

CHECKLIST OF ALIEN VASCULAR PLANTS OF HUNGARY AND THEIR INVASION BIOLOGICAL CHARACTERISTICS

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As part of the PADAPT project, the authors compiled the invasion biological database of the alien vascular flora of Hungary, which contains the nativeness, residence time, introduction mode and invasion status of 878 alien or cryptogenic taxa. In the absence of adequate evidence, the classification of some species was only possible into uncertain, transitional categories. The definitions of most categories are compatible with several international terminologies, but are primarily based on Central European traditions. Of the 560 taxa that have already been naturalised in Hungary, 85 are invasive, and 22 of them are transformer alien vascular plants. Only 5 of these transformers are included in the European list of Invasive Alien Species of Union concern (*Ailanthus altissima*, *Asclepias syriaca*, *Elodea nuttallii*, *Heracleum mantegazzianum* and *H. sosnowskyi*), which require uniform preventive interventions and treatments throughout the continent, while the rest of transformers in Hungary (e.g., *Robinia pseudoacacia*, *Fallopia × bohémica* and *Solidago gigantea*) draw attention to the unique, local and/or regional invasion biological situation of the Pannonian Basin and Central Europe.

Key words: database, introduction mode, invasion status, nativeness, PADAPT, Pannonian Basin, residence time

INTRODUCTION

Despite the fact that the most recent list and identification keys of the vascular flora of Hungary (Király 2009) was published a decade and a half ago, the alien taxa listed in it were not classified by invasion status, origin, or even residence time. Consequently, experts could only consider the invasion biological characteristics of Hungary on the basis of previously published papers. In the case of archaeophytes primarily Terpó *et al.* (1999), while in the case of neophytes Balogh *et al.* (2004) were usually used as reference (cf. Ecseri and Honfi 2020, Lambdon *et al.* 2008, Medvecká 2012, Pyšek *et al.* 2022). These lists are taxonomically incomplete, but enough time has also passed for the status of the species included in them to change, partly for dynamic reasons, partly due to the expansion of our knowledge (cf. Gyulai 2010, Pósa *et al.* 2020, Wirth *et al.* 2020*a, b*). By joining the Pannonian Database of Plant Traits (PADAPT) project (Sonkoly *et al.* 2022) the primary goal of the authors is to eliminate this backlog, after defining and determining the appropriate attributes, as i) the nativeness, ii) the residence time in Hungary, iii) the introduction mode, and iv) the invasion status of the taxa included in the PADAPT.

MATERIAL AND METHODS

Although Király (2009) is now considered outdated in terms of the real richness of the domestic flora (e.g., Bartha 2020, Király *et al.* 2009, Molnár and Csábi 2021, Wirth *et al.* 2020*b*), this is the most recent Hungarian checklist with identification keys. Accordingly, during the classification, we used this checklist and its modified version compiled by the PADAPT team (based on Bartha *et al.* 2015). While natives, “not confirmed” and “planted only” taxa were normally excluded from our list, only those alien species or taxa with unclear origin were classified here, which were also included in the PADAPT project (Sonkoly *et al.* 2022) (Appendix). In addition to the published references (Balogh *et al.* 2004, Bartha 2020, Ecseri 2020, Gyulai 2010, Jakab and Sümegei 2011, Pinke and Pál 2005, Pósa and Gyulai 2019, Pósa *et al.* 2020, Priszter 1985, 1997, Soó 1964–1980, Terpó *et al.* 1999, Udvardy 1998, Wirth 2020*b*), some manuscripts served as background material for the compilation of the database (Balogh and Gyulai 2004, Balogh *et al.* 2011, 2016). When classifying the species, we primarily used the references above, but in the case of data-deficient, poorly documented taxa we relied on our own experience and/or professional intuition. Classification of each taxon was preceded by a discussion among the authors based on the cited documents above. The reconciliation of individual opinions, as well as the subsequent conclusion, were documented by the authors. In this respect, the methodology (decision based on consensus) was the same as the methodology used by the authors of the

recent red list of Hungarian vascular plants (Király 2007), thus the reproducibility of the results is also the same. When defining the relevant invasion biological attributes (categories), we relied on previous Hungarian references (Balogh *et al.* 2004), and on the definitions and nomenclature used by experts from neighbouring countries (Anačkov *et al.* 2013, Boršić *et al.* 2008, De Groot *et al.* 2020, Essl and Rabitsch 2002, Lazarević *et al.* 2012, Medvecká 2012, Pyšek *et al.* 2004, 2012, 2022, Shevera *et al.* 2017, Sukopp 2006, Šilc *et al.* 2012). Due to the lack of reference data, as well as the lack of decisive force of the existing evidence (cf. Pyšek *et al.* 2022, Wąsowicz 2018), transitional categories were used and defined, in certain cases.

Accordingly, the following attributes (categories) and definitions are used in this article.

Nativeness

- **Native species:** Those species are considered native that have occurred within the present-day territory of Hungary throughout the Holocene or were present in nature at least intermittently in subsequent periods (e.g., *Quercus robur*). Species that became extinct during the Holocene, before the Neolithic (~5,000 BC), and have later been re-introduced into Hungary with human assistance are not considered native.
- **Alien species:** Species that settled in Hungary after the appearance of major human population and the associated interventions (appearing after the beginning of the Neolithic period within the present-day territory of Hungary, ~5,000 BC), mainly those that would have had little chance to overcome the natural barriers that prevented their spread without human interventions (e.g., *Centaurea cyanus*).
- **Cryptogenic species:** Any species for which it is debatable whether it is native or alien within the present-day territory of Hungary (e.g., *Abies alba*). Here we interpret this term only in terms of species' nativeness to Hungary.
- **Not confirmed:** Species with no confirming specimens from the present-day territory of Hungary (e.g., *Pyrola media*).
- **Planted only:** Only planted, cultivated specimens or stands are known from the present-day territory of Hungary (e.g., *Metasequoia glyptostroboides*).

Residence time of alien and cryptogenic species

- **Archaeophytes:** alien plant species for which there is historical, archaeological or archaeobotanical evidence of occurrence within the present-day territory of Hungary before 1,500 AD (e.g., *Agrostemma githago*).
- **Neophytes:** alien plant species that appeared within the present-day territory of Hungary after 1,500 AD (e.g., *Bromus catharticus*).

- **Unclear:** any plant species of doubtful indigenous origin (e.g., *Larix decidua*) or alien species which may have been established within the present-day territory of Hungary before or after 1,500 AD (e.g., *Ficus carica*).

For any alien or cryptogenic species for which it is not possible to determine with sufficient probability whether it is an archaeophyte or a neophyte, the following four possibilities apply:

- **native/alien?:** probably native, less likely to be an alien species (and if it is alien, it is most likely to be archaeophyte) (e.g., *Spiraea crenata*);
- **alien/native?:** probably alien species (most likely archaeophyte), less likely to be native (e.g., *Castanea sativa*);
- **archaeophyte/neophyte?:** probably archaeophyte within the present-day territory of Hungary, but this can only be stated with some uncertainty (it may be neophyte) (e.g., *Eranthis hyemalis*);
- **neophyte/archaeophyte?:** probably neophyte within the present-day territory of Hungary, but this can only be stated with some uncertainty (it may be archaeophyte) (e.g., *Chenopodium strictum*).

Introduction mode

- **Accidental:** plant species unintentionally introduced by humans, or species that have migrated from neighbouring countries on their own (e.g., *Plantago coronopus*).
- **Deliberate** (subspontaneous): alien species that got out from stands deliberately established in the present-day territory of Hungary (e.g., *Opuntia humifusa*).
- **Both:** both cases (accidental and deliberate introductions) are known for the species (e.g., *Sorghum halepense*).
- **Unknown:** no reliable data is available for the species in this respect (e.g., *Ranunculus psilostachys*).

Invasion status

Following the traditional approach (Richardson *et al.* 2000, Pyšek *et al.* 2004), we distinguish three main phases of establishment (casual, naturalised, and as a subset of the latter, the invasive species). Among invasive species we distinguish species that significantly change the species composition and structure of habitats (transformer species).

- **Casual species:** species with casual (spontaneous or subspontaneous) occurrences (e.g., *Cucumis sativus*), excluding plants established by deliberate planting or seeding.
- **Naturalised species:** alien species with self-sustaining populations in Hungary (e.g., *Cabomba caroliniana*).

- **Invasive species:** naturalised alien species that reproduce rapidly and spread over large areas (e.g., *Erigeron annuus*).
- **Transformer species:** invasive species that significantly alter their biotic and/or abiotic environment, resulting in the permanent alteration or disappearance of the original vegetation (e.g., *Asclepias syriaca*).

RESULTS

As a result of classifications, the characteristics (attributes) were distributed as follows.

The checklist of PADAPT includes 2,745 taxa, of which 1,838 are native (therefore they are not included in Appendix), 792 are alien, 86 are cryptogenic for Hungary, 20 are not confirmed (*Ambrosia psilostachya* DC., *Azolla mexicana* C. Presl, *Bromus lepidus* Holmb., *Calamintha einseleana* F. W. Schultz, *Callitriche platycarpa* Kütz., *Callitriche stagnalis* Scop., *Diphysium issleri* (Rouy) Holub, *Echinochloa oryzoides* (Ard.) Fritsch, *Hordeum marinum* Huds., *Orobanche coerulescens* Stephan, *Ostrya carpinifolia* Scop., *Petrorhagia obcordata* (Margot et Reut.) Greuter et Burdet, *Polygala nicaensis* Risso subsp. *carniolica* (A. Kern.) Graebn., *Potamogeton filiformis* Pers., *Pyrola media* Sw., *Saxifraga granulata* L., *Schoenus ferrugineus* L., *Senecio rupestris* Waldst. et Kit., *Trichophorum caespitosum* (L.) Hartm. and *Typha shuttleworthii* W. D. J. Koch et Sond.), and 9 are planted only (*Metasequoia glyptostroboides* Hu et W. C. Cheng, *Oryza sativa* L., *Picea omorika* (Pančić) Purk., *Rheum palmatum* L., *Rheum rhabarbarum* L., *Rheum rhaponticum* L., *Ribes sanguineum* Pursh, *Rosa villosa* L. and *Sequoiadendron giganteum* (Lindl.) J. Buchholz).

Within aliens and cryptogenic taxa (878 taxa), 302 are archaeophyte, 448 are neophyte and 128 are unclear species (Fig. 1). Within the 128 unclear

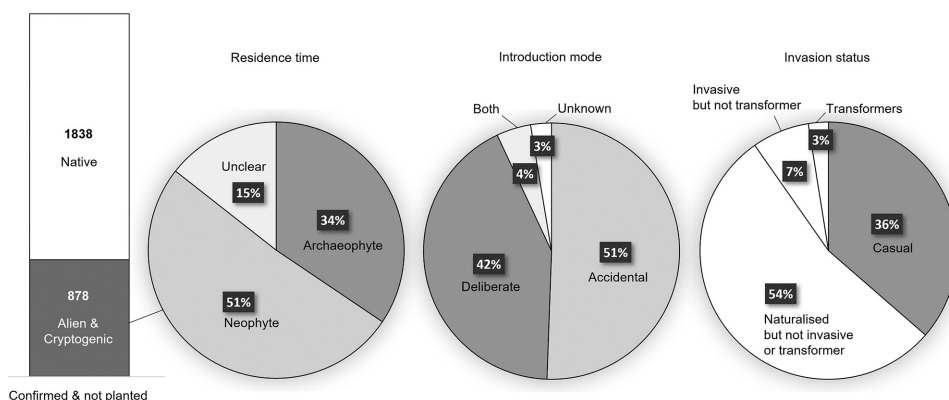


Fig. 1. The proportions of alien species and their invasion biological attributes in the vascular flora of Hungary

taxa, 69 are native/alien?, 17 are alien/native?, 24 are archaeophyte/neophyte?, while 18 are neophyte/archaeophyte?.

Introduction mode is accidental for 446, deliberate for 371, both for 38, and unknown for 23 of the 878 alien or cryptogenic taxa (Fig. 1).

According to their invasion status, 318 species are casual, 475 are naturalised, 63 are invasive, while 22 are transformer species (Fig. 1).

DISCUSSION

The four attribute types (nativeness, residence time, introduction mode, invasion status) arithmetically allow 192 attribute variations ($\approx 22\%$ of the taxonomically distinct 878 units, i.e. alien and cryptogenic plant taxa), however, only 96 of these have any invasion biological significance (the other 50% of combinations are meaningless or prohibited from an invasion biological point of view). In other words, our treatment theoretically reduces the number of morphologically distinguished 878 plant taxa (at the species level) to 96 meaningful categories from an invasion biological point of view. However, of the possible variations only 45 types can be found in our database ($\approx 47\%$ of the non-prohibited ones). The natural (e.g. biogeographical) and/or artificial (e.g. expert bias) background of this phenomenon (proportion of existing variations and/or the absence of the theoretically meaningful variations) is still being explored.

Since the previous lists of alien species in Hungary (Terpó *et al.* 1999, Balogh *et al.* 2004) were based on different definitions, there is no point in comparing new and old Hungarian data in any way. On the other hand, it is worth mentioning that in the European list of Invasive Alien Species of Union concern (FPS 2022), only 16 of the Hungarian alien taxa are listed in the Appendix. Among them only 7 are invasive or transformer taxa, the rest are naturalised (8 species) or casual aliens (*Salvinia molesta*) in Hungary. This low proportion of Hungarian transformers among the “most wanted” European aliens, as well as the absence of other Hungarian transformers (such as *Fallopia × bohémica*, *Robinia pseudoacacia* and *Solidago canadensis*) in the cited list (FPS 2022), draws our attention to the special invasion biological situation of the Pannonian Basin and/or Central Europe (cf. Anačkov *et al.* 2013, Boršić *et al.* 2008, De Groot *et al.* 2020, Pyšek *et al.* 2022, Medvecká 2012, Shevera *et al.* 2017).

As the list of taxa considered in this article is not complete, more and more alien species appear in the Pannonian Basin (cf. Wirth *et al.* 2020b), therefore we consider the listing and classification of all known (not only published) at least occasionally established (casual) alien species as our most important task, which we consider to be feasible only with the involvement of additional experts, in the future. Until then, this list can definitely be a better

starting point for evaluating the number and status of alien species in Hungary than those that were available up to now.

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APPENDIX

Species name as given in PADAPT followed by nativeness, residence time, invasion status and introduction mode. Species listed in the European list of Invasive Alien Species of Union concern (FPS 2022) are highlighted with an asterisk (*). Abbreviations: ar/ntv? = archaeophyte/native?, acc = accidental, ar = archaeophyte, ar/neo? = archaeophyte/neophyte?, cas = casual, cryp = cryptogenic, del = deliberate, inv = invasive, ntv/ar? = native/archaeophyte?, nat = naturalised, neo = neophyte, neo/ar? = neophyte/archaeophyte?, tra = transformer, unk = unknown.

- Abies alba* Mill. – cryp; ar/ntv?; nat; unk
Abies cephalonica Loudon – alien; neo; cas; del
Abies concolor (Gordon) Hildebr. – alien; neo; cas; del
Abies nordmanniana (Steven) Spach – alien; neo; cas; del
Abutilon theophrasti Medik. – alien; ar; inv; acc
Acanthus balcanicus Heywood et I. Richardson – alien; neo; cas; del
Acer negundo L. – alien; neo; nat; both
Acer opalus Mill. subsp. *obtusatum* (Waldst. et Kit. ex Willd.) Gams – alien; neo; cas; del
Acer saccharinum L. – alien; neo; nat; both
Acorus calamus L. – alien; neo; nat; del
Adonis aestivalis L. – alien; ar; nat; acc
Adonis flammae Jacq. – cryp; ar/ntv?; nat; acc
Aegilops cylindrica Host – alien; ar; nat; acc
Aesculus × carnea Hayne – alien; neo; cas; del
Aesculus hippocastanum L. – alien; neo; nat; both
Aethusa cynapium L. – cryp; ar/ntv?; nat; acc
Ageratina altissima (L.) R. M. King et H. Rob. – alien; neo; cas; del
Ageratum houstonianum Mill. – alien; neo; cas; del
Agrostemma githago L. – alien; ar; nat; acc
**Ailanthus altissima* (Mill.) Swingle – alien; neo; tra; both
Ajuga chamaepitys (L.) Schreb. – alien; arc; nat; acc
Alcea biennis Winterl – cryp; ar/ntv?; nat; acc
Alcea rosea L. – alien; neo; cas; del
Allium atropurpureum Waldst. et Kit. – cryp; ar/ntv?; nat; acc
Allium atroviolaceum Boiss. – cryp; ar/ntv?; nat; acc
Allium cepa L. – alien; ar; cas; del
Allium fistulosum L. – alien; neo; cas; del
Allium paradoxum (M. Bieb.) G. Don – alien; neo; cas; del
Allium porrum L. – alien; ar/neo?; cas; del
Allium sativum L. – alien; ar; cas; del
Allium schoenoprasum L. – alien; neo; cas; del
Allium scorodoprasum L. s. str. – alien; arc; nat; acc
Alopecurus myosuroides Huds. – alien; ar; nat; acc
Althaea cannabina L. – alien; ar/neo?; nat; acc
Althaea hirsuta L. – alien; ar/neo?; nat; acc
Althaea officinalis agg. – alien; ar; nat; both
Amaranthus albus L. – alien; neo; inv; acc
Amaranthus blitoides S. Watson – alien; ar; inv; acc
Amaranthus blitum L. – alien; neo; nat; acc
Amaranthus bouchonii Thell. – alien; neo; nat; acc
Amaranthus caudatus L. – alien; neo; cas; del
Amaranthus crispus (Lesp. et Thév.) N. Terracc. – alien; neo; nat; acc
Amaranthus deflexus L. – alien; neo; nat; acc
Amaranthus graecizans L. – alien; ar; cas; acc
Amaranthus patulus Bertol. – alien; neo; cas; acc
Amaranthus powellii S. Watson – alien; neo; inv; acc
Amaranthus retroflexus L. – alien; neo; inv; acc
Amaranthus standleyanus Parodi – alien; neo; cas; del
Amaranthus viridis L. – cryp; ar/ntv?; nat; acc
Ambrosia artemisiifolia L. – alien; neo; inv; acc
Ammannia verticillata (Ard.) Lam. – alien; neo; cas; acc
Amorpha fruticosa L. – alien; neo; tra; del
Amygdalus communis L. – alien; ar; cas; del
Anagallis arvensis L. – alien; ar; nat; acc
Anagallis foemina Mill. – alien; ar; nat; acc
Anchusa azurea Mill. – alien; ar/neo?; nat; acc
Anethum graveolens L. – alien; ar; cas; del
Angelica archangelica L. – alien; ar/neo?; nat; acc
Anthemis arvensis L. – alien; ar; nat; acc
Anthemis austriaca Jacq. – alien; ar; nat; acc
Anthemis cotula L. – alien; ar; nat; acc
Anthemis ruthenica L. – cryp; ntv/ar?; nat; acc
Anthoxanthum aristatum Boiss. – alien; neo; nat; acc
Anthriscus caucalis M. Bieb. – alien; ar; nat; acc
Anthriscus cerefolium (L.) Hoffm. – alien; ar; nat; unk
Antirrhinum majus L. – alien; neo; nat; del
Apera interrupta (L.) Beauv. – alien; ar/neo?; nat; acc
Apera spica-venti (L.) Beauv. – alien; ar; nat; acc
Aphanes arvensis L. – alien; ar; nat; acc
Aphanes australis Rydb. – alien; ar; nat; acc
Apium graveolens L. – alien; ar; cas; del
Arctium lappa L. – alien; ar; nat; acc

- Arctium minus* (Hill) Bernh. – alien; ar; nat; acc
Aristolochia clematitis L. – alien; ar; nat; acc
Armeniacia vulgaris Lam. – alien; ar; cas; del
Armeria alpina (Hoppe) Willd. – alien; neo/ar?; cas; del
Armoracia rusticana G. Gaertn., B. Mey. et Schreb. – alien; ar; nat; acc
Artemisia abrotanum L. – alien; neo; cas; del
Artemisia absinthium L. – alien; ar; nat; acc
Artemisia annua L. – alien; neo; inv; acc
Artemisia dracunculul L. – alien; ar; cas; del
Asarina procumbens Mill. – alien; neo; cas; del
**Asclepias syriaca* L. – alien; neo; tra; del
Asparagus verticillatus L. – alien; neo; cas; del
Asperugo procumbens L. – alien; ar; nat; acc
Asperula arvensis L. – alien; ar; nat; acc
Asperula orientalis Boiss. et Hohen. – alien; neo; cas; acc
Asperula rumelica Boiss. – cryp; ar/ntv?; nat; acc
Aster laevis Willd. – alien; neo; cas; del
Aster lanceolatus agg. – alien; neo; inv; del
Aster novae-angliae L. – alien; neo; inv; del
Aster novi-belgii L. – alien; neo; inv; del
Aster tradescantii L. – alien; neo; cas; del
Aster × salignus Willd. – alien; neo; inv; del
Atriplex hortensis L. – alien; ar/neo?; cas; del
Atriplex micrantha C. A. Mey. in Ledeb. – alien; neo; nat; acc
Atriplex patula L. – alien; ar; nat; acc
Atriplex rosea L. – alien; ar; nat; acc
Atriplex sagittata Borkh. – alien; ar; nat; acc
Atriplex tatarica L. – alien; ar; nat; acc
Avena barbata Brot. – alien; ar/neo?; cas; acc
Avena fatua L. – alien; ar; nat; unk
Avena ludoviciana (Durieu) Nyman – alien; ar/neo?; nat; unk
Avena nuda L. em. Mansf. – alien; neo/ar?; cas; acc
Avena sativa L. – alien; ar; cas; del
Avena strigosa Schreb. – alien; ar/neo?; cas; acc
Azolla filiculoides Lam. – alien; neo; tra; both
Ballota nigra L. – alien; ar; nat; acc
Barbarea verna (Mill.) Asch. – alien; neo; cas; acc
Bellis perennis L. – cryp; ar/ntv?; nat; unk
Bergenia crassifolia (L.) Fritsch – alien; neo; cas; del
Berteroa incana (L.) DC. – cryp; ar/ntv?; nat; acc
Beta vulgaris L. – alien; ar/neo?; cas; del
Bidens frondosa L. – alien; neo; inv; both
Bifora radians M. Bieb. – alien; ar; nat; acc
Borago officinalis L. – alien; neo; cas; del
Brassica x juncea (L.) Czern. – alien; neo; cas; acc
Brassica x napus L. – alien; ar; cas; del
Brassica elongata Ehrh. – cryp; ar/ntv?; nat; acc
Brassica nigra (L.) W. D. J. Koch – alien; ar; nat; del
Brassica oleracea L. – alien; ar; cas; del
Brassica rapa L. – alien; neo; cas; del
Bromus arvensis L. – alien; ar; nat; acc
Bromus brachystachys Hornung – alien; neo; cas; acc
Bromus carinatus Hook. et Arn. – alien; neo; cas; del
Bromus catharticus Vahl – alien; neo; nat; acc
Bromus hordeaceus L. – cryp; ar/ntv?; nat; acc
Bromus japonicus Thunb. – alien; ar; nat; acc
Bromus lanceolatus Roth – alien; neo; cas; acc
Bromus madritensis L. – alien; neo; cas; acc
Bromus rigidus Roth – alien; neo; nat; acc
Bromus secalinus L. – alien; ar; nat; both
Bromus sterilis L. – alien; ar; nat; acc
Bromus tectorum L. – alien; ar; nat; acc
Broussonetia papyrifera (L.) Vent. – alien; neo; inv; del
Brunnera macrophylla I. M. Johnston – alien; neo; cas; del
Bryonia alba L. – cryp; ar/ntv?; nat; acc
Bryonia dioica Jacq. – alien; ar; nat; acc
Buddleja davidii Franch. – alien; neo; nat; del
Bunias orientalis L. – alien; neo; nat; acc
Bupleurum gerardi All. – cryp; ar/ntv?; cas; acc
Bupleurum rotundifolium L. – cryp; ar/ntv?; nat; acc
Bupleurum subovatum Link ex Spreng. – alien; neo; cas; acc
Buxus sempervirens L. – alien; neo; cas; del
**Cabomba caroliniana* A. Gray – alien; neo; nat; del
Calamagrostis epigeios (L.) Roth – cryp; ar/ntv?; inv; acc
Calendula officinalis L. – alien; ar; nat; del
Calepina irregularis (Asso) Thell. – alien; ar; nat; acc
Callistephus chinensis (L.) Ness – alien; neo; cas; del
Camelina alyssum (Mill.) Thell. – alien; ar; nat; acc
Camelina microcarpa Andrzej. ex DC. – alien; ar; nat; acc
Camelina rumelica Velen. – cryp; ar/ntv?; nat; acc
Camelina sativa (L.) Crantz – alien; ar; nat; both
Campsis radicans (L.) Seem. – alien; neo; cas; del
Cannabis sativa L. – alien; ar; nat; acc
Capsella bursa-pastoris (L.) Medik. – alien; ar; nat; acc
Capsella rubella Reut. – alien; neo; cas; acc
Capsicum annum L. – alien; neo; cas; del
Caragana arborescens Lam. – alien; neo; cas; del
Caragana frutex (L.) K. Koch – alien; neo; cas; del
Cardaria draba (L.) Desv. – cryp; ar/ntv?; nat; acc
Carduus acanthoides L. – alien; ar; nat; acc
Carduus nutans L. – alien; ar; nat; acc
Carpesium abrotanoides L. – cryp; ar/ntv?; nat; acc
Carpesium cernuum L. – cryp; ar/ntv?; nat; acc
Carthamus lanatus L. – alien; ar; nat; acc
Carthamus tinctorius L. – alien; ar; cas; del
Carum carvi L. – cryp; ar/ntv?; nat; both
Castanea sativa Mill. – cryp; ar/ntv?; nat; both

- Catalpa bignonioides* Walter – alien; neo; nat; del
Caucalis platycarpus L. – alien; ar; nat; acc
Cedrus atlantica (Endl.) Carrière – alien; neo; cas; del
Cedrus deodara (D. Don) G. Don – alien; neo; cas; del
Celosia argentea L. – alien; neo; cas; del
Celtis australis L. – alien; neo; nat; del
Celtis occidentalis L. – alien; neo; tra; del
Cenchrus incertus M. A. Curtis – alien; neo; inv; acc
Centaurea calcitrapa L. – cryp; ar/ntv?; nat; acc
Centaurea cyanus L. – alien; ar; nat; acc
Centaurea diffusa Lam. – alien; neo; nat; acc
Centaurea salonitana Vis. – alien; neo; cas; acc
Centaurea solstitialis L. – alien; ar; nat; acc
Centaurea stoebe L. – cryp; ar/ntv?; nat; acc
Centunculus minimus L. – alien; ar; nat; acc
Cerastium tomentosum L. – alien; neo; cas; del
Cerasus mahaleb (L.) Mill. – cryp; ar/ntv?; nat; acc
Cerasus vulgaris Mill. – alien; ar; cas; del
Ceratocephala falcata (L.) Pers. – alien; neo; cas; acc
Ceratocephala testiculata (Crantz) Roth – alien; ar; nat; acc
Ceratopteris thalictroides (L.) Brongn. – alien; neo; nat; del
Cercis siliquastrum L. – alien; neo; nat; del
Chamaecyparis lawsoniana (A. Murray) Parl. – alien; neo; cas; del
Chenopodium album L. – alien; ar; nat; acc
Chenopodium ambrosioides L. – alien; neo; nat; acc
Chenopodium aristatum L. – alien; neo; nat; acc
Chenopodium bonus-henricus L. – alien; ar/neo?; nat; del
Chenopodium botrys L. – alien; ar; nat; acc
Chenopodium ficifolium Sm. – alien; ar; nat; acc
Chenopodium foliosum Asch. – alien; neo; cas; del
Chenopodium glaucum L. – cryp; ar/ntv?; nat; acc
Chenopodium hybridum L. – alien; ar; nat; acc
Chenopodium murale L. – alien; ar; nat; acc
Chenopodium pumilio R. Br. – alien; neo; nat; acc
Chenopodium schraderianum Schult. – alien; neo; nat; acc
Chenopodium strictum Roth – alien; neo/ar?; nat; acc
Chenopodium suecicum Murr – alien; neo/ar?; cas; acc
Chenopodium urticum L. – alien; ar; nat; acc
Chenopodium vulvaria L. – cryp; ar/ntv?; nat; acc
Chorispora tenella (Pall.) DC. – alien; neo; nat; acc
Cicer arietinum L. – alien; ar; cas; del
Cichorium intybus L. – alien; ar; nat; unk
Cirsium arvense (L.) Scop. – alien; ar; inv; acc
Cirsium vulgare (Savi) Ten. – cryp; ar/ntv?; nat; acc
Citrullus lanatus (Thunb.) Mansf. – alien; ar; cas; del
Clematis x jackmannii Moore – alien; neo; cas; del
Clematis viticella L. – alien; neo; cas; del
Cnicus benedictus L. – alien; neo; cas; del
Cochlearia danica L. – alien; neo; nat; acc
Commelina communis L. – alien; neo; nat; del
Conium maculatum L. – alien; ar; nat; acc
Conringia orientalis (L.) Dumort. – alien; ar; nat; acc
Consolida ajacis (L.) Schur – alien; neo; cas; del
Consolida orientalis (J. Gay) Schrödinger – alien; ar; nat; acc
Consolida regalis S. F. Gray – alien; ar/neo?; nat; acc
Convolvulus arvensis L. – alien; ar; nat; acc
Conyza canadensis (L.) Cronquist – alien; neo; inv; acc
Coriandrum sativum L. – alien; ar; cas; del
Corispermum leptopterum (Asch.) Iljin – cryp; ar/ntv?; nat; acc
Corispermum marschallii Steven – cryp; ar/ntv?; nat; acc
Cormus domestica (L.) Spach – cryp; ar/ntv?; nat; both
Cornus alba L. – alien; neo; cas; del
Cornus sericea L. – alien; neo; cas; del
Coronopus didymus (L.) Sm. – alien; neo; cas; acc
Coronopus squamatus (Forssk.) Asch. – alien; ar; nat; acc
Corylus colurna L. – alien; neo; cas; del
Cosmos bipinnatus Cav. – alien; neo; cas; del
Crepis capillaris (L.) Wallr. – alien; ar; nat; acc
Crepis rheoadifolia M. Bieb. – cryp; ar/ntv?; nat; acc
Crepis taraxacifolia Thuill. – alien; neo/ar?; nat; acc
Crepis tectorum L. – alien; ar; nat; acc
Crocus tommasinianus Herb. – alien; neo; nat; del
Cucumis melo L. – alien; ar; cas; del
Cucumis sativus L. – alien; ar; cas; del
Cucurbita maxima Duch. – alien; neo; cas; del
Cucurbita pepo L. – alien; neo; cas; del
Cuscuta campestris Yunck. – alien; neo; inv; acc
Cuscuta epilinum Weihe – alien; ar; nat; acc
Cycloloma atriplicifolia (Spreng.) J. M. Coult. – alien; neo; cas; acc
Cydonia oblonga Mill. – alien; ar; cas; del
Cymbalaria muralis G. Gaertn., B. Mey. et Scherb. – alien; neo; nat; acc
Cynodon dactylon (L.) Pers. – alien; ar; nat; acc
Cynosurus echinatus L. – alien; neo; cas; acc
Cyperus difformis L. – alien; neo; inv; acc
Cyperus esculentus L. – alien; neo; inv; acc
Dasyphyrum villosum (L.) P. Candargy – alien; ar; cas; acc
Datura innoxia Mill. – alien; neo; cas; del
Datura stramonium L. – alien; ar; inv; acc
Daucus carota L. – alien; ar; nat; both

- Delphinium x cultorum* Voss – alien; neo; cas; del
Descurainia sophia (L.) Webb – alien; ar; nat; acc
Deutzia scabra Thunb. – alien; neo; cas; del
Dianthus barbatus L. – cryp; ar/ntv?; nat; both
Digitalis lanata Ehrh. – alien; ar; nat; acc
Digitalis purpurea L. – alien; neo; nat; acc
Digitaria ciliaris (Retz.) Koeler – alien; ar; nat; acc
Digitaria ischaemum Schreb. ex Muhl. – alien; ar; nat; acc
Digitaria sanguinalis agg. – alien; ar; inv; acc
Diplotaxis erucoides (L.) DC. – alien; neo; cas; acc
Diplotaxis muralis (L.) DC. – alien; ar; nat; acc
Diplotaxis tenuifolia (L.) DC. – alien; ar; nat; acc
Dittrichia graveolens (L.) Greuter – alien; neo; cas; del
Ecballium elaterium (L.) A. Rich. – alien; neo; cas; acc
Echinaria capitata (L.) Desf. – alien; neo; cas; acc
Echinocloa crus-galli (L.) Beauv. – alien; ar; inv; both
Echinocystis lobata (Michx.) Torr. et A. Gray – alien; neo; tra; both
Echium vulgare L. – alien; ar; nat; acc
Egeria densa Planch. – alien; neo; nat; del
**Eichhornia crassipes* (Mart.) Solms – alien; neo; nat; del
Eichhornia diversifolia Urb. – alien; neo; cas; del
Elaeagnus angustifolia L. – alien; neo; tra; del
Elaeagnus commutata Bernh. ex Rydb. – alien; neo; cas; del
Eleusine indica (L.) Gaertn. – alien; neo; inv; acc
Elodea canadensis Michx. – alien; neo; inv; del
**Elodea nuttallii* (Planch.) H. St.-John – alien; neo; tra; both
Epilobium ciliatum Raf. – alien; neo; nat; acc
Epimedium alpinum L. – alien; neo; cas; del
Eragrostis cilianensis (All.) Vignolo ex Janch. – alien; neo; nat; acc
Eragrostis mexicana (Hornem.) Link – alien; neo; cas; acc
Eragrostis minor Host – alien; ar; nat; acc
Eragrostis multicaulis Steud. – alien; neo; cas; del
Eragrostis pilosa (L.) Beauv. – alien; ar; nat; acc
Eragrostis virescens J. Presl – alien; neo; nat; acc
Eranthis hyemalis (L.) Salisb. – alien; ar/neo?; nat; del
Erechtites hieracifolia (L.) Raf. ex DC. – alien; neo; inv; acc
Erigeron annuus (L.) Pers. – alien; neo; inv; acc
Eriochloa villosa (Thunb.) Kunth – alien; neo; inv; acc
Erodium ciconium (Jusl.) L'Hér. – alien; arc; nat; acc
Erodium cicutarium (L.) L'Hér. – alien; arc; nat; acc
ErUCA vesicaria (L.) Cav. – alien; neo; cas; both
Erucastrum gallicum (Willd.) O. E. Schulz – alien; ar/neo?; nat; acc
Erucastrum nasturtifolium (Poir.) O. E. Schulz – alien; ar; nat; acc
Erysimum cheiri (L.) Crantz – alien; neo; cas; del
Erysimum diffusum Ehrh. – alien; ar; nat; acc
Erysimum repandum L. – alien; ar; nat; acc
Eschscholzia californica Cham. – alien; neo; cas; del
Euclidium syriacum (L.) R. Br. – alien; ar; nat; acc
Euodia hupehensis Dode – alien; neo; nat; del
Euphorbia carpatica Wol. – alien; neo; cas; acc
Euphorbia cyparissias L. – cryp; ar/ntv?; nat; acc
Euphorbia davidii Subils – alien; neo; cas; del
Euphorbia esula L. – cryp; ar/ntv?; nat; acc
Euphorbia exigua L. – cryp; ar/ntv?; nat; acc
Euphorbia falcata L. – alien; ar/neo?; nat; acc
Euphorbia glyptosperma (Engelm.) Small – alien; neo; nat; acc
Euphorbia helioscopia L. – alien; ar; nat; acc
Euphorbia humifusa Willd. – alien; neo; nat; acc
Euphorbia lathyris L. – alien; ar; cas; del
Euphorbia maculata L. – alien; neo; inv; acc
Euphorbia marginata Pursh – alien; neo; cas; del
Euphorbia myrsinites L. – alien; neo; nat; del
Euphorbia nutans Lag. – alien; neo; nat; acc
Euphorbia peplus L. – alien; ar; nat; acc
Euphorbia platyphyllos L. – alien; ar; nat; acc
Euphorbia prostrata (Ait.) Small – alien; neo; nat; both
Euphorbia segetalis L. – alien; neo; cas; acc
Euphorbia serpens Kunth – alien; neo; nat; both
Euphorbia stricta L. – cryp; ar/ntv?; nat; acc
Euphorbia taurinensis All. – alien; ar; nat; acc
Fagopyron esculentum Moench – alien; neo; cas; del
Fagopyron tataricum (L.) Gaertn. – alien; ar; cas; acc
Fallopia aubertii (L. Henry) Holub s. l. – alien; neo; cas; del
Fallopia x bohémica (Chrtek et Chrtková) J. P. Bailey – alien; neo; tra; del
Fallopia convolvulus (L.) Á. Löve – alien; ar; nat; acc
Fallopia dumetorum (L.) Holub – alien; arc; nat; acc
Fallopia japonica (Houtt.) Ronse Decr. – alien; neo; tra; del
Fallopia sachalinensis (F. Schmidt) Ronse Decr. – alien; neo; tra; del
Fallopia sect. *Reynoutria* (Houtt.) Ronse Decr. – alien; neo; tra; del
Ficus carica L. – alien; neo/ar?; nat; del
Foeniculum vulgare Mill. – alien; ar; cas; both
Forsythia x intermedia Zabel – alien; neo; cas; del
Fraxinus americana L. – alien; neo; cas; del

- Fraxinus pennsylvanica* Marshall – alien; neo; tra;
del
- Fritillaria imperialis* L. – alien; neo; cas; del
- Fumaria officinalis* L. – alien; ar; nat; acc
- Fumaria parviflora* Lam. – alien; ar; nat; acc
- Fumaria rostellata* Knaf. – alien; ar; nat; acc
- Fumaria schleicheri* Soy.-Will. – alien; ar; nat; acc
- Fumaria vaillantii* Loisel. – alien; ar; nat; acc
- Gaillardia* spp. – alien; neo; inv; del
- Galega officinalis* L. – alien; neo; nat; acc
- Galeobdolon argentatum* Smejkal – alien; neo; nat;
del
- Galeopsis ladanum* L. – alien; ar; nat; acc
- Galeopsis segetum* Neck. – alien; ar; nat; acc
- Galinsoga ciliata* (Raf.) S. F. Blake – alien; neo; nat;
acc
- Galinsoga parviflora* Cav. – alien; neo; inv; acc
- Galium aparine* L. – alien; ar; nat; acc
- Galium humifusum* M. Bieb. – alien; neo; nat; acc
- Galium parisiense* L. – alien; ar; nat; acc
- Galium spurium* L. – alien; ar; nat; acc
- Galium tricornerutum* Dandy – alien; ar; nat; acc
- Gaudinia fragilis* (L.) P. Beauv. – alien; neo; cas;
unk
- Geranium dissectum* L. – alien; ar; nat; acc
- Geranium molle* L. – alien; ar; nat; acc
- Geranium purpureum* Vill. – alien; neo; nat; acc
- Geranium pusillum* Burm. f. – alien; ar; nat; acc
- Geranium pyrenaicum* Burm. f. – alien; neo; nat; acc
- Geranium rotundifolium* L. – cryp; ar/ntv?; nat; acc
- Geranium sibiricum* L. – alien; neo; nat; acc
- Ginkgo biloba* L. – alien; neo; cas; del
- Glaucium corniculatum* (L.) Rudolph – alien; ar;
nat; acc
- Glaucium flavum* Crantz – alien; neo; cas; acc
- Gleditsia triacanthos* L. – alien; neo; nat; del
- Glycine soja* (L.) Siebold et Zucc. – alien; neo; cas;
del
- Glycyrrhiza glabra* L. – alien; neo; cas; del
- Gomphrena globosa* L. – alien; neo; cas; del
- Gymnocladus dioica* (L.) K. Koch – alien; neo; cas;
del
- Gymnocoronis spilanthoides* DC. – alien; neo; nat;
del
- Gypsophila perfoliata* L. – alien; neo; cas; del
- Gypsophila scorzonerifolia* Ser. – alien; neo; cas; del
- Halimodendron halodendron* (Pall.) Voss – alien;
neo; cas; del
- Helianthus annuus* L. – alien; neo; cas; del
- Helianthus x laetiflorus* Pers. – alien; neo; cas; del
- Helianthus pauciflorus* Nutt. – alien; neo; cas; del
- Helianthus tuberosus* L. s. l. – alien; neo; tra; del
- Heliotropium europaeum* L. – alien; ar; nat; acc
- Helminthia echioides* (L.) Gaertn. – alien; neo/ar?;
nat; acc
- Hemerocallis fulva* L. – alien; neo; cas; del
- *Heracleum mantegazzianum* Sommier et Levier –
alien; neo; tra; both
- *Heracleum sosnowskyi* Manden. – alien; neo; tra;
both
- Herniaria hirsuta* L. – alien; ar; nat; acc
- Hibiscus syriacus* L. – alien; neo; cas; del
- Hibiscus trionum* L. – alien; ar; nat; acc
- Hieracium aurantiacum* L. – alien; neo; nat; del
- Hordeum distichon* L. – alien; ar; nat; acc
- Hordeum jubatum* L. – alien; neo; nat; del
- Hordeum murinum* L. – alien; ar; nat; acc
- Hordeum secalinum* Schreb. – cryp; ar/ntv?; nat;
acc
- Hordeum vulgare* L. – alien; ar; cas; del
- *Humulus scandens* (Lour.) Merr. – alien; neo; inv;
del
- Hyacinthus orientalis* L. – alien; neo; cas; del
- Hydrilla verticillata* (L. f.) Royle – alien; neo; nat;
del
- *Hydrocotyle ranunculoides* L. f. – alien; neo; nat;
del
- Hygrophila polysperma* (Roxb.) T. Anderson –
alien; neo; nat; del
- Hyoscyamus niger* L. – alien; ar; nat; acc
- Hypericum mutilum* L. – alien; neo; nat; acc
- Hyssopus officinalis* L. – alien; neo; cas; del
- Iberis umbellata* L. – alien; neo; cas; del
- Ilex aquifolium* L. – alien; neo; cas; del
- Impatiens balfourii* Hook. – alien; neo; inv; del
- *Impatiens glandulifera* Royle – alien; neo; inv; del
- Impatiens parviflora* DC. – alien; neo; inv; del
- Inula helenium* L. – alien; ar; nat; acc
- Ipomoea purpurea* (L.) Roth – alien; neo; cas; del
- Ipomoea tricolor* Cav. – alien; neo; cas; del
- Iris x germanica* L. – alien; ar; cas; del
- Iris pallida* Lam. – alien; neo; cas; del
- Isatis tinctoria* L. – alien; ar; nat; acc
- Iva xanthifolia* Nutt. – alien; neo; inv; acc
- Jasminum fruticans* L. – alien; neo; cas; del
- Jasminum humile* L. – alien; neo; cas; del
- Jasminum nudiflorum* Lindl. – alien; neo; cas; del
- Juglans nigra* L. – alien; neo; nat; del
- Juglans regia* L. – alien; ar; nat; del
- Juncus tenuis* Willd. – alien; neo; inv; acc
- Juniperus sabina* L. – alien; neo/ar?; cas; del
- Juniperus virginiana* L. – alien; neo; cas; del
- Kickxia elatine* (L.) Dumort. – alien; ar; nat; acc
- Kickxia spuria* (L.) Dumort. – alien; ar; nat; acc
- Kitaibela vitifolia* Willd. – alien; neo; cas; del
- Kochia scoparia* (L.) Schrad. – alien; ar/neo?; cas;
both
- Koeleruteria paniculata* Laxm. – alien; neo; inv; del
- Krascheninnikovia ceratoides* (L.) Gueldenst. – cryp;
ar/ntv?; nat; acc

- Laburnum anagyroides* Medik. – alien; neo/ar?; nat; acc
Lactuca saligna L. – cryp; ar/ntv?; nat; acc
Lactuca sativa L. – alien; neo; cas; acc
Lactuca serriola L. – alien; ar; nat; acc
Lagarosiphon major (Ridl.) Moss. – alien; neo; cas; del
Lamium album L. – alien; ar; nat; acc
Lamium amplexicaule L. – alien; ar; nat; acc
Lamium purpureum L. – alien; ar; nat; acc
Lappula barbata (M. Bieb.) Menyh. – alien; ar; nat; acc
Lappula deflexa (Wahlenb.) Garcke – alien; ar; nat; acc
Lappula marginata (M. Bieb.) Gürke – alien; neo; nat; acc
Lappula squarrosa (Retz.) Dumort. – alien; ar; nat; acc
Larix decidua Mill. – alien; ar/neo?; cas; both
Lathyrus aphaca L. – alien; ar; nat; acc
Lathyrus cicera L. – alien; ar; cas; del
Lathyrus hirsutus L. – alien; ar; nat; acc
Lathyrus nissolia L. – cryp; ar/ntv?; nat; acc
Lathyrus odoratus L. – alien; neo; cas; del
Lathyrus sativus L. – alien; ar; cas; del
Lathyrus tuberosus L. – alien; ar; nat; acc
Lavandula angustifolia Mill. – alien; neo; nat; del
Lavatera thuringiaca L. – alien; ar; nat; acc
Lavatera trimestris L. – alien; neo; cas; del
Legousia speculum-veneris (L.) Chaix – alien; ar; nat; acc
Lemma aequinoctialis Welw. – alien; neo; nat; acc
Lemma minuta Kunth. – alien; neo; tra; acc
Lemma turionifera Landolt – cryp; ar/ntv?; nat; acc
Lens culinaris Medic. – alien; ar; cas; del
Leonurus cardiaca L. – alien; ar; nat; acc
Leonurus marrubiastrum L. – cryp; ar/ntv?; nat; acc
Lepidium campestre (L.) R. Br. – cryp; ar/ntv?; nat; acc
Lepidium densiflorum Schrad. – alien; neo; nat; acc
Lepidium graminifolium L. – alien; ar; nat; acc
Lepidium perfoliatum L. – alien; ar; nat; acc
Lepidium ruderale L. – alien; ar; nat; acc
Lepidium sativum L. – alien; ar; cas; acc
Lepidium virginicum L. – alien; neo; nat; acc
Levisticum officinale W. D. J. Koch – alien; ar; cas; del
Leymus arenarius (L.) Hochst. – alien; neo; cas; acc
Ligustrum ovalifolium Hassk. – alien; neo; cas; del
Limnobium laevigatum (Humb. et Bonpl. ex Willd.) Heine – alien; neo; cas; del
Limonium sinuatum (L.) Mill. – alien; neo; cas; del
Linaria arvensis (L.) Desf. – alien; ar; cas; acc
Lindernia dubia (L.) Pennell – alien; neo; nat; acc
Linum usitatissimum L. – alien; ar; cas; del
Liriodendron tulipifera L. – alien; neo; cas; del
Lolium multiflorum Lam. – alien; neo/ar?; nat; acc
Lolium perenne L. – cryp; ar/ntv?; nat; acc
Lolium remotum Schrank – alien; ar; nat; acc
Lolium temulentum L. – alien; ar; nat; acc
Lonicera caprifolium L. – alien; ar; nat; acc
Lonicera tatarica L. – alien; neo; cas; del
Lotus pedunculatus Cav. – alien; neo; cas; acc
**Ludwigia peploides* (Kunth) Raven – alien; neo; nat; del
Ludwigia repens J. R. Frost. – alien; neo; nat; del
**Ludwigia uruguayensis* (Cambess.) Hara – alien; neo; nat; del
Lunaria annua L. – alien; ar/neo?; nat; del
Lupinus albus L. – alien; neo; cas; del
Lupinus angustifolius L. – alien; neo; cas; del
Lupinus luteus L. – alien; neo; cas; del
Lupinus polyphyllus Lindl. – alien; neo; nat; del
Lycium barbarum L. – alien; ar; nat; acc
Lycium chinense Mill. – alien; neo; cas; del
Lycopersicon esculentum Mill. – alien; neo; cas; del
Lycopsis arvensis L. – alien; ar; nat; acc
Lythrum thesioides M. Bieb. – cryp; ar/ntv?; cas; acc
Maclura pomifera (Raf.) C. K. Schneid. – alien; neo; cas; del
Magnolia acuminata (L.) L. – alien; neo; cas; del
Magnolia x soulangeana Soul.-Bod. – alien; neo; cas; del
Magnolia stellata (Siebold et Zucc.) Maxim. – alien; neo; cas; del
Mahonia aquifolium agg. – alien; neo; nat; del
Majorana hortensis Moench – alien; ar; cas; del
Malcolmia africana (L.) R. Br. – alien; neo; nat; acc
Malus domestica Borkh. – alien; ar; cas; del
Malva alcea L. – alien; ar; nat; acc
Malva moschata L. – alien; neo; cas; acc
Malva neglecta Wallr. – alien; ar; nat; acc
Malva pusilla Sm. – alien; ar; nat; acc
Malva sylvestris L. – alien; ar; nat; acc
Malva verticillata L. – alien; neo; cas; del
Marrubium x paniculatum Desr. – alien; ar; nat; acc
Marrubium peregrinum L. – alien; ar; nat; acc
Marrubium vulgare L. – alien; ar; nat; acc
Matricaria discoidea DC. – alien; neo; nat; acc
Matthiola incana (L.) R. Br. – alien; neo; cas; del
Matthiola longipetala (Vent.) DC. subsp. *bicornis* (Sm.) P. W. Ball – alien; neo; cas; del
Medicago arabica (L.) Huds. – alien; ar; nat; acc
Medicago monspeliaca (L.) Trautv. – cryp; ar/ntv?; nat; acc
Medicago orbicularis (L.) Bartal. – cryp; ar/ntv?; nat; unk
Medicago polymorpha L. – alien; ar; nat; acc
Medicago rigidula (L.) All. – cryp; ar/ntv?; nat; acc

- Medicago sativa* L. – alien; ar; nat; del
Medicago x varia Martyn – alien; ar; nat; unk
Melampyrum arvense L. – cryp; ar/ntv?; nat; acc
Melilotus albus Desr. – alien; ar; nat; acc
Melilotus officinalis (L.) Pall. – alien; ar; nat; acc
Melissa officinalis L. – alien; ar; nat; del
Mentha x piperita L. – alien; neo; cas; del
Mentha spicata L. – alien; neo; cas; del
Mercurialis annua L. – alien; ar; nat; acc
Mespilus germanica L. – alien; ar; cas; del
Microrrhinum minus (L.) Fourr. – alien; ar; nat; acc
Mimulus guttatus Fisch. ex DC. – alien; neo; cas; both
Misopates orontium (L.) Raf. – alien; ar; nat; acc
Monochoria korsakowii Regel et Maack – alien; neo; nat; acc
Montia linearis (Douglas) Greene – alien; neo; nat; acc
Montia perfoliata (Donn ex Wild.) Howell – alien; neo; cas; del
Morus alba L. – alien; ar; nat; del
Morus nigra L. – alien; ar; cas; del
Muscari comosum (L.) Mill. – cryp; ar/ntv?; nat; acc
Muscari neglectum Guss. ex Ten. s. l. – cryp; ar/ntv?; nat; acc
Myagrum perfoliatum L. – alien; ar; nat; acc
Myosotis arvensis (L.) Hill – alien; ar; nat; acc
**Myriophyllum aquaticum* (Vell.) Verdc. – alien; neo; nat; del
**Myriophyllum heterophyllum* Michx. – alien; neo; nat; del
Najas gracillima (A. Braun ex Engelm.) Magnus – alien; neo; nat; acc
Najas guadelupensis (Spreng.) Magnus – alien; neo; cas; del
Narcissus x incomparabilis Mill. – alien; neo; cas; del
Narcissus poëticus – alien; neo; cas; del
Narcissus pseudonarcissus L. – alien; neo; cas; del
Narcissus radiiflorus Salisb. – cryp; ar/ntv?; nat; unk
Nepeta cataria L. – alien; ar; nat; acc
Neslia paniculata (L.) Desv. – cryp; ar/ntv?; nat; acc
Nicandra physalodes (L.) Gaertn. – alien; neo; cas; del
Nicotiana alata Link et Otto – alien; neo; cas; del
Nicotiana rustica L. – alien; neo; cas; del
Nicotiana tabacum L. – alien; neo; cas; del
Nigella arvensis L. – alien; ar; nat; acc
Nigella damascena L. – alien; neo; cas; del
Nigella sativa L. – alien; ar; cas; del
Nonea lutea (Desv.) DC. – alien; neo; nat; del
Nymphaea caerulea Savigny – alien; neo; nat; del
Nymphaea lotus L. – alien; neo; nat; del
Nymphaea rubra Roxb. – alien; neo; nat; del
Oenothera biennis L. – alien; neo; inv; acc
Oenothera glazioviana Micheli – alien; neo; cas; acc
Oenothera x hoelscheri Renner ex Rostański – alien; neo; cas; acc
Oenothera oakesiana (A. Gray) J. W. Robbins ex S. Watson et J. M. Coult. – alien; neo; cas; acc
Oenothera oehlkersii Kappus ex Rostański – alien; neo; cas; del
Oenothera rubricaulis Kleb. – alien; neo; cas; acc
Oenothera salicifolia Desf. – alien; neo; cas; acc
Oenothera suaveolens Desf. – alien; neo; cas; acc
Oenothera victorini R. R. Gates – alien; neo; cas; del
Omphalodes verna Moench – alien; neo; cas; del
Onobrychis viciifolia agg. – alien; ar; nat; del
Onopordum acanthium L. – alien; ar; nat; acc
Opuntia humifusa (Raf.) Raf. – alien; neo; nat; del
Opuntia phaeacantha Engelm. – alien; neo; nat; del
Opuntia polyacantha Haworth – alien; neo; nat; del
Orlaya grandiflora (L.) Hoffm. – alien; ar; nat; acc
Ornithogalum brevistylum Wolfner – alien; ar; nat; acc
Ornithogalum nutans L. – alien; neo; cas; del
Ornithogalum refractum Kit. in Willd. – cryp; ar/ntv?; nat; acc
Ornithogalum umbellatum L. s. l. – cryp; ar/ntv?; nat; acc
Ornithopus sativus Brot. – alien; neo; cas; del
Orobanche cernua L. in Loeffl. – alien; neo; nat; unk
Orobanche cumana Wallr. – alien; neo; nat; unk
Orobanche ramosa L. – alien; neo; nat; unk
Oxalis corniculata L. – alien; ar; inv; acc
Oxalis dillenii Jacq. – alien; neo; inv; acc
Oxalis stricta L. – alien; neo; inv; acc
Oxybaphus nyctagineus (Michx.) Sweet – alien; neo; inv; both
Padus serotina (Ehrh.) Borkh. – alien; neo; tra; del
Paeonia tenuifolia L. – cryp; ar/ntv?; nat; acc
Panicum capillare agg. – alien; neo; inv; acc
Panicum dichotomiflorum Michx. – alien; neo; inv; acc
Panicum miliaceum agg. – alien; ar; cas; del
Panicum philadelphicum Bernh. – alien; neo; cas; acc
Panicum riparium H. Scholz – alien; neo; cas; acc
Panicum ruderale (Kitag.) Lyssov – alien; neo; inv; both
Papaver argemone L. – alien; ar; nat; acc
Papaver dubium L. – alien; ar; nat; acc
Papaver hybridum L. – alien; ar; nat; acc
Papaver rhoeas L. – alien; ar; nat; acc
Papaver somniferum L. – alien; ar; cas; del

- Parietaria diffusa* Mert. et W. D. J. Koch – alien; neo; nat; acc
Parietaria pennsylvanica Muhl. ex Willd. – alien; neo; nat; acc
Parthenocissus inserta (A. Kern.) Fritsch – alien; neo; inv; del
Parthenocissus quinquefolia (L.) Planch. – alien; neo; nat; del
Parthenocissus tricuspidata Siebold et Zucc. – alien; neo; cas; del
Paulownia tomentosa (Thunb.) Steud. – alien; neo; nat; del
Persica vulgaris Mill. – alien; ar; cas; del
Persicaria lapathifolia (L.) Delarbre – alien; ar; nat; acc
Persicaria maculosa S. F. Gray – alien; ar; nat; acc
Persicaria orientalis (L.) Gray – alien; neo; cas; del
Petroselinum crispum (Mill.) A. W. Hill – alien; neo/ar?; cas; del
Petrosimonia triandra (Pall.) Rech. – alien; neo; nat; acc
Petunia x atkinsiana D. Don – alien; neo; cas; del
Phacelia congesta Hook. – alien; neo; cas; del
Phacelia tanacetifolia Benth. – alien; neo; cas; del
Phalaris canariensis L. – alien; neo; cas; both
Phaseolus coccineus L. – alien; neo; cas; del
Phaseolus vulgaris L. – alien; neo; cas; del
Philadelphus coronarius L. – alien; neo; nat; del
Phleum paniculatum Huds. – alien; ar; nat; acc
Phuopsis stylosa (Trin.) Hook. f. ex B. D. Jacks. – alien; neo; cas; del
Physalis alkekengi L. – alien; ar; nat; acc
Physalis peruviana L. – alien; neo; cas; del
Physocaulis nodosus (L.) W. D. J. Koch – alien; ar; nat; acc
Phytolacca americana L. – alien; neo; inv; del
Phytolacca esculenta van Houtte – alien; neo; inv; del
Picea abies (L.) H. Karst. – cryp; ar/ntv?; nat; both
Picea pungens Engelm. – alien; neo; cas; del
Picris hieracioides L. – alien; ar; nat; acc
Pimpinella anisum L. – alien; neo/ar?; cas; both
Pinus nigra J. F. Arnold – alien; neo; nat; del
Pinus ponderosa Douglas ex Lawson et C. Lawson – alien; neo; cas; del
Pinus strobus L. – alien; neo; nat; del
Pinus wallichiana A. B. Jacks. – alien; neo; cas; del
**Pistia stratiotes* L. – alien; neo; nat; del
Pisum elatius Steven – alien; ar; nat; acc
Pisum sativum L. – alien; ar; cas; del
Plantago coronopus L. – alien; neo; nat; acc
Platanus x hybrida Brot. – alien; neo; cas; del
Polycarpon tetraphyllum L. – alien; neo; nat; acc
Polygonum aviculare agg. – alien; ar; nat; acc
Polypogon viridis (Gouan) Breistr. – alien; neo; cas; del
Populus x euramericana (Dode) Guinier – alien; neo; nat; del
Populus simonii Carrière – alien; neo; cas; del
Portulaca grandiflora Hook. – alien; neo; nat; del
Portulaca oleracea L. – alien; ar; nat; acc
Potentilla anserina L. – alien; ar; nat; acc
Potentilla indica (Andrews) Focke – alien; neo; inv; del
Prunus cerasifera Ehrh. – alien; ar; nat; del
Prunus domestica agg. – alien; ar; nat; del
Pseudofumaria lutea (L.) Borkh. – alien; neo; cas; del
Pseudotsuga menziesii (Mirb.) Franco – alien; neo; cas; del
Ptelea trifoliata L. – alien; neo; nat; del
Pterocarya fraxinifolia (Lam.) Spach – alien; neo; cas; del
Pyrus communis L. – alien; ar; cas; del
Pyrus nivalis Jacq. s. l. – cryp; ar/ntv?; nat; unk
Pyrus salviifolia DC. – alien; ar/neo?; cas; del
Quercus frainetto Ten. – alien; ar; nat; acc
Quercus palustris Münchh. – alien; neo; cas; del
Quercus rubra L. – alien; neo; nat; del
Ranunculus arvensis L. – alien; ar; nat; acc
Ranunculus cymbalaria Pursh – alien; neo; cas; del
Ranunculus parviflorus L. – alien; neo; cas; acc
Ranunculus psilostachys Griseb. – alien; ar/neo?; nat; unk
Ranunculus sardous Crantz – alien; ar; nat; acc
Raphanus raphanistrum L. – alien; ar; nat; acc
Raphanus sativus L. – alien; ar; cas; del
Rapistrum pereme (L.) All. – alien; ar; nat; acc
Rapistrum rugosum (L.) All. – alien; neo/ar?; nat; unk
Reseda lutea L. – alien; ar; nat; acc
Reseda luteola L. – alien; ar; nat; acc
Reseda phyteuma L. – alien; ar; nat; acc
Rhus typhina L. – alien; neo; cas; del
Ribes aureum Pursh – alien; neo; inv; del
Ribes nigrum L. – cryp; ar/ntv?; nat; both
Ribes rubrum agg. – alien; ar; nat; del
Robinia hispida L. – alien; neo; cas; del
Robinia pseudoacacia L. – alien; neo; tra; del
Robinia viscosa Vent. – alien; neo; inv; del
Rosa blanda Aiton – alien; neo; cas; del
Rosa foetida Herrm. – alien; neo; cas; del
Rosa glauca Pourr. – alien; neo; cas; del
Rosa majalis Herrm. – alien; neo; cas; del
Rosa multiflora Thunb. – alien; neo; cas; del
Rosa rugosa Thunb. – alien; neo; cas; acc
Rostraria cristata (L.) Tzvelev – alien; neo; cas; acc
Rotala rotundifolia (Roxb.) Koehne – alien; neo; nat; del

- Rubia tinctorum* L. – alien; ar; nat; acc
Rubus phoenicolasius Maxim. – alien; neo; cas; del
Rudbeckia hirta L. – alien; neo; nat; del
Rudbeckia laciniata L. – alien; neo; inv; del
Rudbeckia triloba L. – alien; neo; cas; del
Rumex crispus L. – alien; ar; nat; acc
Rumex dentatus L. subsp. *halacsyi* (Rech.) Rech. – alien; neo/ar?; nat; unk
Rumex patientia L. – alien; ar; nat; both
Rumex pulcher L. – alien; ar; nat; acc
Rumex rugosus Campd. – cryp; ar/ntv?; cas; del
Rumex scutatus L. – alien; neo; cas; del
Rumex thyrsoiflorus Fingerh. – cryp; ar/ntv?; nat; acc
Ruta graveolens L. – alien; neo; cas; del
Sagina procumbens L. – alien; ar; nat; unk
Sagina sabuletorum (J. Gay) Lange – alien; ar/neo?; nat; unk
Sagittaria subulata (L.) Buchenau – alien; neo; nat; del
Salsola collina Pall. – alien; neo; nat; acc
Salvia officinalis L. – alien; ar/neo?; cas; del
Salvia sclarea L. – alien; ar/neo?; nat; del
Salvia verbenacea L. – alien; neo; nat; both
**Salvinia molesta* D. S. Mitch. – alien; neo; cas; del
Saponaria officinalis L. – alien; ar; nat; acc
Sarothamnus scoparius (L.) Wimm. ex W. D. J. Koch – alien; neo/ar?; nat; del
Satureja hortensis L. – alien; ar; cas; del
Scandix pecten-veneris L. – alien; ar; nat; acc
Scilla siberica Haw. – alien; neo; cas; acc
Sclerochloa dura (L.) Beauv. – cryp; ar/ntv?; nat; acc
Secale cereale L. – alien; ar; cas; del
Secale sylvestre Host – cryp; ar/ntv?; nat; acc
Sedum rupestre L. – alien; neo; nat; del
Sedum spurium M. Bieb. – alien; neo; cas; del
Sempervivum tectorum L. – alien; ar; nat; acc
Senecio inaequidens DC. – alien; neo; nat; acc
Senecio vernalis Waldst. et Kit. – alien; neo; nat; acc
Senecio vulgaris L. – alien; ar; nat; acc
Setaria faberi R. A. W. Herrm. – alien; neo; nat; del
Setaria italica (L.) P. Beauv. – alien; ar; cas; del
Setaria pumila (Poir.) Schult. – alien; ar; nat; acc
Setaria verticillata (L.) Beauv. – alien; ar; nat; acc
Setaria verticilliformis Dumort. – alien; ar; nat; acc
Setaria viridis (L.) Beauv. – alien; ar; nat; acc
Sherardia arvensis L. – alien; ar; nat; acc
Sicyos angulatus L. – alien; neo; cas; del
Sideritis montana L. – cryp; ar/ntv?; nat; acc
Silene armeria L. – alien; neo/ar?; cas; del
Silene dichotoma Ehrh. – alien; ar; nat; acc
Silene gallica L. – alien; ar; nat; acc
Silene noctiflora L. – alien; ar; nat; acc
Silybum marianum (L.) Gaertn. – alien; neo; cas; del
Sinapis alba L. – alien; ar; cas; unk
Sinapis arvensis L. – alien; ar; nat; acc
Sisymbrium altissimum L. – alien; ar; nat; acc
Sisymbrium loeselii L. – alien; neo; nat; acc
Sisymbrium officinale (L.) Scop. – alien; ar; nat; acc
Sisymbrium orientale L. – alien; ar; nat; acc
Sisyrinchium bermudiana Mill. s. l. – alien; neo; nat; acc
Solanum alatum Moench – alien; neo; nat; acc
Solanum melongena L. – alien; neo; cas; del
Solanum nigrum L. – alien; ar; nat; acc
Solanum rostratum Dunal – alien; neo; nat; acc
Solanum tuberosum L. – alien; neo; cas; del
Solanum villosum Mill. s. l. – alien; neo; cas; acc
Solidago canadensis L. – alien; neo; tra; del
Solidago gigantea Aiton – alien; neo; tra; del
Solidago graminifolia (L.) Salisb. – alien; neo; cas; del
Sonchus arvensis L. – alien; ar; nat; acc
Sonchus asper (L.) Hill – alien; ar; nat; acc
Sonchus oleraceus L. – alien; ar; nat; acc
Sophora japonica L. – alien; neo; cas; del
Sorghum bicolor (L.) Moench – alien; neo; cas; del
Sorghum halepense (L.) Pers. – alien; neo; inv; both
Sorghum sudanense (Piper) Stapf – alien; neo; cas; del
Spergula arvensis L. – alien; ar; nat; acc
Spinacia oleracea L. – alien; neo/ar?; cas; del
Spiraea crenata L. – cryp; ar/ntv?; nat; unk
Spiraea x vanhouttei (Briot) Zabel – alien; neo; cas; del
Sporobolus cryptandrus (Torr.) A. Gray – alien; neo; nat; acc
Sporobolus neglectus Nash – alien; neo; nat; del
Sporobolus vaginiflorus (Torr.) Wood. – alien; neo; nat; del
Stachys annua L. – alien; ar; nat; acc
Stachys byzantina K. Koch – alien; neo; cas; del
Stipa bromoides (L.) Dörfler – cryp; ar/ntv?; nat; unk
Symphoricarpos albus (L.) S. F. Blake – alien; neo; cas; del
Symphyotrichum ciliatum (Ledeb.) G. L. Nesom – alien; neo; cas; del
Symphytum asperum Lepech. – alien; neo; cas; del
Symphytum x uplandicum Nyman – alien; neo; cas; del
Syringa vulgaris L. – alien; neo; nat; del
Taeniatherum caput-medusae (L.) Nevski – alien; neo; nat; acc
Tagetes erecta L. – alien; neo; cas; del
Tagetes minuta L. – alien; neo; cas; del
Tagetes patula L. – alien; neo; cas; del

- Tamarix* spp. – alien; neo; cas; del
Tanacetum parthenium (L.) Sch. Bip. – alien; neo; cas; del
Tanacetum vulgare L. – cryp; ar/ntv?; nat; acc
Taxodium distichum (L.) Rich. – alien; neo; cas; del
Telekia speciosa (Schreb.) Baumg. – cryp; ar/ntv?; nat; acc
Teucrium botrys L. – alien; ar; nat; acc
Thladiantha dubia Bunge – alien; neo; nat; del
Thlaspi alliaceum L. – cryp; ar/ntv?; nat; acc
Thlaspi arvense L. – cryp; ar/ntv?; nat; acc
Thuja occidentalis L. – alien; neo; cas; del
Thuja orientalis L. – alien; neo; nat; del
Thuja plicata Donn ex D. Don – alien; neo; cas; del
Thymelaea passerina (L.) Coss. et Germ. – alien; ar; nat; acc
Thymus vulgaris L. – alien; neo; cas; del
Tofieldia calyculata (L.) Wahlenb. – cryp; ar/ntv?; nat; unk
Tordylium maximum L. – cryp; ar/ntv?; nat; acc
Torilis arvensis (Huds.) Link – alien; ar; nat; acc
Tradescantia virginiana L. – alien; neo; cas; del
Tragopogon porrifolius L. – alien; neo; cas; del
Tragus racemosus (L.) All. – alien; neo; inv; acc
Tribulus terrestris L. – cryp; ar/ntv?; nat; acc
Trifolium alexandrinum L. – alien; neo; cas; del
Trifolium incarnatum L. – alien; neo; cas; del
Trifolium pallidum Waldst. et Kit. – alien; neo/ar?; cas; acc
Trigonella caerulea (L.) Ser. – alien; neo; cas; del
Trigonella foenum-graecum L. – alien; neo; cas; del
Tripleurospermum inodorum (L.) Schultz-Bip. – alien; ar; nat; acc
Tripleurospermum tenuifolium (Kit.) Freyn – alien; ar; nat; acc
Triticum aestivum L. – alien; ar; cas; del
Triticum monococcum L. – alien; ar; cas; del
Triticum turgidum L. – alien; ar; cas; del
Tulipa gesneriana L. – alien; neo; cas; del
Tulipa sylvestris L. – alien; neo; cas; del
Turgenia latifolia (L.) Hoffm. – alien; ar; nat; acc
Typha laxmannii Lepech. – alien; neo; nat; both
Ulmus pumila L. – alien; neo; inv; del
Urtica urens L. – alien; ar; nat; acc
Utricularia gibba L. – alien; neo; nat; both
Vaccaria hispanica (Mill.) Rauschert – alien; ar; nat; acc
Valerianella carinata Loisel. – cryp; ar/ntv?; nat; acc
Valerianella dentata (L.) Pollich – alien; arc; nat; acc
Valerianella locusta (L.) Laterr. – alien; arc; nat; acc
Valerianella rimosa Bastard – cryp; ar/ntv?; nat; acc
Vallisneria gigantea Graebn. – alien; neo; tra; del
Vallisneria spiralis L. – alien; neo; nat; del
Verbascum speciosum Schrad. – alien; ar; nat; acc
Verbena officinalis L. – alien; ar; nat; acc
Veronica agrestis L. – alien; ar; cas; acc
Veronica persica L. – alien; ar; nat; acc
Veronica filiformis Sm. – alien; neo; nat; acc
Veronica hederifolia agg. – cryp; ar/ntv?; nat; acc
Veronica opaca Fr. – alien; ar; nat; acc
Veronica peregrina L. – alien; neo; nat; del
Veronica persica Poir. – alien; neo; nat; acc
Veronica polita Fr. – alien; ar; nat; acc
Veronica triphyllos L. – alien; ar; nat; acc
Viburnum rhytidophyllum Hemsl. – alien; neo; cas; del
Vicia angustifolia L. – cryp; ar/ntv?; nat; acc
Vicia articulata Hornem. – alien; neo; cas; del
Vicia cracca L. – alien; ar; nat; acc
Vicia ervilia (L.) Willd. – alien; ar; cas; del
Vicia faba L. – alien; ar; cas; del
Vicia grandiflora Scop. – cryp; ar/ntv?; nat; acc
Vicia hirsuta (L.) S. F. Gray – alien; ar; nat; acc
Vicia lutea L. – alien; ar; nat; acc
Vicia narbonensis L. – cryp; ar/ntv?; nat; acc
Vicia pannonica Crantz – cryp; ar/ntv?; nat; acc
Vicia peregrina L. – alien; neo; cas; del
Vicia sativa (L.) – alien; ar; nat; del
Vicia tenuifolia Roth – cryp; ar/ntv?; nat; acc
Vicia tenuissima (M. Bieb.) Schinz et Thell. – alien; neo; cas; acc
Vicia tetrasperma (L.) Schreb. – alien; ar; nat; acc
Vicia villosa Roth – alien; ar; nat; both
Vinca major L. – alien; neo; cas; del
Viola arvensis agg. – alien; ar; nat; acc
Viola odorata L. – alien; ar; nat; acc
Viola sororia Willd. – alien; neo; inv; del
Vitis labrusca L. – alien; neo; cas; del
Vitis rupestris Scheele – alien; neo; cas; del
Vitis vinifera L. – alien; ar; nat; del
Vitis vulpina L. – alien; neo; inv; del
Vulpia myuros (L.) C. C. Gmel. – cryp; ar/ntv?; nat; acc
Weigela florida (Bunge) DC. – alien; neo; cas; del
Wisteria sinensis (Sims) Sweet – alien; neo; cas; del
Wolffia arrhiza (L.) Horkel ex Wimm. – cryp; ar/ntv?; nat; acc
Xanthium albinum (Widder) H. Scholz subsp. *riparium* (Čelak) Widder et Wagenitz – alien; neo; inv; acc
Xanthium italicum agg. – alien; neo; inv; acc
Xanthium saccharatum Wallr. – alien; neo; inv; acc
Xanthium spinosum L. – alien; neo; inv; acc
Xanthium strumarium L. – alien; ar; inv; acc
Yucca filamentosa L. – alien; neo; cas; del
Zea mays L. – alien; neo; cas; del
Zinnia elegans L. – alien; neo; cas; de