



Red List of the Vascular Plants of Luxembourg

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1. *Hymenophyllum tunbrigense* (L.) Smith - threat category EN, photo: Yves Krippel.
2. *Carex pulicaris* L. - threat category CR, photo: Simone Schneider.
3. *Campanula glomerata* L. - threat category VU, photo: Simone Schneider.

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Abstract

The present Red List is the second edition of the Red List of Vascular Plants of Luxembourg applying IUCN Red List categories at the national level. The checklist serving as the backbone of the Red List contains 1,423 native and established alien taxa. No threat category was assigned to the extant 172 Established Aliens (EA) and the 79 Data Deficient (DD) taxa. Out of the remaining 1,172 taxa for

which a threat category was assigned, 8.9 % were assessed as Regionally Extinct (RE), 8.4 % as Critically Endangered (CR), 13.8 % as Endangered (EN), 13.0 % as Vulnerable (VU) and 9.9 % as Near Threatened (NT). In comparison to the previous Red List of Vascular Plants published in 2005 there was an increase of threatened taxa (CR + EN + VU) in Luxembourg from 30.4 % to 35.2 %.

Résumé

La présente Liste rouge est la deuxième édition de la Liste rouge des plantes vasculaires du Luxembourg qui applique les catégories de l'IUCN au niveau national. La liste des taxons qui sert de base à la Liste rouge contient 1.423 taxons indigènes et naturalisés. Aucune catégorie de menace n'a été attribuée aux 172 taxons exotiques naturalisés (EA) et aux 79 taxons pour lesquels les données étaient insuffisantes (DD). Sur les 1.172 autres

taxons pour lesquels une catégorie a été attribuée, 8,9 % sont considérés comme disparus au niveau régional (RE), 8,4 % comme en danger critique (CR), 13,8 % comme en danger (EN), 13,0 % comme vulnérables (VU) et 9,9 % comme quasi menacés (NT). Par rapport à la précédente Liste rouge des plantes vasculaires publiée en 2005, nous avons constaté une augmentation de taxons menacés (CR + EN + VU) au Luxembourg de 30,4 % à 35,2 %.

Zusammenfassung

Die vorliegende Rote Liste ist die zweite Ausgabe der Roten Liste der Gefäßpflanzen Luxemburgs, die die Kategorien der IUCN auf nationaler Ebene anwendet. Die Checkliste, die die Basis der Roten Liste bildet, enthält 1.423 einheimische und etablierte gebietsfremde Taxa. Den 172 etablierten gebietsfremden Taxa (EA) und den 79 Taxa mit ungenügender Datengrundlage (DD) wurde keine Gefährdungskategorie zugewiesen. Von

den bewerteten 1.172 Taxa wurden 8,9 % als regional ausgestorben (RE), 8,4 % als vom Aussterben bedroht (CR), 13,8 % als stark gefährdet (EN), 13,0 % als gefährdet (VU) und 9,9 % als potenziell gefährdet (NT) eingestuft. Im Vergleich zur vorherigen, 2005 veröffentlichten Roten Liste der Gefäßpflanzen gab es einen Anstieg der bedrohten Taxa (CR + EN + VU) in Luxemburg von 30,4 % auf 35,2 %.

1 Introduction

Red Lists are an essential tool in the field of conservation, helping to identify and address the most urgent threats to biodiversity. They provide a systematic and science-based approach to assess and prioritise species in need of conservation action, prevent species extinctions, and protect biodiversity. Red Lists are important both at the global and at the regional level (Rodrigues et al. 2006; Fitzpatrick et al. 2007; Miller et al. 2007; Bilz et al. 2011). At the global level, Red Lists highlight plant species that are threatened with extinction on a global scale, raising awareness about the importance of preserving global biodiversity. At regional or national levels, they provide specific data and priorities for local conservation efforts. The International Union for Conservation of Nature (IUCN) provides specific rules and guidelines for assessing species for Red Lists and their categories and criteria are internationally recognized and widely used standards for assessing the extinction risk of species. The first Red List of Vascular Plants of Luxembourg, published in 2005 (Colling 2005), applied the IUCN threat categories for the first time at the national level for Luxembourg. We now provide a new assessment for the vascular plants of Luxembourg, as regular updates of Red Lists are crucial to accurately reflect the changing status of species and ensure that conservation efforts are informed by the most current information, thus allowing for more effective and responsive conservation strategies and policies.

2 Material and methods

2.1 Checklist of vascular plants

Red Lists should be based on an up-to-date checklist of plant taxa specific to the geographical region under study. We conducted a thorough revision of the published checklist of vascular plant species of Luxembourg (Colling 2005). The current checklist includes all documented vascular plant species in Luxembourg, verified through valid LUX herbarium sheets, and classifies them as either native taxa (including archaeophytes) or established aliens (see below for details). Historical

herbarium sheets of the 19th century were only considered when a precise collection locality was indicated. As the LUX herbarium was recently digitised (Helminger, Weber & Braun 2020), we had online access to most LUX herbarium sheets via the Recorder LUX 6.0 database used at the Luxembourg National Natural History Museum (MnhnL) for the management of natural history collection data (Colling, Walisch & Copp 2007). Taxa with only historical literature records (Tinant 1836; Koltz 1873, 1879) were not considered, except in special cases such as *Osmunda regalis*, which was mentioned by Koltz (1879) but whose presence was only confirmed at the end of the 20th century (Reichling 1990; Colling 2005). For each taxon of the checklist, we defined the year of its first record (first observation in the wild) in Luxembourg using data from the LUX herbarium and occurrence data from the online data portal of the MnhnL (mdata.mnhn.lu). For 56 established alien plant taxa considered to be invasive in Luxembourg, we used the first records established by Ries & Krippel (2021). The list of pteridophytes integrated into the present checklist is based on the online checklist of pteridophytes by Krippel (2024). Nomenclature of the checklist follows Verloove & Van Rossum (2024).

Archaeophytes, Established Aliens and adventive taxa

We did not distinguish between native plants and archaeophytes in the establishment of the present checklist. Archaeophytes are considered non-native species introduced in historical times, prior to Christopher Columbus's arrival in the New World in 1492, which marked the beginning of the Columbian Exchange (Crosby 1972). Neophytes or Established Aliens (EA) are considered to be plant taxa that have become naturalised (having self-sustaining populations) in more recent times.

In contrast to the previous version of the Red List (Colling 2005), hereafter referred to as "2005 Red List", we did not assign a threat category to EA taxa. Casual plant taxa recorded in Luxembourg only for a short time period (≤ 10 years, see Pyšek et al. 2004) were considered as adventive taxa and were thus not included in the present Red List. The following plant taxa listed in the 2005 Red List were now classified as adventive taxa (see Verloove & Van Rossum 2024) and were thus excluded from the new version: *Asparagus*

officinalis, *Bromus lepidus*, *Centaurea repens*, *Centaurea stoebe*, *Cephalaria gigantea*, *Conringia orientalis*, *Crepis sancta* subsp. *nemausensis*, *Cynodon dactylon*, *Herniaria hirsuta*, *Linaria supina*, *Mimulus moschatus*, *Moneses uniflora*, *Symphytum xuplandicum*, *Trifolium montanum*, *Vicia lutea* and *Xanthium strumarium*.

Microspecies, hybrids and infraspecific taxa

In the genus *Taraxacum* with a large number of microspecies, the list of taxa integrated into the present checklist is based on the 2005 Red List. The presence of these taxa was confirmed by historical LUX herbarium specimens and by literature (Reichling 1981). However, the current day occurrence of these mostly apomictic taxa in Luxembourg is a question of debate as we have no recent data for the time period considered (2005 - 2025). The main reason is a lack of specialists able to identify these taxa. For the genus *Rubus* the published checklist (Helminger 2009) was integrated into the present Red List. Due to the lack of current occurrence data, many *Rubus* L. subg. *Rubus* taxa as well as *Taraxacum* taxa were considered as DD. For the other micro-species groups *Hieracium*, *Alchemilla*, *Pilosella*, *Sorbus* and *Ranunculus auricomus* only taxa with known recent occurrences were listed in the present Red List.

Infraspecific taxa like subspecies, varieties, and forms were in general not considered for the checklist except when their conservation status could be evaluated based on recent observations. The same criteria were applied to species hybrids. A systematic inventory of hybrids in pteridophytes allowed an integration of these taxa into the checklist and an assignment to a threat category (see Krippel 2023, 2024). The microspecies *Sorbus semiincisa* included in the 2005 Red List was excluded from the present version of the checklist since its presence was not confirmed for the area covered by the flora of Verloove & Van Rossum (2024).

2.2 Assessment of IUCN threat categories

IUCN threat categories

We applied the Guidelines for Using the IUCN Red List Categories and Criteria (IUCN Standards

and Petitions Committee 2024) and followed the guidelines for the application of the IUCN Red List criteria at a regional and national level (Gärdenfors et al. 2001; IUCN 2012a). The IUCN employs five criteria (A, B, C, D and E) under which a taxon can be evaluated (see Appendix 1). Criterion B (geographic range size and fragmentation, few locations, decline, or fluctuations) is the most widely used, as occurrence data are the only information available for many taxa (Dauby et al. 2017), including those in Luxembourg. When sufficient data were not available for an assessment, taxa were listed as Data Deficient (DD) (IUCN Standards and Petitions Committee 2024). If occurrence data were present, taxa were assigned to one of the three threat categories (Critically Endangered (CR), Endangered (EN), Vulnerable (VU)), or to the categories Near Threatened (NT) or Least Concern (LC). Taxa were considered Regionally Extinct (RE) when the last known observation was older than 30 years.

Occurrence data considered for the assessment

The data on vascular plant taxa occurrences used for the assessment were downloaded from the MnhnL data portal (mdata.mnhn.lu, accessed on 17.01.2022) with a temporal filter of the observation dates set to > 01.01.2005 and a geographical filter of the data using the Luxembourg contour shape file. We also applied a taxonomic filter by using a provisional checklist based on all taxa of the 2005 Red List and new plant taxa observed after 2004 that were considered natives or established aliens. The downloaded data file from mdata.mnhn.lu contained 487,036 occurrences of 1,181 different taxa of vascular plants observed in Luxembourg between 01.01.2005 and 17.01.2022. We used the following data sources available on mdata.mnhn.lu: Recorder-Lux database (MnhnL 2022), iNaturalist (iNaturalist 2022) and GBIF (GBIF.org 2022). In recent years, data contributed by citizen science projects on the platforms iNaturalist.lu and data.mnhn.lu have become a very valuable source of plant occurrence data in addition to the observations contributed by professional botanists. Observations of plants from translocation actions were also part of the dataset. We did not distinguish between natural and translocated populations for the assessment of the threat status of the target plant species.

For occurrences of taxa assessed as not threatened or near threatened (LC or NT), as well as those assessed as VU and EN, we relied on the validation procedures integrated into iNaturalist.lu and data.mnhn.lu. iNaturalist provides a worldwide network of naturalists validating data whereas on data.mnhn.lu the validation process is done by professional botanists and by voluntary scientific collaborators of the MnhnL. For occurrences of CR and RE taxa, we checked the citizen science data from iNaturalist. For example, we confirmed the identification of an occurrence of the rare orchid species *Orchis simia*, which was considered to be RE (Colling 2005) by checking the photographic material that was provided when the observation was made on iNaturalist.lu in 2022. However, when we could not validate the taxonomic determination with the information provided on iNaturalist.lu, we visited the location or contacted the author of the observation to ask for additional photographic material or for herbarium specimens. For some species, like the rare *Carex elata*, we considered only observations occurring within its known historical distribution area. *C. elata* can easily be mistaken with the much more common *C. nigra* when it grows in tufts in fallow wetlands. Whereas *C. nigra* is common in the northern part of Luxembourg, there are no historical records or herbarium specimens of *C. elata* from that area. Therefore, we did not consider occurrences of *C. elata* from the northern region of Luxembourg.

Automated provisional assignment

We used the R package *ConR* (Dauby et al. 2017) for a provisional automated assignment of the plant taxa to one of the IUCN threat categories. *ConR* uses a data input file with geographic coordinates, taxon name and year of observation and calculates the extent of occurrence and the area of occupancy, estimates the number of locations and subpopulations, creates species distribution maps and offers preliminary estimates of IUCN categories based on these results. The extent of occurrence (EOO) is defined as "the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy" (IUCN Standards and Petitions Committee 2024). In general, the EOO is measured by a minimum convex polygon (IUCN Standards and Petitions Committee 2024). EOO is used in

criterion B1 to assess the extinction risk. However, in such a small country like Luxembourg this criterion cannot be used as every plant taxa in Luxembourg (with an area of 2,586 km²) would automatically have an EOO of less than 5,000 km² and would thus be classified at least to be EN (see IUCN 2012b). For that reason, we focussed on criterion B2 which is based on the area of occupancy (AOO) and the number of locations. The IUCN defines the area of occupancy (AOO) as "the area within its 'extent of occurrence' which is occupied by a taxon, excluding cases of vagrancy" (IUCN Standards and Petitions Committee 2024). It reflects that a taxon will not necessarily occur in the whole area defined by the EOO because there are unsuitable areas and/or the taxon went extinct at certain locations. We used the default grid cell size of 2 × 2 km to calculate the AOO. A location is defined as "a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present" (IUCN Standards and Petitions Committee 2024). Subpopulations are defined as "geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange" (IUCN Standards and Petitions Committee 2024).

The number of locations depends on the scale, or the size of the grid cell considered (Dauby et al. 2017). We conducted preliminary tests with *ConR*, using a reduced dataset from the 2005 Red List and grid resolutions of 1 km, 5 km, and 10 km. This test revealed that a grid resolution of 5 km produced automatic assignments most closely aligned with the manual assignments from the 2005 Red List. The number of taxa assigned to the categories CR, EN and VU by *ConR* for the reduced dataset was very similar to the number of threatened plant taxa in the 2005 Red List: 33 taxa for *ConR* and 34 taxa for the 2005 Red List (including the category extremely rare R abolished in the present Red List). Eventually, we used the function *IUCN eval* of *ConR* with default parameters except for the location grid size which was set to 5 km for the whole dataset. A preliminary threat category was assessed with *ConR* for each taxon of the dataset using the criterion B2 AOO (IUCN Standards and Petitions Committee 2024). To validate criterion B, *ConR* also assumes a continuing future decline in habitat quality (condition (b) under criterion B).

Final assessment

The provisional automated assignments to IUCN categories using *ConR* were supplemented with additional criteria to achieve the final assessment. When information about the reduction in population size since 2005 was available, we used criterion A (population size reduction) or criterion D (very small or restricted population) in addition to criterion B (IUCN Standards and Petitions Committee 2024). As the automated assessment using *ConR* is not able to distinguish between LC and NT categories, we assigned taxa to the NT category when a substantial reduction (20 % at least) in population size (criterion A) had occurred since 2005. Recently published records of rare and endangered plant species and newly Established Aliens (see Krippel & Colling 2006, 2008, 2010, 2012, 2014, 2016; Krippel, Helming & Colling 2018, 2020; Krippel & Helming 2022; Wolff & Krippel 2022a, 2022b) and data of vegetation monitoring projects (SICONA 2024) were also considered for the final assessment. Changes of threat categories during the final assessment were made based on evaluations by the co-authors concerning changes in population sizes (criterion A), small population sizes and their decline (Criterion C), and very small or restricted populations (Criterion D) or on new recent occurrence data not yet entered into the database.

The IUCN also requires adjusting the assessment to obtain the final regional Red List categories by assessing the effects of extra-regional populations on the regional ones. In our case, as the available data are very limited, we estimated that it was unlikely that populations received significant immigration of propagules from neighbouring populations in the Greater Region, so no changes were made to the categories in this regard.

2.3 Habitat types

All taxa from the checklist were assigned to the habitat type (Tab. 1) where they typically occur. The habitat types are identical to the ones used in the 2005 Red List (Colling 2005) but some taxa were assigned to different habitats due to additional information about their ecological niche.

Tab. 1: Habitat types assigned to the taxa (see Colling 2005).

Habitat type	Abbreviation
Aquatic habitats and springs	AQU
Dry and mesophilic grasslands and heathlands	DRY
Woodlands, forest fringes and cuttings	FOR
Freshwater margins and damp mud	FRE
Intensively managed grasslands	GRA
Marshes, swamps and wet grasslands	MAR
Rocks and screes	ROC
Fallow land, ruderal communities and arable fields	RUD

2.4 Statistical analyses

To compare the results of the present Red List to the 2005 Red List, we calculated the proportions of plant taxa in the different threat categories excluding EA, DD and Not Evaluated (NE) taxa in both lists. We also calculated the frequencies and proportions of DD, NE, and EA including all taxa for both versions.

We also used frequency analysis to compare the present Red List with the ones from the Greater Region including Saarland, Wallonia, Rhineland-Palatinate, and Lorraine (Schneider et al. 2020; Saintenoy-Simon et al. 2006; Hanselmann et al. 2023; Bonassi et al. 2015 respectively) for the proportions of RE plant taxa excluding DD, NE, and EA taxa.

We used a binomial logistic regression to study the relationship between the estimated year of the first record of a new taxon for Luxembourg by including habitat type as a predictor and its probability to be an EA using the function *glm* in R version 4.0.3. The predicted probabilities were plotted with the function *plotmodel* of the R package *sjplot* version 2.8.10 (Lüdecke 2023). We tested whether the proportion of threatened plant taxa (CR + EN + VU) and the proportion of EA

differed significantly among habitat types using ANOVA in SPSS version 25.0 (IBM Corp., Armonk, NY, USA). To test whether the proportions of threatened plant taxa differed significantly among subsets of habitat types, we used a post-hoc Tukey's test.

To evaluate the trend in extinction risks, we calculated the Red List Index (RLI) (Bubb et al. 2009) for both the 2005 and the present Red List. The comparison between RLIs is based on the changes of species between categories by assigning a weight between 0 (for LC) and 5 (for RE) to each assessed taxon depending on their threat category, excluding DD and NE taxa. We chose to assign the same value to the taxa with the category R than to the CR taxa. The RLI varies between 0 and 1 and is smaller when threat statuses are higher, so if the RLI decreases between two time periods, the extinction risk of the assessed taxa increases.

3 Results

3.1 Checklist and assessment of threat categories

The updated checklist of vascular plants lists 1,423 taxa. In comparison to the 2005 Red List, the number of vascular plant taxa increased by 100 in the checklist, as 133 taxa were newly added, and 33 taxa were not taken over from the 2005 Red List. The additional taxa include newly Established Aliens, taxa for which an evaluation of historical data or specimens brought new evidence to include them in the checklist, taxonomic changes, and some additional microspecies in the genus *Rubus* (see Helminger 2009). The 33 taxa from the 2005 checklist not integrated in the present one were mainly adventives or were eliminated due to taxonomical changes in nomenclature (see Verloove & Van Rossum 2024).

Out of the 983 taxa automatically assessed with *ConR*, 105 taxa were assigned to a different threat category during the final assessment. The threat categories were changed by applying other criteria in addition to criterion B, which indicates that *ConR* can provide an assignment of a large proportion (89.3 %) of taxa using criterion B when

the grid resolution of locations is adapted to the study region. The additional manual application of criteria A, C or D often resulted in a higher threat category (e.g. from VU to EN) when there was information about a substantial reduction in population sizes (criterion A) or when current information about population sizes (criteria C or D) were available.

3.2 Comparison between the present Red List and the 2005 Red List

In comparison to the 2005 Red List, the number of RE vascular plant taxa increased from 88 to 104 taxa, corresponding to an increase from 7.9 % to 8.9 % of RE taxa in the native flora (Tab. 2). However, 14 native taxa considered to be RE in 2005 were observed during the period in between the two Red List assessments and are now assessed as CR (ten taxa, e.g. *Montia arvensis*, *Parietaria officinalis*), EN (two taxa, e.g. *Potamogeton trichoides*) or VU (two taxa, e.g. *Ranunculus lingua*).

A total number of 14 plant taxa assigned to the category CR and 8 taxa assigned to the former category Extremely Rare (R) in 2005 were now considered RE. These taxa include ruderal species like *Filago germanica*, *Scandix pecten-veneris* and *Silene dichotoma*, but also species of dry grasslands and heathlands like *Prunella grandiflora*, *Trifolium alpestre*, *Vaccinium vitis-idaea*. Several species of wet grasslands, swamps and freshwater margins like *Blysmus compressus*, *Carex diandra*, *Parnassia palustris*, *Salix repens* and *Senecio sarracenicus* also went extinct together with some forest species like *Rosa stylosa* and *Vicia pisiformis*. *Huperzia selago* was known only as a single individual from one location which was recently destroyed. Two taxa considered to be Endangered (EN) in 2005 are now classified as RE: *Allium rotundum*, and *Juncus subnodulosus*. Also, *Carex strigosa* and *Agrostis vinealis*, considered to be VU and NT in 2005 respectively, are now considered to be RE.

In the 2005 Red List, the category R existing in the pre-2001 IUCN criteria was used. This category characterised taxa with few and small populations which would not classify for CR, EN, VU, or NT. In the updated IUCN Red List Categories and Criteria (IUCN 2001) category R was abolished

Tab. 2: Comparison of threat categories between the 2005 Red List and the present Red List including 95 apomictic microspecies in the genera *Taraxacum* and *Rubus*.
RE = Regionally Extinct, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, R = Extremely Rare, DD = Data Deficient, NE = Not Evaluated, EA = Established Alien. Values in a) indicate the frequencies and proportions of plant taxa per threat category when EA, DD and NE were excluded from the total number of taxa. Values in b) include the frequencies and proportions of DD, NE and EA taxa for both versions.

Threat category	Frequency		Percentage	
	2005 Red List	Present Red List	2005 Red List	Present Red List
a)				
RE	88	104	7.9 %	8.9 %
CR	113	98	10.1 %	8.4 %
EN	118	162	10.6 %	13.8 %
VU	109	152	9.7 %	13.0 %
NT	36	116	3.2 %	9.9 %
LC	585	540	52.3 %	46.1 %
R	69	-	6.2 %	-
Total Excluding EA+DD+NE	1,118	1,172	100 %	100 %
b)				
Total Excluding EA+DD+NE	1,118	1,172	84.5 %	82.4 %
DD	2	79	0.2 %	5.6 %
NE	85	-	6.4 %	-
EA	118	172	8.9 %	12.1 %
Total taxa	1,323	1,423	100 %	100 %

and all taxa classified as such were now assessed to the current IUCN threat categories. *Carex humilis*, *Dactylis glomerata* subsp. *lobata*, *Diploaxis muralis*, *Eleocharis ovata*, *Laserpitium latifolium*, *Pyrola media* and *Sorbus latifolia* were classified as R in the 2005 Red List and are now considered to be RE. These regional extinctions indicate that some taxa with few and small populations formerly assigned to

category R would have been considered as CR if the current guidelines were used.

The proportion of CR plant taxa decreased from 10.1 % to 8.4 % (Tab. 2). On one hand, 14 taxa assessed as CR in 2005 are now considered to be RE, on the other hand systematic field work (e.g. biotope inventory, monitoring of extensively

managed grasslands) carried out in the two last decades revealed new sites for rare and endangered taxa. Moreover, conservation measures including translocations improved the conservation status of some taxa like *Arnica montana* and *Scutellaria minor*.

The comparison between the two versions of the Red List also showed an alarming increase in the proportion of native plant taxa assessed as EN (from 10.6 % to 13.8 %), VU (from 9.7 % to 13.0 %) and NT (from 3.2 % to 9.9 %) (Tab. 2), indicating that for an increasing proportion of vascular plant taxa the number of locations, the area of occupancy, or the population sizes are small or declining in Luxembourg. Overall, the proportion of threatened native plant taxa (CR + EN + VU) increased from 30.4 % in the 2005 Red List to 35.2 % in the present Red List, resulting in a decrease in the proportion of not threatened taxa (LC) from 52.3 % to 46.1 %.

The number of EA taxa increased from 118 in the 2005 Red List to 172 taxa in the present Red

List (Tab. 2). Fourteen EA taxa in the 2005 Red List are no longer listed in the present Red List (e. g. *Symphytum xuplandicum* and *Xanthium strumarium*) as they are now considered to be adventive. Other newly added EA were either new arrivals or taxa classified as native in the 2005 Red List. The proportion of EA taxa increased from 8.9 % to 12.1 %. The total number of EA in the present Red List was much larger than the number of RE plant taxa (172 EA vs. 104 RE, Tab. 2) indicating a clear trend towards a biotic homogenization of the Luxembourgish flora.

The Red List Index (RLI) was calculated for the 1,098 taxa evaluated both in the 2005 Red List and in the present Red List. Between 2005 and 2025, the RLI varied from 0.6858 to 0.6862, indicating no overall change in the national extinction risk for taxa of the flora of vascular plants of Luxembourg. Of these 1,098 taxa, most taxa did not change their threat category (64 %). A similar proportion of taxa showed an increase (16 %) or a decrease (20 %) in threat categories (Fig. 1).

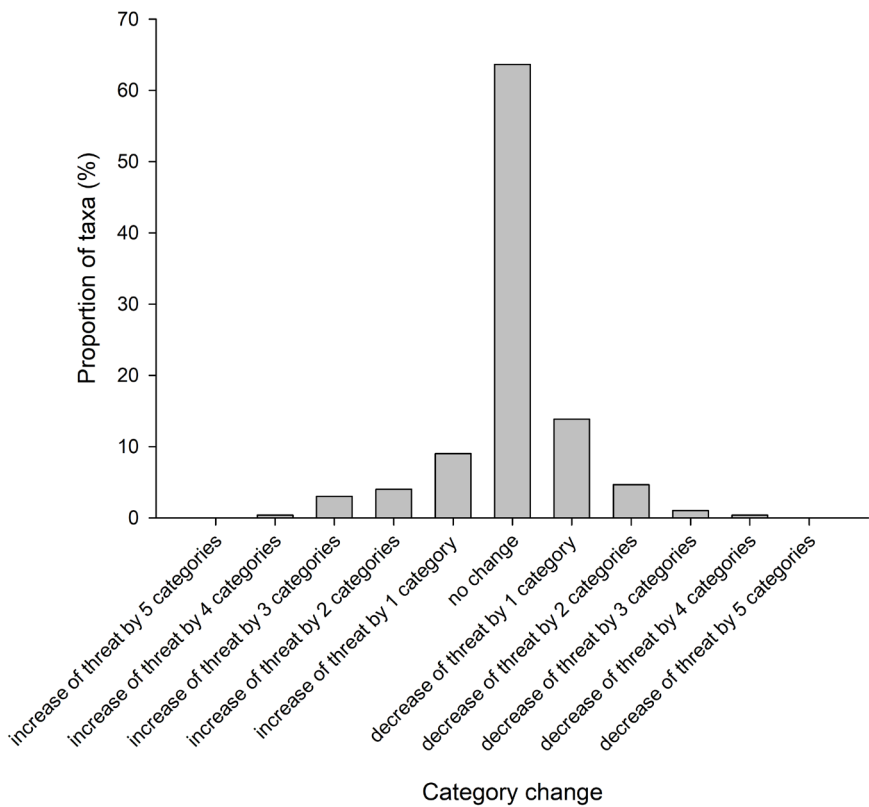


Fig. 1: Proportion of taxa per categorical changes in threat category between the 2005 Red List and the present Red List.

3.3 Luxembourg and the Greater Region

The Greater Region covers 65,406 km² (STATEC 2024) and comprises the territories Lorraine in the French region Grand Est, Wallonia, the Federation Wallonia-Brussels and Ostbelgien in Belgium, the federal states Saarland and Rhineland-Palatinate in Germany as well as the Grand Duchy of Luxembourg (Mémorial 2013). The different regions all have Red Lists of Vascular Plants (Schneider et al. 2020; Saintenoy-Simon et al. 2006; Bonassi et al. 2015; Hanselmann et al. 2023) allowing us to make a comparison of the proportion of RE vascular plant taxa among the territories of the Greater Region (Tab. 3). The proportion of RE taxa of the federal territory of Germany (Metzing et al. 2018) was added for comparison purposes. Smaller study areas like Luxembourg and the similarly sized Saarland had a higher proportion of RE plant taxa (8.9 % and 11.1 %, respectively) than larger regions (Tab. 3). This confirms that when comparing threat levels across different regions or countries, it is essential to account for differences in the size of the study areas (see Colling 2005).

Tab. 3: Proportions of Regionally Extinct (RE) vascular plant taxa in the Greater Region per country/region.

The proportions of RE taxa were calculated by excluding Established Aliens (EA), Not Evaluated (NE) and Data Deficient (DD) taxa. ⁽¹⁾ Schneider et al. 2020, ⁽²⁾ Delescaille & Saintenoy-Simon 2006, ⁽³⁾ Saintenoy-Simon et al. 2006, ⁽⁴⁾ Hanselmann et al. 2023, ⁽⁵⁾ Bonassi et al. 2015, ⁽⁶⁾ Metzing et al. 2018.

Country/region	Area (km ²)	RE (%)	Number of plant taxa
Saarland (DE)	2,570	11.1	1,335 ⁽¹⁾
Luxembourg	2,585	8.9	1,172
Wallonia (BE)	16,901	8.5	1,351 ^(2,3)
Rhineland-Palatinate (DE)	19,854	4.9	1,783 ⁽⁴⁾
Lorraine (FR)	23,547	2.2	1,428 ⁽⁵⁾
Germany	357,022	2.0	3,282 ⁽⁶⁾

3.4 Plant diversity and threat assessments in different habitat types

The two habitat types, FOR and RUD, hosted by far the highest number of plant taxa (404 and 342 taxa, respectively) and made the greatest contribution to vascular plant biodiversity in Luxembourg, accounting for 52.4 % of the local flora (Tab. 4a). Another important habitat for plant diversity are DRY habitats. Thus, the three habitat types DRY, FOR, and RUD, harboured a total of 970 plant taxa, representing 68.2 % of the local flora (Tab. 4a).

The number and proportions of plant taxa in each threat category varied strongly across different habitat types (Tab. 4a). The highest percentages of RE taxa in Luxembourg were found in RUD and DRY habitats (27.3 % and 23.6 %, respectively). Similarly, the highest proportions of CR plant taxa were observed in DRY and RUD habitats (25.8 % and 20.6 %, respectively). FOR habitats contained the highest proportion of LC plant taxa (32.3 %).

In comparison to the 2005 Red List, the number of RE vascular plant taxa in the present Red List increased in DRY, FOR, and MAR, (from 21 to 26, from 7 to 17, and from 10 to 18 respectively, Tab. 4a, Appendix 1 Tab. A1), suggesting that taxa in these habitats became increasingly threatened.

The proportion of threatened plant taxa (CR + EN + VU) differed significantly among habitat types ($F_{7,1415} = 9.7, P < 0.001$; Tab. 5). More than 40 % of species occurring in the habitats AQU, DRY and FRE were considered threatened (Tab. 4b, Tab. 5). FRE and AQU habitats had a significantly higher proportion of threatened plant taxa than FOR, RUD and GRA (Tab. 5). Around 30 to 40 % of plant taxa in ROC, MAR and DRY habitats were considered to be threatened plant taxa but these proportions did not differ significantly either from the subset with a high proportion of threatened plant species AQU and FRE nor from FOR and RUD habitats with a lower proportion. GRA habitats harboured no threatened plant taxa (Tab. 4b, Tab. 5).

Tab. 4: a) Habitat types per threat category. The proportions (and numbers) of plant taxa are indicated per habitat type for each threat category. The proportion and number of EA per habitat type is also indicated. **b) Threat categories per habitat types.** The proportions (and numbers) of plant taxa per threat category for each habitat type are indicated. The total proportion and number of EA is also indicated for each habitat type. For habitat abbreviations see Tab. 1. RE = Regionally Extinct, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, EA = Established Aliens. The two highest proportions per row are highlighted in bold.

a)	RE	CR	EN	VU	NT	LC	DD	Total Natives	EA	Total with EA
AQU	1.8 % (2)	8.2 % (8)	6.1 % (10)	5.3 % (8)	6.1 % (7)	2.2 % (12)	3.8 % (3)	4.0 % (50)	4.7 % (8)	4.1 % (58)
DRY	23.6 % (26)	25.8 % (25)	15.2 % (25)	26.3 % (40)	22.6 % (26)	14.1 % (76)	3.8 % (3)	17.7 % (221)	1.7 % (3)	15.7 % (224)
FOR	15.5 % (17)	17.5 % (17)	28.7 % (47)	18.4 % (28)	40.0 % (46)	32.3 % (174)	48.1 % (38)	29.3 % (366)	22.1 % (38)	28.4 % (404)
FRE	6.4 % (8)	12.4 % (12)	9.1 % (15)	5.1 % (7)	4.7 % (6)	3.5 % (19)	5.1 % (4)	5.7 % (71)	3.5 % (6)	5.4 % (77)
GRA	0.8 % (1)	0.0 % (0)	0.0 % (0)	0.0 % (0)	0.8 % (1)	7.6 % (41)	20.3 % (16)	4.7 % (59)	1.2 % (2)	4.3 % (61)
MAR	16.4 % (18)	10.3 % (10)	9.8 % (16)	15.1 % (23)	10.4 % (12)	13.3 % (72)	2.5 % (2)	12.2 % (153)	1.2 % (2)	10.9 % (155)
ROC	6.4 % (7)	6.2 % (6)	9.3 % (15)	8.6 % (13)	6.1 % (7)	6.1 % (33)	15.2 % (12)	7.4 % (92)	5.8 % (10)	7.2 % (102)
RUD	27.3 % (30)	20.6 % (20)	20.9 % (34)	21.7 % (33)	9.6 % (11)	21.0 % (113)	1.63 % (1)	19.1 % (239)	59.9 % (103)	24.0 % (342)
Total	100 % (109)	100 % (98)	100 % (162)	100 % (152)	100 % (116)	100 % (540)	100 % (79)	100 % (1,251)	100 % (172)	100 % (1,423)

b)	AQU	DRY	FOR	FRE	GRA	MAR	ROC	RUD
RE	3.4 % (2)	11.6 % (26)	4.2 % (17)	10.4 % (8)	1.6 % (1)	11.6 % (18)	7.6 % (7)	8.8 % (30)
CR	13.8 % (8)	11.2 % (25)	4.2 % (17)	15.6 % (12)	0.0 % (0)	6.5 % (10)	6.5 % (6)	5.8 % (20)
EN	17.2 % (10)	11.2 % (25)	11.6 % (47)	19.5 % (15)	0.0 % (0)	10.3 % (16)	14.7 % (15)	14.2 % (34)
VU	13.8 % (8)	17.9 % (40)	6.9 % (28)	9.1 % (7)	0.0 % (0)	14.8 % (23)	12.7 % (13)	9.6 % (33)
NT	12.1 % (7)	11.6 % (26)	11.4 % (46)	7.8 % (6)	1.6 % (1)	7.7 % (12)	6.9 % (7)	4.6 % (11)
LC	20.7 % (12)	33.9 % (76)	43.1 % (174)	24.7 % (19)	67.2 % (41)	46.5 % (72)	32.4 % (33)	33.0 % (113)
DD	5.2 % (3)	1.3 % (3)	9.4 % (38)	5.2 % (4)	26.2 % (16)	1.3 % (2)	11.8 % (12)	0.3 % (1)
Total Natives	86.2 % (50)	98.7 % (221)	90.6 % (366)	92.2 % (71)	96.7 % (59)	98.7 % (153)	90.2 % (92)	69.9 % (239)
EA	13.8 % (8)	1.3 % (3)	9.4 % (38)	7.8 % (6)	3.3 % (2)	1.3 % (2)	9.8 % (10)	30.1 % (103)
Total with EA	100 % (58)	100 % (224)	100 % (404)	100 % (77)	100 % (61)	100 % (155)	100 % (102)	100 % (342)

Tab. 5: Post-hoc Tukey's test comparing proportions of threatened plant taxa (CR + EN + VU) among subsets of habitat types.

For habitat abbreviations see Tab. 1. Proportions with different superscript letters are significantly different ($P < 0.05$).

Habitat type	Proportion of threatened plant taxa (%)		
	low	intermediate	high
GRA	0 ^a		
FOR		23 ^b	
RUD		25 ^b	
MAR		32 ^{bc}	32 ^{bc}
ROC		33 ^{bc}	33 ^{bc}
DRY		40 ^{bc}	40 ^{bc}
FRE			44 ^c
AQU			45 ^c

3.5 Established Aliens and habitats

The proportion of EA taxa strongly differed among habitat types (ANOVA, $F_{7,1415} = 24.7$, $P < 0.001$). The highest proportion of EA per habitat calculated as the ratio between the number of EA per habitat and the total number of taxa per habitat was found in RUD habitats (30.1 %, Tab. 4b). This proportion has increased in comparison to the 2005 Red List (21.7 %, Tab. A1). In contrast, very low proportions of EA were found in DRY and MAR habitats (1.3 %, Tab. 4b) indicating that these habitats are much more resistant to invasions by neophytes. Intensively managed grasslands (GRA) had also a very low proportion of EA (3.3 %).

The probability that a new taxon recorded for the first time in Luxembourg is an EA increased over time, with the year of the first record (Appendix 2 Tab. A2, $P < 0.001$). More recently discovered taxa are much more likely to be EA taxa than taxa

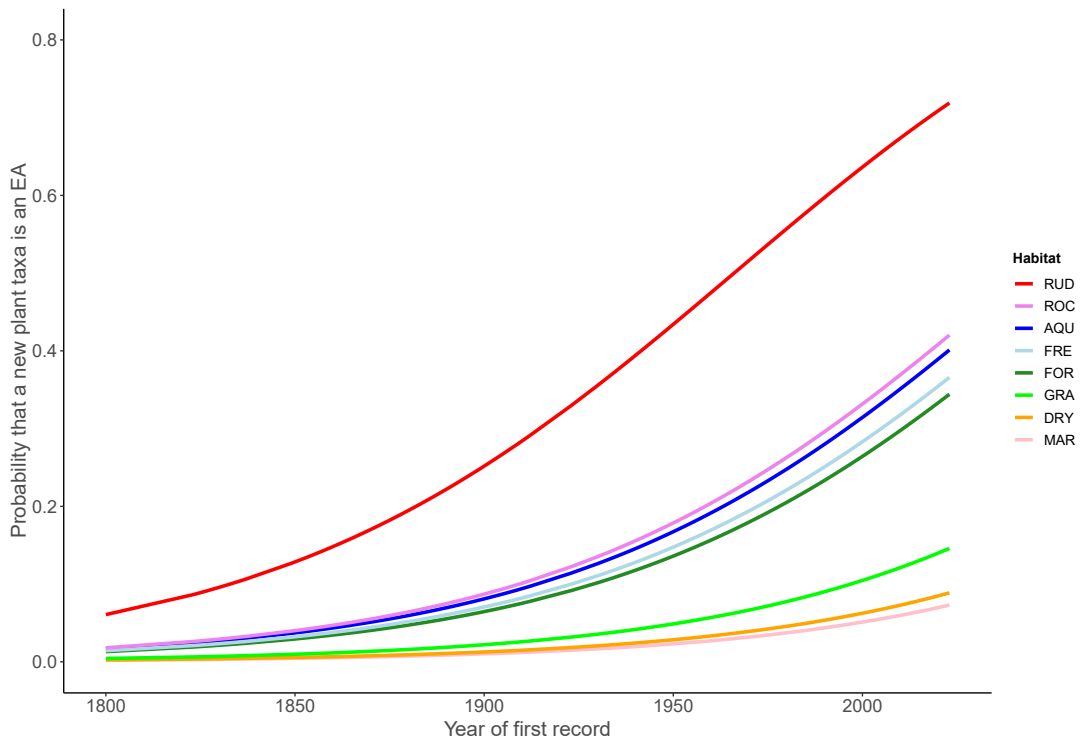


Fig. 2: Binary logistic regression showing the predicted probabilities that a newly discovered taxon is an Established Alien (EA) in relation to the year of its first record. For detailed results see Appendix 2 Tab. A2 and for habitat abbreviations see Tab. 1.

with older first records. However, this probability differed among habitat types (Fig. 2, Appendix 2 Tab. A2). DRY, MAR and GRA habitats had a very low increase in the probability (see coefficients in Appendix 2 Tab. A2 and Fig. 2) of taxa being an EA in relation to the year of first record and can thus be considered highly resistant to the establishment of alien plants, whereas RUD habitats were highly favourable to the establishment of EA over time. ROC, AQU, FRE, and FOR habitats exhibited a moderate increase in the probability of new plant taxa being classified as EA relative to the year of their first record (Fig. 2).

3.6 Comments on ferns and lycophytes

Out of the 64 taxa of ferns, including horsetails (PPG I 2016), and lycophytes (Krippel 2024), 14.1 % are RE, 10.9 % CR, 10.9 % EN, 9.4 % VU, 3.1 % NT and 35.9 % LC. For 9.4 % of the taxa the occurrence data is deficient (DD) and 6.3 % of all pteridophytes are considered to be Established Aliens (EA). Over the last decades, intensive field work allowed to fill some knowledge gaps especially on subspecies and hybrids of ferns (Krippel 2012).

The sandstone area called "Petite Suisse luxembourgeoise" in the Eastern part of the country is a hotspot of pteridophyte diversity (Krippel 2013; Schneider et al. 2019). More than 90 % of all pteridophyte taxa known in Luxembourg occur in this area, which is internationally known for its relict populations of the endangered filmy-fern *Hymenophyllum tunbrigense*. Despite the loss of several populations over the last decades, *H. tunbrigense* is persisting in most of the remaining populations and was classified as EN. However, ongoing climate change with an increasing frequency of long drought periods and extremely high temperatures could negatively affect the survival of the filmy fern in the future (Colling, Helminger & Meisch 2005). The other species of filmy-ferns *Vandenboschia speciosa* occurs in Luxemburg only as independent gametophytes growing sheltered in rock crevices of the Luxembourg sandstone and the Devonian schists (Krippel 2005, 2009) and was assessed as LC.

Woodland ferns and fern taxa growing on rock faces and blocks in woodland areas are generally

in a good conservation status and were mostly assessed as LC, with some exceptions in the *Dryopteris affinis* aggregate. However, the rare *Polystichum setiferum* and *P. ×bicknellii* were both assessed as EN in the present Red List and *Oreopteris limbosperma* changed from VU in the 2005 Red List to EN. Threat statuses increased for ferns growing on rocks: *Polystichum lonchitis* changed from EN to CR, *Asplenium septentrionale* from LC to VU and its rare hybrid with *Asplenium trichomanes* subsp. *trichomanes*, i.e. *Asplenium ×alternifolium* was now assessed as EN. The three fern taxa found exclusively in a single location or exhibiting severe fragmentation (Krippel & Wolff 2025) were classified as CR in the present Red List: *Asplenium ×murbeckii* (previously listed as R in the 2005 Red List), *Osmunda regalis*, and *Thelypteris palustris* (both of which were already classified as CR in the 2005 Red List). The six species and two hybrids of horsetails were all assessed as LC (respectively DD for *Equisetum ×moorei*), except for *Equisetum telmateia* assessed as NT due to recent decreases in population sizes (Krippel 2023). In contrast, the conservation status of the lycophytes in Luxembourg is alarming: four out of six species are considered to be RE and *Lycopodium annotinum* (R in the 2005 Red List) and *L. clavatum* (only some square-decimeters left) are CR. Lycophytes are known to be weak competitors and their strong decline in Luxembourg goes hand in hand with the loss of nutrient poor habitats, such as heathlands and forest fens (Krippel & Massard 2019).

3.7 Comments on apomictic taxa groups

The present checklist includes 95 apomictic micro-species in the genera *Taraxacum* and *Rubus*. In Luxembourg, the distribution of *Rubus* L. subg. *Rubus* was studied in the beginning of the 1990s with a systematic inventory on a raster basis, providing a sound overview of the occurring species and their distribution (Helminger 1992; Colling, Helminger & Reichling 1994; Helminger 2009). Only few fortuitous observations have been added since then (MnhnL 2000-). The 72 *Rubus*-species documented by herbarium specimens (Helminger 2009) have been integrated into the present checklist, with a number of taxonomic corrections (Verloove & Van Rossum 2024). In the Atlas Florae Europaeae volume on the genus

Rubus (Kurtto et al. 2010) 27 additional species were listed as also occurring in Luxembourg. However, for none of these species recently confirmed occurrences exist in the Global Biodiversity Information Facility (GBIF.org 2023) nor in the national biodiversity database (MnhnL 2000-) so these taxa were not included in the present Red List. Three of the additional species, *R. fasciculatiformis*, *R. gratus* and *R. phyllostachys* have wider distribution ranges that extend up to the Luxembourgish border and may well be present in the country but overlooked. The other taxa are either regional species from the Netherlands and the north of Belgium, with often only very few documented occurrences, or species with medium distribution ranges at a large geographical distance from Luxembourg (e.g. United Kingdom or central to western France) (GBIF.org 2023).

Taxonomically complex apomictic micro-species groups like *Rubus*, *Taraxacum*, *Hieracium*, *Pilosella*, *Alchemilla*, *Sorbus* or *Ranunculus auricomus* constitute an important part of the biodiversity of the local flora (Gregor & Matzke-Hajek 2002). However, they are often not determined to the micro-species level and only recorded as species groups or aggregates. These groups can include common and widespread taxa as well as taxa with smaller, regional or local ranges that may be threatened. Well-delimited taxa treated as species should not be left out of conservation efforts aiming to preserve genetic diversity just because they are ubiquitous as a micro-species group with a few dominant species, or because their determination is difficult or including them would increase the number of threatened species in Red Lists (Gregor & Matzke-Hajek 2002). The species composition within apomictic groups can show substantial variation among adjacent regions and seems to be most diverse in traditional agricultural landscapes (Haveman & Ronde 2013; Haveman et al. 2016). Because of their limited range extent of 50-500 km or less, many of the regionally occurring apomictic species are more or less endemic to particular regions or countries. For these reasons many *Rubus* species are considered to be taxa of particular responsibility for conservation (Ludwig et al. 2007). However, in many cases there has been no continuous monitoring of these taxa, which makes it difficult to evaluate their threat status.

4 Discussion

4.1 Methodology

In contrast to the method used in the 2005 Red List we relied on the *R* package *ConR* for a provisional assessment of plant taxa in the present version of the Red List. A preliminary study on a subset of taxa indicated that this procedure allowed us to evaluate the threat status of the native plant taxa of Luxembourg with similar results to the methodology used in 2005 and confirmed that the differences among the two versions of the Red Lists were not mainly due to the methodological change. In a case study on African palm species the comparison between the full IUCN assessment and the automated one with *ConR* was also generally congruent with 71 % of the taxa assigned to the same threat category in both cases (Dauby et al. 2017). A similar case study on Madagascar palm species even found an 81 % consistency between both types of assessment methods (Nic Lughadha et al. 2019). In a study comparing an automated conservation assessment of a large dataset on Orchid species to a full IUCN assessment it was found that automated methods can identify possibly threatened species with an accuracy of up to 85 % when deep learning algorithms were used (Zizka et al. 2021). In our case, 10.7 % of the automated provisional assignments by *ConR* were revised based on additional criteria during the final assessment. Our findings confirm that using automated methods for provisional assessments can significantly reduce the time required and may facilitate more frequent updates to Red Lists.

4.2 Comparison between the 2005 Red List and the present Red List

Between 2005 and 2025, the number and proportion of threatened plant taxa strongly increased. The increase in the number of taxa in nearly all threat categories clearly indicates that neither legal protection (Mémorial 2010) nor conservation measures applied until now stopped the erosion of native plant taxa in Luxembourg. This is also clearly indicated by the fact that the

number of RE taxa has increased since 2005. Moreover, the proportion of NT taxa increased strongly in comparison to the 2005 Red List (from 3.2 % to 9.9 %).

It has been shown that Luxembourg and the Saarland face higher local extinction rates of plant taxa in comparison to larger countries or regions (Colling 2005; Schneider et al. 2020). One likely explanation is the much smaller total population sizes of threatened plant taxa in small countries or regions (Colling 2005). Plant taxa with small population sizes are known to have a higher risk of extinction (Matthies et al. 2004; Frankham et al. 2017). The higher extinction rates observed in Luxembourg and the Saarland highlight the importance of considering differences in the size of study areas when comparing threat levels across countries or regions (see Colling 2005). An alternative explanation for the higher local extinction rates could be that smaller regions are less efficient in conserving their plant biodiversity. Due to their small size, conservation areas in these regions are often also very small and can harbour only small local populations of endangered plant taxa. Moreover, inappropriate management of threatened habitats can quickly lead to the extinction of threatened plant species (Colling & Matthies 2006). Another line of evidence for high threat levels in small regions is that the RLI-value for vascular plants in Luxembourg was much lower (higher extinction risk) than the baseline value for plants of 0.86 calculated on a worldwide randomly selected sample of plant taxa (Brummitt et al. 2015).

Changes in threat category at the species level between the two versions of the Red List are due to either genuine or non-genuine changes (IUCN Standards and Petitions Committee 2024). A genuine change corresponds to a real status change that has taken place since the last assessment. Examples of this kind were the downgrades in threat category of *Anacamptis pyramidalis* (VU → LC), *Ophrys apifera* (EN → VU) and *Himantoglossum hircinum* (EN → LC) due to their increases in population sizes and the area of occupancy probably as a consequence of climate change. However, changes in the threat category might also be due to non-genuine changes like a change in methodology in threat assessment, taxonomy, new information or observation biases related to the recorders. The differences may

also result from spatial-temporal biases in the opportunistic data used, underscoring the need for caution when interpreting changes in threat categories at the species level. To analyse trends in extinction risk over time, occupancy models could be employed, even in datasets with a large part of opportunistic data such as those in the museum's Recorder 6 database (van Strien, van Swaay & Termaat 2013).

4.3 Differences among habitats

Ruderal communities (RUD), dry and mesophile grasslands and heathlands (DRY), marshes and wet grasslands (MAR), woodlands, forest edges and cuttings (FOR) harbour nearly 80 % of the plant diversity in Luxembourg. Since these habitat types with the highest species diversities also harbour the highest number of threatened species, they should be prioritised in conservation actions (Colling et al. 2022; Schneider et al. 2024a). DRY, MAR, RUD, and FOR habitats also had the highest numbers of RE plant species and DRY and RUD habitats had the highest numbers of CR taxa. The number of RE taxa increased in DRY, MAR and FOR in comparison to the 2005 Red List. An alarming proportion of more than 40 % of all taxa in DRY, FRE and AQU habitats were considered to be threatened, indicating that the applied conservation measures in these habitats could not stop the decrease of plant biodiversity in Luxembourg over the last two decades. Known causes that may negatively affect the survival of populations of threatened plant species in these habitats are ongoing habitat fragmentation and changes in land use (Leimu et al. 2006; Ouborg et al. 2006; Klimek, Hofmann & Isselstein 2007; Härdtle 2024).

ROC habitats had low proportions and numbers of RE and CR taxa indicating that these habitats were less subject to recent fragmentation and changes in land use. Threatened species in ROC habitats are often considered to be old rare species because their habitats are naturally fragmented and populations have been isolated for a long time (see Putz, Schmid & Reisch 2015; Walisch et al. 2015). Typical examples are ice age relics like *Saxifraga rosacea* subsp. *sponhemica* and *Dianthus gratianopolitanus*.

4.4 Biotic homogenization and Established Aliens in different habitat types

A higher increase in the number of Established Aliens (EA) (from 118 to 172) compared to the increase of RE plant taxa (from 88 to 104) took place between 2005 and 2025. These results suggest that losses in native species richness in Luxembourg are more than compensated by range-expanding species in contrast to "no-net-change" publications (Bühler & Roth 2011; Vellend et al. 2013; Vellend 2017). The increase of EA and the loss of native taxa indicate that the flora of Luxembourg is becoming increasingly dominated by ubiquitous alien taxa. This change in species composition contributes to an increasing biotic homogenization of the worldwide flora (McKinney & Lockwood 2001; Newbold et al. 2018).

The number of EA plant taxa differed strongly among habitat types. RUD habitats had the highest proportions of EA. Newly discovered taxa in ruderal habitats had a much higher probability to be an EA species than taxa in other habitats indicating that RUD habitats are very favourable to the establishment of new alien taxa (Chytrý et al. 2008; Newbold et al. 2018). In contrast, the proportion of EA was very low in DRY, MAR and GRA habitats suggesting that these habitats are highly resistant to the establishment of EA taxa (Chytrý et al. 2008). The probability that recently established plant species in a specific habitat are EA could thus be considered as a proxy for the invasibility of that habitat. Competition by EA may potentially increase the extinction risk of native plant species (McKinney & Lockwood 2001; Ries et al. 2013; Ries, Krippel & Pfeiffenschneider 2020). However, some habitats like DRY and MAR showed a high number of threatened plant species and a very low number of EA suggesting that in these habitats other factors like habitat fragmentation and changes in land use could be important factors in the decline and extinction of threatened taxa. In contrast, the very low number of threatened and EA plant species in intensively managed grasslands (GRA) indicates that this regime favours only a few very competitive grass species. The intense management regime with frequent cuttings and high levels of artificial nutrient input may prevent the establishment of endangered native taxa (Colling & Matthies 2006; Ceulemans et al. 2013) and of alien species.

4.5 International responsibilities

Although Luxembourg does not host any endemic species, certain plant populations in the country hold international significance and require targeted conservation efforts. For example, *Saxifraga rosacea* subsp. *sponhemica* has a significant portion of its global population located in Luxembourg (Colling 2005; Walisch et al. 2015). Another taxon of particular relevance is *Dactylorhiza incarnata* subsp. *cungsii* only known from one population in southern Luxembourg, although its taxonomic status has recently been questioned (Verloove 2023). Other plant taxa like *Hymenophyllum tunbrigense*, *Vandenboschia speciosa* and *Rorippa stylosa* have isolated populations (see Colling 2005) for which Luxembourg has an international conservation responsibility as they occur far from their main distribution area so that their conservation is of special biogeographical interest. For *Anemone pulsatilla* which is listed as Near Threatened on the global IUCN Red List of threatened species (Schweizer & Hasinger 2014), Luxembourg has an international conservation responsibility as well. In addition to these examples, we identified 40 Central European vascular plant taxa occurring in Luxembourg listed in Schnittler & Günther (1999) as requiring priority conservation measures (Tab. 6).

Out of the 40 Central European taxa listed for Luxembourg, 15 taxa are considered to be Regionally Extinct (RE), six are Critically Endangered (CR), twelve are Endangered (EN), four are Vulnerable (VU), one is Near Threatened (NT), and two are Least Concern (LC) (Tab. 6). The 25 extant taxa all require species action plans to ensure their long-term conservation. At present such plans exist only for three taxa: *Saxifraga rosacea* subsp. *sponhemica*, *Gentianella germanica* and *Anemone pulsatilla*. For the 15 RE taxa, translocation measures would be necessary to reintroduce the species (Schneider et al. 2024a).

4.6 Plant conservation actions

To stop the continuing decline of threatened plant species in Luxembourg and prevent further local extinctions requires consistent conservation actions. The CR taxa of the present Red List and the plant taxa for which Luxembourg has a particular

Tab. 6: Central European vascular plant taxa occurring in Luxembourg requiring priority conservation measures.
! responsibility, !! high responsibility, !!! particular responsibility, (!!!) responsible for isolated outposts (for details see Schnittler & Günther 1999).

Taxon	Responsibility	Threat category
<i>Anacamptis coriophora</i>	!	RE
<i>Anacamptis pyramidalis</i>	!	LC
<i>Anemone pulsatilla</i>	!	EN
<i>Arnoseris minima</i>	!!	RE
<i>Bromus racemosus</i>	!!	LC
<i>Carex davalliana</i>	!!!	RE
<i>Carex diandra</i>	!	RE
<i>Carex pulicaris</i>	!!	CR
<i>Carex strigosa</i>	!	RE
<i>Crepis praemorsa</i>	!	CR
<i>Cuscuta epilinum</i>	!!	RE
<i>Dactylorhiza incarnata</i>	!!	EN
<i>Dactylorhiza incarnata</i> subsp. <i>cungsii</i>	!!!	CR
<i>Dactylorhiza majalis</i>	!!	NT
<i>Dianthus gratianopolitanus</i>	!!!	CR
<i>Dryocallis rupestris</i>	!!!	EN
<i>Dryopteris cristata</i>	!	RE
<i>Epipactis muelleri</i>	!!	EN
<i>Epipactis palustris</i>	!	EN
<i>Epipogium aphyllum</i>	!!	CR
<i>Galium tricornerutum</i>	!	RE
<i>Gentianella germanica</i>	!!	EN
<i>Herminium monorchis</i>	!	RE
<i>Hymenophyllum tunbrigense</i>	(!!!)	EN
<i>Juncus capitatus</i>	!!	RE
<i>Lolium remotum</i>	!!	RE
<i>Lycopodium tristachyum</i>	!	RE
<i>Lythrum hyssopifolia</i>	!	VU
<i>Nymphoides peltata</i>	!	EN
<i>Oenanthe fistulosa</i>	!!	VU
<i>Orobanche elatior</i>	!!	RE
<i>Pedicularis sylvatica</i>	!	EN
<i>Phelipanche purpurea</i>	!	VU
<i>Phelipanche ramosa</i>	!	RE
<i>Potamogeton trichoides</i>	!!	EN
<i>Ranunculus lingua</i>	!	VU
<i>Saxifraga rosacea</i> subsp. <i>sponhemica</i>	!!	EN
<i>Scandix pecten-veneris</i>	!	RE
<i>Sesleria caerulea</i>	!!	EN
<i>Thesium pyrenaicum</i>	!	CR

international responsibility (Tab. 6), constitute together the first proposal for a list of national priority species that need specific conservation actions. Conservation actions should include ex situ and in situ measures like translocations, suitable habitat management regimes (e.g. voluntary contract-based conservation measures) or the strict legal protection of sites (Schneider 2019).

The ex situ propagation of threatened plant species and the production of autochthonous seeds are increasingly important for plant conservation efforts (Schneider et al. 2024b) as translocations are an essential method to strengthen declining populations of threatened species (Godefroid et al. 2011; Breit et al. 2023). Over the last 20 years, translocations have been implemented for nearly 100 EN, CR and LC plant species in Luxembourg (Schneider et al. 2024a). A translocation is considered to be successful when the reinforced or (re)introduced populations show natural establishment of juvenile plants. For successful conservation, translocations often need to be repeated over a long time period and large spatial scales, especially for Critically Endangered species (Diekmann et al. 2015; Schneider et al. 2024a). Sound habitat management based on scientific evidence and long-term monitoring of population sizes and population structure are also important. The general objectives and recommendations for practical implementation of conservation measures are outlined in the Plant Conservation Strategy for Luxembourg (Colling et al. 2022).

In addition to the conservation of targeted species, the restoration of entire ecosystems is of the utmost importance (MECDD 2023; European Parliament 2024). The transfer of diaspores via green hay can be used to restore entire species assemblages of species-rich grasslands (Biro et al. 2024; Schneider & Breit 2024) whereas the creation of conservation crop fields is recommended for the preservation of communities of increasingly rare arable species (Bergmeier et al. 2022). To allow early interventions and prevent further declines of threatened plant species, regular monitoring of their populations and their habitats is essential (Hollenbach et al. 2014; Härdtle 2024). Future biodiversity conservation actions and landscape planning should not neglect conservation actions

for plant species as outlined in the National Conservation Plan and the Plant Conservation Strategy (Colling et al. 2022; MECDD 2023). The extinction of any plant species threatens the integrity of intact ecosystems and, consequently, the ecosystem services they provide (Härdtle 2024).

5 Red List of the vascular plants of Luxembourg

5.1 Legend

Taxon name

According to Verloove and Van Rossum (2024).

Threat category

- RERegionally Extinct
- CRCritically Endangered
- ENEndangered
- VUVulnerable
- NTNear Threatened
- LCLeast Concern
- DDData Deficient
- NANot Applicable

Status

- NNative
- EAEstablished Alien

Criteria sub-heads

- APopulation size reduction
- BGeographic range size
- CSmall population size and decline
- DVery small or restricted population
- EQuantitative analysis of extinction risk

For a complete description of the criteria see Appendix 1 and IUCN Standards and Petitions Committee (2024).

Habitat types

- AQUAquatic habitats and springs
- DRYDry and mesophile grasslands and heathlands
- FORWoodlands, forest edges and cuttings
- FREFreshwater margins and damp mud
- GRAIntensively managed grasslands
- MARMarshes, swamps and wet grasslands
- ROC Rocks and screes
- RUDFallow land, ruderal communities and arable fields

The Red List is available for download at <https://www.mnhn.lu/ferrantia/> in table format.

5.2 Threat categories of the vascular plant taxa of Luxembourg

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Acer campestre</i> L.	LC	N		FOR
<i>Acer negundo</i> L.	NA	EA		FOR
<i>Acer platanoides</i> L.	LC	N		FOR
<i>Acer pseudoplatanus</i> L.	LC	N		FOR
<i>Achillea millefolium</i> L.	LC	N		DRY
<i>Achillea nobilis</i> L.	NA	EA		DRY
<i>Achillea ptarmica</i> L.	LC	N		MAR
<i>Aconitum lycoctonum</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Acorus calamus</i> L.	NA	EA		FRE
<i>Actaea spicata</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Adonis aestivalis</i> L.	RE	N		RUD
<i>Adonis annua</i> L.	RE	EA		RUD
<i>Adonis flammea</i> Jacq.	RE	N		RUD
<i>Adoxa moschatellina</i> L.	LC	N		FOR
<i>Aegopodium podagraria</i> L.	LC	N		FOR
<i>Aethusa cynapium</i> L.	LC	N		RUD
<i>Agrimonia eupatoria</i> L.	LC	N		DRY
<i>Agrimonia procera</i> Wallr.	NT	N		FOR
<i>Agrostemma githago</i> L.	RE	N		RUD
<i>Agrostis canina</i> L.	LC	N		MAR
<i>Agrostis capillaris</i> L.	LC	N		DRY
<i>Agrostis gigantea</i> Roth	EN	N	B2ab(i,iv)	RUD
<i>Agrostis stolonifera</i> L.	LC	N		MAR
<i>Agrostis vinealis</i> Schreb.	RE	N		DRY
<i>Ailanthus altissima</i> (Mill.) Swingle	NA	EA		RUD
<i>Aira caryophylla</i> L.	VU	N	B2ab(i,iv)	DRY
<i>Aira praecox</i> L.	VU	N	B2ab(i,iv)	DRY
<i>Ajuga chamaepitys</i> (L.) Schreb.	RE	N		RUD
<i>Ajuga genevensis</i> L.	VU	N	A2c+B2ab(i,iv)	DRY
<i>Ajuga pyramidalis</i> L.	VU	N	A2c+B2ab(iii,v)c(iv)	DRY
<i>Ajuga reptans</i> L.	LC	N		MAR
<i>Alchemilla acutiloba</i> Opiz	NT	N		DRY
<i>Alchemilla filicaulis</i> Buser	VU	N	B2ab(i,iv)	DRY
<i>Alchemilla glabra</i> Neygenf.	LC	N		MAR
<i>Alchemilla monticola</i> Opiz	VU	N	B2ab(i,iv)	DRY
<i>Alchemilla xanthochlora</i> Rothm.	NT	N		DRY
<i>Alisma lanceolatum</i> With.	VU	N	B2ab(i,iv)	AQU
<i>Alisma plantago-aquatica</i> L.	LC	N		FRE
<i>Alliaria petiolata</i> (Bieb.) Cavara et Grande	LC	N		FOR
<i>Allium oleraceum</i> L.	LC	N		DRY
<i>Allium rotundum</i> L.	RE	N		RUD
<i>Allium scorodoprasum</i> L.	NA	EA		DRY
<i>Allium ursinum</i> L.	LC	N		FOR
<i>Allium vineale</i> L.	LC	N		DRY
<i>Alnus glutinosa</i> (L.) Gaertn.	LC	N		MAR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Alnus incana</i> (L.) Moench	NA	EA		RUD
<i>Alopecurus aequalis</i> Sobol.	EN	N	B2ab(i,iv)+B2b(i,iv)	MAR
<i>Alopecurus geniculatus</i> L.	LC	N		MAR
<i>Alopecurus myosuroides</i> Huds.	LC	N		RUD
<i>Alopecurus pratensis</i> L.	LC	N		GRA
<i>Alopecurus rendlei</i> Eig	VU	N	A2c+B2ab(i,iv)	MAR
<i>Althaea officinalis</i> L.	EN	N	B2ab(i,iv)	MAR
<i>Alyssum alyssoides</i> (L.) L.	VU	N	B2ab(i,iv)	ROC
<i>Amaranthus retroflexus</i> L.	NA	EA		RUD
<i>Ambrosia artemisiifolia</i> L.	NA	EA		RUD
<i>Amelanchier lamarckii</i> F.G. Schroeder	NA	EA		FOR
<i>Amelanchier ovalis</i> subsp. <i>embergeri</i> Favarger et Stearn	EN	N	B2ab(i,iv)	ROC
<i>Anacamptis coriophora</i> (L.) R.M. Bateman, Pridgeon et M.W. Chase	RE	N		MAR
<i>Anacamptis morio</i> (L.) R.M. Bateman, Pridgeon et M.W. Chase	CR	N	A2c+B2ab(i,iv)+C2a(i)	DRY
<i>Anacamptis pyramidalis</i> (L.) L.C.M. Rich.	LC	N		DRY
<i>Anemone nemorosa</i> L.	LC	N		FOR
<i>Anemone pulsatilla</i> L.	EN	N	A2c+B2ab(i,iv)	DRY
<i>Anemone ranunculoides</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Anemone sylvestris</i> L.	RE	N		FOR
<i>Angelica sylvestris</i> L.	LC	N		MAR
<i>Anisantha sterilis</i> (L.) Nevski	LC	N		RUD
<i>Anisantha tectorum</i> (L.) Nevski	NT	N		RUD
<i>Antennaria dioica</i> (L.) Gaertn.	RE	N		FOR
<i>Anthemis arvensis</i> L.	VU	N	A2c+B2ab(i,iv)	RUD
<i>Anthemis cotula</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Anthericum liliago</i> L.	VU	N	B2ab(i,iv)	ROC
<i>Anthoxanthum aristatum</i> Boiss.	RE	EA		RUD
<i>Anthoxanthum odoratum</i> L.	LC	N		GRA
<i>Anthriscus caucalis</i> Bieb.	NA	EA		RUD
<i>Anthriscus sylvestris</i> (L.) Hoffmann	LC	N		GRA
<i>Anthyllis vulneraria</i> L.	NT	N		DRY
<i>Apera interrupta</i> (L.) Beauv.	NA	EA		RUD
<i>Apera spica-venti</i> (L.) Beauv.	LC	N		RUD
<i>Aphanes arvensis</i> L.	LC	N		RUD
<i>Aphanes australis</i> Rydb.	VU	N	B2ab(i,iv)	RUD
<i>Aquilegia vulgaris</i> L.	NT	N		FOR
<i>Arabidopsis arenosa</i> (L.) Lawalrée	LC	N		ROC
<i>Arabidopsis thaliana</i> (L.) Heynh.	LC	N		RUD
<i>Arabis hirsuta</i> (L.) Scop.	VU	N	B2ab(i,iv)	DRY
<i>Arctium lappa</i> L.	LC	N		RUD
<i>Arctium minus</i> (Hill) Bernh.	VU	N	B2ab(i,iv)	RUD
<i>Arctium nemorosum</i> Lej.	DD	N		FOR
<i>Arctium tomentosum</i> Mill.	EN	N	B2ab(i,iv)	RUD
<i>Arenaria leptoclados</i> (Reichenb.) Guss.	DD	N		DRY
<i>Arenaria serpyllifolia</i> L.	LC	N		ROC
<i>Argentina anserina</i> (L.) Rydb.	LC	N		RUD
<i>Aristolochia clematitis</i> L.	EN	N	B2ab(i,iv)	FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Arnica montana</i> L.	VU	N	B2ab(i,iv)	DRY
<i>Arnoseris minima</i> (L.) Schweigg. et Körte	RE	N		RUD
<i>Arrhenatherum elatius</i> (L.) Beauv. ex J. et C. Presl	LC	N		GRA
<i>Artemisia absinthium</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Artemisia vulgaris</i> L.	LC	N		RUD
<i>Arum maculatum</i> L.	LC	N		FOR
<i>Asarum europaeum</i> L.	CR	N	B2ab(i,iv)	FOR
<i>Asperula cynanchica</i> L.	VU	N	B2ab(i,iv)	DRY
<i>Asplenium adiantum-nigrum</i> L.	LC	N		ROC
<i>Asplenium ×alternifolium</i> Wulfen	EN	N	B2ab(i,iv)	ROC
<i>Asplenium ceterach</i> L.	VU	N	B2ab(i,iv)	ROC
<i>Asplenium fontanum</i> (L.) Bernh.	RE	N		ROC
<i>Asplenium ×murbeckii</i> Dörfler	CR	N	B2ab(i,iv)+D	ROC
<i>Asplenium obovatum</i> subsp. <i>billotii</i> (F.W. Schultz) O. Bolòs, Vigo, Masalles et Ninot	RE	N		ROC
<i>Asplenium ruta-muraria</i> L.	LC	N		ROC
<i>Asplenium scolopendrium</i> L.	LC	N		ROC
<i>Asplenium septentrionale</i> (L.) Hoffmann	VU	N	B2ab(iii,iv)	ROC
<i>Asplenium trichomanes</i> L.	LC	N		ROC
<i>Asplenium trichomanes</i> L. subsp. <i>trichomanes</i>	LC	N		ROC
<i>Asplenium trichomanes</i> nsubsp. <i>staufferi</i> Lovis et Reichst.	VU	N	B2ab(i,iv)	ROC
<i>Asplenium trichomanes</i> subsp. <i>pachyrachis</i> (Christ) Lovis et Reichst.	LC	N		ROC
<i>Asplenium trichomanes</i> subsp. <i>quadrivalens</i> D.E. Mey.	LC	N		ROC
<i>Asplenium viride</i> Huds.	RE	N		ROC
<i>Aster amellus</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Astragalus glycyphyllos</i> L.	LC	N		FOR
<i>Athyrium filix-femina</i> (L.) Roth	LC	N		FOR
<i>Atocion armeria</i> (L.) Rafin.	CR	N	B2ab(i,iv)	DRY
<i>Atriplex micrantha</i> Ledeb.	NA	EA		RUD
<i>Atriplex patula</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Atriplex prostrata</i> Boucher ex DC.	VU	N	B2ab(i,iv)	RUD
<i>Atropa bella-donna</i> L.	LC	N		FOR
<i>Avena fatua</i> L.	LC	N		RUD
<i>Avenella flexuosa</i> (L.) Drejer	LC	N		FOR
<i>Avenula pubescens</i> (Huds.) Dum.	NT	N		DRY
<i>Azolla filiculoides</i> Lam.	NA	EA		AQU
<i>Ballota nigra</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Barbarea intermedia</i> Boreau	LC	N		RUD
<i>Barbarea vulgaris</i> R. Brown	LC	N		RUD
<i>Bellis perennis</i> L.	LC	N		GRA
<i>Berberis aquifolium</i> Pursh	NA	EA		FOR
<i>Berberis vulgaris</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Berteroa incana</i> (L.) DC.	NA	EA		RUD
<i>Berula erecta</i> (Huds.) Coville	NT	N		FRE
<i>Betonica officinalis</i> L.	NT	N		DRY
<i>Betula pendula</i> Roth	LC	N		FOR
<i>Betula pubescens</i> Ehrh.	VU	N	B2ab(i,iv)	FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Bidens cernua</i> L.	LC	N		FRE
<i>Bidens frondosa</i> L.	NA	EA		FRE
<i>Bidens tripartita</i> L.	LC	N		FRE
<i>Bistorta officinalis</i> Delarbre	LC	N		MAR
<i>Blackstonia perfoliata</i> (L.) Huds.	RE	N		DRY
<i>Blechnum spicant</i> (L.) Roth	VU	N	B2ab(iii)	FOR
<i>Blitum bonus-henricus</i> (L.) C.A. Mey.	EN	N	B2ab(i,iv)	RUD
<i>Blysmus compressus</i> (L.) Panzer ex Link	RE	N		MAR
<i>Bolboschoenus laticarpus</i> Marhold, Hroudová, Ducháček & Zákr.	CR	N	B2ab(i,iv)+D	FRE
<i>Botrychium lunaria</i> (L.) Swartz	EN	N	B2ab(i,iv)	DRY
<i>Brachypodium pinnatum</i> (L.) Beauv.	LC	N		DRY
<i>Brachypodium sylvaticum</i> (Huds.) Beauv.	LC	N		FOR
<i>Brassica nigra</i> (L.) Koch	EN	N	B2ab(i,iv)	RUD
<i>Briza media</i> L.	LC	N		DRY
<i>Bromopsis benekenii</i> (Lange) Holub	DD	N		FOR
<i>Bromopsis erecta</i> (Huds.) Fourr.	LC	N		DRY
<i>Bromopsis inermis</i> (Leyss.) Holub	VU	N	B2ab(i,iv)	RUD
<i>Bromopsis ramosa</i> (Huds.) Holub	NT	N		FOR
<i>Bromus arvensis</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Bromus commutatus</i> Schrad.	LC	N		RUD
<i>Bromus hordeaceus</i> L.	LC	N		GRA
<i>Bromus racemosus</i> L.	LC	N		MAR
<i>Bromus secalinus</i> L.	LC	N		RUD
<i>Bryonia dioica</i> Jacq.	NT	N		FOR
<i>Buddleja davidii</i> Franch.	NA	EA		RUD
<i>Buglossoides arvensis</i> (L.) I.M. Johnst.	EN	N	B2ab(i,iv)	RUD
<i>Buglossoides purpureocaerulea</i> (L.) I.M. Johnst.	VU	N	B2ab(i,iv)	FOR
<i>Bunias orientalis</i> L.	NA	EA		RUD
<i>Bunium bulbocastanum</i> L.	VU	N	C2a(i)	RUD
<i>Bupleurum falcatum</i> L.	LC	N		DRY
<i>Bupleurum rotundifolium</i> L.	NA	EA		RUD
<i>Butomus umbellatus</i> L.	EN	N	B2ab(i,iv)	AQU
<i>Buxus sempervirens</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Calamagrostis arundinacea</i> (L.) Roth	CR	N	B2ab(i,iv)	FOR
<i>Calamagrostis canescens</i> (Weber) Roth	EN	N	B2ab(i,iv)	FOR
<i>Calamagrostis epigejos</i> (L.) Roth	LC	N		FOR
<i>Calamintha nepeta</i> subsp. <i>sylvaticum</i> (Bromf.) Peruzzi et F. Conti	EN	N	B2ab(i,iv)	FOR
<i>Calendula arvensis</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Calepina irregularis</i> (Asso) Thell.	NA	EA		RUD
<i>Calla palustris</i> L.	RE	N		MAR
<i>Callitriche hamulata</i> Kütz. ex Koch	LC	N		AQU
<i>Callitriche obtusangula</i> Le Gall	CR	N	B2ab(i,iv)	AQU
<i>Callitriche palustris</i> L.	DD	N		AQU
<i>Callitriche platycarpa</i> Kütz.	LC	N		AQU
<i>Callitriche stagnalis</i> Scop.	LC	N		AQU
<i>Calluna vulgaris</i> (L.) Hull	LC	N		DRY
<i>Caltha palustris</i> L.	NT	N		MAR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Campanula cervicaria</i> L.	RE	N		FOR
<i>Campanula glomerata</i> L.	VU	N	B2ab(i,iv) C1+C2a(i)	DRY
<i>Campanula patula</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Campanula persicifolia</i> L.	LC	N		FOR
<i>Campanula rapunculoides</i> L.	LC	N		RUD
<i>Campanula rapunculus</i> L.	LC	N		DRY
<i>Campanula rotundifolia</i> L.	LC	N		DRY
<i>Campanula trachelium</i> L.	LC	N		FOR
<i>Capsella bursa-pastoris</i> (L.) Med.	LC	N		RUD
<i>Cardamine amara</i> L.	LC	N		MAR
<i>Cardamine bulbifera</i> (L.) Crantz	EN	N	B2ab(i,iv)	FOR
<i>Cardamine flexuosa</i> With.	LC	N		FOR
<i>Cardamine hirsuta</i> L.	LC	N		RUD
<i>Cardamine impatiens</i> L.	NT	N		FOR
<i>Cardamine pratensis</i> L.	LC	N		GRA
<i>Carduus crispus</i> L.	LC	N		RUD
<i>Carduus nutans</i> L.	LC	N		RUD
<i>Carex acuta</i> L.	LC	N		MAR
<i>Carex acutiformis</i> Ehrh.	LC	N		MAR
<i>Carex brizoides</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Carex canescens</i> L.	VU	N	A2c+B2ab(i,iv)	MAR
<i>Carex caryophyllea</i> Latourr.	LC	N		DRY
<i>Carex davalliana</i> Smith	RE	N		MAR
<i>Carex demissa</i> Hornem.	LC	N		MAR
<i>Carex depauperata</i> Curt. ex With.	RE	N		FOR
<i>Carex diandra</i> Schrank	RE	N		MAR
<i>Carex digitata</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Carex distans</i> L.	VU	N	B2ab(i,iv)	MAR
<i>Carex disticha</i> Huds.	LC	N		MAR
<i>Carex divulsa</i> Stokes	DD	N		FOR
<i>Carex echinata</i> Murray	NT	N		MAR
<i>Carex elata</i> All.	VU	N	B2ab(i,iv)	MAR
<i>Carex elongata</i> L.	EN	N	A2c+B2ab(i,iv)	FOR
<i>Carex flacca</i> Schreb.	LC	N		DRY
<i>Carex flava</i> L.	EN	N	B2ab(i,iv)	MAR
<i>Carex hirta</i> L.	LC	N		GRA
<i>Carex hostiana</i> DC.	CR	N	B2ab(i,iv)+C2a(i)	MAR
<i>Carex humilis</i> Leyss.	RE	N		ROC
<i>Carex leersii</i> F.W. Schultz	DD	N		FOR
<i>Carex lepidocarpa</i> Tausch	EN	N	A2c+B2ab(i,iv)	MAR
<i>Carex leporina</i> L.	LC	N		MAR
<i>Carex montana</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Carex muricata</i> L.	DD	N		FOR
<i>Carex nigra</i> (L.) Reichenb.	LC	N		MAR
<i>Carex ornithopoda</i> Willd.	CR	N	B2ab(i,iv)	FOR
<i>Carex otrubae</i> Podp.	NT	N		MAR
<i>Carex pairae</i> F.W. Schultz	DD	N		FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Carex pallescens</i> L.	LC	N		FOR
<i>Carex panicea</i> L.	LC	N		MAR
<i>Carex paniculata</i> L.	LC	N		MAR
<i>Carex pendula</i> Huds.	LC	N		FOR
<i>Carex pilosa</i> Scop.	EN	N	B2ab(i,iv)	FOR
<i>Carex pilulifera</i> L.	LC	N		FOR
<i>Carex pseudocyperus</i> L.	VU	N	B2ab(i,iv)	FRE
<i>Carex pulicaris</i> L.	CR	N	B2ab(i,iv)+C2a(i)	MAR
<i>Carex remota</i> Jusl. ex L.	LC	N		FOR
<i>Carex riparia</i> Curt.	LC	N		MAR
<i>Carex rostrata</i> Stokes	NT	N		MAR
<i>Carex spicata</i> Huds.	LC	N		DRY
<i>Carex strigosa</i> Huds.	RE	N		FOR
<i>Carex sylvatica</i> Huds.	LC	N		FOR
<i>Carex tomentosa</i> L.	NT	N		DRY
<i>Carex umbrosa</i> Host	CR	N	B2ab(i,iv)	FOR
<i>Carex vesicaria</i> L.	LC	N		MAR
<i>Carex vulpina</i> L.	LC	N		MAR
<i>Carlina vulgaris</i> L.	LC	N		DRY
<i>Carpinus betulus</i> L.	LC	N		FOR
<i>Carum carvi</i> L.	LC	N		DRY
<i>Castanea sativa</i> Mill.	NA	EA		FOR
<i>Catabrosa aquatica</i> (L.) Beauv.	EN	N	B2ab(i,iv)	FRE
<i>Catapodium rigidum</i> (L.) C.E. Hubbard	NA	EA		RUD
<i>Caucalis platycarpus</i> L.	RE	N		RUD
<i>Centaurea calcitrapa</i> L.	RE	N		RUD
<i>Centaurea decipiens</i> Thuill.	DD	N		DRY
<i>Centaurea jacea</i> L.	LC	N		DRY
<i>Centaurea nigra</i> L.	LC	N		DRY
<i>Centaurea scabiosa</i> L.	LC	N		DRY
<i>Centaurium erythraea</i> Rafn	NT	N		DRY
<i>Centaurium pulchellum</i> (Swartz) Druce	EN	N	B2ab(i,iv)	FRE
<i>Centranthus ruber</i> (L.) DC.	NA	EA		ROC
<i>Cephalanthera damasonium</i> (Mill.) Druce	LC	N		FOR
<i>Cephalanthera longifolia</i> (L.) Fritsch	VU	N	A2c+B2ab(i,iv)	FOR
<i>Cephalanthera rubra</i> (L.) L.C.M. Rich.	EN	N	B2ab(i,iv)	FOR
<i>Cerastium arvense</i> L.	LC	N		DRY
<i>Cerastium brachypetalum</i> Desp. ex Pers.	LC	N		ROC
<i>Cerastium fontanum</i> subsp. <i>vulgare</i> (Hartm.) Greuter et Burdet	LC	N		GRA
<i>Cerastium glomeratum</i> Thuill.	LC	N		RUD
<i>Cerastium pumilum</i> Curt.	LC	N		DRY
<i>Cerastium semidecandrum</i> L.	LC	N		DRY
<i>Cerastium tomentosum</i> L.	NA	EA		ROC
<i>Ceratophyllum demersum</i> L.	VU	N	C2a(i)	AQU
<i>Ceratophyllum submersum</i> L.	CR	N	B2ab(i,iv)	AQU
<i>Cervaria rivini</i> Gaertn.	VU	N	B2ab(i,iv)	FOR
<i>Chaenorhinum minus</i> (L.) Lange	LC	N		RUD

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Chaerophyllum aureum</i> L.	NA	EA		FOR
<i>Chaerophyllum bulbosum</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Chaerophyllum temulum</i> L.	LC	N		FOR
<i>Chelidonium majus</i> L.	LC	N		RUD
<i>Chenopodiastrum hybridum</i> (L.) S. Fuentes, Uotila et Borsch	EN	N	B2ab(i,iv)	RUD
<i>Chenopodiastrum murale</i> (L.) S. Fuentes, Uotila et Borsch	RE	N		RUD
<i>Chenopodium album</i> L.	LC	N		RUD
<i>Chenopodium vulvaria</i> L.	RE	N		RUD
<i>Chondrilla juncea</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Chrysosplenium alternifolium</i> L.	LC	N		AQU
<i>Chrysosplenium oppositifolium</i> L.	LC	N		AQU
<i>Cichorium intybus</i> L.	LC	N		RUD
<i>Circaea alpina</i> L.	CR	N	B2ab(i,iv)+D	FOR
<i>Circaea xintermedia</i> Ehrh.	EN	N	B2ab(i,iv)	FOR
<i>Circaea lutetiana</i> L.	LC	N		FOR
<i>Cirsium acaulon</i> (L.) Scop.	NT	N		DRY
<i>Cirsium arvense</i> (L.) Scop.	LC	N		RUD
<i>Cirsium eriophorum</i> (L.) Scop.	LC	N		RUD
<i>Cirsium oleraceum</i> (L.) Scop.	LC	N		MAR
<i>Cirsium palustre</i> (L.) Scop.	LC	N		MAR
<i>Cirsium vulgare</i> (Savi) Ten.	LC	N		RUD
<i>Claytonia perfoliata</i> Donn ex Willd.	NA	EA		RUD
<i>Clematis vitalba</i> L.	LC	N		FOR
<i>Clinopodium acinos</i> (L.) O. Kuntze	VU	N	A2c+B2ab(i,iv)	DRY
<i>Clinopodium vulgare</i> L.	LC	N		DRY
<i>Cochlearia danica</i> L.	NA	EA		RUD
<i>Coincya monensis</i> subsp. <i>cheiranthos</i> (Vill.) Aedo, Leadlay et Muñoz Garmendia	EN	N	B2ab(i,iv)	ROC
<i>Colchicum autumnale</i> L.	NT	N		MAR
<i>Colutea arborescens</i> L.	NA	EA		FOR
<i>Comarum palustre</i> L.	NT	N		MAR
<i>Conium maculatum</i> L.	LC	N		RUD
<i>Conopodium majus</i> (Gouan) Loret	CR	N	B2ab(i,iv)	FOR
<i>Convallaria majalis</i> L.	LC	N		FOR
<i>Convolvulus arvensis</i> L.	LC	N		RUD
<i>Convolvulus sepium</i> L.	LC	N		FRE
<i>Cornus mas</i> L.	LC	N		FOR
<i>Cornus sanguinea</i> L.	LC	N		FOR
<i>Cornus sericea</i> L.	NA	EA		FOR
<i>Coronilla varia</i> L.	NT	N		RUD
<i>Corrigiola litoralis</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Corydalis cava</i> (L.) Schweigg. et Körte	EN	N	B2ab(i,iv)	FOR
<i>Corydalis solida</i> (L.) Clairv.	LC	N		FOR
<i>Corylus avellana</i> L.	LC	N		FOR
<i>Corynephorus canescens</i> (L.) Beauv.	EN	N	B2ab(i,iv)	DRY
<i>Cota tinctoria</i> (L.) J. Gay	NT	N		RUD
<i>Cotoneaster horizontalis</i> Decaisne	NA	EA		RUD
<i>Cotoneaster integerrimus</i> Med.	EN	N	B2ab(i,iv)	ROC

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Crassula helmsii</i> (T. Kirk) Cock.	NA	EA		AQU
<i>Crataegus germanica</i> (L.) Kuntze	NA	EA		FOR
<i>Crataegus laevigata</i> (Poir.) DC.	LC	N		FOR
<i>Crataegus monogyna</i> Jacq.	LC	N		FOR
<i>Crataegus rosiformis</i> Janka	EN	N	B2ab(i,iv)	FOR
<i>Crepis biennis</i> L.	LC	N		GRA
<i>Crepis capillaris</i> (L.) Wallr.	LC	N		GRA
<i>Crepis foetida</i> L.	EN	N	A2c+B2ab(i,iv)	RUD
<i>Crepis paludosa</i> (L.) Moench	LC	N		MAR
<i>Crepis praemorsa</i> (L.) F.W. Walther	CR	N	B2ab(i,iv)	DRY
<i>Crepis pulchra</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Crepis vesicaria</i> subsp. <i>taraxacifolia</i> (Thuill.) Thell. ex Schinz et R. Keller	EN	N	B2ab(i,iv)	RUD
<i>Cruciata laevipes</i> Opiz	LC	N		GRA
<i>Cryptogramma crispa</i> (L.) R. Brown ex Hook.	RE	N		FOR
<i>Cuscuta epilinum</i> Weihe	RE	N		RUD
<i>Cuscuta epithymum</i> (L.) L.	CR	N	B2ab(i,iv)	DRY
<i>Cuscuta europaea</i> L.	EN	N	A2c+B2ab(i,iv)	FRE
<i>Cuscuta lupuliformis</i> Krocke	DD	N		FRE
<i>Cyanus montanus</i> (L.) Hill	LC	N		FOR
<i>Cyanus segetum</i> Hill	LC	N		RUD
<i>Cymbalaria muralis</i> P. Gaertn., B. Mey. et Scherb.	NA	EA		ROC
<i>Cynoglossum officinale</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Cynosurus cristatus</i> L.	LC	N		GRA
<i>Cyperus flavescens</i> L.	RE	N		FRE
<i>Cyperus fuscus</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Cypripedium calceolus</i> L.	RE	N		FOR
<i>Cyrtomium fortunei</i> J. Smith	NA	EA		RUD
<i>Cystopteris fragilis</i> (L.) Bernh.	LC	N		ROC
<i>Cytisus scoparius</i> (L.) Link	LC	N		DRY
<i>Dactylis glomerata</i> L. subsp. <i>glomerata</i>	LC	N		GRA
<i>Dactylis glomerata</i> subsp. <i>lobata</i> (Drejer) Lindb. f.	RE	N		FOR
<i>Dactylorhiza fuchsii</i> (Druce) Soó	VU	N	B2ab(i,iv)	MAR
<i>Dactylorhiza incarnata</i> (L.) Soó	EN	N	B2ab(i,iv)	MAR
<i>Dactylorhiza incarnata</i> subsp. <i>cungsii</i> Kreutz	CR	N	B2ab(i,iv)+D	MAR
<i>Dactylorhiza maculata</i> (L.) Soó	NT	N		DRY
<i>Dactylorhiza majalis</i> (Reichenb.) P.F. Hunt et Summerh.	NT	N		MAR
<i>Dactylorhiza praetermissa</i> (Druce) Soó	EN	N	B2ab(i,iv)	MAR
<i>Dactylorhiza viridis</i> (L.) R.M. Bateman, Pridgeon et M.W. Chase	CR	N	B2ab(i,iv)	DRY
<i>Danthonia decumbens</i> (L.) DC.	VU	N	C2a(i)	DRY
<i>Daphne mezereum</i> L.	LC	N		FOR
<i>Datura stramonium</i> L.	NA	EA		RUD
<i>Daucus carota</i> L.	LC	N		GRA
<i>Delphinium consolida</i> L.	CR	N	A2c+B2ab(i,iv)+C2a(i)	RUD
<i>Deschampsia cespitosa</i> (L.) Beauv.	LC	N		MAR
<i>Dianthus armeria</i> L.	NT	N		DRY
<i>Dianthus carthusianorum</i> L.	NT	N		DRY
<i>Dianthus deltoides</i> L.	VU	N	C2a(i)	DRY

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Dianthus gratianopolitanus</i> Vill.	CR	N	B2ab(i,iv)+D	ROC
<i>Dichoropetalum carvifolia</i> (Vill.) Pimenov et Kljuykov	EN	N	B2ab(i,iv)	MAR
<i>Digitalis grandiflora</i> Mill.	VU	N	B2ab(i,iv)	FOR
<i>Digitalis lutea</i> L.	LC	N		FOR
<i>Digitalis purpurea</i> L.	LC	N		FOR
<i>Digitaria ischaemum</i> (Schreb.) Muhlenb.	VU	N	B2ab(i,iv)	RUD
<i>Digitaria sanguinalis</i> (L.) Scop.	LC	N		RUD
<i>Dioscorea communis</i> (L.) Caddick et Wilkin	EN	N	B2ab(i,iv)	FOR
<i>Diplotaxis muralis</i> (L.) DC.	RE	EA		ROC
<i>Diplotaxis tenuifolia</i> (L.) DC.	EN	N	B2ab(i,iv)	ROC
<i>Dipsacus fullonum</i> L.	LC	N		RUD
<i>Dipsacus pilosus</i> L.	LC	N		FOR
<i>Draba muralis</i> L.	LC	N		ROC
<i>Draba verna</i> L.	LC	N		ROC
<i>Drosera rotundifolia</i> L.	RE	N		MAR
<i>Dryocallis rupestris</i> (L.) Soják	EN	N	B2ab(i,iv)	ROC
<i>Dryochloa sylvatica</i> (Pollich) Holub	LC	N		FOR
<i>Dryopteris affinis</i> (Lowe) Fraser-Jenkins	VU	N	B2ab(i,iv)	FOR
<i>Dryopteris affinis</i> (Lowe) Fraser-Jenkins subsp. <i>affinis</i>	EN	N	B2ab(i,iv)	FOR
<i>Dryopteris affinis</i> subsp. <i>borreri</i> (Newman) Fraser-Jenkins	LC	N		FOR
<i>Dryopteris affinis</i> subsp. <i>cambrensis</i> Fraser-Jenkins	DD	N		FOR
<i>Dryopteris affinis</i> subsp. <i>pseudodisjuncta</i> (Tavel ex Fraser-Jenkins) Fraser-Jenkins	DD	N		FOR
<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	LC	N		FOR
<i>Dryopteris</i> * <i>complexa</i> Fraser-Jenkins nsubsp. <i>complexa</i>	DD	N		FOR
<i>Dryopteris</i> * <i>complexa</i> nsubsp. <i>critica</i> (Fraser-Jenkins) Fraser-Jenkins	DD	N		FOR
<i>Dryopteris cristata</i> (L.) A. Gray	RE	N		MAR
<i>Dryopteris dilatata</i> (Hoffmann) A. Gray	LC	N		FOR
<i>Dryopteris filix-mas</i> (L.) Schott	LC	N		FOR
<i>Dysphania botrys</i> (L.) Mosyakin et Clemants	NA	EA		RUD
<i>Dysphania pumilio</i> (R. Brown) Mosyakin et Clemants	NA	EA		RUD
<i>Echinochloa crus-galli</i> (L.) Beauv.	LC	N		RUD
<i>Echinops sphaerocephalus</i> L.	NA	EA		RUD
<i>Echium vulgare</i> L.	LC	N		RUD
<i>Eleocharis acicularis</i> (L.) Roem. et Schult.	CR	N	B2ab(i,iv)+D	FRE
<i>Eleocharis ovata</i> (Roth) Roem. et Schult.	RE	N		MAR
<i>Eleocharis palustris</i> (L.) Roem. et Schult.	LC	N		MAR
<i>Eleocharis quinqueflora</i> (F.X. Hartm.) Schwarz	CR	N	B2ab(i,iv)	MAR
<i>Eleocharis uniglumis</i> (Link) Schult.	VU	N	B2a+B2b(iii)	MAR
<i>Elodea canadensis</i> Michaux	NA	EA		AQU
<i>Elodea nuttallii</i> (Planch.) H. St. John	NA	EA		AQU
<i>Elymus caninus</i> (L.) L.	VU	N	B2ab(i,iv)	FOR
<i>Elytrigia repens</i> (L.) Desv. ex Nevski	LC	N		RUD
<i>Epilobium angustifolium</i> L.	LC	N		FOR
<i>Epilobium brachycarpum</i> C. Presl	NA	EA		RUD
<i>Epilobium ciliatum</i> Rafin.	NA	EA		RUD
<i>Epilobium collinum</i> C.C. Gmel.	LC	N		ROC

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<i>Epilobium dodonaei</i> Vill.	NA	EA		RUD
<i>Epilobium hirsutum</i> L.	LC	N		MAR
<i>Epilobium lanceolatum</i> Seb. et Mauri	NT	N		ROC
<i>Epilobium montanum</i> L.	LC	N		FOR
<i>Epilobium obscurum</i> Schreb.	LC	N		MAR
<i>Epilobium palustre</i> L.	NT	N		MAR
<i>Epilobium parviflorum</i> Schreb.	LC	N		MAR
<i>Epilobium roseum</i> Schreb.	VU	N	B2ab(i,iv)	RUD
<i>Epilobium tetragonum</i> L.	LC	N		RUD
<i>Epimedium alpinum</i> L.	RE	EA		FOR
<i>Epipactis atrorubens</i> (Hoffmann) Besser	VU	N	B2ab(i,iv)	DRY
<i>Epipactis helleborine</i> (L.) Crantz	LC	N		FOR
<i>Epipactis leptochila</i> (Godf.) Godf.	CR	N	B2ab(i,iv)	FOR
<i>Epipactis microphylla</i> (Ehrh.) Swartz	CR	N	B2ab(i,iv)	FOR
<i>Epipactis muelleri</i> Godf.	EN	N	B2ab(i,iv)	FOR
<i>Epipactis palustris</i> (L.) Crantz	EN	N	B2ab(i,iv)	MAR
<i>Epipactis purpurata</i> Smith	EN	N	B2ab(i,iv)	FOR
<i>Epipogium aphyllum</i> Swartz	CR	N	B2ab(i,iv)	FOR
<i>Equisetum arvense</i> L.	LC	N		RUD
<i>Equisetum fluviatile</i> L.	LC	N		MAR
<i>Equisetum hyemale</i> L.	LC	N		FOR
<i>Equisetum ×litorale</i> Kühl. ex Rupr.	LC	N		MAR
<i>Equisetum ×moorei</i> Newman	DD	N		FOR
<i>Equisetum palustre</i> L.	LC	N		MAR
<i>Equisetum sylvaticum</i> L.	LC	N		FOR
<i>Equisetum telmateia</i> Ehrh.	NT	N		FOR
<i>Eragrostis minor</i> Host	NA	EA		RUD
<i>Eranthis hyemalis</i> (L.) Salisb.	NA	EA		FOR
<i>Erica tetralix</i> L.	RE	N		DRY
<i>Erigeron acris</i> L.	LC	N		ROC
<i>Erigeron annuus</i> (L.) Desf.	NA	EA		RUD
<i>Erigeron canadensis</i> L.	NA	EA		RUD
<i>Eriophorum angustifolium</i> Honck.	VU	N	A2c+B2ab(i,iv)	MAR
<i>Eriophorum latifolium</i> Hoppe	CR	N	B2ab(i,iv)	MAR
<i>Eriophorum vaginatum</i> L.	RE	N		MAR
<i>Erodium cicutarium</i> (L.) L'Hérit.	LC	N		RUD
<i>Ervilia hirsuta</i> (L.) Opiz	LC	N		RUD
<i>Ervum gracile</i> (Loisel) DC.	VU	N	B2ab(i,iv)	RUD
<i>Ervum tetraspermum</i> L.	LC	N		RUD
<i>Eryngium campestre</i> L.	LC	N		DRY
<i>Erysimum cheiranthoides</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Erysimum cheiri</i> (L.) Crantz	NA	EA		ROC
<i>Erythranthe guttata</i> (DC.) G.L. Nesom	NA	EA		MAR
<i>Euonymus europaeus</i> L.	LC	N		FOR
<i>Eupatorium cannabinum</i> L.	LC	N		FRE
<i>Euphorbia amygdaloides</i> L.	LC	N		FOR
<i>Euphorbia cyparissias</i> L.	LC	N		DRY

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<i>Euphorbia dulcis</i> subsp. <i>incompta</i> (Cesati) Nyman	EN	N	B2ab(i,iv)	FOR
<i>Euphorbia esula</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Euphorbia exigua</i> L.	LC	N		RUD
<i>Euphorbia helioscopia</i> L.	LC	N		RUD
<i>Euphorbia lathyris</i> L.	NA	EA		RUD
<i>Euphorbia maculata</i> L.	NA	EA		RUD
<i>Euphorbia peplus</i> L.	LC	N		RUD
<i>Euphorbia platyphyllos</i> L.	LC	N		RUD
<i>Euphorbia seguieriana</i> Neck.	RE	N		DRY
<i>Euphorbia stricta</i> L.	LC	N		RUD
<i>Euphrasia nemorosa</i> (Pers.) Wallr.	EN	N	B2ab(i,iv)	DRY
<i>Euphrasia officinalis</i> subsp. <i>rostkoviana</i> (Hayne) F. Townsend	CR	N	B2ab(i,iv)	DRY
<i>Euphrasia stricta</i> J.P. Wolff ex Lehm.	EN	N	A2c+B2ab(i,iv)	DRY
<i>Fagus sylvatica</i> L.	NT	N		FOR
<i>Falcaria vulgaris</i> Bernh.	EN	N	B2ab(i,iv)	RUD
<i>Fallopia convolvulus</i> (L.) Á. Löve	LC	N		RUD
<i>Fallopia dumetorum</i> (L.) Holub	EN	N	B2ab(i,iv)	FOR
<i>Festuca filiformis</i> Pourr.	LC	N		DRY
<i>Festuca heteropachys</i> (St-Yves) Patzke ex Auquier	LC	N		ROC
<i>Festuca heterophylla</i> Lam.	DD	N		FOR
<i>Festuca lemanii</i> Bast.	VU	N	B2ab(i,iv)	DRY
<i>Festuca nigrescens</i> Lam.	DD	N		FOR
<i>Festuca patzkei</i> Markgr.-Dann.	CR	N	B2ab(i,iv)	DRY
<i>Festuca rubra</i> L.	LC	N		GRA
<i>Ficaria verna</i> Huds.	LC	N		FOR
<i>Filago arvensis</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Filago germanica</i> L.	RE	N		RUD
<i>Filago lutescens</i> Jord.	RE	N		RUD
<i>Filago pyramidata</i> L.	RE	N		RUD
<i>Filipendula ulmaria</i> (L.) Maxim.	LC	N		MAR
<i>Filipendula vulgaris</i> Moench	CR	N	B2ab(i,iv)+C2a(i)	DRY
<i>Foeniculum vulgare</i> Mill.	NA	EA		RUD
<i>Fourraea alpina</i> (L.) Greuter et Burdet	CR	N	B2ab(i,iv)	ROC
<i>Fragaria moschata</i> Weston	CR	N	B2ab(i,iv)	FOR
<i>Fragaria vesca</i> L.	LC	N		FOR
<i>Fragaria viridis</i> Weston	LC	N		DRY
<i>Frangula alnus</i> Mill.	LC	N		FOR
<i>Fraxinus excelsior</i> L.	LC	N		FOR
<i>Fumaria officinalis</i> L.	LC	N		RUD
<i>Fumaria parviflora</i> Lam.	CR	N	B2ab(i,iv)+C2a(i)	RUD
<i>Fumaria vaillantii</i> Loisel.	EN	N	B2ab(i,iv)	RUD
<i>Gagea lutea</i> (L.) Ker-Gawl.	VU	N	B2ab(i,iv)	FOR
<i>Gagea minima</i> (L.) Ker-Gawl.	RE	N		RUD
<i>Gagea pratensis</i> (Pers.) Dum.	CR	N	B2ab(i,iv)	RUD
<i>Gagea villosa</i> (Bieb.) Sweet	CR	N	B2ab(i,iv)	RUD
<i>Galanthus nivalis</i> L.	NA	EA		FOR
<i>Galega officinalis</i> L.	NA	EA		RUD

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Galeopsis angustifolia</i> Ehrh. ex Hoffmann	VU	N	B2ab(i,iv)	ROC
<i>Galeopsis bifida</i> Boenningh.	VU	N	B2ab(i,iv)	RUD
<i>Galeopsis ladanum</i> L.	EN	N	B2ab(i,iv)(i,iv)	ROC
<i>Galeopsis segetum</i> Neck.	LC	N		ROC
<i>Galeopsis tetrahit</i> L.	LC	N		RUD
<i>Galinsoga parviflora</i> Cav.	NA	EA		RUD
<i>Galinsoga quadriradiata</i> Ruiz et Pav.	NA	EA		RUD
<i>Galium aparine</i> L.	LC	N		RUD
<i>Galium boreale</i> L.	CR	N	B2ab(i,iv)+D	ROC
<i>Galium glaucum</i> L.	RE	N		DRY
<i>Galium mollugo</i> L.	LC	N		GRA
<i>Galium odoratum</i> (L.) Scop.	LC	N		FOR
<i>Galium palustre</i> L.	LC	N		MAR
<i>Galium pumilum</i> Murray	VU	N	B2ab(i,iv)	DRY
<i>Galium saxatile</i> L.	LC	N		DRY
<i>Galium spurium</i> L.	CR	N	B2ab(i,iv)+D	RUD
<i>Galium sylvaticum</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Galium tricornerutum</i> Dandy	RE	N		RUD
<i>Galium uliginosum</i> L.	LC	N		MAR
<i>Galium verum</i> L.	LC	N		DRY
<i>Genista anglica</i> L.	CR	N	B2ab(i,iv)+D	DRY
<i>Genista germanica</i> L.	RE	N		DRY
<i>Genista pilosa</i> L.	LC	N		ROC
<i>Genista sagittalis</i> L.	NT	N		DRY
<i>Genista tinctoria</i> L.	LC	N		DRY
<i>Gentiana cruciata</i> L.	RE	N		DRY
<i>Gentianella germanica</i> (Willd.) Börner	EN	N	B2ab(i,iv)+C2a(i)b	DRY
<i>Gentianopsis ciliata</i> (L.) Ma	VU	N	A2c+B2ab(i,iv)	DRY
<i>Geranium columbinum</i> L.	LC	N		RUD
<i>Geranium dissectum</i> L.	LC	N		RUD
<i>Geranium molle</i> L.	LC	N		RUD
<i>Geranium phaeum</i> L.	NA	EA		FOR
<i>Geranium pratense</i> L.	VU	N	B2ab(i,iv)+C2a(i)	MAR
<i>Geranium pusillum</i> L.	LC	N		RUD
<i>Geranium pyrenaicum</i> Burm. f.	NA	EA		RUD
<i>Geranium robertianum</i> L.	LC	N		FOR
<i>Geranium rotundifolium</i> L.	VU	N	B2ab(i,iv)	ROC
<i>Geranium sanguineum</i> L.	VU	N	C2a(i)	DRY
<i>Geranium sylvaticum</i> L.	VU	N	B2ab(i,iv)+C2a(i)	FOR
<i>Geum rivale</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Geum urbanum</i> L.	LC	N		FOR
<i>Glebionis segetum</i> (L.) Fourr.	NA	EA		RUD
<i>Glechoma hederacea</i> L.	LC	N		GRA
<i>Glyceria declinata</i> Bréb.	NT	N		FRE
<i>Glyceria fluitans</i> (L.) R. Brown	LC	N		FRE
<i>Glyceria maxima</i> (Hartm.) Holmberg	NT	N		FRE
<i>Glyceria notata</i> Chevall.	LC	N		FRE

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Gnaphalium sylvaticum</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Gnaphalium uliginosum</i> L.	LC	N		FRE
<i>Goodyera repens</i> (L.) R. Brown	NA	EA		FOR
<i>Gratiola officinalis</i> L.	RE	N		FRE
<i>Groenlandia densa</i> (L.) Fourr.	CR	N	B2ab(i,iv)	AQU
<i>Gymnadenia conopsea</i> (L.) R. Brown	NT	N		DRY
<i>Gymnadenia odoratissima</i> (L.) L.C.M. Rich.	RE	N		DRY
<i>Gymnocarpium dryopteris</i> (L.) Newman	NT	N		FOR
<i>Gymnocarpium robertianum</i> (Hoffmann) Newman	LC	N		ROC
<i>Gypsophila muralis</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Hedera helix</i> L.	LC	N		FOR
<i>Helianthemum nummularium</i> (L.) Mill.	LC	N		DRY
<i>Helianthus tuberosus</i> L.	NA	EA		RUD
<i>Helichrysum arenarium</i> (L.) Moench	RE	N		DRY
<i>Helictochloa pratensis</i> (L.) Romero Zarco	VU	N	B2ab(i,iv)	DRY
<i>Helleborus foetidus</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Helleborus viridis</i> subsp. <i>occidentalis</i> (Reut.) Schiffn.	RE	N		FOR
<i>Helminthotheca echioides</i> (L.) Holub	NA	EA		RUD
<i>Helosciadium nodiflorum</i> (L.) Koch	EN	N	B2ab(i,iv)	FRE
<i>Heracleum mantegazzianum</i> Somm. et Lev.	NA	EA		RUD
<i>Heracleum sphondylium</i> L.	LC	N		GRA
<i>Herminium monorchis</i> (L.) R. Brown	RE	N		DRY
<i>Herniaria glabra</i> L.	LC	N		RUD
<i>Hesperis matronalis</i> L.	NA	EA		FOR
<i>Hieracium diaphanoides</i> Lindeb.	DD	N		ROC
<i>Hieracium glaucinum</i> Jord.	EN	N	B2ab(i,iv)	ROC
<i>Hieracium lachenalii</i> C.C. Gmell.	DD	N		FOR
<i>Hieracium laevigatum</i> Willd.	VU	N	B2ab(i,iv)	FOR
<i>Hieracium maculatum</i> Schrank	VU	N	B2ab(i,iv)	ROC
<i>Hieracium murorum</i> L.	LC	N		FOR
<i>Hieracium sabaudum</i> L.	DD	N		FOR
<i>Hieracium schmidtii</i> Tausch	DD	N		ROC
<i>Hieracium umbellatum</i> L.	DD	N		FOR
<i>Hieracium wiesbaurianum</i> Uechtr.	DD	N		ROC
<i>Hierochloa odorata</i> (L.) Beauv.	RE	N		MAR
<i>Himantoglossum hircinum</i> (L.) Spreng.	LC	N		DRY
<i>Hippocrepis comosa</i> L.	LC	N		DRY
<i>Hippocrepis emerus</i> (L.) Lassen	NA	EA		FOR
<i>Hippuris vulgaris</i> L.	NA	EA		AQU
<i>Holcus lanatus</i> L.	LC	N		GRA
<i>Holcus mollis</i> L.	LC	N		FOR
<i>Holosteum umbellatum</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Hordelymus europaeus</i> (L.) Jessen ex Harz	EN	N	B2ab(i,iv)	FOR
<i>Hordeum jubatum</i> L.	NA	EA		RUD
<i>Hordeum murinum</i> L.	NT	N		RUD
<i>Hordeum secalinum</i> Schreb.	NT	N		GRA
<i>Humulus lupulus</i> L.	LC	N		FOR

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<i>Huperzia selago</i> (L.) Bernh. ex Schrank et C.F.P. Mart.	RE	N		ROC
<i>Hydrocharis morsus-ranae</i> L.	NT	N		AQU
<i>Hydrocotyle vulgaris</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Hylotelephium telephium</i> (L.) Ohba	NT	N		ROC
<i>Hymenophyllum tunbrigense</i> (L.) Smith	EN	N	B2ab(i,iv)	ROC
<i>Hyoscyamus niger</i> L.	CR	N	B2ab(i,iv)+D	RUD
<i>Hypericum elodes</i> L.	RE	N		MAR
<i>Hypericum hirsutum</i> L.	LC	N		FOR
<i>Hypericum humifusum</i> L.	LC	N		FOR
<i>Hypericum maculatum</i> Crantz subsp. <i>maculatum</i>	LC	N		MAR
<i>Hypericum maculatum</i> subsp. <i>obtusiusculum</i> (Tourlet) Hayek	EN	N	B2ab(i,iv)	MAR
<i>Hypericum montanum</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Hypericum perforatum</i> L.	LC	N		DRY
<i>Hypericum pulchrum</i> L.	LC	N		FOR
<i>Hypericum tetrapterum</i> Fries	LC	N		MAR
<i>Hypochaeris glabra</i> L.	RE	N		DRY
<i>Hypochaeris maculata</i> L.	RE	N		DRY
<i>Hypochaeris radicata</i> L.	LC	N		DRY
<i>Iberis amara</i> L.	EN	N	B2ab(i,iv)	ROC
<i>Ilex aquifolium</i> L.	LC	N		FOR
<i>Illecebrum verticillatum</i> L.	CR	N	B2ab(i,iv)+D	FRE
<i>Impatiens glandulifera</i> Royle	NA	EA		FRE
<i>Impatiens noli-tangere</i> L.	LC	N		FOR
<i>Impatiens parviflora</i> DC.	NA	EA		FOR
<i>Inula britannica</i> L.	RE	N		FRE
<i>Inula conyzae</i> (Griesselich) DC.	LC	N		DRY
<i>Inula salicina</i> L.	LC	N		DRY
<i>Iris pseudacorus</i> L.	NT	N		MAR
<i>Isatis tinctoria</i> L.	NA	EA		RUD
<i>Isolepis setacea</i> (L.) R. Brown	LC	N		FRE
<i>Jacobaea aquatica</i> (Hill) P. Gaertn., B. Mey. et Scherb.	VU	N	A3c+B2ab(i,iv)	MAR
<i>Jacobaea erucifolia</i> (L.) P. Gaertn., B. Mey. et Scherb.	LC	N		DRY
<i>Jacobaea vulgaris</i> P. Gaertn.	LC	N		GRA
<i>Jasione montana</i> L.	NT	N		DRY
<i>Juglans regia</i> L.	NA	EA		FOR
<i>Juncus acutiflorus</i> Ehrh. ex Hoffmann	LC	N		MAR
<i>Juncus articulatus</i> L.	LC	N		MAR
<i>Juncus bufonius</i> L.	LC	N		FRE
<i>Juncus bulbosus</i> L.	VU	N	B2ab(i,iv)	MAR
<i>Juncus capitatus</i> Weigel	RE	N		FRE
<i>Juncus compressus</i> Jacq.	VU	N	B2ab(i,iv)	MAR
<i>Juncus conglomeratus</i> L.	LC	N		MAR
<i>Juncus effusus</i> L.	LC	N		MAR
<i>Juncus filiformis</i> L.	VU	N	B2ab(i,iv)+C1+C2a(i)	MAR
<i>Juncus inflexus</i> L.	LC	N		MAR
<i>Juncus squarrosus</i> L.	CR	N	B2ab(i,iv)+C2a(i)	MAR
<i>Juncus subnodulosus</i> Schrank	RE	N		MAR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Juncus tenuis</i> Willd.	NA	EA		FRE
<i>Juniperus communis</i> L.	VU	N	A2c+B2ab(i,iv)	DRY
<i>Kickxia elatine</i> (L.) Dum.	NT	N		RUD
<i>Kickxia spuria</i> (L.) Dum.	VU	N	B2ab(i,iv)	RUD
<i>Knautia arvensis</i> (L.) Coulter	LC	N		DRY
<i>Koeleria macrantha</i> (Ledeb.) Schult.	VU	N	C2a(i)	DRY
<i>Koeleria pyramidata</i> (Lam.) Beauv.	NT	N		DRY
<i>Laburnum anagyroides</i> Med.	NA	EA		FOR
<i>Lactuca muralis</i> (L.) Gaertn.	LC	N		FOR
<i>Lactuca perennis</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Lactuca saligna</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Lactuca serriola</i> L.	LC	N		RUD
<i>Lactuca virosa</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Lamium album</i> L.	LC	N		RUD
<i>Lamium amplexicaule</i> L.	LC	N		RUD
<i>Lamium galeobdolon</i> (L.) L.	LC	N		FOR
<i>Lamium maculatum</i> L.	LC	N		FOR
<i>Lamium purpureum</i> L.	LC	N		RUD
<i>Lapsana communis</i> L.	LC	N		FOR
<i>Lapsana communis</i> subsp. <i>intermedia</i> (Bieb.) Hayek	NA	EA		RUD
<i>Larix decidua</i> Mill.	NA	EA		FOR
<i>Laserpitium latifolium</i> L.	RE	N		FOR
<i>Lathraea squamaria</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Lathyrus aphaca</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Lathyrus hirsutus</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Lathyrus latifolius</i> L.	NA	EA		RUD
<i>Lathyrus linifolius</i> (Reichard) Bässler	LC	N		FOR
<i>Lathyrus niger</i> (L.) Bernh.	CR	N	B2ab(i,iv)	FOR
<i>Lathyrus nissolia</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Lathyrus pratensis</i> L.	LC	N		GRA
<i>Lathyrus sylvestris</i> L.	LC	N		FOR
<i>Lathyrus tuberosus</i> L.	LC	N		RUD
<i>Leersia oryzoides</i> (L.) Swartz	CR	N	B2ab(i,iv)	FRE
<i>Legousia speculum-veneris</i> (L.) Chaix	EN	N	B2ab(i,iv)	RUD
<i>Lemna gibba</i> L.	EN	N	B2ab(i,iv)	AQU
<i>Lemna minor</i> L.	LC	N		AQU
<i>Lemna minuta</i> Kunth	NA	EA		AQU
<i>Lemna trisulca</i> L.	NT	N		AQU
<i>Leontodon hispidus</i> L.	LC	N		GRA
<i>Leontodon saxatilis</i> Lam.	EN	N	B2ab(i,iv)	ROC
<i>Leonurus cardiaca</i> L. subsp. <i>cardiaca</i>	EN	N	B2ab(i,iv)	RUD
<i>Lepidium campestre</i> (L.) R. Brown	LC	N		RUD
<i>Lepidium coronopus</i> (L.) Al-Shehbaz	VU	N	B2ab(i,iv)	RUD
<i>Lepidium densiflorum</i> Schrad.	EN	N	B2ab(i,iv)	RUD
<i>Lepidium draba</i> L.	NA	EA		RUD
<i>Lepidium latifolium</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Lepidium ruderales</i> L.	EN	N	B2ab(i,iv)	RUD

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<i>Leucanthemum ircutianum</i> DC.	DD	N		GRA
<i>Leucanthemum vulgare</i> Lam.	LC	N		DRY
<i>Leucojum vernum</i> L.	NA	EA		FOR
<i>Ligustrum vulgare</i> L.	LC	N		FOR
<i>Limodorum abortivum</i> (L.) Swartz	RE	N		FOR
<i>Limosella aquatica</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Linaria arvensis</i> (L.) Desf.	CR	N	B2ab(i,iv)	RUD
<i>Linaria repens</i> (L.) Mill.	VU	N	B2ab(i,iv)	ROC
<i>Linaria vulgaris</i> Mill.	LC	N		RUD
<i>Linum austriacum</i> L.	CR	N	B2ab(i,iv)	DRY
<i>Linum catharticum</i> L.	LC	N		DRY
<i>Linum tenuifolium</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Lipandra polysperma</i> (L.) S. Fuentes, Uotila et Borsch	VU	N	B2ab(i,iv)	RUD
<i>Lithospermum officinale</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Logfia minima</i> (Smith) Dum.	EN	N	B2ab(i,iv)	RUD
<i>Lolium multiflorum</i> Lam.	NA	EA		GRA
<i>Lolium perenne</i> L.	LC	N		GRA
<i>Lolium remotum</i> Schrank	RE	N		RUD
<i>Lolium temulentum</i> L.	RE	N		RUD
<i>Loncomelos pyrenaicum</i> (L.) Holub	EN	N	B2ab(i,iv)	FOR
<i>Lonicera periclymenum</i> L.	LC	N		FOR
<i>Lonicera xylosteum</i> L.	LC	N		FOR
<i>Lotus corniculatus</i> L.	LC	N		DRY
<i>Lotus pedunculatus</i> Cav.	LC	N		MAR
<i>Lotus tenuis</i> Waldst. et Kit. ex Willd.	EN	N	B2ab(i,iv)	MAR
<i>Lunaria annua</i> L.	NA	EA		RUD
<i>Lunaria rediviva</i> L.	CR	N	B2ab(i,iv)	FOR
<i>Lupinus polyphyllus</i> Lindl.	NA	EA		RUD
<i>Luzula campestris</i> (L.) DC.	LC	N		DRY
<i>Luzula congesta</i> (Thuil.) Lej.	EN	N	B2ab(i,iv)	FOR
<i>Luzula luzuloides</i> (Lam.) Dandy et Wilmott	LC	N		FOR
<i>Luzula multiflora</i> (Ehrh.) Lej.	LC	N		DRY
<i>Luzula pilosa</i> (L.) Willd.	LC	N		FOR
<i>Luzula sylvatica</i> (Huds.) Gaudin	LC	N		FOR
<i>Lychnis viscaria</i> L.	VU	N	B2ab(i,iv)	ROC
<i>Lycium barbarum</i> L.	NA	EA		ROC
<i>Lycopodiella inundata</i> (L.) Holub	RE	N		MAR
<i>Lycopodium annotinum</i> L.	CR	N	B2ab(i,iv)	FOR
<i>Lycopodium clavatum</i> L.	CR	N	B2ab(i,iv)+D	DRY
<i>Lycopodium complanatum</i> L.	RE	N		DRY
<i>Lycopodium tristachyum</i> Pursh	RE	N		DRY
<i>Lycopsis arvensis</i> L.	LC	N		RUD
<i>Lycopus europaeus</i> L.	LC	N		MAR
<i>Lysimachia arvensis</i> (L.) U. Manns et Anderb.	LC	N		RUD
<i>Lysimachia foemina</i> (Mill.) U. Manns et Anderb.	VU	N	B2ab(i,iv)	RUD
<i>Lysimachia minima</i> (L.) U. Manns et Anderb.	CR	N	B2ab(i,iv)	RUD
<i>Lysimachia nemorum</i> L.	LC	N		FOR

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<i>Lysimachia nummularia</i> L.	LC	N		GRA
<i>Lysimachia punctata</i> L.	NA	EA		FOR
<i>Lysimachia vulgaris</i> L.	LC	N		MAR
<i>Lythrum hyssopifolia</i> L.	VU	N	B2ab(i,iv)	FRE
<i>Lythrum portula</i> (L.) D.A. Webb	NT	N		FRE
<i>Lythrum salicaria</i> L.	LC	N		MAR
<i>Maianthemum bifolium</i> (L.) F.W. Schmidt	LC	N		FOR
<i>Malus sylvestris</i> (L.) Mill.	VU	N	B2ab(i,iv)	FOR
<i>Malva alcea</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Malva moschata</i> L.	LC	N		DRY
<i>Malva neglecta</i> Wallr.	LC	N		RUD
<i>Malva setigera</i> Spenn.	NA	EA		RUD
<i>Malva sylvestris</i> L.	LC	N		RUD
<i>Marrubium vulgare</i> L.	NA	EA		RUD
<i>Matricaria chamomilla</i> L.	LC	N		RUD
<i>Matricaria discoidea</i> DC.	NA	EA		RUD
<i>Matteuccia struthiopteris</i> (L.) Tod.	NA	EA		FOR
<i>Medicago arabica</i> (L.) Huds.	LC	N		RUD
<i>Medicago lupulina</i> L.	LC	N		DRY
<i>Medicago minima</i> (L.) L.	VU	N	B2ab(i,iv)	DRY
<i>Medicago polymorpha</i> L.	NA	EA		RUD
<i>Medicago sativa</i> L. subsp. <i>sativa</i>	NA	EA		RUD
<i>Medicago sativa</i> subsp. <i>falcata</i> (L.) Arcang.	LC	N		DRY
<i>Melampyrum arvense</i> L.	VU	N	A2c+B2ab(i,iv)	DRY
<i>Melampyrum cristatum</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Melampyrum pratense</i> L.	LC	N		FOR
<i>Melica ciliata</i> L.	EN	N	B2ab(i,iv)	ROC
<i>Melica nutans</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Melica uniflora</i> Retz.	LC	N		FOR
<i>Mentha aquatica</i> L.	LC	N		MAR
<i>Mentha arvensis</i> L.	LC	N		MAR
<i>Mentha longifolia</i> (L.) Huds.	DD	N		FRE
<i>Mentha pulegium</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Mentha spicata</i> L.	NA	EA		RUD
<i>Mentha suaveolens</i> Ehrh.	DD	N		FRE
<i>Menyanthes trifoliata</i> L.	VU	N	B2ab(i,iv)+C2a(i)	MAR
<i>Mercurialis annua</i> L.	LC	N		RUD
<i>Mercurialis perennis</i> L.	LC	N		FOR
<i>Meum athamanticum</i> Jacq.	CR	N	B2ab(i,iv)+C2a(i)	DRY
<i>Microthlaspi perfoliatum</i> (L.) F.K. Mey.	LC	N		RUD
<i>Milium effusum</i> L.	LC	N		FOR
<i>Minuartia hybrida</i> (Vill.) Schischkin	VU	N	B2ab(i,iv)	DRY
<i>Misopates orontium</i> (L.) Rafin.	VU	N	A2c+B2ab(i,iv)	RUD
<i>Moehringia trinervia</i> (L.) Clairv.	LC	N		FOR
<i>Moenchia erecta</i> (L.) Gaertn., B. Mey. et Scherb.	RE	N		DRY
<i>Molinia caerulea</i> (L.) Moench	LC	N		MAR
<i>Monotropa hypopitys</i> L.	VU	N	B2ab(i,iv)	FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Montia arvensis</i> Wallr.	CR	N	B2ab(i,iv)+C2a(i)	FRE
<i>Montia fontana</i> L.	LC	N		AQU
<i>Myosotis arvensis</i> (L.) Hill	LC	N		RUD
<i>Myosotis discolor</i> Pers.	NT	N		DRY
<i>Myosotis laxa</i> subsp. <i>cespitosa</i> (C.F. Schultz) Hyl. ex Nordh.	EN	N	B2ab(i,iv)	FRE
<i>Myosotis nemorosa</i> Besser	LC	N		MAR
<i>Myosotis ramosissima</i> Rochel	LC	N		DRY
<i>Myosotis scorpioides</i> L.	LC	N		MAR
<i>Myosotis stricta</i> Link ex Roem. et Schult.	VU	N	C2a(i)	DRY
<i>Myosotis sylvatica</i> Ehrh. ex Hoffmann	LC	N		FOR
<i>Myosoton aquaticum</i> (L.) Moench	LC	N		MAR
<i>Myosurus minimus</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Myriophyllum alterniflorum</i> DC.	CR	N	B2ab(i,iv)	AQU
<i>Myriophyllum aquaticum</i> (Velloso) Verdc.	NA	EA		AQU
<i>Myriophyllum spicatum</i> L.	NT	N		AQU
<i>Myriophyllum verticillatum</i> L.	EN	N	B2ab(i,iv)	AQU
<i>Myrrhis odorata</i> (L.) Scop.	NA	EA		RUD
<i>Najas marina</i> L.	CR	N	B2ab(i,iv)	AQU
<i>Narcissus pseudonarcissus</i> L.	NT	N		FOR
<i>Nardus stricta</i> L.	EN	N	B2ab(i,iv)+C2a(i)	DRY
<i>Nasturtium officinale</i> R. Brown	NT	N		MAR
<i>Neotinea ustulata</i> (L.) R.M. Bateman, Pridgeon et M.W. Chase	RE	N		DRY
<i>Neottia nidus-avis</i> (L.) L.C.M. Rich.	LC	N		FOR
<i>Neottia ovata</i> (L.) Bluff et Fingerh.	LC	N		FOR
<i>Nepeta cataria</i> L.	NA	EA		RUD
<i>Neslia paniculata</i> (L.) Desv.	RE	N		RUD
<i>Noccaea caerulea</i> (J. et C. Presl) F.K. Mey.	NT	N		DRY
<i>Noccaea montana</i> (L.) F.K. Mey.	RE	N		DRY
<i>Nuphar lutea</i> (L.) Smith	VU	N	B2ab(i,iv)	AQU
<i>Nymphaea alba</i> L.	NA	EA		AQU
<i>Nymphoides peltata</i> (S.G. Gmel.) O. Kuntze	EN	N	B2ab(i,iv)	AQU
<i>Odontites vernus</i> (Bellardi) Dum.	NT	N		RUD
<i>Oenanthe aquatica</i> (L.) Poiret	VU	N	B2ab(i,iv)	MAR
<i>Oenanthe fistulosa</i> L.	VU	N	B2ab(i,iv)	MAR
<i>Oenanthe peucedanifolia</i> Pollich	VU	N	B2ab(i,iv)+C2a(i)	MAR
<i>Oenothera biennis</i> L.	NA	EA		RUD
<i>Oenothera glazioviana</i> Micheli	NA	EA		RUD
<i>Oenothera parviflora</i> L.	NA	EA		RUD
<i>Onobrychis viciifolia</i> Scop.	LC	N		DRY
<i>Ononis spinosa</i> L. subsp. <i>spinosa</i>	DD	N		DRY
<i>Ononis spinosa</i> subsp. <i>procurrens</i> (Wallr.) Bonnier et Layens	LC	N		DRY
<i>Onopordum acanthium</i> L.	NA	EA		RUD
<i>Ophioglossum vulgatum</i> L.	VU	N	B2ab(i,iv)	MAR
<i>Ophrys apifera</i> Huds.	VU	N	C2a(i)	DRY
<i>Ophrys aranifera</i> Huds.	CR	N	B2ab(i,iv)+D	DRY
<i>Ophrys fuciflora</i> (F.W. Schmidt) Moench	VU	N	B2ab(i,iv)+C2a(i)	DRY
<i>Ophrys insectifera</i> L.	VU	N	B2ab(i,iv)+C2a(i)	DRY

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<i>Orchis anthropophora</i> (L.) All.	VU	N	C2a(i)	DRY
<i>Orchis mascula</i> (L.) L.	NT	N		DRY
<i>Orchis militaris</i> L.	VU	N	C2a(i)	DRY
<i>Orchis purpurea</i> Huds.	NT	N		FOR
<i>Orchis simia</i> Lam.	CR	N	B2ab(i,iv)+D	DRY
<i>Oreopteris limbosperma</i> (Bellardi ex All.) Holub	EN	N	B2ab(i,ii,iv)	FOR
<i>Origanum vulgare</i> L.	LC	N		DRY
<i>Ornithogalum umbellatum</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Ornithopus perpusillus</i> L.	LC	N		ROC
<i>Orobanche alba</i> Steph. ex Willd.	VU	N	C2a(i)	DRY
<i>Orobanche caryophyllacea</i> Smith	EN	N	B2ab(i,iv)	DRY
<i>Orobanche elatior</i> Sutton	RE	N		DRY
<i>Orobanche hederæ</i> Vaucher ex Duby	CR	N	B2ab(i,iv)+D	FOR
<i>Orobanche minor</i> Smith	CR	N	B2ab(i,iv)	RUD
<i>Orobanche picridis</i> F.W. Schultz	CR	N	B2ab(i,iv)+D	RUD
<i>Orobanche rapum-genistæ</i> Thuill.	EN	N	B2ab(i,iv)	DRY
<i>Orobanche teucris</i> Holandre	CR	N	B2ab(i,iv)	DRY
<i>Orthilia secunda</i> (L.) House	NA	EA		FOR
<i>Osmunda regalis</i> L.	CR	N	B2ab(i,iv)+D	FOR
<i>Oxalis acetosella</i> L.	LC	N		FOR
<i>Oxalis corniculata</i> L.	NA	EA		RUD
<i>Oxalis stricta</i> L.	NA	EA		RUD
<i>Oxybasis glauca</i> (L.) S. Fuentes, Uotila et Borsch	EN	N	B2ab(i,iv)	RUD
<i>Oxybasis rubra</i> (L.) S. Fuentes, Uotila et Borsch	EN	N	B2ab(i,iv)	RUD
<i>Oxybasis urbica</i> (L.) S. Fuentes, Uotila et Borsch	CR	N	B2ab(i,iv)	RUD
<i>Panicum barbipulvinatum</i> Nash	NA	EA		RUD
<i>Panicum miliaceum</i> L.	NA	EA		RUD
<i>Papaver argemone</i> L.	VU	N	B2ab(i,iv)+C1	RUD
<i>Papaver dubium</i> L.	NT	N		RUD
<i>Papaver rhoeas</i> L.	LC	N		RUD
<i>Parietaria judaica</i> L.	EN	N	B2ab(i,iv)	ROC
<i>Parietaria officinalis</i> L.	CR	N	B2ab(i,iv)+D	ROC
<i>Paris quadrifolia</i> L.	LC	N		FOR
<i>Parnassia palustris</i> L.	RE	N		MAR
<i>Parthenocissus inserta</i> (A. Kerner) Fritsch	NA	EA		RUD
<i>Parthenocissus quinquefolia</i> (L.) Planch.	NA	EA		RUD
<i>Pastinaca sativa</i> L.	LC	N		RUD
<i>Pastinaca sativa</i> subsp. <i>urens</i> (Req. ex Godr.) Čelak.	NA	EA		RUD
<i>Paulownia tomentosa</i> (Thunb.) Steud.	NA	EA		RUD
<i>Pedicularis palustris</i> L.	CR	N	A2c+B2ab(i,iv)	MAR
<i>Pedicularis sylvatica</i> L.	EN	N	A2c+B2ab(i,iv)+C1	DRY
<i>Persicaria amphibia</i> (L.) S.F. Gray	LC	N		AQU
<i>Persicaria hydropiper</i> (L.) Spach	LC	N		MAR
<i>Persicaria lapathifolia</i> (L.) Delarbre	LC	N		RUD
<i>Persicaria maculosa</i> S.F. Gray	LC	N		RUD
<i>Persicaria minor</i> (Huds.) Opiz	EN	N	B2ab(i,iv)	FRE
<i>Persicaria mitis</i> (Schränk) Asenov	CR	N	B2ab(i,iv)	FRE

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<i>Petasites hybridus</i> (L.) Gaeartn., B. Mey. et Scherb.	LC	N		FRE
<i>Petrorhagia prolifera</i> (L.) P.W. Ball et Heywood	NT	N		DRY
<i>Phacelia tanacetifolia</i> Benth.	NA	EA		RUD
<i>Phalaris arundinacea</i> L.	LC	N		MAR
<i>Phegopteris connectilis</i> (Michaux) Watt	VU	N	B2ab(i,iv)	FOR
<i>Phelipanche purpurea</i> (Jacq.) Soják	VU	N	B2ab(i,iv)	DRY
<i>Phelipanche ramosa</i> (L.) Pomel	RE	N		RUD
<i>Phleum nodosum</i> L.	NT	N		DRY
<i>Phleum phleoides</i> (L.) Karst.	EN	N	B2ab(i,iv)	DRY
<i>Phleum pratense</i> L.	LC	N		GRA
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	LC	N		MAR
<i>Phyteuma nigrum</i> F.W. Schmidt	LC	N		FOR
<i>Phyteuma spicatum</i> L.	LC	N		FOR
<i>Picea abies</i> (L.) Karst.	NA	EA		FOR
<i>Picris hieracioides</i> L.	LC	N		RUD
<i>Pilosella aurantiaca</i> (L.) F.W. Schultz et Schultz-Bip.	NA	EA		GRA
<i>Pilosella bauhini</i> (Schult.) Arv.-Touv.	VU	N	B2ab(i,iv)	ROC
<i>Pilosella caespitosa</i> (Dum.) P.D. Sell et C. West	EN	N	B2ab(i,iv)	RUD
<i>Pilosella lactucella</i> (Wallr.) P.D. Sell et C. West	LC	N		DRY
<i>Pilosella officinarum</i> F.W. Schultz et Schultz-Bip.	LC	N		DRY
<i>Pilosella piloselloides</i> (Vill.) Soják	VU	N	B2ab(i,iv)	ROC
<i>Pilosella ziziana</i> (Tausch) F.W. Schultz et Schultz-Bip.	DD	N		ROC
<i>Pimpinella major</i> (L.) Huds.	LC	N		GRA
<i>Pimpinella saxifraga</i> L.	LC	N		DRY
<i>Pinus nigra</i> Arnold	NA	EA		FOR
<i>Pinus sylvestris</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Plantago coronopus</i> L.	NA	EA		RUD
<i>Plantago lanceolata</i> L.	LC	N		GRA
<i>Plantago major</i> L. subsp. <i>major</i>	LC	N		RUD
<i>Plantago major</i> subsp. <i>pleiosperma</i> Pilg.	DD	N		FRE
<i>Plantago media</i> L.	LC	N		DRY
<i>Platanthera bifolia</i> (L.) L.C.M. Rich.	NT	N		FOR
<i>Platanthera chlorantha</i> (Cust.) Reichenb.	NT	N		FOR
<i>Poa annua</i> L.	LC	N		RUD
<i>Poa bulbosa</i> L.	CR	N	B2ab(i,iv)	DRY
<i>Poa chaixii</i> Vill.	EN	N	B2ab(i,iv)	FOR
<i>Poa compressa</i> L.	LC	N		ROC
<i>Poa nemoralis</i> L.	LC	N		FOR
<i>Poa palustris</i> L.	LC	N		MAR
<i>Poa pratensis</i> L. subsp. <i>pratensis</i>	LC	N		GRA
<i>Poa pratensis</i> subsp. <i>angustifolia</i> (L.) Gaudin	LC	N		ROC
<i>Poa pratensis</i> subsp. <i>irrigata</i> (Lindm.) Lindb.	LC	N		FOR
<i>Poa trivialis</i> L.	LC	N		GRA
<i>Podospermum laciniatum</i> (L.) DC.	RE	N		RUD
<i>Polemonium caeruleum</i> L.	NA	EA		MAR
<i>Polycnemum majus</i> A. Braun	RE	N		RUD
<i>Polygala amarella</i> Crantz	CR	N	B2ab(i,iv)	DRY

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<i>Polygala calcarea</i> F.W. Schultz	VU	N	A2c+B2ab(i,iv)	DRY
<i>Polygala comosa</i> Schkuhr	NT	N		DRY
<i>Polygala serpyllifolia</i> Hose	VU	N	B2ab(i,iv)	DRY
<i>Polygala vulgaris</i> L.	LC	N		DRY
<i>Polygonatum multiflorum</i> (L.) All.	LC	N		FOR
<i>Polygonatum odoratum</i> (Mill.) Druce	EN	N	B2ab(i,iv)	FOR
<i>Polygonatum verticillatum</i> (L.) All.	LC	N		FOR
<i>Polygonum aviculare</i> L.	LC	N		FOR
<i>Polypodium interjectum</i> Shivas	LC	N		ROC
<i>Polypodium ×mantoniae</i> Rothm.	DD	N		ROC
<i>Polypodium vulgare</i> L.	LC	N		ROC
<i>Polystichum aculeatum</i> (L.) Roth	NT	N		FOR
<i>Polystichum ×bicknellii</i> (Christ) Hahne	EN	N	B2ab(i,iv)	FOR
<i>Polystichum lonchitis</i> (L.) Roth	CR	N	B2ab(i,iv)	FOR
<i>Polystichum setiferum</i> (Forssk.) T. Moore ex Woynar	EN	N	B2ab(i,iv)	FOR
<i>Populus ×canadensis</i> Moench	NA	EA		FOR
<i>Populus ×canescens</i> (Ait.) Smith	NA	EA		FOR
<i>Populus nigra</i> L.	NA	EA		FOR
<i>Populus tremula</i> L.	LC	N		FOR
<i>Portulaca oleracea</i> L.	LC	N		RUD
<i>Potamogeton alpinus</i> Balb.	RE	N		AQU
<i>Potamogeton berchtoldii</i> Fieb.	EN	N	B2ab(i,iv)	AQU
<i>Potamogeton crispus</i> L.	LC	N		AQU
<i>Potamogeton lucens</i> L.	CR	N	B2ab(i,iv)+D	AQU
<i>Potamogeton natans</i> L.	LC	N		AQU
<i>Potamogeton nodosus</i> Poiret	DD	N		AQU
<i>Potamogeton obtusifolius</i> Mert. et Koch	CR	N	B2ab(i,iv)+D	AQU
<i>Potamogeton perfoliatus</i> L.	DD	N		AQU
<i>Potamogeton polygonifolius</i> Pourr.	VU	N	B2ab(i,iv)	AQU
<i>Potamogeton pusillus</i> L.	EN	N	B2ab(i,iv)	AQU
<i>Potamogeton trichoides</i> Cham. et Schlecht.	EN	N	B2ab(i,iv)	AQU
<i>Potentilla anglica</i> Laichard.	VU	N	B2ab(i,iv)	DRY
<i>Potentilla argentea</i> L.	LC	N		DRY
<i>Potentilla erecta</i> (L.) Räuschel	NT	N		DRY
<i>Potentilla indica</i> (Andrews) Th. Wolf	NA	EA		RUD
<i>Potentilla intermedia</i> L.	NA	EA		RUD
<i>Potentilla leucopolitana</i> P.J. Muell.	RE	N		DRY
<i>Potentilla ×neumanniana</i> Reichenb.	DD	N		ROC
<i>Potentilla norvegica</i> L.	NA	EA		RUD
<i>Potentilla recta</i> L.	NA	EA		RUD
<i>Potentilla reptans</i> L.	LC	N		RUD
<i>Potentilla sterilis</i> (L.) Garcke	LC	N		FOR
<i>Potentilla supina</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Potentilla verna</i> L.	LC	N		DRY
<i>Poterium sanguisorba</i> L.	LC	N		DRY
<i>Prenanthes purpurea</i> L.	RE	N		FOR
<i>Primula elatior</i> (L.) Hill	LC	N		FOR

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<i>Primula veris</i> L.	LC	N		DRY
<i>Prunella grandiflora</i> Huds.	RE	N		DRY
<i>Prunella laciniata</i> (L.) L.	NT	N		DRY
<i>Prunella vulgaris</i> L.	LC	N		GRA
<i>Prunus avium</i> (L.) L.	LC	N		FOR
<i>Prunus laurocerasus</i> L.	NA	EA		FOR
<i>Prunus mahaleb</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Prunus padus</i> L.	LC	N		FOR
<i>Prunus serotina</i> Ehrh.	NA	EA		FOR
<i>Prunus spinosa</i> L.	LC	N		FOR
<i>Pseudofumaria lutea</i> (L.) Borkh.	NA	EA		ROC
<i>Pteridium aquilinum</i> (L.) Kuhn	LC	N		FOR
<i>Puccinellia distans</i> (Jacq.) Parl.	NA	EA		RUD
<i>Pulicaria dysenterica</i> (L.) Bernh.	LC	N		MAR
<i>Pulicaria vulgaris</i> Gaertn.	RE	N		FRE
<i>Pulmonaria montana</i> Lej.	VU	N	B2ab(i,iv)	FOR
<i>Pulmonaria obscura</i> Dum.	NT	N		FOR
<i>Pulmonaria officinalis</i> L.	NA	EA		FOR
<i>Pyrola media</i> Swartz	RE	N		FOR
<i>Pyrola minor</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Pyrola rotundifolia</i> L.	NT	N		FOR
<i>Pyrus communis</i> subsp. <i>pyraster</i> (L.) Ehrh.	NT	N		FOR
<i>Quercus petraea</i> Lieblein	LC	N		FOR
<i>Quercus pubescens</i> Willd.	CR	N	B2ab(i,iv)+D	DRY
<i>Quercus robur</i> L.	LC	N		FOR
<i>Quercus rubra</i> L.	NA	EA		FOR
<i>Radiola linoides</i> Roth	RE	N		FRE
<i>Ranunculus acris</i> L.	LC	N		GRA
<i>Ranunculus aquatilis</i> L.	NT	N		AQU
<i>Ranunculus arvensis</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Ranunculus auricomus</i> L.	LC	N		FOR
<i>Ranunculus bulbosus</i> L.	LC	N		DRY
<i>Ranunculus circinatus</i> Sibth.	EN	N	B2ab(i,iv)	AQU
<i>Ranunculus flammula</i> L.	LC	N		MAR
<i>Ranunculus fluitans</i> Lam.	NT	N		AQU
<i>Ranunculus hederaceus</i> L.	VU	N	B2ac(iii)	MAR
<i>Ranunculus lingua</i> L.	VU	N	B2ab(i,iv)	FRE
<i>Ranunculus peltatus</i> Schrank	NT	N		AQU
<i>Ranunculus penicillatus</i> (Dum.) Bab.	NT	N		AQU
<i>Ranunculus platanifolius</i> L.	CR	N	B2ab(i,iv)	FOR
<i>Ranunculus polyanthemoides</i> Boreau	RE	N		DRY
<i>Ranunculus repens</i> L.	LC	N		MAR
<i>Ranunculus sardous</i> Crantz	VU	N	B2ab(i,iv)	RUD
<i>Ranunculus sceleratus</i> L.	VU	N	B2ab(i,iv)+C2a(i)	MAR
<i>Ranunculus serpens</i> Schrank	EN	N	B2ab(i,iv)	FOR
<i>Ranunculus trichophyllus</i> Chaix	VU	N	B2ab(i,iv)	AQU
<i>Raphanus raphanistrum</i> L.	CR	N	B2ab(i,iv)	RUD

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<i>Reseda lutea</i> L.	LC	N		RUD
<i>Reseda luteola</i> L.	NT	N		RUD
<i>Reynoutria ×bohemica</i> Chrtek et Chrtková	NA	EA		RUD
<i>Reynoutria japonica</i> Houtt.	NA	EA		RUD
<i>Reynoutria sachalinensis</i> (F. Schmidt Petrop.) Nakai	NA	EA		RUD
<i>Rhamnus cathartica</i> L.	NT	N		FOR
<i>Rhinanthus alectorolophus</i> (Scop.) Pollich	EN	N	B2ab(i,iv)+C2a(i)	DRY
<i>Rhinanthus angustifolius</i> C.C. Gmel.	CR	N	B2ab(i,iv)	DRY
<i>Rhinanthus minor</i> L.	LC	N		MAR
<i>Rhus typhina</i> L.	NA	EA		RUD
<i>Rhynchospora alba</i> (L.) Vahl	RE	N		MAR
<i>Ribes alpinum</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Ribes nigrum</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Ribes rubrum</i> L.	LC	N		FOR
<i>Ribes uva-crispa</i> L.	LC	N		FOR
<i>Robinia pseudoacacia</i> L.	NA	EA		FOR
<i>Rorippa amphibia</i> (L.) Besser	VU	N	B2ab(i,iv)	FRE
<i>Rorippa palustris</i> (L.) Besser	NT	N		FRE
<i>Rorippa stylosa</i> (Pers.) Mansf. et Rothm.	CR	N	B2ab(i,iv)	DRY
<i>Rorippa sylvestris</i> (L.) Besser	EN	N	B2ab(i,iv)	FRE
<i>Rosa arvensis</i> Huds.	LC	N		FOR
<i>Rosa canina</i> L.	LC	N		FOR
<i>Rosa corymbifera</i> Borkh.	NA	EA		FOR
<i>Rosa micrantha</i> Borrer ex Smith	EN	N	B2ab(i,iv)	FOR
<i>Rosa rubiginosa</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Rosa rugosa</i> Thunb.	NA	EA		RUD
<i>Rosa spinosissima</i> L.	VU	N	B2ab(i,iv)	DRY
<i>Rosa stylosa</i> Desv.	RE	N		FOR
<i>Rosa tomentella</i> Léman	EN	N	B2ab(i,iv)	FOR
<i>Rosa tomentosa</i> Smith	VU	N	B2ab(i,iv)	FOR
<i>Rosa villosa</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Rubus aetnicus</i> Weston	LC	N		FOR
<i>Rubus ambulans</i> Matzke-Hajek	LC	N		FOR
<i>Rubus arduennensis</i> Libert ex Lej.	LC	N		FOR
<i>Rubus armeniacus</i> Focke	NA	EA		FOR
<i>Rubus bertramii</i> G. Braun	NT	N		FOR
<i>Rubus bifrons</i> Vest	LC	N		FOR
<i>Rubus bonus-henricus</i> Matzke-Hajek	NT	N		FOR
<i>Rubus caesius</i> L.	LC	N		FOR
<i>Rubus camptostachys</i> G. Braun	DD	N		FOR
<i>Rubus caninitergi</i> H.E. Weber	NT	N		FOR
<i>Rubus condensatus</i> P.J. Muell.	LC	N		FOR
<i>Rubus constrictus</i> Lef. et P.J. Muell.	DD	N		FOR
<i>Rubus cuspidatus</i> P.J. Muell.	LC	N		FOR
<i>Rubus dechenii</i> Wirtg.	LC	N		FOR
<i>Rubus delectus</i> P.J. Muell. et Wirtg.	NT	N		FOR
<i>Rubus echinosepalus</i> H.E. Weber	LC	N		FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Rubus eifeliensis</i> Wirtg.	NT	N		FOR
<i>Rubus erubescens</i> Wirtg.	DD	N		FOR
<i>Rubus favonii</i> W.C.R. Watson	LC	N		FOR
<i>Rubus flaccidus</i> P.J. Muell.	DD	N		FOR
<i>Rubus fuscus</i> Weihe	NT	N		FOR
<i>Rubus grabowskii</i> Weihe	LC	N		FOR
<i>Rubus gracilis</i> J. Presl et C. Presl	DD	N		FOR
<i>Rubus hadracanthos</i> G. Braun	LC	N		FOR
<i>Rubus holandrei</i> P.J. Muell.	DD	N		FOR
<i>Rubus hoplotheca</i> A. Beek et D.F. Mercier	DD	N		FOR
<i>Rubus hostilis</i> P.J. Muell. et Wirtg.	DD	N		FOR
<i>Rubus idaeus</i> L.	LC	N		FOR
<i>Rubus ignoratus</i> H.E. Weber	NT	N		FOR
<i>Rubus imbellis</i> Matzke-Hajek	DD	N		FOR
<i>Rubus integribasis</i> P.J. Muell. ex Boulay	DD	N		FOR
<i>Rubus laciniatus</i> Willd.	NA	EA		FOR
<i>Rubus langei</i> G. Jensen ex Frid. et Gelert	DD	N		FOR
<i>Rubus leucophaeus</i> P.J. Muell.	DD	N		FOR
<i>Rubus loehrii</i> Wirtg.	LC	N		FOR
<i>Rubus macrodontus</i> P.J. Muell.	NT	N		FOR
<i>Rubus macrophyllus</i> Weihe et Nees	NT	N		FOR
<i>Rubus macrostemonides</i> Fritsch	NT	N		FOR
<i>Rubus melanoxylon</i> P.J. Muell. et Wirtg.	DD	N		FOR
<i>Rubus micans</i> Godr. in Gren. et Godr.	DD	N		FOR
<i>Rubus montanus</i> Libert ex Lej.	LC	N		FOR
<i>Rubus negatus</i> A. Beek	DD	N		FOR
<i>Rubus nemorosus</i> Hayne et Wildenow	DD	N		FOR
<i>Rubus nessensis</i> W. Hall	LC	N		FOR
<i>Rubus nigricans</i> Danthoine	LC	N		FOR
<i>Rubus oblongifolius</i> P.J. Muell. et Wirtg.	LC	N		FOR
<i>Rubus omalodontos</i> P.J. Muell. et Wirtg.	NT	N		FOR
<i>Rubus oreades</i> P.J. Muell. et Wirtg.	NT	N		FOR
<i>Rubus orthostachys</i> G. Braun	NT	N		FOR
<i>Rubus pannosus</i> P.J. Muell. et Wirtg.	NT	N		FOR
<i>Rubus pedica</i> Matzke-Hajek	NT	N		FOR
<i>Rubus perperus</i> H.E. Weber	NT	N		FOR
<i>Rubus plicatus</i> Weihe et Nees	LC	N		FOR
<i>Rubus praestans</i> H.E. Weber	NT	N		FOR
<i>Rubus procerus</i> P.J. Muell. ex Boulay	LC	N		FOR
<i>Rubus radula</i> Weihe	NT	N		FOR
<i>Rubus ripuaricus</i> Matzke-Hajek	DD	N		FOR
<i>Rubus roberti</i> Matzke-Hajek	DD	N		FOR
<i>Rubus rosaceus</i> Weihe	NT	N		FOR
<i>Rubus rudis</i> Weihe	LC	N		FOR
<i>Rubus saltuum</i> Focke	NT	N		FOR
<i>Rubus saxatilis</i> L.	DD	N		FOR
<i>Rubus saxicola</i> P.J. Muell.	LC	N		FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Rubus scabrosus</i> P.J. Muell.	NT	N		FOR
<i>Rubus scissoides</i> H.E. Weber	NT	N		FOR
<i>Rubus scissus</i> W.C.R. Watson	DD	N		FOR
<i>Rubus sprengei</i> Weihe	LC	N		FOR
<i>Rubus stereacanthos</i> P.J. Muell. ex Boulay	LC	N		FOR
<i>Rubus sulcatus</i> Vest	NT	N		FOR
<i>Rubus transvestitus</i> Matzke-Hajek	DD	N		FOR
<i>Rubus umbrosus</i> (Weihe) Arrh.	LC	N		FOR
<i>Rubus vestitus</i> Weihe	LC	N		FOR
<i>Rubus viscosus</i> Weihe ex Lej. et Court.	LC	N		FOR
<i>Rubus wirtgenii</i> Auersw. ex Wirtg.	NT	N		FOR
<i>Rumex acetosa</i> L.	LC	N		GRA
<i>Rumex acetosella</i> L.	LC	N		DRY
<i>Rumex conglomeratus</i> Murray	LC	N		RUD
<i>Rumex crispus</i> L.	LC	N		RUD
<i>Rumex hydrolapathum</i> Huds.	VU	N	B2ab(i,iv)	FRE
<i>Rumex maritimus</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Rumex obtusifolius</i> L.	LC	N		GRA
<i>Rumex sanguineus</i> L.	LC	N		FOR
<i>Rumex scutatus</i> L.	NA	EA		ROC
<i>Sagina apetala</i> Ard.	NT	N		ROC
<i>Sagina nodosa</i> (L.) Fenzl	RE	N		MAR
<i>Sagina procumbens</i> L.	LC	N		ROC
<i>Sagittaria sagittifolia</i> L.	CR	N	B2ab(i,iv)	FRE
<i>Salix alba</i> L.	LC	N		FRE
<i>Salix aurita</i> L.	LC	N		MAR
<i>Salix caprea</i> L.	LC	N		FOR
<i>Salix cinerea</i> L.	LC	N		MAR
<i>Salix ×fragilis</i> L.	LC	N		FRE
<i>Salix pentandra</i> L.	NA	EA		FRE
<i>Salix purpurea</i> var. <i>lambertiana</i> (Smith) Koch	EN	N	B2ab(i,iv)	FOR
<i>Salix repens</i> L.	RE	N		MAR
<i>Salix triandra</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Salix viminalis</i> L.	LC	N		FRE
<i>Salvia nemorosa</i> L.	NA	EA		RUD
<i>Salvia pratensis</i> L.	EN	N	B2ab(i,iv)+C2a(i)	DRY
<i>Salvia verticillata</i> L.	NA	EA		RUD
<i>Sambucus ebulus</i> L.	LC	N		FOR
<i>Sambucus nigra</i> L.	LC	N		FOR
<i>Sambucus racemosa</i> L.	LC	N		FOR
<i>Sanguisorba officinalis</i> L.	VU	N	B2ab(i,iv)+C2a(i)	MAR
<i>Sanicula europaea</i> L.	NT	N		FOR
<i>Saponaria officinalis</i> L.	LC	N		RUD
<i>Saxifraga granulata</i> L.	LC	N		DRY
<i>Saxifraga rosacea</i> subsp. <i>sponhemica</i> (C.C. Gmel.) D.A. Webb	EN	N	B2ab(i,iv)	ROC
<i>Saxifraga tridactylites</i> L.	NT	N		ROC
<i>Scabiosa columbaria</i> L. subsp. <i>columbaria</i>	LC	N		DRY

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<i>Scabiosa columbaria</i> subsp. <i>pratensis</i> (Jord.) Br.-Bl.	EN	N	B2ab(i,iv)	DRY
<i>Scandix pecten-veneris</i> L.	RE	N		RUD
<i>Schedonorus arundinaceus</i> (Schreb.) Dum.	LC	N		MAR
<i>Schedonorus giganteus</i> (L.) Holub	LC	N		FOR
<i>Schedonorus pratensis</i> (Huds.) P. Beauv.	LC	N		GRA
<i>Schoenoplectus lacustris</i> (L.) Palla	VU	N	B2ab(i,iv)+C2a(i)	FRE
<i>Schoenoplectus tabernaemontani</i> (C.C. Gmel.) Palla	EN	N	B2ab(i,iv)+C2a(i)	MAR
<i>Schoenoplectus triqueter</i> (L.) Palla	RE	N		FRE
<i>Scilla bifolia</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Scirpus sylvaticus</i> L.	LC	N		MAR
<i>Scleranthus annuus</i> L.	LC	N		RUD
<i>Scleranthus perennis</i> L.	LC	N		ROC
<i>Sclerochloa dura</i> (L.) Beauv.	NA	EA		RUD
<i>Scorzonera humilis</i> L.	EN	N	A2c+B2ab(i,iv)	MAR
<i>Scorzoneroideis autumnalis</i> (L.) Moench	LC	N		GRA
<i>Scrophularia auriculata</i> L.	VU	N	B2ab(i,iv)	FRE
<i>Scrophularia nodosa</i> L.	LC	N		FOR
<i>Scrophularia umbrosa</i> Dum.	LC	N		FRE
<i>Scutellaria galericulata</i> L.	LC	N		MAR
<i>Scutellaria minor</i> Huds.	EN	N	B2ab(i,iv)	MAR
<i>Sedum acre</i> L.	LC	N		ROC
<i>Sedum album</i> L.	LC	N		ROC
<i>Sedum forsterianum</i> Smith	LC	N		DRY
<i>Sedum rubens</i> L.	RE	N		ROC
<i>Sedum rupestre</i> L.	LC	N		ROC
<i>Sedum sexangulare</i> L.	NT	N		ROC
<i>Selinum carvifolia</i> (L.) L.	VU	N	A2c+A3c+B2ab(i,iv)	MAR
<i>Sempervivum tectorum</i> L.	NA	EA		ROC
<i>Senecio inaequidens</i> DC.	NA	EA		RUD
<i>Senecio ovatus</i> (P. Gaertn., B. Mey. et Scherb.) Willd.	LC	N		FOR
<i>Senecio sarracenicus</i> L.	RE	N		FRE
<i>Senecio sylvaticus</i> L.	LC	N		FOR
<i>Senecio vernalis</i> Waldst. et Kit.	NA	EA		RUD
<i>Senecio viscosus</i> L.	LC	N		RUD
<i>Senecio vulgaris</i> L.	LC	N		RUD
<i>Serratula tinctoria</i> L.	CR	N	B2ab(i,iv)	DRY
<i>Seseli annuum</i> L.	CR	N	B2ab(i,iv)	DRY
<i>Seseli libanotis</i> (L.) Koch	EN	N	B2ab(i,iv)	ROC
<i>Sesleria caerulea</i> (L.) Ard.	EN	N	B2ab(i,iv)	DRY
<i>Setaria italica</i> (L.) Beauv.	NA	EA		RUD
<i>Setaria pumila</i> (Poir.) Roem. et Schult.	NT	N		RUD
<i>Setaria verticillata</i> (L.) Beauv.	DD	N		RUD
<i>Setaria viridis</i> (L.) Beauv.	NT	N		RUD
<i>Sherardia arvensis</i> L.	VU	N	C2a(i)	RUD
<i>Silaum silaus</i> (L.) Schinz et Thell.	LC	N		MAR
<i>Silene conica</i> L.	RE	N		DRY
<i>Silene dichotoma</i> Ehrh.	RE	EA		RUD

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<i>Silene dioica</i> (L.) Clairv.	LC	N		FOR
<i>Silene flos-cuculi</i> (L.) Greuter et Burdet	LC	N		MAR
<i>Silene flos-jovis</i> (L.) Greuter & Burdet	NA	EA		RUD
<i>Silene latifolia</i> subsp. <i>alba</i> (Mill.) Greuter et Burdet	LC	N		RUD
<i>Silene noctiflora</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Silene nutans</i> L.	NT	N		ROC
<i>Silene vulgaris</i> (Moench) Garcke	LC	N		FOR
<i>Sinapis alba</i> L.	NA	EA		RUD
<i>Sinapis arvensis</i> L.	LC	N		RUD
<i>Sisymbrium altissimum</i> L.	NA	EA		RUD
<i>Sisymbrium officinale</i> (L.) Scop.	LC	N		RUD
<i>Solanum dulcamara</i> L.	LC	N		FRE
<i>Solanum nigrum</i> L.	LC	N		RUD
<i>Solidago canadensis</i> L.	NA	EA		RUD
<i>Solidago gigantea</i> Ait.	NA	EA		RUD
<i>Solidago virgaurea</i> L.	LC	N		FOR
<i>Sonchus arvensis</i> L.	LC	N		RUD
<i>Sonchus asper</i> (L.) Hill	LC	N		RUD
<i>Sonchus oleraceus</i> L.	LC	N		MAR
<i>Sorbus aria</i> (L.) Crantz	LC	N		FOR
<i>Sorbus aucuparia</i> L.	LC	N		FOR
<i>Sorbus latifolia</i> (Lam.) Pers.	RE	N		FOR
<i>Sorbus torminalis</i> (L.) Crantz	NT	N		FOR
<i>Sparganium emersum</i> Rehm.	VU	N	B2ab(i,iv)	AQU
<i>Sparganium erectum</i> L.	LC	N		AQU
<i>Sparganium natans</i> L.	RE	N		AQU
<i>Spergula arvensis</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Spergula morisonii</i> Boreau	RE	N		DRY
<i>Spergula pentandra</i> L.	RE	N		RUD
<i>Spergularia marina</i> (L.) Besser	NA	EA		RUD
<i>Spergularia rubra</i> (L.) J. et C. Presl	LC	N		ROC
<i>Spiraea alba</i> Du Roi	NA	EA		FRE
<i>Spiraea ×billardii</i> Hérincq	NA	EA		RUD
<i>Spiraea douglasii</i> Hook.	NA	EA		RUD
<i>Spirodela polyrhiza</i> (L.) Schleid.	LC	N		AQU
<i>Stachys alpina</i> L.	VU	N	B2ab(i,iv)	FOR
<i>Stachys annua</i> (L.) L.	CR	N	B2ab(iv)	RUD
<i>Stachys arvensis</i> (L.) L.	VU	N	B2ab(i,iv)	RUD
<i>Stachys germanica</i> L.	CR	N	B2ab(i,iv)+D	DRY
<i>Stachys palustris</i> L.	LC	N		MAR
<i>Stachys recta</i> L.	NT	N		DRY
<i>Stachys sylvatica</i> L.	LC	N		FOR
<i>Stellaria alsine</i> Grimm	LC	N		MAR
<i>Stellaria graminea</i> L.	LC	N		DRY
<i>Stellaria holostea</i> L.	LC	N		FOR
<i>Stellaria media</i> (L.) Vill.	LC	N		RUD
<i>Stellaria nemorum</i> L.	LC	N		FOR

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Stellaria palustris</i> Retz.	EN	N	B2ab(i,iv)	MAR
<i>Stuckenia pectinata</i> (L.) Börner	VU	N	B2ab(i,iv)	AQU
<i>Succisa pratensis</i> Moench	NT	N		MAR
<i>Symphyotrichum lanceolatum</i> (Willd.) Nesom	NA	EA		RUD
<i>Symphyotrichum novi-belgii</i> (L.) Nesom	NA	EA		RUD
<i>Symphytum officinale</i> L.	LC	N		FRE
<i>Syringa vulgaris</i> L.	NA	EA		ROC
<i>Tanacetum parthenium</i> (L.) Schultz-Bip.	NA	EA		RUD
<i>Tanacetum vulgare</i> L.	LC	N		RUD
<i>Taraxacum adamii</i> auct. non Claire	DD	N		GRA
<i>Taraxacum alatum</i> Lindb. f.	DD	N		GRA
<i>Taraxacum anglicum</i> Dahlst.	DD	N		MAR
<i>Taraxacum copidophyllum</i> Dahlst.	DD	N		GRA
<i>Taraxacum dahlstedtii</i> Lindb. f.	DD	N		GRA
<i>Taraxacum dilatatum</i> Lindb. f.	DD	N		GRA
<i>Taraxacum ekmannii</i> Dahlst.	DD	N		GRA
<i>Taraxacum haematicum</i> G.E. Haglund ex H. Øllg. & Wittzell	DD	N		GRA
<i>Taraxacum hollandicum</i> v. Soest	DD	N		GRA
<i>Taraxacum lacistophylloides</i> Dahlst.	DD	N		MAR
<i>Taraxacum lacistophyllum</i> (Dahlst.) Raunk.	DD	N		ROC
<i>Taraxacum ochrochlorum</i> G.E. Haglund	DD	N		ROC
<i>Taraxacum parnassicum</i> Dahlst.	DD	N		ROC
<i>Taraxacum pectinatiforme</i> Lindb. f.	DD	N		GRA
<i>Taraxacum reichlingii</i> v. Soest	RE	N		MAR
<i>Taraxacum rivulare</i> v. Soest	RE	N		GRA
<i>Taraxacum rubicundum</i> (Dahlst.) Dahlst.	DD	N		ROC
<i>Taraxacum scanicum</i> Dahlst.	DD	N		ROC
<i>Taraxacum sellandii</i> Dahlst.	DD	N		GRA
<i>Taraxacum subpallidissimum</i> v. Soest	DD	N		GRA
<i>Taraxacum subundulatum</i> Dahlst.	DD	N		GRA
<i>Taraxacum tortilobum</i> Florstr.	DD	N		GRA
<i>Taraxacum trilobatum</i> Palmgr.	DD	N		ROC
<i>Taraxacum undulatifforme</i> Dahlst.	DD	N		GRA
<i>Taraxacum undulatum</i> Lindb. f. et Markl.	DD	N		GRA
<i>Taxus baccata</i> L.	NA	EA		FOR
<i>Teesdalia nudicaulis</i> (L.) R. Brown	LC	N		ROC
<i>Tephrosieris helenitis</i> (L.) Nordenstram	EN	N	B2ab(i,iv)	FOR
<i>Teucrium botrys</i> L.	VU	N	B2ab(i,iv)	ROC
<i>Teucrium chamaedrys</i> L.	NT	N		DRY
<i>Teucrium montanum</i> L.	RE	N		DRY
<i>Teucrium scorodonia</i> L.	LC	N		FOR
<i>Thalictrum flavum</i> L.	EN	N	B2ab(i,iv)	MAR
<i>Thalictrum minus</i> subsp. <i>pratense</i> (F.W. Schultz) Hand	EN	N	B2a+B2b(iv)+D	DRY
<i>Thelypteris palustris</i> Schott	CR	N	B2a+B2b(iv)+D	MAR
<i>Thesium pyrenaicum</i> Pourr.	CR	N	B2ab(i,iv)	DRY
<i>Thlaspi arvense</i> L.	LC	N		RUD
<i>Thymelaea passerina</i> (L.) Coss. et Germ.	RE	N		RUD

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<i>Thymus praecox</i> Opiz	NT	N		ROC
<i>Thymus pulegioides</i> L.	LC	N		DRY
<i>Tilia cordata</i> Mill.	NT	N		FOR
<i>Tilia platyphyllos</i> Scop.	LC	N		FOR
<i>Torilis arvensis</i> (Huds.) Link	EN	N	B2ab(i,iv)	RUD
<i>Torilis japonica</i> (Houtt.) DC.	LC	N		FOR
<i>Tragopogon dubius</i> Scop.	NA	EA		RUD
<i>Tragopogon pratensis</i> L.	LC	N		DRY
<i>Tragopogon pratensis</i> subsp. <i>orientalis</i> (L.) Čelak.	EN	N	B2ab(i,iv)	DRY
<i>Trifolium alpestre</i> L.	RE	N		DRY
<i>Trifolium arvense</i> L.	LC	N		DRY
<i>Trifolium aureum</i> Pollich	VU	N	C2a(i)	DRY
<i>Trifolium campestre</i> Schreb.	LC	N		DRY
<i>Trifolium dubium</i> Sibth.	LC	N		GRA
<i>Trifolium fragiferum</i> L.	VU	N	C2a(i)	DRY
<i>Trifolium hybridum</i> L.	LC	N		GRA
<i>Trifolium incarnatum</i> L.	NA	EA		RUD
<i>Trifolium medium</i> L.	LC	N		DRY
<i>Trifolium montanum</i> L.	LC	N		DRY
<i>Trifolium ochroleucon</i> Huds.	EN	N	B2ab(i,iv)	DRY
<i>Trifolium pratense</i> L.	LC	N		GRA
<i>Trifolium repens</i> L.	LC	N		GRA
<i>Trifolium rubens</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Trifolium striatum</i> L.	VU	N	C2a(i)	DRY
<i>Triglochin palustris</i> L.	EN	N	B2ab(i,iv)	MAR
<i>Trigonella alba</i> (Med.) Coulot et Rabaute	LC	N		RUD
<i>Trigonella altissima</i> (Thuill.) Coulot et Rabaute	EN	N	B2ab(i,iv)	RUD
<i>Trigonella officinalis</i> (L.) Coulot et Rabaute	LC	N		RUD
<i>Tripleurospermum maritimum</i> (L.) Koch	LC	N		RUD
<i>Trisetum flavescens</i> (L.) Beauv.	LC	N		GRA
<i>Turgenia latifolia</i> (L.) Hoffmann	RE	N		RUD
<i>Turritis glabra</i> L.	LC	N		FOR
<i>Tussilago farfara</i> L.	LC	N		RUD
<i>Typha angustifolia</i> L.	NT	N		FRE
<i>Typha latifolia</i> L.	LC	N		FRE
<i>Ulex europaeus</i> L.	NA	EA		FOR
<i>Ulmus glabra</i> Huds.	NT	N		FOR
<i>Ulmus laevis</i> Pallas	EN	N	B2ab(i,iv)	FOR
<i>Ulmus minor</i> Mill.	VU	N	B2ab(i,iv)	FOR
<i>Urtica dioica</i> L.	LC	N		RUD
<i>Urtica urens</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Utricularia australis</i> R. Brown	EN	N	B2ab(i,iv)	AQU
<i>Utricularia vulgaris</i> L.	EN	N	B2ab(i,iv)	AQU
<i>Vaccaria hispanica</i> (Mill.) Rauschert	CR	N	B2ab(i,iv)	RUD
<i>Vaccinium myrtillus</i> L.	LC	N		FOR
<i>Vaccinium oxycoccos</i> L.	CR	N	B2ab(iv)+C2a(i)+D	MAR
<i>Vaccinium vitis-idaea</i> L.	RE	N		DRY

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Valeriana dioica</i> L.	VU	N	A2c+A3c+B2ab(i,iv)	MAR
<i>Valeriana officinalis</i> subsp. <i>repens</i> (Host) O. Bolòs et Vigo	LC	N		MAR
<i>Valeriana officinalis</i> subsp. <i>tenuifolia</i> (Vahl) Schübl. et Martens	NT	N		FOR
<i>Valerianella carinata</i> Loisel.	EN	N	B2ab(i,iv)	RUD
<i>Valerianella dentata</i> (L.) Pollich	EN	N	B2ab(i,iv)	RUD
<i>Valerianella locusta</i> (L.) Laterr.	LC	N		RUD
<i>Valerianella rimosa</i> Bast.	EN	N	B2ab(i,iv)	RUD
<i>Vallisneria spiralis</i> L.	CR	N	B2ab(i,iv)	AQU
<i>Vandenboschia speciosa</i> (Willd.) Kunkel	LC	N		ROC
<i>Verbascum blattaria</i> L.	EN	N	B2ab(i,iv)	RUD
<i>Verbascum densiflorum</i> Bertol.	VU	N	B2ab(i,iv)	RUD
<i>Verbascum lychnitis</i> L.	LC	N		ROC
<i>Verbascum nigrum</i> L.	LC	N		RUD
<i>Verbascum phlomoides</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Verbascum pulverulentum</i> Vill.	CR	N	B2ab(i,iv)	ROC
<i>Verbascum thapsus</i> L.	LC	N		RUD
<i>Verbena officinalis</i> L.	LC	N		RUD
<i>Veronica agrestis</i> L.	NT	N		RUD
<i>Veronica anagallis-aquatica</i> L.	EN	N	B2ab(i,iv)	FRE
<i>Veronica arvensis</i> L.	LC	N		RUD
<i>Veronica beccabunga</i> L.	LC	N		FRE
<i>Veronica catenata</i> Pennell	EN	N	B2ab(i,iv)	FRE
<i>Veronica chamaedrys</i> L.	LC	N		DRY
<i>Veronica filiformis</i> Smith	NA	EA		RUD
<i>Veronica hederifolia</i> L.	LC	N		RUD
<i>Veronica montana</i> L.	LC	N		FOR
<i>Veronica officinalis</i> L.	LC	N		FOR
<i>Veronica persica</i> Poiret	LC	N		RUD
<i>Veronica polita</i> Fries	VU	N	B2ab(i,iv)	RUD
<i>Veronica praecox</i> All.	RE	N		RUD
<i>Veronica scutellata</i> L.	NT	N		MAR
<i>Veronica serpyllifolia</i> L.	LC	N		RUD
<i>Veronica sublobata</i> M. Fischer	DD	N		FOR
<i>Veronica teucrium</i> L.	EN	N	B2ab(i,iv)	DRY
<i>Veronica triphyllos</i> L.	VU	N	B2ab(i,iv)	RUD
<i>Veronica verna</i> L.	CR	N	B2ab(i,iv)	RUD
<i>Viburnum lantana</i> L.	LC	N		FOR
<i>Viburnum opulus</i> L.	LC	N		FOR
<i>Vicia cracca</i> L.	LC	N		RUD
<i>Vicia lathyroides</i> L.	CR	N	B2ab(i,iv)	DRY
<i>Vicia pannonica</i> Crantz	NA	EA		RUD
<i>Vicia pisiformis</i> L.	RE	N		FOR
<i>Vicia sativa</i> L.	LC	N		RUD
<i>Vicia sepium</i> L.	LC	N		FOR
<i>Vicia tenuifolia</i> Roth	NT	N		DRY
<i>Vicia villosa</i> Roth	NA	EA		RUD
<i>Vinca major</i> L.	NA	EA		RUD

Taxon	Threat category	Status	Criteria sub-heads	Habitat type
<i>Vinca minor</i> L.	LC	N		FOR
<i>Vincetoxicum hirundinaria</i> Med.	VU	N	B2ab(i,iv)	FOR
<i>Viola arvensis</i> Murray	LC	N		RUD
<i>Viola canina</i> L.	VU	N	C2a(i)	DRY
<i>Viola hirta</i> L.	LC	N		FOR
<i>Viola mirabilis</i> L.	EN	N	B2ab(i,iv)	FOR
<i>Viola odorata</i> L.	LC	N		FOR
<i>Viola palustris</i> L.	VU	N	C2a(i)	MAR
<i>Viola reichenbachiana</i> Jord. ex Boreau	LC	N		FOR
<i>Viola riviniana</i> Reichenb.	LC	N		FOR
<i>Viola tricolor</i> L.	LC	N		RUD
<i>Viscum album</i> L.	LC	N		FOR
<i>Vulpia bromoides</i> (L.) S.F. Gray	EN	N	B2ab(i,iv)	DRY
<i>Vulpia myuros</i> (L.) C.C. Gmel.	LC	N		RUD
<i>Vulpia unilateralis</i> (L.) Stace	NA	EA		DRY
<i>Wahlenbergia hederacea</i> (L.) Reichenb.	CR	N	B2ab(i,iv)+D	MAR
<i>Zannichellia palustris</i> L.	VU	N	B2ab(i,iv)	AQU

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Authors contributions

GC and LD established the updated checklist of vascular plants and applied the IUCN criteria to all plant taxa. For the genera *Rubus* and the pteridophytes the taxa to be included into the checklist were validated by TH and YK respectively. GC, LD, TH, YK and SSch carried out the final assessment. GC and LD did the statistical analyses of the data and wrote the text, which was commented on by the three other co-authors. The comments on pteridophytes and apomictic taxa were written by YK and TH, the section on the conservation actions by SSch.

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Appendix 1

The IUCN categories

(IUCN Standards and Petitions Committee 2024, IUCN 2012a)

Regionally Extinct (RE)

Category for a taxon when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last individual has died or disappeared in the wild from the region. The setting of any time limit for listing under RE is left to the discretion of the regional Red List authority, but should not normally pre-date 1500 AD.

Critically Endangered (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are often included in this category.

Data Deficient (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, or a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

Not Evaluated (NE)

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

The criteria for Critically Endangered, Endangered and Vulnerable taxa

(IUCN 2012b)

Critically Endangered (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of $\geq 90\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
 2. An observed, estimated, inferred or suspected population size reduction of $\geq 80\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
 3. A population size reduction of $\geq 80\%$, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
 4. An observed, estimated, inferred, projected or suspected population size reduction of $\geq 80\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:
1. Extent of occurrence estimated to be less than 100 km^2 , and estimates indicating at least two of a-c:
 - a. Severely fragmented or known to exist at only a single location.
 - b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
 2. Area of occupancy estimated to be less than 10 km^2 , and estimate indicating at least two of a-c:
 - a. Severely fragmented or known to exist at only a single location.
 - b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 250 mature individuals and either:
1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR
 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - a. Population structure in the form of one of the following:

- (i) no subpopulation estimated to contain more than 50 mature individuals, OR
 - (ii) at least 90 % of mature individuals in one subpopulation.
 - b. Extreme fluctuations in number of mature individuals.
- D. Population size estimated to number fewer than 50 mature individuals.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 50 % within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

Endangered (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of $\geq 70\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
2. An observed, estimated, inferred or suspected population size reduction of $\geq 50\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. A population size reduction of $\geq 50\%$, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
4. An observed, estimated, inferred, projected or suspected population size reduction of $\geq 50\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

1. Extent of occurrence estimated to be less than 5,000 km², and estimates indicating at least two of a-c:
 - a. Severely fragmented or known to exist at no more than five locations.
 - b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
2. Area of occupancy estimated to be less than 500 km², and estimates indicating at least two of a-c:
 - a. Severely fragmented or known to exist at no more than five locations.
 - b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence

- (ii) area of occupancy
- (iii) area, extent and/or quality of habitat
- (iv) number of locations or subpopulations
- (v) number of mature individuals.
- c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 2,500 mature individuals and either:
 - 1. An estimated continuing decline of at least 20 % within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR
 - 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - a. Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than 250 mature individuals, OR
 - (ii) at least 95 % of mature individuals in one subpopulation.
 - b. Extreme fluctuations in number of mature individuals.
- D. Population size estimated to number fewer than 250 mature individuals.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 20 % within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

Vulnerable (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild:

- A. Reduction in population size based on any of the following:

- 1. An observed, estimated, inferred or suspected population size reduction of $\geq 50\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:
 - (a) direct observation
 - (b) an index of abundance appropriate to the taxon
 - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
 - (d) actual or potential levels of exploitation
 - (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.
- 2. An observed, estimated, inferred or suspected population size reduction of $\geq 30\%$ over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.
- 3. A population size reduction of $\geq 30\%$ projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
- 4. An observed, estimated, inferred, projected or suspected population size reduction of $\geq 30\%$ over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

- B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both:

- 1. Extent of occurrence estimated to be less than 20,000 km², and estimates indicating at least two of a-c:
 - a. Severely fragmented or known to exist at no more than 10 locations.

- b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
- c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- 2. Area of occupancy estimated to be less than 2,000 km², and estimates indicating at least two of a-c:
 - a. Severely fragmented or known to exist at no more than 10 locations.
 - b. Continuing decline, observed, inferred or projected, in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) area, extent and/or quality of habitat
 - (iv) number of locations or subpopulations
 - (v) number of mature individuals.
 - c. Extreme fluctuations in any of the following:
 - (i) extent of occurrence
 - (ii) area of occupancy
 - (iii) number of locations or subpopulations
 - (iv) number of mature individuals.
- C. Population size estimated to number fewer than 10,000 mature individuals and either:
 - 1. An estimated continuing decline of at least 10 % within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR
 - 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):
 - a. Population structure in the form of one of the following:
 - (i) no subpopulation estimated to contain more than 1,000 mature individuals, OR
 - (ii) all mature individuals in one subpopulation.
 - b. Extreme fluctuations in number of mature individuals.
- D. Population very small or restricted in the form of either of the following:
 - 1. Population size estimated to number fewer than 1,000 mature individuals.
 - 2. Population with a very restricted area of occupancy (typically less than 20 km²) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.
- E. Quantitative analysis showing the probability of extinction in the wild is at least 10 % within 100 years.

Appendix 2

Tab. A1: Proportions (and numbers) of plant taxa per habitat type for each threat category in the 2005 Red List. The proportions and numbers per habitat type for EA taxa and the proportion of taxa that are EA in each habitat type are also indicated. For habitat abbreviations see Tab. 1. RE = Regionally Extinct, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, R = Extremely Rare, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, NE = Not Evaluated, EA = Established Aliens. The two highest proportions per column are highlighted in bold.

	RE	CR	EN	VU	R	NT	LC	DD	NE	Total natives	EA	Total with EA	EA/Total with EA
AQU	4.5 %	2.7 %	5.1 %	8.3 %	11.6 %	0.0 %	2.9 %	0.0 %	0.0 %	3.9 %	5.9 %	4.1 %	
	(4)	(3)	(6)	(9)	(8)	(0)	(17)	(0)	(0)	(47)	(7)	(54)	13.0 %
DRY	23.9 %	30.1 %	30.5 %	24.8 %	13.0 %	19.4 %	14.0 %	0.0 %	0.0 %	17.9 %	3.4 %	16.6 %	
	(21)	(34)	(36)	(27)	(9)	(7)	(82)	(0)	(0)	(216)	(4)	(220)	1.8 %
FOR	8.0 %	9.7 %	11.0 %	25.7 %	37.7 %	38.9 %	32.0 %	0.0 %	63.5 %	28.2 %	14.4 %	27.0 %	
	(7)	(11)	(13)	(28)	(26)	(14)	(187)	(0)	(54)	(340)	(17)	(357)	4.8 %
FRE	11.4 %	8.8 %	8.5 %	7.3 %	11.6 %	0.0 %	3.8 %	0.0 %	0.0 %	5.6 %	7.6 %	5.8 %	
	(10)	(10)	(10)	(8)	(8)	(0)	(22)	(0)	(0)	(68)	(9)	(77)	11.7 %
GRA	1.1 %	0.0 %	0.0 %	0.9 %	0.0 %	0.0 %	7.2 %	0.0 %	21.2 %	5.1 %	2.5 %	4.9 %	
	(1)	(0)	(0)	(1)	(0)	(0)	(42)	(0)	(18)	(62)	(3)	(65)	4.6 %
MAR	11.4 %	22.1 %	14.4 %	18.3 %	4.3 %	11.1 %	11.8 %	0.0 %	2.4 %	12.4 %	1.7 %	11.5 %	
	(10)	25	17	20	3	4	69	0	2	150	2	152	1.3 %
ROC	5.7 %	2.7 %	6.8 %	6.4 %	18.8 %	13.9 %	6.0 %	50.0 %	12.9 %	7.3 %	9.3 %	7.5 %	
	(5)	(3)	(8)	(7)	(13)	(5)	(35)	(1)	(11)	(88)	(11)	(99)	11.1 %
RUD	34.1 %	23.9 %	23.7 %	8.3 %	2.9 %	16.7 %	22.4 %	50.0 %	0.0 %	19.4 %	55.1 %	22.6 %	
	(30)	(27)	(28)	(9)	(2)	(6)	(131)	(1)	(0)	(234)	(65)	(299)	21.7 %
Total	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	
	(88)	(113)	(118)	(109)	(69)	(36)	(585)	(2)	(85)	(1,205)	(118)	(1,323)	8.9 %

Tab. A2: Binary logistic regression analysis of the probability that a plant taxon new for Luxembourg from a certain habitat is an EA in relation to the year of its first record. The MAR habitat was used as reference (Intercept) in the regression. * = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$, ns = not significant. For habitat abbreviations see Tab. 1.

	Estimate	Std. Error	z-value	Pr (> z)
Intercept	-35.90	4.20	-8.548	< 0.001***
First record	0.02	0.002	7.691	< 0.001***
RUD	3.48	0.73	4.79	< 0.001***
AQU	2.14	0.82	2.610	0.009**
DRY	0.21	0.92	0.230	0.818 ns
FOR	1.90	0.74	2.573	0.010*
FRE	1.99	0.84	2.383	0.017*
GRA	0.77	1.02	0.762	0.446 ns
ROC	2.22	0.79	2.800	0.005**

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LISTE DES NUMÉROS PARUS À CETTE DATE

Travaux scientifiques du Musée national d'histoire naturelle (1981-1999)

- I Atlas provisoire des Insectes du Grand-Duché de Luxembourg. Lepidoptera. 1^{ère} partie (Rhopalocera, Hesperidae). Marc Meyer et Alphonse Pelles, 1981.
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