A plant checklist for the Schlosspark Laxenburg: ecological jewels of a Habsburg legacy

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Abstract

The Schlosspark Laxenburg is located in the Vienna Basin south of Vienna. Extended over approximately 280 hectares in area, it is one of the largest parks of its kind in Central Europe. It was first mentioned in the 13th century as a hunting ground that formed part of the estate of a large house. Its present design as English landscape garden took shape in the 18th and continued into the 19th centuries under Joseph II and Francis II/I. In addition to recreational areas, there are large near-natural areas, especially meadows and forests. Due to the occurrence of rare species (especially birds and beetles) and unique habitats, the Schlosspark Laxenburg was designated as part of the Natura 2000 site "Feuchte Ebene-Leithaauen" since 2009 and 2011 respectively. Until now, surprisingly little was known about the inventory of vascular plants in the park. Therefore, surveys were carried out between 2023–2025, in order to assess the floristic composition of the Schlosspark Laxenburg. A total of 484 taxa of wild or feral plants were recorded (478 species, four natural hybrids and two subspecies). Of these, 422 are considered native to Austria (including archaeophytes), 34 are established neophytes (only detected in Austria after 1492) and 28 are considered to be casuals (not permanently established). Forty species are listed as being under threat in Austria according to Red List categories "Endangered" and "Vulnerable". The discovery of the Habitats Directive species *Klasea lycopifolia*, which grows in three meadows in the Schlosspark Laxenburg, is an exceptional find. For this species, the province of Lower Austria holds the entire responsibility for its conservation in Austria, as the only other four known localities of this species in Austria are also found in this federal state. We consider a wet meadow in the northeast of the Schlosspark to be particularly valuable, as 13 Red List plant species were recorded here (including *Allium angulosum*, *Lythrum virgatum*, *Teucrium scordium*, *Thalictrum flavum* and *Viola pumila*). We discuss the importance of the Habsburg Empire in preserving species that are rare in Austria and highlight suggestions for Schlossparks in Austria to increase the knowledge of the plants present there, and their conservation.

Keywords: vascular plants, conservation biology, red list species, Lower Austria

Zusammenfassung

Die Farn- und Blütenpflanzen des Schlossparks Laxenburg: ökologische Perlen im Habsburger-Erbe. Der Schlosspark Laxenburg liegt im Wiener Becken südlich von Wien. Er zählt mit rund 280 Hektar zu den größten Anlagen dieser Art in Mitteleuropa. Erste Erwähnung fand er im 13. Jahrhundert als herrschaftliches Jagdgebiet. Das heutige Aussehen als englischer Landschaftsgarten erlangte er im 18. und 19. Jahrhundert unter Josef II. und Franz II/I. Neben den parkartig gestalteten Bereichen gibt es auch große naturnahe Flächen, insbesondere Wiesen und Wälder. Aufgrund des Vorkommens seltener Arten (insbesondere Vögel und Käfer) und besonderer Lebensräume ist der Schlosspark Laxenburg seit 2009 bzw. 2011 Teil des Europaschutzgebietes Feuchte Ebene-Leithaauen. Über den aktuellen Bestand der wildwachsenden Farn- und Blütenpflanzen war bisher erstaunlich wenig bekannt. Daher fanden in den Jahren 2023 bis 2025 Erhebungen statt, die eine erste aktuelle Übersicht liefern können. Insgesamt konnten 484 Taxa an wilden bzw. verwilderten Pflanzen im Schlosspark Laxenburg nachgewiesen werden (478 Arten, vier natürliche Hybriden und zwei weitere Unterarten). Davon gelten 422 als in Österreich heimisch (inklusive Archäophyten), 34 als etablierte Neophyten (erst nach dem Jahr 1492 in Österreich nachgewiesen) und 28 als, oft nur kurzfristig, verwildert. Insgesamt 40 Arten sind österreichweit in den Gefährdungsstufen „stark gefährdet“ und „gefährdet“ gelistet. Bemerkenswert war der Fund der FFH-Art *Klasea lycopifolia*, die in drei Wiesen im Schlosspark Laxenburg wächst. Für diese Art trägt das Land Niederösterreich die gesamte Verantwortung zum Erhalt in Österreich, da alle bisher bekannten vier Fundorte in diesem Bundesland liegen. Besonders wertvoll erachten wir eine Feuchtwiese im Nordosten des Schlossparks, da hier 13 österreichweit gefährdete Pflanzenarten wachsen (u. A. *Allium angulosum*, *Lythrum virgatum*, *Teucrium scordium*, *Thalictrum flavum* und *Viola pumila*). Wir diskutieren die Bedeutung der Habsburger Monarchie für den Erhalt seltener Pflanzen in Österreich und machen Vorschläge für andere Schlossparks in Österreich, den Kenntnisstand über dortige Pflanzenvorkommen und deren Schutz zu verstärken.

Introduction

In Austria, almost 30 % (24,510 km²) of land is under formal protection, with 452 species and 71 habitats protected under EU law (BISE 2025). Of the 2,823 protected areas in Austria, 383 are Natura 2000 sites. However, there are also sites of conservation importance that do not have any statutory protection.

The current checklist of the vascular plants of Austria includes 2,498 native species and subspecies for the province of Lower Austria, of which 879 (35 %) are included in one of the national red list categories (Schratt-Ehrendorfer et al. 2022).

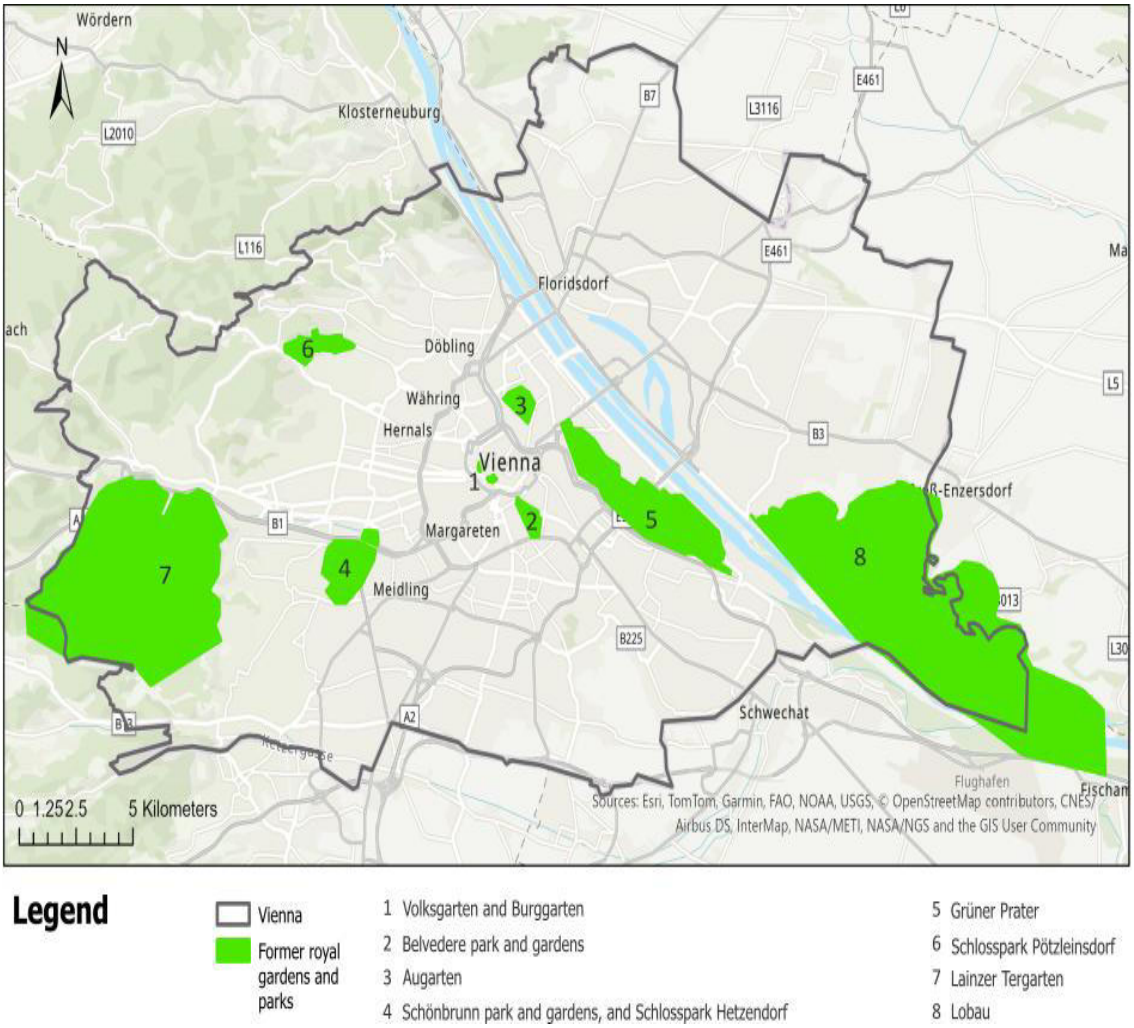

Fig. 1: Examples of former royal parks and gardens in the landscape of Vienna. / *Beispiele für Parkanlagen und Gärten im ehemaligen kaiserlichen Besitz in Wien*. Sources: wien.info, wikipedia.org. Made with ArcGIS Pro v.3.0.0, Esri Inc., 2025.

Schlossparks, extensive parks that were largely created as part of historic palaces (Schloss) during the Habsburg Empire, are found throughout Austria. The complex histories of these areas mean that they can fall under both public and private ownership. Associated with the magnificent palaces we see today, Schlossparks have maintained their importance and value through hundreds of years. Initially designed in the symmetrical and highly managed Baroque style, they moved to an English landscape design typical of the Romantic period in the late 18th to early 19th centuries, during the reign of Emperor Francis II/I. This landscape gardening movement embodied a more natural design and celebrated the beauty of nature, enhancing natural landscapes and habitat diversity (Pecar & Zaunstöch 2015, de Harlez de Deulin 2022).

Today, these parks offer a unique structure to the landscape of Austria, as many are found in or close to urban and agricultural areas that, other than for the Habsburg Empire (1282–1918) or other significant families, would have been turned over to agriculture or urban development (**Fig. 1**). Thanks to their structural diversity and semi-natural areas, these parks can support biodiversity and provide

refuge to rare and endangered taxa (Kümmerling & Müller 2012), providing habitats that would otherwise be lost due to land-use change (IPBES 2019). For example, the extraordinary breeding densities of cavity-nesting birds in Schlosspark Tribuswinkel highlight the important conservation value of these sites (Prinz & Sauberer 2015). As such, they offer a refuge not only for people looking to enjoy nature but for nature itself. Additionally, they provide many ecosystem services and potential for adoption of nature-based solutions, such as the restoration of floodplain grasslands in Marchegg for improving flood alleviation and carbon storage (Lindenberger et al 2025).

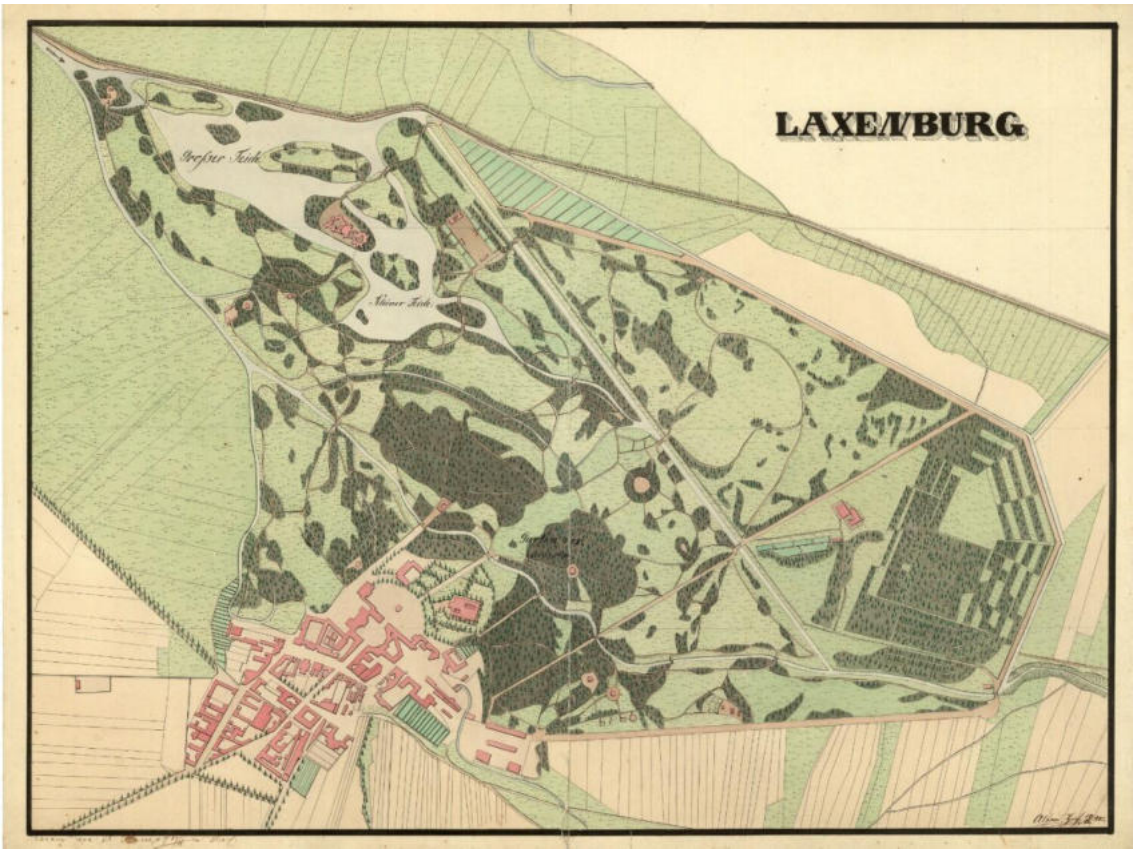

Fig. 2: Historic image of Schlosspark Laxenburg. / *Historische Ansicht des Schlossparks Laxenburg*. Source: Alfred Hoch, 1842. Kuchař, K. Map Collection of B.P. Moll, p. 335, Moravian Library, MZK (Brno, Czech Republic).

Schlosspark Laxenburg is the largest landscaped garden in Austria. It is situated approximately 10 km to the south of Vienna and is part of the Natura 2000 network (Natura 2000 site "Feuchte Ebene–Leithaauen" – AT1220000). The earliest references of this park can be found in historical records from the 13th century (Coker 2020). According to early records, the first ornamental gardens were probably designed in the "Dutch" style during the reign of Emperor Maximillian (1459–1519). Emperor Joseph II, the son of Empress Marie Theresa and Emperor Franz I, expanded the park but maintained the Baroque design. Following the death of Joseph II and his brother Emperor Leopold II, the Empire was inherited by Leopold II's son, Francis II/I, who was known for his great passion for plants and gardening. It was he who transformed the park into a landscape garden design that is still visible today (**Fig. 2**). His works included the creation of the large lake and the Franzensburg Castle. Francis II/I also decided to open the park to the public, around 1800. Since then, the park has become a popular attraction, currently receiving over 600,000 visitors a year. The strong interest of Francis II/I for plants and gardens has its legacy in the herbarium collection of the Vienna Natural History Museum, which owes its origin to the donation of the private collection of the emperor. Today, the collection holds around 5,500,000 herbarium sheets (NHM 2025).

The Schlosspark Laxenburg, however, despite notable anecdotal evidence from citizen science records of its significance for threatened habitats and species, no regular biodiversity monitoring of the park is being conducted and there is no systematic inventory of its fauna and flora. To address this knowledge gap, we have conducted comprehensive inventoring of the higher plants present in the

Schlosspark Laxenburg, highlighting rare and conservation-dependent species as well as possible management measures in the park to safeguard the ecological value of the park and improve the habitat conditions for species threatened or declining. With this work we intend to highlight the importance of parks, such as the Schlosspark Laxenburg, not only for people to enjoy but also for the biodiversity they support, as a legacy of the Habsburg Empire.

Fig. 3: Study area Schlosspark Laxenburg, showing the mix of wooded area and grassland (re-oriented to allow comparison with the historical map in **Fig. 2**). / *Das Untersuchungsgebiet Schlosspark Laxenburg mit dem Lebensraummosaik aus Wald und Wiesen (repositioniert, damit ein Vergleich mit **Fig. 2** möglich wird)*. Made with ArcGIS Pro v.3.0.0, Esri Inc., 2025.

Study area

The Schlosspark Laxenburg (**Fig. 3** – coordinates of the entrance point: 48.066254, 16.358802), is situated in the southern Vienna Basin, a major depression between Alps and Carpathian Mountains. The Vienna Basin is the westernmost part of the Pannonian basin and thus at the edge of the Pontic-Pannonian biogeographical region. It is characterised by a subcontinental climate that is transitional between the temperate humid climate of the deciduous forest zone and the arid climate of the steppe zone (Niklfeld 1964, Walter 1974). In its southern part, the Vienna basin is shaped by Pleistocene gravel terraces, river floodplains, wet depressions and low Tertiary hills. It is bordered by the fringe of the Alps in the west and south, the hilly area of Leithagebirge in the east and the river Danube in the north. To date, no continuous weather records for Laxenburg are available. As such, we are using the weather station, Vienna "Hohe Warte" as a proxy. The mean annual temperature recorded at "Hohe Warte" ranges from 9.9 to 13.1°C over the last 25 years, with a mean of 11.4°C. For the mean annual rainfall, we have compared Laxenburg with the station "Wiener Neustadt". Here, the rainfall ranges from 427 to 807 mm with a mean of 604 mm.

The Schlosspark is extending approximately over 280 hectares in area and is predominantly a mix of grassland, ancient trees and ornamental plantings, centred around a large water body. It includes some old-growth permanent grassland and remnants of former alluvial forest. The diversity of habitats reflects the multi-purpose nature of the park over the centuries. Until the 19th century, pastures and grasslands covered a large portion of the Pannonian lowland of Austria, in some parts even exceeding the area of arable land (Sauberer et al. 1999, Sauberer & Bieringer 2001). Due to the dramatic changes in agriculture and land use during the 20th century, however, only small remnants of these grasslands have been preserved (Sauberer et al. 2021).

Methods

This checklist was created using several data sources. Systematic surveys were performed during spring and summer 2024, with four 20 m × 20 m permanent plots that were established in four different grassland areas of the park. Additionally, ad-hoc field records were collected during the course of several walking visits of the study area from 2023 to 2025, with the aim of covering as much area of the park as possible. Finally, records were also collected from the citizen science platform iNaturalist, through the creation of an iNaturalist project for the Schlosspark Laxenburg. The platform allows citizen scientists to enter species observations with photos, locations, and the date which can be then verified by experts (Campbell et al. 2023). Records on iNaturalist for the park were reviewed by the first two authors before being included in our dataset. The data input was finalised on 30 October 2025.

The scientific species and family names follow Fischer et al. (2008). Where relevant, the name as given on iNaturalist has been added in brackets. The Red List categories follow the Austrian Red List of vascular plants (Schratt-Ehrendorfer et al. 2022).

Results

In the three survey years 2023, 2024 and 2025, a total of 484 taxa of wild (native, naturalised, casual and escaped) vascular plants have been recorded in Schlosspark Laxenburg (**Tab. 1**). This includes 478 species, four natural occurring hybrids and two subspecies. Cultivated plants were not considered in this list. Four-hundred and eight species are native in Austria, with a further 14 assumed to be archaeophytes that arrived in Austria with the introduction of agriculture in the Neolithic period. Twenty-eight species are considered casual (including escaped). Finally, 34 established neophytes (species that have arrived in Austria since 1492) have been found in the Schlosspark Laxenburg, two of which are present on the list of IAS of Union Concern, the tree of heaven (*Ailanthus altissima*) and the Himalayan balsam (*Impatiens glandulifera*).

Tab. 1: List of vascular plant taxa documented in Schlosspark Laxenburg in alphabetical order. Taxon = scientific plant name according to Fischer et al. (2008), where relevant, the name present on iNaturalist has been added in brackets; Family = name of the plant family according to Fischer et al. (2008), where relevant, the family name present on iNaturalist has been added in brackets; Origin = supposed floristic status in Austria; RL-A = Red List of Austria, RL-Pann = endangerment in the Pannonian region of Austria (both following Schratt-Ehrendorfer et al. 2022): EN = endangered, VU = vulnerable, NT = near threatened, LC = least concern, G = degree of endangerment unknown, DD = data deficient, ne = not evaluated. / *Liste der im Schlosspark Laxenburg festgestellten Farn- und Blütenpflanzentaxa alphabetisch gereiht. Taxon = wissenschaftlicher Name nach Fischer et al. (2008), in Klammer, wenn notwendig, der aktuelle Name auf iNaturalist; Family = Name der Pflanzenfamilie nach Fischer et al. (2008), in Klammer, wenn notwendig, der aktuelle Name auf iNaturalist; Origin = floristischer Status des Taxons in Österreich; RL-A = Rote Liste Österreich, RL-Pann = regionaler Gefährdungsgrad in der pannonischen Region (beide nach Schratt-Ehrendorfer et al. 2022): EN = stark gefährdet, VU = gefährdet, NT = Vorwarnliste (Gefährdung droht), LC = ungefährdet, G = Gefährdung unbekannten Ausmaßes, DD = Datenlage unzureichend, ne = nicht in der Roten Liste enthalten*.

Taxon	Family	Origin	RL-A	RL-Pann
Acer campestre	Sapindaceae	native	LC	LC
Acer negundo	Sapindaceae	neophyte	ne	ne
Acer platanoides	Sapindaceae	native	LC	LC
Acer pseudoplatanus	Sapindaceae	native	LC	LC
Achillea collina	Asteraceae	native	LC	LC
Aegopodium podagraria	Apiaceae	native	LC	LC
Aesculus hippocastanum	Sapindaceae	casual	ne	ne
Aethusa cynapium	Apiaceae	native	LC	LC
Agrimonia eupatoria	Rosaceae	native	LC	LC
Agrostis stolonifera	Poaceae	native	LC	LC
Ailanthus altissima	Simaroubaceae	neophyte	ne	ne
Ajuga reptans	Lamiaceae	native	LC	LC
Alisma plantago-aquatica	Alismataceae	native	LC	LC
Alliaria petiolata	Brassicaceae	native	LC	LC
Allium angulosum	Alliaceae (Amaryllidaceae)	native	VU	VU
Allium oleraceum	Alliaceae (Amaryllidaceae)	native	LC	LC
Allium paradoxum	Alliaceae (Amaryllidaceae)	casual	ne	ne
Allium scorodoprasum	Alliaceae (Amaryllidaceae)	native	LC	LC
Allium ursinum	Alliaceae (Amaryllidaceae)	native	LC	LC
Alnus glutinosa	Betulaceae	native	LC	LC

Taxon	Family	Origin	RL-A	RL-Pann
Alopecurus myosuroides	Poaceae	neophyte	ne	ne
Alopecurus pratensis	Poaceae	native	LC	NT
Amaranthus powellii	Amaranthaceae	neophyte	ne	ne
Amaranthus retroflexus	Amaranthaceae	neophyte	ne	ne
Ambrosia artemisiifolia	Asteraceae	neophyte	ne	ne
Anagallis arvensis (Lysimachia arvensis)	Myrsinaceae (Primulaceae)	archaeophyte	LC	LC
Anchusa arvensis subsp. *orientalis (Anchusa ovata)*	Boraginaceae	casual	ne	ne
Anemone ranunculoides	Ranunculaceae	native	LC	LC
Anthemis tinctoria (Cota tinctoria)	Asteraceae	native	NT	NT
Anthriscus cerefolium	Apiaceae	native	LC	LC
Anthriscus sylvestris	Apiaceae	native	LC	LC
Aquilegia vulgaris	Ranunculaceae	native	LC	VU
Arabis hirsuta	Brassicaceae	native	LC	LC
Arctium lappa	Asteraceae	native	LC	LC
Arctium tomentosum	Asteraceae	native	LC	LC
Arenaria serpyllifolia	Caryophyllaceae	native	LC	LC
Arrhenatherum elatius	Poaceae	archaeophyte	LC	LC
Artemisia absinthium	Asteraceae	archaeophyte	LC	LC
Artemisia vulgaris	Asteraceae	native	LC	LC
Arum cylindraceum	Araceae	native	LC	LC
Asplenium ruta-muraria	Aspleniaceae	native	LC	LC
Astragalus cicer	Fabaceae	native	LC	LC
Atriplex oblongifolia	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Atriplex patula	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Atriplex sagitatta	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Ballota nigra	Lamiaceae	native	LC	LC
Barbarea vulgaris	Brassicaceae	native	LC	LC
Bellis perennis	Asteraceae	native	LC	LC
Berberis vulgaris	Berberidaceae	native	LC	LC
Berula erecta	Apiaceae	native	VU	VU
Betonica officinalis	Lamiaceae	native	NT	VU
Bidens frondosa	Asteraceae	neophyte	ne	ne
Brachypodium pinnatum	Poaceae	native	LC	LC
Brachypodium sylvaticum	Poaceae	native	LC	LC
Brassica napus	Brassicaceae	casual	ne	ne
Briza media	Poaceae	native	LC	VU
Bromus benekenii	Poaceae	native	LC	LC
Bromus erectus	Poaceae	native	LC	LC
Bromus hordeaceus	Poaceae	native	LC	LC
Bromus inermis	Poaceae	native	LC	LC
Bromus ramosus	Poaceae	native	LC	VU
Bromus sterilis	Poaceae	native	LC	LC
Bromus tectorum	Poaceae	native	LC	LC
Bryonia dioica (Bryonia cretica subsp. *dioica)*	Cucurbitaceae	native	LC	LC
Buglossoides purpurocaerulea (Aegonychon purpurocaeruleum)	Boraginaceae	native	NT	NT
Bunias orientalis	Brassicaceae	neophyte	ne	ne
Buphthalmum salicifolium	Asteraceae	native	LC	VU
Butomus umbellatus	Butomaceae	native	VU	VU
Buxus sempervirens	Buxaceae	casual	ne	ne
Calamagrostis epigejos	Poaceae	native	LC	LC
Calystegia sepium	Convolvulaceae	native	LC	LC
Campanula persicifolia	Campanulaceae	native	LC	LC
Campanula rapunculoides	Campanulaceae	native	LC	LC
Campanula trachelium	Campanulaceae	native	LC	LC
Capsella bursa-pastoris	Brassicaceae	native	LC	LC
Carduus acanthoides	Asteraceae	native	LC	LC
Carduus crispus	Asteraceae	native	LC	LC
Carex acuta	Cyperaceae	native	VU	VU
Carex acutiformis	Cyperaceae	native	NT	NT
Carex alba	Cyperaceae	native	LC	LC
Carex caryophyllea	Cyperaceae	native	LC	NT
Carex digitata	Cyperaceae	native	LC	LC
Carex distans	Cyperaceae	native	VU	VU
Carex divulsa	Cyperaceae	native	LC	LC
Carex flacca	Cyperaceae	native	LC	NT
Carex hirta	Cyperaceae	native	LC	LC
Carex otrubae	Cyperaceae	native	NT	NT
Carex praecox	Cyperaceae	native	NT	NT
Carex remota	Cyperaceae	native	LC	LC
Carex riparia	Cyperaceae	native	VU	VU
Carex spicata	Cyperaceae	native	LC	LC
Carex sylvatica	Cyperaceae	native	LC	LC

Taxon	Family	Origin	RL-A	RL-Pann
Carex tomentosa	Cyperaceae	native	NT	NT
Carpinus betulus	Betulaceae	native	LC	LC
Carum carvi	Apiaceae	native	LC	EN
Celtis australis	Celtidaceae (Cannabaceae)	casual	ne	ne
Centaurea jacea	Asteraceae	native	LC	VU
Centaurea scabiosa subsp. *scabiosa*	Asteraceae	native	LC	NT
Centaurium pulchellum	Gentianaceae	native	LC	LC
Cerastium arvense subsp. *arvense*	Caryophyllaceae	native	NT	VU
Cerastium glomeratum	Caryophyllaceae	native	LC	LC
Cerastium holosteoides	Caryophyllaceae	native	LC	LC
Cerastium pumilum	Caryophyllaceae	native	NT	NT
Ceratophyllum demersum	Ceratophyllaceae	native	LC	LC
Cerinthe minor	Boraginaceae	native	LC	LC
Chaerophyllum bulbosum	Apiaceae	native	LC	LC
Chaerophyllum temulum	Apiaceae	native	LC	LC
Chelidonium majus	Papaveraceae	native	LC	LC
Chenopodium album	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Chenopodium ficifolium	Chenopodiaceae (Amaranthaceae)	archaeophyte	LC	LC
Chenopodium hybridum	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Chenopodium polyspermum	Chenopodiaceae (Amaranthaceae)	native	LC	LC
Cichorium intybus	Asteraceae	native	LC	LC
Cirsium arvense	Asteraceae	native	LC	LC
Cirsium canum	Asteraceae	native	VU	VU
Cirsium oleraceum	Asteraceae	native	LC	VU
Cirsium vulgare	Asteraceae	native	LC	LC
Clematis vitalba	Ranunculaceae	native	LC	LC
Clinopodium vulgare	Lamiaceae	native	LC	LC
Colchicum autumnale	Colchicaceae	native	LC	LC
Consolida hispanica (Consolida orientalis)	Ranunculaceae	neophyte	ne	ne
Consolida regalis (Delphinium consolida)	Ranunculaceae	archaeophyte	LC	LC
Convolvulus arvensis	Convolvulaceae	native	LC	LC
Cornus mas	Cornaceae	native	LC	LC
Cornus sanguinea	Cornaceae	native	LC	LC
Corydalis cava	Fumariaceae	native	LC	LC
Cosmos bipinnatus	Asteraceae	casual	ne	ne
Crataegus monogyna	Rosaceae	native	LC	LC
Crepis biennis	Asteraceae	native	LC	LC
Crepis pulchra	Asteraceae	casual	ne	ne
Crepis setosa	Asteraceae	native	LC	LC
Crocus vernus agg.	Iridaceae	casual	ne	ne
Cruciata laevipes	Rubiaceae	native	LC	LC
Cyanus segetum (Centaurea cyanus)	Asteraceae	archaeophyte	NT	NT
Cyclamen purpurascens	Myrsinaceae	native	LC	NT
Cynodon dactylon	Poaceae	native	LC	LC
Cystopteris fragilis	Dryopteridaceae (Cystopteridaceae)	native	LC	VU
Dactylis glomerata	Poaceae	native	LC	LC
Datura stramonium	Solanaceae	neophyte	ne	ne
Daucus carota	Apiaceae	native	LC	LC
Deschampsia cespitosa	Poaceae	native	LC	NT
Dianthus superbus subsp. superbus[1)]	Caryophyllaceae	native	EN	EN
Digitaria sanguinalis	Poaceae	native	LC	LC
Dipsacus fullonum	Dipsacaceae	native	LC	LC
Dipsacus pilosus	Dipsacaceae	native	LC	LC
Draba boerhaavii (Draba verna var. *boerhaavii)*	Brassicaceae	native	DD	DD
Echinochloa crus-galli	Poaceae	native	LC	LC
Echinops sphaerocephalus	Asteraceae	native	LC	LC
Echium vulgare	Boraginaceae	native	LC	LC
Elymus caninus	Poaceae	native	LC	LC
Elymus repens	Poaceae	native	LC	LC
Epilobium hirsutum	Onagraceae	native	LC	LC
Epilobium parviflorum	Onagraceae	native	LC	LC
Epilobium roseum	Onagraceae	native	LC	LC
Epilobium tetragonum	Onagraceae	native	LC	LC
Equisetum arvense	Equisetaceae	native	LC	LC
Eragrostis minor	Poaceae	native	ne	ne
Eranthis hyemalis	Ranunculaceae	casual	ne	ne
Erechtites hieraciifolia	Asteraceae	neophyte	ne	ne
Erigeron acris subsp. *serotinus*	Asteraceae	native	NT	G
Erigeron annuus	Asteraceae	neophyte	ne	ne
Erigeron canadensis	Asteraceae	neophyte	ne	ne
Erodium cicutarium	Geraniaceae	native	LC	LC
Eryngium campestre	Apiaceae	native	NT	NT

Taxon	Family	Origin	RL-A	RL-Pann
Euonymus europaeus	Celastraceae	native	LC	LC
Eupatorium cannabinum	Asteraceae	native	LC	LC
Euphorbia cyparissias	Euphorbiaceae	native	LC	LC
Euphorbia esula	Euphorbiaceae	native	LC	LC
Euphorbia verrucosa[2)]	Euphorbiaceae	native	VU	VU
Euphorbia virgata	Euphorbiaceae	native	NT	NT
Fagus sylvatica	Fagaceae	native	LC	LC
Falcaria vulgaris	Apiaceae	native	LC	LC
Fallopia convolvulus	Polygonaceae	native	LC	LC
Fallopia dumetorum	Polygonaceae	native	LC	LC
Fallopia × *bohemica (Reynoutria* × *bohemica)*	Polygonaceae	neophyte	ne	ne
Festuca arundinacea (Lolium arundinaceum)	Poaceae	native	LC	LC
Festuca gigantea (Lolium giganteum)	Poaceae	native	LC	LC
Festuca rubra	Poaceae	native	LC	LC
Festuca rupicola	Poaceae	native	LC	LC
Ficaria verna	Ranunculaceae	native	LC	LC
Filipendula ulmaria subsp. *ulmaria*	Rosaceae	native	LC	LC
Filipendula vulgaris	Rosaceae	native	VU	VU
Fragaria vesca	Rosaceae	native	LC	NT
Fragaria viridis	Rosaceae	native	NT	NT
Fraxinus excelsior	Oleaceae	native	NT	NT
Fumaria vaillantii	Fumariaceae	archaeophyte	NT	NT
Gagea lutea	Liliaceae	native	LC	LC
Gagea villosa	Liliaceae	native	VU	VU
Galanthus nivalis	Amaryllidaceae	native	LC	LC
Galeobdolon montanum	Lamiaceae	native	LC	LC
Galeopsis pubescens	Lamiaceae	native	LC	LC
Galium album	Rubiaceae	native	LC	LC
Galium aparine	Rubiaceae	native	LC	LC
Galium boreale	Rubiaceae	native	NT	VU
Galium mollugo s.str.	Rubiaceae	native	LC	VU
Galium odoratum	Rubiaceae	native	LC	LC
Galium verum (Galium verum subsp. *verum)*	Rubiaceae	native	LC	LC
Galium wirtgenii (Galium verum subsp. *wirtgenii)*	Rubiaceae	native	VU	VU
Geranium pusillum	Geraniaceae	native	LC	LC
Geranium pyrenaicum	Geraniaceae	neophyte	ne	ne
Geranium robertianum	Geraniaceae	native	LC	LC
Geranium sibiricum	Geraniaceae	neophyte	ne	ne
Geum urbanum	Rosaceae	native	LC	LC
Glechoma hederacea	Lamiaceae	native	LC	LC
Gleditsia triacanthos	Caesalpiniaceae (Fabaceae)	casual	ne	ne
Hedera helix	Araliaceae	native	LC	LC
Helianthemum nummularium subsp. *obscurum*	Cistaceae	native	NT	NT
Helminthotheca echioides	Asteraceae	native	ne	ne
Hepatica nobilis	Ranunculaceae	native	LC	LC
Heracleum sphondylium	Apiaceae	native	LC	LC
Hieracium murorum	Asteraceae	native	LC	LC
Hieracium pilosella (Pilosella officinarum)	Asteraceae	native	LC	LC
Holcus lanatus	Poaceae	native	LC	NT
Holosteum umbellatum	Caryophyllaceae	native	LC	LC
Homalotrichon pubescens (Avenula pubescens)	Poaceae	native	LC	VU
Hordelymus europaeus	Poaceae	native	LC	VU
Hordeum murinum	Poaceae	native	LC	LC
Humulus lupulus	Cannabaceae	native	LC	LC
Hypericum perforatum	Hypericaceae	native	LC	LC
Impatiens glandulifera	Balsaminaceae	neophyte	ne	ne
Inula britannica (Pentanema britannica)	Asteraceae	native	VU	VU
Inula conyzae (Pentanema squarrosum)	Asteraceae	native	LC	LC
Inula salicina (Pentanema salicinum)	Asteraceae	native	NT	NT
Iris pseudacorus	Iridaceae	native	LC	LC
Juglans nigra	Juglandaceae	casual	ne	ne
Juglans regia	Juglandaceae	neophyte	ne	ne
Juncus articulatus	Juncaceae	native	LC	LC
Juncus compressus	Juncaceae	native	LC	LC
Juncus sphaerocarpus[3)]	Juncaceae	native	VU	VU
Kickxia spuria	Antirrhinaceae (Plantaginaceae)	archaeophyte	VU	VU
Klasea lycopifolia[4)]	Asteraceae	native	EN	EN
Knautia arvensis	Dipsacaceae	native	LC	LC
Lactuca muralis (Mycelis muralis)	Asteraceae	native	LC	LC
Lactuca saligna	Asteraceae	native	VU	VU
Lactuca serriola	Asteraceae	native	LC	LC
Lamium maculatum	Lamiaceae	native	LC	LC

Taxon	Family	Origin	RL-A	RL-Pann
Lamium purpureum	Lamiaceae	native	LC	LC
Lapsana communis	Asteraceae	native	LC	LC
Lathraea squamaria	Orobanchaceae	native	LC	LC
Lathyrus pannonicus subsp. *pannonicus*[5)]	Fabaceae	native	EN	EN
Lathyrus pratensis	Fabaceae	native	LC	LC
Lathyrus tuberosus	Fabaceae	archaeophyte	LC	LC
Leersia oryzoides	Poaceae	native	LC	LC
Legousia speculum-veneris	Campanulaceae	archaeophyte	VU	EN
Lemna minor	Lemnaceae	native	LC	LC
Leontodon hispidus subsp. *hispidus*	Asteraceae	native	LC	LC
Lepidium draba	Brassicaceae	archaeophyte	LC	LC
Leucanthemum vulgare	Asteraceae	native	NT	VU
Ligustrum vulgare	Oleaceae	native	LC	LC
Linaria vulgaris	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Lolium perenne	Poaceae	native	LC	LC
Lonicera tatarica	Caprifoliaceae	casual	ne	ne
Lonicera xylosteum	Caprifoliaceae	native	LC	LC
Loranthus europaeus	Loranthaceae	native	LC	LC
Lotus corniculatus	Fabaceae	native	LC	LC
Lotus maritimus	Fabaceae	native	VU	VU
Lotus tenuis	Fabaceae	native	VU	VU
Lunaria annua	Brassicaceae	casual	ne	ne
Lychnis flos-cuculi (Silene flos-cuculi)	Caryophyllaceae	native	LC	VU
Lycopus europaeus	Lamiaceae	native	LC	LC
Lysimachia nummularia	Myrsinaceae (Primulaceae)	native	LC	LC
Lythrum salicaria	Lythraceae	native	LC	LC
Lythrum virgatum[6)]	Lythraceae	native	EN	EN
Mahonia aquifolium (Berberis aquifolium)	Berberidaceae	casual	ne	ne
Malva neglecta	Malvaceae	native	LC	LC
Malva sylvestris subsp. *mauritiana*	Malvaceae	casual	ne	ne
Malva sylvestris subsp. *sylvestris*	Malvaceae	native	LC	LC
Matricaria discoidea	Asteraceae	neophyte	ne	ne
Medicago falcata	Fabaceae	native	LC	LC
Medicago lupulina	Fabaceae	native	LC	LC
Medicago minima	Fabaceae	native	LC	LC
Medicago sativa	Fabaceae	neophyte	ne	ne
Medicago × varia	Fabaceae	neophyte	ne	ne
Melica nutans	Poaceae	native	LC	LC
Melica transsilvanica	Poaceae	native	NT	NT
Melica uniflora	Poaceae	native	LC	LC
Melilotus officinalis	Fabaceae	native	LC	LC
Melissa officinalis	Lamiaceae	casual	ne	ne
Mentha aquatica	Lamiaceae	native	LC	LC
Mentha arvensis	Lamiaceae	native	LC	LC
Mentha longifolia	Lamiaceae	native	LC	LC
Mercurialis annua	Euphorbiaceae	native	LC	LC
Mercurialis perennis	Euphorbiaceae	native	LC	LC
Microrrhinum minus	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Microthlaspi perfoliatum (Noccaea perfoliata)	Brassicaceae	native	LC	LC
Muscari comosum	Hyacinthaceae	native	NT	NT
Myriophyllum spicatum	Haloragaceae	native	LC	LC
Najas marina	Najadaceae	native	LC	LC
Nonea pulla	Boraginaceae	native	NT	NT
Nuphar lutea	Nymphaeaceae	native	NT	NT
Nymphaea alba	Nymphaeaceae	native	VU	ne
Onobrychis viciifolia	Fabaceae	neophyte	ne	ne
Ononis spinosa subsp. spinosa	Fabaceae	native	NT	NT
Onopordum acanthium	Asteraceae	native	LC	LC
Ornithogalum kochii (Ornithogalum orthophyllum subsp. *kochii)*	Hyacinthaceae	native	VU	VU
Oxalis corniculata	Oxalidaceae	neophyte	ne	ne
Oxalis dillenii	Oxalidaceae	neophyte	ne	ne
Oxalis stricta	Oxalidaceae	neophyte	ne	ne
Panicum capillare	Poaceae	neophyte	ne	ne
Panicum dichotomiflorum	Poaceae	casual	ne	ne
Papaver dubium subsp. *confine (Papaver confine)*	Papaveraceae	native	VU	VU
Papaver rhoeas	Papaveraceae	native	LC	LC
Parietaria officinalis	Urticaceae	native	LC	LC
Parthenocissus inserta	Vitaceae	neophyte	ne	ne
Paulownia tomentosa	Paulowniaceae	casual	ne	ne
Persicaria amphibia	Polygonaceae	native	LC	LC
Persicaria dubia	Polygonaceae	native	LC	LC
Persicaria hydropiper	Polygonaceae	native	LC	LC

Taxon	Family	Origin	RL-A	RL-Pann
Persicaria lapathifolia	Polygonaceae	native	LC	LC
Phalaris arundinacea	Poaceae	native	LC	LC
Phalaris canariensis	Poaceae	casual	ne	ne
Philadelphus coronarius	Hydrangeaceae	native	EN	ne
Phleum nodosum (Phleum bertolonii)	Poaceae	native	DD	DD
Phleum pratense	Poaceae	native	LC	LC
Phragmites australis	Poaceae	native	LC	LC
Physalis alkekengi (Alkekengi officinarum)	Solanaceae	native	LC	LC
Picea abies	Pinaceae	native	LC	ne
Picris hieracioides	Asteraceae	native	LC	LC
Pimpinella saxifraga	Apiaceae	native	LC	LC
Pinus nigra	Pinaceae	native	LC	LC
Plantago lanceolata	Plantaginaceae	native	LC	LC
Plantago major subsp. *intermedia*	Plantaginaceae	native	LC	LC
Plantago major subsp. *major*	Plantaginaceae	native	LC	LC
Plantago media	Plantaginaceae	native	LC	LC
Platanus orientalis	Platanaceae	casual	ne	ne
Poa angustifolia	Poaceae	native	LC	LC
Poa annua	Poaceae	native	LC	LC
Poa nemoralis	Poaceae	native	LC	LC
Poa trivialis	Poaceae	native	LC	LC
Polygonatum latifolium	Ruscaceae	native	LC	LC
Polygonum aviculare	Polygonaceae	native	LC	LC
Populus alba	Salicaceae	native	LC	LC
Populus tremula	Salicaceae	native	LC	LC
Populus × canescens	Salicaceae	native	LC	LC
Portulaca oleracea	Portulacaceae	archaeophyte	LC	LC
Potamogeton crispus	Potamogetonaceae	native	LC	LC
Potamogeton pectinatus (Stuckenia pectinata)	Potamogetonaceae	native	LC	LC
Potentilla argentea	Rosaceae	native	LC	LC
Potentilla indica	Rosaceae	neophyte	ne	ne
Potentilla reptans	Rosaceae	native	LC	LC
Primula veris	Primulaceae	native	NT	VU
Primula vulgaris	Primulaceae	native	LC	NT
Primula × polyantha	Primulaceae	native	ne	ne
Prunella laciniata	Lamiaceae	native	VU	VU
Prunella vulgaris	Lamiaceae	native	LC	LC
Prunus avium	Rosaceae	native	LC	LC
Prunus padus	Rosaceae	native	LC	LC
Prunus spinosa	Rosaceae	native	LC	LC
Pseudoturritis turrita	Brassicaceae	native	LC	LC
Pulicaria dysenterica	Asteraceae	native	NT	NT
Pulmonaria officinalis	Boraginaceae	native	LC	LC
Pyrus pyraster (Pyrus communis subsp. *pyraster)*	Rosaceae	native	NT	NT
Quercus cerris	Fagaceae	native	LC	LC
Quercus robur	Fagaceae	native	LC	LC
Ranunculus acris	Ranunculaceae	native	LC	LC
Ranunculus bulbosus	Ranunculaceae	native	LC	LC
Ranunculus circinatus[7)]	Ranunculaceae	native	NT	NT
Ranunculus nemorosus (Ranunculus tuberosus)	Ranunculaceae	native	LC	EN
Ranunculus polyanthemos	Ranunculaceae	native	NT	NT
Ranunculus repens	Ranunculaceae	native	LC	LC
Ranunculus sceleratus	Ranunculaceae	native	NT	NT
Reseda lutea	Resedaceae	native	LC	LC
Rhamnus cathartica	Rhamnaceae	native	LC	LC
Rhinanthus minor	Orobanchaceae	native	LC	LC
Robinia pseudacacia	Fabaceae	neophyte	ne	ne
Rorippa palustris	Brassicaceae	native	LC	LC
Rosa canina s.l.	Rosaceae	native	LC	LC
Rubus armeniacus	Rosaceae	casual	ne	ne
Rubus caesius	Rosaceae	native	LC	LC
Rubus laciniatus	Rosaceae	casual	ne	ne
Rubus sect. Rubus	Rosaceae	native	LC	LC
Rumex acetosa	Polygonaceae	native	LC	VU
Rumex conglomeratus	Polygonaceae	native	LC	LC
Rumex crispus	Polygonaceae	native	LC	LC
Rumex sanguineus	Polygonaceae	native	LC	LC
Sagina procumbens	Caryophyllaceae	native	LC	LC
Salvia nemorosa	Lamiaceae	native	LC	LC
Salvia pratensis	Lamiaceae	native	NT	NT
Salvia verticillata	Lamiaceae	native	LC	NT
Sambucus nigra	Sambucaceae (Viburnaceae)	native	LC	LC

Taxon	Family	Origin	RL-A	RL-Pann
Sanguisorba officinalis	Rosaceae	native	NT	VU
Scilla vindobonensis	Hyacinthaceae	native	LC	LC
Scirpus sylvaticus	Cyperaceae	native	LC	NT
Scorzonera cana	Asteraceae	native	LC	LC
Scrophularia nodosa	Scrophulariaceae	native	LC	LC
Scrophularia umbrosa	Scrophulariaceae	native	LC	LC
Scutellaria altissima	Lamiaceae	casual	ne	ne
Scutellaria galericulata	Lamiaceae	native	NT	VU
Scutellaria hastifolia[8)]	Lamiaceae	native	VU	EN
Securigera varia	Fabaceae	native	LC	LC
Senecio erraticus (Jacobaea erratica)	Asteraceae	native	LC	NT
Senecio inaequidens	Asteraceae	neophyte	ne	ne
Senecio jacobaea (Jacobaea vulgaris)	Asteraceae	native	NT	NT
Senecio vulgaris	Asteraceae	native	LC	LC
Serratula tinctoria	Asteraceae	native	NT	VU
Sesleria uliginosa	Poaceae	native	VU	VU
Setaria pumila	Poaceae	native	LC	LC
Setaria verticillata	Poaceae	native	LC	LC
Setaria viridis	Poaceae	native	LC	LC
Sherardia arvensis	Rubiaceae	native	NT	NT
Silaum silaus	Apiaceae	native	VU	VU
Silene latifolia subsp. *alba*	Caryophyllaceae	native	LC	LC
Silene noctiflora	Caryophyllaceae	archaeophyte	NT	NT
Silene vulgaris subsp. *vulgaris*	Caryophyllaceae	native	LC	LC
Silybum marianum	Asteraceae	casual	ne	ne
Sinapis arvensis (Mutarda arvensis)	Brassicaceae	native	LC	LC
Sisymbrium loeselii	Brassicaceae	native	LC	LC
Solanum dulcamara	Solanaceae	native	LC	LC
Solanum nigrum	Solanaceae	native	LC	LC
Sonchus arvensis	Asteraceae	native	LC	LC
Sonchus asper	Asteraceae	native	LC	LC
Sonchus oleraceus	Asteraceae	native	LC	LC
Sonchus palustris	Asteraceae	native	VU	VU
Sparganium erectum	Sparganiaceae	native	G	G
Spirodela polyrhiza	Lemnaceae	native	LC	LC
Stachys annua	Lamiaceae	native	NT	NT
Stachys recta	Lamiaceae	native	NT	NT
Stachys sylvatica	Lamiaceae	native	LC	LC
Staphylea pinnata	Staphyleaceae	native	LC	LC
Stellaria aquatica	Caryophyllaceae	native	LC	LC
Stellaria media s.l.[9)]	Caryophyllaceae	native	LC	LC
Symphyotrichum novi-belgii	Asteraceae	neophyte	ne	ne
Symphytum officinale	Boraginaceae	native	LC	LC
Syringa vulgaris	Oleaceae	neophyte	ne	ne
Taraxacum sect. *Ruderalia (Taraxacum* sect. *Taraxacum)*	Asteraceae	native	LC	LC
Taxus baccata	Taxaceae	native	NT	ne
Teucrium chamaedrys	Lamiaceae	native	LC	NT
Teucrium scordium[10)]	Lamiaceae	native	EN	EN
Thalictrum flavum	Ranunculaceae	native	VU	VU
Thesium ramosum	Santalaceae	native	VU	VU
Thymus kosteleckyanus (Thymus pannonicus)	Lamiaceae	native	EN	EN
Thymus odoratissimus	Lamiaceae	native	VU	VU
Tilia cordata	Tiliaceae	native	LC	LC
Tilia platyphyllos	Tiliaceae	native	LC	LC
Torilis japonica	Apiaceae	native	LC	LC
Tragopogon dubius	Asteraceae	native	LC	LC
Tragopogon orientalis	Asteraceae	native	LC	LC
Trifolium campestre	Fabaceae	native	LC	LC
Trifolium dubium	Fabaceae	native	LC	LC
Trifolium fragiferum	Fabaceae	native	LC	LC
Trifolium hybridum	Fabaceae	native	LC	LC
Trifolium incarnatum	Fabaceae	neophyte	ne	ne
Trifolium montanum	Fabaceae	native	LC	NT
Trifolium pratense	Fabaceae	native	LC	LC
Trifolium repens	Fabaceae	native	LC	LC
Tripleurospermum inodorum	Asteraceae	native	LC	LC
Trisetum flavescens	Poaceae	native	LC	VU
Triticum aestivum	Poaceae	casual	ne	ne
Tulipa sylvestris[11)]	Liliaceae	casual	ne	ne
Tussilago farfara	Asteraceae	native	LC	LC
Typha latifolia	Typhaceae	native	LC	LC
Ulmus laevis	Ulmaceae	native	NT	NT

Taxon	Family	Origin	RL-A	RL-Pann
Ulmus minor	Ulmaceae	native	NT	NT
Urtica dioica	Urticaceae	native	LC	LC
Valeriana officinalis	Valerianaceae (Caprifoliaceae)	native	LC	LC
Valerianella carinata	Valerianaceae (Caprifoliaceae)	archaeophyte	VU	VU
Verbascum phlomoides	Scrophulariaceae	native	LC	LC
Verbena officinalis	Verbenaceae	native	LC	LC
Veronica anagallis-aquatica	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica arvensis	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica chamaedrys	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica hederifolia	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica orchidea	Antirrhinaceae (Plantaginaceae)	native	EN	EN
Veronica persica	Antirrhinaceae (Plantaginaceae)	neophyte	ne	ne
Veronica polita	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica serpyllifolia	Antirrhinaceae (Plantaginaceae)	native	LC	NT
Veronica sublobata	Antirrhinaceae (Plantaginaceae)	native	LC	LC
Veronica teucrium	Antirrhinaceae (Plantaginaceae)	native	VU	VU
Viburnum lantana	Viburnaceae	native	LC	LC
Viburnum opulus	Viburnaceae	native	LC	LC
Vicia angustifolia (Vicia sativa subsp. *nigra)*	Fabaceae	native	G	G
Vicia cracca	Fabaceae	native	LC	LC
Vicia hirsuta	Fabaceae	native	LC	LC
Vinca minor	Apocynaceae	native	LC	LC
Vincetoxicum hirundinaria	Asclepiadaceae	native	LC	LC
Viola arvensis	Violaceae	native	LC	LC
Viola hirta	Violaceae	native	LC	LC
Viola odorata	Violaceae	native	LC	LC
Viola pumila[12)]	Violaceae	native	EN	EN
Viola reichenbachiana	Violaceae	native	LC	LC
Viola suavis	Violaceae	native	LC	LC
Viscum album	Viscaceae	native	LC	LC
Vitis riparia	Vitaceae	casual	ne	ne
Zannichellia palustris	Zannichelliaceae (Potamogetonaceae)	native	LC	LC

Annotations to **Tab. 1**:

1) *Dianthus superbus* subsp. *superbus*: The species is distributed in Eurasia from France to Japan. The subspecies *superbus* is mainly a species from the lowlands and it is endangered in Austria, because of the historic decline of seminatural grassland. The typical habitat is a wet to wet-dry, nutrient-poor grassland, especially purple moor grass meadows.
2) *Euphorbia verrucosa*: This species can be considered representative for a whole species group. Species in this group are found frequently in the meadows of the Vienna Woods and the lower areas of the northeastern Alps but are rare in the Pannonian lowlands, because of the loss of nutrient-poor grasslands during the last century in this region.
3) *Juncus sphaerocarpos*: This is an annual spring-flowering species typical of wet depressions. It was found on patches of bare ground in one of the most interesting meadows of Schlosspark Laxenburg in the northeast (see the chapter discussion).
4) *Klasea lycopifolia*: Historically Laxenburg was known as one of the few sites in Austria where this species occurred (Halácsy 1896, Janchen 1977). However, at least in the last decades *Klasea lycopifolia*, was no longer known from Laxenburg (see Fischer 2011). *Klasea lycopifolia* is a species of both the Bern Convention and EU Habitats Directive and thus protected across the European Union. For further details of this rediscovery see the chapter discussion.
5) *Lathyrus pannonicus* subsp. *pannonicus*: This is a fragile plant growing in nutrient-poor wet meadows. Only one flowering individual was found in Schlosspark Laxenburg in spring 2025. The severe loss of wet meadows in the past century led to a strong decline of the populations of this species.
6) *Lythrum virgatum*: The range of this species extends from eastern Austria to western Siberia. In Austria it is found especially along the Morava River and around lake Neusiedl. It is extremely rare in the southern Vienna basin. It grows in wetlands but is not as competitive as *Lythrum salicaria*. It was only found in a wet meadow in the northeast of Schlosspark Laxenburg (see the chapter discussion).
7) *Ranunculus circinatus*: This species was discovered in the large, central lake of Schlosspark Laxenburg. It belongs to *Ranunculus* sect. *Batrachium*, a group of species difficult to determine. Some other observations on iNaturalist from channels might belong to different species but this cannot be determined solely with the presented photos.
8) *Scutellaria hastifolia*: Three species of *Scutellaria* have been found growing in Schlosspark Laxenburg and this one is the rarest. It was located in a wet meadow in the center of Schlosspark Laxenburg. It is a species with a subcontinental European distribution and not common throughout its range. In Austria *S. hastifolia* is restricted to the easternmost part of the country.
9) *Stellaria media* s.l.: This group of closely related species comprises four separate species and the only definitive detected species in Schlosspark Laxenburg is the recently described *Stellaria ruderalis* (Lepší et al. 2019). However, the other species of this group may possibly also grow here, but determination without photos of the seeds is difficult.
10) *Teucrium scordium*: The water germander needs temporarily flooded depressions along rivers and is found on lake shores and in areas with wet grasslands or pastures. It is scattered throughout its European range. It is rare in Austria (Pannonian area and Carinthia). It was only discovered in a wet meadow in the northeast of Schlosspark Laxenburg (see the chapter discussion).

11) *Tulipa sylvestris*: Now, this species is believed to be a neophyte in Austria, introduced from the Mediterranean to Central Europe in the 16th century. However, a slight possibility exists that it is an archaeophyte at least in the Pannonian region. In some parts of Schlosspark Laxenburg the wild tulip forms dense populations in the forests and at the forest edges. Flowering fluctuates from year to year.
12) *Viola pumila*: This species is very rare in Austria and restricted to the lowlands along the eastern state border. The distribution ranges from France to western Siberia, but it is not common throughout its range. *Viola pumila* grows in temporarily wet grasslands and flowers early in spring. It was only found in a wet meadow in the northeast of Schlosspark Laxenburg (see the chapter discussion).

An analysis of the recently published Red List for Austria (Schratt-Ehrendorfer et al. 2022) shows that 40 species in the Schlosspark Laxenburg are either endangered (EN) or vulnerable (VU) across Austria (see **Tab. 1**). Furthermore, 61 species are classified within these two categories at the regional scale (i. e. within the Pannonian area). For more details see **Tab. 1** and for an overview **Tab. 2**.

As shown by **Tab. 2**, more species are endangered or vulnerable in the Pannonian region when compared with the whole of Austria (61 vs 40). Three species were not given threat status evaluations for the Pannonian region, because they are not native in this part of Austria, but are elsewhere in Austria (*Nymphaea alba*, *Philadelphus coronarius* and *Taxus baccata*). This explains the difference in the category "not evaluated" (ne).

Tab. 2: Comparison of an Austrian-wide Red List assessment and a regional Red List assessment (Pannonian region) for the vascular plants of Schlosspark Laxenburg; for abbreviations see **Tab. 1**. / *Vergleich der österreichweiten mit der regionalen Rote Liste-Bewertung für die Farn- und Blütenpflanzen des Schlossparks Laxenburg; für Abkürzungen siehe **Tab. 1***.

	RL-A	RL-pann
EN	9	12
VU	31	49
NT	43	48
G	2	3
DD	2	2
LC	331	301
ne	66	69
	484	484

Discussion

Our surveys and iNaturalist records have shown that the Schlosspark hosts 484 wild (native, naturalised, casual and escaped) vascular plant taxa. Of these, 408 taxa are native. We found 40 species that are listed as nationally threatened and an additional 21 species that are regionally threatened in the Pannonian area of Austria. Despite this large number of recorded vascular plant species, we estimate that an additional 10–20 % remain to be found in less surveyed areas of the Schlosspark Laxenburg based on known occurrences in the wider area.

The most botanically interesting meadow discovered during the surveys was situated in the northeast of Schlosspark Laxenburg (**Fig. 4** and **5**). It is an extensive, temporarily wet grassland. In total, 13 Red List taxa that are threatened across Austria (Schratt-Ehrendorfer et al. 2022) were recorded; in alphabetical order these species are: *Allium angulosum* VU, *Carex distans* VU, *Carex riparia* VU, *Cirsium canum* VU, *Juncus sphaerocarpus* VU (**Fig. 6a**), *Lathyrus pannonicus* subsp. *pannonicus* EN, *Lythrum virgatum* EN (**Fig. 6b**), *Pentanema britannica* VU, *Silaum silaus* VU, *Teucrium scordium* EN (**Fig. 6c**), *Thalictrum flavum* VU, *Valerianella carinata* VU and *Viola pumila* EN (**Fig. 6d**). In addition to these 13 Red List taxa, many more regionally threatened plant species were found growing in this meadow, but a complete inventory of the meadow has yet to be undertaken. A detailed inventory will be carried out in the coming years.

The most notable finding was the discovery of three separate populations of *Klasea lycopifolia* (**Fig. 7**). The first record was made in June 2023. This member of the family of Asteraceae is a priority species for conservation in Lower Austria, because all four hitherto known sites in Austria are located in this province. *Klasea lycopifolia* was never common, but was more frequently found in the 19th century, with the Vienna Basin being considered a hotspot for this species (Halácsy 1896, Janchen 1977).

However, most of the habitats where this species was found were destroyed in the 20th century (Sauberer et al. 1999). As mentioned in the annotations for **Tab. 1**, *K. lycopifolia* is a species of both the Bern Convention and EU Habitats Directive and thus protected across the European Union. We can confidently say that the three occurrences of *K. lycopifolia* within Schlosspark Laxenburg are relict populations, that were hitherto unknown, at least in recent decades (Fischer 2011). Many of the plant species recorded in the park were historically known in the wider area around Laxenburg, which supports the idea of continuous land use as an important factor in maintaining habitats and species-richness of the park (Kümmerling & Müller 2012).

Fig. 4: Species-rich wet meadow in the northeast of Schlosspark Laxenburg. / *Artenreiche Feuchtwiese im Nordosten des Schlossparks Laxenburg*. 6.6.2025, © Norbert Sauberer.

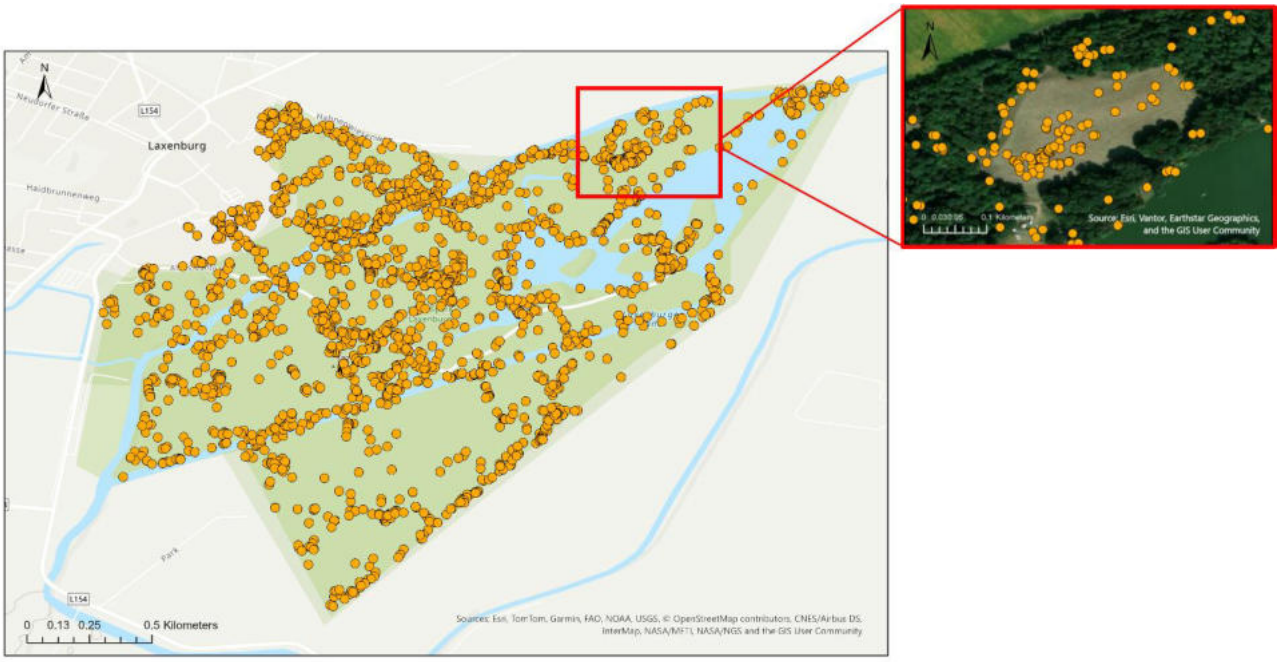

Fig. 5: Observations of vascular plants from Schlosspark Laxenburg and location of the species-rich wet meadow in the northeast of the park. / *Gefäßpflanzen-Beobachtungen im Schlosspark Laxenburg und Lage der artenreichen Feuchtwiese im Nordosten des Schlossparks*. Source: iNaturalist community; Records exported from https://www.inaturalist.org on 2/12/2025. Figure made with ArcGIS Pro v.3.0.0, Esri Inc., 2025.

Thanks to this survey, we have demonstrated that the Schlosspark Laxenburg holds a relic flora (and almost certainly a fauna) that would have been much more common in 1306 when the dominion of Laxenburg was acquired by the Habsburgs. Through the continuation of Habsburg values and appreciation of green space, this park is now home to a large number of plant and animal species that have gone locally extinct elsewhere in the Pannonian region of Austria due to habitat loss and fragmentation driven by urbanization and agriculture. As well as the plant species we have reported in this paper, further examples of this diversity can be seen on the iNaturalist project for the Schlosspark Laxenburg (at the time of writing over 1150 plant, animal and fungus species had been recorded). This project only shows a snapshot of this diversity, but clearly there are strong indications that this park is important for other groups of organisms as well. For example, sporadic observations through citizen science of Eurasian otter (*Lutra lutra*) suggest the park may hold higher vertebrate diversity than officially documented. Expert entomologists are currently working on compiling checklists of the Coleoptera, Heteroptera and Lepidoptera of the Schlosspark and have confirmed the presence of two new species for Austria (Heteroptera, see Rabitsch 2023, Rabitsch in prep.) and a new site for Austria for a rare beetle (*Biphyllus frater* associated with fungi on old deciduous trees, Samuel Messner pers. comm.).

Fig. 6: Endangered plant species found in the wet meadow in the northeast of Schlosspark Laxenburg. / *Gefährdete Pflanzenarten, die in der Feuchtwiese im Nordosten des Schlossparks Laxenburg wachsen*. a) *Juncus sphaerocarpus*, b) *Lythrum virgatum*, c) *Teucrium scordium*, d) *Viola pumila*. © Norbert Sauberer.

Alongside being important for species rare in Austria, the authors find it noteworthy that there is a relatively low number of introduced plant taxa present (those found outside of ornamental plantings) present in the park (76 vs 408). This is also considered an ecologically important feature of the park and potentially highlights the resilience of this ecosystem to introduced species. However, despite this currently relatively low number of alien species, there may be consequences in the future under

different climate regimes and therefore the authors advise caution if any of these introduced species show invasive behaviour, that rapid management is undertaken.

We have provided further compelling evidence that Schlossparks can play a crucial role in halting the ongoing loss of biodiversity and ecosystem function and in achieving the objectives of EU-wide conservation targets (e.g. Biodiversity Strategy 2030+ and Nature Conservation Act). The fact that around 20% of the plants featured in the park are rare in Austria and one is listed in Annex II of the Habitats Directive shows the importance of this designation.

Fig. 7: *Klasea lycopifolia* in the Schlosspark Laxenburg. / *Klasea lycopifolia im Schlosspark Laxenburg*. © Norbert Sauberer.

Despite being such an important hotspot for biodiversity in Austria, anthropogenic pressures notably, climate change (e.g. fluctuations in water regimes, extreme weather) and invasive species (e.g. alien insect species, plant pathogens) could potentially impact the flora of the Schlosspark. It is therefore paramount that the park is managed to minimize direct human pressures and increase the resilience of the ecosystems to climate change and invasive alien species. Below we outline possible measures to support the conservation of rare species both in Schlosspark Laxenburg and across Austria:

- Further regular, systematic and integrated surveys to increase the scope beyond plants to include e.g. fungi, bryophytes, lichens and invertebrates. This would support the baseline knowledge of under-recorded species present in the Schlosspark Laxenburg and provide clearer causal association between population trends and drivers of change;

- ❖ Using recently collected data, undertake a review of management plans, including detailed information on mowing times and potential green-hay seed sowing to support some of the rarer species;
- ❖ Digitization of historic planting lists to help understand the history of the park, which species are surviving and which species have vanished over time in the Schlosspark Laxenburg;
- ❖ Control and, where possible, eradication of species on the list of IAS of Union Concern;
- ❖ Supporting Schlosspark managers to help them collectively address common threats and co-design opportunities to protect Schlossparks from ongoing drivers of biodiversity loss;
- ❖ Developing projects linking socio-cultural value to the ecological importance and ecosystem service provisioning of Schlossparks;
- ❖ Developing a national monitoring study for Schlossparks across Austria to understand the collective ecological value and the links to the history behind them;
- ❖ Considering designation of other Austrian Schlossparks, that are not already listed as Natura 2000 sites as such, to improve their legal protection status and promote statutory reporting through Natura 2000 standard data forms. Further consider designating them as Other Effective Area-Based Conservation Measures (OECMs) (Jonas et al. 2021).

Authors contribution

PV, JP, SA and NS designed the study. NS, JP and SA performed the surveys. NS and JP identified the species and reviewed records of vascular plants from iNaturalist. NS, JP and SA wrote the manuscript. KI and WM provided information on the history of Schlosspark Laxenburg and Habsburg legacy. All authors contributed to revisions and gave final approval for publication.

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