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Invertebrate survey and classification
of rivers for nature conservation

1991/92 report

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1. INTRODUCTION

In 1986 the Freshwater Biological Association (now the Institute of Freshwater Ecology) was contracted by the Nature Conservancy Council to undertake an examination of the macroinvertebrate fauna of a series of river systems in Great Britain. The project was entitled 'Invertebrate Survey and Classification of Rivers for Nature Conservation' and initially the funding was for a period of three years (contract number HF3-03-340). The NCC had previously carried out a national survey of river vegetation (Holmes, 1983) but in order to choose a series of rivers which merit notification as Sites of Special Scientific Interest, the macroinvertebrates, in addition to the vegetation, must be taken into account. Hence, a major objective of the project on macroinvertebrates was to fill in some of the gaps in the biological data-base. In 1988 the NCC decided to extend the contract to March 1992. Further details are given in Section 3.

2. PROGRAMME OF WORK

Four elements were specified in the original contract:

1. A sampling programme for invertebrates in each year of the project on a series of rivers selected by the NCC. The field sampling techniques to be compatible with the IFE 'River Communities Project' but also to take into account the further requirements of the NCC (see methods section).
2. Identification of the fauna, transfer of the data to computer and reporting of results in the form of species lists at the end of each year.
3. In the final year, the invertebrate species lists to be used to classify each site, using the latest IFE classification system.
4. The conservation value of the sites on all rivers sampled to be assessed in the final year, using criteria provided by the NCC. These criteria to include presence of rare species and/or rare communities, species richness at the site and the occurrence of representative communities. These attributes to be assessed by reference to information on the distribution of species and communities throughout Britain, held within the 'River Communities Project'.

3. SYNOPSIS OF PROGRESS 1986-1990

In 1986 seven river systems in Scotland (20 sites) were sampled for macroinvertebrates (Wright *et al.*, 1987) whilst in 1987, sampling was confined to five river systems (21 sites) in England and Wales (Wright *et al.*, 1988).

Prior to the 1988 sampling operation, the NCC took a policy decision to put additional resources into the conservation of rivers. As part of this policy, new funds were made available to undertake further survey work to enlarge the biological data-base. Under a new research project entitled 'Survey of Rivers for Conservation' a coordinated programme of river corridor, macrophyte and macroinvertebrate survey was developed. The IFE was asked to undertake the macroinvertebrate survey element of the work, using the existing methodology and new funding was provided for the period April 1988 to February 1992 (contract number HF3-08-33).

As a consequence, the funding for 1988/89 was higher than in the two previous years because it included funds from the final year of the initial contract plus funds from the new contract. In 1988, nine river systems (28 sites) in England and Wales were sampled (Wright *et al.*, 1989), whilst in 1989 five river systems (16 sites) in Scotland and England were examined (Wright *et al.*, 1990).

4. STRATEGY FOR 1990-1992

In February 1990 the NCC nominated officer for the project suggested a modification to the current sampling strategy in order to increase the number of sites for which data could be acquired in the final two years of the project. Essentially, the plan was to eliminate the need for IFE staff to undertake sampling at the rivers and sites of interest to the NCC by enlisting the help of National Rivers Authority (NRA) and River Purification Board (RPB) biologists.

The quinquennial River Quality Survey, planned for 1990, involved the collection of macroinvertebrate data by NRA/RPB staff in spring, summer and autumn using the same procedures as used by IFE in taking the 'main' samples in this NCC project. Thus, by enlisting the collaboration of NRA/RPB staff who were planning to sample most of the rivers of interest to NCC, more time would be available for IFE staff to identify samples in 1990/91 and 1991/92 and undertake items 3 and 4 of the programme of work in 1991/92. Using a list of rivers in England, Wales and Scotland already sampled by the NCC for macrophytes and for which macroinvertebrate data would be of interest, the relevant NRA/RPB regions were contacted by letter in early March 1990. For this new strategy to be workable, a small number of points relating to site locations and detailed sampling protocol would need to be accepted by NRA/RPB staff in order to retain the procedures undertaken by IFE staff over the previous four years. These were as follows:

- a) The location of the sites should, where possible, be coincident with previous macrophyte surveys and should always avoid badly polluted/impacted locations.

- b) An IFE 'Sample Area Form' should be completed in each season, together with a 'Survey Area Form' in summer only.
- c) Although the standard 3 minute kick/sweep plus 1 minute (maximum) search undertaken in the 1990 River Quality Survey forms the 'main' sample in each season, there is a further requirement for a 'supplementary' sample for the NCC from each site in each season.
- d) If possible a photograph (35mm colour slide) should be taken of each site in one season.

A list of the grid references of the sites to be sampled in the 1990 River Quality Survey was requested from the regions which indicated that they were prepared to collaborate. After further consultation between IFE and the NCC nominated officer on the suitability of the sites to be sampled within the 1990 RQS and the need for any additional sampling sites, a list of rivers and sites was drawn up. Some sites were designated as higher priority than others and 20 sites on five river systems in England and Scotland were examined 1990/91 (Wright *et al.* 1991) with others to be examined in 1991/92 as time allowed.

It was agreed that the NRA/RPB biologists who took samples for the project would be given listings of the species identified by IFE staff at the sites they sampled.

The strategy has undoubtedly meant that information on a larger number of sites is available for assessment than would have been possible if IFE staff had been involved in field sampling. This is particularly relevant in this, the final year of the project, when an appraisal of all the results obtained over the six year project will be carried out (items 3 and 4 of the programme of work). However, there were some problems, particularly in 1990/91.

All samples taken for the 1990 River Quality Survey (including those of interest to the NCC) were examined at BMWP family level by the local biologists before the full samples were sent to the IFE River Laboratory. The work load on NRA/RPB biologists to undertake the 1990 River Quality Survey was considerable and hence samples reached us later than when IFE staff sample in spring, summer and autumn. This resulted in a minor delay in completing the sample identifications in 1990/91, but was not a problem for the 1991/92 programme, since all samples for processing were at the River Laboratory at the start of the year.

Unfortunately, some regions found themselves under such a heavy workload that they were unable to comply with all aspects of the sampling protocol. In particular, supplementary samples were not obtained at all sites and on all sampling occasions. Although this means a loss of information on additional taxa found in the vicinity of the main sampling site, it will not affect the site classifications to be undertaken in 1991/92, since these are based on the results obtained from the 3-minute main samples only. Further information relating to the absence of some supplementary samples is given in the next section.

5. STUDY SITES FOR 1991-1992

A total of 18 sites on 8 river systems in England, Wales and Scotland were selected for study. Information on the site names and locations, together with the dates on which samples were taken, are given in Table 1. The 54 'main' samples (i.e. 18 sites x 3 seasons) were taken, but supplementary samples were not obtained on 13 of the possible 54 sampling occasions.

Table 1. Rivers and sites sampled in 1990. Samples then examined in 1991. "M" refers to the main sample and "S" to the supplementary sample. See methods section of text for further details.

River	Site name	M/S	Method	NGR	Sampling dates		
					Spr	Sum	Aut
de Lank	Bradford	M	Pond-net	SX 114758	26 Mar	26 Jun	03 Oct
	"	S	"	"	26 Mar	26 Jun	03 Oct
	Keybridge	M	"	SX 089739	26 Mar	26 Jun	03 Oct
	"	S	"	"	26 Mar	26 Jun	03 Oct
R.Wharfe	Hubberholme	M	"	SD 933783	08 May	17 Jul	16 Oct
	"	S	"	"	08 May	17 Jul	16 Oct
	Grassington	M	"	SD 997639	08 May	17 Jul	16 Oct
	"	S	"	"	08 May	17 Jul	16 Oct
	Addingham	M	"	SE 084499	08 May	03 Aug	25 Oct
	"	S	"	"	08 May	03 Aug	25 Oct
	Otley	M	"	SE 188455	09 May	03 Aug	25 Oct
	"	S	"	"	09 May	03 Aug	25 Oct
Western Cleddau	Wetherby	M	"	SE 406477	09 May	03 Aug	23 Nov
	"	S	"	"	09 May	03 Aug	23 Nov
	Wolf's Castle	M	"	SM 956256	20 Apr	07 Aug	06 Nov
	"	S	"	"	None	07 Aug	06 Nov
R.Loddon	Treffgarne	M	"	SM 959230	24 Apr	07 Aug	07 Nov
	"	S	"	"	None	07 Aug	07 Nov
	Crow Hill	M	"	SM 954177	20 Apr	07 Aug	06 Nov
	"	S	"	"	None	None	06 Nov
R.Enborne	Oliver's Battery	M	"	SU 667537	21 Mar	02 Jul	27 Sep
	"	S	"	-	None	None	None
	Sherfield-on-Loddon	M	"	SU 683583	21 Mar	14 Jun	20 Sep
R.Bladnoch	"	S	"	-	None	None	None
	Brimpton	M	"	SU 568648	06 Mar	06 Jun	27 Sep
R.Lonan	"	S	"	-	None	None	None
	Glassoch Bridge	M	"	NX 333695	11 Apr	30 Aug	21 Nov
	"	S	"	"	11 Apr	30 Aug	21 Nov
	Spittal	M	"	NX 360579	30 May	30 Aug	21 Nov
	"	S	"	"	30 May	30 Aug	21 Nov
Lusragen Burn	Clachadubh	M	"	NM 937280	04 Apr	24 Jul	05 Nov
	"	S	"	"	04 Apr	24 Jul	05 Nov
Aber	Cluny Villa	M	"	NM 908327	04 Apr	24 Jul	05 Nov
	"	S	"	"	04 Apr	24 Jul	05 Nov
Aber	Abergwyngregyn	M	"	SH 657727	23 Apr*	27 Aug*	07 Sep
	"	S	"	"	23 Apr*	27 Aug*	07 Sep

*These samples collected in 1991.

In this, the final year of the contract, a small number of sites on a relatively large number of river systems, which have already been surveyed by the NCC for their macrophyte communities, were examined for their invertebrate assemblages.

In the south-west of England, two sites on the de Lank, a tributary of the R. Camel were included in the programme. The de Lank has its source on Bodmin Moor, close to the source of the R. Fowey (sampled in 1988), but whereas the R. Fowey flows south, the de Lank flows in a south-westerly direction to join the middle reaches of the R. Camel.

A total of five sites were sampled on the R. Wharfe, which flows off the Pennines in a south-easterly direction before joining the Yorkshire Ouse at the southern end of the Vale of York. An 8.5 km section of this river near the top site sampled for invertebrates (Hubberholme) has already been designated as an SSSI (Holmes *et al.* 1990).

Three sites were sampled on the Western Cleddau in south-west Wales. Note that four sites on the Eastern Cleddau are currently within RIVPACS (River Invertebrate Prediction and Classification System). A 1.6 km length of river valley in the headwaters of the Western Cleddau at Esgyrn Bottom, which has geological interest, is a river valley SSSI (Holmes *et al.* 1990).

A further three sites were sampled within the catchment of the R. Thames in Berkshire. Two of these were on the R. Loddon, which flows in a northerly direction to join the R. Thames east of Reading. A 4 km section of the R. Loddon, downstream of the invertebrate sites has been designated as an SSSI (Holmes *et al.* 1990) due to the occurrence of the Loddon pondweed (*Potamogeton nodosus* Poir) which is rare in England. The other site was on the R. Enborne, a tributary of the R. Kennet which, in turn, has its confluence with the R. Thames at Reading.

Four sites on three different river systems were examined in Scotland. Two of these were on the R. Bladnoch in south-west Scotland, a river already noted for its aquatic macrophytes and the diversity of its Ephemeropteran fauna, which includes the most northerly record of *Heptagenia fuscogrisea* (Bratton, 1990). The other two sites were on separate river systems to the east of Oban in Argyll. The R. Lonan has an unusually rich invertebrate fauna (R. Doughty, pers. comm.) whilst the Lusragen Burn drains the Black Lochs SSSI.

Finally, a single site was sampled on the lower reaches of the R. Aber in North Wales which flows into Conway Bay to the east of Bangor. Upstream, the oak woods of Coedydd Aber are a National Nature Reserve.

6. METHODS

Two types of sample were requested from NRA/RPB biologists at each site in spring, summer and autumn. They were designated the 'main' sample and the 'supplementary' sample.

The field sampling technique used for the main sample ensured compatibility with the data-base held by the IFE within the 'River Communities Project'. Prior to the 1990 River Quality Survey the biologists had access to a video which demonstrated the field techniques required for compatibility. At each site a 3-minute pond-net sample was taken which encompassed all available habitats in order to capture the widest range of invertebrates within the allotted time.

Supplementary samples were taken in an attempt to increase the species lists further by examining additional habitats. Typically, the river bank was walked, both upstream and downstream of the main sampling location, in order to locate unsampled habitats. Supplementary samples taken by kicking or sweeping with a pond-net were untimed, but up to 30 minutes was spent picking out invertebrates in the field before the specimens were preserved for later identification in the laboratory.

At each sampling location, a 'Sample Area' form was completed in each season. The form includes information on site location and sampling method, stream dimensions, surface velocity and substratum type, together with a space for a sketch map and information on macrophytes etc. At main sampling sites in summer only a 'Survey Area' form was also completed. This was used for recording features whose values are less prone to seasonal variation and for collating further background data on each site. Examples of these forms and notes for their completion can be found in Furse *et al.* (1986).

After receipt of the main and supplementary samples from the NRA/RPB regions, IFE staff sorted and identified the material as far as current taxonomic keys allow (normally to species/genus) with the exception of the Oligochaeta (true worms) and Chironomidae (non-biting midges) which were not identified further. The listings of taxa recorded at each site were then transferred to computer and validated.

In the results section, the printouts are given in two separate formats. The first gives details of the sampling procedures used at each site to obtain the main and the supplementary samples, followed by a single listing of all the species recorded at each site. The second printout is the species by sites matrix and this presents the invertebrate fauna recorded at each site in each season (spring, summer, autumn) for each river in turn. On this printout, species recorded in the main sample (+) are distinguished from additional species recorded in the supplementary sample (S) within any one season.

The report also includes a brief statement on any notable features of the macroinvertebrate fauna of each river. (Section 7.3.)

Finally, the information on the invertebrate fauna recorded at each site has been used to calculate an index of river quality which is now widely used within the National Rivers Authority. The Biological Monitoring Working Party (BMWP) score system was first used in a major survey of river quality in England and Wales in 1980 (National Water Council, 1981). Scores are allocated to 'families' of invertebrates (range 1-10) according to their known tolerance to organic pollution. Addition of the scores for all scoring families at a site gives the total BMWP Score. The Average Score Per Taxon (ASPT), that is, total score divided by the number of scoring taxa, is also used in the appraisal of river quality. BMWP scores, number of scoring taxa, and ASPT values are provided for each sampling site in each season and also for the three seasons combined. Note that these indices have been calculated using the 'main' samples only, since supplementary samples were not available for all sites in all seasons.

7. RESULTS

7.1 Species lists for each site

In the pages which follow, a species list is provided for each of the 18 sampling sites. The listings incorporate all species found in spring, summer and autumn in both the main and supplementary samples. Details of the procedures used for collecting the main and supplementary samples, the dates of collection and grid references are given at the head of each printout. Note that at a few sites, supplementary samples were not taken.

For more detailed information on the species recorded in particular seasons and additional species confined to the supplementary samples, see section 7.2.

	Pages
de Lank	10-11
Wharfe	12-16
Western Cleddau	17-19
Loddon	20-21
Enborne	22
Bladnoch	23-24
Lonan	25
Lusragen Burn	26
Aber	27

SX 114 758	26 Mar	Main sample	3 minute kick/sweep
SX 114 758	26 Mar	Supplementary	Kick/sweep
SX 114 758	26 Jun	Main sample	3 minute kick/sweep
SX 114 758	26 Jun	Supplementary	Kick/sweep
SX 114 758	03 Oct	Main sample	3 minute kick/sweep
SX 114 758	03 Oct	Supplementary	Kick/sweep

Planariidae (incl. Dugesiidae)	Stictonectes lepidus (Olivier)
Polycelis felina (Dalyell)	Ilybius sp.
Crenobia alpina (Dana)	Dytiscus semisulcatus Muller
Ancylus fluviatilis Muller	Orectochilus villosus (Muller)
Pisidium casertanum (Poli)	Hydraena gracilis Germar
Oligochaeta	Helophorus brevipalpis Bedel
Helobdella stagnalis (L.)	Helophorus flavipes (Fabricius)
Hydracarina	Elmis aenea (Muller)
Asellus meridianus Racovitza	Limnius volckmari (Panzer)
Siphonurus lacustris Eaton	Oulimnius tuberculatus (Muller)
Baetis scambus group	Sialis lutaria (L.)
Baetis vernus Curtis	Rhyacophila dorsalis (Curtis)
Baetis rhodani (Pictet)	Rhyacophila munda McLachlan
Baetis niger (L.)	Chimarra marginata (L.)
Rhithrogena semicolorata group	Polycentropus flavomaculatus (Pictet)
Heptagenia sp.	Polycentropus irroratus (Curtis)
Heptagenia sulphurea (Muller)	Polycentropus kingi McLachlan
Ecdyonurus sp.	Lype sp.
Leptophlebiidae	Hydropsyche pellucidula (Curtis)
Leptophlebia sp.	Hydropsyche siltalai Dohler
Leptophlebia marginata (L.)	Ithytrichia sp.
Paraleptophlebia submarginata (Stephens)	Oxyethira sp.
Ephemerella ignita (Poda)	Limnephilus marmoratus Curtis
Brachyptera risi (Morton)	Limnephilus vittatus (Fabricius)
Protonemura meyeri (Pictet)	Anabolia nervosa (Curtis)
Amphinemura sulcicollis (Stephens)	Potamophylax sp.
Leuctra geniculata (Stephens)	Halesus sp.
Leuctra inermis Kempny	Halesus radiatus (Curtis)
Leuctra hippopus (Kempny)	Chaetopteryx villosa (Fabricius)
Leuctra nigra (Olivier)	Odontocerum albicorne (Scopoli)
Leuctra fusca (L.)	Athripsodes albifrons (L.)
Perlodes microcephala (Pictet)	Mystacides nigra (L.)
Isoperla grammatica (Poda)	Mystacides azurea (L.)
Chloroperla torrentium (Pictet)	Ylodes simulans (Tjeder)
Coenagriidae	Silo pallipes (Fabricius)
Pyrrhosoma nymphula (Sulzer)	Lepidostoma hirtum (Fabricius)
Calopteryx sp.	Brachycentrus subnubilus Curtis
Calopteryx virgo (L.)	Sericostoma personatum (Spence)
Cordulegaster boltonii (Donovan)	Tipula montium group
Velia sp.	Dicranota sp.
Velia caprai Tamanini	Limnophila (Eloeophila) sp.
Gerris sp.	Pilaria (Pilaria) sp.
Gerris najas (Degeer)	Dixa puberula Loew
Micronecta sp.	Ceratopogonidae
Corixa punctata (Illiger)	Chironomidae
Hesperocorixa sahlbergi (Fieber)	Simulium (Nevermannia) cryophilum group
Sigara sp.	Simulium (Nevermannia) cryophilum (Rubtsov)
Sigara distincta (Fieber)	Simulium (Eusimulium) aureum group
Sigara venusta (Douglas & Scott)	Simulium (Simulium) ornatum group
Haliplus lineatocollis (Marshall)	Atherix marginata (Fabricius)
Stictotarsus duodecimpustulatus (Fabricius)	Limnophora sp.
Oreodytes sanmarkii (Sahlberg)	

SX 089 739	26 Mar	Main sample	3 minute kick/sweep
SX 089 739	26 Mar	Supplementary	Kick/sweep
SX 089 739	26 Jun	Main sample	3 minute kick/sweep
SX 089 739	26 Jun	Supplementary	Kick/sweep
SX 089 739	03 Oct	Main sample	3 minute kick/sweep
SX 089 739	03 Oct	Supplementary	Kick/sweep

Polycelis felina (Dalyell)	Chaetopteryx villosa (Fabricius)
Phagocata vitta (Duges)	Beraeodes minutus (L.)
Crenobia alpina (Dana)	Mystacides azurea (L.)
Potamopyrgus jenkinsi (Smith)	Oecetis testacea (Curtis)
Ancyclus fluviatilis Muller	Goeridae
Pisidium casertanum (Poli)	Silo pallipes (Fabricius)
Oligochaeta	Lepidostoma hirtum (Fabricius)
Helobdella stagnalis (L.)	Brachycentrus subnubilus Curtis
Hydracarina	Sericostoma personatum (Spence)
Asellus meridianus Racovitza	Pericoma sp.
Siphonurus lacustris Eaton	Pericoma pseudoexquisita Tonnoir
Baetis rhodani (Pictet)	Dixa puberula Loew
Heptagenia sp.	Dixella filicornis Edwards
Heptagenia sulphurea (Muller)	Ceratopogonidae
Ecdyonurus sp.	Chironomidae
Ephemera ignita (Poda)	Simulium (Eusimulium) aureum group
Brachyptera risi (Morton)	Simulium (Simulium) argyreatum group
Protonemura sp.	Hemerodromia group
Protonemura meyeri (Pictet)	Dolichopodidae
Leuctra geniculata (Stephens)	Atherix marginata (Fabricius)
Leuctra hippopus (Kempny)	
Leuctra fusca (L.)	
Isoperla grammatica (Poda)	
Dinocras cephalotes (Curtis)	
Chloroperla torrentium (Pictet)	
Calopteryx virgo (L.)	
Cordulegaster boltonii (Donovan)	
Velia sp.	
Velia caprai Tamanini	
Gerris sp.	
Gerris najas (Degeer)	
Gyrinidae	
Gyrinus sp.	
Orectochilus villosus (Muller)	
Limnebius truncatellus (Thunberg)	
Helophorus flavipes (Fabricius)	
Elmis aenea (Muller)	
Limnius volckmari (Panzer)	
Oulimnius sp.	
Oulimnius tuberculatus (Muller)	
Sialis fuliginosa Pictet	
Rhyacophila dorsalis (Curtis)	
Rhyacophila munda McLachlan	
Glossosoma sp.	
Agapetus sp.	
Polycentropodidae	
Polycentropus kingi McLachlan	
Hydropsyche pellucidula (Curtis)	
Hydropsyche siltalai Dohler	
Limnephilidae	
Potamophylax cingulatus (Stephens)	
Halesus radiatus (Curtis)	

SD 933 783	08 May	Main sample	3 minute kick/sweep
SD 933 783	08 May	Supplementary	Kick/sweep
SD 933 783	17 Jul	Main sample	3 minute kick/sweep
SD 933 783	17 Jul	Supplementary	Kick/sweep
SD 933 783	16 Oct	Main sample	3 minute kick/sweep
SD 933 783	16 Oct	Supplementary	Kick/sweep

<i>Lymnaea peregra</i> (Muller)	<i>Dicranota</i> sp.
<i>Ancylus fluviatilis</i> Muller	<i>Limnophila</i> (<i>Eloeophila</i>) sp.
<i>Succinea</i> sp.	Chironomidae
<i>Oligochaeta</i>	<i>Simulium</i> (<i>Simulium</i>) <i>tuberosum</i> Lundstrom
<i>Glossiphonia complanata</i> (L.)	<i>Simulium</i> (<i>Simulium</i>) <i>reptans</i> group
<i>Helobdella stagnalis</i> (L.)	<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group
Erpobdellidae	Chelifera group
Hydracarina	<i>Atherix ibis</i> (Fabricius)
<i>Asellus aquaticus</i> (L.)	Syrphidae
<i>Baetis</i> sp.	
<i>Baetis scambus</i> group	
<i>Baetis rhodani</i> (Pictet)	
<i>Baetis muticus</i> (L.)	
<i>Rhithrogena semicolorata</i> group	
<i>Ecdyonurus</i> sp.	
<i>Ephemerella ignita</i> (Poda)	
<i>Caenis rivulorum</i> Eaton	
<i>Amphinemura sulcicollis</i> (Stephens)	
<i>Leuctra fusca</i> (L.)	
<i>Isoperla grammatica</i> (Poda)	
<i>Dinocras cephalotes</i> (Curtis)	
<i>Perla bipunctata</i> Pictet	
<i>Chloroperla torrentium</i> (Pictet)	
<i>Brychius elevatus</i> (Panzer)	
<i>Oreodytes sanmarkii</i> (Sahlberg)	
<i>Hydraena gracilis</i> Germar	
<i>Elmis aenea</i> (Muller)	
<i>Esolus parallelepipedus</i> (Muller)	
<i>Limnius volckmari</i> (Panzer)	
<i>Oulimnius</i> sp.	
<i>Oulimnius tuberculatus</i> (Muller)	
<i>Rhyacophila dorsalis</i> (Curtis)	
<i>Rhyacophila munda</i> McLachlan	
<i>Glossosoma</i> sp.	
<i>Agapetus</i> sp.	
Polycentropodidae	
<i>Polycentropus flavomaculatus</i> (Pictet)	
<i>Tinodes waeneri</i> (L.)	
<i>Psychomyia pusilla</i> (Fabricius)	
<i>Hydropsyche instabilis</i> (Curtis)	
<i>Hydropsyche siltalai</i> Dohler	
<i>Hydroptila</i> sp.	
<i>Ithytrichia</i> sp.	
<i>Ecclisopteryx guttulata</i> (Pictet)	
<i>Potamophylax latipennis</i> (Curtis)	
<i>Melampophylax mucoreus</i> (Hagen)	
<i>Allogamus auricollis</i> (Pictet)	
<i>Athripsodes</i> sp.	
<i>Lepidostoma hirtum</i> (Fabricius)	
<i>Sericostoma personatum</i> (Spence)	
<i>Tipula montium</i> group	
<i>Antocha vitripennis</i> Meigen	

SD 997 639	08 May	Main sample	3 minute kick/sweep
SD 997 639	08 May	Supplementary	Kick/sweep
SD 997 639	17 Jul	Main sample	3 minute kick/sweep
SD 997 639	17 Jul	Supplementary	Kick/sweep
SD 997 639	16 Oct	Main sample	3 minute kick/sweep
SD 997 639	16 Oct	Supplementary	Kick/sweep

Potamopyrgus jenkinsi (Smith)	Ceratopogonidae
Lymnaea peregra (Muller)	Chironomidae
Ancylus fluviatilis Muller	Simulium (Eusimulium) aureum group
Sphaerium corneum (L.)	Simulium (Simulium) reptans group
Pisidium tenuilineatum Stelfox	Simulium (Simulium) argyreatum group
Oligochaeta	Simulium (Simulium) ornatum group
Glossiphonia complanata (L.)	Chelifera group
Helobdella stagnalis (L.)	Hemerodromia group
Erpobdella octoculata (L.)	Wiedemannia group
Hydracarina	Atherix ibis (Fabricius)
Gammarus pulex (L.)	Limnophora sp.
Austropotamobius pallipes (Lereboullet)	
Baetis scambus group	
Baetis rhodani (Pictet)	
Baetis muticus (L.)	
Rhithrogena semicolorata group	
Ecdyonurus sp.	
Ephemerella ignita (Poda)	
Caenis rivulorum Eaton	
Taeniopteryx nebulosa (L.)	
Amphinemura sulcicollis (Stephens)	
Leuctra geniculata (Stephens)	
Leuctra fusca (L.)	
Isoperla grammatica (Poda)	
Dinocras cephalotes (Curtis)	
Perla bipunctata Pictet	
Chloroperla tripunctata (Scopoli)	
Micronecta sp.	
Elmis aenea (Muller)	
Esolus parallelepipedus (Muller)	
Limnius volckmari (Panzer)	
Rhyacophila dorsalis (Curtis)	
Rhyacophila munda McLachlan	
Glossosoma sp.	
Agapetus sp.	
Polycentropus flavomaculatus (Pictet)	
Hydropsyche siltalai Dohler	
Hydroptila sp.	
Ithytrichia sp.	
Ecclisopteryx guttulata (Pictet)	
Halesus sp.	
Melampophylax mucoreus (Hagen)	
Athripsodes sp.	
Athripsodes albifrons (L.)	
Mystacides azurea (L.)	
Ceraclea annulicornis (Stephens)	
Lepidostoma hirtum (Fabricius)	
Sericostoma personatum (Spence)	
Tipula montium group	
Antocha vitripennis Meigen	
Dicranota sp.	
Pericoma exquisita Eaton	

SE 084 499	08 May	Main sample	3 minute kick/sweep
SE 084 499	08 May	Supplementary	Kick/sweep
SE 084 499	03 Aug	Main sample	3 minute kick/sweep
SE 084 499	03 Aug	Supplementary	Kick/sweep
SE 084 499	25 Oct	Main sample	3 minute kick/sweep
SE 084 499	25 Oct	Supplementary	Kick/sweep

Potamopyrgus jenkinsi (Smith)
Ancylus fluviatilis Muller
Pisidium personatum Malm
Oligochaeta
Helobdella stagnalis (L.)
Erpobdella octoculata (L.)
Hydracarina
Baetis scambus group
Baetis rhodani (Pictet)
Procloeon bifidum Bengtsson
Rhithrogena semicolorata group
Heptagenia sulphurea (Muller)
Ecdyonurus sp.
Ephemerella ignita (Poda)
Ephemera danica Muller
Caenis luctuosa group
Caenis rivulorum Eaton
Amphinemura sulcicollis (Stephens)
Leuctra geniculata (Stephens)
Leuctra fusca (L.)
Isoperla grammatica (Poda)
Perla bipunctata Pictet
Chloroperla torrentium (Pictet)
Helophorus grandis Illiger
Elmis aenea (Muller)
Esolus parallelepipedus (Muller)
Limnius volckmari (Panzer)
Oulimnius sp.
Oulimnius tuberculatus (Muller)
Rhyacophila dorsalis (Curtis)
Glossosoma sp.
Agapetus sp.
Polycentropus flavomaculatus (Pictet)
Psychomyia pusilla (Fabricius)
Hydropsyche pellucidula (Curtis)
Hydropsyche siltalai Dohler
Cheumatopsyche lepida (Pictet)
Hydroptila sp.
Ithytrichia sp.
Athripsodes sp.
Athripsodes cinereus (Curtis)
Athripsodes albifrons (L.)
Ceraclea annulicornis (Stephens)
Ceraclea dissimilis (Stephens)
Lepidostoma hirtum (Fabricius)
Brachycentrus subnubilus Curtis
Tipula montium group
Antocha vitripennis Meigen
Dicranota sp.
Pericoma neglecta Eaton
Ceratopogonidae
Chironomidae
Wiedemannia group
Atherix ibis (Fabricius)

SE 188 455	09 May	Main sample	3 minute kick/sweep
SE 188 455	09 May	Supplementary	Kick/sweep
SE 188 455	03 Aug	Main sample	3 minute kick/sweep
SE 188 455	03 Aug	Supplementary	Kick/sweep
SE 188 455	25 Oct	Main sample	3 minute kick/sweep
SE 188 455	25 Oct	Supplementary	Kick/sweep

<i>Theodoxus fluviatilis</i> (L.)	<i>Agraylea multipunctata</i> Curtis
<i>Potamopyrgus jenkinsi</i> (Smith)	<i>Allotrichia pallicornis</i> (Eaton)
<i>Lymnaea auricularia</i> (L.)	<i>Athripsodes</i> sp.
<i>Lymnaea peregra</i> (Muller)	<i>Athripsodes cinereus</i> (Curtis)
<i>Planorbis carinatus</i> Muller	<i>Athripsodes albifrons</i> (L.)
<i>Gyraulus albus</i> (Muller)	<i>Mystacides azurea</i> (L.)
<i>Armiger crista</i> (L.)	<i>Ceraclea annulicornis</i> (Stephens)
<i>Ancylus fluviatilis</i> Muller	<i>Ceraclea dissimilis</i> (Stephens)
<i>Sphaerium corneum</i> (L.)	<i>Lepidostoma hirtum</i> (Fabricius)
<i>Pisidium casertanum</i> (Poli)	<i>Brachycentrus subnubilus</i> Curtis
<i>Pisidium subtruncatum</i> Malm	<i>Tipula montium</i> group
<i>Pisidium henslowanum</i> (Sheppard)	<i>Antocha vitripennis</i> Meigen
<i>Oligochaeta</i>	Psychodidae
<i>Theromyzon tessulatum</i> (Muller)	<i>Pericoma</i> sp.
<i>Glossiphonia complanata</i> (L.)	<i>Pericoma exquisita</i> Eaton
<i>Helobdella stagnalis</i> (L.)	Ceratopogonidae
<i>Erpobdella octoculata</i> (L.)	Chironomidae
<i>Hydracarina</i>	<i>Simulium</i> (<i>Wilhelmia</i>) sp.
<i>Baetis scambus</i> group	<i>Simulium</i> (<i>Simulium</i>) <i>reptans</i> group
<i>Baetis rhodani</i> (Pictet)	<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group
<i>Centroptilum luteolum</i> (Muller)	<i>Hemerodromia</i> group
<i>Cloeon dipterum</i> (L.)	<i>Atalanta</i> group
<i>Procloeon bifidum</i> Bengtsson	<i>Wiedemannia</i> group
<i>Heptagenia sulphurea</i> (Muller)	<i>Atherix ibis</i> (Fabricius)
<i>Ecdyonurus</i> sp.	Ephydriidae
<i>Paraleptophlebia submarginata</i> (Stephens)	Muscidae
<i>Ephemerella ignita</i> (Poda)	
<i>Caenis luctuosa</i> group	
<i>Caenis rivulorum</i> Eaton	
<i>Amphinemura sulcicollis</i> (Stephens)	
<i>Leuctra</i> sp.	
<i>Leuctra fusca</i> (L.)	
<i>Perlodes microcephala</i> (Pictet)	
<i>Isoperla grammatica</i> (Poda)	
<i>Sigara</i> (<i>Sigara</i>) sp.	
<i>Halipplus fluviatilis</i> Aube	
<i>Halipplus immaculatus</i> Gerhardt	
<i>Halipplus wehnckeii</i> Gerhardt	
<i>Potamonectes depressus</i> (Fabricius)	
<i>Platambus maculatus</i> (L.)	
<i>Elmis aenea</i> (Muller)	
<i>Esolus parallelepipedus</i> (Muller)	
<i>Limnius volckmari</i> (Panzer)	
<i>Oulimnius tuberculatus</i> (Muller)	
<i>Sialis lutaria</i> (L.)	
<i>Rhyacophila dorsalis</i> (Curtis)	
<i>Glossosoma</i> sp.	
<i>Polycentropus flavomaculatus</i> (Pictet)	
<i>Psychomyia pusilla</i> (Fabricius)	
<i>Hydropsyche pellucidula</i> (Curtis)	
<i>Hydropsyche siltalai</i> Dohler	

SE 406 477	09 May	Main sample	3 minute kick/sweep
SE 406 477	09 May	Supplementary	Kick/sweep
SE 406 477	03 Aug	Main sample	3 minute kick/sweep
SE 406 477	03 Aug	Supplementary	Kick/sweep
SE 406 477	23 Nov	Main sample	3 minute kick/sweep
SE 406 477	23 Nov	Supplementary	Kick/sweep

Polycelis nigra group	Agraylea multipunctata Curtis
Dugesia polychroa group	Allotrichia pallicornis (Eaton)
Dendrocoelum lacteum (Muller)	Hydroptila sp.
Theodoxus fluviatilis (L.)	Athripsodes sp.
Potamopyrgus jenkinsi (Smith)	Athripsodes cinereus (Curtis)
Lymnaea peregra (Muller)	Athripsodes albifrons (L.)
Planorbis carinatus Muller	Ceraclea sp.
Gyraulus albus (Muller)	Goera pilosa (Fabricius)
Bathyomphalus contortus (L.)	Lepidostoma hirtum (Fabricius)
Ancylus fluviatilis Muller	Brachycentrus subnubilus Curtis
Sphaerium corneum (L.)	Sericostoma personatum (Spence)
Pisidium amnicum (Muller)	Tipula montium group
Pisidium casertanum (Poli)	Antocha vitripennis Meigen
Pisidium supinum Schmidt	Dicranota sp.
Pisidium henslowanum (Sheppard)	Pericoma exquisita Eaton
Pisidium nitidum Jenyns	Ceratopogonidae
Oligochaeta	Chironomidae
Hemiclepsis marginata (Muller)	Simulium (Eusimulium) aureum group
Glossiphonia complanata (L.)	Simulium (Wilhelmia) sp.
Helobdella stagnalis (L.)	Simulium (Simulium) reptans group
Erpobdella octoculata (L.)	Simulium (Simulium) ornatum group
Trocheta bykowskii Gedroyc	Empididae
Hydracarina	Limnophora sp.
Asellus aquaticus (L.)	
Crangonyx pseudogracilis Bousfield	
Gammarus pulex (L.)	
Baetis scambus group	
Baetis rhodani (Pictet)	
Rhithrogena semicolorata group	
Heptagenia sulphurea (Muller)	
Ecdyonurus sp.	
Ephemerella ignita (Poda)	
Caenis luctuosa group	
Caenis rivulorum Eaton	
Leuctra geniculata (Stephens)	
Leuctra fusca (L.)	
Perlodes microcephala (Pictet)	
Haliphus sp.	
Potamonectes depressus (Fabricius)	
Orectochilus villosus (Muller)	
Elmis aenea (Muller)	
Esolus parallelepipedus (Muller)	
Limnius volckmari (Panzer)	
Oulimnius sp.	
Rhyacophila dorsalis (Curtis)	
Glossosoma sp.	
Agapetus sp.	
Psychomyia pusilla (Fabricius)	
Hydropsyche pellucidula (Curtis)	
Hydropsyche contubernalis McLachlan	
Hydropsyche siltalai Dohler	
Cheumatopsyche lepida (Pictet)	

SM 956 256	20 Apr	Main sample	3 minute kick/sweep
SM 956 256		Supplementary	No sample taken
SM 956 256	07 Aug	Main sample	3 minute kick/sweep
SM 956 256	07 Aug	Supplementary	Kick/sweep
SM 956 256	06 Nov	Main sample	3 minute kick/sweep
SM 956 256	06 Nov	Supplementary	Kick/sweep

Polycelis sp.

Polycelis nigra group

Polycelis felina (Dalyell)

Chordodidae

Potamopyrgus jenkinsi (Smith)

Lymnaea peregra (Muller)

Anisus vortex (L.)

Ancylus fluviatilis Muller

Succinea sp.

Pisidium sp.

Pisidium casertanum (Poli)

Pisidium personatum Malm

Pisidium subtruncatum Malm

Pisidium nitidum Jenyns

Oligochaeta

Glossiphonia complanata (L.)

Helobdella stagnalis (L.)

Erpobdella octoculata (L.)

Hydracarina

Asellus aquaticus (L.)

Gammarus pulex (L.)

Baetis scambus group

Baetis vernus Curtis

Baetis rhodani (Pictet)

Baetis muticus (L.)

Rhithrogena semicolorata group

Heptagenia sulphurea (Muller)

Ecdyonurus sp.

Ephemerella ignita (Poda)

Ephemera danica Muller

Caenis rivulorum Eaton

Brachyptera risi (Morton)

Protonemura meyeri (Pictet)

Amphinemura sulcicollis (Stephens)

Nemoura avicularis Morton

Leuctra geniculata (Stephens)

Leuctra hippopus (Kempny)

Leuctra fusca (L.)

Perlodes microcephala (Pictet)

Chloroperla torrentium (Pictet)

Chloroperla tripunctata (Scopoli)

Calopteryx virgo (L.)

Cordulegaster boltonii (Donovan)

Hydrometra sp.

Gerris sp.

Halipplus sp.

Potamonectes depressus (Fabricius)

Oreodytes sanmarkii (Sahlberg)

Platambus maculatus (L.)

Orectochilus villosus (Muller)

Hydraena riparia Kugelann

Hydraena gracilis Germar

Helophorus brevipalpis Bedel

Elmis aenea (Muller)

Limnius volckmari (Panzer)

Oulimnius sp.

Oulimnius tuberculatus (Muller)

Sialis lutaria (L.)

Rhyacophila dorsalis (Curtis)

Rhyacophila munda McLachlan

Glossosoma sp.

Agapetus sp.

Polycentropus flavomaculatus (Pictet)

Hydropsyche pellucidula (Curtis)

Hydropsyche siltalai Dohler

Limnephilidae

Drusus annulatus Stephens

Potamophylax latipennis (Curtis)

Halesus radiatus (Curtis)

Odontocerum albicorne (Scopoli)

Mystacides azurea (L.)

Lepidostoma hirtum (Fabricius)

Brachycentrus subnubilus Curtis

Sericostoma personatum (Spence)

Tipula montium group

Dicranota sp.

Limnophila (Eloeophila) sp.

Pilaria (Pilaria) sp.

Dixa nebulosa Meigen

Ceratopogonidae

Chironomidae

Simulium (Nevermannia) cryophilum group

Simulium (Eusimulium) aureum group

Simulium (Wilhelmia) sp.

Simulium (Wilhelmia) equinum L.

Hemerodromia group

Wiedemannia group

Atherix ibis (Fabricius)

Limnophora sp.

SM 959 230	24 Apr	Main sample	3 minute kick/sweep
SM 959 230		Supplementary	No sample taken
SM 959 230	07 Aug	Main sample	3 minute kick/sweep
SM 959 230	07 Aug	Supplementary	Kick/sweep
SM 959 230	07 Nov	Main sample	3 minute kick/sweep
SM 959 230	07 Nov	Supplementary	Kick/sweep

Polycelis nigra group	Rhyacophila dorsalis (Curtis)
Polycelis felina (Dalyell)	Rhyacophila munda McLachlan
Crenobia alpina (Dana)	Glossosoma sp.
Potamopyrgus jenkinsi (Smith)	Agapetus sp.
Lymnaea peregra (Muller)	Polycentropus flavomaculatus (Pictet)
Ancylus fluviatilis Muller	Hydropsyche pellucidula (Curtis)
Pisidium subtruncatum Malm	Hydropsyche siltalai Dohler
Oligochaeta	Drusus annulatus Stephens
Glossiphonia complanata (L.)	Ecclisopteryx guttulata (Pictet)
Helobdella stagnalis (L.)	Potamophylax latipennis (Curtis)
Erpobdella octoculata (L.)	Mystacides azurea (L.)
Hydracarina	Adicella reducta (McLachlan)
Asellus aquaticus (L.)	Oecetis testacea (Curtis)
Asellus meridianus Racovitza	Silo sp.
Gammarus pulex (L.)	Silo pallipes (Fabricius)
Baetis sp.	Silo nigricornis (Pictet)
Baetis scambus group	Lepidostoma hirtum (Fabricius)
Baetis rhodani (Pictet)	Brachycentrus subnubilus Curtis
Baetis muticus (L.)	Sericostoma personatum (Spence)
Rhithrogena semicolorata group	Tipula sp.
Heptagenia sulphurea (Muller)	Tipula montium group
Ecdyonurus sp.	Antocha vitripennis Meigen
Paraleptophlebia submarginata (Stephens)	Pedicia rivosa (L.)
Ephemerella ignita (Poda)	Dicranota sp.
Ephemera danica Muller	Limnophila (Eloeophila) sp.
Caenis luctuosa group	Dixa nebulosa Meigen
Caenis rivulorum Eaton	Ceratopogonidae
Brachyptera risi (Morton)	Chironomidae
Protonemura meyeri (Pictet)	Simulium (Nevermannia) cryophilum group
Amphinemura sulcicollis (Stephens)	Simulium (Eusimulium) aureum group
Nemoura avicularis Morton	Simulium (Wilhelmia) sp.
Leuctra geniculata (Stephens)	Simulium (Wilhelmia) equinum L.
Leuctra hippopus (Kempny)	Simulium (Simulium) reptans group
Leuctra fusca (L.)	Simulium (Simulium) variegatum Meigen
Perlodes microcephala (Pictet)	Simulium (Simulium) ornatum group
Isoperla grammatica (Poda)	Hemerodromia group
Chloroperla torrentium (Pictet)	Wiedemannia group
Chloroperla tripunctata (Scopoli)	Atherix ibis (Fabricius)
Calopteryx virgo (L.)	Atherix marginata (Fabricius)
Velia caprai Tamanini	Tabanus group
Gerris sp.	Limnophora sp.
Oreodytes sanmarkii (Sahlberg)	
Platambus maculatus (L.)	
Orectochilus villosus (Muller)	
Hydraena gracilis Germar	
Elmis aenea (Muller)	
Esolus parallelepipedus (Muller)	
Limnius volckmari (Panzer)	
Oulimnius sp.	
Oulimnius tuberculatus (Muller)	
Sialis lutaria (L.)	
Sialis fuliginosa Pictet	

SM 954 177	20 Apr	Main sample	3 minute kick/sweep
SM 954 177		Supplementary	No sample taken
SM 954 177	07 Aug	Main sample	3 minute kick/sweep
SM 954 177		Supplementary	No sample taken
SM 954 177	06 Nov	Main sample	3 minute kick/sweep
SM 954 177	06 Nov	Supplementary	Kick/sweep

Polycelis nigra group	Glossosoma sp.
Polycelis felina (Dalyell)	Agapetus sp.
Potamopyrgus jenkinsi (Smith)	Polycentropus sp.
Lymnaea peregra (Muller)	Polycentropus flavomaculatus (Pictet)
Physa fontinalis (L.)	Hydropsyche pellucidula (Curtis)
Ancylus fluviatilis Muller	Chaetopteryx villosa (Fabricius)
Pisidium sp.	Odontocerum albicorne (Scopoli)
Pisidium subtruncatum Malm	Athripsodes sp.
Pisidium hibernicum Westerlund	Athripsodes cinereus (Curtis)
Oligochaeta	Mystacides azurea (L.)
Glossiphonia complanata (L.)	Lepidostoma hirtum (Fabricius)
Erpobdella octoculata (L.)	Brachycentrus subnubilus Curtis
Trocheta subviridis Dutrochet	Sericostoma personatum (Spence)
Hydracarina	Dicranota sp.
Asellus meridianus Racovitza	Limnophila (Eloeophila) sp.
Crangonyx pseudogracilis Bousfield	Ceratopogonidae
Gammarus pulex (L.)	Chironomidae
Baetis scambus group	Simulium (Nevermannia) vernum group
Baetis vernus Curtis	Simulium (Nevermannia) cryophilum group
Baetis rhodani (Pictet)	Simulium (Eusimulium) aureum group
Centroptilum luteolum (Muller)	Simulium (Wilhelmia) sp.
Rhithrogena semicolorata group	Simulium (Wilhelmia) equinum L.
Heptagenia sulphurea (Muller)	Simulium (Simulium) ornatum group
Ecdyonurus sp.	Wiedemannia group
Ephemerella ignita (Poda)	Atherix ibis (Fabricius)
Ephemera danica Muller	Chrysops sp.
Caenis luctuosa group	Tabanus group
Caenis rivulorum Eaton	
Taeniopteryx nebulosa (L.)	
Amphinemura sulcicollis (Stephens)	
Leuctra geniculata (Stephens)	
Leuctra hippopus (Kempny)	
Leuctra fusca (L.)	
Perlodes microcephala (Pictet)	
Isoperla grammatica (Poda)	
Chloroperla torrentium (Pictet)	
Calopteryx splendens (Harris)	
Corixidae	
Sigara (Sigara) sp.	
Oreodytes sanmarkii (Sahlberg)	
Platambus maculatus (L.)	
Orectochilus villosus (Muller)	
Hydraena gracilis Germar	
Elmis aenea (Muller)	
Esolus parallelepipedus (Muller)	
Limnius volckmari (Panzer)	
Oulimnius sp.	
Oulimnius tuberculatus (Muller)	
Sialis lutaria (L.)	
Sialis fuliginosa Pictet	
Sialis nigripes Pictet	
Rhyacophila dorsalis (Curtis)	

SU 667 537	21 Mar	Main sample	3 minute kick/sweep
SU 667 537		Supplementary	No sample taken
SU 667 537	02 Jul	Main sample	3 minute kick/sweep
SU 667 537		Supplementary	No sample taken
SU 667 537	27 Sep	Main sample	3 minute kick/sweep
SU 667 537		Supplementary	No sample taken

Polycelis nigra group	Tinodes waeneri (L.)
Polycelis felina (Dalyell)	Hydropsyche siltalai Dohler
Dendrocoelum lacteum (Muller)	Agraylea multipunctata Curtis
Valvata cristata Muller	Agraylea sexmaculata Curtis
Valvata piscinalis (Muller)	Hydroptila sp.
Potamopyrgus jenkinsi (Smith)	Oxyethira sp.
Lymnaea palustris (Muller)	Limnephilus lunatus group
Lymnaea peregra (Muller)	Potamophylax sp.
Physa fontinalis (L.)	Potamophylax latipennis (Curtis)
Planorbis carinatus Muller	Potamophylax cingulatus (Stephens)
Anisus vortex (L.)	Halesus sp.
Bathyomphalus contortus (L.)	Melampophylax mucoreus (Hagen)
Ancylus fluviatilis Muller	Chaetopteryx villosa (Fabricius)
Succinea sp.	Mystacides azurea (L.)
Pisidium casertanum (Poli)	Dicranota sp.
Pisidium subtruncatum Malm	Pericoma trivialis group
Pisidium nitidum Jenyns	Chironomidae
Pisidium pulchellum Jenyns	Simulium (Nevermannia) angustitarse group
Oligochaeta	Simulium (Simulium) ornatum group
Piscicola geometra (L.)	
Glossiphonia heteroclita (L.)	
Glossiphonia complanata (L.)	
Helobdella stagnalis (L.)	
Erpobdella octocolata (L.)	
Hydracarina	
Asellus aquaticus (L.)	
Asellus meridianus Racovitza	
Gammarus pulex (L.)	
Baetis scambus group	
Baetis vernus Curtis	
Baetis rhodani (Pictet)	
Centroptilum luteolum (Muller)	
Ephemerella ignita (Poda)	
Gerris sp.	
Nepa cinerea L.	
Hesperocorixa sahlbergi (Fieber)	
Sigara (Sigara) sp.	
Brychius elevatus (Panzer)	
Haliphus lineatocollis (Marsham)	
Haliphus laminatus Schaller	
Haliphus wehnckeii Gerhardt	
Oreodytes sanmarkii (Sahlberg)	
Hydroporus palustris (L.)	
Agabus sp.	
Agabus didymus (Olivier)	
Agabus sturmii (Gyllenhal)	
Agabus bipustulatus (L.)	
Platambus maculatus (L.)	
Hydrophilidae (incl. Hydraenidae)	
Anacaena limbata (Fabricius)	
Elmis aenea (Muller)	
Sialis lutaria (L.)	

SU 683 583	21 Mar	Main sample	3 minutes kick/sweep
SU 683 583		Supplementary	No sample taken
SU 683 583	14 Jun	Main sample	3 minutes kick/sweep
SU 683 583		Supplementary	No sample taken
SU 683 583	20 Sep	Main sample	3 minutes kick/sweep
SU 683 583		Supplementary	No sample taken

Polycelis nigra group	Sialis lutaria (L.)
Valvata piscinalis (Muller)	Rhyacophila dorsalis (Curtis)
Potamopyrgus jenkinsi (Smith)	Hydropsyche pellucidula (Curtis)
Bithynia tentaculata (L.)	Hydropsyche siltalai Dohler
Lymnaea stagnalis (L.)	Hydroptila sp.
Lymnaea peregra (Muller)	Limnephilus lunatus group
Physa fontinalis (L.)	Anabolia nervosa (Curtis)
Anisus vortex (L.)	Potamophylax latipennis (Curtis)
Gyraulus albus (Muller)	Halesus radiatus (Curtis)
Armiger crista (L.)	Melampophylax mucoreus (Hagen)
Acroloxus lacustris (L.)	Athripsodes aterrimus (Stephens)
Ancylus fluviatilis Muller	Athripsodes cinereus (Curtis)
Sphaerium corneum (L.)	Athripsodes albifrons (L.)
Pisidium sp.	Mystacides azurea (L.)
Pisidium amnicum (Muller)	Goera pilosa (Fabricius)
Pisidium subtruncatum Malm	Lepidostoma hirtum (Fabricius)
Pisidium nitidum Jenyns	Sericostoma personatum (Spence)
Oligochaeta	Dicranota sp.
Theromyzon tessulatum (Muller)	Pilaria (Pilaria) sp.
Glossiphonia heteroclita (L.)	Ceratopogonidae
Glossiphonia complanata (L.)	Chironomidae
Helobdella stagnalis (L.)	Simulium (Nevermannia) angustitarse group
Erpobdella octoculata (L.)	Simulium (Eusimulium) aureum group
Hydracarina	Chelifera group
Asellus aquaticus (L.)	Hemerodromia group
Gammarus pulex (L.)	Atherix ibis (Fabricius)
Baetis scambus group	
Baetis vernus Curtis	
Baetis rhodani (Pictet)	
Centroptilum luteolum (Muller)	
Centroptilum pennulatum Eaton	
Ephemerella ignita (Poda)	
Ephemera danica Muller	
Caenis luctuosa group	
Calopteryx splendens (Harris)	
Gerris lacustris (L.)	
Micronecta sp.	
Micronecta poweri (Douglas & Scott)	
Hesperocorixa sahlbergi (Fieber)	
Sigara (Sigara) sp.	
Brychius elevatus (Panzer)	
Halipplus lineatocollis (Marsham)	
Halipplus laminatus Schaller	
Halipplus wehnckeii Gerhardt	
Potamonectes sp.	
Potamonectes depressus (Fabricius)	
Agabus sp.	
Platambus maculatus (L.)	
Elmis aenea (Muller)	
Limnius volckmari (Panzer)	
Oulimnius sp.	
Oulimnius tuberculatus (Muller)	

SU 568 648	06 Mar	Main sample	3 minute kick/sweep
SU 568 648		Supplementary	No sample taken
SU 568 648	06 Jun	Main sample	3 minute kick/sweep
SU 568 648		Supplementary	No sample taken
SU 568 648	27 Sep	Main sample	3 minute kick/sweep
SU 568 648		Supplementary	No sample taken

Theodoxus fluviatilis (L.)	Goera pilosa (Fabricius)
Potamopyrgus jenkinsi (Smith)	Lepidostoma hirtum (Fabricius)
Lymnaea peregra (Muller)	Tipula montium group
Anisus vortex (L.)	Dicranota sp.
Gyraulus albus (Muller)	Chironomidae
Bathyomphalus contortus (L.)	Simulium (Nevermannia) angustitarse group
Acroloxus lacustris (L.)	Atalanta group
Ancylus fluviatilis Muller	Atherix ibis (Fabricius)
Sphaerium corneum (L.)	
Pisidium amnicum (Muller)	
Pisidium casertanum (Poli)	
Pisidium subtruncatum Malm	
Pisidium nitidum Jenyns	
Oligochaeta	
Glossiphonia complanata (L.)	
Helobdella stagnalis (L.)	
Erpobdella octoculata (L.)	
Hydracarina	
Gammarus pulex (L.)	
Baetis vernus Curtis	
Baetis rhodani (Pictet)	
Centroptilum luteolum (Muller)	
Cloeon dipterum (L.)	
Procloeon bifidum Bengtsson	
Habrophlebia fusca (Curtis)	
Ephemerella ignita (Poda)	
Ephemera danica Muller	
Caenis luctuosa group	
Erythromma najas (Hansemann)	
Calopteryx splendens (Harris)	
Notonecta sp.	
Notonecta glauca L.	
Micronecta poweri (Douglas & Scott)	
Sigara (Sigara) sp.	
Sigara falleni (Fieber)	
Haliphus fluviatilis Aube	
Potamonectes depressus (Fabricius)	
Platambus maculatus (L.)	
Ilybius sp.	
Helophorus brevipalpis Bedel	
Elmis aenea (Muller)	
Limnius volckmari (Panzer)	
Oulimnius tuberculatus (Muller)	
Sialis lutaria (L.)	
Sialis nigripes Pictet	
Hydroptila sp.	
Halesus sp.	
Molanna angustata Curtis	
Athripsodes cinereus (Curtis)	
Mystacides nigra (L.)	
Mystacides azurea (L.)	
Ceraclea dissimilis (Stephens)	

NX 333 695	11 Apr	Main sample	3 minute kick/sweep
NX 333 695	11 Apr	Supplementary	Kick/sweep
NX 333 695	30 Aug	Main sample	3 minute kick/sweep
NX 333 695	30 Aug	Supplementary	Kick/sweep
NX 333 695	21 Nov	Main sample	3 minute kick/sweep
NX 333 695	21 Nov	Supplementary	Kick/sweep

Ancylus fluviatilis Muller
 Pisidium sp.
 Pisidium hibernicum Westerlund
 Oligochaeta
 Glossiphonia complanata (L.)
 Helobdella stagnalis (L.)
 Erpobdella octoculata (L.)
 Hydracarina
 Baetis rhodani (Pictet)
 Baetis niger (L.)
 Rhithrogena semicolorata group
 Heptagenia sulphurea (Muller)
 Heptagenia fuscogrisea (Retzius)
 Ecdyonurus sp.
 Leptophlebiidae
 Leptophlebia sp.
 Leptophlebia marginata (L.)
 Caenis luctuosa group
 Caenis rivulorum Eaton
 Taeniopteryx nebulosa (L.)
 Protonemura meyeri (Pictet)
 Amphinemura sulcicollis (Stephens)
 Nemoura avicularis Morton
 Leuctra hippopus (Kempny)
 Leuctra fusca (L.)
 Perlodes microcephala (Pictet)
 Isoperla grammatica (Poda)
 Chloroperla torrentium (Pictet)
 Cordulegaster boltonii (Donovan)
 Velia caprai Tamanini
 Orectochilus villosus (Muller)
 Dryops sp.
 Elmis aenea (Muller)
 Limnius volckmari (Panzer)
 Oulimnius sp.
 Oulimnius tuberculatus (Muller)
 Sialis lutaria (L.)
 Rhyacophila dorsalis (Curtis)
 Rhyacophila munda McLachlan
 Agapetus sp.
 Polycentropus flavomaculatus (Pictet)
 Hydropsyche pellucidula (Curtis)
 Hydropsyche siltalai Dohler
 Drusus annulatus Stephens
 Potamophylax latipennis (Curtis)
 Halesus radiatus (Curtis)
 Athripsodes cinereus (Curtis)
 Lepidostoma hirtum (Fabricius)
 Brachycentrus subnubilus Curtis
 Palaria (Neolimnomyia) sp.
 Ceratopogonidae

Chironomidae
 Simulium (Nevermannia) cryophilum group
 Simulium (Simulium) noelleri Friederichs
 Simulium (Simulium) ornatum group

NX 360 579	30 May	Main sample	3 minute kick/sweep
NX 360 579	30 May	Supplementary	Kick/sweep
NX 360 579	30 Aug	Main sample	3 minute kick/sweep
NX 360 579	30 Aug	Supplementary	Kick/sweep
NX 360 579	21 Nov	Main sample	3 minute kick/sweep
NX 360 579	21 Nov	Supplementary	Kick/sweep

Polycelis nigra group

Valvata piscinalis (Muller)

Lymnaea peregra (Muller)

Gyraulus albus (Muller)

Bathyomphalus contortus (L.)

Ancylus fluviatilis Muller

Pisidium sp.

Oligochaeta

Glossiphoniidae

Glossiphonia complanata (L.)

Erpobdella octoculata (L.)

Hydracarina

Asellus meridianus Racovitza

Gammarus pulex (L.)

Baetis sp.

Baetis scambus group

Baetis rhodani (Pictet)

Centroptilum luteolum (Muller)

Proclleon bifidum Bengtsson

Heptageniidae

Rhithrogena semicolorata group

Heptagenia sulphurea (Muller)

Ecdyonurus sp.

Leptophlebiidae

Leptophlebia sp.

Ephemerella ignita (Poda)

Caenis luctuosa group

Caenis rivulorum Eaton

Leuctra geniculata (Stephens)

Leuctra hippopus (Kempny)

Leuctra fusca (L.)

Isoperla grammatica (Poda)

Chloroperla torrentium (Pictet)

Potamonectes sp.

Hydraena sp.

Hydraena gracilis Germar

Dryops sp.

Elmis aenea (Muller)

Esolus parallelepipedus (Muller)

Limnius volckmari (Panzer)

Oulimnius sp.

Oulimnius tuberculatus (Muller)

Rhyacophila dorsalis (Curtis)

Polycentropus flavomaculatus (Pictet)

Hydropsyche pellucidula (Curtis)

Hydropsyche siltalai Dohler

Lepidostoma hirtum (Fabricius)

Tipula montium group

Ptychoptera sp.

Chironomidae

Simulium (Eusimulium) aureum group

Simulium (Simulium) reptans group

Simulium (Simulium) ornatum group

Hemerodromia group

NM 937 280	04 Apr	Main sample	3 minute kick/sweep
NM 937 280	04 Apr	Supplementary	Kick/sweep
NM 937 280	24 Jul	Main sample	3 minute kick/sweep
NM 937 280	24 Jul	Supplementary	Kick/sweep
NM 937 280	05 Nov	Main sample	3 minute kick/sweep
NM 937 280	05 Nov	Supplementary	Kick/sweep

Polycelis nigra group	Elmis aenea (Muller)
Polycelis felina (Dalyell)	Esolus parallelepipedus (Muller)
Chordodidae	Limnius volckmari (Panzer)
Potamopyrgus jenkinsi (Smith)	Oulimnius sp.
Lymnaea peregra (Muller)	Oulimnius tuberculatus (Muller)
Ancylus fluviatilis Muller	Riolus subviolaceus (Muller)
Pisidium sp.	Sialis lutaria (L.)
Oligochaeta	Rhyacophila sp.
Glossiphoniidae	Rhyacophila dorsalis (Curtis)
Glossiphonia complanata (L.)	Polycentropus flavomaculatus (Pictet)
Helobdella stagnalis (L.)	Tinodes sp.
Haemopis sanguisuga (L.)	Hydropsyche pellucidula (Curtis)
Hydracarina	Hydropsyche siltalai Dohler
Gammarus pulex (L.)	Limnephilidae
Siphonurus lacustris Eaton	Anabolia nervosa (Curtis)
Baetis scambus group	Potamophylax sp.
Baetis rhodani (Pictet)	Halesus sp.
Baetis muticus (L.)	Halesus radiatus (Curtis)
Centroptilum luteolum (Muller)	Hydatophylax infumatus (McLachlan)
Rhithrogena semicolorata group	Odontocerum albicorne (Scopoli)
Heptagenia lateralis (Curtis)	Mystacides azurea (L.)
Ecdyonurus sp.	Goera pilosa (Fabricius)
Leptophlebiidae	Lepidostoma hirtum (Fabricius)
Paraleptophlebia submarginata (Stephens)	Sericostoma personatum (Spence)
Ephemerella ignita (Poda)	Tipula montium group
Ephemera danica Muller	Antocha vitripennis Meigen
Caenis rivulorum Eaton	Dicranota sp.
Brachyptera sp.	Pericoma fallax Eaton
Brachyptera risi (Morton)	Pericoma pseudoexquisita Tonnoir
Protonemura praecox (Morton)	Chironomidae
Protonemura meyeri (Pictet)	Simulium (Nevermannia) cryophilum group
Nemoura avicularis Morton	Simulium (Nevermannia) cryophilum (Rubtsov)
Leuctra inermis Kempny	Simulium (Simulium) argyreatum group
Leuctra hippopus (Kempny)	Simulium (Simulium) ornatum group
Leuctra fusca (L.)	Hemerodromia group
Perlodes microcephala (Pictet)	Wiedemannia group
Isoperla grammatica (Poda)	Limnophora sp.
Perla bipunctata Pictet	
Chloroperla torrentium (Pictet)	
Coenagriidae	
Calopteryx sp.	
Gerris sp.	
Micronecta sp.	
Micronecta poweri (Douglas & Scott)	
Oreodytes sanmarkii (Sahlberg)	
Platambus maculatus (L.)	
Gyrinus natator group	
Orectochilus villosus (Muller)	
Hydrophilidae (incl. Hydraenidae)	
Hydraena gracilis Germar	
Hydrocyphon deflexicollis (Muller)	

NM 908 327	04 Apr	Main sample	3 minute kick/sweep
NM 908 327	04 Apr	Supplementary	Kick/sweep
NM 908 327	24 Jul	Main sample	3 minute kick/sweep
NM 908 327	24 Jul	Supplementary	Kick/sweep
NM 908 327	05 Nov	Main sample	3 minute kick/sweep
NM 908 327	05 Nov	Supplementary	Kick/sweep

<i>Polycelis felina</i> (Dalyell)	<i>Odontocerum albicorne</i> (Scopoli)
<i>Lymnaea peregra</i> (Muller)	<i>Silo pallipes</i> (Fabricius)
<i>Bathyomphalus contortus</i> (L.)	<i>Lepidostoma hirtum</i> (Fabricius)
<i>Ancylus fluviatilis</i> Muller	<i>Sericostoma personatum</i> (Spence)
<i>Pisidium</i> sp.	<i>Antocha vitripennis</i> Meigen
<i>Pisidium casertanum</i> (Poli)	<i>Dicranota</i> sp.
<i>Oligochaeta</i>	<i>Limnophila</i> (<i>Eloeophila</i>) sp.
<i>Helobdella stagnalis</i> (L.)	Ceratopogonidae
Hydracarina	Chironomidae
<i>Gammarus pulex</i> (L.)	<i>Simulium</i> (<i>Nevermannia</i>) <i>cryophilum</i> group
<i>Baetis rhodani</i> (Pictet)	<i>Simulium</i> (<i>Nevermannia</i>) <i>angustitarse</i> group
<i>Baetis muticus</i> (L.)	<i>Simulium</i> (<i>Simulium</i>) <i>reptans</i> group
Heptageniidae	<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> group
<i>Rhithrogena semicolorata</i> group	<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group
<i>Ecdyonurus</i> sp.	Chelifera group
<i>Leptophlebia</i>	Hemerodromia group
<i>Paraleptophlebia submarginata</i> (Stephens)	Wiedemannia group
<i>Ephemerella ignita</i> (Poda)	
<i>Ephemera danica</i> Muller	
<i>Caenis rivulorum</i> Eaton	
<i>Amphinemura sulcicollis</i> (Stephens)	
<i>Nemoura avicularis</i> Morton	
<i>Leuctra geniculata</i> (Stephens)	
<i>Leuctra inermis</i> Kempny	
<i>Leuctra hippopus</i> (Kempny)	
<i>Leuctra fusca</i> (L.)	
<i>Perlodes microcephala</i> (Pictet)	
<i>Isoperla grammatica</i> (Poda)	
<i>Perla bipunctata</i> Pictet	
<i>Chloroperla torrentium</i> (Pictet)	
<i>Chloroperla tripunctata</i> (Scopoli)	
<i>Calopteryx virgo</i> (L.)	
<i>Brychius elevatus</i> (Panzer)	
<i>Deronectes latus</i> (Stephens)	
<i>Potamonectes depressus</i> (Fabricius)	
<i>Oreodytes sanmarkii</i> (Sahlberg)	
<i>Orectochilus villosus</i> (Muller)	
<i>Hydraena gracilis</i> Germar	
<i>Hydrocyphon deflexicollis</i> (Muller)	
<i>Elmis aenea</i> (Muller)	
<i>Esolus parallelepipedus</i> (Muller)	
<i>Limnius volckmari</i> (Panzer)	
<i>Oulimnius tuberculatus</i> (Muller)	
<i>Rhyacophila dorsalis</i> (Curtis)	
<i>Glossosoma</i> sp.	
<i>Agapetus</i> sp.	
<i>Polycentropus</i> sp.	
<i>Hydropsyche pellucidula</i> (Curtis)	
<i>Hydropsyche siltalai</i> Dohler	
<i>Ithytrichia</i> sp.	
<i>Potamophylax</i> sp.	
<i>Halesus radiatus</i> (Curtis)	

SH 657 727	23 Apr 1991	Main sample	3 minute kick/sweep
SH 657 727	23 Apr 1991	Supplementary	Kick/sweep
SH 657 727	27 Aug 1991	Main sample	3 minute kick/sweep
SH 657 727	27 Aug 1991	Supplementary	Kick/sweep
SH 657 727	07 Sep 1990	Main sample	3 minute kick/sweep
SH 657 727	07 Sep 1990	Supplementary	Kick/sweep

<i>Crenobia alpina</i> (Dana)	<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> group
<i>Ancylus fluviatilis</i> Muller	<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> Meigen
<i>Oligochaeta</i>	<i>Simulium</i> (<i>Simulium</i>) <i>variegatum</i> Meigen
<i>Hydracarina</i>	<i>Wiedemannia</i> group
<i>Gammarus pulex</i> (L.)	
<i>Baetis rhodani</i> (Pictet)	
<i>Baetis muticus</i> (L.)	
<i>Centroptilum pennulatum</i> Eaton	
<i>Rhithrogena semicolorata</i> group	
<i>Heptagenia lateralis</i> (Curtis)	
<i>Ecdyonurus</i> sp.	
<i>Paraleptophlebia submarginata</i> (Stephens)	
<i>Ephemerella ignita</i> (Poda)	
<i>Caenis rivulorum</i> Eaton	
<i>Protonemura meyeri</i> (Pictet)	
<i>Amphinemura sulcicollis</i> (Stephens)	
<i>Leuctra inermis</i> Kempny	
<i>Leuctra hippopus</i> (Kempny)	
<i>Leuctra nigra</i> (Olivier)	
<i>Leuctra fusca</i> (L.)	
<i>Isoperla grammatica</i> (Poda)	
<i>Dinocras cephalotes</i> (Curtis)	
<i>Perla bipunctata</i> Pictet	
<i>Chloroperla torrentium</i> (Pictet)	
<i>Chloroperla tripunctata</i> (Scopoli)	
<i>Oreodytes sanmarkii</i> (Sahlberg)	
<i>Orectochilus villosus</i> (Muller)	
<i>Hydraena gracilis</i> Germar	
<i>Elmis aenea</i> (Muller)	
<i>Esolus parallelepipedus</i> (Muller)	
<i>Limnius volckmari</i> (Panzer)	
<i>Rhyacophila dorsalis</i> (Curtis)	
<i>Glossosoma</i> sp.	
<i>Agapetus</i> sp.	
<i>Philopotamus montanus</i> (Donovan)	
<i>Wormaldia</i> sp.	
<i>Polycentropodidae</i>	
<i>Polycentropus flavomaculatus</i> (Pictet)	
<i>Hydropsyche pellucidula</i> (Curtis)	
<i>Hydropsyche instabilis</i> (Curtis)	
<i>Hydropsyche siltalai</i> Dohler	
<i>Hydroptila</i> sp.	
<i>Odontocerum albicorne</i> (Scopoli)	
<i>Lepidostoma hirtum</i> (Fabricius)	
<i>Sericostoma personatum</i> (Spence)	
<i>Antocha vitripennis</i> Meigen	
<i>Dicranota</i> sp.	
<i>Limnophila</i> (<i>Eloeophila</i>) sp.	
<i>Dixa puberula</i> Loew	
<i>Chironomidae</i>	
<i>Simulium</i> (<i>Eusimulium</i>) <i>aureum</i> group	
<i>Simulium</i> (<i>Simulium</i>) <i>reptans</i> group	

7.2 Species x site matrix for each river in each season

The following printouts list the species recorded in each of the river systems sampled. Site names for each river (or tributary) are given at the head of each printout, together with grid references and sampling dates. To the left of each river and site name appears a site code (e.g. 81 de Lank, Bradford). The code 81 then acts as a heading for the three columns of data relating to that site.

The three columns are, from left to right
Spring (26 March at this site)
Summer (26 June)
Autumn (3 October)

+ indicates present in main sample

S indicates additional species recorded in the supplementary sample

O indicates absent in main and supplementary sample

	Pages
de Lank	29-31
Wharfe	32-34
Western Cleddau	35-37
Loddon	38-39
Enborne	40-41
Bladnoch	42-43
Lonan	44-45
Lusragen Burn	46-47
Aber	48-49

81 De Lank	Bradford	SX 114 758	26 Mar	26 Jun	03 Oct
85 De Lank	Keybridge	SX 089 739	26 Mar	26 Jun	03 Oct

81 85

Planariidae (incl. Dugesiidae)	+00	000
Polycelis felina	00+	+++
Phagocata vitta	000	+00
Crenobia alpina	0+0	+0+
Potamopyrgus jenkinsi	000	+++
Ancylus fluviatilis	+0+	+++
Pisidium casertanum	+++	00S
Oligochaeta	+++	+++
Helobdella stagnalis	00+	00S
Hydracarina	+++	0+S
Asellus meridianus	+00	00S
Siphonurus lacustris	0+0	0S0
Baetis scambus group	0+0	000
Baetis vernus	+++	000
Baetis rhodani	0++	+++
Baetis niger	+++	000
Rhithrogena semicolorata group	+00	000
Heptagenia sp.	00+	00+
Heptagenia sulphurea	+00	+00
Ecdyonurus sp.	00+	00+
Leptophlebiidae	00+	000
Leptophlebia sp.	S00	000
Leptophlebia marginata	+00	000
Paraleptophlebia submarginata	00S	000
Ephemerella ignita	0++	++0
Brachyptera risi	+00	+00
Protonemura sp.	000	0S0
Protonemura meyeri	+++	+++
Amphinemura sulcicollis	+00	000
Leuctra geniculata	0+0	0S0
Leuctra inermis	+00	000
Leuctra hippopus	+0S	00S
Leuctra nigra	+00	000
Leuctra fusca	0++	0+0
Perlodes microcephala	00+	000
Isoperla grammatica	++0	+00
Dinocras cephalotes	000	+S0
Chloroperla torrentium	++0	+00
Coenagriidae	+00	000
Pyrrhosoma nymphula	+++	000
Calopteryx sp.	+00	000
Calopteryx virgo	S+S	SSS
Cordulegaster boltonii	S++	++S
Velia sp.	++0	0S0
Velia caprai	S00	S00
Gerris sp.	0S0	0S0
Gerris najas	0+0	S0+
Micronecta sp.	+00	000
Corixa punctata	00S	000

Hesperocorixa sahlbergi	00S 000
Sigara sp.	0S0 000
Sigara distincta	00+ 000
Sigara venusta	+++ 000
Haliplus lineatocollis	+00 000
Stictotarsus duodecimpustulatus	+0S 000
Oreodytes sanmarkii	S+S 000
Stictonectes lepidus	00+ 000
Ilybius sp.	0++ 000
Dytiscus semisulcatus	0S0 000
Gyrinidae	000 S00
Gyrinus sp.	000 0S0
Orectochilus villosus	+S+ +00
Hydraena gracilis	+00 000
Limnebius truncatellus	000 00+
Helophorus brevipalpis	S00 000
Helophorus flavipes	+00 00+
Elmis aenea	+++ +++
Limnius volckmari	+++ +++
Oulimnius sp.	000 0S0
Oulimnius tuberculatus	+++ +00
Sialis lutaria	+++ 000
Sialis fuliginosa	000 00+
Rhyacophila dorsalis	+S+ 00+
Rhyacophila munda	++0 ++0
Glossosoma sp.	000 +0+
Agapetus sp.	000 +00
Chimarra marginata	+0+ 000
Polycentropodidae	000 S0+
Polycentropus flavomaculatus	+0+ 000
Polycentropus irroratus	0+0 000
Polycentropus kingi	0+0 0+0
Lype sp.	00+ 000
Hydropsyche pellucidula	00+ +00
Hydropsyche siltalai	++0 +++
Ithytrichia sp.	+0S 000
Oxyethira sp.	+0+ 000
Limnephilidae	000 S00
Limnephilus marmoratus	+00 000
Limnephilus vittatus	+00 000
Anabolia nervosa	++0 000
Potamophylax sp.	00S 000
Potamophylax cingulatus	000 +00
Halesus sp.	0+0 000
Halesus radiatus	+S0 ++0
Chaetopteryx villosa	0+0 0+0
Beraeodes minutus	000 00S
Odontocerum albicorne	0+0 000
Athripsodes albifrons	0+0 000
Mystacides nigra	+00 000
Mystacides azurea	00S +0+
Ylodes simulans	0+0 000
Oecetis testacea	000 +00
Goeridae	000 0+0
Silo pallipes	+0+ +00
Lepidostoma hirtum	+++ +++
Brachycentrus subnubilus	0++ 0++
Sericostoma personatum	+++ +++

Tipula montium group	0++ 000
Dicranota sp.	++0 000
Limnophila (Eloeophila) sp.	+00 000
Pilaria (Pilaria) sp.	+00 000
Pericoma sp.	000 00+
Pericoma pseudoexquisita	000 00+
Dixa puberula	0S0 00S
Dixella filicornis	000 00S
Ceratopogonidae	+++ 0S0
Chironomidae	+++ +++
Simulium (Nevermannia) cryophilum group	0+0 000
Simulium (Nevermannia) cryophilum	+00 000
Simulium (Eusimulium) aureum group	0++ 0SS
Simulium (Simulium) argyreatum group	000 00+
Simulium (Simulium) ornatum group	0++ 000
Hemerodromia group	000 +00
Dolichopodidae	000 0+0
Atherix marginata	+++ +++
Limnophora sp.	0S0 000

81 R. Wharfe	Hubberholme	SD 933 783	08 May 17	Jul 16	Oct
85 R. Wharfe	Grassington	SD 997 639	08 May 17	Jul 16	Oct
89 R. Wharfe	Addingham	SE 084 499	08 May 03	Aug 25	Oct
93 R. Wharfe	Otley	SE 188 455	09 May 03	Aug 25	Oct
97 R. Wharfe	Wetherby	SE 406 477	09 May 03	Aug 23	Nov

	81	85	89	93	97
Polycelis nigra group	000	000	000	000	00+
Dugesia polychroa group	000	000	000	000	+++
Dendrocoelum lacteum	000	000	000	000	0S+
Theodoxus fluviatilis	000	000	000	+S+	+++
Potamopyrgus jenkinsi	000	+++	S++	+++	+++
Lymnaea auricularia	000	000	000	0SS	000
Lymnaea peregra	++S	++0	000	+++	+++
Planorbis carinatus	000	000	000	0++	+++
Gyraulus albus	000	000	000	0+0	S++
Armiger crista	000	000	000	+++	000
Bathyomphalus contortus	000	000	000	000	00+
Ancylus fluviatilis	++0	+00	S++	+0+	+++
Succinea sp.	00+	000	000	000	000
Sphaerium corneum	000	0+0	000	+0+	+++
Pisidium amnicum	000	000	000	000	+0S
Pisidium casertanum	000	000	000	0+0	0S+
Pisidium personatum	000	000	00+	000	000
Pisidium subtruncatum	000	000	000	+0+	000
Pisidium supinum	000	000	000	000	00+
Pisidium henslowanum	000	000	000	00+	00+
Pisidium nitidum	000	000	000	000	+++
Pisidium tenuilineatum	000	+00	000	000	000
Oligochaeta	+++	+++	+++	+++	+++
Theromyzon tessulatum	000	000	000	0+0	000
Hemiclepsis marginata	000	000	000	000	00+
Glossiphonia complanata	0+0	0S0	000	0++	+S+
Helobdella stagnalis	0+0	0+0	+00	0++	0S+
Erpobdellidae	0+0	000	000	000	000
Erpobdella octoculata	000	0+0	S0+	+0+	+++
Trocheta bykowskii	000	000	000	000	00+
Hydracarina	+++	+0+	++0	+++	++0
Asellus aquaticus	0++	000	000	000	+++
Crangonyx pseudogracilis	000	000	000	000	00+
Gammarus pulex	000	+00	000	000	+0+
Austropotamobius pallipes	000	+00	000	000	000
Baetis sp.	00+	000	000	000	000
Baetis scambus group	S+0	++0	++0	S00	++S
Baetis rhodani	++0	+++	00+	+0+	00+
Baetis muticus	+00	+00	000	000	000
Centroptilum luteolum	000	000	000	0+0	000
Cloeon dipterum	000	000	000	0+0	000
Procloeon bifidum	000	000	S00	0+0	000
Rhithrogena semicolorata group	S0S	S00	+00	000	+00
Heptagenia sulphurea	000	000	+0S	+0+	+++
Ecdyonurus sp.	+++	+++	+++	++S	+++

Paraleptophlebia submarginata	000	000	000	00+	000
Ephemerella ignita	++0	++0	+++	+++	++0
Ephemera danica	000	000	+S0	000	000
Caenis luctuosa group	000	000	S00	+0+	+0+
Caenis rivulorum	+++	++0	+0+	+00	+00
Taeniopteryx nebulosa	000	00+	000	000	000
Amphinemura sulcicollis	+0+	+00	00S	+00	000
Leuctra sp.	000	000	000	+00	000
Leuctra geniculata	000	0+0	++0	000	+00
Leuctra fusca	S+0	++0	++0	0+0	++0
Perlodes microcephala	000	000	000	+00	00+
Isoperla grammatica	+0+	++0	+0+	+00	000
Dinocras cephalotes	++0	S+0	000	000	000
Perla bipunctata	0S0	+++	00+	000	000
Chloroperla torrentium	S00	000	S00	000	000
Chloroperla tripunctata	000	+00	000	000	000
Micronecta sp.	000	+00	000	000	000
Sigara (Sigara) sp.	000	000	000	0+0	000
Brychius elevatus	0+0	000	000	000	000
Halipilus sp.	000	000	000	000	0++
Halipilus fluviatilis	000	000	000	0+0	000
Halipilus immaculatus	000	000	000	0+0	000
Halipilus wehnckeii	000	000	000	0+0	000
Potamonectes depressus	000	000	000	0+0	00+
Oreodytes sanmarkii	++0	000	000	000	000
Platambus maculatus	000	000	000	00+	000
Orectochilus villosus	000	000	000	000	+0+
Hydraena gracilis	00+	000	000	000	000
Helophorus grandis	000	000	S00	000	000
Elmis aenea	+++	+++	+++	+++	+++
Esolus parallelepipedus	00+	+++	+++	+++	+++
Limnius volckmari	+++	+++	+++	+++	+++
Oulimnius sp.	00+	000	0+0	000	0++
Oulimnius tuberculatus	++0	000	00+	+++	000
Sialis lutaria	000	000	000	00+	000
Rhyacophila dorsalis	+S0	+++	+++	+0+	+++
Rhyacophila munda	+00	S00	000	000	000
Glossosoma sp.	0+0	0++	0++	00+	0++
Agapetus sp.	+00	+00	+++	000	+S+
Polycentropodidae	0+0	000	000	000	000
Polycentropus flavomaculatus	+S0	+++	+S+	+++	000
Tinodes waeneri	+00	000	000	000	000
Psychomyia pusilla	++0	000	+00	+0+	+00
Hydropsyche pellucidula	000	000	S++	S0+	S++
Hydropsyche contubernalis	000	000	000	000	00+
Hydropsyche instabilis	+00	000	000	000	000
Hydropsyche siltalai	+S0	+++	+0+	+0+	+00
Cheumatopsyche lepida	000	000	00+	000	+0+
Agraylea multipunctata	000	000	000	0+0	00S
Allotrichia pallicornis	000	000	000	+00	+00
Hydroptila sp.	++0	+0+	+00	000	00+
Ithytrichia sp.	+00	++0	00+	000	000
Ecclisopteryx guttulata	00+	00+	000	000	000
Potamophylax latipennis	0+0	000	000	000	000
Halesus sp.	000	+00	000	000	000
Melampophylax mucoreus	+00	+00	000	000	000
Allogamus auricollis	0S0	000	000	000	000

Athripsodes sp.	0+0	+00	0++	S+0	0+0
Athripsodes cinereus	000	000	+00	+0+	S0+
Athripsodes albifrons	000	0+0	+00	+00	+00
Mystacides azurea	000	+00	000	0++	000
Ceraclea sp.	000	000	000	000	+00
Ceraclea annulicornis	000	+00	+00	+0+	000
Ceraclea dissimilis	000	000	+00	+00	000
Goera pilosa	000	000	000	000	+00
Lepidostoma hirtum	0++	++S	+0+	+0+	+0+
Brachycentrus subnubilus	000	000	0+0	0++	0++
Sericostoma personatum	+S0	++0	000	000	+00
Tipula montium group	00+	0++	00+	00+	+0+
Antocha vitripennis	++0	+++	+0	+00	00+
Dicranota sp.	S00	0+0	0+0	000	00+
Limnophila (Eloeophila) sp.	S00	000	000	000	000
Psychodidae	000	000	000	S00	000
Pericoma sp.	000	000	000	+00	000
Pericoma exquisita	000	00+	000	00+	00+
Pericoma neglecta	000	000	00+	000	000
Ceratopogonidae	000	+00	+00	+00	++0
Chironomidae	++S	+++	+++	+++	+++
Simulium (Eusimulium) aureum group	000	0S0	000	000	+00
Simulium (Wilhelmia) sp.	000	000	000	+0+	++S
Simulium (Simulium) tuberosum	+00	000	000	000	000
Simulium (Simulium) reptans group	0+0	++0	000	+00	S+0
Simulium (Simulium) argyreatum group	000	0+0	000	000	000
Simulium (Simulium) ornatum group	0S0	0++	000	+00	+0+
Empididae	000	000	000	000	++0
Chelifera group	0+0	0+0	000	000	000
Hemerodromia group	000	+00	000	S00	000
Atalanta group	000	000	000	0+0	000
Wiedemannia group	000	0+0	+00	+0+	000
Atherix ibis	++0	++0	+++	+0S	000
Syrphidae	00+	000	000	000	000
Ephydridae	000	000	000	0+0	000
Phaeonia group	000	000	000	0S0	000
Limnophora sp.	000	S++	000	000	0++

87 Western Cleddau Wolf's Castle	SM 956 256	20 Apr 07	Aug 06	Nov
91 Western Cleddau Treffgarne	SM 959 230	24 Apr 07	Aug 07	Nov
95 Western Cleddau Crow Hill	SM 954 177	20 Apr 07	Aug 06	Nov

87 91 95

Polycelis sp.	0S0	000	000
Polycelis nigra group	00+	0S0	+00
Polycelis felina	+++	+++	+++
Crenobia alpina	000	+++	000
Chordodidae	0+0	000	000
Potamopyrgus jenkinsi	+++	+++	+++
Lymnaea peregra	+++	+++	+++
Physa fontinalis	000	000	00+
Anisus vortex	0+0	000	000
Ancylus fluviatilis	+++	+++	+++
Succinea sp.	0+0	000	000
Pisidium sp.	+0S	000	+00
Pisidium casertanum	00+	000	000
Pisidium personatum	0+0	000	000
Pisidium subtruncatum	0++	+0+	00+
Pisidium hibernicum	000	000	0+0
Pisidium nitidum	00+	000	000
Oligochaeta	+++	+++	+++
Glossiphonia complanata	0++	0++	00+
Helobdella stagnalis	00+	00+	000
Erpobdella octoculata	+++	+S+	00+
Trocheta subviridis	000	000	0+0
Hydracarina	0++	0++	+0+
Asellus aquaticus	+++	00+	000
Asellus meridianus	000	+++	+0+
Crangonyx pseudogracilis	000	000	00+
Gammarus pulex	+++	+++	+++
Baetis sp.	000	0+0	000
Baetis scambus group	+0+	0+0	+++
Baetis vernus	+00	000	+00
Baetis rhodani	+++	+++	+0+
Baetis muticus	+0+	+00	000
Centroptilum luteolum	000	000	+00
Rhithrogena semicolorata group	+0+	+++	+0+
Heptagenia sulphurea	+0+	00+	+++
Ecdyonurus sp.	+++	00+	0++
Paraleptophlebia submarginata	000	00+	000
Ephemerella ignita	+++	+++	+0+
Ephemera danica	0++	+S+	+0+
Caenis luctuosa group	000	00S	00+
Caenis rivulorum	+++	+++	+0+
Taeniopteryx nebulosa	000	000	00+
Brachyptera risi	+00	+00	000
Protonemura meyeri	00+	0++	000
Amphinemura sulcicollis	+00	+00	+00
Nemoura avicularis	00+	00+	000

Leuctra geniculata	++0	++0	+00
Leuctra hippopus	00+	00+	00+
Leuctra fusca	0+0	++0	0+0
Perlodes microcephala	0++	00+	0++
Isoperla grammatica	000	++0	+00
Chloroperla torrentium	+0S	++0	+0+
Chloroperla tripunctata	+00	+00	000
Calopteryx splendens	000	000	+00
Calopteryx virgo	+00	0+0	000
Cordulegaster boltonii	0S0	000	000
Hydrometra sp.	0S0	000	000
Velia caprai	000	0S0	000
Gerris sp.	0S0	0S0	000
Corixidae	000	000	0+0
Sigara (Sigara) sp.	000	000	+00
Haliphus sp.	0+0	000	000
Potamonectes depressus	00+	000	000
Oreodytes sanmarkii	0++	0++	0+0
Platambus maculatus	0++	0+0	00+
Orectochilus villosus	+0S	00+	+++
Hydraena riparia	0+0	000	000
Hydraena gracilis	+++	+++	+++
Helophorus brevipalpis	0S0	000	000
Elmis aenea	+++	+++	+++
Esolus parallelepipedus	000	0+0	+++
Limnius volckmari	+++	+++	+++
Oulimnius sp.	00+	00+	00S
Oulimnius tuberculatus	0+0	0+0	0++
Sialis lutaria	0S+	+0+	00S
Sialis fuliginosa	000	00+	00+
Sialis nigripes	000	000	00+
Rhyacophila dorsalis	+++	0++	+00
Rhyacophila munda	++0	++0	000
Glossosoma sp.	0+0	0++	0++
Agapetus sp.	+++	+++	+++
Polycentropus sp.	000	000	00+
Polycentropus flavomaculatus	00+	0++	00S
Hydropsyche pellucidula	0++	+++	+++
Hydropsyche siltalai	+0+	+++	000
Limnephilidae	00S	000	000
Drusus annulatus	+++	+00	000
Ecclisopteryx guttulata	000	00+	000
Potamophylax latipennis	+0+	00+	000
Halesus radiatus	+00	000	000
Chaetopteryx villosa	000	000	+00
Odontocerum albicorne	+++	000	0+0
Athripsodes sp.	000	000	0+0
Athripsodes cinereus	000	000	+0+
Mystacides azurea	0++	0S0	+++
Adicella reducta	000	0+0	000
Oecetis testacea	000	00S	000
Silo sp.	000	0+0	000
Silo pallipes	000	+0+	000
Silo nigricornis	000	00+	000
Lepidostoma hirtum	+S+	+0+	+++
Brachycentrus subnubilus	0+0	0++	+++
Sericostoma personatum	+++	+++	+0+
Tipula sp.	000	00+	000

Tipula montium group	00+	00+	000
Antocha vitripennis	000	+00	000
Pedicia rivosa	000	00+	000
Dicranota sp.	+++	0++	0++
Limnophila (Eloeophila) sp.	+0+	+0+	+00
Pilaria (Pilaria) sp.	+00	000	000
Dixa nebulosa	0S+	0S0	000
Ceratopogonidae	+++	+0+	+00
Chironomidae	+++	+++	+++
Simulium (Nevermannia) venum group	000	000	+00
Simulium (Nevermannia) cryophilum group	+00	+00	+00
Simulium (Eusimulium) aureum group	0+0	0++	0++
Simulium (Wilhelmia) sp.	0S+	0S0	+00
Simulium (Wilhelmia) equinum	0+0	0+0	0+0
Simulium (Simulium) reptans group	000	+00	000
Simulium (Simulium) variegatum	000	0+0	000
Simulium (Simulium) ornatum group	000	0+0	+00
Hemerodromia group	+00	+0+	000
Wiedemannia group	+0+	+++	+0+
Atherix ibis	+00	+0+	00+
Atherix marginata	000	0+S	000
Chrysops sp.	000	000	00+
Tabanus group	000	00+	0++
Limnophora sp.	0++	0++	000

81 R. Loddon Oliver's Battery SU 667 537 21 Mar 02 Jul 27 Sep
 85 R. Loddon Sherfield On Loddon SU 683 583 21 Mar 14 Jun 20 Sep

	81	85
<i>Polycelis nigra</i> group	0+0	0+0
<i>Polycelis felina</i>	++0	000
<i>Dendrocoelum lacteum</i>	0+0	000
<i>Valvata cristata</i>	00+	000
<i>Valvata piscinalis</i>	+++	+++
<i>Potamopyrgus jenkinsi</i>	++0	0++
<i>Bithynia tentaculata</i>	000	+++
<i>Lymnaea palustris</i>	00+	000
<i>Lymnaea stagnalis</i>	000	0+0
<i>Lymnaea peregra</i>	0+0	+++
<i>Physa fontinalis</i>	++0	0++
<i>Planorbis carinatus</i>	0+0	000
<i>Anisus vortex</i>	+++	+++
<i>Gyraulus albus</i>	000	+++
<i>Armiger crista</i>	000	0+0
<i>Bathyomphalus contortus</i>	0++	000
<i>Acroloxus lacustris</i>	000	0+0
<i>Ancylus fluviatilis</i>	0+0	+++
<i>Succinea</i> sp.	+00	000
<i>Sphaerium corneum</i>	000	+++
<i>Pisidium</i> sp.	000	+00
<i>Pisidium amnicum</i>	000	0+0
<i>Pisidium casertanum</i>	+00	000
<i>Pisidium subtruncatum</i>	00+	00+
<i>Pisidium nitidum</i>	0++	0++
<i>Pisidium pulchellum</i>	00+	000
<i>Oligochaeta</i>	+++	+++
<i>Piscicola geometra</i>	+++	000
<i>Theromyzon tessulatum</i>	000	0+0
<i>Glossiphonia heteroclita</i>	00+	+00
<i>Glossiphonia complanata</i>	+++	+++
<i>Helobdella stagnalis</i>	00+	++0
<i>Erpobdella octoculata</i>	+++	+0+
<i>Hydracarina</i>	+++	+++
<i>Asellus aquaticus</i>	+++	+++
<i>Asellus meridianus</i>	+0+	000
<i>Gammarus pulex</i>	+++	+++
<i>Baetis scambus</i> group	0+0	0++
<i>Baetis vernus</i>	0++	++0
<i>Baetis rhodani</i>	0+0	0+0
<i>Centroptilum luteolum</i>	0+0	0+0
<i>Centroptilum pennulatum</i>	000	0+0
<i>Ephemerella ignita</i>	++0	0++
<i>Ephemera danica</i>	000	+++
<i>Caenis luctuosa</i> group	000	0++
<i>Calopteryx splendens</i>	000	+++
<i>Gerris</i> sp.	0+0	000
<i>Gerris lacustris</i>	000	00+
<i>Nepa cinerea</i>	+00	000

Micronecta sp.	000	+00
Micronecta poweri	000	0+0
Hesperocorixa sahlbergi	+00	00+
Sigara (Sigara) sp.	+00	0++
Brychius elevatus	0+0	+++
Haliphus lineatocollis	+++	00+
Haliphus laminatus	+00	0+0
Haliphus wehnckei	+00	0+0
Potamonectes sp.	000	00+
Potamonectes depressus	000	++0
Oreodytes sanmarkii	0+0	000
Hydroporus palustris	+0+	000
Agabus sp.	0+0	0+0
Agabus didymus	00+	000
Agabus sturmii	00+	000
Agabus bipustulatus	00+	000
Platambus maculatus	00+	00+
Hydrophilidae (incl. Hydraenidae)	0+0	000
Anacaena limbata	+00	000
Elmis aenea	0++	+++
Limnius volckmari	000	+++
Oulimnius sp.	000	00+
Oulimnius tuberculatus	000	0+0
Sialis lutaria	+++	+0+
Rhyacophila dorsalis	000	++0
Tinodes waeneri	0+0	000
Hydropsyche pellucidula	000	+++
Hydropsyche siltalai	+0+	0+0
Agraylea multipunctata	00+	000
Agraylea sexmaculata	00+	000
Hydroptila sp.	00+	+++
Oxyethira sp.	00+	000
Limnephilus lunatus group	++0	0+0
Anabolia nervosa	000	0+0
Potamophylax sp.	00+	000
Potamophylax latipennis	0+0	++0
Potamophylax cingulatus	0+0	000
Halesus sp.	+00	000
Halesus radiatus	000	0+0
Melampophylax mucoreus	+++	+++
Chaetopteryx villosa	0+0	000
Athripsodes aterrimus	000	00+
Athripsodes cinereus	000	+0+
Athripsodes albifrons	000	0+0
Mystacides azurea	0+0	00+
Goera pilosa	000	+++
Lepidostoma hirtum	000	0+0
Sericostoma personatum	000	00+
Dicranota sp.	0+0	0+0
Pilaria (Pilaria) sp.	000	0+0
Pericoma trivialis group	00+	000
Ceratopogonidae	000	0+0
Chironomidae	+++	+++
Simulium (Nevermannia) angustitarse group	00+	00+
Simulium (Eusimulium) aureum group	000	0+0
Simulium (Simulium) ornatum group	0+0	000
Chelifera group	000	+00

93 R. Enborne

Brimpton

SU 568 648 06 Mar 06 Jun 27 Sep

93

<i>Theodoxus fluviatilis</i>	++0
<i>Potamopyrgus jenkinsi</i>	0++
<i>Lymnaea peregra</i>	+++
<i>Anisus vortex</i>	+00
<i>Gyraulus albus</i>	+++
<i>Bathyomphalus contortus</i>	++0
<i>Acroloxus lacustris</i>	0++
<i>Ancylus fluviatilis</i>	0+0
<i>Sphaerium corneum</i>	+++
<i>Pisidium amnicum</i>	++0
<i>Pisidium casertanum</i>	+00
<i>Pisidium subtruncatum</i>	+++
<i>Pisidium nitidum</i>	+++
<i>Oligochaeta</i>	+++
<i>Glossiphonia complanata</i>	+++
<i>Helobdella stagnalis</i>	+00
<i>Erpobdella octoculata</i>	++0
<i>Hydracarina</i>	0++
<i>Gammarus pulex</i>	+++
<i>Baetis vernus</i>	0+0
<i>Baetis rhodani</i>	+00
<i>Centroptilum luteolum</i>	0+0
<i>Cloeon dipterum</i>	00+
<i>Procloeon bifidum</i>	0+0
<i>Habrophlebia fusca</i>	0+0
<i>Ephemerella ignita</i>	0+0
<i>Ephemera danica</i>	0++
<i>Caenis luctuosa group</i>	0++
<i>Erythromma najas</i>	00+
<i>Calopteryx splendens</i>	+++
<i>Notonecta sp.</i>	0+0
<i>Notonecta glauca</i>	00+
<i>Micronecta poweri</i>	0+0
<i>Sigara (Sigara) sp.</i>	0++
<i>Sigara falleni</i>	0++
<i>Halipplus fluviatilis</i>	0++
<i>Potamonectes depressus</i>	0+0
<i>Platambus maculatus</i>	++0
<i>Ilybius sp.</i>	00+
<i>Helophorus brevipalpis</i>	0+0
<i>Elmis aenea</i>	++0
<i>Limnius volckmari</i>	0+0
<i>Oulimnius tuberculatus</i>	0++
<i>Sialis lutaria</i>	+++
<i>Sialis nigripes</i>	0+0
<i>Hydroptila sp.</i>	0++
<i>Halesus sp.</i>	+00
<i>Molanna angustata</i>	+0+
<i>Athripsodes cinereus</i>	0++
<i>Mystacides nigra</i>	00+
<i>Mystacides azurea</i>	++0
<i>Ceraclea dissimilis</i>	0+0

Goera pilosa	+00
Lepidostoma hirtum	0+0
Tipula montium group	+00
Dicranota sp.	+00
Chironomidae	+++
Simulium (Nevermannia) angustitarse group	0+0
Atalanta group	0+0
Atherix ibis	+00

03 R. Bladnoch	Glassoch Bridge	NX 333 695	11 Apr 30	Aug 21	Nov
11 R. Bladnoch	Spittal	NX 360 579	30 May 30	Aug 21	Nov

03 11

Polycelis nigra group	000	0++
Valvata piscinalis	000	++0
Lymnaea peregra	000	0S0
Gyraulus albus	000	+00
Bathyomphalus contortus	000	++0
Ancylus fluviatilis	+++	++0
Pisidium sp.	+++	++0
Pisidium hibernicum	00S	000
Oligochaeta	+++	+++
Glossiphoniidae	000	S00
Glossiphonia complanata	0+S	0+0
Helobdella stagnalis	+00	000
Erpobdella octoculata	+S+	+++
Hydracarina	0+0	++0
Asellus meridianus	000	0++
Gammarus pulex	000	+++
Baetis sp.	000	0S0
Baetis scambus group	000	++0
Baetis rhodani	0+0	+++
Baetis niger	++0	000
Centroptilum luteolum	000	0S0
Proclleon bifidum	000	0+0
Heptageniidae	000	0S0
Rhithrogena semicolorata group	+0+	+00
Heptagenia sulphurea	+++	+00
Heptagenia fuscogrisea	+0S	000
Ecdyonurus sp.	+++	+++
Leptophlebiidae	0+0	0+0
Leptophlebia sp.	+00	00S
Leptophlebia marginata	S0S	000
Ephemerella ignita	000	++0
Caenis luctuosa group	S00	S00
Caenis rivulorum	+00	+00
Taeniopteryx nebulosa	00+	000
Protonemura meyeri	+0+	000
Amphinemura sulcicollis	+0+	000
Nemoura avicularis	0S0	000
Leuctra geniculata	000	+00
Leuctra hippopus	+0+	00+
Leuctra fusca	0+0	++0
Perlodes microcephala	0++	000
Isoperla grammatica	+0+	+00
Chloroperla torrentium	+00	+0+
Cordulegaster boltonii	SS0	000
Velia caprai	S00	000
Potamonectes sp.	000	+00
Orectochilus villosus	+00	000
Hydraena sp.	000	0+0
Hydraena gracilis	000	+00

Dryops sp.	0+0	0S0
Elmis aenea	+++	+++
Esolus parallelepipedus	000	+00
Limnius volckmari	+++	++0
Oulimnius sp.	00+	00+
Oulimnius tuberculatus	++0	++0
Sialis lutaria	S0S	000
Rhyacophila dorsalis	0+0	+00
Rhyacophila munda	+00	000
Agapetus sp.	+00	000
Polycentropus flavomaculatus	+++	+00
Hydropsyche pellucidula	++0	+00
Hydropsyche siltalai	+0+	++0
Drusus annulatus	00+	000
Potamophylax latipennis	00S	000
Halesus radiatus	+0S	000
Athripsodes cinereus	00+	000
Lepidostoma hirtum	+++	+00
Brachycentrus subnubilus	+++	000
Tipula montium group	000	0+0
Pilaria (Neolimnomyia) sp.	00S	000
Ptychoptera sp.	000	0+0
Ceratopogonidae	+00	000
Chironomidae	++0	++0
Simulium (Nevermannia) cryophilum group	00+	000
Simulium (Eusimulium) aureum group	000	0+0
Simulium (Simulium) reptans group	000	++0
Simulium (Simulium) noelleri	+00	000
Simulium (Simulium) ornatum group	0+0	++0
Hemerodromia group	000	+00

03 R. Lonan Clachadubh NM 937 280 04 Apr 24 Jul 05 Nov

	03
Polycelis nigra group	00+
Polycelis felina	+00
Chordodidae	0+0
Potamopyrgus jenkinsi	+++
Lymnaea peregra	+S+
Ancylus fluviatilis	+++
Pisidium sp.	+00
Oligochaeta	+++
Glossiphoniidae	0S0
Glossiphonia complanata	+++
Helobdella stagnalis	0+S
Haemopsis sanguisuga	+0S
Hydracarina	++S
Gammarus pulex	+++
Siphonurus lacustris	+00
Baetis scambus group	0+0
Baetis rhodani	+++
Baetis muticus	0+0
Centroptilum luteolum	+S0
Rhithrogena semicolorata group	+0+
Heptagenia lateralis	+0+
Ecdyonurus sp.	+++
Leptophlebiidae	0+0
Paraleptophlebia submarginata	+0+
Ephemerella ignita	0+0
Ephemera danica	+00
Caenis rivulorum	+00
Brachyptera sp.	00+
Brachyptera risi	+00
Protonemura praecox	00+
Protonemura meyeri	+0+
Nemoura avicularis	00+
Leuctra inermis	+00
Leuctra hippopus	+0+
Leuctra fusca	0+0
Perlodes microcephala	0++
Isoperla grammatica	+0+
Perla bipunctata	+00
Chloroperla torrentium	+0+
Coenagriidae	+00
Calopteryx sp.	00S
Gerris sp.	0S0
Micronecta sp.	00S
Micronecta poweri	0+0
Oreodytes sanmarkii	0+S
Platambus maculatus	00S
Gyrinus natator group	00S
Orectochilus villosus	00+
Hydrophilidae (incl. Hydraenidae)	0+0
Hydraena gracilis	+00
Hydrocyphon deflexicollis	+0+
Elmis aenea	+++

<i>Esolus parallelepipedus</i>	0++
<i>Limnius volckmari</i>	+++
<i>Oulimnius</i> sp.	S00
<i>Oulimnius tuberculatus</i>	+++
<i>Riolus subviolaceus</i>	+00
<i>Sialis lutaria</i>	+0S
<i>Rhyacophila</i> sp.	+00
<i>Rhyacophila dorsalis</i>	0++
<i>Polycentropus flavomaculatus</i>	0++
<i>Tinodes</i> sp.	00+
<i>Hydropsyche pellucidula</i>	+++
<i>Hydropsyche siltalai</i>	+0+
Limnephilidae	00+
<i>Anabolia nervosa</i>	+00
<i>Potamophylax</i> sp.	00S
<i>Halesus</i> sp.	+00
<i>Halesus radiatus</i>	S00
<i>Hydatophylax infumatus</i>	+00
<i>Odontocerum albicorne</i>	0+0
<i>Mystacides azurea</i>	+00
<i>Goera pilosa</i>	+00
<i>Lepidostoma hirtum</i>	+0+
<i>Sericostoma personatum</i>	0++
<i>Tipula montium</i> group	00+
<i>Antocha vitripennis</i>	S0+
<i>Dicranota</i> sp.	+++
<i>Pericoma fallax</i>	+00
<i>Pericoma pseudoexquisita</i>	+00
Chironomidae	+++
<i>Simulium</i> (<i>Nevermannia</i>) <i>cryophilum</i> group	00+
<i>Simulium</i> (<i>Nevermannia</i>) <i>cryophilum</i>	+00
<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> group	+00
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	0++
<i>Hemerodromia</i> group	00+
<i>Wiedemannia</i> group	+++
<i>Limnophora</i> sp.	00S

03 Lusragan Burn Cluny Villa

NM 908 327 04 Apr 24 Jul 05 Nov

03

<i>Polycelis felina</i>	+++
<i>Lymnaea peregra</i>	S0+
<i>Bathyomphalus contortus</i>	+00
<i>Ancylus fluviatilis</i>	++0
<i>Pisidium</i> sp.	00+
<i>Pisidium casertanum</i>	0S0
<i>Oligochaeta</i>	+++
<i>Helobdella stagnalis</i>	+0+
<i>Hydracarina</i>	++S
<i>Gammarus pulex</i>	+++
<i>Baetis rhodani</i>	+++
<i>Baetis muticus</i>	+++
Heptageniidae	0S0
<i>Rhithrogena semicolorata</i> group	+0+
<i>Ecdyonurus</i> sp.	+++
Leptophlebiidae	0+0
<i>Paraleptophlebia submarginata</i>	+0+
<i>Ephemerella ignita</i>	0+0
<i>Ephemera danica</i>	+0+
<i>Caenis rivulorum</i>	+00
<i>Amphinemura sulcicollis</i>	+0+
<i>Nemoura avicularis</i>	0+S
<i>Leuctra geniculata</i>	0+0
<i>Leuctra inermis</i>	+00
<i>Leuctra hippopus</i>	+0+
<i>Leuctra fusca</i>	0S0
<i>Perlodes microcephala</i>	0++
<i>Isoperla grammatica</i>	+0+
<i>Perla bipunctata</i>	+++
<i>Chloroperla torrentium</i>	+0+
<i>Chloroperla tripunctata</i>	+00
<i>Calopteryx virgo</i>	00S
<i>Brychius elevatus</i>	0S0
<i>Deronectes latus</i>	0+0
<i>Potamonectes depressus</i>	++0
<i>Oreodytes sanmarkii</i>	+++
<i>Orectochilus villosus</i>	+0+
<i>Hydraena gracilis</i>	+0+
<i>Hydrocyphon deflexicollis</i>	+++
<i>Elmis aenea</i>	+0+
<i>Esolus parallelepipedus</i>	+++
<i>Limnius volckmari</i>	+++
<i>Oulimnius tuberculatus</i>	00+
<i>Rhyacophila dorsalis</i>	+++
<i>Glossosoma</i> sp.	0+0
<i>Agapetus</i> sp.	+0+
<i>Polycentropus</i> sp.	+00
<i>Hydropsyche pellucidula</i>	+++
<i>Hydropsyche siltalai</i>	+++
<i>Ithytrichia</i> sp.	00+
<i>Potamophylax</i> sp.	00+
<i>Halesus radiatus</i>	+00

Odontocerum albicorne	+++
Silo pallipes	+0+
Lepidostoma hirtum	+0+
Sericostoma personatum	+0+
Antocha vitripennis	00+
Dicranota sp.	+++
Limnophila (Eloeophila) sp.	S0+
Ceratopogonidae	+00
Chironomidae	+++
Simulium (Nevermannia) cryophilum group	+00
Simulium (Nevermannia) angustitarse group	00+
Simulium (Simulium) reptans group	+0+
Simulium (Simulium) argyreatum group	+0+
Simulium (Simulium) ornatum group	+++
Chelifera group	+++
Hemerodromia group	0+0
Wiedemannia group	+0+

07 Aber Abergwyngregyn SH 657 727 23 Apr 27 Aug 07 Sep

	07
<i>Crenobia alpina</i>	00+
<i>Ancylus fluviatilis</i>	0++
<i>Oligochaeta</i>	+++
<i>Hydracarina</i>	+++
<i>Gammarus pulex</i>	S++
<i>Baetis rhodani</i>	+++
<i>Baetis muticus</i>	+++
<i>Centroptilum pennulatum</i>	00S
<i>Rhithrogena semicolorata</i> group	+00
<i>Heptagenia lateralis</i>	+00
<i>Ecdyonurus</i> sp.	+++
<i>Paraleptophlebia submarginata</i>	00+
<i>Ephemerella ignita</i>	0S0
<i>Caenis rivulorum</i>	+S+
<i>Protonemura meyeri</i>	0S+
<i>Amphinemura sulcicollis</i>	+00
<i>Leuctra inermis</i>	+00
<i>Leuctra hippopus</i>	00S
<i>Leuctra nigra</i>	S00
<i>Leuctra fusca</i>	0++
<i>Isoperla grammatica</i>	+00
<i>Dinocras cephalotes</i>	00+
<i>Perla bipunctata</i>	+++
<i>Chloroperla torrentium</i>	+00
<i>Chloroperla tripunctata</i>	+0+
<i>Oreodytes sanmarkii</i>	++S
<i>Orectochilus villosus</i>	+0+
<i>Hydraena gracilis</i>	+++
<i>Elmis aenea</i>	+++
<i>Esolus parallelepipedus</i>	+++
<i>Limnius volckmari</i>	0+S
<i>Rhyacophila dorsalis</i>	+++
<i>Glossosoma</i> sp.	+0+
<i>Agapetus</i> sp.	+00
<i>Philopotamus montanus</i>	00+
<i>Wormaldia</i> sp.	00S
<i>Polycentropodidae</i>	+00
<i>Polycentropus flavomaculatus</i>	S++
<i>Hydropsyche pellucidula</i>	+0+
<i>Hydropsyche instabilis</i>	+00
<i>Hydropsyche siltalai</i>	+++
<i>Hydroptila</i> sp.	++0
<i>Odontocerum albicorne</i>	S00
<i>Lepidostoma hirtum</i>	+00
<i>Sericostoma personatum</i>	S++
<i>Antocha vitripennis</i>	00+
<i>Dicranota</i> sp.	00+
<i>Limnophila (Eloeophila)</i> sp.	+00
<i>Dixa puberula</i>	0++
<i>Chironomidae</i>	+++
<i>Simulium (Eusimulium) aureum</i> group	0++
<i>Simulium (Simulium) reptans</i> group	00+

Simulium (Simulium) argyreatum group	0S+
Simulium (Simulium) argyreatum	+00
Simulium (Simulium) variegatum	+00
Wiedemannia group	+++

7.3 Preliminary comments on the fauna

In this section of the report we offer a brief commentary on the invertebrate fauna of the rivers examined in 1991. A full appraisal of the fauna at all sites sampled within the contract will be given in the final report. The purpose here is to highlight rivers which support rich species assemblages in particular taxonomic groups and to draw attention to the occurrence some rare or notable species.

In Table 2 the number of different taxa recorded within each major taxonomic group is given for each river sampled. The data have been abstracted from the species x sites matrices in section 7.2 and only include demonstrably different taxa. That is, in cases where a list includes identifications at two taxonomic levels (e.g. *Silo* sp. and *Silo pallipes*) only one taxon is counted.

Table 2. Number of different taxa recorded in each major taxonomic group for the running-water sites examined in 1991.

River	de Lank	Wharfe	Western Cleddau	Loddon	Enborne	Bladnoch	Lonan	Lusragen	Aber
No.sites	2	5	3	2	1	2	1	1	1
Tricladida	3	3	3	3	-	1	2	1	1
Chordodidae	-	-	1	-	-	-	1	-	-
Gastropoda	2	10	6	16	8	5	3	3	1
Bivalvia	1	9	5	6	5	1	1	1	-
Oligochaeta	1	1	1	1	1	1	1	1	1
Hirudinea	1	6	4	6	3	3	3	1	-
Hydracarina	1	1	1	1	1	1	1	1	1
Crustacea	1	4	4	3	1	2	1	1	1
Ephemeroptera	11	14	13	8	9	13	12	8	9
Plecoptera	12	10	12	-	-	10	11	11	11
Odonata	3	-	3	1	2	1	2	1	-
Hemiptera	7	2	4	5	4	1	2	-	-
Coleoptera	15	14	12	16	8	8	11	11	6
Megaloptera	2	1	3	1	2	1	1	-	-
Trichoptera	30	30	22	22	9	12	14	13	13
Diptera	18	24	24	9	6	11	12	13	10

Since the number of sites examined on each river or stream varied between one and five, caution is required in the interpretation of the results. Nevertheless, a number of features are apparent.

The de Lank, like the R. Walkham, which was examined last year, has a restricted range of non-insect taxa as a result of the harsh environmental conditions on the moors of the south-west of England. However, it supports an impressive range of insect taxa and, in particular, the richness of the trichopteran assemblage (30 taxa from just two sites) is notable.

The R. Wharfe, with five sites sampled, has a wider range of non-insect taxa than the de Lank. There are many more molluscs, and in particular the richness of the Bivalvia (all in the Sphaeriidae) is interesting. The river also supports a fair range of insect taxa, although it is unexceptional, in view of the number of sites examined.

Overall, the Western Cleddau is a fairly taxon-rich river, but this is mainly because a wide range of taxonomic groups occur with moderate richness. Note that all three species of *Sialis* (Megaloptera) have been recorded in this river.

The Loddon and the Enborne are the only lowland rivers examined this year and as such the three sites support distinct species assemblages. They have a good range of molluscs and the Loddon, in particular, has a rich assemblage of gastropods. The insects are characterised by the total absence of Plecoptera and only modest representation of Ephemeroptera and Diptera.

The R. Bladnoch, in south-west Scotland, has a limited non-insect fauna, as expected, and insects dominate the community. Although 13 species of Ephemeroptera were recorded between the two sites, the complement of Plecoptera (10 species) and Trichoptera (12 species) appears to be rather restricted for an upland river.

Further north, on the west coast near Oban, the single sites on the Lonan and Lusragen support relatively similar faunal assemblages. However, the Lonan is the more species-rich of the two and in fact more species were recorded at this single site than on the two sites sampled on the Bladnoch.

Finally, the site on the Aber in North Wales was also dominated by insects but was unexceptional in the richness of its species complement.

This section concludes with a brief commentary on the macroinvertebrate fauna of each river, with emphasis on the occurrence of rare or notable taxa. One source for evaluating the status of taxa is Report No. 66 of the NCC Chief Scientist Directorate, compiled by Ball (1986), which lists some groups of freshwater invertebrates with Red Data Book (RDB) or Nationally Notable (N) status. The relevant codes for this report are:-

Na: less than 30 known occurrences in 10km squares of the national grid
Nb: less than 100 known occurrences in 10km squares of the national grid
Refer to Ball (1986) for further details.

In addition, the Nature Conservancy Council has recently published reviews of the Ephemeroptera and Plecoptera (Bratton 1990) and Trichoptera (Wallace 1991) which provide up to date information on the status of the less common species.

Clearly, the designated status of a species may change over time in the light of new information on distribution, or as a result of environmental changes which may have either beneficial or adverse effects on distribution and abundance.

The IFE data-base, used in the latest classification and prediction system, currently holds information on 438 sites from almost 80 river systems throughout Great Britain. It is also a valuable source of information on rare and infrequent taxa at running water sites and will be particularly useful when a full evaluation is undertaken at the end of the contract.

de Lank

This site has a very rich assemblage of Trichoptera, including *Chimarra marginata* and *Beraeodes minutus*, which are regarded as local by Wallace (1991). The most interesting find was the leptocerid *Ylodes simulans* which is a Red Data Book (RDB 3) species previously unrecorded in the south-west of England (Wallace 1991). In his key to the British Dixidae, Disney (1975) indicates that there were, at that time, no records of *Dixella filicornis* from Wales or the south-west. However, this may be due to under-recording.

R. Ouse (Yorkshire)

In addition to the high species richness recorded for the Sphaeriidae, the list includes *Pisidium tenuilineatum*, a Red Data Book (RDB 3) species, which has been confirmed by Dr M. Kerney of the British Museum (Natural History). This is the first record of this species in the north of England, the previous known occurrences having been limited to a small number of sites in central and southern England and Wales (Kerney 1976).

Amongst the total of 30 species of Trichoptera was the hydroptilid *Allotrichia pallicornis* which appears to be local (Wallace 1991) but which is likely to be grossly under recorded.

Western Cleddau

The megalopteran *Sialis nigripes* was given the status pRDB 3 in Ball (1986). However, it was found in 26 (5.9%) of the 438 IFE sites and is certainly under recorded.

[Note that the Western Cleddau is one of the few rivers where *Ylodes simulans* (see de Lank above) has been recorded in the past (Jenkins & Mold 1977). They recorded larvae both upstream of our Wolf's Castle site and downstream of our Crow Hill site in the mid 1970's. No specimens were taken during the present survey.]

R. Loddon

The two sites support 16 species of Gastropoda between them, but there are no rare species.

The coleopteran *Haliplus laminatus* is classed as a nationally notable (Nb) species (Ball 1986).

Of the Trichoptera, two species, *Agraylea sexmaculata* and *Melampophylax mucoreus* are regarded as local by Wallace (1991).

R. Enborne

Sialis nigripes present (pRDB 3). As previously indicated, this has been found in 26 (5.9%) of the 438 IFE sites.

R. Bladnoch

Heptagenia fuscogrisea is regarded as a notable ephemeropteran in Bratton (1990). The most northerly published record for this species is within the Bladnoch catchment on a tributary stream draining Loch Fell and Loch Hempton (Shires & Wallace 1973). The record for Glassoch Bridge in this report is several miles further north on the main river.

R. Lonan

This site supports a diverse insect fauna, although there are no rare taxa. The coleopteran *Riolus subviolaceus* has nationally notable (Nb) status, but it should be pointed out that it has been recorded at 36 (8.2%) of the 438 IFE sites. The trichopteran *Hydatophylax infumatus* is regarded as local by Wallace (1991).

Lusragen Burn

The coleopteran *Deronectes latus*, which has nationally notable (Na) status, has been recorded at 15 (3.4%) of the 438 IFE sites.

Aber

No rare species recorded.

7.4 **BMWP Scores (SCR), number of scoring taxa (TX) and Average Score per Taxon (ASPT) at each site for single seasons and for 3 seasons' data combined. This year, the values are based on the number of BMWP families recorded in the 'main' sample only because supplementary samples were not available for all sites in all seasons.**

River	Site name	Spring			Summer			Autumn			Combined		
		SCR	TX	ASPT	SCR	TX	ASPT	SCR	TX	ASPT	SCR	TX	ASPT
de Lank	Bradford	229	35	6.54	204	30	6.80	210	32	6.56	293	43	6.81
"	Keybridge	165	23	7.17	127	19	6.68	121	20	6.05	211	30	7.03
R. Wharfe	Hubberholme	140	22	6.36	152	25	6.08	74	12	6.17	189	30	6.30
"	Grassington	192	29	6.62	149	24	6.21	87	15	5.80	208	32	6.50
"	Addingham	130	19	6.84	88	14	6.29	124	20	6.20	165	25	6.60
"	Otley	156	26	6.00	105	19	5.53	155	27	5.74	198	33	6.00
"	Wetherby	174	30	5.80	119	22	5.41	161	30	5.37	209	35	5.97
Western Cleddau	Wolf's Castle	185	30	6.17	191	32	5.97	201	33	6.09	252	40	6.30
"	Treffgarne	196	31	6.32	192	30	6.40	216	35	6.17	254	39	6.51
"	Crow Hill	207	32	6.47	163	27	6.04	205	34	6.03	252	40	6.30
R. Loddon	Oliver's Battery	93	22	4.23	134	29	4.62	80	20	4.00	155	33	4.70
"	Sherfield on Loddon	130	26	5.00	168	31	5.42	163	31	5.26	190	35	5.43
R. Enborne	Brimpton	98	19	5.16	153	28	5.46	120	23	5.22	191	33	5.79
R. Bladnoch	Glassoch Bridge	147	23	6.39	113	18	6.28	119	17	7.00	172	26	6.62
"	Spittal	137	23	5.96	107	21	5.10	57	10	5.70	163	28	5.82
R. Lonan	Clachadubh	227	35	6.49	144	23	6.26	179	28	6.39	287	43	6.67
Lusragen Burn	Cluny Villa	215	32	6.72	138	21	6.57	204	31	6.58	237	36	6.58
Aber	Abergwyngregyn	136	21	6.48	104	17	6.12	150	23	6.52	181	27	6.70

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