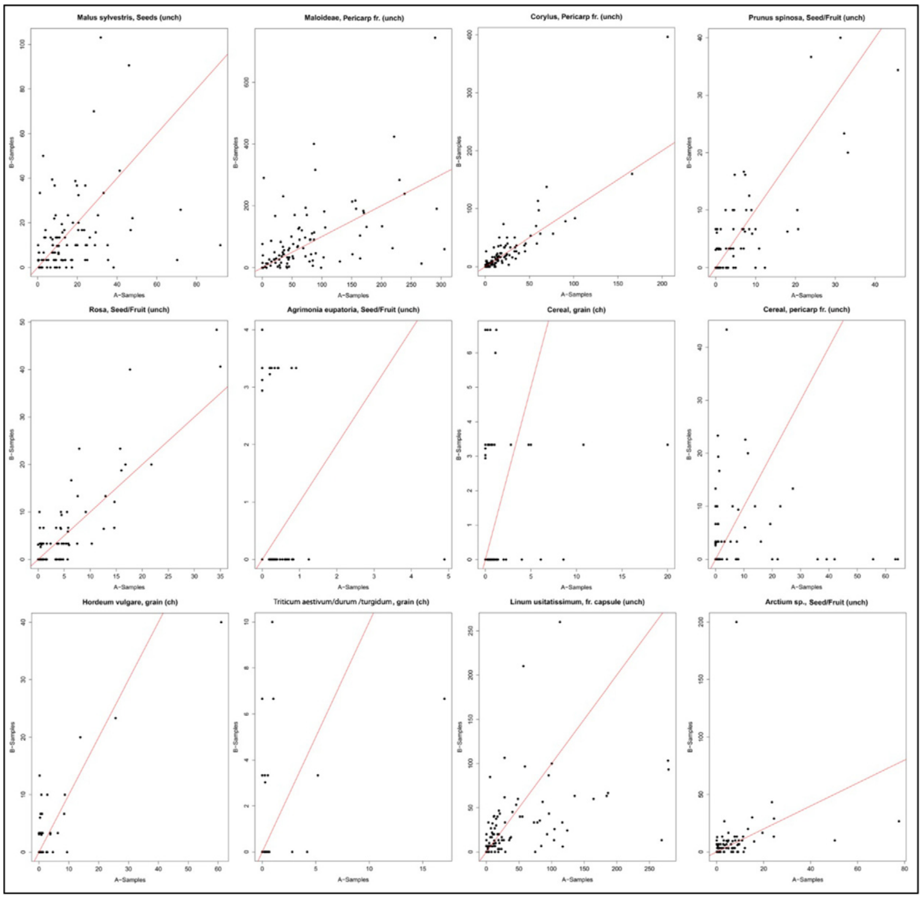


Fig. 4. Concentration values obtained for selected large-sized taxa in A- and B-samples. The red line shows perfect match. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Table 4
Pearson's correlation, *p*-value. Strong correlations shaded in dark grey.

P: Spearman's correlation	Concentration	Proportions
Triticum aestivum s.l./*durum*/*turgidum*, Grain (ch)	0.004	0.013
Triticum dicoccon, Grain (ch)	0.000	0.000
Cerealia indet., Grain (ch)	0.006	0.011
Cerealia indet., Bran frag. (unch)	0.052	0.162
Hordeum vulgare undiff., Grain (ch)	0.000	0.000
Linum usitatissimum, Capsule fr. (unch)	0.000	0.000
Agrimonia eupatoria	0.661	0.876
Arctium spec.	0.000	0.000
Corylus avellana (unch)	0.000	0.000
Galeopsis tetrahit	0.000	0.000
Malus sylvestris, seed	0.000	0.000
Malus/*Pyrus*, Pericarp (unch)	0.000	0.000
Prunus spinosa	0.000	0.000
Quercus spec., Pericarp (unch)	0.000	0.000
Ranunculus repens	0.748	0.641
Rosa spec.	0.000	0.000
Viburnum lantana	0.041	0.126

capsule fragments of *Linum usitatissimum* yielded similar distributions and clustering patterns.

4. Discussion

4.1. Limitations of this work

The results presented in this paper are of high relevance for archaeobotany in wetland contexts, particularly taking into account the insufficient amount of methodological research done to date in this field, mostly due to the fact that most of the research is carried out in the framework of commercial archaeology, which does not allow the time nor the financial support for methodological evaluations.

The comparison presented above is aimed to make a final statement about the need of large-volume samples from well-preserved waterlogged archaeological deposits in order to have a full representation of all seed and fruit remains (possibly also other types of remains recovered in these samples, like insect or fish remains). This was a necessary work given that profile and core sampling are still very commonly used in similar contexts to the ones investigated in this paper. This kind of sampling is most useful to target layer formation processes, but not representative enough for a full reconstruction of the economy (particularly regarding the relative importance of different plant foods in diet) at a site scale.

There are some methodological limitations in our work that need to be taken into consideration. The samples we studied need to be understood as subsamples of different volume of the same master sample, which is not fully comparable to the type of samples that one would obtain by sampling profiles (monolith sampling), using cores scattered through the site. At most, it could be compared to taking small surface samples because our samples were taken from a surface of a square metre (so called scatter samples according to Lennstrom and Hastorf, 1992) and not just at a random point. One should assume that profile sampling or core sampling would tend to give even more biased results than the ones presented here, since the chances of not having a good representation of the whole surface of the site are larger. In addition to this, taking a sub-sample from the master sample introduced a sequencing effect and an error (due to the process of subsampling a clumpy sediment) that we have recently tried to calculate (Steiner et al., in press). Ideal case studies or test studies do not generally exist in archaeology. One cannot take a large and a small sample from a context without introducing this sequencing effect in some form. For this reason we still find our analysis a powerful tool to judge the representativeness of different sampling strategies in wetland sites with similar preservation conditions.

4.2. How comparable are ubiquity, concentration and proportions obtained in A- and B- samples for large-sized items?

We observed that the results obtained for large-sized items in A- and B-samples tend to diverge considerably, depending on the method used to compare the samples. From the most common taxa, only one was comparably well recorded in both kinds of subsamples: large capsule fragments of *Linum usitatissimum* (Table 5). Some taxa never yielded comparable results like charred grains, bran fragments of Cerealia or fruits of *Agrimonia eupatoria.* Other plant macroremains, like pericarp fragments of Maloideae and nutshell fragments of *Corylus avellana* gave roughly similar results for ubiquity, concentration and proportions, but not in the GIS plans. Other taxa yielded similar GIS-plan distributions despite dissimilarities in other parameters, like charred grains of *Hordeum vulgare* and *Triticum aestivum/durum/turgidum.* Large-sized items seem to be systematically underrepresented in small-sized samples except the most abundant and frequent ones (with the exception of large capsule fragments of flax) (Steiner et al., 2015).

Regarding ubiquity values, on the basis of what we have observed (Table 1), very important large-sized items present in almost all samples (97–100%) are equally recovered in almost all smaller sub-samples (88–92%), but a few taxa with somewhat lower ubiquity values (75–95%), which are also economically important, presented clearly lower values in smaller samples (30–60%), showing poorer chances to be detected with this type of sampling. Therefore, under the pre-condition that a relatively large number of small-volume samples have been investigated, large-sized items found in small-volume samples in ubiquities above 50% should be considered as important resources, since it is unlikely that these values are higher for most taxa when small samples are taken. Ubiquity values are, therefore, in general, not directly comparable to other sites where large-volume samples have been investigated.

Regarding concentration, we have observed that average concentration values are similar using both datasets and therefore are fully comparable, which is a very important result for large-scale comparisons between different sites with different sample sizes. A relatively large number of samples and a large-scale surface sampling (from multiple parts of the settlement) is also required in any case so that these average values are representative for the site. On the other hand, comparisons on a sample-to-sample basis do not seem possible either relying on concentration values or on proportions. Only two taxa (*Ranunculus repens* and *Agrimonia eupatoria*) seemed to show a positive monotonic correlation, which is what one would expect if B-samples provided a proportional amount of remains of those found in A-samples. In addition to this, a qualitative observation of the scatterplots in Fig. 4 and ESM 2 also allowed the observation that the taxa which have the highest ubiquity values in B-samples are the ones which also yielded more similar results in concentration on a one-to-one basis to A-samples. This could be interpreted as an indication that concentration values at a sample scale are in general not reliable in small samples as a direct comparison to large samples except for the most ubiquitous taxa.

Qualitative comparisons (combined with clustering analysis) between GIS plans produced with concentration values of A- and B-samples also showed divergences between A- and B-samples, particularly among clearly large-sized items. For this reason, direct comparison does not seem possible.

4.3. Which taxa appear in which fractions? Does sample volume make a difference?

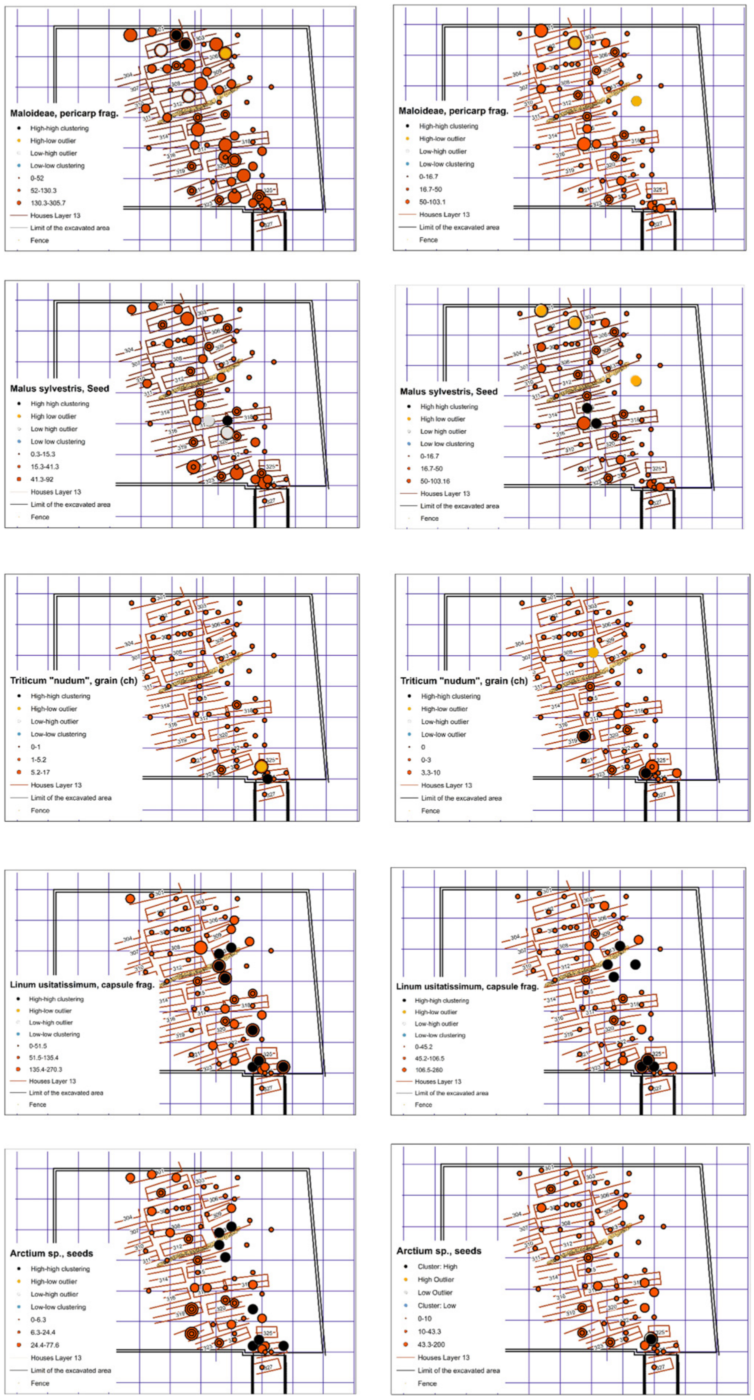
Two different aspects were to be considered regarding the type of remains found in each fraction: first of all, do large-sized remains appear in the 2 mm fractions independently of sample size? Secondly, are large- and small-sized items equally separated in the two fractions that we used in large and small samples? In consequence, were our counting units adequate for our case study and are they valid for other case studies with independence of the volume of the samples?

We had defined our counting units on the basis of previous work in Arbon Bleiche 3 (Hosch and Jacomet, 2004) and adapted them after performing some initial tests (Jacomet, unpublished) and further sieving tests (Fig. 3, Steiner et al., 2015). With the present work, we identified some other plant macroremains that were not quantified in the 2 mm fraction of A-samples but should be included in the quantification list in future analyses (these concern mainly middle-sized seeds and other items): *Najas marina/intermedia* (complete and half seeds), charred chaff remains of *Triticum dicoccon* and *Triticum durum/turgidum* and seeds of *Ranunculus repens* and *Aethusa cynapium* (ESM 4). It is particularly important to emphasize that charred chaff remains of cereals must be counted in this fraction in order to obtain comparable results to dry sites.

What about small-sized items? As already mentioned, smaller-sized items were semi-quantified in A-samples. In the case that the 0.35 mm fraction had not been analysed, how much could one rely on the semiquantifications performed in A-samples? Could one use the presence/absence of these taxa as a reliable indicator in, for instance, preliminary evaluations for a site under study? In this test, the recording of presence of the taxa proved to be reliable for a lot of taxa (including uncharred chaff remains of the main cereals and flax seeds) except those with clearly small seeds like *Potentilla* sp., *Lycopus europaeus*, *Betula pendula/pubescens*, *Fragaria vesca*, *Origanum vulgare*, *Prunella vulgaris*, etc. These taxa would have always been underestimated in terms of ubiquity in the values produced by the 2 mm fraction of A-samples. One final remark is needed: our results are only valid for other sites where the sieving method was equally gentle (the so-called wash-over technique). Otherwise, much less small-sized material would have been recovered in A-samples.

4.4. Comparison with other contemporary lakeshore settlements

The results presented above indicate two main guidelines for the comparison of values regarding large-seeded taxa between sites where different sample sizes have been taken. The first one is that only the global concentration values (and not at a sample basis) can be compared if a relatively high number of samples has been studied.


Maloideae, pericarp frag.
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-52
52-130.3
130.3-305.7
Houses Layer 13
Limit of the excavated area
Fence
Maloideae, pericarp frag.
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-16.7
16.7-50
50-103.1
Houses Layer 13
Limit of the excavated area
Fence
Malus sylvestris, Seed
High high clustering
High low outlier
Low high outlier
Low low clustering
0.3-15.3
15.3-41.3
41.3-92
Houses Layer 13
Limit of the excavated area
Fence
Malus sylvestris, Seed
High high clustering
High low outlier
Low high outlier
Low low clustering
0-16.7
16.7-50
50-103.16
Houses Layer 13
Limit of the excavated area
Fence
Triticum "nudum", grain (ch)
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-1
1-5.2
5.2-17
Houses Layer 13
Limit of the excavated area
Fence
Triticum "nudum", grain (ch)
High-high clustering
High-low outlier
Low-high outlier
Low-low outlier
0
0-3
3.3-10
Houses Layer 13
Limit of the excavated area
Fence
Linum usitatissimum, capsule frag.
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-51.5
51.5-135.4
135.4-270.3
Houses Layer 13
Limit of the excavated area
Fence
Linum usitatissimum, capsule frag.
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-45.2
45.2-106.5
106.5-280
Houses Layer 13
Limit of the excavated area
Fence
Arctium sp., seeds
High-high clustering
High-low outlier
Low-high outlier
Low-low clustering
0-6.3
6.3-24.4
24.4-77.6
Houses Layer 13
Limit of the excavated area
Fence
Arctium sp., seeds
Cluster: High
High Outlier
Low Outlier
Cluster: Low
0-10
10-43.3
43.3-200
Houses Layer 13
Limit of the excavated area
Fence

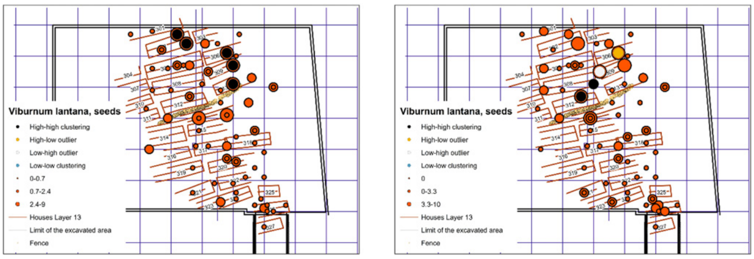


Fig. 5. (*Continued*)

Table 5
Ticks mark an "acceptable" agreement in the results obtained in A- and B- samples.

	Ubiquity	Concentration	Proportion	GIS Plan
Malus sylvestris, seed	✓	✓	✓	
Maloideae, pericarp fragment	✓	✓	✓	
Corylus avellana, shell fragments	✓	✓	✓	
Prunus spinosa, seed			✓	✓
Rosa sp., seed		✓	✓	
Agrimonia eupatoria, fruit				
Cerealia, grain (charred)				
Cerealia, bran fragment (uncharred)				
Hordeum vulgare, grain (charred)				✓
Triticum "nudum", grain (charred)				✓
Linum usitatissimum, large capsule fragment	✓	✓	✓	✓
Arctium sp., seed		✓	✓	

The second one is that only the most ubiquitous taxa will have a reliable ubiquity in sites where small samples were taken. Otherwise, taxa with ubiquities of 30–70% should be considered as very ubiquitous (=75–95%).

In order to see how useful these guidelines are, we compared our results with other roughly contemporaneous lakeshore sites investigated in the region and for which the necessary data were available: Arbon Bleiche 3 (Hosch and Jacomet, 2004), Horgen Scheller (Horgen layers) (Favre, 2002), Bad Buchau-Torwiesen II (Maier and Herbig, 2011) and Zürich-Kanalisationssanierung Seefeld (abbreviated as "KanSan") (Layer 3) (Brombacher and Jacomet, 1997). These sites were sampled in different ways. From Arbon Bleiche 3 we could include profile samples (av. volume of 0.13 l per sample, 49 samples from 12 places along a lake-land transect) and surface samples (33 samples of 2 l of volume in average); the latter came from different locations than the profile samples. From Horgen Scheller, scatter samples (see section 4.1) of small volume (ca. 0.6 l) were taken, while from Zürich-KanSan only profile samples from 13 locations (ca. 0.7 l of volume per sample in average) were studied. We selected a number of taxa that appeared in our test study and, in order to avoid comparing very poor samples, only samples that presented >100 remains per litre of sediment of these taxa were kept for the evaluation. The synthesis of the data produced can be observed in Table 6.

It can soon be observed that the lowest density and ubiquity values were obtained mostly in the profile samples of Arbon Bleiche 3 and the coring program at Torwiesen II, which also presented the smallest volumes per sample, as well as in Horgen-Scheller, where the average volume was below 1 l per sample. It is particularly clear how charred cereal remains were found in much lower ubiquities in all sets of samples except the surface samples of Arbon Bleiche 3. These trends confirm the results observed in our test. The large differences in concentration values between small- and large-volume samples observed in Table 6 (particularly for Arbon Bleiche, where both types of samples were taken) might be due to the fact that small-volume samples come from profile columns or cores (in Bad Buchau). In both cases, the sample is taken from a specific point, instead of aiming to have represented a larger surface as with scatter samples. As already noted in the comparison performed by Jacomet between profile and surface samples at Arbon Bleiche 3, the average concentration values of small-volume samples taken from a small number of spots (<20) cannot provide reliable estimations (Jacomet et al., 2004, 413–414)

Regarding the number of places that should be sampled if only profile columns or cores with samples of <1 l of volume in average are a viable option or in order to consider this type of approach as representative, 20 sampling spots have been mentioned in previous research (Jacomet et al., 2004, 414). We would now even suggest 40 spots as a minimum, taking into consideration the results of layer 3 in Horgen Scheller (Table 6). This number remains to be tested, since the work presented here does not allow stating a minimum number of samples.

4.5. Which is the appropriate volume of sediment to make a reliable evaluation of large-sized items in wetland sites? Which are the implications for research carried out to date in wetland sites?

The analysis of ubiquity showed that some plant macros were clearly underrepresented in samples of small size like charred cereal grains, and wild plants with a secondary importance (not regularly consumed and processed, but economically important) like *Viburnum lantana*, *Rosa* sp. or *Prunus spinosa*. In this case, only very frequent and abundant taxa like *Corylus avellana* or *Malus sylvestris* produced similar patterns for large- and small-volume samples.

On the other hand, the mean concentration per taxon seems to not be significantly different between subsample types, which is probably not comparable to sites where profile or core samples were taken because these only reflect very specific areas of the surface of the site. Therefore, if a large number of small samples (above 40) is taken and the spatial patterning of each plant taxon is not a main question of the project, a reliable average density can be obtained for a settlement phase and reliable ubiquity values for all those taxa that appear in high densities and extremely high ubiquities. For large-sized taxa that do not appear in most samples and particularly taxa that appear in low densities, small-sample volumes are not appropriate. This implies, for instance, that charred grains (probably excluding those in burnt layers) were not representatively recorded in sites where only samples of small volume were taken.

Fig. 5. GIS plans for different taxa quantified in A- (left column) and B-samples (right column) showing the density of remains per sample using Jenks natural breaks to define symbol size and Anselin Local Morans I to identify clusters and outliers.

Table 6
Average density and ubiquity of some selected large-seeded taxa from lakeshore sites in the Alpine Foreland that are roughly contemporary to Zürich-Parkhaus Opéra, ordered from left to right according to the mean sample volume. The lowest values per taxon are shaded in grey. Volume measurements of Arbon Bleiche 3, Zürich-KanSan and Horgen-Scheller were converted to displacement volume by applying a factor of 1.5 as suggested in Antolín et al., 2015. See references to the bibliographical sources in the text.

	Arbon Bleiche 3, Profile samples (49 samples from 12 columns, av. Vol. 0.13 l)		Bad Buchau-Torwiesen II, coring program (537 Samples, av. Vol. 0.225 l)		Horgen-Scheller, Layer 3, surface samples (41 samples, av. Vol. 0.6 l)		Horgen-Scheller, Layer 4, surface samples (21 samples, av. Vol. 0.7 l)		Zürich-KanSan, profile column (18 Samples from 13 columns, av. Vol. 0.7 litres)		Arbon Bleiche 3, Surface samples (33 Samples, av. Vol. 2 l)	
	Average density	Ubiquity	Average density	Ubiquity	Average density	Ubiquity	Average density	Ubiquity	Average density	Ubiquity	Average density	Ubiquity
Malus sylvestris, seed	100.1	93.9	1.5	5	69.5	92.7	14.3	95.2	61.2	100	179.4	100
Malus sylvestris, pericarp frag.	284.6	100	0.6	<1	363.3	100	37.8	100	124.5	100	220.1	100
Quercus spec., pericarp frag.	5.0	26.5			79.2	95.1	32.0	100	104.0	77.8	16.1	87.9
Corylus avellana, shell frag.	183.0	95.9	0.1	<1	73.1	92.7	42.6	100	38.0	100	273.5	97.0
Prunus spinosa, stone	2.0	16.3	0.0	<1	2.7	53.7	3.8	47.6	6.5	83.3	2.9	75.8
Rosa spec., stone	2.3	14.3	0.0	<1	9.8	82.9	6.8	85.7	14.9	88.9	3.2	72.7
Cerealia indet., grain (ch)	3.2	14.3	0.0	<1	8.7	80.5	0.9	33.3			1.5	63.6
Hordeum vulgare undiff., grain (ch)	13.7	26.5	2.0	15.0	0.9	36.6	0.8	33.3	1.3	33.3	1.8	78.8
Triticum „nudum", grain (ch)	1.7	12.2	0.4	6.0	0.8	36.6	0.3	14.3	0.9	22.2	1.2	69.7
Linum usitatissimum, capsule frag.	239.0	91.8	76.0	79	1014.1	100	2508.4	100	984.4	100	1136.7	100

From the results obtained at Zürich-Parkhaus Opéra, we can infer that samples of 3 l of sediment volume (that is to say 4.5 l if measuring the classical volume) are needed for a representative recovery of large-sized plant remains. This confirms the estimations done in previous work, but tests should be carried out in other sites to prove the applicability of this value (it can vary if this amount is not enough to recover ca. 400 large-sized items, for instance).

This result implies that more human and financial efforts need to be put in the archaeobotanical research of sites with waterlogged preservation, and that more methodological critique needs to be included in the interpretation of archaeobotanical assemblages coming from samples of small volume in this type of archaeological deposits.

5. Conclusions

In this study we could perform a test analysis that finally proves that large-volume samples are needed for the representative recording of large-sized items (including charred cereal grain) in wetland sites, especially if the economy of a site is targeted. This is an important result given that sample sizes are usually very small (below 1 l) in these sites, which renders the results of these unique contexts (regarding charred remains) almost incomparable to the archaeobotanical data obtained from dry sites. We therefore recommend the use of samples of around 3 l of sediment, at least, for well-preserved Neolithic settlement layers (with average concentration values per sample of around 10.000 mostly uncharred remains per litre of sediment).

We could also show that average density values obtained from small-volume samples might be comparable to those obtained from large-volume samples. This facilitates inter-site comparisons of wetland sites, although caution is always recommended in interpretations. Ubiquity values of large-sized items will probably be underestimated in sampling programs based on samples of small volume. In this case, ubiquity values above 30% and particularly above 50%, need to be considered as very high. Site plan distributions of large-sized items based on samples of small volume are prone to a large bias and should not be performed or interpreted as representative (particularly the absence of remains cannot be interpreted in these cases).

Since the number of remains to be counted per sample are independently treated for each fraction (ca.400 remains are needed per fraction), counting units need to be clearly pre-defined to avoid counting remains twice and our proposal can be used as a reference. A proposal is included in the ESM 4 of this paper.

Finally, we recommend the conduction of tests at a site scale to check the suitability of these standards to each case study.

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jasrep.2017.02.008.

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Appendix 7.4. Report: Zug-Riedmatt, Überbauung Riedpark III (ZGRI RIII)

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Basel, 17. Mai 2016

Schlussbericht zur Bearbeitung von fünf Proben Zug-Riedmatt, Überbauung Riedpark III

Einleitung

Bei der Aushubüberwachung von Zug-Riedmatt, Überbauung Riedpark III, wurden drei Profile geborgen. Es war von vorneherein bekannt, dass an dieser Stelle keine Kulturschicht erwartet werden kann (Gross, Reinhard und Schaeren 2015). Sie liegt ca. 80 m von den Siedlungsschichten der Riedmatt entfernt flussaufwärts und die Schichten sind höher gelegen. Grund für diese Massnahme war vielmehr das Bedürfnis für ein detaillierteres Verständnis der Landschaftsgeschichte um die horgenzeitliche Seeufersiedlung Zug-Riedmatt. Die Beprobungsstelle liegt im alten Lorzedelta und die botanischen Reste in den abgelagerten Sedimenten können deshalb über die damals natürlich vorhandenen Vegetation Aufschluss geben, welche ihren Weg in die Sedimente gefunden hat und bis heute erhalten geblieben ist. Ausgehend von der Annahme, dass ein Grossteil der Reste (zumindest im oberen Teil der Stratigraphie) durch Überschwemmungen der Lorze in Auenlehmen abgelagert wurden, sollte eine Untersuchung auch aufzeigen, welche Reste über fluviatile Kräfte zur Ablagerung gelangten. Dies würde eine Interpretation der verschiedenen Einflüsse auf die Kulturschicht der Seeufersiedlung Riedmatt erleichtern. Allerdings muss noch untersucht werden, ob die hier untersuchten Straten genau gleichzeitig abgelagert wurden wie die Kulturschicht von Zug-Riedmatt.

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Methoden

Die Profile wurden am IPNA in transdisziplinärer Zusammenarbeit beschrieben. Danach wurden die Profile palynologisch und mikromorphologisch beprobt und anschliessend für die archäobotanische Untersuchung abgebaut. Eine Auswahl von fünf Proben (121.8, 121. 12, 122.11, 122.14, 123. 2) wurde durch Giovanni Di Stefano geschlämmt und durch die Autorin analysiert. Die Proben wurden so gewählt, dass man eine möglichst gute Repräsentation der gesamten Stratigraphie hatte und trotzdem möglichst organische Proben untersuchen konnte. Probe 121.12 war jedoch die einzige Probe, welche komplett aus organischem Sediment bestand. Proben 121.8, 122.11, 122.14 waren siltig-organisch gebänderte Schichten und in der Probe 123.2 war der organische Anteil im Silt fein verteilt. Bei der Analyse wurden dieselben Methoden verwendet, welche für die Auswertung der restlichen Proben von Zug-Riedmatt zum Einsatz gekommen sind (vgl. Ismail-Meyer *et al.* in Vorbereitung) und die Resultate dieser Proben dienten bei der Auswertung auch hauptsächlich als Vergleichsbasis. Während den Analysen wurden wie gewöhnlich auch Kleintier- und Insekten-Reste ausgelesen, welche somit für weiterführende Analysen ebenfalls zur Verfügung stehen.

Resultate und Diskussion

Eine Tabelle mit den erhobenen Daten findet sich als Anhang in der Excel-Tabelle „*ZGRI_RiedparkIII_Resultate.xlsx*". Es sind sowohl die Konzentrationen aller Samen, Früchte und anderen generativen Pflanzenteilen sowie auch die halbquantitativen Schätzwerte der Anteile von Materialklassen und Erhaltungsparametern (meist vegetatives pflanzliches Material) angegeben.

Alle fünf Proben enthielten keine Reste von Kulturpflanzen und wir können deshalb feststellen, dass sie auf natürliche Weise abgelagert worden sein müssen. Das beprobte Sediment muss also in einer gewissen zeitlichen Distanz zum Siedlungsgeschehen der damaligen Siedlung Riedmatt abgelagert worden sein oder die ca. 80 m von den Siedlungsschichten entfernten Sedimente wurden deshalb nicht vom Siedlungsgeschehen beeinflusst, weil sie höher und flussaufwärts lagen, sodass es zu keiner Vermischung kommen konnte (mündl. Mitteilung Eda Gross).

Obwohl alle Proben natürlich entstanden sind, hatten sie z. T. eine unterschiedliche Zusammensetzung. Nur die folgenden vier Wald-Arten waren in allen fünf Proben vorhanden: Schwarz- (oder allenfalls Grau-) Erle (*Alnus cf. glutinosa*), Weiss-Tanne (*Abies alba*), Linde (*Tilia sp.*) und Haselstrauch (*Corylus avellana*).

Die stratigraphisch unterste Probe, 123.2, enthielt zahlreiche Wasserpflanzen. Am häufigsten kam eine Glanzleuchteralge (*Nitella sp.*) vor, welche in keiner anderen Probe auftrat. Auch Armleuchteralgen (*Chara sp.*) und Nixenkraut (*Najas sp.*) waren in dieser Probe zu finden. Letzteres fehlte ebenfalls in allen anderen Proben, war hier aber durch Samen sowie Blätter vertreten. Neben diesen Wasserpflanzen gab es in dieser Probe noch wenige andere Wildpflanzen, vor allem Pflanzen aus Waldbeständen, Waldrändern und Hecken und eine etwas grössere Menge von Früchten der Schwarz-Erle als in den anderen Proben. Noch zu erwähnen ist die Gemeine Esche (*Fraxinus excelsior*), welche als einzige der hier nachgewiesenen Arten in den Proben der Seeufersiedlung Riedmatt als generativer Pfanzenteil nie gefunden wurde (als Holz war sie jedoch durchaus vorhanden, mündl. Mitteilung Eda Gross). Eschenfrüchte werden in Kulturschichten trotz der häufigen Anwesenheit ihres Holzes selten gefunden. Die oben erwähnte Artenzusammensetzung, die überaus zahlreichen Insektenreste und die Anwesenheit von (vorwiegend limnisch vorkommenden) Süsswassermoostierchen in dieser Probe deuten auf eine seekreidehaltige Schicht, welche vorwiegend limnisch gebildet wurde. Fluviale Prozesse könnten ebenfalls eine Rolle gespielt haben, in welchem Rahmen, muss aber ohne weitere Untersuchungen unbekannt bleiben.

Die beiden Proben aus dem Profil 122 (122.11, 122.14) waren einander sehr ähnlich und werden deshalb gemeinsam besprochen. Sie enthielten am meisten Schwarz-Erle, im Vergleich zu Nüsschen waren jedoch Zäpfchen nur in der Probe 122.14 und nur in geringen Mengen vorhanden. Sie enthielten beide wenige Reste des Schwarzbraunen Zypergrases (*Cyperus fuscus*), welche sonst nur in der Probe 123.2 gefunden wurde. Auch Seggen (*Carex sp.*) fanden sich in beiden Proben und es waren viele Reste der Weiss-Tanne vorhanden, vorwiegend Nadeln, aber v.a. in der Probe 122.14 auch einige Samen. Blattfragmente waren sehr häufig in beiden Proben zu finden, was schon makroskopisch beobachtet werden konnte. Neben den oben erwähnten häufigsten Arten enthielt die Probe 122.11 eine Frucht der Birke (*Betula pendula/pubescens*), einen Samen des Faulbaums (*Frangula alnus*) sowie Reste von Mistel (*Viscum album*) und war insgesamt die ärmste Probe. Die Probe 122.14 enthielt ein Fragment einer Eichel (*Quercus sp.*) sowie je einen Samen des Hartriegels (*Cornus sanguinea*) und des Wolligen Schneeballs (*Viburnum lantana*). Das völlige Fehlen von Wasserpflanzen deutet darauf hin, dass diese beiden Proben nicht unter Wasser abgelagert wurden. Schwarz-Erle sowie das Schwarzbraune Zypergras und die Seggen deuten jedoch auf eine eher feuchte Umgebung. Man kann sich also durchaus vorstellen, dass es sich um Deltaablagerungen der Lorze handelt, die genannten Wald- und Uferflanzen gerieten vermutlich weiter oben auf natürliche Weise in den Fluss und wurden dann hier angeschwemmt.

Probe 121.8 enthielt keinerlei Wasserpflanzen, dafür mit Erle (Nüsschen und Zäpfchen) und Wechselblättrigem Milzkraut (*Chrysosplenium alternifolium*) zwei Arten, welche bevorzugt an Feuchtstandorten gedeihen. Ansonsten waren viele Arten von Wald, Waldrändern und Hecken vorhanden, darunter sehr zahlreich Weiss-Tanne (Nadeln, Samen und Zapfenschuppen), aber auch Birke, Buche (*Fagus sylvatica*, Fruchtbecher), Esche, Eiche (Perikarpfragment der Eichel), Linde und Haselstrauch. Blätter und Rinde waren die vorherrschenden Materialklassen.

Aufgrund der fehlenden Wasserpflanzen und dem gleichzeitigen Vorhandensein von grossen oder schweren Resten (z. B. Erlen-Zäpfchen, Tannen-Zapfenschuppen) kann als Herkunft der Sedimente hier ebenfalls die Lorze in Betracht gezogen werden.

Die stratigraphisch höchstgelegene Probe, 121.12, enthielt die höchste Konzentration an botanischen Resten. Sie war beim Abbau auch die einzige Probe, welche hauptsächlich aus organischem Material bestand. Arten, welche nur in dieser Probe vorkamen, waren z. B. Ahorn (*Acer sp.*), Günsel (*Ajuga genevensis/reptans*), Distel/Kratzdistel (*Carduus/Cirsium*), Holunder (*Sambucus sp.*) und Weidenröschen (*Epilobium sp.*). Diese Probe enthielt als einzige etwas Holzkohle. Zu erwähnen sind ausserdem das vergleichsweise gehäufte Vorkommen von Früchten der Esche (11 Stück), das Vorhandensein eines Oogoniums einer Armleuchteralge, einiger Erlen-Zäpfchen, von Buche (Fruchtbecher und Perikarp), von einer Mistelfrucht, einigen Früchten von Seggen, einer grossen Menge Weiss-Tannen-Nadeln (es waren auch Samen und Zapfenschuppen vorhanden) und einer relativ hohen Anzahl von Haselnüssen (darunter auch einige unreife Exemplare). Als Materialklasse war Rinde vorherrschend. Hier liegt sicher kein typisches Seekreide-spektrum vor, und Armleuchteralgen können auch in Tümpeln von Flusstälern abgelagert werden (siehe z. B. Bos und Urz 2003). Deshalb kann auch hier vermutet werden, dass das Sediment aus Deltaablagerungen der Lorze stammt.

Bei einem Grossteil der Proben kann also eine Entstehung durch Flussaktivitäten vermutet werden. Es kann aber keine bestimmte Gruppe von Arten definiert werden, welche typischerweise in solchen Ablagerungen vorkommt. Für Schwarz-Erle scheint eine fluviale Herkunft sehr wahrscheinlich. Besonders bei den Erlen-Zäpchen kann man sich gut vorstellen, dass ihr Transport eine gewisse Fliessgeschwindigkeit des Wassers voraussetzt. Bei Weiss-Tanne und Haselstrauch ist die Lage unklar. In einer Seeufersiedlung ist eine anthropogene oder auch limnische Herkunft sehr viel wahrscheinlicher als eine fluviatile, denn Haselnüsse waren beliebte Sammelfrüchte und die Weiss-Tanne war ein wichtiges Bauholz, deren Zweige wahrscheinlich auch ans Vieh verfüttert (siehe z.B. Zibulski 2010) oder als Baumaterial verwendet wurden (z.B. als Bodenbedeckung, siehe ethnographische Quellen). Bei der Linde wäre eine fluviale Herkunft möglich. Sie kommt in der Seeufersiedlung Zug-Riedmatt selten vor und ist nur in den Profilen 46/45 etwas häufiger, welche damals dem Fluss am nächsten lagen und in dem auch am meisten natürlich entstandene Proben enthalten waren.

Ansonsten waren in diesem Typ Proben vor allem Pflanzen aus Wald, Waldrand und Hecken gut vertreten. Auch einige Pflanzen von Feuchtstandorten waren vorhanden, jedoch (fast) keine Wasserpflanzen. Alle diese Taxa können – in eher niedriger Zahl – auch auf natürlich Weise eingelagert werden, denn sie haben in Auen natürliche Standorte. Die Artenzusammensetzung variierte aber je nach

Probe, sodass kein typisches Spektrum an Arten festgemacht werden kann, welches mit fluviatilen Ereignissen einhergeht. Es muss deshalb vermutet werden, dass auch natürliche Auensedimente eine gewisse Variabilität in ihrer Zusammensetzung aufweisen. Dies ist insofern nicht verwunderlich, als das Spektrum je nach Jahreszeit, in welcher die Reste in den Fluss fielen und dann angeschwemmt wurden, unterschiedlich sein kann.

Die Artendiversität und die Konzentrationen der bestimmbaren Reste waren deutlich tiefer als in Kulturschichtproben der Siedlung Riedmatt; ihre Zusammensetzung widerspiegelt in plausibler Weise die natürliche Vegetation im Bereich des Lorze-Flusslaufes. All dies entspricht den Erwartungen. Angemerkt sei noch, dass die Erhaltung der noch vorhandenen Reste nicht schlecht war.

Weitergehende Aussagen wären evt. möglich, wenn wir uns neben den archäobotanischen Resultaten auch auf Angaben anderer Disziplinen stützen zu könnten, um die genannten Vermutungen zu verifizieren. Zu den mikromorphologischen und palynologischen Proben liegen aber noch keine Ergebnisse vor. Die hier erzielten Resultate werden im Rahmen des laufenden NF-Projektes (‚Formation and taphonomy of archaeological wetland deposits: two transdisciplinary case studies and their impact on lakeshore archaeology', Projekt-Nr. CR30I2_149679) und im Rahmen meiner Dissertation aber weiterverfolgt.

Aus archäobotanischer Sicht kann leider keine Aussage zur Zeitstellung der Proben gemacht werden, denn alle vorkommenden Arten kommen entweder auch in der Seeufersiedlung Riedmatt vor oder wurden schon in kontemporären Siedlungen gefunden (im Falle der Esche z. B. Zürich-Parkhaus Opéra, mündl. Mitteilung Stefanie Jacomet). Sämtliche Taxa kommen spätestens ab dem mittleren Holozän vor und sind deshalb für eine Datierung nicht aussagekräftig.
Es wurde jedoch während der Analyse aus jeder Probe jeweils ein geeigneter Rest für eine AMS-C14-Datierung separiert. Die Ergebnisse der Datierungen liegen aber noch nicht vor.

Fazit
Die Analyse der fünf Proben von der Überbauung Riedpark III hat einen interessanten Einblick in die Zusammensetzung natürlicher (Auen-)Sedimente geliefert, über welche sehr wenig bekannt ist. Es zeigte sich, dass es schwierig ist, eine bestimmte Indikatorengruppe für fluviatile Ereignisse zu definieren, denn auch Auensedimente scheinen variabel zusammengesetzt zu sein (Literaturvergleiche müssen noch eruiert werden). Immerhin wurde die Vermutung bestätigt, dass Reste der Erle vor allem auf natürliche Weise in Schichten eingetragen werden können. Eine Einbindung dieser Ergebnisse in statistische Analysen der Sedimentzusammensetzung wird in Zukunft vielleicht auch weiterführendere Interpretationen erlauben.

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Appendix 7.5. Report: Zug-Schützenmatt (ZGSCH)

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Schlussbericht zur Bearbeitung von fünf Proben Zug-Schützenmatt

Einleitung

Fünf Bohrproben der Sondierbohrungen B02, B03 und B05 von Zug-Schützenmatt wurden im Labor beschrieben, anschliessend geschlämmt und archäobotanisch analysiert. Es sollte vor allem untersucht werden, ob diese Proben mit hohem organischem Anteil eindeutige anthropogene Spuren (z.B. Kulturschichtmaterial) aufweisen.

Methoden

Die makroskopischen Anteile der Proben wurden vor dem Abbau beschrieben, jedoch wurde auf eine Feinunterteilung der Proben verzichtet, da wie oben erwähnt vorwiegend wichtig war, überhaupt ein Vorkommen von Kulturpflanzen in den Proben zu überprüfen. Trotzdem wurden noch wenige Pollen- (pro Probe 3) und Mikromorphologieproben (insg. 2) entnommen. Das Schlämmen aller Proben wurde von Giovanni Di Stefano durchgeführt, die nachfolgende Analysen und die Auswertung von der Autorin. Es wurden dieselben Methoden verwendet, welche für die Auswertung der Proben von Zug-Riedmatt zum Einsatz gekommen sind (vgl. Gross *et al.* in Vorbereitung) und die Resultate dieser Fundstelle dienten bei der Auswertung der Resultate der Proben der Schützenmatt auch hauptsächlich als Vergleichsbasis.

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Resultate und Diskussion
Eine Tabelle mit den erhobenen Daten findet man als Anhang in der Excel-Tabelle „*ZGSCH_Resultate.xlsx*“. Es sind sowohl die Konzentrationen aller Samen, Früchte und anderen generativen Pflanzenteilen sowie auch die halbquantitativen Schätzwerte der Anteile von Material- und Erhaltungsparametern (meist vegetatives pflanzliches Material) angegeben.

Zwei der fünf Proben enthielten überhaupt keine Kulturpflanzen. Es handelt sich dabei um die Proben 3 (Bohrloch 03, 6m) und 21 (Bohrloch 05, 7.5m). Die Probe 3 war auch die einzige Probe, in welcher keine Holzkohle gefunden wurde.

Die Proben 15 (Bohrloch 02, 5m) und 20 (Bohrloch 05, 6m) enthielten Holzkohle und wenige Fragmente von Schlafmohn (*Papaver somniferum*), es handelt sich aber auf jeden Fall auch bei diesen Proben nicht um Kulturschichtmaterial, dafür sind die Anteile viel zu klein. Probe 15 war jedoch die Probe mit der höchsten Konzentration an (natürlichen) botanischen Resten sowie der höchsten Anzahl Taxa und sie enthielt ein Fragment Getreidedrusch.

Probe 9 (Bohrloch 03, 9m) war die einzige Probe, welche eine etwas grössere Menge und Vielfalt an Kulturpflanzen enthielt. Neben Schlafmohn war auch Lein (*Linum usitatissimum*), Getreidekleie und -drusch (v. a. unbestimmbar, aber auch sehr wenig Emmer, *Triticum dicoccon* und Hartweizen, *Triticum turgidum/durum*) vorhanden. Jedoch wurden in derselben Probe auch viele Wasserpflanzen gefunden.

Auf jeden Fall ist die Anzahl an Kulturpflanzen in dieser Probe für einen reinen ‚Zufallsfund’ zu hoch und es müsste genauer untersucht werden, weshalb in dieser Probe eine etwas grössere Konzentration von Kulturpflanzen vorhanden war.

Es handelt sich aber auch bei dieser Probe eindeutig nicht um eine ‚klassische’ Kulturschicht, die Konzentrationen von Kulturpflanzen und Holzkohle ist zu gering, die anorganische Fraktion ergibt ebenfalls keine Hinweise auf Siedlungsabfall. Wasserpflanzen und Mollusken weisen auf Wasserüberdeckung während der Ablagerung (zumindest zeitweise), was bei der tiefen Lage der Probe eigentlich auch zu erwarten ist.

Der momentane Stand der Untersuchung erlaubt folgende Hypothesen: Kulturpflanzen und Holzkohle könnten aus Schichtmaterial stammen, welches aus einer nahgelegenen Siedlung eingeschwemmt wurde. Ob diese Siedlung gleichzeitig mit der Ablagerung an der Bohrstelle existierte oder älter war, lässt sich aufgrund der bisherigen Untersuchungen nicht entscheiden.

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Es ist nicht auszuschliessen, dass die Kulturpflanzenreste aus den organischen Brocken zwischen dem feinsandigen Silt stammen (siehe Bericht von Ph. Rentzel) (Abb. 1).

Abb. 1 Detailaufnahme der Probe 9 mit org. Brocken (braun gefärbt). Foto von B. Steiner.

Eine zweite Möglichkeit wäre, dass pflanzliches Material der landwärts nachgewiesenen Ufersiedlung Zug-Schützenmatt in tiefere Zonen verlagert wurde. Ohne absolute Datierung der organischen Reste aus dieser Probe bleibt diese Möglichkeit spekulativ, das nachgewiesene Kulturpflanzenspektrum würde durchaus zu typischen Spektren der Horgener Zeit passen.

Aufgrund des technischen Vorgehens bei der Probenentnahme kann letztlich auch eine Verunreinigung der Probe durch höher gelegene Probensegmente nicht ausgeschlossen werden. Diese Möglichkeit könnte nur durch die Untersuchung weiterer Proben des Bohrkerns besser beurteilt werden.

Interessant ist ausserdem, dass die Proben 20 und 21 hohe Anteile von Erle (*Alnus* cf. *glutinosa*) und Birke (*Betula pendula/pubescens*), dafür nur sehr wenig Wasserpflanzen enthielten, während bei den Proben 15 und 9 genau das Gegenteil der Fall war. Probe 3 enthielt sowohl Erle und Birke sowie auch einen etwas grösseren Anteil von Wasserpflanzen. Ob dies direkt auf unterschiedliche Einflüsse von See und Fluss schliessen lässt, müsste jedoch noch genauer untersucht werden. Da die entnommenen Proben in die Gesamtauswertung meiner Dissertation einbezogen werden können, lässt sich diese Frage vielleicht im grösseren Rahmen besser beantworten.

UNI BASEL

Appendix 7.6. Conference paper: New taphonomic research in archaeological wetland deposits: the bone midden of Zug-Riedmatt (Central Switzerland)

Culture, Climate and Environment – Interactions at Prehistoric Wetland Sites, 2015, Berne

Appendix 7.7. Conference paper: Basic methodological research on waterlogged sediments

17th conference of the International Work Group for Palaeoethnobotany (IWGP), 2016, Paris

Basic methodological research on waterlogged sediments

Bigna L. Steiner, Ferran Antolín, Werner Vach, Stefanie Jacomet

In collaboration with Örni Akeret, Christoph Brombacher, Marlu Kühn, Patricia Vandorpe

Introduction

Within the framework of the SNF-funded project *Formation and taphonomy of archaeological wetland deposits: two transdisciplinary case studies and their impact on lakeshore archaeology* (project nr. CR30I2_149679), several studies were performed in order to determine how to best treat a waterlogged archaeobotanical sample before and during analysis.

Together with research at the IPAS over the last 20 years, these studies give important methodological implications, which are briefly presented here.

THE PROJECT

Sites

Two Neolithic lakeshore settlements from Central Switzerland:

Zürich-Parkhaus Opéra

Zug-Riedmatt

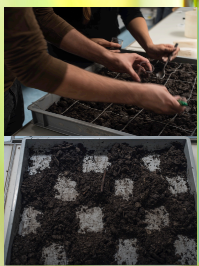
dated to c. 3200-3100 cal BC

THE TESTS

Testing the consistency of wash-over sieving (Steiner *et al.*, 2015)

Inconsistencies of sieving performed by different operators can negatively affect archaeobotanical results (Hosch and Zibulski, 2003).

Here we tested the consistency between four sievers with identical instructions using the wash-over sieving method (Kenward *et al.*, 1980).

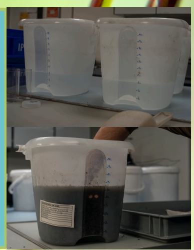


Investigation of the subsampling process (Steiner *et al.*, submitted)

Following previous research (Hosch and Jacomet, 2001), the sampling of ZHOPE was based on bulk samples (5-8L) for a representative recovery of large remains. Subsamples (0.3L) were taken to investigate the smaller fraction, thus minimizing the sieving time. Different techniques for carrying out this subsampling were tested.

Comparison of volume measurement techniques (Antolín *et al.*, 2015)

Systematic comparison of the two commonly used methods of displacement and classical (upper limit of the sediment in water, measured before and after freezing as pre-treatment) volume measurement were done with the samples of ZHOPE (>300). Four operators measured the classical volume.



Comparison of different sample volumes/fractions (Antolín *et al.*, in preparation)

Results from the 2mm fraction of large-volume samples were compared with the ones from the 2mm fraction and the 0.35mm fractions of small-volume subsamples taken from the same samples. The goal was to see which taxa were found in which fraction and sample type (large or small volume) in order to improve the sampling strategy in future projects.

GUIDELINES BASED ON METHODOLOGICAL RESULTS

basic sampling unit
bulk or profile sample, ideally min. 3L
(Hosch and Jacomet, 2001)

↓

taking of subsamples for **special examinations**,
eg. of pollen, parasites, geochemistry

↓

volume measurement using the displacement method
(Antolín *et al.*, 2015)

↓

freezing and slow thawing of sample as pre-treatment
(Vandorpe and Jacomet, 2007)

↗

wash-over sieving (Hosch and Zibulski, 2003)
clear instructions and feedback for sievers (Steiner *et al.*, 2015)

↓ at best 100% of the sample

↓ if time-saving strategy needed: **subsampling after sieving** (Steiner *et al.*, submitted)
random sampling → large subsample 8 + 2 mm; small subsample (2 +) 0.35 mm

↓

analysis
using detailed counting instructions
to avoid counting remains twice in different fractions
(Antolín *et al.*, in preparation)

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Vandorpe P, Jacomet S, 2007. Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits. *Environ. Archaeol.* 12 (2), 207–214.

→ **online handbook of procedures incl. video with wash-over sieving instructions in preparation**

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IPAS · University of Basel · FNSNF Fonds national suisse · Schweizerischer Nationalfonds · Fondo nazionale svizzero · Swiss National Science Foundation

Appendix 7.8. Script of the sieving video

Text by B. L. Steiner, based on research done in the archaeobotany lab at the IPAS, University of Basel.

Wash-over sieving of archaeological samples

Disclaimer: This video gives an instruction for the use of wash-over sieving of archaeological samples for archaeobotanists. The method can be used by other people as well, but only after consulting the responsible experts. The video does not replace practical training.

00:13
This is our room for sieving.

00:20
Sieving is a method to clean archaeobiological remains, such as botanical macroremains, bones of small animals or insect remains, from the fine sediment particles of a soil sample.

00:37
As a “side” product we often find archaeological artefacts like coins, beads, flint flakes and so on in sieved samples.

00:51
Wash-over is the only sieving method which does not impact or damage fragile archaeobotanical material (Hosch and Zibulski, 2003). In this movie, we present how the general handling of archaeological samples and the wash-over sieving method is done.
A waterlogged sample serves as an example, but the method can be used for all kinds of sediments.

01:26
We would like to discourage the use of mechanical methods. (maschinell: done by sieving machines)

01:32
Bigna Steiner, a Ph.D. student here at the IPAS, is now going to show to us the individual steps of wash-over sieving.

02:24
A waterlogged sample of the Late Neolithic lakeshore site Zug-Riedmatt serves as an example to show the wash-over process.

02:36
Each archaeological sample should contain a label with the abbreviated name of the site and the sample number. To all parts of a sample, such a label has to be added. Labelling with a pencil is most durable.

02:51
Here you can see the position of the sample to be sieved in the profile of the excavation and in the profile column.

03:28
It is best to store the sample wet, but not standing in water before the volume measurement.

03:42
In some cases, a macroscopic description of the sample makes sense. For this, the material is spread in a large tray.

04:11
The content of organic and inorganic components, the matrix and the colour are estimated using a predefined scale.

04:31
The reaction of the sediment when hydrochloric acid is applied is measured, ideally in several places.

04:50
Results should instantly be typed into a table, so that this information can be used later.

05:14
If necessary, one can now separate reserve samples or subsamples for special investigations, for example geochemical, palynological or parasite analyses, using a riffle box or using grid subsampling. A riffle box does not work well for subsampling wet, clumpy material, which is why we use the grid subsampling here. The volume of the subsamples has to be predefined or measured after taking subsamples.

06:33
Then, the volume of the sample is measured. The displacement method is well-suited for this (Antolin *et al.*, 2015): a known volume of water is poured into a container with a litre scale, and then the sample is added.

07:14
The volume is measured, and the known starting volume of water is subtracted in order to determine the displacement volume of the sample. For this method, the degree of water saturation of all samples should be similar.

07:38
After subsampling and calculation of the volume, the sample is soaked in water, frozen, and slowly defrosted. This process will simplify handling during the sieving process without damaging the remains (Vandorpe and Jacomet, 2007).

07:56
Sample is frozen for two days.
08:09
Sample is defrosted for one day.

08:13
After these pretreatments, the sieving can be started.

08:37
The procedure and methodology should always be precisely recorded. For this, a sieving journal is useful. There, one can also note important information about a sample. A sieving journal is best managed in an excel table, but can also be done in a notebook and transcribed later if computer equipment is not available in the lab or in the field.

09:36
A sieving station consists of four elements:
The base element (or collecting tank), which holds back fine particles, but discharges the water via an overflow through the pipes visible here.

09:50
The remaining three elements contain one sieve each; the smallest meshed sieve is in the lowest element, the medium meshed in the middle, and the largest meshed sieve is on top.

10:00
Sieve mesh sizes have to be defined beforehand:
The smallest mesh size of a sieve is defined by the purpose of the analysis. If lakeshore vegetation with all its small seeds is to be reconstructed, one has to use a mesh size of a widest 0.2mm.
The sieve mesh sizes used here for the organic fraction of a Neolithic sample are 4mm, as trap for large remains, 2mm and 0.35mm; this should normally be small enough for archaeological research questions about the communities' economy.

10:37
Now all four elements of the sieving station are assembled in order to sieve the sample.
The original sample is best sieved without subsampling (except for other disciplines) and is only subsampled after sieving, as the clumpy waterlogged sediment could otherwise cause a bias in the results (Steiner *et al.*, 2017a).

11:32
Further items needed for sieving are one, or several, large bowls and a funnel with its narrow end cut off for the transfer of the fractions at the end, a small bowl for the sieving of the sample material, a container for the inorganic material, a spoon for the sample material and a hose with a sprinkler head.

12:11
Wash-over is based on the principle of organic remains being lighter than inorganic components of a sample. Using a stream of water, organic remains can be made to float, and can then be decanted over the set of sieves. The difference to classical flotation is that the process is done manually and can be controlled at all times.

12:50
The precise procedure of the wash-over sieving is the following:
Small quantities of the soaked archaeological sample are put in a small bowl. With a stream of water, which should not be too strong, or with a movement of the hand, the material in the bowl is 'swirled': the components floating on top are decanted over the set of sieves. Those are mostly the light, organic components. The non-floating, inorganic components are collected separately and, if needed, can be sieved in a second step.

13:28
Now patience is required while the whole sample is sieved in several portions using the wash-over method. We will show only some excerpts of the whole process.
The sieving process for a sample of this size, with all necessary steps shown in this video, takes about three hours on average.

14:29
Conspicuous and very fragile remains should be separated and put into separate boxes. One should also look out for pieces of dung, like the one which can be seen here, as these should not be broken.

16:06
If the material is hard to separate despite freezing the sample, it has to be disintegrated with a great deal of sensitivity! To do this without damaging the material requires a certain amount of experience.

17:08
Staff who sieve should always get detailed instructions and continuous feedback about their work so that quality can be assured and, if necessary, several sievers can work on the same project without differences of quality (Steiner *et al.*, 2015).

18:04
This is the last portion of the sample being sieved. The container of the sample is already completely rinsed and the spoon is cleaned.

18:58
Here we see the comparatively large amount of inorganic material from the bottom of the sample container. The material is not evenly distributed, which has to be kept in mind.

19:15
But in this sample, the inorganic fraction in total was rather small, the proportion can vary quite strongly depending on the sample. Here we see the inorganic material of the sieved sample in total.

19:34
After the sample has been fully sieved, the organic material of each fraction is again gently washed with a stream of water until the water coming out below is clean. The water pressure cannot be too high, otherwise fragile remains will be damaged. Rubbing and pushing through the sieve are prohibited!
We start with the 4mm fraction…

20:37
A first glance at the 4mm fraction reveals remains like a pea pod fragment (*Pisum sativum* pod), half a sloe seed (*Prunus spinosa* seed), a fragment of an acorn (*Quercus sp.* pericarp), a leaf of mistletoe (*Viscum album* leaf), a fragment of a beechnut (*Fagus sylvatica* pericarp) and a fragment of a hazelnut (*Corylus avellana* pericarp).

21:06
Next comes the transfer of the fractions into fitting containers. First, the content of the sieve is poured into a large bowl using a funnel with its narrow end cut off. Attention – there's a possibility of flooding!

22:14
Now the top element can be removed.
22:23
The next fraction, 2mm, is treated the same way, so first it's gently washed…
22:38
…and then transferred into a large bowl.

23:27
Now the second element can be removed.
23:40
The smallest fraction, 0.35mm, is gently washed…
23:56
…and then transferred.

24:57
We see here all completely sieved fractions.

25:15
Before transferring the fractions into plastic bags, their volumes must be measured using the displacement volume.

25:26
The 4mm fraction serves as an example here, as the procedure is the same for every fraction, we will only show the process for one of them. The material is poured into a small, very finely meshed sieve.

25:48
For the displacement volume measurement, it is very important to dry the fractions before measuring the volume in order not to distort the measurement. This must be done before each measurement.

26:32
After measuring, the volume should be noted in the sieving journal, either directly in the excel sheet or first on the protocol sheet.

26:43
After measuring the volumes of all fractions, if necessary, subsamples for analysis can be taken now. As an example, we separate here a subsample of 5 ml of the 0.35mm fraction, so that this fraction can later be analysed portion-wise. Again, the grid subsampling and the displacement volume measurement are used.

28:30
Then the material is packed into plastic bags or screw cap jars. Plastic bags are best closed by the means of a plastic fusion machine. Here the packing of the 2mm fraction serves as an example.

29:03
For more stability and mobility, especially if samples are larger than shown here, the plastic bag could be placed in a beaker glass.

29:41
Organic waterlogged material has to be kept in water.

29:59
Attention: a label with the site name and sample number always needs to be added to every fraction.

30:12
Once all fractions are packed, they should be stored in a cool (<5 degrees Celsius) and dark environment until they are analysed. They are best placed in rako boxes which are labelled according to the samples they contain, so that the samples can quickly be found for analysis.

30:55
The inorganic fraction is now also sieved, but using the wet sieving method: the material is directly spread on the uppermost sieve and is rinsed with a stream of water which should not be too strong. For the inorganic material, one doesn't necessarily have to use the same mesh sizes as for the organic material. This has to be discussed from case to case with the person responsible for the small animals bones. For waterlogged material, normally 2 and 1mm mesh sizes are used.

31:26
The inorganic fraction of the previously sieved sample is comparatively small. Therefore we show here examples of inorganic fractions from other samples as well.

31:36
After sieving, the inorganic material is slowly dried and stored, again with a label with all the important information about the sample.

31:48
Here we see some archaeological artefacts and other finds from sieved samples, such as fragments of bones, fragments of iron, glass, more fragments of iron, a drop of glass, molluscs, flint flakes and fragments of ceramic.

Credits

Stefanie Jacomet	film production
Bigna Steiner	direction and script
Laura Rindlisbacher	speaker
Raül Soteras	camera
Giovanni Di Stefano	sound and sound mixing
R. Soteras – G. Di Stefano	cut
Giovanni Di Stefano	soundtrack

Thanks to Örni Akeret, Ferran Antolín, Christoph Brombacher, Ben Jennings, Marlu Kühn, Britta Pollmann, Philippe Rentzel, Patricia Vandorpe, Petra Zibulski

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Vandorpe P, Jacomet S (2007) Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits. Environmental Archaeology 12(2): 207-214

Appendix 7.9. Densities of seed and fruits in all samples from Zug-Riedmatt

Data can also be requested in electronic form from the author (bigna.steiner@unibas.ch).

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.17	2.20	0.12	0.42	0.34	0.50	0.10	1.00	0.15	0.20	0.35	0.30	0.20	0.21	0.17	0.10
		sediment type	M1	M2	M1	M3	M1	M1	M1	M1	MO1	MO1	MO2	MO1	MO1	MO1	MO1	M2	MO1
		unit	U1	U1	U1	U1	U1	U1	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2
		sample nr.	46_1	46_2	74_1	74_2	88_1	88_2	96_1	96_2	46_3	46_4	46_5	68_4	74_3	74_4	88_3	96_3	96_4
	type	state	density (r/l)																
aquatic plants oligotrophic																			
Chara spec.	oog	uncharred	64.00	52.94	520.45	175.00	238.10	235.29	178.00	670.00	36.00	66.67	50.00	137.14	140.00	80.00	342.86	952.94	250.00
Chara spec.	oogK	uncharred	24.00	17.65	254.55	100.00	150.00	82.35	0.00	0.00	4.00	6.67	0.00	120.00	153.33	15.00	271.43	0.00	0.00
Nitella spec.	oog	uncharred	3436.00	129.41	87.27	16.67	38.10	2.94	1468.00	50.00	21.00	0.00	10.00	2.86	10.00	0.00	0.00	23.53	0.00
density			3524.00	200.00	862.27	291.67	426.19	320.59	1646.00	720.00	61.00	73.33	60.00	260.00	303.33	95.00	614.29	976.47	250.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	2.00	1.00
aquatic plants meso-/eutrophic																			
Myriophyllum cf. spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	14.00	47.06	10.91	16.67	47.62	229.41	0.00	0.00	2.00	20.00	0.00	2.86	3.33	0.00	142.86	0.00	0.00
Najas minor	seed/fruit	uncharred	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	10.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	42.00	35.29	14.09	8.33	28.57	29.41	26.00	0.00	6.00	66.67	15.00	8.57	0.00	0.00	4.76	0.00	30.00
Najas intermedia/marina	fruit whole	uncharred	18.00	5.88	0.45	0.00	7.14	0.00	0.00	0.00	6.00	80.00	30.00	8.57	10.00	0.00	0.00	0.00	0.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	56.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	14.29	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. obtusifolius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			130.00	100.00	25.91	25.00	83.33	258.82	26.00	0.00	17.00	173.33	95.00	37.14	13.33	0.00	147.62	0.00	40.00
number of taxa			2.00	4.00	2.00	2.00	2.00	2.00	1.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	0.00	2.00
reed bed and sedge swamp plants																			
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Glyceria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	4.76	0.00	0.00
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	1.00	6.67	5.00	0.00	6.67	10.00	4.76	5.88	0.00
cf. Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa palustris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	1.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus cf. lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	11.76	0.00	0.00	2.38	0.00	0.00	0.00	3.00	13.33	0.00	0.00	6.67	0.00	4.76	11.76	10.00
density			0.00	11.76	0.00	8.33	4.76	5.88	2.00	0.00	5.00	20.00	10.00	2.86	13.33	10.00	14.29	17.65	10.00
number of taxa			0.00	1.00	0.00	1.00	2.00	1.00	1.00	0.00	3.00	2.00	2.00	1.00	2.00	1.00	3.00	2.00	1.00
wet grassland plants																			
cf. Deschampsia cespitosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. repens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	2.94	0.00	0.00	0.00	6.67	0.00	2.86	0.00	0.00	0.00	0.00	0.00
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	2.38	5.88	2.00	0.00	0.00	6.67	0.00	2.86	0.00	0.00	4.76	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	1.00	2.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
shoreline pioneers incl. shore weeds																			
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. tripartita	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. humifusum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	5.88	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	6.67	10.00	0.00	0.00	0.00	0.00	5.88	0.00
number of taxa			0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00
wetland plants unassigned																			
Cardamine cf. flexuosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	2.00	0.00	5.00	0.00	0.00	5.00	4.76	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa cf. nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00
density			0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	2.00	0.00	5.00	0.00	0.00	5.00	4.76	5.88	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00
riparian woodland and carr plants																			
Alnus cf. glutinosa	seed/fruit	uncharred	8.00	0.00	0.91	0.00	2.38	2.94	0.00	0.00	21.00	13.33	15.00	2.86	0.00	5.00	0.00	0.00	30.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00
cf. Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. officinale	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.45	0.08	0.20	0.30	0.45	0.30	0.15	0.16	0.50	0.60	0.15	0.20	1.00	0.60
		sediment type	O1	SO, O1	OL	O2	O2	O1	O2S	L2	O1	O1	O1	O2	O2	O1	L1
		unit	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3
		sample nr.	46_6	46_7-8	46_9	46_10	68_5	68_6	74_5	74_6	74_7_1	88_4	98_4	98_5	96_5	96_6	96_7
	type	state	density (r/l)														
aquatic plants oligotrophic																	
Chara spec.	oog	uncharred	0.00	0.00	12.50	5.00	100.00	2.22	6.67	6.67	12.50	130.00	100.00	20.00	10.00	180.00	1.67
Chara spec.	oogK	uncharred	0.00	0.00	0.00	0.00	3.33	0.00	13.33	6.67	6.25	6.00	75.00	0.00	0.00	0.00	0.00
Nitella spec.	oog	uncharred	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00
density			0.00	0.00	37.50	5.00	103.33	2.22	20.00	13.33	18.75	136.00	175.00	20.00	10.00	183.00	1.67
number of taxa			0.00	0.00	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00
aquatic plants meso-/eutrophic																	
Myriophyllum cf. spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.33	0.00	0.00	1.00	0.00
Najas minor	seed/fruit	uncharred	0.00	0.00	0.00	15.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	2.00	6.67	87.50	40.00	6.67	17.78	3.33	6.67	0.00	2.00	1.67	13.33	10.00	1.00	15.00
Najas intermedia/marina	fruit whole	uncharred	2.00	6.67	87.50	20.00	0.00	17.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	1.00	0.00
cf. Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. obtusifolius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.00	13.33	187.50	75.00	6.67	37.78	3.33	6.67	0.00	4.00	5.00	13.33	25.00	3.00	15.00
number of taxa			1.00	1.00	2.00	2.00	1.00	2.00	1.00	1.00	0.00	2.00	2.00	1.00	2.00	2.00	1.00
reed bed and sedge swamp plants																	
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Glyceria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	8.00	0.00	0.00	0.00	10.00	2.22	3.33	26.67	62.50	0.00	0.00	6.67	0.00	0.00	1.67
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	0.00
cf. Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa palustris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	2.00	0.00	0.00	10.00	3.33	2.22	0.00	53.33	25.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus cf. lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
cf. Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	0.00	12.50	0.00	0.00	0.00	3.33	0.00	6.25	2.00	1.67	0.00	0.00	2.00	0.00
density			10.00	0.00	12.50	10.00	13.33	4.44	6.67	80.00	100.00	4.00	1.67	13.33	0.00	4.00	1.67
number of taxa			2.00	0.00	1.00	1.00	2.00	2.00	2.00	2.00	4.00	2.00	1.00	2.00	0.00	3.00	1.00
wet grassland plants																	
cf. Deschampsia cespitosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	2.22	25.00	0.00	0.00	2.22	0.00	6.67	0.00	0.00	0.00	0.00	0.00	1.00	1.67
cf. Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	2.00	2.22	0.00	0.00	0.00	0.00	0.00	53.33	75.00	0.00	1.67	0.00	0.00	0.00	0.00
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. repens	seed/fruit	uncharred	0.00	4.44	12.50	5.00	3.33	8.89	0.00	6.67	62.50	0.00	0.00	0.00	10.00	0.00	0.00
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.00	8.89	37.50	5.00	10.00	11.11	0.00	113.33	162.50	0.00	1.67	0.00	10.00	1.00	1.67
number of taxa			1.00	3.00	2.00	1.00	2.00	2.00	0.00	5.00	3.00	0.00	1.00	0.00	1.00	1.00	1.00
shoreline pioneers incl. shore weeds																	
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. tripartita	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	87.50	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. humifusum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	2.00	0.00	12.50	0.00	0.00	4.44	0.00	160.00	112.50	0.00	0.00	6.67	0.00	1.00	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.44	3.33	0.00	6.25	0.00	0.00	0.00	0.00	1.00	0.00
Polygonum cf. hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. lapathifolium agg.	seed/fruit	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.44	0.00	20.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	6.00	2.22	12.50	10.00	10.00	8.89	0.00	120.00	225.00	0.00	1.67	0.00	0.00	2.00	0.00
density			10.00	2.22	25.00	10.00	10.00	22.22	3.33	333.33	443.75	0.00	1.67	6.67	0.00	4.00	0.00
number of taxa			3.00	1.00	2.00	1.00	1.00	4.00	1.00	6.00	5.00	0.00	1.00	1.00	0.00	3.00	0.00
wetland plants unassigned																	
Cardamine cf. flexuosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	3.33	2.22	0.00	13.33	12.50	0.00	0.00	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	2.22	0.00	0.00	0.00	2.22	3.33	0.00	12.50	2.00	3.33	6.67	0.00	1.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa cf. nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	4.44	0.00	0.00	3.33	4.44	3.33	13.33	25.00	2.00	3.33	6.67	0.00	1.00	0.00
number of taxa			0.00	2.00	0.00	0.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	0.00	1.00	0.00
riparian woodland and carr plants																	
Alnus cf. glutinosa	seed/fruit	uncharred	4.00	4.44	12.50	25.00	0.00	2.22	0.00	20.00	6.25	2.00	0.00	6.67	0.00	2.00	0.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
cf. Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
Nasturtium cf. officinale	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.30	0.15	0.50	0.38	0.30	0.40	0.65	0.15	0.60	0.30	0.50	0.40	1.00	0.80	0.40	0.75	1.00
		sediment type	MO2	MO2	MO2	MO2, O1, L	O1	S	OSLM	O1	OS	L1	L1	OSLM	L1	SO	OSLM	OSLM	OSLM
		unit	U4	U4	U4	U4, U5	U4?	U4?	U4?	U5	U5	U5	U5	U5	U5	U5	U5	U5	U5
		sample nr.	46_11	46_12	68_7	96_8	74_7_2	88_5	98_6	74_8	74_9_1	74_9_2	73_1	88_6	88_7	88_8	98_7	98_8	98_9
	type	state	density (r/l)																
aquatic plants oligotrophic																			
Chara spec.	oog	uncharred	200.00	93.33	6.00	10.53	3.33	80.00	0.00	6.67	6.67	10.00	14.00	0.00	0.00	2.50	2.50	0.00	0.00
Chara spec.	oogK	uncharred	0.00	13.33	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitella spec.	oog	uncharred	3.33	0.00	96.00	39.47	0.00	0.00	4.62	0.00	66.67	43.33	50.00	0.00	1.00	100.00	0.00	0.00	0.00
density			203.33	106.67	106.00	50.00	3.33	80.00	4.62	6.67	73.33	53.33	64.00	0.00	1.00	102.50	2.50	0.00	0.00
number of taxa			2.00	1.00	3.00	2.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.00	1.00	2.00	1.00	0.00	0.00
aquatic plants meso-/eutrophic																			
Myriophyllum cf. spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	3.33	66.67	148.00	0.00	0.00	0.00	1.54	0.00	1.67	0.00	6.00	0.00	0.00	1.25	2.50	0.00	3.00
Najas minor	seed/fruit	uncharred	140.00	266.67	214.00	923.68	0.00	0.00	3.08	0.00	1.67	6.67	12.00	0.00	0.00	2.50	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	40.00	106.67	364.00	160.53	3.33	0.00	3.08	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	6.00
Najas intermedia/marina	fruit whole	uncharred	26.67	20.00	24.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Najas spec.	seed/fruit	uncharred	6.67	20.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	13.33	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. obtusifolius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			216.67	500.00	766.00	1084.21	6.67	0.00	7.69	0.00	5.00	6.67	18.00	0.00	2.00	7.50	2.50	0.00	9.00
number of taxa			3.00	4.00	5.00	2.00	2.00	0.00	3.00	0.00	3.00	1.00	2.00	0.00	1.00	3.00	1.00	0.00	2.00
reed bed and sedge swamp plants																			
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
cf. Glyceria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	6.67	13.33	4.00	7.89	6.67	0.00	0.00	0.00	1.67	0.00	4.00	0.00	50.00	1.25	5.00	0.00	0.00
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
cf. Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa palustris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	2.00	0.00	3.33	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.00
Schoenoplectus cf. lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.50	4.62	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
density			13.33	13.33	6.00	7.89	10.00	2.50	6.15	0.00	1.67	0.00	4.00	0.00	51.00	8.75	5.00	0.00	2.00
number of taxa			2.00	1.00	2.00	1.00	2.00	1.00	2.00	0.00	1.00	0.00	1.00	0.00	2.00	5.00	1.00	0.00	2.00
wet grassland plants																			
cf. Deschampsia cespitosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	3.33	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
cf. Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	2.50	69.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	0.00	0.00	6.00	2.63	3.33	2.50	0.00	6.67	1.67	0.00	4.00	0.00	0.00	1.25	0.00	0.00	0.00
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. repens	seed/fruit	uncharred	6.67	6.67	6.00	5.26	13.33	0.00	0.00	6.67	0.00	0.00	2.00	2.50	1.00	5.00	0.00	0.00	0.00
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			10.00	6.67	14.00	10.53	20.00	2.50	0.00	13.33	1.67	0.00	22.00	5.00	71.00	8.75	0.00	0.00	0.00
number of taxa			2.00	1.00	3.00	3.00	3.00	1.00	0.00	2.00	1.00	0.00	6.00	2.00	3.00	3.00	0.00	0.00	0.00
shoreline pioneers incl. shore weeds																			
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. tripartita	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. humifusum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	6.67	2.00	0.00	3.33	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	4.00	2.63	0.00	7.50	1.54	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.50	0.00	0.00
Polygonum cf. hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	8.00	2.63	100.00	2.50	0.00	13.33	0.00	3.33	0.00	0.00	2.00	0.00	0.00	0.00	0.00
density			0.00	13.33	14.00	5.26	110.00	12.50	1.54	13.33	0.00	3.33	0.00	0.00	3.00	3.75	2.50	0.00	1.00
number of taxa			0.00	2.00	3.00	2.00	4.00	3.00	1.00	1.00	0.00	1.00	0.00	0.00	2.00	2.00	1.00	0.00	1.00
wetland plants unassigned																			
Cardamine cf. flexuosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	10.00	26.67	0.00	7.89	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Poa cf. nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			10.00	26.67	0.00	7.89	6.67	2.50	0.00	0.00	0.00	3.33	0.00	0.00	1.00	5.00	0.00	0.00	0.00
number of taxa			1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00	0.00	0.00	0.00
riparian woodland and carr plants																			
Alnus cf. glutinosa	seed/fruit	uncharred	3.33	6.67	4.00	0.00	10.00	0.00	0.00	0.00	0.00	6.67	4.00	0.00	1.00	0.00	0.00	0.00	1.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. officinale	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.17	2.20	0.12	0.42	0.34	0.50	0.10	1.00	0.15	0.20	0.35	0.30	0.20	0.21
		sediment type	M1	M2	M1	M3	M1	M1	M1	M1	MO1	MO1	MO2	MO1	MO1	MO1	MO1
		unit	U1	U1	U1	U1	U1	U1	U1	U1	U2	U2	U2	U2	U2	U2	U2
		sample nr.	46_1	46_2	74_1	74_2	88_1	88_2	96_1	96_2	46_3	46_4	46_5	68_4	74_3	74_4	88_3
	type	state	density (r/l)														
Prunus padus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus caesius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	5.00	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			8.00	0.00	0.91	0.00	2.38	2.94	0.00	0.00	23.00	13.33	20.00	8.57	3.33	5.00	0.00
number of taxa			1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	3.00	1.00	2.00	2.00	1.00	1.00	0.00
woodland plants																	
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	5.00	0.00	3.33	5.00	0.00
Abies alba	leaf	uncharred	10.00	11.76	10.91	16.67	64.29	144.12	2.00	0.00	353.00	1153.33	705.00	851.43	116.67	155.00	523.81
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	6.00	23.53	0.45	58.33	4.76	0.00	2.00	10.00	4.00	13.33	5.00	2.86	6.67	0.00	4.76
Betula pendula/pubescens	fruit whole	uncharred	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	3.33	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	1.00	13.33	0.00	0.00	3.33	0.00	4.76
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	2.86	0.00	0.00	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	0.00	0.00	0.00	0.00	2.38	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	9.52
density			16.00	41.18	11.36	75.00	73.81	150.00	4.00	10.00	367.00	1186.67	715.00	857.14	133.33	165.00	547.62
number of taxa			2.00	2.00	2.00	2.00	4.00	3.00	2.00	1.00	4.00	3.00	2.00	3.00	3.00	2.00	5.00
woodland clearing edge, hedge, bush plants																	
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	5.00	2.86	0.00	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	5.71	3.33	0.00	0.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	5.88	0.00	0.00	4.76	2.94	0.00	0.00	1.00	0.00	5.00	2.86	3.33	0.00	0.00
Origanum vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.71	0.00	0.00	0.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	5.88	0.00	0.00	7.14	5.88	0.00	0.00	3.00	0.00	25.00	20.00	6.67	0.00	0.00
number of taxa		16	0.00	1.00	0.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	4.00	5.00	2.00	0.00	0.00
grassland plants																	
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	5.00	4.76
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	1.00	0.00	0.00	2.86	0.00	5.00	4.76
number of taxa			0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00
winter crop annual and flax weeds																	
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.17	0.10	0.50	0.45	0.08	0.20	0.30	0.45	0.30	0.15	0.16	0.50	0.60	0.15	0.20	1.00	0.60	0.30	0.15	0.50
		sediment type	M2	MO1	O1	SO, O1	OL	O2	O2	O1	O2S	L2	O1	O1	O1	O2	O2	O1	L1	MO2	MO2	MO2
		unit	U2	U2	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U4	U4	U4
		sample nr.	96_3	96_4	46_6	46_7-8	46_9	46_10	68_5	68_6	74_5	74_6	74_7_1	88_4	98_4	98_5	96_5	96_6	96_7	46_11	46_12	68_7
Prunus padus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00
Rubus caesius	seed/fruit	uncharred	0.00	0.00	0.00	2.22	0.00	0.00	6.67	0.00	0.00	6.67	0.00	0.00	1.67	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	30.00	6.00	6.67	12.50	25.00	6.67	2.22	0.00	26.67	6.25	2.00	1.67	13.33	5.00	3.00	3.33	6.67	6.67	4.00
number of taxa			0.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	0.00	2.00	1.00	1.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00
woodland plants																						
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	3.00	0.00	3.33	6.67	0.00
Abies alba	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	uncharred	23.53	30.00	1396.00	933.33	1525.00	315.00	453.33	695.56	313.33	53.33	37.50	518.00	801.67	1860.00	165.00	760.00	1701.67	350.00	260.00	202.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	29.41	10.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	5.00	1.00	0.00	0.00	20.00	0.00
Betula pendula/pubescens	fruit whole	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	3.33	95.56	0.00	6.67	18.75	2.00	75.00	13.33	0.00	1.00	3.33	0.00	13.33	2.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	3.33	2.22	0.00	0.00	6.25	2.00	1.67	0.00	0.00	0.00	5.00	0.00	0.00	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	12.00	13.33	50.00	0.00	0.00	2.22	0.00	6.67	6.25	4.00	0.00	6.67	0.00	4.00	1.67	3.33	0.00	4.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	3.33	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	0.00	0.00	20.00	6.67	0.00	0.00	3.33	4.44	0.00	0.00	0.00	0.00	13.33	73.33	5.00	1.00	20.00	6.67	0.00	0.00
density			52.94	40.00	1438.00	953.33	1587.50	320.00	463.33	804.44	316.67	80.00	68.75	534.00	895.00	1953.33	175.00	771.00	1731.67	366.67	300.00	214.00
number of taxa			2.00	2.00	6.00	3.00	3.00	2.00	4.00	6.00	2.00	5.00	4.00	6.00	5.00	4.00	3.00	6.00	5.00	4.00	3.00	5.00
woodland clearing edge, hedge, bush plants																						
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	2.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	1.67	3.33	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	4.00	2.22	0.00	0.00	3.33	6.67	0.00	13.33	87.50	0.00	0.00	6.67	0.00	0.00	0.00	3.33	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	4.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	6.25	2.00	1.67	0.00	0.00	0.00	1.67	0.00	13.33	0.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	6.25	2.00	1.67	6.67	0.00	0.00	0.00	0.00	0.00	2.00
Origanum vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	140.00	2.22	10.00	40.00	100.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	26.67	0.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	6.67	6.25	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	2.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			5.88	0.00	10.00	4.44	25.00	5.00	153.33	13.33	10.00	80.00	225.00	4.00	5.00	26.67	0.00	3.00	3.33	6.67	40.00	8.00
number of taxa		16	1.00	0.00	3.00	2.00	1.00	1.00	3.00	4.00	1.00	5.00	7.00	2.00	3.00	4.00	0.00	1.00	2.00	2.00	2.00	3.00
grassland plants																						
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33	6.67	12.50	2.00	1.67	0.00	5.00	0.00	0.00	0.00	6.67	0.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	18.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	10.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33	20.00	31.25	2.00	1.67	0.00	5.00	0.00	0.00	0.00	13.33	4.00
number of taxa			0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	2.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	2.00	1.00
winter crop annual and flax weeds																						
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	3.33	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	2.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	2.22	0.00	5.00	0.00	0.00	0.00	6.67	6.25	0.00	0.00	0.00	0.00	0.00	1.67	6.67	0.00	2.00
number of taxa			0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	0.00	1.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.38	0.30	0.40	0.65	0.15	0.60	0.30	0.50	0.40	1.00	0.80	0.40	0.75	1.00
		sediment type	MO2, O1, L	O1	S	OSLM	O1	OS	L1	L1	OSLM	L1	SO	OSLM	OSLM	OSLM
		unit	U4, U5	U4?	U4?	U4?	U5	U5	U5	U5	U5	U5	U5	U5	U5	U5
		sample nr.	96_8	74_7_2	88_5	98_6	74_8	74_9_1	74_9_2	73_1	88_6	88_7	88_8	98_7	98_8	98_9
Prunus padus	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus caesius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	1.00	2.50	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	10.00	5.00	1.54	0.00	1.67	6.67	4.00	0.00	2.00	2.50	0.00	1.33	1.00
number of taxa			0.00	1.00	2.00	1.00	0.00	1.00	1.00	1.00	0.00	2.00	1.00	0.00	1.00	1.00
woodland plants																
Abies alba	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Abies alba	leaf	charred	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	uncharred	92.11	353.33	877.50	258.46	153.33	8.33	266.67	8.00	747.50	337.00	695.00	30.00	9.33	17.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	fruit whole	uncharred	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	1.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	2.63	3.33	5.00	1.54	0.00	0.00	3.33	0.00	0.00	2.00	2.50	0.00	0.00	0.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	0.00	10.00	0.00	1.54	0.00	0.00	6.67	0.00	2.50	4.00	1.25	0.00	0.00	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	0.00	1.54	0.00	0.00	6.67	0.00	2.50	2.00	6.25	0.00	0.00	1.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00	4.00	31.25	5.00	0.00	0.00
density			97.37	370.00	890.00	263.08	160.00	8.33	283.33	8.00	762.50	350.00	737.50	35.00	9.33	18.00
number of taxa			2.00	3.00	4.00	4.00	2.00	1.00	4.00	1.00	6.00	6.00	5.00	2.00	1.00	2.00
woodland clearing edge, hedge, bush plants																
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	5.26	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	2.63	6.67	2.50	4.62	6.67	5.00	0.00	2.00	2.50	38.00	8.75	0.00	0.00	0.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	3.33	0.00	1.54	20.00	0.00	0.00	0.00	0.00	2.00	1.25	0.00	0.00	0.00
Origanum vulgare	seed/fruit	uncharred	0.00	10.00	2.50	1.54	0.00	0.00	0.00	0.00	0.00	3.00	87.50	0.00	0.00	3.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			7.89	36.67	7.50	7.69	26.67	5.00	0.00	4.00	2.50	45.00	98.75	0.00	0.00	3.00
number of taxa		16	2.00	5.00	3.00	3.00	2.00	1.00	0.00	2.00	1.00	5.00	4.00	0.00	0.00	1.00
grassland plants																
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	1.25	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	10.53	3.33	0.00	3.08	0.00	0.00	0.00	0.00	0.00	2.00	3.75	0.00	0.00	1.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	2.63	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			13.16	3.33	2.50	3.08	13.33	0.00	0.00	0.00	2.50	2.00	5.00	0.00	0.00	1.00
number of taxa			2.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00
winter crop annual and flax weeds																
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.25	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	2.63	0.00	0.00	1.54	0.00	0.00	0.00	0.00	2.50	113.00	2.50	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.63	0.00	0.00	1.54	0.00	0.00	0.00	0.00	2.50	114.00	5.00	0.00	0.00	0.00
number of taxa			1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	2.00	3.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.17	2.20	0.12	0.42	0.34	0.50	0.10	1.00	0.15	0.20	0.35	0.30	0.20	0.21	0.17	0.10	0.50	0.45	0.08	0.20	0.30	0.45	0.30	0.15
		sediment type	M1	M2	M1	M3	M1	M1	M1	M1	MO1	MO1	MO2	MO1	MO1	MO1	MO1	M2	MO1	O1	SO, O1	OL	O2	O2	O1	O2S	L2
		unit	U1	U1	U1	U1	U1	U1	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2	U3	U3	U3	U3	U3	U3	U3	U3
		sample nr.	46_1	46_2	74_1	74_2	88_1	88_2	96_1	96_2	46_3	46_4	46_5	68_4	74_3	74_4	88_3	96_3	96_4	46_6	46_7-8	46_9	46_10	68_5	68_6	74_5	74_6
	type	state	density (r/l)																								
summer crop annual weeds, annual ruderals																											
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	2.00	0.00	5.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	5.00	0.00	3.33	0.00	0.00	0.00	0.00	2.00	2.22	12.50	0.00	0.00	6.67	3.33	20.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. ischaemum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria ischaemum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Polygonum cf. aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00
Polygonum cf. persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	8.33	0.00	5.88	0.00	0.00	3.00	0.00	0.00	5.71	0.00	0.00	9.52	5.88	0.00	2.00	0.00	0.00	5.00	3.33	2.22	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	5.88	0.00	0.00	1.00	0.00	5.00	0.00	3.33	0.00	0.00	5.88	0.00	0.00	0.00	0.00	10.00	3.33	4.44	3.33	26.67
density			0.00	0.00	0.00	8.33	9.52	11.76	0.00	0.00	8.00	6.67	15.00	5.71	6.67	0.00	19.05	11.76	0.00	8.00	2.22	12.50	20.00	13.33	13.33	6.67	113.33
number of taxa			0.00	0.00	0.00	1.00	3.00	2.00	0.00	0.00	4.00	1.00	3.00	1.00	2.00	0.00	3.00	2.00	0.00	4.00	1.00	1.00	2.00	3.00	3.00	2.00	7.00
perennial ruderals																											
Arctium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	3.33	8.89	3.33	6.67
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Arctium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. aparine	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	3.33	8.89	6.67	6.67
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	2.00	1.00
cereals																											
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	0.00	29.41	0.00	0.00	9.52	5.88	0.00	0.00	65.00	20.00	15.00	5.71	36.67	30.00	14.29	0.00	0.00	6.00	0.00	37.50	5.00	0.00	2.22	0.00	6.67
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	uncharred	0.00	88.24	0.00	33.33	33.33	88.24	0.00	0.00	154.00	73.33	155.00	102.86	223.33	155.00	252.38	0.00	90.00	650.00	33.33	25.00	370.00	6.67	160.00	360.00	20.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	11.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
Triticum cf. monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./durum/turgidum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	uncharred	0.00	0.00	0.00	16.67	11.90	29.41	0.00	0.00	145.00	66.67	5.00	5.71	73.33	15.00	14.29	0.00	30.00	26.00	131.11	87.50	35.00	0.00	0.00	126.67	0.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	0.00	152.94	0.00	0.00	0.00	53.33	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	164.44	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	bran	uncharred	12.00	170.59	9.09	58.33	735.71	100.00	0.00	0.00	1170.00	1040.00	3190.00	651.43	1153.33	2760.00	5857.14	58.82	30.00	3312.00	493.33	11175.00	1310.00	100.00	1595.56	5406.67	80.00
Cerealia indet.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	0.00	117.65	0.00	41.67	45.24	0.00	2.00	0.00	210.00	60.00	160.00	85.71	180.00	130.00	109.52	29.41	40.00	764.00	0.00	225.00	60.00	0.00	0.00	13.33	0.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	uncharred	0.00	129.41	0.45	0.00	2.38	0.00	0.00	0.00	161.00	86.67	280.00	111.43	73.33	0.00	457.14	0.00	0.00	296.00	302.22	712.50	165.00	0.00	108.89	203.33	0.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			12.00	535.29	9.55	150.00	838.10	400.00	2.00	0.00	1905.00	1400.00	3805.00	962.86	1743.33	3090.00	6704.76	88.24	290.00	5054.00	1124.44	12275.00	1945.00	106.67	1866.67	6110.00	126.67
density cereals determined with bran			12.00	288.24	9.09	108.33	790.48	400.00	0.00	0.00	1534.00	1253.33	3365.00	765.71	1486.67	2960.00	6138.10	58.82	250.00	3994.00	822.22	11325.00	1720.00	106.67	1757.78	5893.33	126.67
number of taxa			1.00	2.00	1.00	2.00	3.00	4.00	1.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00	3.00	3.00	2.00	3.00	3.00	1.00	2.00	2.00	3.00
pulses																											
Fabaceae	pod	uncharred			0.00	0.00	0.00	2.94	0.00	0.00					10.00			0.00	0.00						17.78	0.00	
Fabaceae	pod	semi-charred			0.00	0.00	0.00	0.00	0.00	0.00					0.00			0.00	0.00						0.00	0.00	
Fabaceae	pod stem	uncharred			0.00	0.00	0.00	0.00	0.00	0.00					0.00			0.00	0.00						0.00	0.00	
cf. Fabaceae	pod	uncharred			0.00	0.00	0.00	0.00	0.00	0.00					0.00			0.00	0.00						0.00	0.00	
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.78	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
oil- and fibre-plants																											
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Linum usitatissimum	seed/fruit	uncharred	2.00	29.41	0.00	25.00	147.62	626.47	6.00	20.00	126.00	333.33	530.00	345.71	233.33	460.00	1742.86	41.18	20.00	948.00	1151.11	1162.50	360.00	723.33	973.33	1190.00	333.33
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	0.00	11.76	0.00	0.00	11.90	67.65	0.00	0.00	31.00	40.00	5.00	14.29	3.33	5.00	23.81	0.00	0.00	78.00	28.89	37.50	10.00	3.33	13.33	10.00	0.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	0.00	35.29	0.45	8.33	52.38	176.47	0.00	0.00	154.00	126.67	180.00	242.86	113.33	300.00	495.24	52.94	80.00	306.00	333.33	337.50	125.00	20.00	371.11	280.00	93.33
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	36.00	288.24	18.18	108.33	750.00	2123.53	2.00	10.00	1230.00	1393.33	7640.00	2488.57	2960.00	3805.00	8376.19	164.71	520.00	15800.00	11131.11	25475.00	8865.00	3483.33	6422.22	12683.33	4300.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			38.00	364.71	18.64	141.67	961.90	2997.06	8.00	30.00	1542.00	1900.00	8355.00	3091.43	3310.00	4570.00	10642.86	258.82	620.00	17132.00	12644.44	27012.50	9360.00	4230.00	7780.00	14163.33	4733.33
number of taxa			2.00	4.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																											
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																											
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	2.86	6.67	0.00	4.76	5.88	0.00	0.00	0.00	12.50	0.00	6.67	0.00	3.33	26.67
cf. Corylus avellana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.16	0.50	0.60	0.15	0.20	1.00	0.60	0.30	0.15	0.50	0.38	0.30	0.40	0.65	0.15	0.60	0.30	0.50	0.40	1.00	0.80	0.40	0.75	1.00
		sediment type	O1	O1	O1	O2	O2	O1	L1	MO2	MO2	MO2	MO2, O1, L	O1	S	OSLM	O1	OS	L1	L1	OSLM	L1	SO	OSLM	OSLM	OSLM
		unit	U3	U3	U3	U3	U3	U3	U3	U4	U4	U4	U4, U5	U4?	U4?	U4?	U5	U5	U5	U5	U5	U5	U5	U5	U5	U5
		sample nr.	74_7_1	88_4	98_4	98_5	96_5	96_6	96_7	46_11	46_12	68_7	96_8	74_7_2	88_5	98_6	74_8	74_9_1	74_9_2	73_1	88_6	88_7	88_8	98_7	98_8	98_9
	type	state																								
summer crop annual weeds, annual ruderals																										
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	8.00	0.00	0.00	2.50	0.00	0.00	1.67	0.00	0.00	5.00	2.00	2.50	5.00	0.00	1.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	1.67	0.00	10.00	4.00	5.00	0.00	0.00	0.00	0.00	6.67	0.00	1.54	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. ischaemum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria ischaemum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	87.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.00
Polygonum cf. persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	4.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.63	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	12.50	0.00	1.67	0.00	0.00	0.00	0.00	0.00	6.67	96.00	2.63	3.33	0.00	0.00	6.67	1.67	0.00	2.00	0.00	1.00	1.25	2.50	0.00	1.00
density			112.50	4.00	6.67	13.33	15.00	6.00	5.00	3.33	13.33	206.00	10.53	23.33	5.00	1.54	13.33	5.00	0.00	8.00	5.00	4.00	5.00	7.50	0.00	3.00
number of taxa			4.00	1.00	3.00	1.00	2.00	3.00	1.00	1.00	2.00	5.00	4.00	5.00	2.00	1.00	2.00	3.00	0.00	3.00	1.00	3.00	3.00	2.00	0.00	3.00
perennial ruderals																										
Arctium spec.	seed/fruit	uncharred	12.50	6.00	3.33	0.00	10.00	0.00	0.00	0.00	6.67	8.00	0.00	6.67	10.00	16.92	0.00	0.00	0.00	0.00	5.00	0.00	5.00	12.50	14.67	12.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Arctium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. aparine	seed/fruit	uncharred	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			12.50	6.00	5.00	0.00	10.00	0.00	0.00	0.00	20.00	8.00	2.63	13.33	10.00	16.92	0.00	0.00	0.00	0.00	7.50	0.00	5.00	12.50	14.67	12.00
number of taxa			1.00	1.00	2.00	0.00	1.00	0.00	0.00	0.00	3.00	1.00	1.00	3.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	1.00	1.00	1.00
cereals																										
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	18.75	6.00	6.67	20.00	0.00	5.00	0.00	3.33	26.67	0.00	0.00	6.67	2.50	0.00	26.67	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	uncharred	162.50	440.00	420.00	573.33	0.00	1154.00	6.67	1356.67	946.67	248.00	252.63	833.33	580.00	143.08	300.00	3.33	10.00	6.00	52.50	139.00	527.50	10.00	0.00	2.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	5.00	1.00	0.00	0.00	0.00	0.00	5.26	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Triticum cf. monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./durum/turgidum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	uncharred	0.00	100.00	128.33	26.67	0.00	233.00	13.33	156.67	193.33	0.00	102.63	36.67	95.00	7.69	100.00	0.00	0.00	0.00	0.00	2.00	192.50	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	120.00	0.00	600.00	15.00	0.00	11.67	0.00	13.33	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	44.00	203.75	0.00	0.00	2.00
Cerealia indet.	bran	uncharred	1243.75	3390.00	6256.67	27033.33	55.00	451.00	573.33	3383.33	2373.33	536.00	15.79	2790.00	15.00	5733.85	1100.00	380.00	126.67	4.00	45.00	198.00	6255.00	755.00	2.67	1651.00
Cerealia indet.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	75.00	80.00	386.67	566.67	20.00	436.00	28.33	420.00	333.33	6.00	0.00	320.00	232.50	3.08	173.33	0.00	10.00	4.00	0.00	2.00	2.50	0.00	0.00	60.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	4.00	2.63	3.33	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	uncharred	125.00	2.00	150.00	1053.33	0.00	0.00	3.33	660.00	533.33	112.00	0.00	353.33	2.50	0.00	106.67	6.67	0.00	0.00	0.00	0.00	413.75	7.50	0.00	2.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			1631.25	4138.00	7348.33	29873.33	95.00	2286.00	636.67	5980.00	4420.00	906.00	386.84	4543.33	940.00	5889.23	1806.67	391.67	146.67	14.00	100.00	389.00	7605.00	777.50	2.67	1718.00
density cereals determined with bran			1431.25	4056.00	6811.67	28253.33	75.00	1846.00	605.00	4900.00	3553.33	784.00	376.32	3866.67	705.00	5884.62	1526.67	383.33	136.67	10.00	100.00	387.00	7187.50	770.00	2.67	1655.00
number of taxa			2.00	3.00	3.00	3.00	1.00	4.00	2.00	3.00	3.00	1.00	3.00	3.00	4.00	2.00	3.00	1.00	1.00	1.00	1.00	3.00	2.00	2.00	1.00	1.00
pulses																										
Fabaceae	pod	uncharred					0.00	2.00	13.33			4.00	2.63	30.00							2.50					
Fabaceae	pod	semi-charred					0.00	0.00	0.00			0.00	0.00	0.00							0.00					
Fabaceae	pod stem	uncharred					0.00	0.00	0.00			0.00	0.00	0.00							0.00					
cf. Fabaceae	pod	uncharred					0.00	0.00	0.00			0.00	0.00	0.00							0.00					
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	2.00	13.33	0.00	0.00	4.00	2.63	30.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
oil- and fibre-plants																										
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	462.50	956.00	1860.00	5693.33	260.00	1165.00	1020.00	1360.00	1160.00	640.00	594.74	1273.33	1297.50	801.54	1386.67	186.67	23.33	56.00	532.50	1201.00	1595.00	337.50	2.67	662.00
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	3.33	6.67	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	6.25	66.00	146.67	440.00	0.00	0.00	0.00	166.67	66.67	0.00	0.00	20.00	0.00	9.23	113.33	3.33	10.00	0.00	7.50	9.00	11.25	0.00	0.00	1.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	112.50	390.00	251.67	1673.33	135.00	1533.00	680.00	803.33	453.33	148.00	586.84	920.00	837.50	78.46	746.67	76.67	6.67	14.00	155.00	105.00	273.75	2.50	0.00	102.00
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	9587.50	4204.00	13028.33	27473.33	990.00	4441.00	2228.33	6483.33	6573.33	4196.00	1381.58	9406.67	5672.50	15403.08	3506.67	826.67	510.00	304.00	2087.50	3588.00	9201.25	3070.00	0.00	5732.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00
density			10168.75	5616.00	15290.00	35306.67	1390.00	7140.00	3928.33	8813.33	8253.33	4984.00	2563.16	11620.00	7810.00	16293.85	5753.33	1096.67	550.00	374.00	2782.50	4903.00	11082.50	3415.00	2.67	6497.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00
potentially cultivated plants																										
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																										
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	25.00	4.00	20.00	20.00	0.00	0.00	1.67	0.00	6.67	4.00	0.00	26.67	17.50	30.77	6.67	0.00	3.33	2.00	7.50	1.00	18.75	0.00	1.33	9.00
cf. Corylus avellana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.17	2.20	0.12	0.42	0.34	0.50	0.10	1.00	0.15	0.20	0.35	0.30	0.20	0.21	0.17	0.10	0.50	0.45	0.08	0.20	0.30	0.45	0.30	0.15	0.16	0.50	0.60	0.15	0.20	1.00	0.60	0.30	0.15	0.50	0.38	0.30	0.40	0.65	0.15	0.60	0.30	0.50	0.40	1.00	0.80	0.40	0.75	1.00
		sediment type	M1	M2	M1	M3	M1	M1	M1	M1	MO1	MO1	MO2	MO1	MO1	MO1	MO1	M2	MO1	O1	SO, O1	OL	O2	O2	O1	O2S	L2	O1	O1	O1	O2	O2	O1	L1	MO2	MO2	MO2	MO2, O1, L	O1	S	OSLM	O1	OS	L1	L1	OSLM	L1	SO	OSLM	OSLM	OSLM
		unit	U1	U1	U1	U1	U1	U1	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U4	U4	U4	U4, U5	U4?	U4?	U4?	U5	U5	U5	U5	U5	U5	U5	U5	U5	U5
		sample nr.	46_1	46_2	74_1	74_2	88_1	88_2	96_1	96_2	46_3	46_4	46_5	68_4	74_3	74_4	88_3	96_3	96_4	46_6	46_7-8	46_9	46_10	68_5	68_6	74_5	74_6	74_7_1	88_4	98_4	98_5	96_5	96_6	96_7	46_11	46_12	68_7	96_8	74_7_2	88_5	98_6	74_8	74_9_1	74_9_2	73_1	88_6	88_7	88_8	98_7	98_8	98_9
	type	state	density (r/l)																																																
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	6.67	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.25	0.00	0.00	1.00
Fragaria vesca	seed/fruit	uncharred	2.00	129.41	0.45	108.33	16.67	176.47	2.00	10.00	45.00	100.00	10.00	102.86	213.33	70.00	214.29	23.53	150.00	180.00	208.89	300.00	60.00	350.00	680.00	13.33	140.00	262.50	140.00	451.67	833.33	100.00	321.00	365.00	10.00	20.00	166.00	50.00	0.00	227.50	370.77	6.67	6.67	16.67	14.00	10.00	88.00	637.50	55.00	0.00	50.00
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	7.14	11.76	0.00	0.00	4.00	13.33	30.00	11.43	3.33	5.00	95.24	0.00	20.00	18.00	15.56	25.00	20.00	30.00	26.67	43.33	13.33	18.75	42.00	31.67	66.67	15.00	4.00	18.33	20.00	6.67	16.00	2.63	46.67	32.50	55.38	53.33	6.67	0.00	2.00	5.00	8.00	90.00	17.50	30.67	25.00
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	0.00	0.00	0.45	8.33	11.90	32.35	0.00	0.00	11.00	13.33	55.00	45.71	10.00	10.00	76.19	0.00	20.00	108.00	73.33	75.00	25.00	60.00	37.78	156.67	13.33	12.50	144.00	130.00	486.67	60.00	72.00	51.67	36.67	6.67	8.00	50.00	60.00	80.00	96.92	6.67	8.33	3.33	4.00	12.50	3.00	140.00	55.00	85.33	98.00
Malus/Pyrus	stem	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	13.33	10.00	5.71	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	6.67	3.33	0.00	6.25	2.00	11.67	6.67	10.00	0.00	0.00	0.00	6.67	2.00	0.00	3.33	0.00	10.77	0.00	0.00	0.00	0.00	0.00	0.00	7.50	10.00	8.00	21.00
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	0.00	0.00	0.45	0.00	0.00	2.94	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.67	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	1.67	3.33	6.67	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.00	0.00	1.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	20.00	6.67	6.67	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	7.50	3.08	0.00	0.00	3.33	0.00	2.50	1.00	18.75	0.00	0.00	0.00
Rosa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	5.71	0.00	0.00	14.29	0.00	0.00	2.00	2.22	0.00	0.00	10.00	11.11	3.33	0.00	6.25	0.00	1.67	0.00	0.00	0.00	3.33	0.00	6.67	0.00	0.00	0.00	5.00	9.23	0.00	0.00	0.00	0.00	7.50	4.00	11.25	5.00	0.00	8.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	5.88	0.00	6.00	0.00	0.00	10.00	16.67	4.44	0.00	6.67	12.50	0.00	0.00	0.00	65.00	3.00	3.33	0.00	0.00	4.00	150.00	3.33	5.00	1.54	0.00	0.00	0.00	6.00	0.00	1.00	11.25	2.50	0.00	1.00
Rubus fruticosus/idaeus	seed/fruit	uncharred	0.00	0.00	0.00	16.67	23.81	0.00	0.00	0.00	0.00	6.67	15.00	8.57	6.67	0.00	114.29	0.00	0.00	4.00	0.00	287.50	180.00	0.00	113.33	3.33	0.00	75.00	0.00	6.67	0.00	10.00	0.00	3.33	0.00	0.00	4.00	0.00	13.33	0.00	76.92	0.00	0.00	6.67	0.00	0.00	0.00	187.50	2.50	0.00	70.00
Rubus idaeus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	16.67	288.24	2.00	20.00	0.00	26.67	50.00	42.86	40.00	5.00	171.43	5.88	40.00	8.00	515.56	700.00	420.00	203.33	164.44	10.00	126.67	162.50	120.00	63.33	20.00	85.00	321.00	721.67	6.67	13.33	98.00	878.95	180.00	120.00	169.23	20.00	1.67	6.67	12.00	37.50	181.00	432.50	2.50	0.00	74.00
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.00	129.41	1.36	133.33	80.95	517.65	4.00	30.00	61.00	186.67	180.00	225.71	286.67	90.00	695.24	41.18	240.00	328.00	815.56	1412.50	720.00	696.67	1053.33	240.00	333.33	581.25	476.00	725.00	1440.00	345.00	721.00	1171.67	80.00	80.00	308.00	1131.58	340.00	495.00	826.15	93.33	23.33	40.00	40.00	85.00	288.00	1577.50	150.00	125.33	359.00
number of taxa			1.00	1.00	3.00	3.00	4.00	6.00	2.00	2.00	3.00	5.00	4.00	5.00	5.00	3.00	6.00	4.00	3.00	6.00	4.00	4.00	5.00	9.00	8.00	5.00	6.00	6.00	5.00	6.00	5.00	4.00	4.00	8.00	5.00	7.00	7.00	4.00	6.00	7.00	7.00	4.00	3.00	5.00	5.00	6.00	8.00	10.00	5.00	2.00	9.00
various unassigned plants																																																				
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Asteraceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Asteraceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	4.76	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	10.00	0.00	1.54	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.00
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	10.00	0.00	4.44	0.00	5.00	0.00	0.00	0.00	20.00	287.50	2.00	0.00	0.00	0.00	2.00	1.67	13.33	80.00	8.00	5.26	200.00	2.50	3.08	0.00	0.00	3.33	10.00	0.00	1.00	6.25	0.00	0.00	1.00
Caryophyllaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerastium spec.	seed/fruit	uncharred	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	6.67	5.00	0.00	0.00	0.00	4.00	0.00	25.00	5.00	0.00	4.44	6.67	13.33	25.00	2.00	0.00	13.33	0.00	1.00	0.00	3.33	20.00	4.00	2.63	10.00	5.00	1.54	13.33	1.67	0.00	2.00	10.00	125.00	62.50	2.50	0.00	4.00
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	3.33	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	0.00	5.88	0.00	0.00	4.76	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	3.33	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	1.00	1.67	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	1.25	0.00	0.00	0.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	chaff	uncharred	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	53.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.75	0.00	1.67	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	1.54	0.00	0.00	0.00	0.00	2.50	1.00	3.75	0.00	0.00	0.00
Rumex spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.17	2.20	0.12	0.42	0.34	0.50	0.10	1.00	0.15	0.20	0.35	0.30	0.20	0.21	0.17	0.10
		sediment type	M1	M2	M1	M3	M1	M1	M1	M1	MO1	MO1	MO2	MO1	MO1	MO1	MO1	M2	MO1
		unit	U1	U1	U1	U1	U1	U1	U1	U1	U2	U2	U2	U2	U2	U2	U2	U2	U2
		sample nr.	**46_1**	**46_2**	**74_1**	**74_2**	**88_1**	**88_2**	**96_1**	**96_2**	**46_3**	**46_4**	**46_5**	**68_4**	**74_3**	**74_4**	**88_3**	**96_3**	**96_4**
	type	**state**	**density (r/l)**																
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	5.88	0.45	0.00	9.52	0.00	0.00	0.00	2.00	20.00	25.00	2.86	20.00	5.00	4.76	5.88	10.00
number of taxa			0.00	1.00	1.00	0.00	3.00	0.00	0.00	0.00	2.00	2.00	5.00	1.00	4.00	1.00	1.00	1.00	1.00
indeterminate plants																			
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	4.00	94.12	1.36	0.00	0.00	0.00	0.00	0.00	14.00	46.67	50.00	14.29	13.33	10.00	0.00	0.00	0.00
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
density			4.00	94.12	1.36	0.00	0.00	0.00	0.00	0.00	14.00	46.67	50.00	14.29	13.33	15.00	0.00	0.00	0.00
density total			3734.00	1488.24	931.82	833.33	2504.76	4688.24	1694.00	790.00	4011.00	5040.00	13370.00	5494.29	5863.33	8055.00	19404.76	1470.59	1540.00
number of taxa total			11.00	18.00	14.00	16.00	31.00	30.00	12.00	7.00	32.00	24.00	33.00	29.00	29.00	16.00	29.00	19.00	17.00
charred all density			0.00	0.00	0.00	0.00	0.00	14.71	0.00	0.00	1.00	0.00	5.00	0.00	3.33	10.00	0.00	0.00	0.00
semi-charred all density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	3.33	0.00	4.76	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.45	0.08	0.20	0.30	0.45	0.30	0.15	0.16	0.50	0.60	0.15	0.20	1.00	0.60
		sediment type	O1	SO, O1	OL	O2	O2	O1	O2S	L2	O1	O1	O1	O2	O2	O1	L1
		unit	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3	U3
		sample nr.	**46_6**	**46_7-8**	**46_9**	**46_10**	**68_5**	**68_6**	**74_5**	**74_6**	**74_7_1**	**88_4**	**98_4**	**98_5**	**96_5**	**96_6**	**96_7**
	type	**state**															
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			16.00	11.11	75.00	15.00	13.33	11.11	10.00	133.33	356.25	6.00	6.67	13.33	0.00	11.00	3.33
number of taxa			4.00	3.00	5.00	3.00	2.00	3.00	2.00	8.00	6.00	3.00	4.00	1.00	0.00	6.00	2.00
indeterminate plants																	
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	10.00	0.00	50.00	15.00	0.00	0.00	6.67	0.00	43.75	0.00	86.67	53.33	0.00	0.00	0.00
Indeterminata	AOV	charred	6.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			16.00	0.00	50.00	15.00	0.00	0.00	13.33	0.00	43.75	0.00	88.33	53.33	0.00	0.00	0.00
density total			24034.00	15595.56	42762.50	12535.00	5836.67	11653.33	20916.67	6220.00	13993.75	10934.00	24561.67	68753.33	2085.00	11139.00	7518.33
number of taxa total			37.00	28.00	29.00	26.00	36.00	44.00	25.00	58.00	51.00	31.00	37.00	28.00	19.00	41.00	30.00
charred all density			6.00	0.00	25.00	0.00	0.00	0.00	6.67	6.67	6.25	0.00	3.33	6.67	0.00	5.00	0.00
semi-charred all density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	13.33	5.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.30	0.15	0.50	0.38	0.30	0.40	0.65	0.15	0.60	0.30	0.50	0.40	1.00	0.80	0.40	0.75	1.00
		sediment type	MO2	MO2	MO2	MO2, O1, L	O1	S	OSLM	O1	OS	L1	L1	OSLM	L1	SO	OSLM	OSLM	OSLM
		unit	U4	U4	U4	U4, U5	U4?	U4?	U4?	U5	U5	U5	U5	U5	U5	U5	U5	U5	U5
		sample nr.	**46_11**	**46_12**	**68_7**	**96_8**	**74_7_2**	**88_5**	**98_6**	**74_8**	**74_9_1**	**74_9_2**	**73_1**	**88_6**	**88_7**	**88_8**	**98_7**	**98_8**	**98_9**
	type	**state**																	
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			26.67	106.67	26.00	31.58	243.33	10.00	9.23	20.00	6.67	3.33	12.00	17.50	132.00	73.75	2.50	1.33	9.00
number of taxa			5.00	3.00	7.00	6.00	9.00	3.00	5.00	2.00	4.00	1.00	2.00	4.00	7.00	4.00	1.00	1.00	6.00
indeterminate plants																			
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	56.67	33.33	10.00	0.00	140.00	0.00	6.15	53.33	5.00	30.00	0.00	0.00	0.00	0.00	2.50	0.00	2.00
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	2.50	1.54	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
density			56.67	33.33	10.00	0.00	140.00	2.50	7.69	53.33	5.00	30.00	0.00	2.50	0.00	0.00	2.50	0.00	2.00
density total			15800.00	13953.33	7590.00	5415.79	17530.00	10277.50	23341.54	7973.33	1625.00	1126.67	572.00	3777.50	6358.00	21333.75	4415.00	157.33	8635.00
number of taxa total			36.00	38.00	51.00	39.00	52.00	36.00	35.00	22.00	23.00	19.00	28.00	28.00	49.00	54.00	19.00	8.00	32.00
charred all density			0.00	0.00	4.00	13.16	3.33	5.00	4.62	0.00	3.33	0.00	2.00	2.50	0.00	10.00	2.50	0.00	0.00
semi-charred all density			0.00	0.00	2.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.70	0.55	0.40	0.50	0.40	0.23	0.18	0.45	0.20	0.20	0.25	0.25	0.10	0.15	0.30	0.10	0.40	0.30	0.20	0.20	0.05	0.20	0.10	0.35	0.14	0.15	0.10	0.40	0.50	0.40	0.20	0.25	0.25	0.35	0.21	0.80	0.50	0.50	0.60	0.80	0.50	0.22	0.20	0.30	0.25	0.40	0.19	0.19	0.06
		sediment type	OSLM	OSLM	OSLM	OSLM	L1	OS	O1	O2	SO	O2	O2	O1	SO	O1	O1	O1	O1	O1	LO	O1	SO	O1	L1	OL	O1	O2	SO	O2	O1	OS	SO, O1	O1	O1	O2	O1	OL	OS	O2	O1	O1	MO2	MO2	MO1	MO1	OL	MO2	SO	O2	O1
		unit	U5	U5	U5	U5	U5	U5	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6, U5	U7	U7	U7	U7	U7	U7	U8	U8	U8
		sample nr.	98_10	98_11	98_12	98_13	96_9	96_10	46_13	46_14	46_15	46_16	46_17	46_18	46_19	46_20	68_8_1	68_8_2	68_9	68_10	68_11	68_12	68_13	74_10	74_11	73_2	73_3	73_4	73_5	73_6	88_10	88_11	89_1-2	89_3	89_4	89_5	89_6	96_11	96_12	96_13	96_14	88_9	46_21	68_14	73_7	88_12	89_7	96_15	46_22	46_23	46_24
	type	state																																																	
aquatic plants oligotrophic																																																			
Chara spec.	oog	uncharred	1.43	0.00	0.00	2.00	0.00	0.00	22.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	5.00	0.00	0.00	15.00	10.00	8.57	28.57	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	2.50	0.00	0.00	0.00
Chara spec.	oogK	uncharred	0.00	0.00	2.50	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitella spec.	oog	uncharred	0.00	0.00	7.50	2.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	75.00	0.00	71.43	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1.43	0.00	10.00	4.00	2.50	0.00	27.78	0.00	0.00	0.00	0.00	0.00	20.00	0.00	3.33	10.00	2.50	0.00	15.00	0.00	0.00	90.00	10.00	82.86	35.71	0.00	10.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	60.00	0.00	2.50	0.00	0.00	0.00
number of taxa			1.00	0.00	2.00	2.00	1.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	2.00	0.00	0.00	2.00	1.00	2.00	2.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
aquatic plants meso–eutrophic																																																			
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	0.00	105.00	0.00	7.50	69.57	16.67	4.44	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas minor	seed/fruit	uncharred	0.00	0.00	10.00	0.00	185.00	226.09	133.33	0.00	10.00	0.00	4.00	4.00	160.00	26.67	0.00	0.00	0.00	0.00	10.00	5.00	180.00	5.00	0.00	8.57	0.00	0.00	10.00	2.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	4.00	22.73	15.00	6.67	0.00	82.50	0.00	5.26	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	0.00	0.00	15.00	0.00	27.50	30.43	22.22	2.22	0.00	0.00	0.00	16.00	20.00	26.67	13.33	0.00	2.50	0.00	0.00	0.00	20.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00	4.00	0.00	0.00	0.00	2.50	0.00	0.00	1.67	2.50	0.00	22.73	15.00	16.67	0.00	5.00	0.00	0.00	0.00
Najas intermedia/marina	fruit whole	uncharred	0.00	0.00	5.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	12.00	20.00	6.67	3.33	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	2.00	0.00	15.00	3.33	0.00	0.00	5.26	0.00	0.00
Najas spec.	seed/fruit	uncharred	0.00	256.36	0.00	100.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	16.67	4.44	0.00	5.00	0.00	0.00	10.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	5.26	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.35	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	256.36	135.00	100.00	222.50	330.43	200.00	15.56	10.00	5.00	4.00	44.00	230.00	66.67	23.33	10.00	5.00	0.00	10.00	5.00	280.00	15.00	0.00	11.43	0.00	0.00	10.00	2.50	0.00	15.00	5.00	4.00	0.00	0.00	0.00	5.00	2.00	0.00	1.67	2.50	6.00	50.00	55.00	26.67	0.00	95.00	5.26	10.53	0.00
number of taxa			0.00	1.00	3.00	1.00	4.00	4.00	5.00	3.00	1.00	1.00	1.00	2.00	3.00	3.00	2.00	1.00	2.00	0.00	1.00	1.00	3.00	3.00	0.00	2.00	0.00	0.00	1.00	1.00	0.00	2.00	1.00	1.00	0.00	0.00	0.00	2.00	1.00	0.00	1.00	1.00	2.00	2.00	3.00	3.00	0.00	4.00	1.00	2.00	0.00
reed bed and sedge swamp plants																																																			
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	186.67	40.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	0.00	5.45	5.00	4.00	0.00	0.00	0.00	4.44	5.00	0.00	0.00	4.00	10.00	0.00	10.00	10.00	2.50	0.00	0.00	0.00	20.00	5.00	0.00	8.57	142.86	653.33	0.00	2.50	0.00	0.00	5.00	0.00	0.00	0.00	9.52	0.00	0.00	2.00	0.00	0.00	2.00	0.00	10.00	10.00	4.00	0.00	10.53	21.05	33.33
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	4.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	0.00	1.82	0.00	2.00	0.00	8.70	5.56	2.22	5.00	100.00	0.00	0.00	10.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	6.67	50.00	10.00	108.00	2.50	10.00	0.00	12.00	8.57	9.52	2.50	6.00	6.00	3.33	0.00	2.00	0.00	15.00	0.00	8.00	5.00	0.00	5.26	16.67
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	1.82	0.00	72.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	13.33	30.00	5.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.50	0.00	5.26	0.00
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	0.00	0.00	4.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	40.00	80.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	15.00	0.00	5.71	7.14	0.00	0.00	0.00	4.00	5.00	5.00	4.00	4.00	0.00	4.76	0.00	2.00	0.00	3.33	0.00	2.00	9.09	0.00	0.00	8.00	0.00	0.00	0.00	0.00
density			0.00	9.09	10.00	82.00	0.00	8.70	5.56	11.11	10.00	100.00	4.00	4.00	60.00	100.00	203.33	60.00	10.00	0.00	0.00	0.00	20.00	25.00	0.00	14.29	164.29	673.33	80.00	17.50	112.00	7.50	20.00	8.00	16.00	8.57	23.81	3.75	10.00	12.00	6.67	0.00	8.00	9.09	30.00	13.33	28.00	10.00	10.53	31.58	50.00
number of taxa			0.00	3.00	2.00	4.00	0.00	1.00	1.00	4.00	2.00	1.00	1.00	1.00	3.00	3.00	4.00	3.00	3.00	0.00	0.00	0.00	1.00	3.00	0.00	2.00	3.00	3.00	2.00	3.00	2.00	2.00	3.00	2.00	2.00	1.00	3.00	1.00	3.00	3.00	2.00	0.00	4.00	1.00	3.00	2.00	5.00	3.00	1.00	3.00	2.00
wet grassland plants																																																			
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00	2.50	6.67	0.00	0.00	0.00	5.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	7.50	5.26	5.26	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	3.64	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	1.82	0.00	84.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	2.00	0.00	5.00	4.00	8.00	0.00	4.76	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.79	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	1.43	3.64	5.00	4.00	0.00	0.00	0.00	2.22	10.00	0.00	12.00	8.00	120.00	106.67	220.00	600.00	1082.50	700.00	260.00	5.00	80.00	0.00	0.00	2.86	0.00	0.00	10.00	0.00	6.00	12.50	5.00	8.00	8.00	120.00	4.76	0.00	8.00	24.00	3.33	0.00	8.00	4.55	10.00	10.00	16.00	52.50	89.47	15.79	166.67
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	1.43	3.64	2.50	2.00	2.50	0.00	11.11	2.22	5.00	10.00	0.00	192.00	20.00	153.33	10.00	220.00	222.50	6.67	5.00	10.00	40.00	0.00	10.00	0.00	21.43	0.00	30.00	2.50	6.00	2.50	0.00	12.00	20.00	5.71	14.29	0.00	4.00	4.00	3.33	1.25	18.00	27.27	10.00	50.00	16.00	10.00	15.79	10.53	16.67
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	10.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	12.00	0.00	26.67	0.00	90.00	10.00	3.33	0.00	0.00	20.00	5.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	4.55	0.00	3.33	8.00	5.00	15.79	0.00	16.67
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.86	14.55	10.00	90.00	2.50	0.00	11.11	6.67	15.00	15.00	12.00	216.00	170.00	286.67	246.67	950.00	1320.00	716.67	265.00	15.00	140.00	10.00	10.00	14.29	35.71	0.00	40.00	2.50	14.00	15.00	15.00	24.00	40.00	128.57	33.33	1.25	16.00	30.00	11.67	3.75	26.00	36.36	20.00	63.33	40.00	75.00	126.32	47.37	200.00
number of taxa			2.00	5.00	3.00	3.00	1.00	0.00	1.00	3.00	2.00	2.00	1.00	4.00	4.00	3.00	4.00	5.00	5.00	4.00	2.00	2.00	3.00	2.00	1.00	4.00	3.00	0.00	2.00	1.00	3.00	2.00	3.00	3.00	4.00	3.00	4.00	1.00	3.00	3.00	5.00	2.00	2.00	3.00	2.00	3.00	3.00	4.00	4.00	4.00	3.00
shoreline pioneers incl. shore weeds																																																			
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	2.50	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	13.33	120.00	0.00	20.00	0.00	10.00	0.00	40.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	8.57	0.00	0.00	0.00	0.00	3.33	0.00	4.00	18.18	0.00	6.67	4.00	0.00	10.53	142.11	33.33
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	5.00	0.00	0.00	0.00	5.56	0.00	5.00	5.00	0.00	0.00	10.00	6.67	0.00	0.00	122.50	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	4.00	5.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	4.00	13.64	0.00	0.00	0.00	0.00	21.05	5.26	16.67
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	240.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	5.56	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	3.33	5.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	5.26	0.00	0.00
density			1.43	1.82	7.50	0.00	0.00	0.00	11.11	4.44	10.00	5.00	0.00	0.00	10.00	20.00	226.67	440.00	157.50	3.33	20.00	5.00	60.00	10.00	0.00	0.00	14.29	0.00	10.00	0.00	4.00	12.50	0.00	28.00	0.00	8.57	0.00	0.00	0.00	2.00	5.00	0.00	16.00	31.82	10.00	6.67	8.00	5.00	42.11	147.37	50.00
number of taxa			1.00	1.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00	1.00	0.00	0.00	1.00	2.00	3.00	2.00	5.00	1.00	3.00	1.00	2.00	1.00	0.00	0.00	2.00	0.00	1.00	0.00	1.00	3.00	0.00	3.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	4.00	2.00	1.00	1.00	2.00	1.00	4.00	2.00	2.00
wetland plants unassigned																																																			
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	1.82	2.50	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67
Eupatorium cannabinum	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	10.00	6.67	0.00	0.00	0.00	3.33	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.79	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	8.00	0.00	0.00	0.00	3.33	30.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	2.00	3.33	1.25	2.00	0.00	0.00	0.00	4.00	5.00	0.00	0.00	0.00
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.86	3.64	2.50	2.00	0.00	0.00	5.56	0.00	0.00	10.00	8.00	0.00	10.00	6.67	3.33	30.00	2.50	3.33	0.00	5.00	20.00	5.00	0.00	0.00	7.14	0.00	0.00	2.50	0.00	2.50	0.00	0.00	0.00	11.43	4.76	0.00	0.00	2.00	5.00	1.25	2.00	4.55	0.00	0.00	4.00	5.00	15.79	5.26	16.67
number of taxa			1.00	2.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	3.00	1.00	0.00	0.00	1.00	2.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
riparian woodland and carr plants																																																			
Alnus cf. *glutinosa*	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	211.11	0.00	5.00	0.00	4.00	16.00	0.00	26.67	0.00	20.00	7.50	0.00	5.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.50	0.00	4.00	0.00	5.71	0.00	0.00	4.00	2.00	0.00	1.25	24.00	9.09	0.00	3.33	0.00	0.00	5.26	0.00	0.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.70	0.55	0.40	0.50	0.40	0.23	0.18	0.45	0.20	0.20	0.25	0.25	0.10
		sediment type	OSLM	OSLM	OSLM	OSLM	L1	OS	O1	O2	SO	O2	O2	O1	SO
		unit	U5	U5	U5	U5	U5	U5	U6	U6	U6	U6	U6	U6	U6
		sample nr.	98_10	98_11	98_12	98_13	96_9	96_10	46_13	46_14	46_15	46_16	46_17	46_18	46_19
	type	state													
Prunus padus	seed/fruit	uncharred	0.00	1.82	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	12.00	0.00
Rubus caesius	seed/fruit	uncharred	2.86	0.00	0.00	0.00	2.50	4.35	5.56	0.00	0.00	0.00	4.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.86	7.27	0.00	2.00	2.50	4.35	222.22	0.00	5.00	0.00	16.00	28.00	10.00
number of taxa			1.00	3.00	0.00	1.00	1.00	1.00	2.00	0.00	1.00	0.00	3.00	2.00	1.00
woodland plants															
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	40.00
Abies alba	leaf	charred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	2.22	5.00	5.00	8.00	0.00	0.00
Abies alba	leaf	uncharred	54.29	25.45	45.00	294.00	140.00	626.09	411.11	546.67	955.00	795.00	1048.00	1564.00	1000.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	30.00
Betula pendula/pubescens	fruit whole	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	2.86	3.64	2.50	6.00	2.50	0.00	5.56	2.22	0.00	0.00	0.00	4.00	120.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	0.00	0.00	2.50	4.00	0.00	4.35	11.11	0.00	5.00	25.00	12.00	16.00	20.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	0.00	2.00	0.00	13.04	0.00	11.11	15.00	20.00	12.00	12.00	10.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	2.86	1.82	2.50	0.00	5.00	13.04	0.00	0.00	0.00	5.00	20.00	0.00	0.00
density			60.00	40.00	55.00	306.00	152.50	656.52	427.78	562.22	985.00	860.00	1104.00	1600.00	1230.00
number of taxa			3.00	7.00	5.00	4.00	4.00	3.00	3.00	3.00	4.00	5.00	5.00	5.00	6.00
woodland clearing edge, hedge, bush plants															
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	3.64	0.00	2.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	10.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	10.00	2.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	100.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	2.86	45.45	105.00	60.00	2.50	0.00	5.56	0.00	5.00	0.00	8.00	16.00	100.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	3.64	0.00	2.00	2.50	13.04	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Origanum vulgare	seed/fruit	uncharred	2.86	45.45	7.50	96.00	5.00	0.00	11.11	2.22	0.00	0.00	0.00	192.00	30.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	0.00	5.45	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			5.71	103.64	125.00	168.00	10.00	17.39	27.78	2.22	10.00	5.00	8.00	220.00	250.00
number of taxa		16	2.00	5.00	4.00	7.00	3.00	2.00	4.00	1.00	2.00	1.00	1.00	4.00	5.00
grassland plants															
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	0.00	0.00	4.00	0.00	0.00	0.00	8.89	45.00	0.00	8.00	0.00	20.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	1.82	0.00	4.00	0.00	0.00	0.00	4.44	5.00	0.00	4.00	0.00	20.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	1.82	7.50	8.00	2.50	0.00	0.00	15.56	50.00	5.00	12.00	0.00	40.00
number of taxa			0.00	1.00	2.00	2.00	1.00	0.00	0.00	3.00	2.00	1.00	2.00	0.00	2.00
winter crop annual and flax weeds															
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	5.71	172.73	157.50	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			5.71	176.36	157.50	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			1.00	3.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.15	0.30	0.10	0.40	0.30	0.20	0.20	0.05	0.20	0.10	0.35	0.14	0.15	0.10	0.40	0.50	0.40	0.20
		sediment type	O1	O1	O1	O1	O1	LO	O1	SO	O1	L1	OL	O1	O2	SO	O2	O1	OS	SO, O1
		unit	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6
		sample nr.	46_20	68_8_1	68_8_2	68_9	68_10	68_11	68_12	68_13	74_10	74_11	73_2	73_3	73_4	73_5	73_6	88_10	88_11	89_1-2
	type	state																		
Prunus padus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
Rubus caesius	seed/fruit	uncharred	0.00	0.00	80.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	0.00	10.00	2.50	6.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	2.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			26.67	0.00	100.00	20.00	0.00	15.00	0.00	40.00	5.00	0.00	5.71	0.00	0.00	30.00	2.50	8.00	2.50	0.00
number of taxa			1.00	0.00	2.00	4.00	0.00	2.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	2.00	1.00	2.00	1.00	0.00
woodland plants																				
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	charred	0.00	3.33	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	2.86	7.14	0.00	0.00	0.00	2.00	0.00	0.00
Abies alba	leaf	uncharred	1113.33	240.00	110.00	350.00	300.00	560.00	415.00	280.00	335.00	60.00	154.29	450.00	546.67	770.00	710.00	1006.00	847.50	320.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	20.00	3.33	0.00	0.00	3.33	0.00	0.00	20.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	2.50	0.00
Betula pendula/pubescens	fruit whole	uncharred	6.67	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	10.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	0.00	0.00	0.00	2.50	0.00	0.00	5.00	20.00	5.00	10.00	8.57	14.29	6.67	10.00	2.50	2.00	0.00	0.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	33.33	370.00	472.50	2.00	0.00	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	13.33	10.00	0.00	10.00	0.00	0.00	5.00	40.00	5.00	0.00	0.00	7.14	6.67	0.00	0.00	4.00	5.00	0.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Viscum album s.l.	leaf	uncharred	6.67	6.67	0.00	0.00	0.00	5.00	5.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	7.50	25.00
density			1193.33	273.33	130.00	367.50	303.33	570.00	450.00	400.00	345.00	70.00	171.43	485.71	593.33	1150.00	1187.50	1034.00	862.50	365.00
number of taxa			8.00	4.00	2.00	4.00	2.00	2.00	5.00	5.00	3.00	2.00	3.00	4.00	4.00	3.00	4.00	6.00	4.00	4.00
woodland clearing edge, hedge, bush plants																				
Agrimonia eupatoria	seed/fruit	uncharred	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	5.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	6.67	100.00	40.00	10.00	6.67	5.00	0.00	40.00	5.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	6.67	10.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	6.67	3.33	20.00	7.50	0.00	0.00	15.00	40.00	0.00	0.00	2.86	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	10.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	2.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	6.67	6.67	0.00	2.50	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	26.67	120.00	80.00	120.00	3.33	15.00	125.00	60.00	15.00	0.00	114.29	21.43	0.00	20.00	0.00	4.00	150.00	10.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	6.67	0.00	0.00	0.00	6.67	0.00	0.00	40.00	5.00	0.00	0.00	0.00	0.00	30.00	2.50	6.00	2.50	5.00
Origanum vulgare	seed/fruit	uncharred	26.67	140.00	90.00	160.00	0.00	0.00	15.00	100.00	0.00	10.00	5.71	7.14	0.00	10.00	0.00	2.00	0.00	10.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	0.00	6.67	0.00	2.50	0.00	0.00	60.00	0.00	0.00	0.00	11.43	0.00	0.00	0.00	0.00	0.00	0.00	125.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			93.33	383.33	250.00	302.50	20.00	30.00	215.00	280.00	25.00	10.00	137.14	28.57	13.33	70.00	2.50	16.00	155.00	155.00
number of taxa			7.00	7.00	6.00	6.00	4.00	4.00	4.00	5.00	3.00	1.00	5.00	2.00	1.00	4.00	1.00	5.00	3.00	5.00
grassland plants																				
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	6.67	20.00	10.00	3.33	0.00	5.00	0.00	0.00	0.00	0.00	71.43	0.00	0.00	7.50	2.00	5.00	10.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	20.00	160.00	260.00	222.50	266.67	10.00	15.00	20.00	0.00	0.00	2.86	14.29	6.67	0.00	0.00	2.00	5.00	5.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	3.33	0.00	2.50	0.00	0.00	0.00	0.00	5.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			20.00	170.00	280.00	235.00	270.00	15.00	25.00	20.00	10.00	0.00	2.86	92.86	6.67	0.00	7.50	4.00	10.00	15.00
number of taxa			1.00	3.00	2.00	3.00	2.00	2.00	3.00	1.00	2.00	0.00	1.00	3.00	1.00	0.00	1.00	2.00	2.00	2.00
winter crop annual and flax weeds																				
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	2.50	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	2.50	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.25	0.25	0.35	0.21	0.80	0.50	0.50	0.60	0.80	0.50	0.22	0.20	0.30	0.25	0.40	0.19	0.19	0.06
		sediment type	O1	O1	O2	O1	OL	OS	O2	O1	O1	MO2	MO2	MO1	MO1	OL	MO2	SO	O2	O1
		unit	U6	U6	U6	U6	U6	U6	U6	U6	U6, U5	U7	U7	U7	U7	U7	U7	U8	U8	U8
		sample nr.	89_3	89_4	89_5	89_6	96_11	96_12	96_13	96_14	88_9	46_21	68_14	73_7	88_12	89_7	96_15	46_22	46_23	46_24
	type	state																		
Prunus padus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus caesius	seed/fruit	uncharred	4.00	0.00	2.86	0.00	0.00	4.00	8.00	0.00	0.00	2.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			8.00	0.00	8.57	4.76	0.00	8.00	18.00	1.67	2.50	30.00	9.09	0.00	3.33	4.00	2.50	5.26	0.00	0.00
number of taxa			2.00	0.00	2.00	1.00	0.00	2.00	3.00	1.00	1.00	2.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
woodland plants																				
Abies alba	seed/fruit	uncharred	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.53	0.00
Abies alba	leaf	charred	4.00	4.00	0.00	0.00	1.25	0.00	4.00	3.33	0.00	4.00	0.00	0.00	0.00	0.00	5.00	0.00	5.26	0.00
Abies alba	leaf	uncharred	636.00	952.00	1297.14	842.86	481.25	314.00	520.00	701.67	526.25	370.00	400.00	70.00	1396.67	1036.00	900.00	368.42	736.84	1000.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	0.00	4.00	0.00	4.76	0.00	2.00	2.00	1.67	0.00	4.00	9.09	0.00	6.67	0.00	2.50	5.26	0.00	0.00
Betula pendula/pubescens	fruit whole	uncharred	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	8.00	0.00	2.86	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	3.33	4.00	0.00	0.00	0.00	0.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	4.00	0.00	314.29	9.52	1.25	14.00	2.00	1.67	3.75	8.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	28.57	9.52	2.50	0.00	4.00	6.67	1.25	12.00	4.55	0.00	3.33	20.00	12.50	10.53	84.21	83.33
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	10.53	0.00
Viscum album s.l.	leaf	uncharred	4.00	12.00	20.00	19.05	10.00	6.00	34.00	30.00	2.50	6.00	9.09	0.00	0.00	12.00	17.50	63.16	36.84	183.33
density			668.00	976.00	1668.57	890.48	497.50	336.00	570.00	746.67	537.50	408.00	422.73	85.00	1410.00	1072.00	940.00	452.63	889.47	1266.67
number of taxa			5.00	5.00	6.00	6.00	5.00	4.00	6.00	6.00	5.00	5.00	4.00	3.00	4.00	4.00	4.00	5.00	4.00	3.00
woodland clearing edge, hedge, bush plants																				
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	4.00	0.00	0.00	0.00	0.00	2.00	6.00	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	3.33	4.00	2.50	15.79	5.26	66.67
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	12.00	0.00	2.86	4.76	0.00	6.00	4.00	3.33	2.50	2.00	90.91	15.00	10.00	0.00	5.00	10.53	94.74	16.67
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	5.26	16.67
Origanum vulgare	seed/fruit	uncharred	8.00	8.00	2.86	9.52	0.00	0.00	10.00	5.00	0.00	2.00	9.09	0.00	0.00	4.00	7.50	15.79	110.53	0.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	4.00	5.71	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	10.53	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			32.00	20.00	17.14	14.29	0.00	12.00	22.00	10.00	3.75	10.00	109.09	20.00	13.33	16.00	15.00	42.11	236.84	100.00
number of taxa			4.00	3.00	4.00	2.00	0.00	4.00	4.00	3.00	2.00	3.00	3.00	2.00	2.00	4.00	3.00	3.00	7.00	3.00
grassland plants																				
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	12.00	4.00	8.57	4.76	0.00	0.00	6.00	0.00	2.50	2.00	9.09	10.00	0.00	16.00	7.50	5.26	0.00	0.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	4.00	4.00	0.00	0.00	1.25	0.00	10.00	6.67	93.75	0.00	0.00	0.00	6.67	0.00	2.50	0.00	15.79	0.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			16.00	8.00	11.43	9.52	1.25	0.00	20.00	6.67	96.25	4.00	9.09	10.00	6.67	16.00	10.00	15.79	15.79	0.00
number of taxa			2.00	2.00	2.00	2.00	1.00	0.00	4.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	0.00
winter crop annual and flax weeds																				
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	5.00	0.00	0.00	5.00	0.00	5.26	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	8.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	2.00	0.00	5.00	0.00	0.00	5.00	0.00	5.26	0.00
number of taxa			0.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.70	0.55	0.40	0.50	0.40	0.23	0.18	0.45	0.20	0.20	0.25	0.25	0.10	0.15	0.30	0.10	0.40	0.30	0.20	0.20
		sediment type	OSLM	OSLM	OSLM	OSLM	L1	OS	O1	O2	SO	O2	O2	O1	SO	O1	O1	O1	O1	O1	LO	O1
		unit	U5	U5	U5	U5	U5	U5	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6
		sample nr.	98_10	98_11	98_12	98_13	96_9	96_10	46_13	46_14	46_15	46_16	46_17	46_18	46_19	46_20	68_8_1	68_8_2	68_9	68_10	68_11	68_12
	type	state																				
summer crop annual weeds, annual ruderals																						
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	2.86	5.45	0.00	0.00	0.00	0.00	0.00	55.56	5.00	0.00	16.00	192.00	200.00	26.67	520.00	400.00	5.00	0.00	5.00	5.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	2.86	109.09	90.00	6.00	5.00	4.35	0.00	4.44	10.00	5.00	0.00	0.00	20.00	0.00	3.33	0.00	0.00	0.00	0.00	5.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00	186.67	0.00	0.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	1.43	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	4.00	20.00	0.00	220.00	360.00	260.00	13.33	0.00	10.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	7.27	2.50	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	163.33	120.00	12.50	0.00	0.00	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	5.56	0.00	5.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	4.35	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	10.00	0.00	0.00	5.00	5.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	35.71	3.64	2.50	8.00	0.00	0.00	5.56	0.00	5.00	5.00	8.00	12.00	30.00	26.67	100.00	360.00	300.00	3.33	5.00	15.00
density			42.86	125.45	95.00	16.00	10.00	8.70	16.67	68.89	25.00	15.00	28.00	216.00	320.00	53.33	1010.00	1250.00	697.50	203.33	115.00	60.00
number of taxa			4.00	4.00	3.00	3.00	3.00	2.00	3.00	4.00	4.00	3.00	3.00	4.00	7.00	2.00	6.00	5.00	5.00	3.00	4.00	7.00
perennial ruderals																						
Arctium spec.	seed/fruit	uncharred	7.14	5.45	5.00	8.00	2.50	13.04	0.00	0.00	0.00	5.00	0.00	16.00	40.00	6.67	0.00	10.00	35.00	3.33	0.00	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	1.82	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	1.43	3.64	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	2.50	0.00	0.00	0.00
density			8.57	10.91	7.50	8.00	7.50	13.04	0.00	0.00	0.00	5.00	0.00	16.00	40.00	13.33	3.33	10.00	37.50	3.33	0.00	0.00
number of taxa			2.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	0.00	0.00
cereals																						
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	0.00	2.50	2.00	0.00	0.00	0.00	2.22	5.00	0.00	8.00	8.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Hordeum vulgare undiff.	rachis segment	uncharred	0.00	3.64	0.00	2.00	0.00	0.00	0.00	4.44	20.00	0.00	32.00	28.00	0.00	0.00	30.00	0.00	2.50	0.00	0.00	5.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	0.00	0.00	0.00	96.00	0.00	4.35	16.67	55.56	10.00	0.00	8.00	20.00	20.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	uncharred	0.00	10.91	22.50	84.00	5.00	86.96	894.44	513.33	410.00	390.00	676.00	1100.00	510.00	586.67	16.67	30.00	5.00	0.00	410.00	25.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	4.00	0.00	8.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	0.00	0.00	10.00	0.00	13.04	0.00	0.00	0.00	10.00	16.00	12.00	0.00	6.67	0.00	0.00	15.00	0.00	5.00	5.00
Triticum durum/turgidum	rachis segment	uncharred	2.86	67.27	22.50	202.00	25.00	0.00	72.22	224.44	345.00	225.00	276.00	716.00	40.00	146.67	50.00	0.00	30.00	0.00	145.00	75.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	4.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	74.29	1.82	262.50	4.00	25.00	21.74	111.11	8.89	0.00	20.00	0.00	16.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	15.00
Cerealia indet.	bran	uncharred	1715.71	490.91	5842.50	326.00	192.50	413.04	2061.11	1988.89	1950.00	2885.00	6880.00	3304.00	1240.00	1720.00	230.00	20.00	662.50	13.33	1800.00	270.00
Cerealia indet.	seed/fruit	charred	1.43	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	2.50	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	35.71	1.82	0.00	0.00	25.00	95.65	244.44	55.56	255.00	160.00	204.00	364.00	40.00	66.67	0.00	0.00	142.50	0.00	260.00	0.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	8.00	0.00	20.00	0.00	0.00	0.00	0.00	5.00	0.00
Triticum spec.	chaff	uncharred	2.86	172.73	7.50	8.00	0.00	0.00	405.56	200.00	335.00	300.00	352.00	672.00	380.00	973.33	20.00	10.00	132.50	0.00	220.00	0.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			1832.86	750.91	6160.00	738.00	272.50	643.48	3805.56	3053.33	3335.00	3995.00	8460.00	6248.00	2250.00	3526.67	356.67	80.00	995.00	13.33	2845.00	405.00
density cereals determined with bran			1792.86	574.55	6152.50	730.00	247.50	547.83	3155.56	2797.78	2740.00	3535.00	7900.00	5204.00	1820.00	2460.00	336.67	70.00	717.50	13.33	2360.00	405.00
number of taxa			2.00	3.00	3.00	4.00	2.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	1.00	3.00	1.00	2.00	3.00
pulses																						
Fabaceae	pod	uncharred				4.00	2.50	0.00									6.67	0.00	15.00	3.33	135.00	10.00
Fabaceae	pod	semi-charred				0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	pod stem	uncharred				0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00
cf. Fabaceae	pod	uncharred				0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	4.00	2.50	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	15.00	3.33	135.00	10.00
number of taxa			0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
oil- and fibre-plants																						
Linum usitatissimum	seed/fruit	charred	2.86	7.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	1055.71	1390.91	1510.00	564.00	155.00	291.30	666.67	413.33	585.00	700.00	580.00	1224.00	840.00	680.00	206.67	30.00	465.00	213.33	420.00	165.00
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	8.57	10.91	7.50	16.00	0.00	0.00	16.67	2.22	10.00	20.00	4.00	12.00	30.00	26.67	13.33	0.00	12.50	10.00	15.00	10.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	97.14	145.45	107.50	144.00	37.50	17.39	377.78	322.22	210.00	200.00	168.00	192.00	240.00	293.33	140.00	10.00	307.50	3.33	120.00	115.00
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	7242.86	8045.45	9312.50	3000.00	370.00	3204.35	7877.78	2035.56	2705.00	3830.00	6440.00	7940.00	4940.00	3226.67	660.00	570.00	1682.50	426.67	3145.00	1810.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
density			8407.14	9600.00	10937.50	3724.00	562.50	3513.04	8938.89	2775.56	3510.00	4750.00	7192.00	9368.00	6050.00	4226.67	1020.00	610.00	2467.50	653.33	3710.00	2100.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																						
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																						
Corylus avellana	seed/fruit	charred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	15.71	3.64	20.00	18.00	0.00	0.00	0.00	2.22	5.00	0.00	4.00	0.00	0.00	0.00	3.33	30.00	17.50	0.00	0.00	5.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.05	0.20	0.10	0.35	0.14	0.15	0.10	0.40	0.50	0.40	0.20	0.25	0.25	0.35	0.21	0.80	0.50	0.50
		sediment type	SO	O1	L1	OL	O1	O2	SO	O2	O1	OS	SO, O1	O1	O1	O2	O1	OL	OS	O2
		unit	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6
		sample nr.	68_13	74_10	74_11	73_2	73_3	73_4	73_5	73_6	88_10	88_11	89_1-2	89_3	89_4	89_5	89_6	96_11	96_12	96_13
	type	state																		
summer crop annual weeds, annual ruderals																				
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	80.00	90.00	0.00	8.57	85.71	20.00	0.00	5.00	2.00	90.00	0.00	48.00	16.00	85.71	9.52	0.00	0.00	8.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	10.00	0.00	21.43	6.67	0.00	0.00	2.00	0.00	0.00	8.00	12.00	5.71	9.52	0.00	4.00	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	2.86	4.76	0.00	0.00	0.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	20.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	20.00	10.00	0.00	2.86	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	5.71	7.14	0.00	40.00	2.50	6.00	0.00	15.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	7.14	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	16.00	2.86	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	20.00	0.00	0.00	0.00	0.00	13.33	20.00	2.50	0.00	0.00	20.00	120.00	160.00	120.00	100.00	0.00	120.00	6.00
density			180.00	105.00	10.00	20.00	121.43	53.33	130.00	10.00	10.00	92.50	40.00	192.00	212.00	220.00	123.81	0.00	128.00	24.00
number of taxa			5.00	3.00	1.00	4.00	3.00	4.00	4.00	3.00	3.00	2.00	3.00	5.00	5.00	6.00	4.00	0.00	4.00	5.00
perennial ruderals																				
Arctium spec.	seed/fruit	uncharred	0.00	5.00	0.00	0.00	7.14	13.33	30.00	12.50	10.00	42.50	15.00	4.00	4.00	5.71	4.76	0.00	2.00	8.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	5.00	0.00	11.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	5.71	0.00	0.00	10.00	2.50	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	10.00	0.00	17.14	7.14	13.33	40.00	15.00	18.00	67.50	15.00	4.00	4.00	8.57	4.76	0.00	2.00	10.00
number of taxa			0.00	2.00	0.00	2.00	1.00	1.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	2.00	1.00	0.00	1.00	1.00
cereals																				
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	117.14	57.14	5.00	2.00	2.00
Hordeum vulgare undiff.	rachis segment	uncharred	40.00	10.00	0.00	0.00	0.00	0.00	50.00	170.00	30.00	12.50	70.00	0.00	16.00	128.57	19.05	0.00	0.00	2.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	0.00	10.00	0.00	2.86	14.29	0.00	0.00	0.00	0.00	5.00	10.00	4.00	96.00	20.00	233.33	0.00	0.00	4.00
Triticum dicoccum	glume basis	uncharred	180.00	360.00	40.00	5.71	242.86	0.00	20.00	5.00	470.00	170.00	0.00	48.00	28.00	88.57	257.14	3.75	6.00	42.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.71	0.00	0.00	0.00	4.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	2.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	10.00	22.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	2.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	15.00	0.00	2.86	14.29	13.33	0.00	0.00	10.00	10.00	10.00	48.00	52.00	105.71	142.86	3.75	12.00	12.00
Triticum durum/turgidum	rachis segment	uncharred	120.00	125.00	0.00	71.43	157.14	0.00	60.00	5.00	462.00	185.00	290.00	196.00	364.00	254.29	338.10	2.50	16.00	36.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	114.29	0.00	0.00	162.50	180.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Cerealia indet.	bran	uncharred	880.00	4520.00	220.00	117.14	4285.71	940.00	310.00	585.00	174.00	1852.50	170.00	68.00	112.00	588.57	85.71	300.00	104.00	2156.00
Cerealia indet.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	1.25	0.00	100.00
Cerealia indet.	chaff	uncharred	60.00	300.00	20.00	0.00	200.00	0.00	120.00	170.00	90.00	252.50	5.00	60.00	0.00	737.14	14.29	5.00	16.00	122.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	40.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	2.50	0.00	0.00	0.00	85.71	0.00	0.00	0.00	4.00
Triticum spec.	chaff	uncharred	80.00	285.00	0.00	142.86	271.43	606.67	130.00	2.50	4.00	227.50	20.00	88.00	304.00	465.71	200.00	0.00	2.00	0.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			1400.00	5625.00	280.00	342.86	5314.29	1560.00	710.00	1107.50	1420.00	2720.00	575.00	520.00	984.00	2600.00	1371.43	321.25	184.00	2506.00
density cereals determined with bran			1220.00	5040.00	260.00	200.00	4828.57	953.33	440.00	935.00	1326.00	2235.00	550.00	368.00	680.00	1308.57	1157.14	315.00	164.00	2280.00
number of taxa			3.00	3.00	1.00	2.00	2.00	1.00	3.00	4.00	3.00	3.00	3.00	2.00	3.00	3.00	4.00	3.00	4.00	4.00
pulses																				
Fabaceae	pod	uncharred	20.00	35.00	10.00	17.14	7.14			10.00	16.00	2.50		4.00	4.00			2.50	2.00	2.00
Fabaceae	pod	semi-charred	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00		0.00	0.00			0.00	0.00	0.00
Fabaceae	pod stem	uncharred	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00		0.00	0.00			0.00	0.00	0.00
cf. Fabaceae	pod	uncharred	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00		0.00	0.00			0.00	0.00	0.00
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			20.00	35.00	10.00	17.14	7.14	0.00	0.00	10.00	16.00	2.50	0.00	4.00	4.00	0.00	0.00	2.50	2.00	2.00
number of taxa			1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
oil- and fibre-plants																				
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Linum usitatissimum	seed/fruit	uncharred	240.00	1055.00	70.00	391.43	1100.00	1866.67	2160.00	2200.00	726.00	257.50	1340.00	1016.00	696.00	577.14	552.38	175.00	356.00	742.00
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	20.00	5.00	0.00	0.00	71.43	0.00	0.00	22.50	28.00	12.50	220.00	192.00	184.00	25.71	23.81	0.00	24.00	0.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	260.00	135.00	0.00	11.43	171.43	373.33	100.00	692.50	378.00	212.50	390.00	648.00	488.00	222.86	385.71	177.50	0.00	224.00
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	2.86	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	3960.00	10445.00	440.00	3322.86	5535.71	9900.00	7220.00	12630.00	1100.00	1022.50	260.00	632.00	848.00	1308.57	900.00	950.00	2288.00	2586.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4480.00	11640.00	510.00	3725.71	6878.57	12140.00	9480.00	15545.00	2232.00	1505.00	2210.00	2496.00	2216.00	2137.14	1861.90	1302.50	2670.00	3552.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																				
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																				
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	20.00	25.00	0.00	11.43	85.71	20.00	20.00	2.50	6.00	5.00	10.00	8.00	8.00	14.29	14.29	11.25	46.00	0.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.60	0.80	0.50	0.22	0.20	0.30	0.25	0.40	0.19	0.19	0.06
		sediment type	O1	O1	MO2	MO2	MO1	MO1	OL	MO2	SO	O2	O1
		unit	U6	U6, U5	U7	U7	U7	U7	U7	U7	U8	U8	U8
		sample nr.	96_14	88_9	46_21	68_14	73_7	88_12	89_7	96_15	46_22	46_23	46_24
	type	state											
summer crop annual weeds, annual ruderals													
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	6.67	0.00	16.00	90.91	5.00	90.00	16.00	7.50	73.68	126.32	66.67
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	5.00	1.25	10.00	0.00	0.00	0.00	0.00	7.50	5.26	15.79	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	0.00	6.00	0.00	0.00	0.00	16.00	0.00	84.21	10.53	200.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	1.25	2.00	0.00	0.00	0.00	0.00	2.50	5.26	0.00	16.67
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	16.67
Sonchus asper	seed/fruit	uncharred	1.67	3.75	0.00	0.00	5.00	0.00	4.00	52.50	0.00	5.26	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	4.55	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	1.25	6.00	9.09	0.00	0.00	4.00	0.00	5.26	5.26	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	80.00	0.00	6.00	109.09	30.00	100.00	204.00	10.00	252.63	236.84	400.00
density			93.33	7.50	48.00	213.64	40.00	196.67	248.00	80.00	431.58	410.53	700.00
number of taxa			4.00	4.00	7.00	4.00	3.00	3.00	6.00	5.00	7.00	8.00	5.00
perennial ruderals													
Arctium spec.	seed/fruit	uncharred	8.33	7.50	2.00	0.00	0.00	0.00	4.00	2.50	5.26	5.26	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.05	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	1.67	0.00	6.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	1.67	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
density			11.67	8.75	12.00	0.00	0.00	0.00	4.00	2.50	10.53	31.58	0.00
number of taxa			3.00	2.00	3.00	0.00	0.00	0.00	1.00	1.00	2.00	2.00	0.00
cereals													
Hordeum vulgare undiff.	seed/fruit	charred	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	5.00	2.50	2.00	0.00	0.00	186.67	4.00	2.50	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	0.00	12.50	22.00	18.18	0.00	0.00	284.00	2.50	126.32	0.00	50.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	0.00	2.50	4.00	0.00	0.00	576.67	16.00	0.00	5.26	0.00	0.00
Triticum dicoccum	glume basis	uncharred	163.33	20.00	270.00	263.64	20.00	193.33	240.00	97.50	221.05	121.05	533.33
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	1.25	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	3.33	6.25	0.00	0.00	0.00	0.00	0.00	0.00	10.53	5.26	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	16.67	10.00	8.00	13.64	0.00	220.00	4.00	0.00	0.00	10.53	66.67
Triticum durum/turgidum	rachis segment	uncharred	98.33	226.25	174.00	222.73	10.00	176.67	1012.00	52.50	184.21	226.32	400.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	5.00	0.00	4.00	0.00	0.00	3.33	0.00	72.50	0.00	5.26	0.00
Cerealia indet.	bran	uncharred	2536.67	7.50	834.00	1690.91	40.00	3123.33	2728.00	715.00	2410.53	257.89	4316.67
Cerealia indet.	seed/fruit	charred	0.00	0.00	2.00	4.55	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	4.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	181.67	0.00	16.00	254.55	45.00	296.67	1504.00	165.00	94.74	0.00	266.67
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	5.00	0.00	0.00	18.18	5.00	0.00	0.00	10.00	0.00	0.00	0.00
Triticum spec.	chaff	uncharred	95.00	233.75	108.00	209.09	15.00	310.00	780.00	62.50	121.05	142.11	683.33
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			3110.00	523.75	1448.00	2695.45	135.00	5163.33	6588.00	1185.00	3173.68	768.42	6316.67
density cereals determined with bran			2828.33	290.00	1318.00	2209.09	70.00	4546.67	4288.00	947.50	2957.89	626.32	5366.67
number of taxa			4.00	4.00	3.00	3.00	2.00	3.00	3.00	4.00	4.00	3.00	3.00
pulses													
Fabaceae	pod	uncharred	8.33	1.25		45.45				7.50			
Fabaceae	pod	semi-charred	0.00	0.00		0.00				0.00			
Fabaceae	pod stem	uncharred	0.00	0.00		0.00				0.00			
cf. Fabaceae	pod	uncharred	0.00	0.00		0.00				0.00			
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			8.33	1.25	0.00	45.45	0.00	0.00	0.00	7.50	0.00	0.00	0.00
number of taxa			1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
oil- and fibre-plants													
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	618.33	497.50	192.00	504.55	235.00	460.00	2100.00	462.50	389.47	557.89	966.67
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	0.00	15.00	20.00	13.64	30.00	13.33	252.00	0.00	26.32	5.26	66.67
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	4.00	0.00	0.00	0.00	8.00	0.00	10.53	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	330.00	253.75	138.00	322.73	135.00	196.67	1284.00	210.00	184.21	326.32	666.67
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	3055.00	1557.50	780.00	3440.91	1375.00	1873.33	2608.00	1367.50	1752.63	1878.95	3000.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4003.33	2323.75	1134.00	4281.82	1775.00	2543.33	6252.00	2040.00	2363.16	2768.42	4700.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants													
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns													
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	1.67	12.50	14.00	4.55	5.00	13.33	0.00	5.00	10.53	0.00	0.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.70	0.55	0.40	0.50	0.40	0.23	0.18	0.45	0.20	0.20	0.25	0.25	0.10	0.15	0.30	0.10	0.40	0.30	0.20	0.20	0.05	0.20	0.10	0.35	0.14	0.15	0.10	0.40	0.50	0.40	0.20	0.25	0.25	0.35	0.21	0.80	0.50	0.50	0.60	0.80	0.50	0.22	0.20	0.30	0.25	0.40	0.19	0.19	0.06
		sediment type	OSLM	OSLM	OSLM	OSLM	LI	OS	O1	O2	SO	O2	O2	O1	SO	O1	O1	O1	O1	O1	LO	O1	SO	O1	LI	OL	O1	O2	SO	O2	O1	OS	SO, O1	O1	O1	O2	O1	OL	OS	O2	O1	O1	MO2	MO2	MO1	MO1	OL	MO2	SO	O2	O1
		unit	U5	U5	U5	U5	U5	U5	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6, U5	U7	U7	U7	U7	U7	U7	U8	U8	U8
		sample nr.	**98_10**	**98_11**	**98_12**	**98_13**	**96_9**	**96_10**	**46_13**	**46_14**	**46_15**	**46_16**	**46_17**	**46_18**	**46_19**	**46_20**	**68_8_1**	**68_8_2**	**68_9**	**68_10**	**68_11**	**68_12**	**68_13**	**74_10**	**74_11**	**73_2**	**73_3**	**73_4**	**73_5**	**73_6**	**88_10**	**88_11**	**89_1-2**	**89_3**	**89_4**	**89_5**	**89_6**	**96_11**	**96_12**	**96_13**	**96_14**	**88_9**	**46_21**	**68_14**	**73_7**	**88_12**	**89_7**	**96_15**	**46_22**	**46_23**	**46_24**
	type	**state**																																																	
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	pericarp	uncharred	1.43	1.82	0.00	0.00	2.50	8.70	5.56	2.22	0.00	5.00	4.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	325.00	10.00	0.00	0.00	2.86	0.00	0.00	8.00	2.00	0.00	5.00	2.00	0.00	0.00	20.00	0.00	5.00	0.00	0.00	0.00
Fragaria vesca	seed/fruit	uncharred	5.71	390.91	332.50	180.00	85.00	773.91	22.22	66.67	105.00	320.00	196.00	704.00	720.00	400.00	160.00	170.00	362.50	6.67	380.00	440.00	520.00	410.00	40.00	245.71	657.14	1586.67	1500.00	1857.50	202.00	195.00	0.00	100.00	144.00	8.57	85.71	125.00	184.00	462.00	431.67	187.50	6.00	390.91	340.00	113.33	12.00	300.00	73.68	236.84	233.33
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	10.00	52.73	30.00	20.00	22.50	121.74	16.67	40.00	85.00	25.00	56.00	216.00	120.00	80.00	30.00	0.00	22.50	3.33	30.00	35.00	40.00	125.00	20.00	88.57	50.00	40.00	120.00	35.00	18.00	90.00	5.00	4.00	4.00	20.00	0.00	20.00	22.00	26.00	15.00	26.25	12.00	13.64	10.00	30.00	0.00	17.50	5.26	10.53	16.67
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	18.57	45.45	37.50	58.00	102.50	321.74	11.11	71.11	90.00	40.00	192.00	216.00	130.00	80.00	70.00	0.00	12.50	16.67	30.00	85.00	60.00	480.00	20.00	194.29	121.43	233.33	290.00	87.50	22.00	182.50	0.00	12.00	12.00	20.00	14.29	101.25	56.00	184.00	65.00	38.75	34.00	18.18	20.00	66.67	8.00	37.50	21.05	21.05	16.67
Malus/Pyrus	stem	uncharred	7.14	7.27	0.00	16.00	5.00	17.39	0.00	4.44	15.00	0.00	4.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	15.00	0.00	11.43	7.14	0.00	0.00	0.00	2.00	5.00	15.00	4.00	4.00	2.86	0.00	1.25	0.00	0.00	0.00	5.00	2.00	0.00	0.00	3.33	0.00	2.50	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	1.43	5.45	0.00	4.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	10.00	0.00	6.67	10.00	2.50	3.33	0.00	0.00	0.00	5.00	0.00	2.86	0.00	0.00	10.00	5.00	2.00	0.00	5.00	8.00	12.00	0.00	4.76	1.25	0.00	0.00	3.33	2.50	4.00	0.00	20.00	3.33	4.00	0.00	0.00	0.00	0.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	5.45	0.00	4.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	10.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	2.86	3.64	2.50	14.00	2.50	8.70	0.00	28.89	5.00	10.00	8.00	8.00	10.00	0.00	3.33	0.00	2.50	3.33	0.00	10.00	0.00	20.00	0.00	0.00	7.14	0.00	0.00	0.00	4.00	65.00	5.00	8.00	0.00	0.00	0.00	1.25	0.00	2.00	1.67	2.50	2.00	9.09	0.00	10.00	4.00	7.50	0.00	0.00	0.00
Rosa spec.	seed/fruit	uncharred	7.14	9.09	2.50	0.00	2.50	13.04	0.00	0.00	5.00	0.00	0.00	16.00	0.00	13.33	10.00	10.00	15.00	3.33	0.00	5.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	17.50	4.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	1.67	2.50	2.00	4.55	0.00	0.00	0.00	2.50	0.00	5.26	0.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	1.43	1.82	10.00	60.00	2.50	21.74	0.00	0.00	0.00	5.00	4.00	4.00	0.00	6.67	10.00	130.00	7.50	6.67	20.00	90.00	100.00	5.00	0.00	62.86	28.57	333.33	110.00	195.00	2.00	2.50	10.00	4.00	0.00	0.00	4.76	0.00	6.00	24.00	5.00	1.25	2.00	9.09	15.00	13.33	8.00	0.00	0.00	10.53	16.67
Rubus fruticosus/idaeus	seed/fruit	uncharred	35.71	0.00	140.00	0.00	2.50	8.70	0.00	8.89	15.00	0.00	16.00	356.00	30.00	0.00	0.00	10.00	7.50	0.00	360.00	0.00	420.00	10.00	10.00	0.00	171.43	0.00	30.00	2.50	0.00	105.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.67	0.00	8.00	131.82	5.00	100.00	4.00	62.50	73.68	0.00	266.67
Rubus idaeus	seed/fruit	uncharred	78.57	381.82	560.00	468.00	660.00	578.26	5.56	133.33	210.00	100.00	256.00	480.00	340.00	146.67	246.67	20.00	140.00	0.00	540.00	1140.00	580.00	120.00	0.00	57.14	257.14	280.00	970.00	4752.50	8.00	180.00	700.00	168.00	208.00	140.00	85.71	3.75	306.00	490.00	518.33	115.00	26.00	327.27	670.00	120.00	8.00	1782.50	368.42	663.16	900.00
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	1.82	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00	2.50	0.00	0.00	0.00	0.00	5.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			185.71	912.73	1137.50	842.00	890.00	1873.91	61.11	368.89	540.00	505.00	752.00	2048.00	1380.00	733.33	543.33	390.00	595.00	43.33	1365.00	1810.00	1760.00	1230.00	90.00	677.14	1392.86	2493.33	3050.00	6955.00	316.00	1160.00	765.00	316.00	396.00	208.57	209.52	266.25	634.00	1190.00	1170.00	401.25	114.00	909.09	1085.00	493.33	60.00	2222.50	557.89	947.37	1450.00
number of taxa			9.00	12.00	7.00	8.00	8.00	7.00	4.00	7.00	7.00	6.00	9.00	9.00	7.00	6.00	8.00	7.00	10.00	6.00	4.00	7.00	6.00	8.00	3.00	6.00	7.00	5.00	6.00	7.00	12.00	7.00	8.00	7.00	5.00	5.00	6.00	6.00	8.00	6.00	8.00	10.00	9.00	7.00	6.00	8.00	7.00	7.00	5.00	5.00	4.00
various unassigned plants																																																	
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	6.67	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	10.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	2.00	14.00	0.00	0.00	6.00	27.27	0.00	0.00	20.00	0.00	5.26	0.00	0.00
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	1.43	3.64	10.00	8.00	2.50	0.00	133.33	66.67	20.00	15.00	12.00	192.00	30.00	66.67	703.33	1600.00	762.50	240.00	15.00	10.00	100.00	20.00	0.00	8.57	21.43	0.00	20.00	0.00	4.00	77.50	5.00	8.00	0.00	0.00	9.52	0.00	6.00	168.00	81.67	131.25	2.00	9.09	20.00	50.00	0.00	5.00	10.53	5.26	16.67
Caryophyllaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	10.00	0.00	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	0.00	0.00	52.63	0.00	0.00
Cerastium spec.	seed/fruit	uncharred	78.57	45.45	5.00	8.00	0.00	0.00	16.67	6.67	10.00	5.00	8.00	8.00	100.00	106.67	280.00	200.00	10.00	0.00	10.00	10.00	0.00	15.00	0.00	5.71	28.57	0.00	20.00	5.00	4.00	105.00	60.00	48.00	252.00	120.00	85.71	1.25	4.00	106.00	80.00	1.25	124.00	236.36	10.00	50.00	232.00	92.50	178.95	189.47	300.00
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	5.71	0.00	0.00	0.00	2.00	0.00	0.00	8.00	22.73	0.00	6.67	4.00	0.00	94.74	15.79	50.00
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	5.00	0.00	5.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	2.00	0.00	0.00	0.00	4.00	2.50	0.00	5.26	0.00
Lamiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	15.79	0.00	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.53	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00
Mentha spec.	seed/fruit	uncharred	2.86	0.00	2.50	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	6.67	0.00	20.00	2.50	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	4.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	5.00	0.00	0.00	33.33
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	3.33	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	15.79	0.00	0.00
cf. *Poa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Poaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	0.00	1.82	0.00	2.00	0.00	4.35	0.00	2.22	0.00	10.00	0.00	16.00	100.00	26.67	3.33	30.00	2.50	6.67	0.00	0.00	20.00	0.00	0.00	5.71	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00
Poaceae	chaff	uncharred	0.00	0.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	8.00	0.00	15.79	0.00	0.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	140.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	1.67	0.00	0.00	4.55	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	2.22	10.00	5.00	0.00	4.00	0.00	6.67	13.33	180.00	300.00	6.67	0.00	10.00	20.00	0.00	0.00	0.00	7.14	6.67	10.00	0.00	2.00	2.50	0.00	12.00	4.00	0.00	4.76	0.00	0.00	0.00	1.67	1.25	2.00	0.00	5.00	0.00	4.00	2.50	0.00	10.53	33.33
Rumex spec.	flower	uncharred	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	5.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.70	0.55	0.40	0.50	0.40	0.23	0.18	0.45	0.20	0.20	0.25	0.25
		sediment type	OSLM	OSLM	OSLM	OSLM	L1	OS	O1	O2	SO	O2	O2	O1
		unit	U5	U5	U5	U5	U5	U5	U6	U6	U6	U6	U6	U6
		sample nr.	**98_10**	**98_11**	**98_12**	**98_13**	**96_9**	**96_10**	**46_13**	**46_14**	**46_15**	**46_16**	**46_17**	**46_18**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			82.86	50.91	200.00	18.00	10.00	4.35	177.78	82.22	45.00	45.00	20.00	248.00
number of taxa			3.00	3.00	7.00	3.00	4.00	1.00	6.00	6.00	4.00	5.00	2.00	9.00
indeterminate plants														
Indeterminata	seed/fruit	charred	2.86	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	4.29	0.00	25.00	0.00	0.00	0.00	27.78	15.56	30.00	10.00	20.00	60.00
Indeterminata	AOV	charred	2.86	0.00	0.00	2.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	4.00
density			10.00	0.00	30.00	2.00	0.00	0.00	27.78	15.56	35.00	10.00	20.00	64.00
density total			10652.86	12065.45	19087.50	6122.00	2150.00	7073.91	13966.67	6982.22	8590.00	10330.00	17640.00	20320.00
number of taxa total			34.00	58.00	49.00	48.00	38.00	27.00	38.00	41.00	37.00	32.00	34.00	46.00
charred all density			10.00	9.09	10.00	110.00	2.50	17.39	16.67	62.22	30.00	15.00	48.00	56.00
semi-charred all density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	5.00	4.00	4.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.10	0.15	0.30	0.10	0.40	0.30	0.20	0.20	0.05	0.20	0.10	0.35
		sediment type	SO	O1	O1	O1	O1	O1	LO	O1	SO	O1	L1	OL
		unit	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6
		sample nr.	**46_19**	**46_20**	**68_8_1**	**68_8_2**	**68_9**	**68_10**	**68_11**	**68_12**	**68_13**	**74_10**	**74_11**	**73_2**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	10.00	20.00	7.50	0.00	5.00	5.00	0.00	0.00	10.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			300.00	233.33	1026.67	2240.00	1110.00	400.00	70.00	35.00	200.00	35.00	10.00	37.14
number of taxa			5.00	7.00	7.00	11.00	11.00	6.00	8.00	4.00	5.00	2.00	1.00	8.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	160.00	60.00	0.00	50.00	52.50	30.00	35.00	0.00	140.00	20.00	0.00	0.00
Indeterminata	AOV	charred	0.00	0.00	3.33	130.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	2.86
density			160.00	60.00	3.33	180.00	52.50	30.00	40.00	0.00	140.00	25.00	0.00	2.86
density total			12530.00	10666.67	5503.33	7020.00	8395.00	2666.67	9220.00	5145.00	9440.00	19245.00	1010.00	5280.00
number of taxa total			52.00	51.00	57.00	52.00	69.00	34.00	39.00	42.00	44.00	42.00	14.00	45.00
charred all density			40.00	33.33	16.67	130.00	17.50	0.00	15.00	20.00	40.00	30.00	0.00	14.29
semi-charred all density			0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.14	0.15	0.10	0.40	0.50	0.40	0.20	0.25	0.25	0.35	0.21	0.80	0.50
		sediment type	O1	O2	SO	O2	O1	OS	SO, O1	O1	O1	O2	O1	OL	OS
		unit	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6	U6
		sample nr.	**73_3**	**73_4**	**73_5**	**73_6**	**88_10**	**88_11**	**89_1-2**	**89_3**	**89_4**	**89_5**	**89_6**	**96_11**	**96_12**
	type	**state**													
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			71.43	20.00	60.00	5.00	16.00	200.00	80.00	88.00	272.00	128.57	114.29	3.75	22.00
number of taxa			4.00	3.00	4.00	1.00	6.00	6.00	5.00	7.00	3.00	3.00	5.00	3.00	7.00
indeterminate plants															
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	28.57	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
Indeterminata	AOV	charred	0.00	0.00	0.00	2.50	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
density			28.57	13.33	0.00	2.50	0.00	0.00	5.00	0.00	0.00	22.86	0.00	0.00	0.00
density total			14685.72	17580.00	14870.00	24875.00	5220.00	6832.50	4265.00	4408.00	5156.00	7188.57	4666.67	2406.25	4026.00
number of taxa total			40.00	25.00	37.00	33.00	51.00	43.00	40.00	47.00	38.00	43.00	41.00	26.00	44.00
charred all density			50.00	13.33	20.00	5.00	12.00	20.00	25.00	72.00	168.00	337.14	452.38	12.50	22.00
semi-charred all density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.71	4.76	0.00	2.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.60	0.80	0.50	0.22	0.20	0.30	0.25	0.40	0.19	0.19	0.06
		sediment type	O2	O1	O1	MO2	MO2	MO1	MO1	OL	MO2	SO	O2	O1
		unit	U6	U6	U6, U5	U7	U7	U7	U7	U7	U7	U8	U8	U8
		sample nr.	**96_13**	**96_14**	**88_9**	**46_21**	**68_14**	**73_7**	**88_12**	**89_7**	**96_15**	**46_22**	**46_23**	**46_24**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	2.50	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			302.00	170.00	138.75	146.00	309.09	55.00	116.67	284.00	122.50	394.74	242.11	483.33
number of taxa			8.00	6.00	6.00	6.00	7.00	7.00	6.00	7.00	10.00	9.00	7.00	6.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	0.00	3.33	0.00	30.00	27.27	0.00	0.00	32.00	0.00	84.21	0.00	300.00
Indeterminata	AOV	charred	4.00	0.00	0.00	2.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	16.67
density			4.00	3.33	0.00	32.00	27.27	0.00	3.33	32.00	0.00	84.21	0.00	316.67
density total			8266.00	9366.67	4052.50	3446.00	9163.64	3325.00	10120.00	14656.00	6825.00	7731.58	6557.90	15650.00
number of taxa total			52.00	52.00	43.00	56.00	43.00	36.00	39.00	47.00	55.00	51.00	52.00	34.00
charred all density			132.00	31.67	17.50	30.00	36.36	15.00	1050.00	52.00	22.50	26.32	21.05	83.33
semi-charred all density			4.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.22	0.05	0.35	0.16	0.45	0.10	0.15	0.07	0.45	0.12	0.27	0.15	0.50	0.08	0.25	0.60	0.30	0.19	0.20	0.15	0.24	0.14
		sediment type	O2	SL	O2	OLA	O2	L2	O1	SO	O2	L1	O2	SO, O2	O2	SO	O1	O1	OL	O1	O1	SO	O1	O2
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	46_25	46_26	46_27	46_28	46_29	46_30	46_31	46_32	46_33	46_34	46_35	46_36-37	45_4	45_5	67_5_1	67_5_2	67_6	67_7	67_8	67_9	67_10	67_11
	type	state																						
aquatic plants oligotrophic																								
Chara spec.	oog	uncharred	0.00	0.00	0.00	6.25	0.00	0.00	6.67	0.00	2.22	8.33	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chara spec.	oogK	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	2.22	0.00	0.00	6.67	2.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00
Nitella spec.	oog	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	6.25	0.00	0.00	6.67	14.29	4.44	16.67	0.00	6.67	2.00	12.50	8.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00
number of taxa			0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	2.00	0.00	1.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
aquatic plants meso-/eutrophic																								
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00
Najas minor	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	20.00	192.00	375.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	6.67	36.00	12.50	0.00	0.00	6.67	0.00	5.00	0.00	0.00	0.00
Najas intermedia/marina	fruit whole	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	10.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	40.00	156.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	10.00	0.00	14.29	2.22	0.00	7.41	80.00	414.00	462.50	0.00	0.00	6.67	0.00	5.00	6.67	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	2.00	2.00	3.00	3.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
reed bed and sedge swamp plants																								
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	0.00	60.00	2.86	0.00	0.00	10.00	20.00	42.86	2.22	0.00	0.00	6.67	2.00	0.00	0.00	1.67	0.00	10.53	10.00	20.00	12.50	7.14
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	4.55	0.00	2.86	6.25	4.44	0.00	20.00	14.29	6.67	33.33	7.41	33.33	6.00	0.00	12.00	5.00	0.00	10.53	20.00	13.33	200.00	21.43
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	4.44	0.00	6.67	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	4.55	0.00	0.00	0.00	4.44	0.00	6.67	0.00	0.00	0.00	0.00	0.00	2.00	0.00	4.00	0.00	0.00	0.00	5.00	0.00	4.17	0.00
density			9.09	60.00	8.57	6.25	15.56	10.00	53.33	57.14	8.89	41.67	11.11	46.67	10.00	12.50	28.00	6.67	0.00	21.05	65.00	40.00	216.67	35.71
number of taxa			2.00	1.00	2.00	1.00	4.00	1.00	4.00	2.00	2.00	2.00	2.00	3.00	3.00	1.00	3.00	2.00	0.00	2.00	4.00	3.00	3.00	3.00
wet grassland plants																								
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	20.00	2.86	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.33	0.00	0.00	0.00	4.17	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	4.17	14.29
Mentha arvensis	seed/fruit	uncharred	9.09	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	9.09	60.00	11.43	25.00	8.89	20.00	80.00	57.14	142.22	108.33	51.85	66.67	112.00	25.00	12.00	1.67	10.00	21.05	560.00	153.33	829.17	485.71
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	0.00	20.00	8.57	12.50	0.00	0.00	6.67	14.29	2.22	8.33	3.70	46.67	2.00	12.50	4.00	213.33	3.33	5.26	240.00	160.00	16.67	314.29
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	4.55	60.00	5.71	12.50	4.44	0.00	0.00	14.29	88.89	66.67	44.44	33.33	0.00	0.00	16.00	3.33	3.33	0.00	5.00	0.00	125.00	400.00
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			31.82	160.00	28.57	50.00	13.33	70.00	93.33	85.71	237.78	191.67	100.00	153.33	116.00	37.50	36.00	221.67	20.00	26.32	815.00	320.00	983.33	1214.29
number of taxa			5.00	4.00	4.00	3.00	2.00	2.00	3.00	3.00	4.00	4.00	3.00	4.00	3.00	2.00	4.00	4.00	4.00	2.00	4.00	3.00	6.00	4.00
shoreline pioneers incl. shore weeds																								
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	66.67	185.71	8.89	25.00	3.70	0.00	6.00	12.50	12.00	6.67	10.00	0.00	20.00	0.00	125.00	228.57
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	6.25	0.00	10.00	13.33	28.57	0.00	0.00	3.70	6.67	0.00	0.00	8.00	3.33	0.00	0.00	15.00	13.33	16.67	14.29
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	7.14
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	12.50	0.00	0.00	0.00	0.00	15.00	13.33	0.00	0.00
density			0.00	20.00	2.86	6.25	0.00	10.00	80.00	214.29	8.89	25.00	7.41	13.33	14.00	25.00	20.00	11.67	10.00	0.00	50.00	26.67	154.17	257.14
number of taxa			0.00	1.00	1.00	1.00	0.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00	4.00	2.00	2.00	3.00	1.00	0.00	3.00	2.00	3.00	4.00
wetland plants unassigned																								
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	5.26	0.00	0.00	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	6.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	4.55	80.00	2.86	12.50	4.44	10.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	16.00	5.00	0.00	0.00	0.00	0.00	16.67	14.29
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.55	160.00	2.86	12.50	4.44	10.00	0.00	0.00	2.22	8.33	0.00	20.00	4.00	0.00	16.00	5.00	3.33	5.26	0.00	0.00	25.00	14.29
number of taxa			1.00	3.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	3.00	2.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	2.00	1.00
riparian woodland and carr plants																								
Alnus cf. *glutinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	14.29	2.22	8.33	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	21.43
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.34	0.30	0.50	0.85	0.60	0.25	1.60	0.40	0.23	0.34	0.08	0.10	0.30	0.20	0.30	0.20	0.80	0.80	3.50	0.65	0.25	1.00	0.26	0.60	0.13
		sediment type	O2	O2	O2	O1	O1	O1	SL	OSLM	OSLM	OL	L1	L2	OL	OL	O1	O2	OL	OL	O1	OL	L1	O2	L1	OL	L1	L1
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U9	U9	U9	U9	U9	U9
		sample nr.	67_12	73_8	73_9	73_10	73_11	73_12	88_13	88_14	88_15	89_8	89_9	89_10	89_11	96_16	96_17	96_18	96_19	96_20	92_1	92_2	89_12	89_13	89_14	89_15	89_16	89_17
	type	state																										
aquatic plants oligotrophic																												
Chara spec.	oog	uncharred	2.00	2.94	0.00	2.00	4.71	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.29	1.54	0.00	11.00	15.38	93.33	30.77
Chara spec.	oogK	uncharred	0.00	0.00	0.00	0.00	2.35	306.67	0.00	0.00	0.00	0.00	2.94	12.50	10.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	5.00	53.85	70.00	215.38
Nitella spec.	oog	uncharred	2.00	2.94	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.00	5.88	0.00	2.00	7.06	468.33	0.00	0.00	0.00	0.00	2.94	12.50	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.29	1.54	12.00	16.00	69.23	163.33	246.15
number of taxa			2.00	2.00	0.00	1.00	1.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
aquatic plants meso-/eutrophic																												
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas minor	seed/fruit	uncharred	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	4.00	5.88	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	fruit whole	uncharred	0.00	5.88	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			6.00	17.65	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	10.00	3.33	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			2.00	3.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
reed bed and sedge swamp plants																												
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	6.00	0.00	320.00	168.00	2.35	0.00	0.00	1.88	2.50	0.00	0.00	0.00	0.00	3.33	0.00	3.33	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	7.69
Mentha aquatica	seed/fruit	uncharred	0.00	2.94	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	160.00	5.88	0.00	0.00	3.53	3.33	4.00	0.00	10.00	0.00	5.88	0.00	0.00	3.33	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	3.85	1.67	15.38
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	2.00	5.88	0.00	0.00	0.00	3.33	0.00	0.63	0.00	0.00	0.00	12.50	0.00	3.33	5.00	0.00	0.00	1.25	1.25	0.00	0.00	4.00	1.00	0.00	0.00	0.00
density			168.00	14.71	323.33	168.00	7.06	6.67	8.00	2.50	12.50	0.00	5.88	12.50	0.00	10.00	5.00	3.33	0.00	1.25	5.00	0.29	0.00	4.00	2.00	3.85	1.67	23.08
number of taxa			3.00	3.00	2.00	1.00	3.00	2.00	2.00	2.00	2.00	0.00	1.00	1.00	0.00	3.00	1.00	1.00	0.00	1.00	3.00	1.00	0.00	1.00	2.00	1.00	1.00	2.00
wet grassland plants																												
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	4.00	2.94	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.67	0.00	0.00	0.00	0.00	3.75	0.29	1.54	0.00	0.00	0.00	0.00	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	5.88	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	1.25	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	1184.00	5.88	6.67	4.00	203.53	200.00	4.00	1.25	0.00	0.00	11.76	87.50	20.00	3.33	5.00	0.00	5.00	1.25	1.25	0.00	3.08	12.00	3.00	53.85	5.00	92.31
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	548.00	8.82	483.33	192.00	7.06	121.67	8.00	0.00	0.00	4.35	0.00	25.00	20.00	3.33	10.00	0.00	15.00	0.00	0.00	0.00	1.54	0.00	1.00	7.69	1.67	7.69
Scirpus sylvaticus	seed/fruit	uncharred	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	480.00	8.82	0.00	0.00	1.18	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	3.33	92.31
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2218.00	35.29	490.00	196.00	212.94	330.00	12.00	4.38	2.50	4.35	11.76	112.50	40.00	146.67	25.00	3.33	20.00	5.00	7.50	0.29	6.15	12.00	5.00	65.38	10.00	192.31
number of taxa			5.00	6.00	2.00	2.00	4.00	5.00	2.00	3.00	1.00	1.00	1.00	2.00	2.00	5.00	3.00	1.00	2.00	3.00	3.00	1.00	3.00	1.00	3.00	3.00	3.00	3.00
shoreline pioneers incl. shore weeds																												
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	258.00	123.53	440.00	170.00	3.53	255.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	6.67	0.00	0.00	5.00	0.00	0.00	0.00	3.08	0.00	0.00	0.00	0.00	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	2.94	6.67	0.00	4.71	6.67	0.00	0.00	2.50	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	7.69	1.67	7.69
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	2.00	2.94	10.00	0.00	1.18	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			260.00	129.41	460.00	170.00	10.59	273.33	0.00	0.00	2.50	0.00	11.76	25.00	0.00	10.00	0.00	3.33	5.00	0.00	0.00	0.00	3.08	4.00	4.00	7.69	1.67	7.69
number of taxa			2.00	3.00	4.00	1.00	4.00	7.00	0.00	0.00	1.00	0.00	3.00	1.00	0.00	2.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
wetland plants unassigned																												
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	15.38
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	8.00	0.00	0.00	0.00	2.35	40.00	0.00	0.00	2.50	0.00	5.88	0.00	0.00	6.67	10.00	0.00	5.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	6.67	7.69
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			8.00	2.94	3.33	0.00	2.35	41.67	0.00	0.00	2.50	0.00	5.88	12.50	0.00	6.67	10.00	0.00	5.00	0.00	0.00	1.14	0.00	4.00	0.00	0.00	13.33	23.08
number of taxa			1.00	1.00	1.00	0.00	1.00	2.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	2.00	2.00
riparian woodland and carr plants																												
Alnus cf. *glutinosa*	seed/fruit	uncharred	4.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.22	0.05	0.35	0.16	0.45	0.10	0.15	0.07	0.45	0.12	0.27	0.15	0.50	0.08	0.25	0.60	0.30	0.19	0.20	0.15	0.24	0.14	0.50	0.34	0.30	0.50	0.85	0.60	0.25	1.60	0.40	0.23	0.34	0.08	0.10	0.30	0.20	0.30	0.20	0.80	0.80	3.50	0.65	0.25	1.00	0.26	0.60	0.13
		sediment type	O2	SL	O2	OLA	O2	L2	O1	SO	O2	L1	O2	SO, O2	O2	SO	O1	O1	OL	O1	O1	SO	O1	O2	O2	O2	O2	O1	O1	O1	SL	OSLM	OSLM	OL	L1	L2	OL	OL	O1	O2	OL	OL	O1	OL	L1	O2	L1	OL	L1	L1
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U9	U9	U9	U9	U9	U9
		sample nr.	46_25	46_26	46_27	46_28	46_29	46_30	46_31	46_32	46_33	46_34	46_35	46_36-37	45_4	45_5	67_5_1	67_5_2	67_6	67_7	67_8	67_9	67_10	67_11	67_12	73_8	73_9	73_10	73_11	73_12	88_13	88_14	88_15	89_8	89_9	89_10	89_11	96_16	96_17	96_18	96_19	96_20	92_1	92_2	89_12	89_13	89_14	89_15	89_16	89_17
	type	state																																																
Prunus padus	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	1.67	0.00
Rubus caesius	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	7.14	2.00	0.00	0.00	2.00	2.35	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.38
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.55	20.00	0.00	0.00	2.22	0.00	6.67	14.29	4.44	8.33	0.00	0.00	2.00	25.00	4.00	1.67	6.67	0.00	10.00	0.00	4.17	35.71	10.00	0.00	0.00	2.00	4.71	3.33	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	5.00	3.33	0.00	1.25	1.25	1.43	0.00	0.00	1.00	0.00	1.67	15.38
number of taxa			1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	2.00	0.00	1.00	0.00	1.00	3.00	3.00	0.00	0.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00
woodland plants																																																
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	32.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	charred	4.55	20.00	0.00	0.00	0.00	20.00	0.00	0.00	2.22	0.00	7.41	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	6.00	2.35	0.00	0.00	1.25	5.00	0.00	2.94	12.50	10.00	3.33	0.00	0.00	0.00	0.00	1.25	1.14	0.00	0.00	0.00	7.69	0.00	30.77
Abies alba	leaf	uncharred	545.45	960.00	751.43	887.50	560.00	360.00	1380.00	1128.57	448.89	716.67	1922.22	360.00	688.00	100.00	684.00	1193.33	973.33	726.32	820.00	320.00	383.33	578.57	914.00	502.94	536.67	494.00	628.24	703.33	468.00	94.38	637.50	573.91	158.82	212.50	200.00	720.00	805.00	650.00	300.00	1271.25	1067.50	927.14	12.31	64.00	14.00	857.69	106.67	3284.62
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	28.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	1.18	1.67	4.00	0.00	0.00	4.35	0.00	0.00	0.00	6.67	0.00	0.00	5.00	0.00	1.25	0.29	0.00	4.00	0.00	0.00	1.67	0.00
Betula pendula/pubescens	fruit whole	uncharred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	6.67	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	4.55	20.00	2.86	0.00	2.22	0.00	6.67	14.29	2.22	0.00	7.41	13.33	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	14.29	0.00	0.00	6.67	2.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	3.33	0.00	3.75	0.00	0.00	1.54	0.00	3.00	3.85	1.67	23.08
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	13.64	0.00	2.86	6.25	0.00	20.00	26.67	28.57	724.44	16.67	3.70	13.33	16.00	0.00	16.00	6.67	13.33	0.00	25.00	0.00	33.33	21.43	208.00	0.00	0.00	2.00	28.24	233.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	13.33	5.00	0.00	3.75	0.00	0.00	4.00	2.00	15.38	0.00	7.69
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	9.09	40.00	14.29	12.50	102.22	30.00	20.00	14.29	6.67	58.33	70.37	13.33	0.00	0.00	4.00	10.00	10.00	21.05	45.00	20.00	16.67	42.86	6.00	0.00	0.00	2.00	7.06	81.67	0.00	0.00	5.00	0.00	8.82	25.00	20.00	20.00	25.00	153.33	0.00	2.50	7.50	9.43	3.08	0.00	0.00	7.69	3.33	0.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	16.00	3.33	0.00	0.00	0.00	6.67	4.17	0.00	2.00	0.00	0.00	0.00	1.18	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	31.82	0.00	2.86	0.00	0.00	0.00	20.00	0.00	26.67	25.00	3.70	0.00	4.00	0.00	4.00	3.33	13.33	0.00	10.00	0.00	0.00	0.00	12.00	0.00	0.00	2.00	1.18	0.00	16.00	3.75	22.50	4.35	0.00	12.50	0.00	33.33	55.00	76.67	15.00	7.50	12.50	15.43	0.00	0.00	0.00	3.85	0.00	0.00
density			609.09	1060.00	774.29	906.25	668.89	430.00	1453.33	1228.57	1215.56	816.67	2018.52	406.67	712.00	112.50	728.00	1220.00	1020.00	752.63	900.00	353.33	450.00	664.29	1148.00	508.82	543.33	508.00	670.59	1026.67	488.00	99.38	707.50	582.61	170.59	262.50	250.00	786.67	885.00	900.00	325.00	1287.50	1098.75	953.43	18.46	72.00	19.00	896.15	113.33	3346.15
number of taxa			5.00	4.00	5.00	3.00	4.00	3.00	5.00	6.00	6.00	4.00	6.00	5.00	4.00	2.00	5.00	5.00	6.00	3.00	4.00	4.00	5.00	4.00	6.00	2.00	2.00	5.00	6.00	6.00	3.00	2.00	3.00	3.00	2.00	3.00	4.00	5.00	3.00	6.00	4.00	4.00	7.00	4.00	4.00	3.00	3.00	5.00	4.00	3.00
woodland clearing edge, hedge, bush plants																																																
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	4.00	1.67	0.00	0.00	5.00	26.67	225.00	14.29	2.00	2.94	0.00	0.00	0.00	1.67	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	2.00	0.00	8.00	3.33	0.00	0.00	10.00	13.33	16.67	14.29	160.00	8.82	0.00	0.00	4.71	6.67	4.00	0.63	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	8.33	0.00	2.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	13.33	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	0.00	20.00	0.00	6.25	0.00	0.00	13.33	28.57	2.22	25.00	3.70	13.33	0.00	25.00	8.00	1.67	0.00	0.00	20.00	686.67	875.00	457.14	8.00	105.88	200.00	2.00	2.35	3.33	0.00	0.63	62.50	0.00	5.88	12.50	20.00	10.00	10.00	0.00	0.00	1.25	3.75	0.00	4.62	0.00	1.00	0.00	0.00	30.77
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	0.00	20.00	0.00	0.00	4.44	0.00	6.67	14.29	0.00	0.00	0.00	6.67	0.00	0.00	4.00	1.67	3.33	5.26	0.00	153.33	8.33	7.14	4.00	2.94	6.67	2.00	1.18	0.00	4.00	0.00	2.50	0.00	2.94	25.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	16.00	1.00	0.00	0.00	15.38
Origanum vulgare	seed/fruit	uncharred	4.55	60.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	8.33	7.41	13.33	4.00	25.00	12.00	160.00	6.67	5.26	15.00	0.00	8.33	14.29	8.00	5.88	320.00	264.00	94.12	5.00	0.00	0.00	2.50	0.00	2.94	12.50	0.00	3.33	20.00	3.33	5.00	0.00	3.75	0.29	3.08	0.00	1.00	3.85	1.67	15.38
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	13.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	4.00	0.00	4.00	1.67	3.33	5.26	0.00	0.00	8.33	14.29	0.00	2.94	6.67	0.00	1.18	1.67	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	3.85	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			22.73	140.00	8.57	6.25	8.89	0.00	20.00	42.86	4.44	33.33	14.81	46.67	10.00	50.00	40.00	175.00	16.67	15.79	50.00	893.33	1158.33	521.43	192.00	132.35	533.33	272.00	104.71	20.00	32.00	4.38	72.50	0.00	20.59	50.00	30.00	13.33	35.00	6.67	25.00	1.25	13.75	0.57	7.69	16.00	3.00	11.54	5.00	69.23
number of taxa	16		3.00	4.00	3.00	1.00	2.00	0.00	2.00	2.00	2.00	2.00	3.00	5.00	3.00	2.00	6.00	9.00	4.00	3.00	4.00	5.00	9.00	6.00	8.00	7.00	4.00	5.00	6.00	6.00	4.00	5.00	4.00	0.00	5.00	3.00	2.00	2.00	3.00	2.00	3.00	1.00	4.00	2.00	2.00	1.00	3.00	3.00	3.00	4.00
grassland plants																																																
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	2.22	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	5.26	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	1.18	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	4.17	14.29	0.00	0.00	3.33	0.00	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	60.00	5.71	0.00	8.89	10.00	0.00	28.57	8.89	25.00	14.81	6.67	4.00	0.00	16.00	5.00	3.33	5.26	200.00	0.00	125.00	171.43	256.00	5.88	6.67	0.00	3.53	93.33	4.00	0.63	12.50	0.00	5.88	25.00	0.00	83.33	10.00	3.33	0.00	2.50	75.00	0.00	0.00	0.00	0.00	3.85	1.67	15.38
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	66.67	14.29	0.00	8.33	7.41	6.67	2.00	0.00	0.00	5.00	6.67	5.26	240.00	153.33	150.00	200.00	322.00	2.94	320.00	4.00	78.82	5.00	0.00	1.25	0.00	0.00	2.94	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	15.38	0.00	0.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	1.67	0.00	5.26	5.00	0.00	16.67	28.57	8.00	0.00	0.00	0.00	1.18	5.00	0.00	0.00	0.00	4.35	11.76	25.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	3.85	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	60.00	5.71	0.00	13.33	10.00	80.00	42.86	11.11	50.00	22.22	13.33	6.00	12.50	36.00	11.67	10.00	21.05	445.00	173.33	295.83	421.43	590.00	8.82	330.00	4.00	87.06	106.67	8.00	1.88	12.50	4.35	20.59	50.00	30.00	86.67	10.00	3.33	0.00	2.50	76.25	0.29	1.54	8.00	0.00	23.08	1.67	23.08
number of taxa			0.00	1.00	1.00	0.00	2.00	1.00	3.00	2.00	2.00	4.00	2.00	2.00	2.00	1.00	3.00	3.00	2.00	4.00	3.00	3.00	4.00	5.00	4.00	2.00	3.00	1.00	5.00	4.00	2.00	2.00	1.00	1.00	3.00	2.00	2.00	2.00	1.00	1.00	0.00	1.00	2.00	1.00	1.00	2.00	0.00	3.00	1.00	2.00
winter crop annual and flax weeds																																																
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	4.55	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.55	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	1.67	0.00	0.00	0.00	6.67	0.00	0.00	2.00	2.94	6.67	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.22	0.05	0.35	0.16	0.45	0.10	0.15	0.07	0.45	0.12	0.27	0.15	0.50	0.08	0.25	0.60	0.30	0.19	0.20	0.15	0.24	0.14	0.50
		sediment type	O2	SL	O2	OLA	O2	L2	O1	SO	O2	L1	O2	SO, O2	O2	SO	O1	O1	OL	O1	O1	SO	O1	O2	O2
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	46_25	46_26	46_27	46_28	46_29	46_30	46_31	46_32	46_33	46_34	46_35	46_36-37	45_4	45_5	67_5_1	67_5_2	67_6	67_7	67_8	67_9	67_10	67_11	67_12
	type	state																							
summer crop annual weeds, annual ruderals																									
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	13.64	40.00	0.00	0.00	8.89	20.00	13.33	71.43	0.00	8.33	0.00	6.67	2.00	12.50	16.00	5.00	0.00	0.00	15.00	20.00	0.00	14.29	4.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	10.00	13.33	42.86	0.00	0.00	0.00	0.00	2.00	25.00	0.00	0.00	0.00	0.00	0.00	6.67	12.50	0.00	6.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	4.55	0.00	8.57	0.00	0.00	0.00	0.00	0.00	6.67	58.33	3.70	0.00	2.00	0.00	0.00	133.33	3.33	0.00	240.00	186.67	425.00	314.29	608.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	256.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	28.57	4.44	8.33	0.00	13.33	0.00	0.00	4.00	1.67	0.00	0.00	10.00	6.67	8.33	28.57	160.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	20.00	0.00	6.25	0.00	10.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	4.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	14.29	0.00
Sonchus asper	seed/fruit	uncharred	0.00	20.00	2.86	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	4.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	2.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	20.00	0.00	0.00	2.22	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	4.00	0.00	0.00	10.53	15.00	0.00	8.33	0.00	8.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	145.45	120.00	2.86	0.00	4.44	0.00	80.00	57.14	4.44	33.33	14.81	40.00	0.00	37.50	288.00	160.00	3.33	0.00	20.00	313.33	225.00	28.57	512.00
density			168.18	260.00	14.29	18.75	15.56	80.00	106.67	228.57	15.56	108.33	22.22	66.67	10.00	87.50	576.00	301.67	10.00	15.79	300.00	533.33	695.83	400.00	1304.00
number of taxa			4.00	7.00	3.00	2.00	3.00	5.00	3.00	6.00	3.00	4.00	3.00	4.00	3.00	4.00	7.00	5.00	3.00	2.00	5.00	5.00	8.00	5.00	8.00
perennial ruderals																									
Arctium spec.	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	344.00	12.50	0.00	18.33	3.33	10.53	35.00	193.33	483.33	507.14	80.00
Arctium spec.	flower	charred	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	2496.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	4.17	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	6.25	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00
density			0.00	20.00	5.71	12.50	4.44	10.00	6.67	0.00	0.00	0.00	0.00	6.67	2840.00	12.50	0.00	18.33	3.33	10.53	35.00	213.33	491.67	507.14	80.00
number of taxa			0.00	1.00	2.00	2.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	3.00	3.00	1.00	1.00
cereals																									
Hordeum vulgare undiff.	seed/fruit	charred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	5.00	13.33	0.00	7.14	4.00
Hordeum vulgare undiff.	rachis segment	charred	9.09	60.00	5.71	0.00	0.00	0.00	20.00	14.29	2.22	16.67	0.00	6.67	2.00	0.00	12.00	11.67	33.33	15.79	55.00	0.00	8.33	7.14	20.00
Hordeum vulgare undiff.	rachis segment	uncharred	50.00	100.00	257.14	250.00	353.33	40.00	26.67	28.57	168.89	91.67	59.26	106.67	6.00	0.00	300.00	321.67	543.33	247.37	475.00	0.00	241.67	42.86	14.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	4.55	100.00	0.00	106.25	95.56	70.00	120.00	57.14	11.11	25.00	11.11	53.33	8.00	0.00	208.00	0.00	3.33	42.11	25.00	0.00	8.33	28.57	30.00
Triticum dicoccum	glume basis	uncharred	154.55	360.00	248.57	537.50	762.22	120.00	466.67	285.71	304.44	275.00	292.59	400.00	364.00	112.50	692.00	405.00	450.00	584.21	1625.00	406.67	700.00	778.57	1410.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	3.70	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	9.09	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.05	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	20.00	5.71	12.50	6.67	0.00	0.00	85.71	11.11	0.00	0.00	40.00	12.00	0.00	36.00	10.00	13.33	0.00	65.00	186.67	45.83	78.57	16.00
Triticum durum/turgidum	rachis segment	uncharred	436.36	300.00	254.29	150.00	162.22	30.00	133.33	100.00	168.89	50.00	155.56	26.67	16.00	12.50	376.00	941.67	626.67	15.79	845.00	53.33	254.17	221.43	442.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	11.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	192.00	21.67	0.00	247.37	20.00	6.67	0.00	0.00	0.00
Cerealia indet.	bran	uncharred	259.09	2940.00	3680.00	2331.25	4486.67	70.00	986.67	571.43	2246.67	1025.00	577.78	1193.33	1668.00	1187.50	2892.00	4108.33	8233.33	2294.74	6585.00	6.67	1825.00	1857.14	2978.00
Cerealia indet.	seed/fruit	charred	0.00	0.00	2.86	0.00	2.22	0.00	6.67	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	7.14	6.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	12.50	0.00	0.00	0.00	526.32	0.00	186.67	175.00	0.00	0.00
Cerealia indet.	chaff	uncharred	13.64	1080.00	551.43	1050.00	302.22	10.00	600.00	328.57	106.67	191.67	300.00	80.00	100.00	100.00	1024.00	885.00	1440.00	1163.16	1685.00	6.67	500.00	857.14	640.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	160.00	2.86	12.50	8.89	10.00	66.67	0.00	6.67	0.00	14.81	40.00	6.00	50.00	0.00	138.33	6.67	0.00	320.00	0.00	12.50	200.00	288.00
Triticum spec.	chaff	uncharred	254.55	460.00	277.14	237.50	426.67	70.00	160.00	228.57	275.56	66.67	192.59	233.33	640.00	237.50	672.00	1085.00	883.33	0.00	820.00	26.67	704.17	542.86	1604.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			1290.00	5580.00	5297.14	4687.50	6611.11	520.00	2586.67	1700.00	3302.22	1750.00	1611.11	2180.00	2828.00	1712.50	6412.00	7931.67	12233.33	5157.89	12525.00	893.33	4479.17	4628.57	7452.00
density cereals determined with bran			931.82	3880.00	4462.86	3387.50	5868.89	430.00	1753.33	1142.86	2913.33	1483.33	1100.00	1826.67	2082.00	1312.50	4716.00	5820.00	9903.33	3468.42	9700.00	673.33	3087.50	3021.43	4914.00
number of taxa			4.00	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00
pulses																									
Fabaceae	pod	uncharred	9.09					60.00							24.00	37.50	52.00	58.33	150.00	0.00	775.00	0.00	8.33	28.57	72.00
Fabaceae	pod	semi-charred	0.00					0.00							0.00	0.00	4.00	3.33	0.00	0.00	0.00	0.00	0.00	7.14	4.00
Fabaceae	pod stem	uncharred	0.00					0.00							2.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	4.17	0.00	0.00
cf. Fabaceae	pod	uncharred	0.00					0.00							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			9.09	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	3.70	0.00	26.00	37.50	56.00	65.00	150.00	0.00	775.00	6.67	12.50	42.86	76.00
number of taxa			1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
oil- and fibre-plants																									
Linum usitatissimum	seed/fruit	charred	0.00	40.00	2.86	0.00	0.00	0.00	0.00	14.29	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	386.36	680.00	365.71	406.25	355.56	190.00	320.00	314.29	426.67	216.67	233.33	380.00	652.00	187.50	1708.00	2088.33	1293.33	1473.68	1740.00	873.33	1175.00	1071.43	1762.00
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	40.91	60.00	11.43	93.75	8.89	10.00	13.33	14.29	8.89	16.67	22.22	26.67	18.00	0.00	20.00	31.67	283.33	36.84	30.00	0.00	12.50	21.43	16.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	286.36	460.00	234.29	468.75	571.11	110.00	226.67	28.57	200.00	300.00	251.85	180.00	306.00	0.00	608.00	678.33	863.33	421.05	1005.00	153.33	500.00	571.43	992.00
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	909.09	2580.00	1600.00	768.75	2280.00	390.00	1426.67	2228.57	2028.89	766.67	651.85	793.33	948.00	1437.50	9476.00	7735.00	7100.00	5752.63	6920.00	2520.00	3175.00	2400.00	2400.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1622.73	3840.00	2214.29	1737.50	3215.56	700.00	1993.33	2600.00	2666.67	1300.00	1162.96	1380.00	1924.00	1625.00	11812.00	10540.00	9540.00	7684.21	9695.00	3546.67	4866.67	4064.29	5170.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																									
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																									
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	4.55	0.00	0.00	0.00	2.22	0.00	20.00	0.00	60.00	8.33	44.44	33.33	8.00	0.00	16.00	10.00	0.00	5.26	25.00	20.00	54.17	71.43	54.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.34	0.30	0.50	0.85	0.60	0.25	1.60	0.40	0.23	0.34	0.08	0.10	0.30	0.20	0.30	0.20	0.80	0.80	3.50	0.65	0.25	1.00	0.26	0.60	0.13
		sediment type	O2	O2	O1	O1	O1	SL	OSLM	OSLM	OL	L1	L2	OL	OL	O1	O2	OL	OL	O1	OL	L1	O2	L1	L1	L1	L1
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U9	U9	U9	U9	U9	U9
		sample nr.	73_8	73_9	73_10	73_11	73_12	88_13	88_14	88_15	89_8	89_9	89_10	89_11	96_16	96_17	96_18	96_19	96_20	92_1	92_2	89_12	89_13	89_14	89_15	89_16	89_17
	type	state																									
summer crop annual weeds, annual ruderals																											
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	547.06	400.00	168.00	141.18	6.67	48.00	1.25	2.50	0.00	0.00	12.50	0.00	10.00	100.00	6.67	10.00	0.00	87.50	100.00	1.54	4.00	4.00	11.54	0.00	7.69
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	1.25	0.00	0.00	0.00	0.00	0.00	3.33	5.00	3.33	0.00	0.00	1.25	0.00	1.54	0.00	0.00	0.00	1.67	15.38
Brassica/Sinapis	seed/fruit	uncharred	5.88	3.33	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	5.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.08
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	0.00	10.00	3.33	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	2.94	3.33	2.00	3.53	133.33	0.00	0.00	0.00	4.35	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	0.00	1.18	5.00	0.00	1.25	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	6.67	2.00	1.18	0.00	0.00	0.00	2.50	0.00	2.94	37.50	10.00	3.33	5.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	2.94	6.67	4.00	4.71	1.67	8.00	0.00	0.00	4.35	0.00	0.00	30.00	0.00	0.00	0.00	5.00	0.00	1.25	0.29	0.00	4.00	1.00	0.00	0.00	7.69
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.85	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	194.12	920.00	240.00	125.88	68.33	360.00	52.50	100.00	8.70	2.94	62.50	20.00	436.67	140.00	13.33	130.00	3.75	150.00	280.00	3.08	64.00	27.00	361.54	20.00	215.38
density			758.82	1340.00	420.00	278.82	226.67	428.00	56.25	105.00	17.39	11.76	137.50	80.00	460.00	250.00	23.33	150.00	6.25	240.00	380.57	6.15	72.00	35.00	388.46	23.33	269.23
number of taxa			6.00	6.00	6.00	7.00	9.00	4.00	4.00	3.00	3.00	4.00	5.00	5.00	6.00	4.00	3.00	4.00	2.00	4.00	4.00	3.00	3.00	4.00	4.00	3.00	5.00
perennial ruderals																											
Arctium spec.	seed/fruit	uncharred	2.94	63.33	38.00	32.94	21.67	8.00	1.25	2.50	4.35	0.00	0.00	0.00	13.33	0.00	3.33	0.00	1.25	32.50	0.29	0.00	0.00	0.00	0.00	0.00	69.23
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.94	63.33	38.00	32.94	23.33	8.00	1.88	2.50	4.35	0.00	0.00	0.00	20.00	5.00	3.33	0.00	1.25	32.50	0.29	0.00	4.00	0.00	3.85	0.00	69.23
number of taxa			1.00	1.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00	0.00	0.00	0.00	3.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
cereals																											
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	4.00	2.35	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	6.67	6.00	16.47	6.67	156.00	21.88	10.00	17.39	8.82	0.00	0.00	3.33	10.00	0.00	5.00	3.75	2.50	0.86	0.00	4.00	5.00	46.15	1.67	107.69
Hordeum vulgare undiff.	rachis segment	uncharred	2.94	13.33	0.00	4.71	18.33	8.00	0.63	12.50	13.04	50.00	100.00	100.00	0.00	0.00	10.00	0.00	3.75	10.00	158.00	1.54	16.00	2.00	38.46	1.67	30.77
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	11.76	0.00	4.00	137.65	13.33	204.00	104.38	0.00	13.04	11.76	12.50	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	3.08	0.00	0.00	269.23	16.67	315.38
Triticum dicoccum	glume basis	uncharred	176.47	0.00	0.00	474.12	300.00	356.00	9.38	145.00	121.74	50.00	50.00	0.00	270.00	295.00	6.67	125.00	210.00	228.75	422.29	0.00	40.00	35.00	115.38	6.67	200.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	100.00	35.63	105.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	16.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	40.00	216.00	7.06	11.67	192.00	189.38	60.00	0.00	5.88	0.00	6.67	0.00	3.33	10.00	11.67	10.00	22.50	12.29	0.00	32.00	25.00	100.00	0.00	253.85
Triticum durum/turgidum	rachis segment	uncharred	29.41	0.00	68.00	160.00	161.67	112.00	61.88	210.00	204.35	164.71	175.00	40.00	173.33	175.00	73.33	20.00	160.00	143.75	346.57	23.08	20.00	1.00	84.62	0.00	153.85
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	312.00	136.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	2.00	2.35	6.67	48.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00	20.00	50.00	250.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	bran	uncharred	741.18	6.67	120.00	2248.24	1303.33	100.00	240.00	865.00	17.39	394.12	650.00	70.00	2523.33	2180.00	366.67	330.00	278.75	1560.00	2592.00	3.08	96.00	15.00	523.08	130.00	646.15
Cerealia indet.	seed/fruit	charred	2.94	0.00	8.00	0.00	0.00	8.00	1.88	2.50	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	3.85	0.00	15.38
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	5.00	120.00	107.50	12.50	0.00	2.94	25.00	0.00	10.00	0.00	20.00	0.00	0.00	62.50	4.00	0.00	24.00	6.00	0.00	0.00	30.77
Cerealia indet.	chaff	uncharred	176.47	10.00	240.00	235.29	440.00	48.00	35.00	0.00	13.04	358.82	362.50	30.00	196.67	220.00	20.00	200.00	0.00	666.25	1927.71	3.08	36.00	2.00	323.08	26.67	538.46
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	0.00	0.00	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.57	0.00	16.00	13.00	138.46	30.00	123.08
Triticum spec.	chaff	uncharred	161.76	23.33	0.00	510.59	510.00	72.00	0.00	0.00	17.39	194.12	337.50	90.00	236.67	20.00	0.00	60.00	205.00	0.00	0.00	15.38	48.00	18.00	330.77	23.33	600.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			1308.82	106.67	550.00	3798.82	2778.33	1964.00	989.38	1427.50	417.39	1241.18	1737.50	340.00	3410.00	2930.00	1086.67	830.00	1065.00	2947.50	5474.57	49.23	336.00	124.00	1973.08	236.67	3015.38
density cereals determined with bran			961.76	66.67	420.00	3052.94	1823.33	1604.00	845.00	1412.50	386.96	685.29	987.50	220.00	2976.67	2680.00	1066.67	550.00	857.50	2218.75	3542.00	30.77	212.00	85.00	1176.92	156.67	1707.69
number of taxa			3.00	2.00	3.00	3.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	4.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00
pulses																											
Fabaceae	pod	uncharred	0.00		4.00	31.76	41.67	44.00	2.50		8.70			10.00	26.67	10.00	13.33	55.00	31.25		0.29						
Fabaceae	pod	semi-charred	0.00		0.00	1.18	3.33	0.00	0.00		0.00			0.00	0.00	0.00	0.00	0.00	0.00		0.00						
Fabaceae	pod stem	uncharred	0.00		0.00	0.00	6.67	0.00	0.00		0.00			0.00	0.00	0.00	3.33	0.00	1.25		0.00						
cf. Fabaceae	pod	uncharred	0.00		0.00	0.00	0.00	0.00	0.00		0.00			0.00	0.00	0.00	0.00	0.00	0.00		0.00						
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	4.00	32.94	51.67	44.00	2.50	0.00	8.70	0.00	0.00	10.00	26.67	20.00	16.67	55.00	32.50	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
oil- and fibre-plants																											
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	482.35	1203.33	842.00	927.06	658.33	804.00	258.13	362.50	347.83	294.12	287.50	230.00	1043.33	1245.00	1663.33	1000.00	816.25	1125.00	1940.29	30.77	116.00	69.00	534.62	60.00	630.77
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	23.53	0.00	4.00	3.53	13.33	56.00	5.00	5.00	4.35	64.71	50.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08	8.00	10.00	103.85	3.33	107.69
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	5.88	243.33	266.00	302.35	258.33	364.00	90.63	160.00	108.70	300.00	175.00	100.00	533.33	1070.00	1093.33	395.00	595.00	1041.25	1528.86	6.15	36.00	14.00	307.69	20.00	761.54
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	4591.18	8440.00	4324.00	3500.00	1908.33	2620.00	2121.25	4087.50	608.70	1758.82	3912.50	1040.00	1940.00	1820.00	1866.67	735.00	530.00	1247.50	1302.00	270.77	1316.00	185.00	1392.31	383.33	3430.77
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
density			5102.94	9886.67	5436.00	4732.94	2838.33	3844.00	2475.00	4615.00	1069.57	2417.65	4425.00	1380.00	3533.33	4140.00	4630.00	2135.00	1941.25	3413.75	4771.14	310.77	1480.00	279.00	2338.46	466.67	4930.77
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																											
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	5.88	3.33	2.00	0.00	0.00	0.00	0.00	0.00	4.35	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			5.88	3.33	2.00	0.00	1.67	0.00	0.00	0.00	4.35	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																											
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	23.53	0.00	18.00	8.24	3.33	44.00	3.75	2.50	4.35	0.00	0.00	0.00	10.00	25.00	0.00	5.00	10.00	27.50	4.57	0.00	0.00	2.00	38.46	0.00	23.08
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.22	0.05	0.35	0.16	0.45	0.10	0.15	0.07	0.45	0.12	0.27	0.15	0.50	0.08	0.25	0.60	0.30	0.19	0.20	0.15	0.24	0.14	0.50
		sediment type	O2	SL	O2	OLA	O2	L2	O1	SO	O2	L1	O2	SO, O2	O2	SO	O1	O1	OL	O1	O1	SO	O1	O2	O2
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	**46_25**	**46_26**	**46_27**	**46_28**	**46_29**	**46_30**	**46_31**	**46_32**	**46_33**	**46_34**	**46_35**	**46_36-37**	**45_4**	**45_5**	**67_5_1**	**67_5_2**	**67_6**	**67_7**	**67_8**	**67_9**	**67_10**	**67_11**	**67_12**
	type	**state**																							
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	1.67	0.00	0.00	5.00	0.00	0.00	7.14	6.00
Fragaria vesca	seed/fruit	uncharred	236.36	120.00	137.14	112.50	8.89	40.00	26.67	0.00	6.67	16.67	14.81	73.33	258.00	100.00	16.00	1013.33	696.67	315.79	285.00	220.00	125.00	200.00	288.00
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	9.09	0.00	5.71	6.25	22.22	0.00	40.00	14.29	15.56	33.33	7.41	13.33	18.00	0.00	12.00	16.67	30.00	5.26	35.00	13.33	16.67	21.43	16.00
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	4.55	80.00	5.71	31.25	20.00	10.00	40.00	71.43	33.33	16.67	22.22	60.00	50.00	12.50	40.00	35.00	146.67	42.11	50.00	13.33	66.67	35.71	58.00
Malus/Pyrus	stem	uncharred	0.00	0.00	2.86	0.00	2.22	0.00	6.67	0.00	2.22	0.00	7.41	0.00	2.00	0.00	0.00	1.67	3.33	0.00	20.00	0.00	4.17	0.00	0.00
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	9.09	80.00	0.00	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	12.50	0.00	0.00	0.00	5.26	0.00	6.67	0.00	14.29	2.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	3.70	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	5.26	100.00	53.33	20.83	7.14	4.00
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	4.55	0.00	2.86	12.50	15.56	0.00	13.33	0.00	6.67	0.00	0.00	0.00	2.00	0.00	4.00	5.00	13.33	31.58	1240.00	286.67	133.33	7.14	12.00
Rosa spec.	seed/fruit	uncharred	0.00	0.00	45.71	0.00	11.11	0.00	0.00	0.00	0.00	0.00	14.81	20.00	20.00	12.50	4.00	8.33	0.00	0.00	5.00	0.00	0.00	0.00	8.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	0.00	20.00	2.86	6.25	0.00	0.00	0.00	14.29	2.22	0.00	11.11	60.00	6.00	25.00	4.00	5.00	0.00	0.00	0.00	26.67	4.17	28.57	10.00
Rubus fruticosus/idaeus	seed/fruit	uncharred	0.00	140.00	711.43	356.25	142.22	0.00	6.67	0.00	0.00	8.33	7.41	6.67	4.00	0.00	160.00	186.67	0.00	0.00	10.00	0.00	4.17	21.43	0.00
Rubus idaeus	seed/fruit	uncharred	831.82	420.00	845.71	631.25	268.89	120.00	6.67	42.86	6.67	16.67	74.07	60.00	98.00	12.50	576.00	560.00	3.33	173.68	5.00	26.67	125.00	228.57	160.00
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	4.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00
density			1104.55	900.00	1760.00	1162.50	495.56	190.00	166.67	142.86	133.33	108.33	207.41	340.00	472.00	175.00	840.00	1846.67	896.67	584.21	1780.00	666.67	558.33	650.00	622.00
number of taxa			7.00	6.00	6.00	6.00	7.00	5.00	6.00	3.00	6.00	4.00	7.00	8.00	10.00	6.00	8.00	9.00	4.00	6.00	7.00	7.00	7.00	9.00	10.00
various unassigned plants																							
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
Asteraceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	flower	uncharred	0.00	0.00	0.00	6.25	2.22	0.00	0.00	0.00	0.00	0.00	14.81	6.67	0.00	0.00	16.00	8.33	6.67	0.00	5.00	0.00	20.83	28.57	6.00
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.43	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.67	0.00	14.29	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	9.09	20.00	0.00	6.25	0.00	10.00	93.33	71.43	0.00	16.67	7.41	20.00	0.00	12.50	12.00	6.67	3.33	10.53	440.00	280.00	450.00	542.86	546.00
Caryophyllaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	16.67	7.14	0.00
Cerastium spec.	seed/fruit	uncharred	109.09	60.00	320.00	93.75	266.67	20.00	93.33	57.14	8.89	41.67	14.81	13.33	4.00	12.50	388.00	320.00	0.00	173.68	15.00	220.00	225.00	171.43	288.00
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	4.55	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	12.50	0.00	1.67	0.00	0.00	0.00	0.00	4.17	14.29	6.00
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	0.00	0.00	8.57	0.00	0.00	0.00	0.00	42.86	0.00	33.33	7.41	33.33	0.00	0.00	0.00	186.67	6.67	0.00	200.00	0.00	125.00	142.86	320.00
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.67	0.00	14.29	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	7.14	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	2.00	0.00	4.00	1.67	0.00	0.00	0.00	0.00	8.33	21.43	4.00
Lamiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	16.67	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	5.26	0.00	13.33	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	12.00	1.67	0.00	0.00	0.00	6.67	0.00	28.57	0.00
Poaceae	seed/fruit	charred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	4.55	0.00	5.71	25.00	35.56	0.00	13.33	0.00	8.89	25.00	14.81	0.00	4.00	0.00	8.00	1.67	0.00	0.00	5.00	0.00	16.67	200.00	160.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	8.00	0.00	3.33	0.00	10.00	0.00	4.17	14.29	192.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	13.64	40.00	0.00	0.00	0.00	0.00	13.33	0.00	2.22	0.00	0.00	0.00	2.00	0.00	16.00	0.00	0.00	5.26	0.00	220.00	12.50	314.29	6.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.00	26.67	150.00	14.29	0.00
Rumex spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	7.14	4.00
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.34	0.30	0.50	0.85	0.60	0.25	1.60	0.40	0.23	0.34	0.08	0.10	0.30	0.20	0.30	0.20	0.80	0.80	3.50	0.65	0.25	1.00	0.26	0.60	0.13
		sediment type	O2	O2	O1	O1	O1	SL	OSLM	OSLM	OL	L1	L2	OL	OL	O1	O2	OL	OL	O1	OL	L1	O2	L1	OL	L1	L1
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U9	U9	U9	U9	U9	U9
		sample nr.	**73_8**	**73_9**	**73_10**	**73_11**	**73_12**	**88_13**	**88_14**	**88_15**	**89_8**	**89_9**	**89_10**	**89_11**	**96_16**	**96_17**	**96_18**	**96_19**	**96_20**	**92_1**	**92_2**	**89_12**	**89_13**	**89_14**	**89_15**	**89_16**	**89_17**
	type	**state**																									
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	pericarp	uncharred	0.00	0.00	0.00	2.35	3.33	4.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.29	0.00	0.00	0.00	3.85	0.00	0.00
Fragaria vesca	seed/fruit	uncharred	141.18	523.33	554.00	285.88	96.67	120.00	182.50	500.00	86.96	0.00	37.50	20.00	86.67	0.00	3.33	0.00	0.00	62.50	0.57	1.54	0.00	2.00	3.85	0.00	15.38
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	11.76	6.67	12.00	18.82	18.33	4.00	2.50	27.50	0.00	2.94	0.00	20.00	20.00	0.00	46.67	5.00	1.25	51.25	10.29	0.00	4.00	4.00	30.77	0.00	30.77
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	4.00	1.18	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	14.71	16.67	10.00	50.59	63.33	12.00	16.25	77.50	4.35	8.82	25.00	0.00	33.33	20.00	76.67	15.00	2.50	70.00	13.71	0.00	4.00	1.00	3.85	1.67	84.62
Malus/Pyrus	stem	uncharred	5.88	0.00	0.00	1.18	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33	5.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	7.69
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	5.88	10.00	2.00	2.35	1.67	8.00	0.63	75.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	5.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	23.08
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	2.94	0.00	0.00	24.71	38.33	8.00	0.00	2.50	4.35	2.94	0.00	0.00	3.33	0.00	0.00	0.00	2.50	7.50	0.29	0.00	0.00	0.00	0.00	6.67	207.69
Rosa spec.	seed/fruit	uncharred	5.88	3.33	4.00	2.35	0.00	4.00	0.00	5.00	0.00	0.00	0.00	0.00	3.33	5.00	0.00	0.00	1.25	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	2.94	13.33	8.00	1.18	0.00	76.00	45.63	12.50	0.00	0.00	0.00	0.00	10.00	0.00	3.33	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	76.92
Rubus fruticosus/idaeus	seed/fruit	uncharred	8.82	0.00	2.00	3.53	5.00	0.00	0.00	75.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	1.25	0.00	0.29	0.00	0.00	1.00	38.46	0.00	7.69
Rubus idaeus	seed/fruit	uncharred	91.18	360.00	336.00	4.71	3.33	352.00	468.13	1167.50	0.00	0.00	25.00	30.00	83.33	30.00	533.33	0.00	3.75	101.25	1.14	3.08	12.00	2.00	130.77	23.33	0.00
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	3.33	2.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	12.50	0.00	0.00	0.00	3.33	0.00	0.00	2.50	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			314.71	940.00	962.00	408.24	238.33	632.00	721.25	1945.00	100.00	17.65	100.00	70.00	256.67	80.00	673.33	35.00	22.50	333.75	35.71	4.62	24.00	15.00	250.00	31.67	476.92
number of taxa			8.00	8.00	8.00	10.00	7.00	9.00	9.00	8.00	4.00	2.00	4.00	3.00	7.00	4.00	6.00	3.00	5.00	7.00	8.00	2.00	3.00	6.00	5.00	3.00	5.00
various unassigned plants																									
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	flower	uncharred	2.94	0.00	0.00	9.41	96.67	0.00	0.00	7.50	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	88.24	13.33	194.00	156.47	160.00	4.00	1.88	0.00	0.00	0.00	25.00	0.00	0.00	0.00	3.33	0.00	0.00	1.25	0.00	0.00	0.00	2.00	7.69	1.67	0.00
Caryophyllaceae	seed/fruit	uncharred	194.12	0.00	0.00	297.65	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Cerastium spec.	seed/fruit	uncharred	564.71	560.00	168.00	174.12	120.00	48.00	1.88	62.50	0.00	35.29	150.00	10.00	83.33	20.00	0.00	20.00	1.25	2.50	0.57	3.08	8.00	3.00	61.54	23.33	138.46
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	0.00	0.00	0.00	2.35	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	200.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	158.82	1160.00	480.00	94.12	108.33	0.00	0.00	0.00	0.00	8.82	62.50	0.00	3.33	0.00	0.00	0.00	0.00	2.50	0.57	1.54	0.00	0.00	3.85	3.33	30.77
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	8.82	0.00	0.00	0.00	93.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamiaceae	seed/fruit	uncharred	2.94	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa* spec.	seed/fruit	uncharred	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	0.00	10.00	2.00	1.18	0.00	0.00	1.88	0.00	0.00	5.88	0.00	0.00	3.33	0.00	0.00	0.00	2.50	3.75	100.00	0.00	0.00	0.00	3.85	0.00	0.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	1.18	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	0.00	0.00	0.00	3.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	13.33	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	10.00	3.33	0.00	1.25	1.25	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	3.33	6.00	4.71	5.00	4.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	1.00	0.00	0.00	23.08
Rumex spec.	flower	uncharred	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	4.00	2.35	0.00	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.22	0.05	0.35	0.16	0.45	0.10	0.15	0.07	0.45	0.12	0.27	0.15
		sediment type	O2	SL	O2	OLA	O2	L2	O1	SO	O2	L1	O2	SO, O2
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	**46_25**	**46_26**	**46_27**	**46_28**	**46_29**	**46_30**	**46_31**	**46_32**	**46_33**	**46_34**	**46_35**	**46_36-37**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	4.44	0.00	0.00	14.29	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			145.45	160.00	334.29	143.75	308.89	40.00	253.33	200.00	28.89	158.33	70.37	93.33
number of taxa			6.00	5.00	3.00	5.00	4.00	3.00	6.00	5.00	6.00	5.00	8.00	6.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	6.25	0.00	0.00	20.00	42.86	0.00	0.00	7.41	0.00
Indeterminata	seed/fruit	uncharred	0.00	240.00	8.57	31.25	28.89	0.00	100.00	128.57	26.67	33.33	88.89	40.00
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.00	33.33	14.29	0.00	0.00	3.70	0.00
density			0.00	240.00	8.57	37.50	28.89	0.00	153.33	185.71	26.67	33.33	100.00	40.00
density total			4936.36	12700.00	10465.71	8793.75	11406.67	2150.00	7060.00	6771.43	7673.33	4650.00	5359.26	4893.33
number of taxa total			42.00	44.00	36.00	31.00	36.00	31.00	42.00	39.00	42.00	39.00	44.00	51.00
charred all density			27.27	440.00	20.00	143.75	115.56	110.00	266.67	228.57	35.56	50.00	59.26	140.00
semi-charred all density			0.00	0.00	11.43	0.00	2.22	0.00	6.67	0.00	0.00	0.00	3.70	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.50	0.08	0.25	0.60	0.30	0.19	0.20	0.15	0.24	0.14	0.50	0.34
		sediment type	O2	SO	O1	O1	OL	O1	O1	SO	O1	O2	O2	O2
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	**45_4**	**45_5**	**67_5_1**	**67_5_2**	**67_6**	**67_7**	**67_8**	**67_9**	**67_10**	**67_11**	**67_12**	**73_8**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	1.67	0.00	5.26	0.00	220.00	0.00	7.14	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	21.43	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	3.33	0.00	5.00	0.00	0.00	0.00	2.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00
density			14.00	50.00	500.00	536.67	36.67	200.00	895.00	1040.00	1058.33	1628.57	1540.00	1026.47
number of taxa			5.00	4.00	11.00	11.00	6.00	5.00	11.00	12.00	15.00	21.00	13.00	9.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	4.17	0.00	2.00	0.00
Indeterminata	seed/fruit	uncharred	6.00	0.00	12.00	0.00	0.00	0.00	40.00	246.67	225.00	135.71	20.00	17.65
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	2.94
density			6.00	0.00	12.00	0.00	10.00	0.00	40.00	246.67	229.17	142.86	22.00	20.59
density total			9410.00	4450.00	21128.00	22898.33	23973.33	14494.74	28385.00	8966.67	15691.67	15228.57	20872.00	9400.00
number of taxa total			51.00	35.00	60.00	63.00	41.00	35.00	54.00	55.00	73.00	72.00	75.00	60.00
charred all density			30.00	75.00	264.00	165.00	66.67	584.21	470.00	386.67	258.33	350.00	366.00	23.53
semi-charred all density			4.00	0.00	4.00	3.33	0.00	0.00	0.00	0.00	4.17	7.14	4.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.30	0.50	0.85	0.60	0.25	1.60	0.40	0.23	0.34	0.08	0.10	0.30
		sediment type	O2	O1	O1	O1	SL	OSLM	OSLM	OL	L1	L2	OL	OL
		unit	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8	U8
		sample nr.	**73_9**	**73_10**	**73_11**	**73_12**	**88_13**	**88_14**	**88_15**	**89_8**	**89_9**	**89_10**	**89_11**	**96_16**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1980.00	872.00	748.24	760.00	60.00	8.13	75.00	4.35	55.88	250.00	20.00	96.67
number of taxa			10.00	8.00	10.00	12.00	4.00	5.00	4.00	1.00	4.00	4.00	2.00	5.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	23.33	10.00	14.12	41.67	0.00	0.00	0.00	0.00	32.35	75.00	0.00	13.33
Indeterminata	AOV	charred	0.00	12.00	1.18	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			23.33	34.00	15.29	50.00	0.00	0.00	0.00	0.00	32.35	100.00	0.00	13.33
density total			17033.33	9640.00	11155.29	9250.00	7536.00	4366.88	8982.50	2217.39	4032.35	7287.50	2260.00	8896.67
number of taxa total			50.00	47.00	66.00	74.00	40.00	41.00	35.00	21.00	34.00	32.00	27.00	50.00
charred all density			53.33	280.00	167.06	46.67	1208.00	598.75	195.00	30.43	32.35	87.50	20.00	13.33
semi-charred all density			0.00	0.00	1.18	3.33	0.00	0.00	5.00	0.00	0.00	12.50	0.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.20	0.30	0.20	0.80	0.80	3.50	0.65	0.25	1.00	0.26	0.60	0.13
		sediment type	O1	O2	OL	OL	O1	OL	L1	O2	L1	OL	L1	L1
		unit	U8	U8	U8	U8	U8	U8	U9	U9	U9	U9	U9	U9
		sample nr.	**96_17**	**96_18**	**96_19**	**96_20**	**92_1**	**92_2**	**89_12**	**89_13**	**89_14**	**89_15**	**89_16**	**89_17**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	7.69
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			35.00	10.00	20.00	5.00	17.50	102.29	4.62	16.00	6.00	84.62	30.00	230.77
number of taxa			3.00	3.00	1.00	3.00	9.00	7.00	2.00	3.00	3.00	5.00	4.00	8.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	5.00	15.38
Indeterminata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	8.00	34.62	3.33	53.85
Indeterminata	AOV	charred	10.00	0.00	0.00	1.25	2.50	0.57	0.00	0.00	0.00	3.85	0.00	23.08
density			10.00	0.00	0.00	1.25	2.50	0.57	0.00	24.00	8.00	38.46	8.33	92.31
density total			8460.00	7370.00	3605.00	4373.75	8202.50	11723.14	413.85	2088.00	517.00	6153.85	1108.33	13030.77
number of taxa total			34.00	33.00	26.00	29.00	50.00	38.00	24.00	26.00	32.00	37.00	31.00	43.00
charred all density			50.00	13.33	40.00	58.75	92.50	21.71	3.08	88.00	52.00	573.08	53.33	915.38
semi-charred all density			5.00	0.00	20.00	0.00	0.00	0.29	0.00	4.00	2.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.13	1.00	0.15	0.70	0.50	1.50	0.14	0.14	1.00	0.30	1.20	0.30	0.30	0.45	0.55	0.60	0.40
		sediment type	L1	L2	O2	L1	OS	L1	L1	O2	L1	OL	L1	L1	O2	L1	L1	O2	L1
		unit	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9
		sample nr.	89_18	92_3	92_4	92_5	92_6	92_7	101_1	101_2	101_3	101_4-7	101_8	101_9	101_10-11	101_12	101_13	101_14-16	101_17
	type	state																	
aquatic plants oligotrophic																			
Chara spec.	oog	uncharred	46.15	1.00	0.00	0.00	0.00	0.67	42.86	14.29	10.00	3.33	2.50	13.33	3.33	20.00	3.64	5.00	10.00
Chara spec.	oogK	uncharred	223.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.82	6.67	65.00
Nitella spec.	oog	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			269.23	1.00	0.00	0.00	0.00	0.67	42.86	14.29	10.00	3.33	2.50	13.33	3.33	20.00	25.45	11.67	75.00
number of taxa			1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
aquatic plants meso-/eutrophic																			
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	5.00
Najas minor	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	825.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.50
Najas intermedia/marina	fruit whole	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	35.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
Nuphar spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	6.67	0.00	0.00	0.00	0.00	7.14	0.00	0.00	1.67	0.00	0.00	0.00	1.82	0.00	900.00
number of taxa			0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	0.00	3.00
reed bed and sedge swamp plants																			
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	15.38	0.00	0.00	1.43	0.00	18.67	21.43	0.00	4.00	0.00	0.00	0.00	3.33	2.22	0.00	0.00	7.50
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	15.38	0.00	26.67	0.00	4.00	0.00	0.00	0.00	1.00	3.33	0.83	3.33	3.33	0.00	0.00	5.00	0.00
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	1.00	0.00	0.00	2.00	1.33	0.00	7.14	1.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	2.50
density			30.77	1.00	26.67	1.43	6.00	20.00	28.57	7.14	6.00	3.33	1.67	3.33	6.67	2.22	0.00	5.00	15.00
number of taxa			2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	3.00	1.00	2.00	1.00	2.00	1.00	0.00	1.00	3.00
wet grassland plants																			
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	7.69	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	15.38	0.00	0.00	1.43	8.00	2.67	7.14	14.29	2.00	0.00	0.00	13.33	6.67	11.11	0.00	43.33	2.50
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	23.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.33	0.00	0.00	3.33	0.00	1.82	1.67	2.50
Scirpus sylvaticus	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	76.92	0.00	0.00	1.43	0.00	0.67	7.14	0.00	1.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			130.77	1.00	0.00	2.86	8.00	3.33	14.29	14.29	4.00	6.67	0.83	13.33	10.00	11.11	1.82	46.67	5.00
number of taxa			5.00	1.00	0.00	2.00	1.00	2.00	2.00	1.00	3.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	2.00
shoreline pioneers incl. shore weeds																			
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	3.33	0.00	0.00	0.00	3.33	5.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	13.33	0.00	0.00	2.00	0.00	0.00	1.00	0.00	0.83	0.00	0.00	4.44	3.64	3.33	7.50
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	1.00	13.33	0.00	2.00	2.00	0.00	0.00	5.00	0.00	0.83	6.67	0.00	4.44	3.64	6.67	15.00
number of taxa			0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	4.00	0.00	1.00	2.00	0.00	1.00	1.00	2.00	3.00
wetland plants unassigned																			
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	3.33	0.00	0.00	1.82	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	2.50
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	1.00	13.33	0.00	4.00	1.33	0.00	0.00	0.00	0.00	0.00	3.33	0.00	2.22	0.00	0.00	0.00
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	1.00	13.33	0.00	4.00	1.33	0.00	0.00	2.00	0.00	1.67	6.67	0.00	2.22	1.82	0.00	2.50
number of taxa			0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	2.00	2.00	0.00	1.00	1.00	0.00	1.00
riparian woodland and carr plants																			
Alnus cf. *glutinosa*	seed/fruit	uncharred	0.00	0.00	0.00	2.86	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.25	0.05	0.28	0.42	0.25	0.70	0.90	0.08	0.25	0.55	0.80	0.30	0.58	0.55	0.40	0.15
		sediment type	MO2	OS	O2S	O1	O2	MO3_SM	MO3_OS	SL	O2	L2	L1	MO2	O2	SM	O1	SO
		unit	U10	U10	U10	U10	U10	U10	U10, U9	U11	U11	U11	U11	U12	U12	U12, U11	U13	U13
		sample nr.	45_6	67_13	73_13	73_14	89_19	101_20-21	101_18-19	45_7	45_8-9	45_10	89_20	45_11	73_15	101_22	45_12	45_13
	type	state																
aquatic plants oligotrophic																		
Chara spec.	oog	uncharred	4.00	180.00	871.43	647.62	36.00	160.00	1.11	0.00	60.00	10.91	525.00	60.00	634.48	656.36	97.50	213.33
Chara spec.	oogK	uncharred	4.00	340.00	1946.43	2266.67	76.00	240.00	13.33	0.00	8.00	5.45	656.25	10.00	206.90	570.91	0.00	13.33
Nitella spec.	oog	uncharred	0.00	60.00	3.57	133.33	0.00	2.86	0.00	0.00	0.00	3.64	0.00	13.33	0.00	230.91	67.50	6.67
density			8.00	580.00	2821.43	3047.62	112.00	402.86	14.44	0.00	68.00	20.00	1181.25	83.33	841.38	1458.18	165.00	233.33
number of taxa			1.00	2.00	2.00	2.00	1.00	2.00	1.00	0.00	1.00	2.00	1.00	2.00	1.00	2.00	2.00	2.00
aquatic plants meso-/eutrophic																		
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	0.00	40.00	10.71	4.76	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	1.72	101.82	52.50	200.00
Najas minor	seed/fruit	uncharred	48.00	40.00	0.00	2.38	0.00	737.14	20.00	50.00	8.00	27.27	0.00	416.67	0.00	192.73	67.50	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	4.00	60.00	7.14	19.05	0.00	80.00	3.33	12.50	8.00	5.45	1.25	113.33	12.07	183.64	1097.50	793.33
Najas intermedia/marina	fruit whole	uncharred	0.00	0.00	7.14	7.14	0.00	8.57	1.11	0.00	4.00	1.82	0.00	16.67	3.45	30.91	157.50	100.00
Najas spec.	seed/fruit	uncharred	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.00	160.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.50	33.33
Nuphar spec.	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	20.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	42.50	26.67
density			52.00	160.00	28.57	33.33	0.00	827.14	25.56	62.50	20.00	34.55	1.25	553.33	17.24	510.91	1722.50	1333.33
number of taxa			2.00	4.00	2.00	3.00	0.00	3.00	3.00	2.00	2.00	2.00	1.00	3.00	2.00	4.00	6.00	4.00
reed bed and sedge swamp plants																		
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	4.00	0.00	10.71	2.38	0.00	0.00	3.33	50.00	8.00	18.18	0.00	10.00	6.90	7.27	10.00	0.00
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	7.14	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Phragmites australis	seed/fruit	uncharred	0.00	0.00	10.71	9.52	0.00	4.29	1.11	12.50	0.00	0.00	0.00	3.33	1.72	1.82	2.50	6.67
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	0.00	0.00	7.14	7.14	0.00	0.00	1.11	0.00	0.00	0.00	0.00	66.67	3.45	20.00	1180.00	4300.00
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	12.00	0.00	3.57	0.00	4.00	0.00	0.00	0.00	12.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00
density			16.00	0.00	32.14	26.19	4.00	5.71	5.56	62.50	24.00	20.00	0.00	80.00	15.52	30.91	1192.50	4313.33
number of taxa			2.00	0.00	4.00	4.00	1.00	2.00	3.00	2.00	3.00	2.00	0.00	3.00	4.00	4.00	3.00	3.00
wet grassland plants																		
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	10.71	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	20.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	48.00	80.00	557.14	647.62	16.00	0.00	1.11	0.00	8.00	0.00	0.00	3.33	331.03	1.82	0.00	0.00
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	4.00	0.00	85.71	190.48	12.00	2.86	0.00	0.00	0.00	1.82	0.00	0.00	70.69	16.36	60.00	6.67
Scirpus sylvaticus	seed/fruit	uncharred	4.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	40.00	114.29	114.29	0.00	0.00	0.00	0.00	8.00	0.00	0.00	3.33	0.00	0.00	2.50	0.00
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00
density			56.00	140.00	778.57	954.76	28.00	2.86	1.11	0.00	20.00	5.45	1.25	16.67	401.72	18.18	67.50	6.67
number of taxa			3.00	3.00	6.00	4.00	2.00	1.00	1.00	0.00	3.00	2.00	1.00	4.00	2.00	2.00	3.00	1.00
shoreline pioneers incl. shore weeds																		
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	14.29	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	2.50	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	1014.29	190.48	4.00	0.00	1.11	0.00	4.00	1.82	0.00	0.00	82.76	0.00	10.00	6.67
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	142.86	7.14	0.00	1.43	0.00	12.50	4.00	0.00	0.00	0.00	1.72	0.00	37.50	80.00
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	114.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	2.50	6.67
density			0.00	20.00	1285.71	211.90	4.00	1.43	1.11	12.50	8.00	1.82	0.00	6.67	84.48	1.82	55.00	93.33
number of taxa			0.00	1.00	4.00	4.00	1.00	1.00	1.00	1.00	2.00	1.00	0.00	2.00	2.00	1.00	5.00	3.00
wetland plants unassigned																		
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	1.82	0.00	0.00	0.00	1.82	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	4.00	0.00	10.71	0.00	0.00	2.86	0.00	37.50	0.00	3.64	0.00	0.00	0.00	0.00	0.00	6.67
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	20.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			4.00	20.00	10.71	2.38	0.00	2.86	1.11	50.00	4.00	5.45	0.00	3.33	0.00	1.82	0.00	6.67
number of taxa			1.00	1.00	1.00	1.00	0.00	1.00	1.00	2.00	1.00	2.00	0.00	1.00	0.00	1.00	0.00	1.00
riparian woodland and carr plants																		
Alnus cf. *glutinosa*	seed/fruit	uncharred	4.00	20.00	3.57	0.00	0.00	1.43	0.00	25.00	8.00	1.82	0.00	0.00	0.00	3.64	67.50	80.00
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00	62.50	20.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.20	0.30	0.30	0.30	0.15	0.15	0.18	0.02	0.18	0.53	0.28	0.30	0.40	0.45	1.10	0.40
		sediment type	O1	SO	M2	M1	M1	M2	O2	OSA	OL	M3	OS	M1	M1	M2	M1	M2
		unit	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U14	U14	U14	U14
		sample nr.	45_14	45_15	45_16	45_17	45_18	45_19	67_14	67_15	67_16	67_17	73_16	101_23	45_20	45_21	45_22	45_23
	type	state																
aquatic plants oligotrophic																		
Chara spec.	oog	uncharred	220.00	693.33	733.33	1140.00	1906.67	2126.67	333.33	2600.00	933.33	3445.28	4414.29	1890.00	3315.00	2177.78	906.36	690.00
Chara spec.	oogK	uncharred	180.00	1070.00	393.33	1640.00	2920.00	3260.00	288.89	1700.00	755.56	1105.66	1785.71	1983.33	880.00	204.44	1031.82	632.50
Nitella spec.	oog	uncharred	20.00	70.00	130.00	353.33	320.00	2226.67	83.33	250.00	166.67	867.92	114.29	546.67	405.00	8.89	21.82	2.50
density			420.00	1833.33	1256.67	3133.33	5146.67	7613.33	705.56	4550.00	1855.56	5418.87	6314.29	4420.00	4600.00	2391.11	1960.00	1325.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
aquatic plants meso-/eutrophic																		
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas flexilis	seed/fruit	uncharred	290.00	840.00	146.67	100.00	20.00	40.00	22.22	100.00	16.67	301.89	171.43	66.67	5.00	0.00	19.09	5.00
Najas minor	seed/fruit	uncharred	10.00	380.00	30.00	3.33	6.67	0.00	11.11	0.00	100.00	60.38	3.57	93.33	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	390.00	1353.33	160.00	123.33	26.67	13.33	61.11	100.00	77.78	284.91	310.71	50.00	0.00	0.00	1.82	0.00
Najas intermedia/marina	fruit whole	uncharred	95.00	110.00	46.67	6.67	0.00	0.00	44.44	100.00	11.11	126.42	3.57	163.33	2.50	0.00	0.91	2.50
Najas spec.	seed/fruit	uncharred	60.00	13.33	30.00	10.00	0.00	6.67	0.00	0.00	0.00	3.77	14.29	0.00	0.00	0.00	0.00	0.00
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar spec.	seed/fruit	uncharred	0.00	3.33	3.33	3.33	6.67	6.67	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nuphar* spec.	seed/fruit	uncharred	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	3.33	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			850.00	2700.00	420.00	263.33	60.00	66.67	138.89	300.00	211.11	779.25	507.14	376.67	7.50	0.00	21.82	7.50
number of taxa			4.00	4.00	5.00	5.00	4.00	3.00	3.00	2.00	4.00	4.00	4.00	4.00	2.00	0.00	2.00	2.00
reed bed and sedge swamp plants																		
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	0.00	0.00	0.00	3.33	13.33	0.00	5.56	0.00	5.56	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	6.67	11.11	0.00	5.56	0.00	10.71	0.00	0.00	0.00	0.00	2.50
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	725.00	640.00	113.33	103.33	40.00	20.00	16.67	0.00	5.56	18.87	157.14	16.67	5.00	2.22	1.82	0.00
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	0.00	0.00	3.33	0.00	0.00	16.67	0.00	22.22	0.00	3.57	0.00	0.00	0.00	0.91	0.00
density			725.00	640.00	113.33	110.00	53.33	26.67	55.56	0.00	38.89	20.75	171.43	16.67	5.00	2.22	2.73	2.50
number of taxa			1.00	1.00	1.00	3.00	2.00	2.00	5.00	0.00	4.00	2.00	3.00	1.00	1.00	1.00	2.00	1.00
wet grassland plants																		
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	5.00	0.00	0.00	3.33	6.67	0.00	50.00	0.00	0.00	0.00	7.14	3.33	0.00	0.00	0.91	0.00
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	10.00	3.33	6.67	3.33	0.00	0.00	16.67	50.00	5.56	5.66	3.57	3.33	0.00	0.00	0.00	0.00
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	5.56	1.89	3.57	0.00	0.00	0.00	0.00	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	11.11	0.00	7.14	0.00	0.00	0.00	0.00	0.00
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			15.00	3.33	10.00	10.00	6.67	0.00	94.44	50.00	33.33	7.55	21.43	6.67	0.00	0.00	0.91	0.00
number of taxa			2.00	1.00	2.00	3.00	1.00	0.00	5.00	1.00	4.00	2.00	4.00	2.00	0.00	0.00	1.00	0.00
shoreline pioneers incl. shore weeds																		
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	1.89	3.57	0.00	0.00	0.00	0.00	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	5.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	16.67	3.77	3.57	0.00	0.00	0.00	0.00	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	3.33	0.00	0.00	0.00	0.00	66.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	3.33	6.67	0.00	0.00	0.00	0.00	1.89	3.57	0.00	0.00	0.00	0.00	0.00
density			5.00	3.33	3.33	3.33	6.67	0.00	66.67	0.00	38.89	7.55	10.71	0.00	0.00	0.00	0.00	0.00
number of taxa			1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00
wetland plants unassigned																		
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	16.67	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	27.78	50.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
riparian woodland and carr plants																		
Alnus cf. *glutinosa*	seed/fruit	uncharred	410.00	83.33	206.67	46.67	120.00	160.00	0.00	0.00	5.56	7.55	0.00	6.67	45.00	4.44	38.18	2.50
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	6.67	0.00	0.00	0.00	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	90.00	30.00	223.33	63.33	0.00	6.67	0.00	0.00	11.11	0.00	0.00	0.00	0.00	31.11	10.00	85.00
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	3.33	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.13	1.00	0.15	0.70	0.50	1.50	0.14	0.14	1.00	0.30	1.20	0.30	0.30	0.45	0.55	0.60	0.40	0.25	0.05	0.28	0.42	0.25	0.70	0.90	0.08	0.25	0.55	0.80	0.30	0.58	0.55	0.40	0.15	0.20	0.30	0.30	0.30	0.15	0.15	0.18	0.02	0.18	0.53	0.28	0.30	0.40	0.45	1.10	0.40
		sediment type	L1	L2	O2	L1	OS	L1	L1	O2	L1	OL	L1	L1	O2	L1	L1	O2	L1	MO2	OS	O2S	O1	O2	MO3, SM	MO1, OS	SL	O2	L2	L1	MO2	O2	SM	O1	SO	O1	SO	M2	M1	M1	M2	O2	OSA	OL	M3	OS	M1	M1	M2	M1	M2
		unit	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U10	U10	U10	U10	U10	U10	U10, U9	U11	U11	U11	U11	U12	U12	U12, U11	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U14	U14	U14	U14
		sample nr.	**89_18**	**92_3**	**92_4**	**92_5**	**92_6**	**92_7**	**101_1**	**101_2**	**101_3**	**101_4-7**	**101_8**	**101_9**	**101_10-11**	**101_12**	**101_13**	**101_14-16**	**101_17**	**45_6**	**67_13**	**73_13**	**73_14**	**89_19**	**101_20-21**	**101_18-19**	**45_7**	**45_8-9**	**45_10**	**89_20**	**45_11**	**73_15**	**101_22**	**45_12**	**45_13**	**45_14**	**45_15**	**45_16**	**45_17**	**45_18**	**45_19**	**67_14**	**67_15**	**67_16**	**67_17**	**73_16**	**101_23**	**45_20**	**45_21**	**45_22**	**45_23**
	type	**state**																																																	
Prunus padus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	7.50
Rubus caesius	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	1.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	3.33	0.00	0.00	0.00	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
density			0.00	1.00	6.67	4.29	2.00	0.67	0.00	0.00	1.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	4.00	60.00	7.14	0.00	0.00	1.43	0.00	25.00	12.00	3.64	0.00	0.00	0.00	3.64	142.50	100.00	500.00	113.33	443.33	113.33	120.00	173.33	0.00	0.00	22.22	9.43	0.00	20.00	45.00	42.22	48.18	97.50
number of taxa			0.00	1.00	1.00	2.00	1.00	1.00	0.00	0.00	1.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	2.00	0.00	0.00	1.00	0.00	1.00	2.00	1.00	0.00	0.00	0.00	1.00	2.00	1.00	1.00	1.00	3.00	2.00	1.00	2.00	0.00	0.00	1.00	2.00	0.00	3.00	1.00	2.00	1.00	3.00
woodland plants																																																	
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abies alba	leaf	charred	7.69	0.00	0.00	0.00	2.00	2.00	0.00	0.00	1.00	10.00	0.83	6.67	3.33	0.00	0.00	0.00	2.50	4.00	20.00	0.00	2.38	8.00	0.00	0.00	0.00	4.00	3.64	0.00	10.00	0.00	1.82	5.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.56	100.00	0.00	3.77	0.00	3.33	0.00	0.00	0.00	0.00
Abies alba	leaf	uncharred	369.23	364.00	1140.00	354.29	622.00	50.00	100.00	642.86	59.00	653.33	113.33	216.67	903.33	71.11	52.73	530.00	345.00	220.00	400.00	457.14	500.00	132.00	298.57	113.33	12.50	300.00	54.55	3.75	146.67	455.17	60.00	115.00	140.00	50.00	10.00	36.67	13.33	13.33	60.00	350.00	200.00	700.00	88.68	207.14	36.67	5.00	0.00	0.00	0.00
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Betula pendula/pubescens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	1.67	2.50	0.00	20.00	3.57	2.38	0.00	5.71	0.00	0.00	0.00	3.64	1.25	6.67	0.00	12.73	67.50	0.00	15.00	6.67	30.00	13.33	73.33	106.67	16.67	0.00	5.56	3.77	0.00	6.67	25.00	6.67	35.45	25.00
Betula pendula/pubescens	fruit whole	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	5.00	3.33	0.00	3.33	0.00	13.33	0.00	0.00	0.00	0.00	0.00	6.67	10.00	2.22	3.64	0.00
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	128.57	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moehringia trinervia	seed/fruit	uncharred	7.69	28.00	20.00	0.00	0.00	1.33	0.00	7.14	2.00	3.33	1.67	0.00	10.00	0.00	0.00	0.00	2.50	4.00	0.00	71.43	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.00	2.50	0.00	0.00	0.00	3.33	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	30.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.83	3.33	20.00	2.22	1.82	6.67	2.50	0.00	0.00	160.71	209.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	205.17	1.82	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	11.11	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.91	0.00
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	0.00	0.00	10.00	0.00	0.00	21.43	1.00	10.00	0.00	0.00	16.67	0.00	0.00	8.33	5.00	4.00	0.00	3.57	2.38	8.00	1.43	0.00	0.00	4.00	1.82	0.00	3.33	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	6.67	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	0.00	1.00	40.00	12.86	4.00	0.67	0.00	0.00	0.00	33.33	0.83	0.00	13.33	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	1.89	0.00	0.00	0.00	0.00	0.00	0.00
density			415.38	393.00	1206.67	372.86	644.00	54.67	107.14	678.57	64.00	716.67	117.50	226.67	966.67	73.33	56.36	550.00	362.50	232.00	440.00	825.00	733.33	148.00	307.14	113.33	12.50	316.00	63.64	5.00	180.00	662.07	78.18	220.00	153.33	70.00	20.00	93.33	30.00	93.33	180.00	411.11	350.00	755.56	98.11	210.71	53.33	40.00	8.89	40.00	25.00
number of taxa			3.00	3.00	4.00	4.00	3.00	5.00	2.00	4.00	4.00	5.00	4.00	2.00	5.00	2.00	3.00	5.00	5.00	3.00	2.00	6.00	7.00	2.00	3.00	1.00	1.00	3.00	3.00	2.00	5.00	3.00	4.00	4.00	2.00	2.00	2.00	4.00	2.00	3.00	2.00	6.00	2.00	6.00	3.00	2.00	2.00	2.00	1.00	2.00	1.00
woodland clearing edge, hedge, bush plants																																																	
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	3.33	0.00	0.00	2.50	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	2.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	6.67	0.00	6.67	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.00
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Epilobium spec.	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	142.86	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	7.69	4.00	6.67	0.00	0.00	0.67	0.00	0.00	0.00	3.33	0.00	0.00	3.33	2.22	3.64	1.67	5.00	4.00	80.00	217.86	171.43	0.00	5.71	0.00	12.50	16.00	7.27	0.00	6.67	6.90	7.27	10.00	140.00	20.00	6.67	3.33	6.67	13.33	6.67	55.56	150.00	100.00	7.55	7.14	3.33	0.00	0.00	0.00	0.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	3.33	0.00	3.33	3.33	2.22	0.00	0.00	0.00	0.00	20.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Origanum vulgare	seed/fruit	uncharred	7.69	1.00	6.67	0.00	0.00	0.67	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	80.00	10.71	0.00	0.00	45.71	0.00	0.00	8.00	1.82	0.00	13.33	0.00	9.09	2.50	26.67	15.00	0.00	0.00	6.67	20.00	0.00	22.22	0.00	11.11	26.42	3.57	3.33	0.00	0.00	0.00	0.00
Prunus spec.	seed/fruit	uncharred	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	3.33	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	1.82	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.17	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			38.46	7.00	13.33	0.00	0.00	2.00	0.00	0.00	1.00	10.00	0.00	6.67	10.00	6.67	3.64	5.00	5.00	4.00	220.00	382.14	185.71	4.00	51.43	0.00	12.50	32.00	10.91	0.00	36.67	13.79	20.00	32.50	193.33	45.00	16.67	10.00	16.67	33.33	6.67	100.00	150.00	116.67	35.85	10.71	6.67	0.00	0.00	0.91	0.00
number of taxa		16	5.00	3.00	2.00	0.00	0.00	3.00	0.00	0.00	1.00	3.00	0.00	2.00	3.00	3.00	1.00	3.00	1.00	1.00	4.00	5.00	6.00	1.00	2.00	0.00	1.00	4.00	3.00	0.00	5.00	3.00	4.00	8.00	5.00	4.00	3.00	3.00	3.00	2.00	1.00	5.00	1.00	3.00	3.00	2.00	2.00	0.00	0.00	1.00	0.00
grassland plants																																																	
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	1.00	0.00	1.43	0.00	1.33	0.00	7.14	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	2.00	13.33	2.86	6.00	0.00	7.14	0.00	1.00	0.00	1.67	3.33	10.00	4.44	1.82	3.33	5.00	0.00	0.00	114.29	0.00	0.00	2.86	1.11	12.50	12.00	0.00	0.00	0.00	3.45	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	6.67	50.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.91	0.00
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	1.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	2.50	4.00	0.00	203.57	209.52	0.00	1.43	0.00	0.00	0.00	1.82	0.00	10.00	68.97	0.00	2.50	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	5.56	1.89	0.00	0.00	0.00	2.22	0.00	0.00
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	2.86	0.00	0.00	0.00	21.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	4.76	0.00	0.00	1.11	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	3.00	13.33	8.57	6.00	1.33	7.14	71.43	4.00	0.00	1.67	10.00	10.00	4.44	1.82	5.00	7.50	4.00	20.00	317.86	216.67	8.00	4.29	2.22	37.50	28.00	14.55	0.00	10.00	72.41	3.64	2.50	20.00	5.00	0.00	0.00	0.00	0.00	6.67	55.56	0.00	22.22	3.77	3.57	0.00	0.00	2.22	0.91	0.00
number of taxa			0.00	2.00	1.00	3.00	1.00	1.00	1.00	5.00	4.00	0.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	3.00	1.00	2.00	2.00	3.00	2.00	2.00	0.00	1.00	2.00	1.00	1.00	3.00	1.00	0.00	0.00	0.00	0.00	1.00	2.00	0.00	2.00	2.00	1.00	0.00	0.00	1.00	1.00	0.00
winter crop annual and flax weeds																																																	
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	1.72	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	1.00	0.00	1.43	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	1.00	0.00	1.43	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	20.00	0.00	2.38	0.00	0.00	1.11	0.00	0.00	1.82	0.00	0.00	1.72	1.82	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI	type	state	89_18	92_3	92_4	92_5	92_6	92_7	101_1	101_2	101_3	101_4-7	101_8	101_9
sample type			profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
volume (l)			0.13	1.00	0.15	0.70	0.50	1.50	0.14	0.14	1.00	0.30	1.20	0.30
sediment type			L1	L2	O2	L1	OS	L1	L1	O2	L1	OL	L1	L1
unit			U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9
summer crop annual weeds, annual ruderals														
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	15.38	28.00	13.33	2.86	6.00	42.67	35.71	0.00	10.00	0.00	1.67	3.33
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	24.00	33.33	0.00	2.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	148.00	46.67	37.14	8.00	21.33	0.00	0.00	18.00	0.00	0.00	3.33
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	7.14	0.00	1.00	0.00	1.67	0.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	3.00	0.00	0.00	0.00	1.33	0.00	14.29	1.00	0.00	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	1.00	6.67	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	6.67	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	7.14	0.00	1.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	69.23	76.00	53.33	37.14	4.00	66.67	64.29	14.29	64.00	70.00	0.83	10.00
density			84.62	283.00	166.67	77.14	28.00	133.33	121.43	35.71	96.00	73.33	5.00	20.00
number of taxa			2.00	7.00	5.00	3.00	5.00	6.00	5.00	3.00	7.00	2.00	4.00	4.00
perennial ruderals														
Arctium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.83	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	2.00	0.00	1.43	0.00	0.67	0.00	0.00	0.00	3.33	1.67	0.00
number of taxa			0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00
cereals														
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	1.00	0.00	0.00	2.00	2.00	0.00	21.43	1.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	15.38	45.00	60.00	4.29	114.00	1.33	0.00	21.43	0.00	3.33	2.50	0.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	7.69	2.00	6.67	0.00	0.00	0.67	0.00	21.43	12.00	66.67	0.83	6.67
Triticum dicoccum	glume basis	uncharred	0.00	60.00	333.33	20.00	394.00	25.33	42.86	235.71	50.00	300.00	46.67	96.67
Triticum dicoccum	glume basis	semi-charred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum*/*turgidum*	seed/fruit	charred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	46.15	0.00	46.67	4.29	12.00	0.67	0.00	21.43	4.00	0.00	1.67	6.67
Triticum durum/turgidum	rachis segment	uncharred	0.00	5.00	193.33	0.00	230.00	2.00	0.00	192.86	16.00	33.33	27.50	43.33
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67
Cerealia indet.	bran	uncharred	369.23	526.00	60.00	221.43	3446.00	464.67	150.00	2178.57	154.00	1440.00	97.50	166.67
Cerealia indet.	seed/fruit	charred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00
Cerealia indet.	chaff	charred	0.00	1.00	0.00	0.00	0.00	2.67	0.00	0.00	2.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	138.46	220.00	413.33	42.86	448.00	163.33	0.00	200.00	32.00	396.67	126.67	50.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	6.67	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	uncharred	100.00	0.00	0.00	1.43	342.00	0.00	14.29	0.00	0.00	0.00	0.00	6.67
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			684.62	861.00	1140.00	294.29	4992.00	662.67	207.14	2892.86	275.00	2246.67	304.17	383.33
density cereals determined with bran			438.46	640.00	720.00	250.00	4200.00	496.67	192.86	2692.86	241.00	1850.00	176.67	326.67
number of taxa			3.00	3.00	4.00	3.00	3.00	3.00	1.00	3.00	4.00	4.00	3.00	2.00
pulses														
Fabaceae	pod	uncharred			40.00		48.00	0.00						
Fabaceae	pod	semi-charred			0.00		2.00	0.00						
Fabaceae	pod stem	uncharred			0.00		4.00	0.00						
cf. Fabaceae	pod	uncharred			0.00		0.00	0.00						
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	40.00	0.00	54.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
oil- and fibre-plants														
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	192.31	427.00	226.67	25.71	660.00	192.67	14.29	642.86	182.00	686.67	120.83	100.00
Linum usitatissimum	seed/fruit	semi-charred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	61.54	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	16.67	5.00	6.67
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	169.23	218.00	613.33	40.00	316.00	100.00	21.43	450.00	68.00	510.00	114.17	36.67
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	553.85	600.00	546.67	82.86	3056.00	582.67	142.86	2285.71	561.00	2000.00	380.00	290.00
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			984.62	1245.00	1386.67	148.57	4040.00	875.33	178.57	3378.57	812.00	3220.00	620.00	433.33
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants														
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns														
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	0.00	1.00	0.00	1.43	0.00	2.67	0.00	0.00	2.00	16.67	5.00	0.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI	type	state	101_10-11	101_12	101_13	101_14-16	101_17	45_6	67_13	73_13	73_14	89_19	101_20-21	101_18-19	45_7	45_8-9	45_10	89_20	45_11	73_15	101_22
sample type			profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
volume (l)			0.30	0.45	0.55	0.60	0.40	0.25	0.05	0.28	0.42	0.25	0.70	0.90	0.08	0.25	0.55	0.80	0.30	0.58	0.55
sediment type			O2	L1	L1	O2	L1	MO2	OS	O2S	O1	O2	MO3_SM	MO1_OS	SL	O2	L2	L1	MO2	O2	SM
unit			U9	U9	U9	U9	U9	U10	U10	U10	U10	U10	U10	U10, U9	U11	U11	U11	U11	U12	U12	U12, U11
summer crop annual weeds, annual ruderals																					
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	0.00	4.44	5.45	1.67	0.00	8.00	0.00	114.29	9.52	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	68.97	0.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	8.00	0.00	71.43	4.76	0.00	0.00	0.00	12.50	8.00	0.00	0.00	0.00	0.00	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	1.82	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	1.82
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.64
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	20.00	100.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	1.25	0.00	0.00	0.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	3.33	4.44	3.64	1.67	0.00	0.00	60.00	100.00	7.14	0.00	0.00	2.22	0.00	0.00	0.00	0.00	3.33	1.72	0.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	1.82	1.67	0.00	0.00	20.00	142.86	95.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	1.67	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	3.33	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	1.82
Verbena officinalis	seed/fruit	charred	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	83.33	2.22	25.45	1.67	5.00	40.00	200.00	257.14	97.62	84.00	5.71	22.22	25.00	20.00	14.55	0.00	13.33	96.55	29.09
density			90.00	11.11	40.00	8.33	22.50	68.00	300.00	885.71	223.81	104.00	8.57	36.67	50.00	32.00	14.55	1.25	23.33	174.14	38.18
number of taxa			3.00	3.00	5.00	5.00	3.00	4.00	4.00	7.00	6.00	3.00	3.00	4.00	3.00	3.00	1.00	1.00	4.00	4.00	5.00
perennial ruderals																					
Arctium spec.	seed/fruit	uncharred	10.00	0.00	0.00	1.67	0.00	0.00	0.00	67.86	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	10.00	31.03	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	1.82
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			10.00	0.00	0.00	1.67	0.00	0.00	0.00	75.00	2.38	0.00	0.00	4.44	0.00	8.00	0.00	0.00	10.00	31.03	1.82
number of taxa			1.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.00	0.00	2.00	0.00	0.00	1.00	1.00	1.00
cereals																					
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	6.67	0.00	0.00	0.00	7.50	24.00	0.00	3.57	4.76	0.00	2.86	0.00	25.00	60.00	1.82	0.00	3.33	1.72	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	6.67	11.11	1.82	3.33	0.00	24.00	60.00	10.71	9.52	4.00	1.43	0.00	62.50	20.00	0.00	0.00	0.00	10.34	0.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	6.67	0.00	5.45	3.33	12.50	12.00	60.00	7.14	14.29	16.00	28.57	3.33	0.00	8.00	1.82	0.00	0.00	151.72	9.09
Triticum dicoccum	glume basis	uncharred	480.00	48.89	49.09	325.00	110.00	236.00	480.00	85.71	266.67	16.00	117.14	62.22	162.50	8.00	32.73	0.00	3.33	12.07	12.73
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum*/*turgidum*	seed/fruit	charred	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	10.00	0.00	0.00	0.00	0.00	0.00	40.00	85.71	7.14	8.00	0.00	2.22	25.00	12.00	0.00	0.00	3.33	0.00	1.82
Triticum durum/turgidum	rachis segment	uncharred	226.67	11.11	7.27	0.00	0.00	12.00	0.00	21.43	2.38	12.00	0.00	0.00	87.50	84.00	5.45	0.00	0.00	82.76	7.27
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	6.67	4.44	0.00	50.00	0.00	0.00	0.00	0.00	121.43	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00
Cerealia indet.	bran	uncharred	1476.67	106.67	94.55	766.67	130.00	3312.00	920.00	1114.29	1676.19	112.00	1082.86	60.00	2300.00	1676.00	196.36	0.00	3.33	1.72	109.09
Cerealia indet.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	290.00	31.11	14.55	250.00	65.00	48.00	400.00	0.00	247.62	60.00	68.57	15.56	212.50	0.00	12.73	0.00	0.00	6.90	3.64
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	6.67	0.00	0.00	0.00	0.00	72.00	140.00	14.29	190.48	0.00	4.29	0.00	137.50	0.00	5.45	0.00	0.00	124.14	3.64
Triticum spec.	chaff	uncharred	173.33	0.00	12.73	8.33	50.00	304.00	420.00	360.71	514.29	96.00	77.14	28.89	275.00	300.00	21.82	1.25	0.00	993.10	21.82
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			2690.00	213.33	185.45	1408.33	375.00	4120.00	2520.00	1703.57	3057.14	336.00	1385.71	172.22	3287.50	2228.00	280.00	1.25	13.33	1386.21	169.09
density cereals determined with bran			2220.00	182.22	158.18	1150.00	260.00	3620.00	1560.00	1328.57	2104.76	168.00	1235.71	127.78	2662.50	1868.00	240.00	0.00	13.33	260.34	140.00
number of taxa			3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	1.00	3.00	3.00	2.00
pulses																					
Fabaceae	pod	uncharred						36.00	20.00	21.43	11.90				0.00	4.00	1.82		0.00	1.72	
Fabaceae	pod	semi-charred						0.00	0.00	0.00	0.00				0.00	0.00	0.00		0.00	0.00	
Fabaceae	pod stem	uncharred						0.00	0.00	3.57	0.00				0.00	0.00	0.00		0.00	0.00	
cf. Fabaceae	pod	uncharred						0.00	0.00	0.00	0.00				12.50	0.00	0.00		6.67	0.00	
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	36.00	20.00	25.00	14.29	0.00	0.00	0.00	12.50	4.00	1.82	0.00	6.67	1.72	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
oil- and fibre-plants																					
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	586.67	71.11	43.64	500.00	65.00	152.00	300.00	503.57	730.95	124.00	342.86	71.11	112.50	220.00	21.82	22.50	120.00	401.72	63.64
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	10.00	0.00	1.82	1.67	0.00	12.00	0.00	10.71	11.90	16.00	1.43	1.11	0.00	4.00	1.82	0.00	0.00	3.45	18.18
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	483.33	4.44	25.45	193.33	50.00	80.00	140.00	146.43	533.33	84.00	98.57	24.44	87.50	72.00	3.64	2.50	6.67	308.62	29.09
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	820.00	151.11	203.64	870.00	130.00	280.00	1320.00	3346.43	3123.81	248.00	441.43	124.44	225.00	824.00	118.18	37.50	116.67	868.97	101.82
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1900.00	226.67	276.36	1568.33	245.00	528.00	1760.00	4007.14	4400.00	472.00	884.29	221.11	425.00	1120.00	145.45	62.50	246.67	1582.76	212.73
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																					
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	12.00	1.82	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	12.00	1.82	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																					
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	0.00	6.67	10.91	98.33	0.00	0.00	60.00	3.57	45.24	0.00	4.29	3.33	12.50	4.00	0.00	0.00	6.67	18.97	5.45
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI	type	state	45_12	45_13	45_14	45_15	45_16	45_17	45_18	45_19	67_14	67_15	67_16	67_17	73_16	101_23	45_20	45_21	45_22	45_23
sample type			profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
volume (l)			0.40	0.15	0.20	0.30	0.30	0.30	0.15	0.15	0.18	0.02	0.18	0.53	0.28	0.30	0.40	0.45	1.10	0.40
sediment type			O1	SO	O1	SO	M2	M1	M1	M2	O2	OSA	OL	M3	OS	M1	M1	M2	M1	M2
unit			U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U14	U14	U14	U14
summer crop annual weeds, annual ruderals																				
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.91	0.00
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	5.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	5.56	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	5.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chenopodium spec.	seed/fruit	uncharred	10.00	26.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	11.11	50.00	11.11	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	5.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.22	0.00	5.56	3.77	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	charred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbena officinalis	seed/fruit	uncharred	157.50	280.00	90.00	50.00	26.67	6.67	0.00	13.33	155.56	100.00	111.11	33.96	85.71	26.67	0.00	0.00	0.00	0.00
density			182.50	340.00	95.00	56.67	26.67	6.67	0.00	13.33	233.33	150.00	138.89	43.40	89.29	30.00	0.00	0.00	0.91	0.00
number of taxa			5.00	5.00	2.00	3.00	1.00	1.00	0.00	1.00	9.00	2.00	5.00	5.00	2.00	2.00	0.00	0.00	1.00	0.00
perennial ruderals																				
Arctium spec.	seed/fruit	uncharred	10.00	20.00	0.00	0.00	3.33	0.00	0.00	0.00	11.11	0.00	5.56	0.00	7.14	3.33	0.00	0.00	0.00	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			10.00	26.67	0.00	0.00	3.33	0.00	0.00	0.00	22.22	0.00	11.11	0.00	7.14	3.33	0.00	0.00	0.00	0.00
number of taxa			1.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00	3.00	0.00	2.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
cereals																				
Hordeum vulgare undiff.	seed/fruit	charred	12.50	6.67	0.00	0.00	3.33	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	charred	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	11.11	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	charred	10.00	13.33	10.00	6.67	3.33	0.00	0.00	0.00	150.00	0.00	88.89	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	uncharred	10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	322.22	0.00	744.44	52.83	85.71	13.33	0.00	0.00	0.00	0.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum*/*turgidum*	seed/fruit	charred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	charred	45.00	6.67	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	66.67	1.89	0.00	6.67	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.22	0.00	5.56	3.77	0.00	0.00	0.00	0.00	0.00	0.00
Triticum durum/turgidum	rachis segment	semi-charred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	bran	uncharred	75.00	13.33	50.00	50.00	90.00	10.00	26.67	33.33	1500.00	1700.00	1588.89	132.08	142.86	10.00	0.00	6.67	2.73	0.00
Cerealia indet.	seed/fruit	charred	22.50	6.67	5.00	0.00	10.00	6.67	0.00	0.00	5.56	0.00	16.67	0.00	7.14	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	222.22	250.00	261.11	0.00	371.43	0.00	0.00	0.00	0.00	0.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	40.00	20.00	10.00	0.00	6.67	6.67	13.33	166.67	100.00	77.78	3.77	71.43	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	uncharred	37.50	13.33	0.00	0.00	0.00	0.00	0.00	0.00	388.89	350.00	200.00	26.42	10.71	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density cereals all			232.50	100.00	85.00	73.33	106.67	40.00	33.33	53.33	2816.67	2400.00	3077.78	222.64	689.29	30.00	0.00	6.67	2.73	0.00
density cereals determined with bran			172.50	40.00	60.00	60.00	96.67	26.67	26.67	40.00	2033.33	1700.00	2511.11	192.45	228.57	30.00	0.00	6.67	2.73	0.00
number of taxa			3.00	3.00	1.00	2.00	2.00	2.00	1.00	1.00	3.00	1.00	3.00	2.00	1.00	2.00	0.00	1.00	1.00	0.00
pulses																				
Fabaceae	pod	uncharred									16.67	50.00	72.22	1.89	0.00					
Fabaceae	pod	semi-charred									5.56	0.00	0.00	0.00	0.00					
Fabaceae	pod stem	uncharred									5.56	0.00	0.00	0.00	0.00					
cf. Fabaceae	pod	uncharred									0.00	0.00	0.00	0.00	0.00					
Pisum sativum	seed/fruit	charred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.78	50.00	72.22	1.89	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
oil- and fibre-plants																				
Linum usitatissimum	seed/fruit	charred	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	seed/fruit	uncharred	122.50	66.67	15.00	50.00	66.67	6.67	13.33	73.33	177.78	150.00	155.56	86.79	157.14	46.67	0.00	0.00	1.82	2.50
Linum usitatissimum	seed/fruit	semi-charred	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	uncharred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	3.57	3.33	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	7.50	6.67	5.00	13.33	26.67	0.00	20.00	6.67	100.00	0.00	133.33	33.96	10.71	10.00	2.50	2.22	0.00	0.00
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	3.33	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	300.00	400.00	160.00	150.00	86.67	113.33	100.00	66.67	1000.00	650.00	811.11	196.23	442.86	53.33	5.00	2.22	2.73	2.50
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			432.50	493.33	180.00	216.67	183.33	120.00	133.33	146.67	1283.33	800.00	1100.00	316.98	614.29	113.33	7.50	4.44	4.55	5.00
number of taxa			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
potentially cultivated plants																				
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gathered fruits/berries/nuts/acorns																				
Corylus avellana	seed/fruit	charred	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corylus avellana	seed/fruit	uncharred	127.50	140.00	10.00	26.67	16.67	3.33	0.00	0.00	44.44	100.00	16.67	24.53	39.29	6.67	2.50	2.22	0.00	0.00
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.13	1.00	0.15	0.70	0.50	1.50	0.14	0.14	1.00	0.30	1.20	0.30	0.30	0.45	0.55	0.60	0.40	0.25	0.05	0.28	0.42	0.25	0.70	0.90	0.08	0.25	0.55	0.80	0.30	0.58	0.55	0.40	0.15	0.20	0.30	0.30	0.30	0.15	0.15	0.18	0.02	0.18	0.53	0.28	0.30	0.40	0.45	1.10	0.40
		sediment type	L1	L2	O2	L1	OS	L1	L1	O2	L1	OL	L1	L1	O2	L1	L1	O2	L1	MO2	OS	O2S	O1	O2	MO3_SM	MO3_OS	SL	O2	L2	L1	MO2	O2	SM	O1	SO	O1	SO	M2	M1	M1	M2	O2	OSA	OL	M3	OS	M1	M1	M2	M1	M2
		unit	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U10	U10	U10	U10	U10	U10	U10, U9	U11	U11	U11	U11	U12	U12	U12, U11	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U13	U14	U14	U14	U14
		sample nr.	89_18	92_3	92_4	92_5	92_6	92_7	101_1	101_2	101_3	101_4-7	101_8	101_9	101_10-11	101_12	101_13	101_14-16	101_17	45_6	67_13	73_13	73_14	89_19	101_20-21	101_18-19	45_7	45_8-9	45_10	89_20	45_11	73_15	101_22	45_12	45_13	45_14	45_15	45_16	45_17	45_18	45_19	67_14	67_15	67_16	67_17	73_16	101_23	45_20	45_21	45_22	45_23
	type	state																																																	
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	50.00	13.33	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	7.27	2.50
Fagus sylvatica	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	5.00	10.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	3.57	3.33	0.00	0.00	0.00	0.00
Fragaria vesca	seed/fruit	uncharred	69.23	0.00	6.67	1.43	112.00	0.67	21.43	128.57	3.00	13.33	0.00	13.33	13.33	6.67	5.45	50.00	7.50	0.00	200.00	114.29	211.90	12.00	30.00	4.44	37.50	16.00	7.27	1.25	13.33	82.76	32.73	70.00	213.33	50.00	70.00	6.67	40.00	6.67	0.00	183.33	100.00	144.44	41.51	7.14	13.33	0.00	0.00	0.00	2.50
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	7.69	2.00	0.00	2.86	0.00	2.67	7.14	28.57	4.00	33.33	37.50	6.67	46.67	22.22	5.45	3.33	0.00	24.00	80.00	39.29	14.29	12.00	0.00	2.22	12.50	0.00	1.82	1.25	0.00	10.34	0.00	20.00	6.67	15.00	0.00	3.33	10.00	0.00	0.00	16.67	0.00	11.11	3.77	3.57	6.67	2.50	0.00	0.00	0.00
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	0.00	3.00	13.33	1.43	12.00	3.33	7.14	35.71	2.00	56.67	0.00	23.33	40.00	4.44	3.64	36.67	2.50	72.00	20.00	14.29	45.24	4.00	7.14	2.22	37.50	8.00	3.64	0.00	20.00	15.52	1.82	5.00	6.67	0.00	3.33	3.33	3.33	0.00	0.00	16.67	0.00	5.56	5.66	3.57	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	6.67	0.00	3.33	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	14.29	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	7.14	2.38	0.00	0.00	0.00	12.50	8.00	0.00	0.00	3.33	0.00	0.00	2.50	0.00	5.00	3.33	3.33	3.33	0.00	0.00	5.56	0.00	11.11	3.77	0.00	3.33	0.00	0.00	0.00	0.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	0.00	6.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	0.00	95.00	33.33	1.43	10.00	0.67	0.00	0.00	0.00	6.67	0.00	0.00	13.33	0.00	1.82	5.00	0.00	0.00	0.00	60.71	26.19	0.00	2.86	0.00	0.00	0.00	0.00	1.25	10.00	6.90	0.00	30.00	6.67	10.00	3.33	3.33	3.33	0.00	0.00	5.56	0.00	22.22	7.55	3.57	3.33	0.00	0.00	0.00	0.00
Rosa spec.	seed/fruit	uncharred	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	3.33	0.00	4.00	40.00	3.57	4.76	0.00	2.86	0.00	0.00	8.00	0.00	0.00	3.33	3.45	0.00	22.50	26.67	5.00	3.33	6.67	0.00	0.00	0.00	5.56	0.00	16.67	5.66	3.57	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	15.38	1.00	6.67	1.43	0.00	0.00	0.00	7.14	1.00	0.00	1.67	0.00	3.33	0.00	1.82	1.67	2.50	0.00	40.00	10.71	9.52	4.00	1.43	0.00	0.00	0.00	0.00	0.00	6.67	5.17	14.55	195.00	300.00	80.00	110.00	10.00	13.33	6.67	6.67	22.22	0.00	5.56	7.55	10.71	20.00	0.00	0.00	0.00	0.00
Rubus fruticosus/idaeus	seed/fruit	uncharred	15.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.00	6.67	0.00	0.00	3.64	6.67	0.00	0.00	80.00	14.29	133.33	0.00	2.86	13.33	0.00	0.00	0.00	0.00	0.00	3.45	25.45	105.00	106.67	50.00	13.33	0.00	0.00	0.00	0.00	16.67	50.00	11.11	7.55	75.00	16.67	0.00	0.00	0.91	0.00
Rubus idaeus	seed/fruit	uncharred	15.38	1.00	0.00	2.86	2.00	16.00	21.43	14.29	22.00	10.00	0.83	0.00	3.33	2.22	16.36	5.00	5.00	0.00	200.00	114.29	209.52	0.00	1.43	3.33	0.00	0.00	1.82	1.25	6.67	82.76	32.73	262.50	546.67	120.00	120.00	13.33	6.67	0.00	6.67	83.33	0.00	0.00	49.06	128.57	13.33	0.00	0.00	0.00	0.00
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	7.14	0.00	2.00	0.00	0.83	0.00	0.00	0.00	0.00	1.67	0.00	0.00	20.00	3.57	2.38	0.00	0.00	1.11	12.50	0.00	1.82	0.00	3.33	1.72	0.00	37.50	73.33	10.00	6.67	3.33	0.00	0.00	6.67	16.67	0.00	5.56	1.89	3.57	0.00	0.00	0.00	0.00	0.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			123.08	111.00	66.67	12.86	138.00	27.33	64.29	228.57	43.00	150.00	46.67	50.00	126.67	48.89	49.09	215.00	17.50	104.00	840.00	392.86	709.52	32.00	52.86	30.00	137.50	52.00	16.36	5.00	76.67	231.03	112.73	907.50	1446.67	410.00	390.00	90.00	106.67	13.33	20.00	422.22	250.00	261.11	158.49	282.14	86.67	5.00	11.11	8.18	5.00
number of taxa			4.00	6.00	5.00	6.00	4.00	6.00	4.00	5.00	7.00	6.00	6.00	3.00	5.00	4.00	6.00	8.00	4.00	2.00	9.00	10.00	11.00	3.00	7.00	5.00	5.00	6.00	4.00	4.00	10.00	8.00	5.00	11.00	10.00	10.00	10.00	11.00	8.00	2.00	3.00	9.00	3.00	8.00	9.00	9.00	8.00	2.00	2.00	2.00	2.00
various unassigned plants																																																	
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	flower	uncharred	7.69	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	3.57	2.38	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	46.15	0.00	13.33	1.43	6.00	0.67	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.22	0.00	1.67	2.50	8.00	80.00	0.00	133.33	4.00	1.43	2.22	0.00	4.00	7.27	0.00	0.00	96.55	16.36	157.50	346.67	70.00	0.00	0.00	6.67	0.00	0.00	66.67	0.00	22.22	33.96	10.71	13.33	0.00	0.00	0.00	0.00
Caryophyllaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	200.00	7.14	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00
Cerastium spec.	seed/fruit	uncharred	15.38	0.00	26.67	1.43	112.00	13.33	7.14	14.29	10.00	10.00	3.33	13.33	6.67	2.22	1.82	5.00	2.50	8.00	20.00	171.43	152.38	16.00	0.00	0.00	12.50	8.00	3.64	0.00	10.00	82.76	9.09	2.50	0.00	0.00	0.00	0.00	3.33	0.00	0.00	16.67	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	7.14	0.00	0.00	0.00	0.00	12.50	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	7.69	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	1.67	2.50	0.00	0.00	442.86	400.00	4.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	124.14	5.45	67.50	66.67	0.00	13.33	6.67	0.00	0.00	6.67	22.22	0.00	5.56	1.89	10.71	0.00	0.00	0.00	0.00	0.00
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	3.57	0.00	0.00	0.00	0.00	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	4.00	3.64	0.00	3.33	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	2.50	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	uncharred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	1.82	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	68.97	5.45	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.77	0.00	3.33	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	0.00	2.00	6.67	2.86	0.00	2.00	7.14	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	2.50	4.00	80.00	10.71	9.52	0.00	0.00	0.00	12.50	4.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	11.11	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	7.69	0.00	0.00	0.00	0.00	2.00	0.00	7.14	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	6.67	0.00	0.00	0.00	0.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	0.00	0.00	1.11	0.00	0.00	1.82	0.00	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.33	0.00	0.00	0.00	4.44	7.27	0.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	2.22	0.00	4.00	7.27	0.00	0.00	5.17	3.64	45.00	120.00	0.00	3.33	3.33	3.33	0.00	0.00	44.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	0.00	0.00	1.43	0.00	0.00	0.00	0.00	2.00	0.00	0.83	0.00	0.00	0.00	1.82	0.00	0.00	0.00	20.00	185.71	7.14	8.00	1.43	0.00	12.50	0.00	0.00	0.00	6.67	68.97	1.82	52.50	6.67	5.00	0.00	6.67	0.00	0.00	0.00	61.11	0.00	5.56	0.00	3.57	0.00	0.00	0.00	0.00	0.00
Rumex spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	14.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	6.67	5.56	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.13	1.00	0.15	0.70	0.50	1.50	0.14	0.14	1.00	0.30	1.20	0.30
		sediment type	L1	L2	O2	L1	OS	L1	L1	O2	L1	OL	L1	L1
		unit	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9	U9
		sample nr.	**89_18**	**92_3**	**92_4**	**92_5**	**92_6**	**92_7**	**101_1**	**101_2**	**101_3**	**101_4-7**	**101_8**	**101_9**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			100.00	9.00	60.00	8.57	124.00	20.67	28.57	21.43	19.00	20.00	5.83	20.00
number of taxa			7.00	6.00	5.00	5.00	5.00	7.00	3.00	2.00	8.00	4.00	3.00	3.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	92.31	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	AOV	charred	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
density			92.31	1.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
density total			2953.85	2922.00	4160.00	934.29	10056.00	1806.00	800.00	7350.00	1345.00	6453.33	1113.33	1196.67
number of taxa total			34.00	40.00	34.00	33.00	30.00	42.00	23.00	28.00	51.00	31.00	36.00	28.00
charred all density			69.23	5.00	73.33	4.29	22.00	8.00	0.00	64.29	27.00	76.67	4.17	23.33
semi-charred all density			7.69	1.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.30	0.45	0.55	0.60	0.40	0.25	0.05	0.28	0.42	0.25	0.70	0.90
		sediment type	O2	L1	L1	O2	L1	MO2	OS	O2S	O1	O2	MO3, SM	MO1, OS
		unit	U9	U9	U9	U9	U9	U10	U10	U10	U10	U10	U10	U10, U9
		sample nr.	**101_10-11**	**101_12**	**101_13**	**101_14-16**	**101_17**	**45_6**	**67_13**	**73_13**	**73_14**	**89_19**	**101_20-21**	**101_18-19**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			20.00	13.33	23.64	15.00	12.50	36.00	380.00	1053.57	719.05	48.00	5.71	22.22
number of taxa			4.00	5.00	7.00	6.00	4.00	6.00	8.00	10.00	10.00	6.00	4.00	7.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	8.00	300.00	157.14	26.19	24.00	0.00	0.00
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.00	20.00	14.29	9.52	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	8.00	320.00	171.43	35.71	24.00	0.00	0.00
density total			5843.33	637.78	674.55	3846.67	2060.00	5284.00	7820.00	14807.14	14576.19	1324.00	3944.29	652.22
number of taxa total			32.00	28.00	34.00	42.00	36.00	34.00	48.00	70.00	69.00	26.00	36.00	35.00
charred all density			36.67	0.00	10.91	8.33	25.00	188.00	280.00	125.00	230.95	44.00	35.71	5.56
semi-charred all density			0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	2.86	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.08	0.25	0.55	0.80	0.30	0.58	0.55	0.40	0.15	0.20	0.30	0.30	0.30
		sediment type	SL	O2	L2	L1	MO2	O2	SM	O1	SO	O1	SO	M2	M1
		unit	U11	U11	U11	U11	U12	U12	U12, U11	U13	U13	U13	U13	U13	U13
		sample nr.	**45_7**	**45_8-9**	**45_10**	**89_20**	**45_11**	**73_15**	**101_22**	**45_12**	**45_13**	**45_14**	**45_15**	**45_16**	**45_17**
	type	**state**													
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			50.00	52.00	30.91	2.50	20.00	455.17	49.09	340.00	560.00	85.00	33.33	16.67	16.67
number of taxa			4.00	9.00	9.00	2.00	3.00	9.00	8.00	10.00	6.00	4.00	6.00	3.00	4.00
indeterminate plants															
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	13.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	0.00	4.00	16.36	3.75	0.00	12.07	0.00	92.50	360.00	25.00	16.67	36.67	13.33
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	4.00	16.36	3.75	0.00	25.86	0.00	92.50	360.00	25.00	16.67	36.67	13.33
density total			4237.50	4044.00	689.09	1265.00	1366.67	5998.28	2712.73	5800.00	9786.67	3515.00	6116.67	2813.33	3983.33
number of taxa total			31.00	50.00	42.00	15.00	50.00	48.00	48.00	67.00	54.00	37.00	38.00	41.00	38.00
charred all density			187.50	144.00	12.73	0.00	20.00	293.10	18.18	117.50	100.00	35.00	20.00	16.67	13.33
semi-charred all density			0.00	0.00	0.00	0.00	3.33	0.00	0.00	5.00	0.00	0.00	10.00	3.33	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile	profile
		volume (l)	0.15	0.15	0.18	0.02	0.18	0.53	0.28	0.30	0.40	0.45	1.10	0.40
		sediment type	M1	M2	O2	OSA	OL	M3	OS	M1	M1	M2	M1	M2
		unit	U13	U13	U13	U13	U13	U13	U13	U13	U14	U14	U14	U14
		sample nr.	**45_18**	**45_19**	**67_14**	**67_15**	**67_16**	**67_17**	**73_16**	**101_23**	**45_20**	**45_21**	**45_22**	**45_23**
	type	**state**												
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	26.67	233.33	100.00	100.00	45.28	39.29	23.33	0.00	4.44	0.00	0.00
number of taxa			0.00	3.00	9.00	2.00	10.00	6.00	6.00	3.00	0.00	1.00	0.00	0.00
indeterminate plants														
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00
Indeterminata	seed/fruit	uncharred	26.67	40.00	50.00	0.00	38.89	13.21	3.57	0.00	0.00	0.00	0.91	0.00
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	5.56	1.89	0.00	0.00	0.00	0.00	0.00	0.00
density			26.67	40.00	50.00	0.00	44.44	16.98	3.57	0.00	0.00	0.00	0.91	0.00
density total			5726.67	8373.33	6755.56	9200.00	7905.56	7186.79	8975.00	5186.67	4710.00	2473.33	2092.73	1467.50
number of taxa total			21.00	23.00	68.00	20.00	61.00	48.00	42.00	34.00	12.00	13.00	18.00	13.00
charred all density			6.67	20.00	350.00	200.00	272.22	15.09	78.57	10.00	0.00	0.00	0.00	0.00
semi-charred all density			0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	bulk	bulk	bulk	bulk																		
		volume (l)	0.55	0.85	0.45	0.50	0.50	4.00	4.50	5.50	4.50																	
		sediment type	M1	M1	NA	NA	NA	NA	NA	NA	NA		ubiquity	average density														
		unit	U14	U14	NA	NA	NA	NA	NA	NA	NA		(without samples from profile sequence 53-52-51-50 and bulk samples)		average densities per unit													
		sample nr.	45_24	101_24	50_7_1	50_7_2	50_7_3	1452_A	1655_A	1672_A	1711_A				U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14
	type	state																										
aquatic plants oligotrophic																												
Chara spec.	oog	uncharred	687.27	2123.53	135.56	846.00	128.00	0.25	158.89	200.00	0.67		59.90	36.24	266.72	228.40	39.15	56.17	2.86	2.80	10.42	4.58	14.27	271.45	148.98	450.28	1481.93	1649.99
Chara spec.	oogK	uncharred	494.55	1430.59	37.78	420.00	56.00	0.00	0.67	0.55	0.00		39.59	14.81	78.57	63.38	7.15	2.48	0.31	0.75	0.00	8.62	29.25	698.06	167.43	262.60	1221.13	778.98
Nitella spec.	oog	uncharred	0.00	136.47	115.56	972.00	626.00	0.25	0.44	0.00	0.00		32.99	36.51	653.55	7.49	2.09	20.49	16.91	5.61	0.00	0.42	0.00	28.54	0.91	81.41	373.07	95.78
density			1181.82	3690.59	288.89	2238.00	810.00	0.50	160.00	200.55	0.67			421.96	998.84	299.27	48.39	79.14	20.08	9.16	10.42	13.62	43.52	998.05	317.31	794.30	3076.14	2524.75
number of taxa			1.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00			1.01	2.00	1.56	1.07	1.57	1.06	0.53	0.33	0.56	0.87	1.57	1.00	1.67	2.00	1.83
aquatic plants meso-/eutrophic																												
Myriophyllum cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.06	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Najas flexilis	seed/fruit	uncharred	36.36	1.18	15.56	294.00	12.00	0.00	0.44	0.18	0.00		29.95	6.17	45.71	19.01	0.42	31.36	12.28	0.72	1.59	0.15	0.25	8.13	0.00	34.51	169.15	11.11
Najas minor	seed/fruit	uncharred	0.00	1.18	0.00	0.00	0.00	1.00	0.22	0.00	0.00		35.03	25.82	0.74	6.67	1.15	221.06	27.75	16.63	21.82	13.61	35.91	121.07	21.32	203.13	54.71	0.20
Najas intermedia/marina	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Najas intermedia/marina	seed/fruit	uncharred	7.27	4.71	4.44	66.00	24.00	15.50	0.44	25.09	0.67		51.27	10.08	22.96	14.56	14.24	96.80	5.09	4.52	9.90	2.15	2.01	24.79	6.80	103.01	345.86	2.30
Najas intermedia/marina	fruit whole	uncharred	3.64	2.35	6.67	42.00	12.00	4.00	0.22	3.64	0.00		32.49	3.70	3.93	14.95	8.93	10.10	0.49	3.10	3.39	1.36	1.60	3.42	1.45	17.01	68.91	1.98
Najas spec.	seed/fruit	uncharred	5.45	0.00	2.22	12.00	2.00	0.00	0.00	0.00	0.00		10.66	2.61	0.06	0.00	0.00	5.52	22.27	0.46	0.00	0.32	0.00	0.51	0.00	0.00	40.58	0.91
Najas spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.60	2.09	7.00	2.33	1.07	0.95	0.13	0.45	0.00	4.96	0.00	0.00	0.00	0.00	0.00	0.00
Nuphar lutea	seed/fruit	uncharred	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.66	0.64	0.00	0.00	0.83	2.38	0.16	1.34	0.42	0.48	0.11	0.00	0.00	0.00	5.06	0.30
Nuphar spec.	seed/fruit	uncharred	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.12	0.31	0.00	0.00	0.00	0.29	0.27	0.65	0.83	0.37	0.00	2.86	0.00	0.00	1.98	0.30
cf. *Nuphar* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00		1.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.36	0.00
Nymphaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Nymphaea* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nymphaeaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton crispus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton cf. *crispus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.26	0.00
Potamogeton cf. *natans*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.24	0.00
Potamogeton cf. *obtusifolius*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potamogeton spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.09	0.16	0.74	0.65	0.00	0.29	0.00	0.36	0.00	0.00	0.00	0.16	0.00	0.00	2.50	0.00
Trapa natans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	4.94	0.00
density			56.36	9.41	28.89	414.00	56.00	20.50	1.33	29.09	0.67			104.71	81.13	58.16	26.64	368.75	68.44	28.90	38.78	24.20	39.88	160.94	29.57	360.49	694.92	17.10
number of taxa			3.00	3.00	2.00	2.00	2.00	2.00	3.00	3.00	1.00			1.50	1.88	1.56	1.40	2.71	1.63	1.32	2.33	0.71	0.35	2.43	1.75	3.00	4.00	2.00
reed bed and sedge swamp plants																												
Alisma plantago-aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.09	0.00	0.00	0.00	0.00	0.00	0.29	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alisma spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.07	0.00	0.00	0.00	0.00	0.00	0.16	0.42	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Cicuta virosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00
Cladium mariscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.02	0.25	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis palustris agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.16	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00
Eleocharis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	1.43	0.00	0.00	0.00	0.00	0.06	6.81	0.00	0.00	0.00	0.00	0.00	1.15	0.00	0.00
cf. *Glyceria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.05	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Lycopus europaeus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.00	0.67	0.36	0.22		47.72	12.44	0.00	0.85	8.07	5.51	4.77	26.32	4.33	17.36	3.55	2.92	19.05	8.06	2.83	0.00
Mentha aquatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.11	0.23	0.00	0.00	0.44	0.00	0.00	0.10	1.22	0.44	0.04	1.22	0.00	0.00	0.87	0.00
Phragmites australis	seed/fruit	uncharred	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00		48.22	7.43	0.74	4.44	0.20	0.95	0.94	11.34	5.00	14.26	3.64	3.66	3.13	2.29	3.09	0.42
cf. *Phragmites australis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.07	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.06	0.31	0.00	1.00	0.00	0.00	0.00
Poa palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.08	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa palustris*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00
Schoenoplectus lacustris	seed/fruit	uncharred	1.82	2.35	6.67	12.00	0.00	0.00	0.89	0.00	0.00		28.93	1.83	0.30	0.67	6.39	0.98	4.75	2.07	0.75	0.68	0.22	2.20	0.00	30.04	524.04	2.20
Schoenoplectus cf. *lacustris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Schoenoplectus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.04	0.00	0.00	0.07	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Schoenoplectus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.05	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Typha spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.36	0.00		36.04	2.43	1.77	5.50	1.85	1.02	0.41	5.43	3.18	1.47	0.90	2.80	3.45	0.00	3.27	0.15
density			1.82	2.35	6.67	14.00	2.00	0.50	1.56	1.45	0.22			61.70	4.09	11.46	17.44	8.46	11.39	52.67	16.40	35.78	8.67	12.80	26.63	42.14	534.10	2.77
number of taxa			1.00	1.00	1.00	2.00	1.00	1.00	2.00	3.00	1.00			1.82	0.75	1.89	1.67	1.57	1.38	1.97	3.00	1.96	1.43	2.29	1.75	3.67	2.21	1.17
wet grassland plants																												
cf. *Deschampsia cespitosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00
Filipendula ulmaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.18	0.22		21.32	1.86	0.37	0.00	2.59	0.85	0.16	1.51	1.25	4.24	0.14	1.87	0.00	0.00	1.94	0.00
cf. *Filipendula ulmaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Hypericum tetrapterum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.05	0.28	0.00	0.00	0.00	0.48	0.13	0.88	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Linum catharticum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.03	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lythrum salicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		13.20	0.75	0.00	0.00	1.78	0.00	0.57	0.76	0.00	1.14	0.38	3.88	0.91	0.00	0.40	0.00
Mentha arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00		9.64	1.79	0.00	0.00	0.44	0.00	10.33	0.94	0.00	1.94	0.00	0.00	0.00	2.22	0.00	0.00
Molinia caerulea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.06	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.04	0.14	0.00	0.00	0.00	0.00	0.00
cf. *Molinia caerulea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00
Molinia arundinacea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Molinia arundinacea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plantago major s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.36	0.22		63.45	54.39	0.00	0.53	8.95	2.07	1.73	100.55	16.84	108.15	12.92	192.84	2.00	112.06	5.39	0.15
Potentilla reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	1.11	0.00	0.00
Ranunculus cf. *repens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.36	0.00		64.97	24.61	0.67	1.06	7.56	5.42	1.83	30.73	21.88	57.42	2.45	42.15	0.45	29.02	12.48	0.00
Scirpus sylvaticus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.15	0.73	0.25	0.00	3.00	0.29	0.13	1.07	0.00	0.44	0.50	1.08	0.00	0.00	1.02	0.00
Valeriana dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veronica spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		27.92	11.06	0.00	0.00	0.00	0.00	0.00	5.32	3.48	31.48	8.03	38.37	2.00	1.11	2.28	0.00
cf. *Veronica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	1.78	0.91	0.44			93.23	1.28	1.59	24.31	9.10	15.10	142.08	43.45	205.71	24.56	280.19	6.68	145.52	23.76	0.15
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	4.00	3.00	2.00			2.23	0.50	0.33	1.53	1.86	1.94	2.76	2.83	3.16	2.00	2.86	1.50	2.67	2.21	0.17
shoreline pioneers incl. shore weeds																												
Bidens cernua	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Bidens cf. *tripartita*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.04	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.04	0.14	0.00	0.00	0.00	0.00	0.00
Bidens spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Cyperus fuscus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.14	0.99	0.00	0.00	6.72	0.48	0.09	1.00	0.67	0.39	0.00	3.40	0.00	0.00	0.79	0.00
Cyperus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
Cyperus/Scirpus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.10	0.00	0.00	0.00	0.95	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.61	0.18	0.00
Hypericum cf. *humifusum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		1.52	0.06	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Myosoton aquaticum/Stellaria nemorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	140.36	0.22		37.06	17.05	0.00	1.76	19.94	2.07	0.08	6.93	5.47	48.09	0.68	172.84	1.45	27.59	3.50	0.00
Polygonum hydropiper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.22	3.64	0.67		36.04	3.26	0.00	0.00	1.00	2.24	0.53	5.92	2.94	4.70	2.66	21.63	4.13	0.57	14.58	0.00
Polygonum cf. *hydropiper*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00
Polygonum lapathifolium agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.12	0.00	0.00	0.89	0.00	0.00	0.07	0.00	0.07	0.00	0.00	0.00	1.11	0.00	0.00
Polygonum cf. *lapathifolium* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum minus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00		7.11	2.61	0.00	0.00	2.46	0.48	0.16	10.41	0.00	0.56	0.13	16.33	0.00	0.00	0.00	0.00
Polygonum mite	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.11	0.00	0.00	0.44	0.00	0.00	0.07	1.17	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Polygonum mite/minus	seed/fruit	uncharred	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.05	0.19	0.00	0.00	0.00	0.00	0.16	0.00	0.33	0.58	0.00	0.00	0.00	0.00	0.18	0.20
Ranunculus sceleratus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Torilis japonica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.12	0.00	0.00	0.00	0.00	0.00	0.15	0.67	0.20	0.04	0.00	0.00	0.00	0.00	0.00
Torilis cf. *japonica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00
Urtica dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00		23.35	5.18	0.00	0.74	26.55	16.16	1.28	6.57	1.67	1.61	0.00	0.68	0.00	1.11	1.76	0.00
density			0.00	1.18	0.00	0.00	0.00	1.00	0.44	144.55	0.89			34.60	0.30	2.51	58.15	22.38	2.35	31.39	12.91	56.82	3.86	217.74	5.58	30.99	20.99	0.20
number of taxa			0.00	1.00	0.00	0.00	0.00	2.00	2.00	4.00	2.00			1.31	0.13	0.33	1.93	2.14	0.75	1.24	1.83	1.69	1.04	1.71	1.00	1.67	1.64	0.17
wetland plants unassigned																												
Cardamine cf. *flexuosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Chrysosplenium alternifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		11.17	0.78	0.00	0.00	2.09	0.95	0.39	0.37	0.00	1.06	0.96	0.00	3.13	1.11	0.79	0.00
Eupatorium cannabinum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.22	0.18	0.00		16.24	0.96	0.74	1.86	2.22	6.72	0.35	0.07	0.76	0.76	0.26	0.00	1.45	0.61	0.00	0.00
Mentha aquatica/arvensis	seed/fruit	uncharred	1.82	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00		9.14	0.92	0.00	0.00	0.00	0.00	0.08	1.56	0.00	2.06	0.14	0.34	0.00	0.00	0.40	0.30
Poa nemoralis/palustris/(compressa)	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		26.90	2.37	0.00	0.00	0.15	0.00	0.45	2.01	1.83	5.63	1.89	2.51	10.28	0.00	5.24	0.00
Poa cf. *nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.05	0.08	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.09	0.09	3.02	0.00	0.00	0.00	0.00
cf. *Poa nemoralis/palustris/(compressa)*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.05	0.00	0.65	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1.82	0.00	0.00	2.00	0.00	0.25	0.22	0.18	0.00			5.29	0.74	2.52	4.46	7.68	1.27	4.29	2.59	9.72	3.35	5.87	14.86	1.72	6.43	0.30
number of taxa			1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00			0.68	0.13	0.56	0.87	0.71	0.56	0.68	0.67	0.84	0.74	0.86	1.25	0.67	0.36	0.17
riparian woodland and carr plants																												
Alnus cf. *glutinosa*	seed/fruit	uncharred	47.27	0.00	4.44	10.00	8.00	3.25	0.22	5.09	0.00		43.65	4.43	1.78	9.69	5.67	3.43	0.91	10.49	6.07	2.16	0.25	4.14	8.70	1.21	85.28	22.90
Alnus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.08	0.21	0.00	0.37	0.00	0.00	0.00	0.68	0.00	0.16	0.04	0.00	0.00	0.00	0.87	0.00
Alnus spec.	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alnus spec.	cone (female)	uncharred	16.36	0.00	0.00	0.00	0.00	0.75	0.44	0.55	0.00		11.68	0.20	0.00	0.32	0.33	0.22	0.11	0.49	0.00	0.12	0.00	0.00	0.45	0.00	36.21	23.75
cf. *Alnus* spec.	seed/fruit	uncharred	0.00	4.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.09	0.00	0.00	0.00	0.00	0.00	0.78
Circaea lutetiana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.05	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Circaea spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.04	0.00	0.32	0.13	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clematis vitalba	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		1.52	0.03	0.00	0.00	0.11	0.36	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Frangula alnus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.55	0.06	0.00	0.11	0.00	0.48	0.00	0.07	0.42	0.00	0.00	0.00	0.00	0.00	1.19	0.42
cf. *Frangula alnus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.04	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.00
Nasturtium cf. *officinale*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		**sample type**	profile	profile	profile	profile	profile	bulk	bulk	bulk	bulk															
		volume (l)	0.55	0.85	0.45	0.50	0.50	4.00	4.50	5.50	4.50															
		sediment type	M1	M1	NA	NA	NA	NA	NA	NA	NA	**ubiquity**	**average density**													
		unit	U14	U14	NA	NA	NA	NA	NA	NA	NA	(without samples from profile														
		sample nr.	**45_24**	**101_24**	**50_7_1**	**50_7_2**	**50_7_3**	**1452_A**	**1655_A**	**1672_A**	**1711_A**	sequence 53-52-51-50 and bulk	**average densities per unit**													
	type	**state**										samples)		**U1**	**U2**	**U3**	**U4**	**U5**	**U6**	**U7**	**U8**	**U9**	**U10**	**U11**	**U12**	**U13**	**U14**
Prunus padus	seed/fruit	uncharred	1.82	0.00	0.00	0.00	0.00	0.00	2.89	1.45	0.00	10.15	0.43	0.00	0.00	0.11	0.36	0.24	1.18	0.00	0.47	0.07	5.71	0.00	0.00	0.48	2.66
Rubus caesius	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.67	4.00	0.22	19.80	1.43	0.00	0.67	1.21	0.00	0.93	4.12	1.00	0.89	0.33	0.51	0.00	0.00	0.00	0.00
Rumex sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.57	0.17	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.77	0.00	1.00	0.00	0.37	0.00
Rumex cf. *sanguineus*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Salix spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.24	0.00
density			65.45	4.71	4.44	10.00	8.00	4.75	4.22	11.27	0.22		17.02	1.78	11.47	8.02	4.84	2.38	17.30	8.15	4.29	1.54	10.37	10.16	1.21	125.53	50.51
number of taxa			2.00	1.00	1.00	1.00	1.00	2.00	3.00	4.00	1.00		0.96	0.50	1.22	1.33	1.14	0.94	1.15	1.00	0.78	0.52	0.86	1.00	0.33	1.36	1.67
woodland plants																										
Abies alba	seed/fruit	uncharred	0.00	0.00	0.00	4.00	0.00	0.25	0.00	0.36	0.00	10.15	0.77	0.00	0.11	0.31	1.90	0.08	1.48	0.00	1.06	0.32	0.00	0.00	0.00	0.83	0.00
Abies alba	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.55	0.22	32.99	1.68	0.00	1.59	0.00	0.38	0.16	1.68	1.50	2.54	3.24	4.91	1.91	3.94	8.88	0.00
Abies alba	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	411.50	1689.78	2340.36	514.00	96.95	541.51	32.47	434.64	768.58	341.91	216.06	622.32	695.44	676.85	475.05	303.01	92.70	220.61	144.34	0.83
Abies alba	leaf	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.08	0.00	0.74	0.00	0.29	0.00	0.00	0.00	0.11	0.00	0.00	0.00	1.11	0.00	0.00
Acer spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.22	2.03	0.14	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Acer* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.07	0.00	0.00	0.27	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ajuga reptans	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	3.55	0.20	0.00	0.00	0.00	0.00	0.23	0.59	0.00	0.15	0.11	0.34	0.00	0.00	0.40	0.00
Betula pendula/pubescens	seed/fruit	uncharred	5.45	0.00	2.22	16.00	12.00	0.00	0.00	0.00	0.00	42.64	2.83	13.13	8.45	1.18	2.86	0.27	3.20	3.71	1.94	0.85	4.52	1.22	6.46	24.65	16.26
Betula pendula/pubescens	fruit whole	uncharred	1.82	3.53	6.67	10.00	6.00	0.00	0.22	0.00	0.00	13.71	0.34	0.74	0.70	0.22	0.29	0.42	0.68	0.67	0.05	0.11	0.34	1.00	0.00	2.80	3.53
Betula pendula/pubescens	bract	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.18	0.00	5.08	0.24	0.00	0.00	0.00	0.00	0.00	0.73	0.83	0.22	0.00	0.20	0.00	0.00	1.19	0.00
cf. *Betula pendula/pubescens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.05	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Fagaceae	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	2.03	0.14	0.00	0.11	0.97	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.18	0.44	4.06	0.15	0.00	0.00	0.00	0.29	0.22	0.40	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Ilex aquifolium	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamium galeobdolon s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Milium effusum	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.19	0.00	0.00	0.44	0.00	0.00	0.29	0.00	0.31	0.00	19.05	0.00	0.00	0.26	0.00
cf. *Milium effusum*	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.03	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Moehringia trinervia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.44	0.55	0.67	45.18	4.81	0.37	2.49	14.71	3.98	1.58	6.79	1.22	2.88	5.08	11.80	0.00	0.57	1.61	0.00
Phyteuma spicatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.08	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.22	0.07	0.00	0.00	0.00	3.57	0.00
Phyteuma cf. *spicatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Picea abies	leaf	uncharred	0.00	0.00	4.44	4.00	0.00	0.25	1.11	6.91	2.22	44.16	18.41	0.00	0.65	1.50	1.65	1.58	39.31	2.17	33.00	4.37	52.89	0.00	70.11	2.06	0.15
cf. *Picea abies*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.51	0.01	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Picea abies*	leaf	uncharred	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
cf. *Picea* spec.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.02	0.00	0.00	0.07	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanicula europaea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrophularia nodosa/umbrosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Stachys sylvatica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.00	0.11	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria cf. *holostea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00
Taxus baccata	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.89	0.18	0.67	53.81	10.07	0.30	0.00	7.12	1.27	2.09	7.02	8.73	24.71	3.76	2.77	1.45	1.72	1.19	0.00
cf. *Taxus baccata*	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Tilia cf. *cordata*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tilia platyphyllos	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00
Tilia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.08	0.15	0.00	0.53	0.24	0.48	0.00	0.20	0.00	0.03	0.19	0.00	0.00	0.00	2.74	0.00
cf. *Tilia* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Ulmus glabra	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	9.64	0.53	0.00	0.00	0.13	0.00	0.16	0.56	0.42	1.13	0.40	0.00	0.00	0.00	0.00	0.00
Viscum album s.l.	leaf	uncharred	0.00	0.00	0.00	0.00	0.00	4.25	3.78	10.91	3.56	45.18	8.55	0.67	1.61	9.81	1.67	4.40	7.89	7.43	15.95	4.92	0.00	0.00	2.22	0.53	0.00
density			7.27	4.71	13.33	34.00	18.00	418.00	1698.00	2360.36	522.00		524.84	47.67	451.63	806.14	357.30	227.63	694.46	722.95	762.48	498.74	399.83	99.28	306.75	195.63	20.98
number of taxa			1.00	2.00	2.00	3.00	1.00	6.00	9.00	7.00	7.00		3.72	2.25	2.89	4.27	3.57	3.50	4.35	4.00	4.22	3.70	3.43	2.25	4.00	3.00	1.50
woodland clearing edge, hedge, bush plants																										
Agrimonia eupatoria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	9.14	0.32	0.00	0.00	0.84	0.48	0.00	0.63	0.00	0.32	0.00	0.00	1.00	1.11	0.65	0.00
Agrimonia procera	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	1.52	0.06	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00
Agrimonia cf. *procera*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agrimonia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00
Agrimonia spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.07	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.06	0.10	0.00	0.00	0.00	0.00	0.00
Calamintha menthifolia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Clinopodium vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.18	0.00	19.29	3.55	0.00	0.00	1.72	0.00	0.48	7.15	1.52	6.47	0.07	0.85	0.00	0.61	0.54	0.00
Cornus sanguinea	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Cornus sanguinea	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.36	0.00	7.61	0.27	0.00	0.00	0.86	0.00	0.00	0.64	0.00	0.12	0.14	0.34	0.00	0.61	1.19	0.15
cf. *Cornus sanguinea*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.06	0.00	0.00	0.27	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.48	0.00
Epilobium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	29.95	4.73	0.00	1.10	8.25	2.66	0.81	6.37	2.64	8.05	0.50	26.46	0.00	2.22	0.97	0.00
Fallopia dumetorum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	6.09	0.34	0.00	0.00	0.00	0.00	0.13	0.89	0.00	0.53	0.00	0.00	0.00	0.00	0.18	0.00
Galeopsis cf. *tetrahit*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.44	0.73	0.44	10.15	0.50	0.30	0.56	0.59	1.52	0.08	0.80	0.00	0.43	0.33	0.68	0.00	0.00	0.75	0.00
cf. *Galeopsis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Humulus lupulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum perforatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.73	0.44	64.47	26.64	0.37	1.01	0.92	4.25	17.42	31.02	20.48	61.24	3.24	68.43	8.94	6.95	37.87	0.00
Hypericum cf. *perforatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Lapsana communis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Lapsana communis	seed/fruit	uncharred	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.55	0.22	36.55	3.57	1.70	1.35	1.44	0.98	2.78	3.32	0.67	6.96	2.30	3.20	0.00	0.57	0.00	0.20
Origanum vulgare	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.22	320.00	0.89	53.81	16.86	0.00	1.75	19.59	5.82	15.64	25.15	3.77	27.23	1.90	19.49	2.45	7.47	9.82	0.00
Prunus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	5.58	0.12	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.22	0.16	0.00	0.00	0.00	0.87	0.00
cf. *Rosa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rubus spec.	seed/fruit	uncharred	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.22	13.71	1.98	0.00	0.32	2.73	0.29	0.65	6.52	0.00	0.77	0.48	0.57	0.45	2.22	0.00	0.30
Silene dioica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum lantana	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.55	0.00	14.21	0.74	0.00	0.00	0.00	0.00	0.00	0.58	0.67	1.94	0.38	1.02	0.00	1.72	0.67	0.00
cf. *Viburnum lantana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viburnum opulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	1.52	0.04	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.07	0.00	0.00	1.00	0.00	0.00	0.00
Viburnum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00
density			1.82	1.18	0.00	0.00	0.00	1.75	2.22	324.00	2.89		58.84	2.36	6.73	37.87	16.35	38.42	83.56	30.57	115.94	9.62	121.04	13.85	23.49	55.29	0.65
number of taxa		16	1.00	1.00	0.00	0.00	0.00	4.00	6.00	10.00	7.00		2.81	0.63	1.56	2.60	2.86	2.44	3.44	2.83	3.76	2.00	2.71	2.00	4.00	3.21	0.50
grassland plants																										
cf. *Agrostis* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.18	0.00	0.32	0.00	0.00	0.00	0.14	0.00	0.47	0.00	0.00	7.13	0.00	0.00	0.00
Gentiana cruciata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.62	0.00	0.00	0.00	0.00	0.00
Heracleum sphondylium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum cf. *maculatum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.48	0.00
Laserpitium siler	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.08	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leucanthemum cf. *vulgare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	5.58	0.24	0.00	0.00	0.00	0.00	0.16	0.30	0.00	0.43	0.33	0.34	0.00	0.00	0.00	0.00
Medicago lupulina	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.21	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.13	0.00
Poa pratensis/trivialis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.79	10.79	0.00	1.20	2.30	3.37	0.67	7.67	7.43	28.70	3.60	18.04	6.13	1.15	5.71	0.15
Poa cf. *pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.30	1.42	0.00	0.00	1.21	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Poa pratensis/trivialis*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.17	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.50	0.00	0.00	3.18	0.00	0.00	0.00
Prunella vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	38.07	17.63	0.00	0.00	2.14	1.30	0.36	34.21	1.53	36.04	1.45	59.79	0.45	26.32	1.58	0.37
Prunella cf. *vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.04	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.04	0.00	0.00	0.00	0.00	0.36	0.00
Rumex acetosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.06	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Rumex acetosella agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.31	2.86	0.00	0.00	0.00	0.00
Rumex acetosella agg.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Silene vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Taraxacum officinale agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trifolium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.24	1.40	0.00	1.11	0.00	0.95	0.16	0.53	0.33	3.51	1.36	0.84	3.13	0.00	0.26	0.00
cf. *Trifolium* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.18	0.00		30.39	0.30	2.62	4.44	5.63	2.73	43.40	9.29	71.24	9.24	81.86	20.01	28.68	8.52	0.52
number of taxa			0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00		1.37	0.13	0.56	0.60	1.14	0.75	1.68	1.33	2.07	1.65	1.71	1.75	1.33	0.93	0.33
winter crop annual and flax weeds																										
Agrostemma githago	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.04	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphanes arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	0.07	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.16	0.00	2.86	0.45	0.57	0.48	0.00
cf. *Camelina* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.22	3.55	0.08	0.00	0.00	0.26	0.48	0.25	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Fallopia convolvulus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.08	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.24	0.00	0.34	0.00	0.00	0.00	0.00
Silene cretica	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.50	0.00	5.27	62.22	6.60	2.96	0.00	0.00	0.42	1.36	28.87	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Silene cf. *cretica*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valerianella dentata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	8.63	0.43	0.00	0.00	0.00	0.00	0.00	0.34	2.00	0.84	0.39	0.16	0.00	0.00	0.00	0.00
Valerianella locusta	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.00
Vicia hirsuta/tetrasperma	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola tricolor agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.75	0.22	5.27	62.44		3.24	0.00	0.00	1.45	1.83	29.32	0.49	2.00	1.37	0.39	3.36	0.45	1.18	0.48	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00		0.27	0.00	0.00	0.33	0.71	0.75	0.15	0.50	0.27	0.17	0.43	0.25	0.67	0.07	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	bulk	bulk	bulk	bulk																
		volume (l)	0.55	0.85	0.45	0.50	0.50	4.00	4.50	5.50	4.50																
		sediment type	M1	M1	NA	NA	NA	NA	NA	NA	NA	ubiquity	average density														
		unit	U14	U14	NA	NA	NA	NA	NA	NA	NA	(without samples from profile															
		sample nr.	45_24	101_24	50_7_1	50_7_2	50_7_3	1452_A	1655_A	1672_A	1711_A	sequence 53-52-51-50 and bulk	average densities per unit														
	type	state										samples)		U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14
summer crop annual weeds, annual ruderals																									
Aethusa cynapium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Arenaria serpyllifolia agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.18	53.33	55.33	28.60	0.60	1.31	0.86	2.45	1.59	58.39	37.57	48.42	8.66	19.03	0.00	22.99	1.01	0.15
Arenaria serpyllifolia agg.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
Brassica rapa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	153.50	0.67	156.00	107.11	38.07	4.30	0.00	1.15	4.49	1.17	13.69	3.92	2.92	3.55	3.70	12.03	5.13	0.00	1.76	0.00
Brassica/Sinapis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	9.14	0.71	0.00	0.53	0.11	0.38	0.06	2.05	0.56	0.38	0.69	0.16	0.00	0.00	0.24	0.00
Chenopodium album	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.16	0.00	0.00	0.00	0.85	0.00	0.08	0.00	0.35	0.04	1.59	0.00	0.61	0.00	0.00
Chenopodium cf. *album*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Chenopodium polyspermum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.12	0.00	0.00	0.44	0.00	0.00	0.10	0.00	0.22	0.00	0.00	0.00	2.32	0.00	0.00
Chenopodium cf. *polyspermum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Chenopodiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.09	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.60	0.00
Chenopodium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	2.54	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	2.87	0.00
Digitaria cf. *ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.80	18.34	0.00	0.00	0.00	0.00	0.00	10.80	3.67	51.00	13.28	17.14	3.44	0.00	1.19	0.00
cf. *Digitaria ischaemum*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.69	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria sanguinalis	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Digitaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.10	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.15	0.00	1.36	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00
cf. *Digitaria* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.60	0.94	0.00	0.00	0.00	0.00	0.00	3.00	0.00	1.01	0.25	1.92	0.00	0.00	0.40	0.00
Echinochloa crus-galli	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.03	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum aviculare agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.22	0.55	0.00	31.47	8.91	0.00	0.74	0.86	1.05	0.09	27.26	0.75	10.40	1.10	24.20	0.00	1.69	5.53	0.00
Polygonum cf. *aviculare* agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00
Polygonum persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	1.33	291.09	0.67	18.27	4.09	0.00	0.00	8.63	13.71	0.88	9.96	0.00	1.74	0.46	36.87	0.00	2.30	1.79	0.00
Polygonum cf. *persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solanum nigrum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.09	0.52	0.00	0.00	0.11	0.00	0.00	0.45	1.00	1.30	0.17	0.00	0.00	0.00	0.00	0.00
Sonchus asper	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.22	0.18	0.44	29.95	2.77	1.78	2.68	1.99	0.29	0.70	4.27	10.25	2.89	1.40	0.00	0.00	0.61	0.40	0.00
Sonchus oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	0.11	0.00	0.00	0.07	0.73	0.00	0.06	0.00	0.04	0.38	0.00	0.00	0.00	0.00	0.00
Sonchus asper/oleraceus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.09	0.40	0.30	0.00	0.33	0.95	0.00	0.80	0.76	0.12	0.64	0.00	1.00	0.00	0.00	0.00
Stachys arvensis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	2.03	0.10	0.00	0.00	0.44	0.48	0.00	0.15	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria media agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	27.41	1.93	0.00	0.00	0.91	0.00	0.68	1.65	3.18	4.22	1.08	16.57	0.00	1.72	2.43	0.00
Verbena officinalis	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.09	0.33	0.00	0.00	0.00	0.18	0.00
Verbena officinalis	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.44	0.36	0.00	75.63	61.37	1.03	1.69	4.13	15.52	4.12	48.75	76.52	139.74	58.19	100.96	14.89	46.33	81.23	0.00
density			0.00	0.00	0.00	0.00	0.00	155.50	3.33	448.91	161.56		129.20	3.70	8.10	23.46	37.58	21.80	172.11	137.72	272.25	90.89	232.39	24.45	78.55	100.41	0.15
number of taxa			0.00	0.00	0.00	0.00	0.00	6.00	6.00	9.00	4.00		3.45	0.75	1.78	2.53	2.86	2.44	3.88	4.67	4.69	4.09	4.43	2.00	4.33	3.07	0.17
perennial ruderals																									
Arctium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	3.00	5.78	4.00	4.44	47.21	15.52	0.00	0.00	3.75	6.89	5.64	8.70	1.42	43.34	3.52	9.69	1.00	13.68	4.32	0.00
Arctium spec.	flower	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Arctium spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	15.69	0.00	0.00	0.00	0.00	0.00	0.91	0.00	56.08	0.09	0.00	0.00	0.00	0.00	0.00
cf. *Arctium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.14	0.00	0.00	0.00	0.00	0.00
Artemisia vulgaris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.60	0.33	0.37	0.00	0.00	0.38	0.27	0.53	1.00	0.45	0.00	1.02	0.00	0.00	0.40	0.00
cf. *Artemisia vulgaris*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00
Daucus carota	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	2.54	0.04	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.09	0.00	0.63	0.00	0.61	0.40	0.00
Dipsacus fullonum/pilosus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Galium cf. *aparine*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	7.61	0.29	0.00	0.00	0.33	0.48	0.47	0.14	0.67	0.38	0.20	0.00	0.00	0.00	0.00	0.00
Lamium maculatum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malva sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.07	0.00	0.00	0.00	0.48	0.00
Nepeta cataria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
Rumex conglomeratus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
Rumex crispus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbascum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.11	0.39	0.00	0.00	0.00	1.43	0.00	0.95	0.00	0.43	0.06	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	3.75	6.00	4.55	4.44		28.02	0.37	0.00	4.09	10.13	6.70	11.33	3.08	101.32	4.25	11.69	2.00	14.28	5.99	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	3.00	2.00	2.00	1.00		0.81	0.13	0.00	0.73	1.43	1.13	1.09	0.83	1.02	0.48	0.57	0.50	1.00	0.79	0.00
cereals																									
Hordeum vulgare undiff.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.82	0.32	0.00	0.00	0.00	0.00	0.00	0.11	0.00	1.03	0.09	0.34	0.00	0.00	2.08	0.00
Hordeum vulgare undiff.	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	36.76	7.53	0.00	0.00	0.00	0.00	0.28	7.24	32.53	12.78	8.96	5.03	21.70	1.69	1.55	0.00
Hordeum vulgare undiff.	rachis segment	uncharred	0.00	0.00	0.00	0.00	0.00	1.50	0.22	0.73	0.00	58.33	38.08	5.60	20.74	7.59	5.60	2.33	20.08	54.45	97.68	16.55	15.67	20.63	3.45	2.46	0.00
Hordeum vulgare undiff.	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.05	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Triticum dicoccum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.71	0.00
Triticum dicoccum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.73	0.00	45.59	21.82	0.74	0.00	0.42	0.00	6.43	15.95	99.44	34.34	32.91	20.19	2.45	53.61	20.29	0.00
Triticum dicoccum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	96.50	215.78	180.36	60.67	81.86	239.99	30.39	133.99	292.10	622.91	78.73	226.98	180.74	352.25	131.07	180.54	50.81	9.38	88.47	0.00
Triticum dicoccum	glume basis	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	4.90	0.17	0.00	0.00	0.00	0.00	0.00	0.29	1.11	0.18	0.13	0.41	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.37	2.07	0.74	0.00	0.00	0.00	0.00	0.52	0.83	6.81	0.09	0.00	0.00	0.00	0.00	0.00
Triticum monococcum	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	3.11	11.64	0.00	13.24	2.17	1.47	1.11	1.73	1.47	1.04	1.51	0.00	4.89	0.29	0.00	0.00	0.00	0.00	0.00
Triticum cf. *monococcum*	glume basis	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.14	0.00	0.00	0.13	1.07	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00
Triticum aestivum s.l./*durum/turgidum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.14	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.16	0.41	0.00	0.00	0.00	0.18	0.00
Triticum durum/turgidum	rachis segment	charred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	5.09	0.00	44.61	17.72	0.00	0.00	0.00	0.00	1.83	16.12	40.94	33.34	24.54	20.44	9.25	1.72	9.30	0.00
Triticum durum/turgidum	rachis segment	uncharred	0.00	0.00	0.00	0.00	0.00	5.75	3.56	129.45	55.33	70.59	121.84	7.25	39.44	60.51	84.57	38.38	157.42	274.65	201.36	55.26	6.83	44.24	30.01	2.25	0.00
Triticum durum/turgidum	rachis segment	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.35	0.00	0.00	0.00	0.00	0.00	0.34	1.67	0.70	0.17	0.00	0.00	0.00	0.18	0.00
Triticum monococcum/dicoccum	glume base	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	3.07	0.00	0.00	0.00	0.00	0.00	0.00	8.33	9.99	0.04	0.00	0.00	0.00	0.00	0.00
Triticum monococcum/dicoccum	glume base	uncharred	0.00	0.00	0.00	0.00	0.00	121.25	458.44	226.91	143.56	28.92	27.50	19.12	15.93	60.74	30.48	40.10	19.49	13.31	35.76	2.95	17.35	0.45	0.00	0.79	0.00
Cerealia indet.	bran	charred	0.00	3.53	0.00	0.00	0.00	3266.50	4792.22	5076.00	1015.11	19.61	1587.87	135.72	1767.86	4165.04	2121.04	1218.63	1324.64	1521.87	1723.90	576.61	1182.48	1043.09	38.05	387.30	2.15
Cerealia indet.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.36	0.67	16.67	0.83	0.00	0.00	0.13	0.22	0.28	0.46	2.76	1.51	1.21	0.57	0.00	0.57	5.73	0.00
Cerealia indet.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.53	9.19	0.00	0.00	0.00	1.13	0.00	3.60	3.33	28.46	2.89	12.00	15.00	0.00	0.79	0.00
Cerealia indet.	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	567.75	352.44	0.73	0.00	0.98	210.22	25.82	111.63	177.00	187.84	25.63	121.93	380.20	409.70	165.71	119.96	56.31	3.51	78.91	0.00
Cerealia indet.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.63	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.06	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triticum spec.	chaff	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.31	12.66	0.00	0.00	0.97	1.42	0.10	5.74	5.53	32.74	14.60	60.15	35.74	42.59	36.88	0.00
Triticum spec.	chaff	uncharred	0.00	1.18	0.00	0.00	2.00	6.75	0.00	320.18	152.67	70.10	188.24	16.53	129.95	208.11	237.31	45.48	210.55	247.43	299.62	75.84	257.29	149.52	338.31	73.35	0.20
Triticum spec.	chaff	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.09	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.24	0.00
density cereals all			0.00	4.71	0.00	0.00	2.00	4068.25	5825.78	5952.18	1428.44		2217.52	243.37	2221.02	4974.47	3295.06	1459.31	2133.64	2869.13	3287.58	1110.88	1899.24	1449.19	522.88	711.47	2.35
density cereals determined with bran			0.00	3.53	0.00	0.00	0.00	3493.25	5473.33	5630.91	1275.11		1827.93	201.02	1979.07	4588.26	2867.13	1387.75	1790.99	2229.88	2515.28	850.64	1449.26	1192.63	137.89	515.57	2.15
number of taxa			0.00	1.00	0.00	0.00	1.00	3.00	4.00	4.00	2.00		2.62	1.75	2.78	2.47	2.71	2.06	2.74	3.00	3.20	2.91	2.71	2.50	2.67	1.93	0.50
pulses																									
Fabaceae	pod	uncharred			0.00	0.00	0.00					79.55	28.36	0.49	3.33	6.62	12.21	2.25	14.85	26.48	57.56	29.33	22.33	1.94	0.86	28.16	-
Fabaceae	pod	semi-charred			0.00	0.00	0.00					9.09	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.67	0.00	0.00	0.00	1.11	-
Fabaceae	pod stem	uncharred			0.00	0.00	0.00					10.23	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.33	0.89	0.00	0.00	1.11	-
cf. Fabaceae	pod	uncharred			0.00	0.00	0.00					2.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	3.33	0.00	-
Pisum sativum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.18	0.00
Pisum sativum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.13	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.37	0.00	0.34	0.00	0.00	0.00	0.00
cf. *Pisum sativum*	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		12.47	0.37	1.11	2.21	5.23	0.56	9.32	8.83	36.12	4.09	13.61	4.58	2.80	11.03	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.39	0.13	0.11	0.20	0.43	0.19	0.62	0.33	0.58	0.09	0.57	0.75	0.67	0.36	0.00
oil- and fibre-plants																									
Linum usitatissimum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	7.61	0.58	0.00	0.00	0.89	0.00	0.89	0.06	0.00	1.39	0.12	0.00	0.00	0.00	0.95	0.00
Linum usitatissimum	seed/fruit	uncharred	0.00	1.18	0.00	0.00	0.00	1481.00	1799.33	2354.55	1384.22	97.97	679.31	107.06	425.82	1217.23	1018.16	684.39	700.76	659.01	794.31	268.63	317.78	94.20	195.12	84.86	0.92
Linum usitatissimum	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.25	0.89	0.18	0.00	4.57	0.21	0.00	0.00	1.00	0.22	0.08	0.07	0.00	0.15	0.33	0.00	0.00	0.00	0.18	0.00
Linum usitatissimum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	5.00	8.00	14.00	4.44	65.99	26.70	11.41	13.60	56.00	37.51	12.40	30.19	54.83	25.21	15.10	7.59	1.45	7.21	1.37	0.00
Linum usitatissimum	capsule	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.04	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	0.31	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.83	0.07	0.00	0.00	0.00	0.00	0.00
Linum usitatissimum	capsule frg.	uncharred	0.00	0.00	0.00	0.00	0.00	181.25	185.78	378.00	118.67	93.40	299.03	34.12	193.89	442.79	546.78	126.95	239.80	381.07	427.21	198.21	158.11	41.41	114.79	26.70	0.79
Linum usitatissimum	capsule frg.	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	3.05	0.10	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.11	0.29	0.57	0.00	0.00	0.48	0.00
Papaver somniferum	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.08	0.18	0.37	0.00	0.07	0.36	0.00	0.32	0.00	0.20	0.12	0.00	0.00	1.11	0.00	0.00
Papaver somniferum	seed/fruit	uncharred	3.64	3.53	2.22	10.00	2.00	7050.50	18879.33	24460.36	4702.44	99.49	3443.85	417.03	3175.31	10007.50	7016.64	3750.08	3448.54	1907.46	2694.96	879.76	1269.16	301.17	362.48	323.59	3.27
Papaver somniferum	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.18	0.00	4.57	0.34	0.00	0.85	0.44	0.00	0.26	0.29	0.00	0.52	0.17	0.00	0.00	0.00	0.00	0.00
density			3.64	4.71	2.22	10.00	2.00	8718.00	20874.00	27207.45	6209.78		3795.37	570.00	3810.01	11726.36	8619.67	4575.05	4420.03	3004.36	3944.89	1362.81	1753.22	438.24	680.72	438.13	4.97
number of taxa			1.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00		2.01	2.38	2.00	2.00	2.00	1.94	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.83
potentially cultivated plants																									
Anethum graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.05	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Anethum graveolens*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Apium graveolens	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.58	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	1.08	3.45	0.00	0.79	0.00
density			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.33	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.57	0.00	1.08	3.45	0.00	0.79	0.00
number of taxa			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.07	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.18	0.00	0.29	0.50	0.00	0.07	0.00
gathered fruits/berries/nuts/acorns																									
Corylus avellana	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.25	0.44	0.55	0.67	4.57	0.09	0.00	0.00	0.00	0.22	0.16	0.27	0.00	0.01	0.04	0.00	0.00	0.00	0.87	0.00
Corylus avellana	seed/fruit	uncharred	1.82	0.00	0.00	0.00	2.00	19.50	22.22	17.64	22.44	65.48	9.89	0.37	2.24	7.99	12.23	6.68	11.43	6.98	14.16	9.05	16.63	4.13	10.36	39.70	1.09
cf. *Corylus avellana*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
Crataegus monogyna agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.07	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	bulk	bulk	bulk	bulk																
		volume (l)	0.55	0.85	0.45	0.50	0.50	4.00	4.50	5.50	4.50																	
		sediment type	M1	M1	NA	NA	NA	NA	NA	NA	NA		ubiquity	average density														
		unit	U14	U14	NA	NA	NA	NA	NA	NA	NA		(without samples from profile															
		sample nr.	45_24	101_24	50_7_1	50_7_2	50_7_3	1452_A	1655_A	1672_A	1711_A		sequence 53-52-51-50 and bulk		average densities per unit													
	type	state												samples)	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14
Crataegus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.05	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00
cf. *Crataegus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fagus sylvatica	cupule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.06	0.02	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.19	2.74
Fagus sylvatica	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	1.00	0.89	0.55	0.44		24.37	3.45	0.00	0.74	0.41	1.43	1.67	12.52	4.50	1.16	0.31	0.51	1.00	0.00	1.98	0.00
Fragaria vesca	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	551.50	1065.11	900.73	222.89		90.36	193.04	55.67	103.22	293.71	120.61	165.78	382.22	193.71	167.91	20.67	81.80	15.51	42.94	67.60	0.42
Malus sylvestris	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.03	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus sylvestris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	54.25	41.11	166.18	18.00		82.23	23.30	2.36	20.26	25.89	25.69	30.95	44.95	13.86	14.29	12.16	24.54	3.89	3.45	6.91	0.42
Malus sylvestris	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.36	0.00		4.57	0.20	0.00	0.00	0.00	0.00	0.00	0.26	0.67	0.44	0.00	0.00	0.00	0.00	0.54	0.00
Malus/Pyrus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		1.52	0.03	0.00	0.00	0.13	0.00	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.07	0.00	0.56	0.22	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	pericarp	uncharred	0.00	0.00	0.00	0.00	0.00	114.75	182.67	263.64	34.00		88.32	51.76	6.63	26.80	100.40	48.32	62.50	95.26	30.72	34.10	14.80	23.56	12.28	12.45	3.79	0.00
Malus/Pyrus	stem	uncharred	0.00	0.00	0.00	0.00	0.00	8.75	13.33	11.45	3.78		37.56	2.66	0.30	4.34	3.11	3.25	6.21	3.44	1.31	1.62	1.13	0.57	4.13	0.00	1.21	0.00
cf. *Malus/Pyrus*	stem	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Malus/Pyrus	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00		1.02	0.10	0.00	0.00	0.83	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Malus/Pyrus*	stem	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
cf. *Pyrus* spec.	fruit flesh	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Physalis alkekengi	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.89	255.64	0.22		37.56	2.84	0.42	0.74	1.33	1.90	0.76	2.90	5.22	5.60	1.08	7.07	5.13	1.11	2.95	0.00
Prunus cf. *spinosa*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.05	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
Prunus spinosa	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	2.50	1.56	5.09	3.11		11.17	0.51	0.00	0.56	0.00	0.29	1.34	0.73	1.33	0.47	0.00	8.91	0.00	1.11	0.24	0.00
Quercus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	seed/fruit	uncharred	1.82	0.00	0.00	0.00	0.00	0.00	0.22	0.91	0.22		11.68	1.51	0.00	0.00	0.28	0.00	0.06	0.49	0.00	4.32	1.29	0.51	0.00	0.00	0.89	0.30
Quercus spec.	cotyledon	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quercus spec.	pericarp	uncharred	9.09	0.00	0.00	0.00	0.00	4.75	1.11	5.82	1.11		50.25	16.12	0.37	0.00	2.89	2.08	3.74	6.05	5.43	41.95	16.59	12.82	0.31	5.63	7.06	1.52
Rosa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	12.25	12.89	29.64	8.22		42.13	3.02	0.00	2.33	2.66	2.99	4.38	3.89	1.51	4.27	0.27	7.88	2.00	2.26	6.83	0.00
Rubus fruticosus agg.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Rubus fruticosus agg.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	5.50	170.44	222.18	1.11		60.41	13.47	0.30	1.18	8.51	23.41	7.45	34.65	7.90	9.48	5.24	9.38	0.00	8.79	57.69	0.00
Rubus fruticosus/idaeus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	229.25	110.44	189.09	55.11		50.76	35.02	5.06	16.80	45.54	13.47	28.35	49.38	51.89	49.00	3.94	34.83	0.00	9.63	32.29	0.15
Rubus idaeus	seed/fruit	uncharred	0.00	1.18	0.00	0.00	0.00	750.50	340.00	748.73	166.22		86.80	227.40	40.86	42.43	242.77	209.45	218.41	402.88	488.96	240.35	13.43	75.51	0.77	40.72	96.44	0.20
Rubus idaeus	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sambucus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.50	0.67	0.18	0.00		22.84	0.90	0.00	0.00	0.37	0.00	0.27	1.02	0.00	1.99	0.58	3.87	3.58	1.69	11.80	0.00
Taxus baccata	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.22		2.03	0.03	0.00	0.00	0.13	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00
Vaccinium cf. *myrtillus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.05	0.00	0.00	0.00	0.00	0.11	0.06	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Vaccinium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.10	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.34	0.00	0.00	0.00	0.00
density			12.73	1.18	0.00	0.00	2.00	1755.50	1964.44	2819.27	538.00			523.83	112.34	222.94	737.29	465.82	538.96	1053.41	813.99	592.09	100.90	308.75	52.72	140.14	346.06	7.20
number of taxa			2.00	1.00	0.00	0.00	1.00	10.00	12.00	12.00	12.00			6.02	2.75	4.22	5.67	6.14	6.75	6.85	7.33	6.40	4.91	6.71	4.75	7.67	7.93	1.83
various unassigned plants																												
cf. *Alopecurus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.02	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Anagallis/Lysimachia	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.04	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthriscus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Apiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.06	0.00	0.00	0.11	0.00	0.06	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Asteraceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00		4.06	0.18	0.00	0.00	0.00	0.00	0.06	0.43	0.00	0.24	0.14	0.00	0.00	0.00	0.00	0.00
Asteraceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.22		23.35	2.55	0.00	1.27	0.94	2.12	0.56	1.32	8.88	5.50	0.91	0.85	1.00	0.57	0.40	0.00
Brassicaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Brassicaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.09	0.43	0.00	0.65	0.00	0.29	0.00	0.41	1.59	0.87	0.00	0.00	0.00	0.00	0.60	0.00
Brassicaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00
Bromus spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Bromus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.11	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.22	0.29	0.00	0.00	0.00	0.00	0.00
Campanula rapunculoides/trachelium	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.09	0.41	0.00	2.04	0.83	0.00	0.00	0.07	0.00	0.73	0.00	0.34	0.00	0.00	0.79	0.00
cf. *Campanula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campanulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
Cardamine spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.06	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	2.00	0.25	0.44	4.91	0.67		62.44	52.98	0.30	1.48	21.51	44.60	2.95	133.16	14.35	71.96	3.75	32.71	2.82	37.64	51.98	0.00
Caryophyllaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.15	5.88	0.00	0.00	0.11	0.00	0.00	0.61	0.76	20.72	0.00	32.61	0.00	0.00	1.46	0.00
Cerastium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	133.25	86.67	0.00	0.89		75.13	55.62	0.06	1.61	6.65	6.64	22.38	50.37	124.14	124.60	20.98	52.54	6.03	33.95	2.40	0.00
cf. *Cerastium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00
Cirsium/Carduus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.04	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.08	0.00	0.00	0.00	0.00	0.40	0.00
cf. *Cirsium/Carduus*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Crepis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		12.18	0.72	0.00	0.56	1.28	1.79	0.00	0.06	0.00	1.45	0.62	1.59	5.13	0.00	0.79	0.00
Crepis spec.	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.03	0.00	0.00	0.07	0.00	0.06	0.00	0.00	0.00	0.14	1.90	0.00	0.00	0.00	0.00
Euphrasia/Odontites	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	1.27	0.00	0.00	0.00	0.00	0.00	0.04	0.00	4.58	0.00	0.00	0.00	0.57	0.00	0.00
Fabaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.05	0.00	0.00	0.22	0.00	0.16	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Fragaria/Potentilla	seed/fruit	uncharred	1.82	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00		32.99	21.49	1.33	0.74	0.73	0.48	0.10	0.79	6.90	74.36	2.40	121.18	0.00	43.20	14.37	0.50
Galium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.17	0.00	0.00	0.00	0.00	0.00
Geum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Hordeum* spec.	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypericum hirsutum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.54	0.11	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.34	0.00	3.20	0.00	0.00	0.00	0.00
Hypericum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.11	0.54	0.00	0.00	0.00	0.00	0.16	1.74	0.42	0.46	0.14	0.00	2.31	0.00	0.65	0.00
cf. *Hypericum* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juncus spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		15.23	1.47	0.00	0.00	0.74	0.48	0.00	1.52	1.42	3.68	0.00	2.61	1.91	2.26	0.00	0.00
Lamiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.12	0.55	0.00	0.00	0.83	0.00	0.00	0.36	0.83	1.26	0.14	2.86	0.00	1.21	1.13	0.00
Lamium spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22		0.51	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Luzula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.13	0.00	0.00	0.00	0.00	0.00	0.54	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Luzula* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00
cf. *Melica* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Mentha spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		15.23	1.05	0.00	0.00	1.33	1.50	0.33	1.18	1.67	1.61	0.55	1.02	0.45	24.81	0.69	0.00
Origanum/Mentha	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.08	0.24	0.00	0.00	0.00	1.33	0.10	0.41	0.00	0.32	0.00	0.00	0.00	0.00	1.09	0.00
Origanum/Mentha	seed/fruit	semi-charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00
Pinaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00		0.51	0.01	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Pinus* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.18	0.00
Physalis/Solanum dulcamara	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Poa spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.12	0.70	0.00	0.00	0.00	0.29	0.16	1.98	0.83	0.60	0.41	0.57	2.00	0.00	0.79	0.00
cf. *Poa* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.60	0.82	0.00	0.00	0.15	0.00	0.06	0.12	0.00	2.82	0.00	0.57	0.00	0.00	3.57	0.00
Poaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.15	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.44	0.15	0.00	0.00	0.00	0.00	0.00
Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.75	0.22	140.00	80.00		34.01	5.93	0.00	0.67	0.59	0.48	0.74	7.29	0.00	14.64	1.32	14.89	4.58	0.00	1.33	0.00
Poaceae	fruit large	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.06	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.06	0.17	0.00	0.00	0.00	0.00	0.00
Poaceae	node	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Poaceae	chaff	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	1.10	0.30	0.00	0.00	0.22	10.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.05	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	bran	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. Poaceae	fruit large	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.36	0.00		13.71	2.04	0.00	0.00	1.25	0.48	0.10	0.32	1.89	5.88	0.98	0.51	0.31	0.00	1.11	0.00
Polygonaceae	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00
Polygonaceae/Cyperaceae	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonaceae/Cyperaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polygonum lapathifolium/persicaria	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22		1.02	0.03	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00
Polygonum cf. *minus/persicaria*	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
Polygonum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22		10.66	2.02	0.00	0.00	4.00	0.76	0.13	6.12	1.59	0.96	0.03	1.18	0.45	0.57	0.00	0.00
Potentilla spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		19.80	4.35	0.00	0.00	0.00	0.00	0.16	0.38	1.33	14.84	0.78	17.46	2.82	2.94	15.67	0.00
Primula spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.08	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00
Primulaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
Primulaceae	fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Rosaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.18	0.00	0.00	0.00	0.00	0.00	0.00
Rubiaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.02	0.01	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Rumex conglomeratus/sanguineus	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.24	0.00
Rumex conglomeratus/sanguineus	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Rumex spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.25	0.22	0.73	0.22		36.04	5.98	0.00	0.00	1.43	0.60	0.61	17.94	2.25	6.34	1.31	31.76	3.13	25.82	10.08	0.00
Rumex spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.06	0.21	0.00	0.00	0.00	0.00	0.16	0.15	0.00	0.18	0.81	0.16	0.00	0.00	0.00	0.00
cf. *Rumex* spec.	flower	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
Scrophularia spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.03	0.00	0.00	0.13	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.13	0.00
Scrophularia/Verbascum	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.18	0.00		7.61	0.49	0.00	0.00	0.00	0.00	0.16	0.65	0.56	0.88	0.55	0.00	0.00	1.21	0.18	0.00
Senecio spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.51	0.03	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silene spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52	0.03	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.07	0.00	0.00	0.45	0.00	0.00	0.00
Solanaceae	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.17	0.00	0.00	0.00	0.24	0.00
Solanum spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.12	0.30	0.00	0.37	0.00	0.95	0.00	0.43	0.00	0.45	0.17	1.71	0.00	0.00	1.60	0.00
Stachys spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.03	0.08	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.00	0.07	0.16	0.00	0.00	0.00	0.00

site: 6252 ZGRI		sample type	profile	profile	profile	profile	profile	bulk	bulk	bulk	bulk
		volume (l)	0.55	0.85	0.45	0.50	0.50	4.00	4.50	5.50	4.50
		sediment type	M1	M1	NA	NA	NA	NA	NA	NA	NA
		unit	U14	U14	NA	NA	NA	NA	NA	NA	NA
		sample nr.	**45_24**	**101_24**	**50_7_1**	**50_7_2**	**50_7_3**	**1452_A**	**1655_A**	**1672_A**	**1711_A**
	type	**state**									
Stellaria graminea/palustris	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00
Torilis spec.	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00
Viola spec.	capsule	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	seed/fruit	uncharred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
density			1.82	1.18	0.00	0.00	2.00	135.75	89.11	146.91	82.67
number of taxa			1.00	1.00	0.00	0.00	1.00	5.00	8.00	7.00	7.00
indeterminate plants											
Indeterminata	seed/fruit	charred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00
Indeterminata	seed/fruit	uncharred	7.27	0.00	2.22	0.00	2.00	1.00	3.78	16.36	3.78
Indeterminata	AOV	charred	0.00	0.00	0.00	0.00	0.00	0.75	4.00	2.18	0.22
density			7.27	0.00	2.22	0.00	2.00	1.75	7.78	18.91	4.00
density total			1341.82	3725.88	346.67	2722.00	904.00	15286.75	30640.44	39676.00	9019.33
number of taxa total			14.00	16.00	9.00	12.00	11.00	52.00	67.00	74.00	52.00
charred all density			0.00	0.00	0.00	0.00	0.00	3.25	5.11	10.36	2.00
semi-charred all density			0.00	0.00	0.00	0.00	0.00	0.25	1.33	0.18	0.44

	ubiquity	**average density** (without samples from profile sequence 53-52-51-50 and bulk samples)	**average densities per unit** U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14
Stellaria graminea/palustris	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Stellaria spec.	4.06	2.19	0.00	0.67	0.00	0.00	0.00	3.43	0.00	5.20	0.00	0.00	0.00	0.00	0.00	0.00
cf. *Teucrium* spec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Torilis spec.	0.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Torilis spec.	3.05	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.68	0.33	0.00	0.00	0.00	0.00	0.00
cf. *Vaccinium* spec.	0.51	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Viola spec.	9.64	0.70	0.00	0.00	0.44	0.00	0.06	2.03	0.00	0.76	0.12	0.00	0.00	0.00	0.00	0.00
Viola spec.	1.52	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.07	0.29	0.00	0.00	0.00	0.00	0.00
cf. *Viola* spec.	0.51	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
density		167.91	1.98	10.61	45.43	64.78	40.26	235.50	172.21	371.17	38.85	323.51	33.85	174.75	115.68	1.24
number of taxa		4.94	0.63	2.00	3.47	5.43	3.31	5.41	7.17	6.71	4.74	7.29	6.00	6.67	5.14	0.50
indeterminate plants																
Indeterminata	9.64	1.10	0.00	0.00	0.11	0.00	0.49	0.23	0.00	2.88	1.41	0.00	0.00	4.60	0.13	0.00
Indeterminata	53.81	24.43	12.44	16.48	17.69	35.16	7.63	22.83	14.88	44.96	9.22	73.62	6.03	4.02	51.18	1.36
Indeterminata	20.81	2.09	0.00	0.56	0.84	0.58	0.46	4.76	0.89	2.53	1.36	6.26	0.00	0.00	0.53	0.00
density		29.67	12.44	17.03	18.65	35.74	8.58	27.81	15.77	50.37	11.99	79.88	6.03	8.62	51.85	1.36
density total		8260.14	2083.05	7138.77	18569.25	13415.45	7070.33	9171.04	7922.61	9957.55	3368.03	6915.41	2558.90	3359.22	6523.18	2635.21
number of taxa total		37.97	17.38	25.33	34.67	41.00	33.50	41.88	46.00	44.78	33.70	45.43	34.50	48.67	42.29	14.33
charred all density		82.68	1.84	2.15	4.37	4.30	11.21	58.09	200.98	173.68	93.18	129.89	86.06	110.43	89.65	0.00
semi-charred all density		1.26	0.00	1.64	1.44	0.51	0.14	1.01	2.78	2.18	1.02	0.98	0.00	1.11	1.71	0.00