Conserving Europe's threatened plants








Progress towards Target 8 of the Global Strategy for Plant Conservation

BGCI
Plants for the Planet

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BGCI

Plants for the Planet

Botanic Gardens Conservation International (BGCI)

Linking more than 800 botanic gardens and other partners in some 120 countries, BGCI forms the world's largest plant conservation network. From grass-roots action to global policy development, BGCI operates at all levels to achieve plant conservation, environmental education and development goals. We aim to ensure that plants are recognised as one of the world's most important natural resources, providing essential ecosystem services and underpinning all life on Earth. Our mission is to: "*mobilise botanic gardens and engage partners in securing plant diversity for the well-being of people and the planet*".

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Foreword

The continuing loss of biodiversity in Europe remains a major concern. As the European Environment Agency has recently noted (EEA 2008), 'less than half of the protected species and habitats in Europe are considered to be in "favourable conservation status". For most of the remaining species and habitats, the conservation status is considered to be either inadequate or bad. Furthermore, for a significant number of species and habitats, the data at hand are simply insufficient to reach any assessment.' It is disturbing that the lack of data is still a limiting factor in achieving conservation goals. This Report is, therefore, all the more welcome in helping address one of the most serious gaps in our knowledge – how many European plant species are threatened? Such a baseline is critical in tackling a number of other GSPC targets yet it has remained elusive, partly because of the different approaches adopted by individual European countries and the difficulties of interpreting and reconciling such a disparate set of data.

The lack of a consolidated list of threatened plants for Europe has proved a serious obstacle when tackling some of the targets of the *Global Strategy for Plant Conservation* such as Target 8 on *ex situ* conservation, an area where botanic gardens play a major role. Since its establishment, BGCI has acknowledged the importance of *ex situ* conservation, even during a period when many conservationists downplayed such an approach, and as far back as 1989 the Botanic Gardens Conservation Strategy set out a detailed strategy to achieve it. Although *in situ* conservation remains the preferred option, it is not always possible and even the viability of protected areas is coming under question today as the projections of the future impacts of climate change suggest that at least some of them, and the species they house, will be put at risk through a failure to adapt through migration. In today's world, all options – *in situ*, *inter situs*, *ex situ* must be employed if we are to have a hope of maintaining as much existing biodiversity as possible now and for future generations.


Gentiana verna


Allium spp.

This Report not only provides a consolidated list of the threatened plants of Europe but summarises the various policy instruments and the ways in which plant conservation is organized at a European level. It also provides an account of what progress has been made in implementing Target 8 of the GSPC in Europe and points out the various gaps and deficiencies.

The list itself shows very clearly how much further work needs to be done to complete the detailed conservation assessment of all European species: the discrepancies between this new list and those of IUCN, the Habitats Directive and the Bern Convention, for example, raises a number of serious questions that will have to be addressed by those responsible for maintaining and updating them. Is it too much to expect that in the face of the unprecedented biodiversity crisis that we are facing, the various organizations get together to agree a consolidated approach?

BGCI is to be congratulated on this initiative. It continues to show how the world's botanic garden estate is increasingly having to take over responsibility for various aspects of plant conservation and related topics, often without any explicit official mandate or appropriate finance.

Vernon H Heywood
Former Director BGCI and
Chief Scientist (Plant Conservation) IUCN

Executive Summary

The European flora (excluding Turkey) consists of around 12,500 vascular plants. The main centres of diversity include the mountain areas around the Mediterranean and the Black Sea and the islands and islets of the Mediterranean basin. Plant diversity in Europe includes a wide range of domesticated and economically important species and their wild relatives. As well as being amongst the most studied in the world, the last two centuries of development and industrialization mean that European plants are also considered the most threatened. Habitat loss is the primary cause of concern. Between 1990 – 2000, 800,000 hectares of Europe's land cover was converted to artificial surface and over 60% of the remaining land is used for farming. The impacts of alien invasive species, over-exploitation and increasingly, climate change are also exerting huge pressures on native plant diversity in Europe.

Plant conservation in Europe is covered by a series of international, pan-European, European Union and national strategies and frameworks. However, an up-to-date regional plant Red List does not exist and it is not clear exactly how many plants are threatened in Europe. This lack of data is a limiting factor in achieving conservation goals.

The *Global Strategy for Plant Conservation* (GSPC), which was adopted by the Parties to the Convention on Biological Diversity (CBD) in 2002, calls for a number of plant conservation targets to be met by 2010. Amongst these is Target 8: '*60% of threatened plant species in accessible* ex situ *collections, preferably in the country of origin, and 10% of them included in recovery and restoration programmes*'. The importance of achieving this target has been highlighted in recent years as the impacts of climate change start to be felt and concerns are raised about our ability to conserve species *in situ* in the long term. The lack of a European plant Red List however, and discrepancies between other lists of threatened plants in Europe makes monitoring progress towards this and other targets difficult. Botanic Gardens Conservation International (BGCI), as a facilitating agency for Target 8 decided to address this gap and has developed a consolidated list of European threatened plants based largely on national Red Lists and species distribution data. The list includes 1,917 taxa, or 15% of the European flora.

Threatened plant species are concentrated in the Mediterranean and Balkan regions with Italy, Spain and Greece being the countries with the greatest numbers of threatened plants. 90% of the species on the list are single country endemics.

To assess progress towards GSPC Target 8, BGCI compared the consolidated list of threatened plants with two databases: (i) PlantSearch, a database of plants in cultivation in botanic gardens worldwide which includes records for over 178,000 taxa in cultivation in 694 botanic gardens, of which 257 are European gardens; (ii) the database of the European Native Seed Conservation Network (ENSCONET) which has records for more than 41,000 accessions relating to over 9,000 species. Together these two databases provide comprehensive information on plants in *ex situ* collections in Europe. The comparison revealed that 547 threatened European taxa (28% of the total) are held in the living collections of botanic gardens, while 515 taxa (27%) are held in seed bank collections. A total of 808 threatened European taxa (42% of the total) are maintained in *ex situ* collections in Europe.

Further analysis of the PlantSearch database revealed that 228 of the threatened taxa (43%) are found in only one botanic garden, thus raising doubts about the long-term security of these collections. Furthermore, little information is available about the source of materials in botanic garden collections (wild-collected or obtained from cultivated sources) and the extent to which natural diversity is represented in collections. Thus it is difficult to assess the conservation value of the living collections of botanic gardens. Lack of information also constrains the assessment of progress towards the second part of Target 8 (*10% in recovery and restoration programmes*). Nevertheless, it is clear that an increasing number of European botanic gardens are working towards the conservation and restoration of their native flora, and this report provides a wide range of examples and case studies of this work.

Europe is a region rich in skills and expertise and relative to other regions, with less plant diversity. BGCI therefore believes that our goal should be for 100% of threatened plants in Europe to be included in integrated *in situ* / *ex situ* conservation programmes and we call for greater support for plant-focused conservation action at the European level. Botanic gardens are obviously major players in achieving this goal. However, greater efforts are needed in the development of working partnerships with other conservation agencies, in prioritising and coordinating actions and in sharing data.

We suggest that a European-wide action plan for the recovery of threatened plant species should be developed based on a prioritisation of species in trouble, taking into account regionally threatened species and those vulnerable to climate change (e.g. alpine and island species). We believe that conservation actions need to meet agreed standards and be focused, prioritised and coordinated. Mechanisms to ensure such prioritisation and coordination throughout Europe therefore need to be maintained and strengthened to ensure that no wild plant species becomes needlessly extinct.


Campanula incurva

Contents

Introduction

Europe is home to a varied and unique flora and plant diversity in this region has been extensively studied over many years by a wide range of institutions, including botanic gardens, universities, governmental and non-governmental organisations as well as many amateur botanists. However, despite the relatively good level of knowledge of the flora, and the wide-spread recognition that many of Europe's plant species are being pushed to the edge of extinction by habitat loss caused by agricultural intensification, industrialisation and development in the region, an up-to-date Red List of European threatened plants does not presently exist. This seriously constrains efforts to prioritise and plan coordinated plant conservation action.

It is generally recognised that *in situ* conservation is the best means of ensuring the security of plant diversity in the long term. Nevertheless, *ex situ* conservation is a vitally important supplementary tool. In Europe, with its long tradition of nature conservation and good level of expertise, integrated *in situ* and *ex situ* conservation should be the goal for all threatened plant species.

Target 8 of the Global Strategy for Plant Conservation (GSPC), adopted by the Convention on Biological Diversity (CBD) in 2002 calls for "*60 per cent of threatened plant species in accessible* ex situ *collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes.*" The European Union, as a signatory party to the CBD, is obliged to work towards meeting this target, but in the absence of list of regionally threatened species, progress is difficult to measure on a regional scale. The need to conserve plant diversity *ex situ* (outside its natural habitat) has been given added urgency in recent years as the impacts of climate change start to be felt and concerns are raised about our ability to conserve species *in situ* in the long term.

Botanic Gardens Conservation International (BGCI) is one of the facilitating organisations for the implementation of Target 8 of the GSPC and has put in place a global database of plants in cultivation in botanic gardens as a tool to monitor progress at the global level (PlantSearch). As convenor of the European Botanic Gardens Consortium (an informal partnership of European botanic garden networks), BGCI has also been working with European botanic gardens to obtain data from this region for PlantSearch. At the same time, the European Native Seeds Conservation Network (ENSCONET) has brought together 29 partner institutes in Europe in a coordinated seed banking effort for European plant species. Through this work, ENSCONET is also monitoring *ex situ* conservation in Europe.

Box 1: Botanic gardens and plant conservation in Europe – the historical context

In 1975, a conference was held at the Royal Botanic Gardens (RBG), Kew entitled '*The functions of living plant collections in conservation and conservation-orientated research and public education'* which passed a series of resolutions, several of them referring to living plant collections in botanic gardens. In the same year, the first draft of the IUCN SSC Threatened Plants Committee (TPC) *List of Rare, Threatened and Endemic Plants for the Countries of Europe*, commissioned in 1974 by the Council of Europe, was prepared and after further revision, published in 1977. Responding to issues raised at the Kew Conference, the list of 1,878 threatened taxa was sent to European botanic gardens, to determine which species were in cultivation in Europe. A total of 70 botanic gardens responded and the results showed that 529 threatened species (28%) were in cultivation. This initial survey laid the foundations for the establishment in 1979 of a new structure, the Botanic Gardens Conservation Co-ordinating Body which operated until 1986. In 1987, a new body, the Botanic Gardens Conservation Secretariat was established which incorporated and expanded the earlier work of the Coordinating Body.

A second survey of European botanic garden collections was carried out in 1998 by the Conservation Projects Development Unit, RBG Kew, focusing on the conservation of the 573 plant taxa listed in the Bern Convention. This survey revealed that 308 (54%) of the listed taxa were in cultivation in 105 botanic gardens in Europe, but only 27 taxa were the subject of recovery and restoration projects. The survey also gathered data on the number of accessions being conserved per taxon, the number of gardens conserving each taxon and the origin of the material. The survey raised doubts about the conservation value of botanic garden collections and made recommendations on how botanic gardens could more effectively contribute to plant conservation in Europe.

Source: IUCN Threatened Plants Committee, 1979; Maunder & Higgins, 1998. Maunder *et al*., 2001

Although an up-to-date European plant Red List is not available, most countries in Europe have developed national Red Lists. BGCI has used these lists, together with species distribution data, to develop a consolidated list of European threatened plants, in order to assess progress to date at the regional level in the *ex situ* conservation of threatened European plants.

This report also builds on previous efforts to assess the conservation role of botanic gardens in Europe (See Box 1). It provides details of the development of a consolidated list of threatened European plants and the results of an analysis of how many of these species are conserved *ex situ* in the seed banks and living collections of European botanic gardens, i.e. how close are we to meeting Target 8 of the GSPC in Europe. The report also provides case studies illustrating the conservation work of European botanic gardens and provides some recommendations for future actions to ensure the long-term survival of Europe's threatened flora.

1. The European flora – current status and threats

1.1 European vegetation

The European region covers a wide range of environments and habitats and supports a large floral diversity. Extending from the sub-tropical Mediterranean climate to cold sub-polar regions and from the oceanic Atlantic to the continental interior, the region encompasses lowland plains and high mountains. Each geographical region has its own specialised ecosystems and plant associations.

The main natural vegetation cover in Europe is mixed forest, both broadleaf and coniferous trees, but today only about 30% of Europe remains forested. More than any other continent, plant diversity in Europe, has been shaped by the influence of human activity over time, with settled agriculture spreading from the south-east to the north-west between 10,000 and 5,000 years ago. Where natural vegetation does remain, this continues to be dominated by forest. In central and western Europe, the most important species are beech and oak. In the north, the taiga is a mixed spruce-pine-birch forest; further north within Russia and extremely northern Scandinavia, the taiga gives way to Arctic tundra. Mediterranean Cypress is widely grown in southern Europe and the semi-arid Mediterranean region hosts much scrub forest. A narrow east-west tongue of Eurasian grassland (the steppe) extends westwards from Ukraine and southern Russia and ends in Hungary and traverses into taiga to the north.

Wetlands are also an important component of the natural vegetation in Europe providing ideal conditions for a vast diversity of habitats and species. Countless specialist plants depend on wetlands, but these habitats are disappearing or are being polluted at an alarming rate and are among Europe's most threatened ecosystems.

1.2 Plant diversity in Europe

The European flora (excluding Asiatic Turkey) consists of around 14,000 vascular plants. The flora is one of the best known in the world – but gaps in our knowledge still exist. The main centres of plant diversity include the mountain areas around the Mediterranean and the Black Sea, with the floras of Spain, Greece, Italy and Bulgaria supporting the most endemic species. (Planta Europa, 2002). Endemism is also very important in the Mediterranean basin which contains nearly 5,000 islands and islets. In this region, the great diversity in island size as well as differences in altitude and geology, mean that a large number of habitats are represented and the island flora is exceptionally diverse. Indeed the Mediterranean region, which hosts a flora of around 25-30,000 flowering plants and ferns and has been identified as one of the world's 34 biodiversity 'hot spots' (Mittermeier *et al*., 2004). It has been noted that in terms of plant diversity per unit area, the Mediterranean may in fact be the 'hottest' of the hot spots Furthermore, due to their isolation, some ancient plant species continue to survive on Mediterranean islands, while their relatives on the mainland have become extinct (Montmollin & Strahn, 2005).

Europe is also rich in diversity of domesticated and economically important plant resources and their wild relatives. Around 80% of the plants of the European and Mediterranean region are considered to be of current or potential socio-economic use (Kell *et al.,* 2008). Major crops such as oats (*Avena sativa*), sugar beet (*Beta vulgaris*), carrot (*Daucus carota*), apple (*Malus domestica*), annual meadow grass (*Festuca pratensis*) and white clover (*Trifolium repens*), have wild relatives in Europe. Many minor crops have also been developed and domesticated in the region, such as arnica (*Arnica montana*), asparagus (*Asparagus officinalis*), lettuce (*Lactuca sativa*), sage (*Salvia officinalis*), raspberries and blackberries (*Rubus* spp.), as well as herbs and aromatic plants such as mints (*Mentha* spp.) and chives (*Allium* spp.). The region also hosts a rich diversity of forest

Arnica montana

trees, such as pine (*Pinus* spp.) and ornamental plants such as sweet pinks (*Dianthus* spp.) and violets (*Viola* spp.) (Maxted *et al*, 2008). However the genetic diversity amongst crop wild relatives in the region is being eroded at an ever increasing rate (Maxted, 2003), and at the same time the diversity of traditional land races and old varieties of food crops is also greatly diminished due to their replacement by modern uniform cultivars.

1.3. Threats to the flora of Europe

Habitat loss

The last two centuries of industrialisation and changes in land use have led to European plants being considered amongst the most threatened in the world. In some countries, more than two-thirds of the existing habitat types are considered endangered. During the period 1990-2000, 800,000 ha of Europe's land cover was converted to artificial surface, taking over agricultural and natural areas, in particular wetlands (EEA, 2006). It is estimated that habitat destruction from human activity is the primary cause of risk for 83% of endangered plant species. According to the United Nations Environment Programme (UNEP), it has been predicted that by the year 2032, more than 70% of the world's land's surface will have been destroyed or disturbed. Habitat loss is also a problem because it leads to the fragmentation of the remaining habitat, resulting in further isolation of plant populations (European Commission, 2008). Most of the population of Europe now lives in urban areas and urban development is extending in a scattered way all over the countryside. Urbanisation of coastal areas continues to accelerate as a consequence of mass tourism, as well as the increase in the number of second homes (EEA, 2006). In our modified landscapes, the habitats and the connectivity between habitats where species can survive is steadily decreasing and becoming more and more fragmented, making the maintenance of viable species populations more difficult.

Invasive alien species

Alien species may have a profound impact on the environment and society as they can act as vectors for new diseases, alter ecosystem processes, change biodiversity, disrupt cultural landscapes, reduce the value of land and water for human activities and cause other socioeconomic consequences. Alien species are plants, animals and micro-organisms that have been moved by humans to new environments outside of the range they occupy naturally. European island ecosystems (especially in the Macaronesian and Mediterranean biogeographical regions) are considered particularly vulnerable to non-native invasive species, due to their long-standing isolation.

Examples of the impacts of invasive species range from wholesale ecosystem changes, e.g. colonisation of sand dunes by *Acacia* spp. and the extinction of native species or threats to endemic coastal plants following expansion of iceplant (*Carpobrotus edulis*), to more subtle ecological changes and increased biological homogeneity. For example, rhododendron (*Rhododendron ponticum*) reduces the biodiversity of Atlantic oakwoods, as well as being a serious pest in Britain. A subtler but potentially more serious impact of invasive species is the possibility of hybridisation with native species. Hybridisation may introduce mal-adaptive genes to wild populations or result in vigorous and invasive hybrids.

Box 2: Impacts of invasive species on native European plants

Competition: plants like Japanese knotweed (*Fallopia japonica*) or giant hogweed (*Hercleum mantegazzianum*) compete with native plants, causing changes to habitat structure

Hybridising with a related species or variety: the North American grass *Spartina alterniflora* hybridised with the European *Spartina maritima* and produced the very invasive hybrid *Spartina anglica*, which has radically changed coastal mudflat habitats in Great Britain, Denmark and Germany

Disrupting pollination: *Impatiens glandulifera* competes for pollinators such as bumblebees with the native riverbank species, and so reduces seed set in these other plants

Altering the composition and functioning of habitats and ecosystems: Water hyacinth (*Eichhornia crassipes*) changes water flow by overgrowing and blocking water bodies.

Source: http://ec.europa.eu/environment/nature/invasive alien/docs/1_EN_impact_assesment_part1_v3.pdf

Cerastium alpinum

Over-exploitation

The majority of medicinal and aromatic plants used today are collected from the wild. Species such as *Arnica montana* and *Gentiana lutea* are harvested throughout Europe (especially in Bulgaria and Romania) and are included in Annex V of the Habitats Directive (see p. 12) which identifies species requiring management measures because of exploitation concerns. The trade in European medicinal plants is long established but has been growing rapidly over the past decade. Over 2,000 medicinal and aromatic plants are traded commercially in Europe, of which two thirds are native to the region. It is estimated that around 150 plant species are threatened in at least one European country by this trade.

Agriculture

Farming accounts for 60% of the land surface of Europe. In places industrial agriculture has almost eradicated wild plants and numerous rare habitats have been destroyed (Planta Europa, 2002). Pastures and semi-natural grasslands continue to be converted to arable land, with subsequent use of fertilisers and pesticides, as well as destruction of hedgerows, walls, lanes and ponds that have historically supplied niches for a wide range of species. On the other hand, farmland abandonment is occurring in many regions as a result of socio-economic marginalisation and the ageing of local human populations. On the European scale, farmland abandonment is exceeding the formation of new agricultural land. This trend has contributed to the overall increase in forest area in Europe which has occurred largely through afforestation of agricultural land as part of the set-aside strategy of the EU Common Agricultural Policy (EEA, 2006). However, depending on the type of management, such increase in forest area does not ensure an increase in the quality of habitats for biodiversity.

Climate change

Climate change poses an enormous challenge to the conservation and management of plant diversity in Europe and focuses attention on the need to ensure *ex situ* collections of native species as an insurance policy against possible future extinctions. The impacts of climate change on European plants are likely to result in changes in the distribution of species, flowering times etc. and these impacts are forecasted to be most pronounced in mountainous areas and the Mediterranean and Pannonian biogeographical regions (European Commission, 2008). Climate change will particularly impact on species, such as those with long life cycles and/or slow dispersal mechanisms, that are unable to change their distribution fast enough to keep up with changing climates. Arctic, alpine and island species will also be extremely vulnerable. Climate change may also result in changes in plant communities and species associations as species move and adapt at different rates. Increased invasion by alien species is also likely as conditions become more suitable for exotics and native species are unable to compete. Evidence has already emerged providing proof that climate change in the Italian Alps is forcing plants to move to higher altitudes, cooler temperatures and probable extinction. A study by ENSCONET members at the University of Pavia, Italy, repeated a 50-year old plant survey and observed that many species have moved 430m higher than their previously recorded limits in response to a 1.5°C rise in temperature (Parolo & Rossi, 2007).

Box 3: Impact of climate change on European plant species

Many studies have attempted to model the impact of climate change on plant diversity in Europe. For example:

- Thuiller *et al*., (2005) assessed 1,350 European plant species against projected future climatic conditions. Using current distribution maps, and based on the IUCN system for categorising threat, more than half the species become vulnerable or committed to extinction by 2080 based on the effects of climate change alone. The impacts of land-use change on the threat status of species are considered likely to be overridden by the impact of climate.

- Bakkenes *et al*., (2002) used climate data from 1990 to 2050 to determine the climate envelopes for about 1,400 European plant species. The climate envelopes were applied to projected climate. For each European grid cell the model calculated which species would still occur. On average, 32% of the European plant species that were present in a cell in 1990 would disappear by 2050.

- Skov and Svenning (2004) looked at the possible consequences of two climate change scenarios on a representative sample of forest herbs in Europe. Even under the mild scenario (less warming) moderate to large range losses (a 17 to 61% reduction in total climatic suitability for 75% of the 26 species) was shown. The range centres are projected to move strongly towards the northeast for most species, with migration rates of on average 2.1km/yr and 3.9km/yr (for each climate scenario respectively) required. This is a particular problem for forest herbs, the majority of which are poor dispersers existing in forest fragments.

Source: Hawkins *et al*, 2008.

2. Conservation of wild plants in Europe – the policy framework

Despite the fact that Europe was one of the first regions to address the conservation of wild plants, with the Council of Europe commissioning and publishing the first ever regional list of threatened plants in the 1970s, Europe's plant life continues to decline. This is of particular concern given the increasing political visibility and support biodiversity conservation has gained over the past decade with its recognition as a critical factor in addressing sustainable development and poverty reduction goals.

Plant conservation in Europe is covered to varying degrees by a series of international, Pan-European, European Union and national strategies and legal frameworks relating both specifically to plant conservation and to plant conservation within the broader biodiversity framework.

2.1 Policies for plant conservation

The European Union and its Member States are contracting parties to the UN Convention on Biological Diversity (CBD). Within the framework of the CBD, the **Global Strategy for Plant Conservation** (GSPC) (CBD, 2002) was developed in response to a recognised need for a greater focus on plants within the broad biodiversity agenda. The GSPC was adopted by the Parties to the CBD in 2002 and all signatory governments have committed to delivering the Strategy's 16 ambitious targets by 2010 (Box 4). Since its adoption, the GSPC has motivated action to save plant diversity from extinction at national, regional and international levels (CBD, 2007) and in Europe, a number of countries (e.g. Germany, Ireland and the UK) have used the GSPC as a basis for developing national plant conservation strategies. At the European level however, there have only been limited actions in support of the GSPC and its targets have not been fully integrated into EU biodiversity conservation policies (European Community, 2005).

The first **European Plant Conservation Strategy** (EPCS) was developed in 2001 by the Planta Europa network and the Council of Europe, in partnership with other related conservation organisations as a contribution to the GSPC. It covers vascular plants, mosses, lichen and algae. Following its completion in 2007, a new EPCS was developed covering the period 2008-2014 and adopted by the Standing Committee of the Bern Convention in November 2008. The new EPCS provides a structure to complement and enhance the other key European and global initiatives influencing plant conservation. The structure ensures that the EPCS is closely modelled on the 16 targets of the GSPC, with specific European targets and activities aligned under each of the global targets.

A review of progress towards the implementation of the EPCS was carried out in 2007. In relation to conserving threatened species, it was reported that collating information to analyse progress in this area had been a 'major challenge' due to the lack of base line data and mechanisms to monitor plant conservation objectives systematically on a European scale. The need to integrate ongoing initiatives and information into a European red list of threatened plant species, particularly for widely distributed but rapidly declining species was also highlighted. A further constraint to progress noted in the review was the lack of direct national or regional funding sources to implement the EPCS/GSPC, which means that the burden of resource mobilisation for plant conservation rests on a variety of organisations with variable capacities for fund-raising (Planta Europa, 2007).

2.2 Policies for biodiversity conservation

The Convention on the Conservation of European Wildlife and Natural Habitats 1982 (Bern Convention)

The Bern Convention was the first convention developed specifically for the conservation of wild European flora and fauna and their natural habitats. It also focuses on promoting European co-operation in this field. It requires member states of the Council of Europe to: ensure conservation of all wild plant and animal species; to increase cooperation between states; and to afford special protection to the most vulnerable species. Many threatened

Box 4: Global Strategy for Plant Conservation - Targets for 2010:

(a) Understanding and documenting plant diversity

Target 1:
A widely accessible working list of known plant species, as a step towards a complete world flora.

Target 2:
A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels.

Target 3:
Development of models with protocols for plant conservation and sustainable use, based on research and practical experience.

(b) Conserving plant diversity

Target 4:
At least 10 per cent of each of the world's ecological regions effectively conserved.

Target 5:
Protection of 50 per cent of the most important areas for plant diversity assured.

Target 6:
At least 30 per cent of production lands managed consistent with the conservation of plant diversity.

Target 7:
60 per cent of the world's threatened species conserved *in situ*.

Target 8:
60 per cent of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes.

Target 9:
70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained.

Target 10:
Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems.

(c) Using plant diversity sustainably

Target 11:
No species of wild flora endangered by international trade.

Target 12:
30 per cent of plant-based products derived from sources that are sustainably managed.

Target 13:
The decline of plant resources, and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care, halted.

(d) Promoting education and awareness about plant diversity

Target 14:
The importance of plant diversity and the need for its conservation incorporated into communication, educational and public–awareness programmes.

(e) Building capacity for the conservation of plant diversity

Target 15:
The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy.

Target 16:
Networks for plant conservation activities established or strengthened at national, regional and international levels.

European species are listed by the Convention and scheduled for protection. Appendix 1 lists all the Strictly Protected Flora Species. The Standing Committee of the Bern Convention continues to adopt resolutions and associated recommendations that support and underpin the articles of the Convention. The Bern Convention is a binding international legal instrument in the field of nature conservation, which covers the whole of the natural heritage of the European continent and extends to some states of Africa.


Saxifraga azoides

Crocus cartwrightianus

Pan-European Biodiversity and Landscape Diversity Strategy (PEBLDS) 1995

This strategy provides a framework for strengthening and building on existing initiatives and programmes drawn up as a pan-European response to the CBD. It includes the establishment of a pan-European Ecological Network consisting of core conservation areas, ecological corridors, buffer zones and restoration areas. The principal aim of the Strategy is to find a consistent response to the decline of biological and landscape diversity in Europe and to ensure the sustainability of the natural environment.

European Council Directive 92/43/EEC on the conservation of natural habitats of wild flora and fauna (The Habitats and Species Directive)

This Directive, together with **Directive 79/409/EEC (Birds Directive)** establishes the legislative framework for protecting and conserving the EU's wildlife and habitats. At the centre of these Directives is the creation of a coherent ecological network of protected areas throughout Europe – known as Natura 2000. Special Areas of Conservation (SAC) and Special Protection Areas (Birds Directive) are designed to maintain the distribution and abundance of threatened species and habitats, both terrestrial and marine. SAC selection is based on presence of species and habitats of European importance that are listed in the Directive's annexes. Annex I lists the habitat types and Annex IIb lists the plant species that qualify for SAC designation. Some 25,000 sites have so far been included in the Natura 2000 network and collectively they cover 17% of the European territory.

Article 13 of the Habitats Directive requires that member states should also establish a system of strict protection of endangered plant species included in Annex V by prohibiting the "deliberate picking, collecting, cutting, uprooting or destruction" of such plants in their natural range in the wild and the "keeping, transport and sale or exchange" of specimens of such species taken in the wild.

The 2010 Target

The objective of 'managing natural resources more responsibly: to protect and restore habitats and natural systems and halt the decline of biodiversity in the EU by 2010' was first adopted by the EU in 2001 in the EU Strategy for Sustainable Development. In 2002, EU Heads of State joined some 130 world leaders in Johannesburg in agreeing to significantly reduce the rate of biodiversity loss globally by 2010. In May 2006, the European Commission adopted a communication on 'Halting Biodiversity Loss by 2010 – and Beyond: Sustaining ecosystem services for human well-being'. The Communication underlined the importance of biodiversity protection as a prerequisite for sustainable development and set out a detailed EU Biodiversity Action Plan to achieve this. Of particular relevance is the proposed Action A1.3.3: *To identify and fill critical gaps in EU* ex-situ *(zoo, botanic gardens, etc.) conservation programmes for wild species, in line with best practice, with appropriate co-financing from the European Commission and Member States [2006 onwards].* (http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/sec_2006_621.pdf)

European Community Biodiversity Strategy

The strategy was launched in 2001 and provides the framework for developing community policies and instruments in order to comply with the Convention on Biological Diversity (CBD). The strategy covers eight policy areas and Biodiversity Action Plans have so far been developed for four sectoral policies: Agriculture, Fisheries, Natural Resources, and Development and Economic Cooperation. The action plans call on Member States to ensure that no priority species are in a worsening conservation state by 2010, and that the majority of species are in, or moving towards, a favourable conservation status by 2013.

2.3 EU support for plant conservation

LIFE is the EU's financial instrument supporting environmental and nature conservation projects. Between 1992 and 2006, LIFE supported 970 projects, of which only 33 focused on plant species. The majority of projects related to plants supported by LIFE actually target plant conservation within a broader context as part of habitat conservation. In this context, guaranteeing the protection of endangered plant species relies principally on the management of Natura 2000 sites. However, Natura 2000 sites with a high level of plant diversity present a considerable challenge in terms of conservation and

therefore in the drawing up of management plans. Plant species often exist across only a small area and the populations are normally isolated. In a review of plant conservation activities undertaken by LIFE, it was noted that "*there is frequently a lack of scientific or monitoring data and little local experience in managing Natura 2000 sites for plants*" (Natura 2000, 2007).

2.4 Networks for plant conservation in Europe

Planta Europa

The Planta Europa Network was established in 1995 as a result of a conference discussing pan-European cooperation for plant conservation. It brings together governmental and non-governmental organisations to support the coordination of activities to implement the European Strategy for Plant Conservation. Currently, the network has 78 member organisations from 35 European countries. Planta Europa organises a conference every three years to discuss the future of conserving European wild plants in their natural habitats. More information is available at: www.plantaeuropa.org.

European Botanic Gardens Consortium

There are over 700 botanic gardens in the European Union (see Table 3) and together they cultivate around 125,000 plant taxa, including over 6,000 globally threatened species.

Box 5: Important Plant Areas in Europe

One of the contributions to the European Plant Conservation Strategy is the production of an inventory of Important Plant Areas (IPAs) in Europe. IPAs are natural or semi-natural sites exhibiting exceptional botanical richness, or supporting rare, threatened or endemic plant species or vegetation of high botanical value. The European IPA programme has three objectives: to identify within each biogeographic zone the most important sites for the conservation of plants; to promote awareness of the importance and need to conserve these areas; to promote direct conservation action and funding towards these sites. To date, more than 15 European countries have been actively engaged in IPA identification projects and more than 1,000 IPAs have been identified. The IPAs, along with Important Bird Areas (IBAs) provide a valuable reference for the implementation of the Natura 2000 network sites of Community importance, especially in new Member States.

Online data on the sites, their qualifying features and threats are available at www.plantlifeipa.org/reports.asp.

The IPA programme in Europe is coordinated by Plantlife International in partnership with IUCN.

Box 6: Action Plan for Botanic Gardens in the European Union

The activities of the European Botanic Gardens Consortium have included the development and publication of an *Action Plan for Botanic Gardens in the European Union.* This document helps to define botanic garden responsibilities and obligations in relation to plant resource management and conservation and the role of botanic gardens in contributing to the implementation of international, regional and national instruments, legislation and conventions that focus on plants and the environment.

They receive more than 50 million visitors each year and are a major source of information for the people of Europe on the diversity and importance of the world's plants. Many botanic gardens in Europe are also leading institutions of world significance in botanical research, plant conservation, environmental education and horticulture (BGCI, 2000).

Representatives of European national botanic garden networks come together in the **European Botanic Gardens Consortium**, of which BGCI is the convenor. The Consortium was established in 1994 to plan Europe-wide initiatives for botanic gardens, especially within the context of implementation of the Convention on Biological Diversity and other European biodiversity policies and strategies.

The Consortium consists of representatives of all EU member countries, with Croatia, Iceland, Norway and Switzerland invited to attend meetings as observers. The Consortium meets twice yearly, with meetings being hosted by member gardens.

The Consortium acts as a valuable conduit for information flow and co-operation between the national associations of botanic gardens as well as between individual institutions. As well as organising regular European Botanic Gardens Congresses, the Consortium has also promoted and helped to lead other significant international initiatives, such as the IPEN - the International Plant Exchange Network. Further information is available at: www.bgci.org/global/2245/

European Native Seed Conservation Network

The European Native Seed Conservation Network (ENSCONET) coordinates the conservation activities of over twenty European seed banks, botanic gardens and other institutes involved in plant conservation. One of the main purposes of ENSCONET is to improve quality, co-ordination and integration of European seed conservation practice, policy and research for native seed plant species. The network, which is coordinated by the Royal Botanic Gardens, Kew in the UK, covers activities related to seed collection, curation, data management and dissemination. Further information is available at: www.ensconet.eu

3. How many plant species are under threat in Europe?

3.1 Developing a list of threatened European plants

Although various lists of 'at risk' plant species in Europe have been developed, an up-to-date IUCN Red List of European plants is not presently available. Several European policy instruments include lists of plant species requiring special protection. The Habitats Directive (Annexes II and IV) lists 484 species, while the Bern Convention identifies 642 priority species. Of these, 352 species are included on both lists. 183 European plant species are included in the 2008 IUCN Red List of globally threatened plants. A database of 650 of the most endangered European plant species (IUCN criteria EX, EW, CR) has been developed by the European Environment Agency / European Topic Centre on Biological Diversity, in collaboration with the Conservatoire Botanique National de Brest, France (see below). Furthermore, most countries in Europe have published National Red Lists of threatened species, mostly, but not always based on the IUCN Red List Categories and Criteria (Box 7).

The absence of a European plant Red List, and the lack of consistency between other lists of priority plant species, seriously constrains the prioritization of species-based conservation work at the regional level and the monitoring of the progress of such work. Targets 7 and 8 of the GSPC and EPCS call for 60% of threatened species to be conserved in *in situ* and *ex situ* programmes respectively. Monitoring of

Box 7: The IUCN Red List of Threatened Species

The system of categorising threat to species that is used as a global standard is the application of the IUCN Red List Categories and Criteria (IUCN, 2001). Basically, these are;

- **EXTINCT (EX)** - A taxon is Extinct when there is no reasonable doubt that the last individual has died.
- **EXTINCT IN THE WILD (EW)** - A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range.
- **CRITICALLY ENDANGERED (CR)** - A taxon is Critically Endangered when the best available evidence indicates that it meets any of five criteria 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 five criteria 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 five criteria 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.

progress towards these targets is not possible without a baseline list. BGCI, as one of the facilitating organizations for Target 8 of the GSPC decided to address this gap, and has developed a consolidated list of European threatened plant species based on available national and regional lists. The list includes some 1,917 taxa, and is presented in Annex 1.

3.1.1 Sources of data

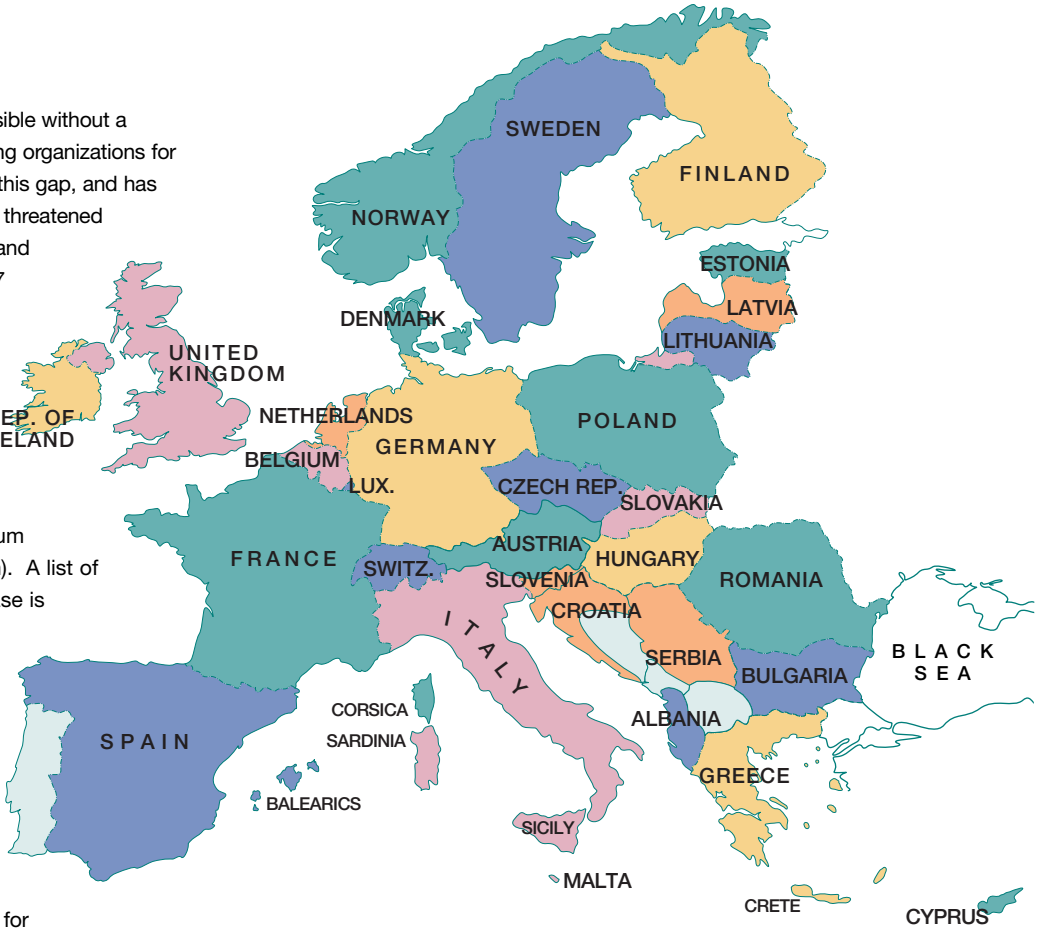
National Red Lists

National Red Lists were obtained for 28 European countries (see map). Partial Red Lists were obtained for Belgium (Wallonia) and Bulgaria (Black Sea region). A list of national Red Lists included in the database is provided in Annex 1. Gaps where national Red Lists are not available include Portugal, Bosnia and Herzegovina, Macedonia and Montenegro.

All plants listed on national Red Lists, with the exception of plants categorised as 'Least Concern' were entered into a database. Distribution data for each species was also included using data from national Red Lists and from *Flora Europea* (Tutin *et al*., 1964-1980). Plant names were maintained as those used in the national Red Lists, and synonyms were identified using *Flora Europea*. Threat status at the European level was determined by comparing distribution data with country Red List information. All species that were recorded as threatened in every country in which they are known to be distributed were included in the final threatened species list.

Information on threat status as provided in the national Red Lists was included in the database, but no attempt has been made to include this information in the final list presented in Annex 1 as ways of categorising threat status are not consistent across European countries.

Cynara spp.



Countries with national plant Red List information included in the threatened plant database

Box 8: Apomixis

Apomicts are plants that produce seed wholly (or almost entirely) female in origin and without fertilisation. There is evidence in most groups for occasional or very rare sexual outcrossing but, by and large, each new generation has the same genetic make-up as its female parent. The result of this is a large number of 'clones' which are all reproductively isolated but very closely related and these 'clones' are distinguished as microspecies.

Source: *The Vascular Plant Red Data List for Great Britain* (2005). Cheffings, C. and Farrell, L. (Editors)

Expert consultation

Members of the European Consortium of Botanic Gardens were consulted during the development of the database. In some cases, additional information to supplement national Red Lists was provided, with a particular focus on threatened endemic species.

Database on the most threatened plants in Europe

Upon request from the European Topic Centre on Nature Protection and Biodiversity, and in partnership with the Council of Europe, the Conservatoire Botanique National de Brest, France developed a database based on an assessment of 650 European taxa falling under IUCN global categories Extinct (EX), Extinct in the Wild (EW) and Critically rare (CR), on the

IUCN global Red List (1997) and a review of the most up-dated national red lists on plants as well as numerous individual contacts. Almost all the species included in this database are European endemics. A copy of this was provided to BGCI for inclusion in the database of threatened European plants. This has ensured that the most threatened species in countries such as Portugal, where national Red Lists are not currently available, are included in the final list.

IUCN Red Lists

Additional data was obtained from IUCN's 1977 and 1982 editions of the *List of Rare, Threatened and Endemic Plants in Europe*, as well as the 1997 and 2008 editions of the IUCN *Red List of Threatened Plants*.

Alterra Report

In 2005, a report and database identifying European species of concern was developed by the research institute Alterra for the implementation of the Pan-European Ecological Network (PEEN) (Ozinga & Schaminée, 2005). The database includes a complete plant species list for Europe, from which 'target species' have been identified on the basis of three criteria: legal protection (Bern Convention, Habitats Directive), threat status (IUCN), and degree of endemism. A copy of this list of 'target species' was provided to BGCI.

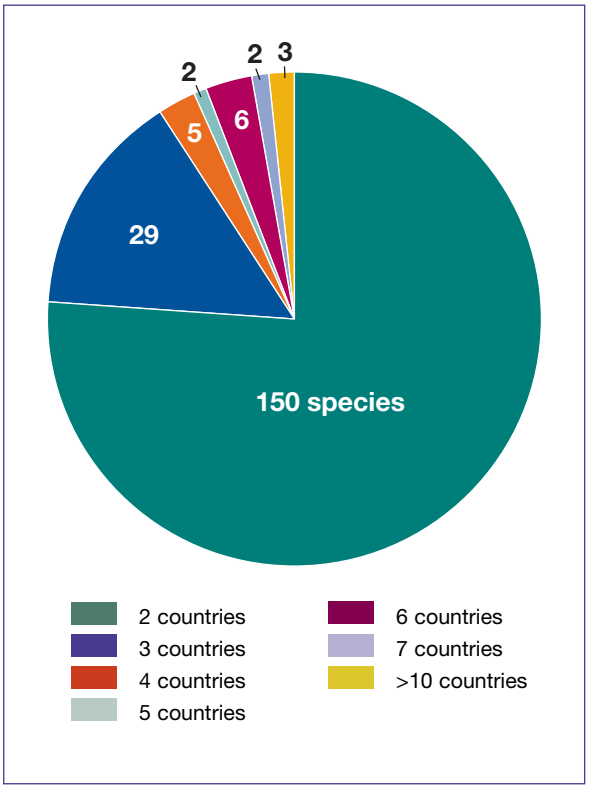
3.2 The European threatened plant list

From the sources outlined above, a total of 11,475 taxa were recorded in a database. From this database, a list of European taxa which are known to be threatened throughout their range has been extracted. This list consists of 1,917 taxa (species and subspecies). The full list is presented in Annex 2.

It should be noted that the list includes species from apomitic groups, such as *Hieracium, Limonium, Rubus, Sorbus* and *Taraxacum* where these are included in national Red Lists.

This list confirms that nearly 2,000 plant species that are unique to Europe, or some 15% of the total flora, are considered at risk of extinction. The potential loss of

Figure 1: The distribution of threatened species found in more than one country in Europe



Europe's native plants is not just of concern to scientists in research institutes, it affects us all. Loss of plant species could trigger a cascade of local extinctions and lead to ecosystems collapsing and livelihoods being destroyed.

Geographical distribution of threatened species

As might be expected, the majority of taxa on the threatened plant list (90%) are single country endemics. Figure 1 illustrates the extent of distribution of threatened taxa that are found in more than one country.
The ten most widely distributed taxa that are threatened throughout their range are shown in Table 1


Primula carniolica

Table 1: Most widely distributed threatened European plants

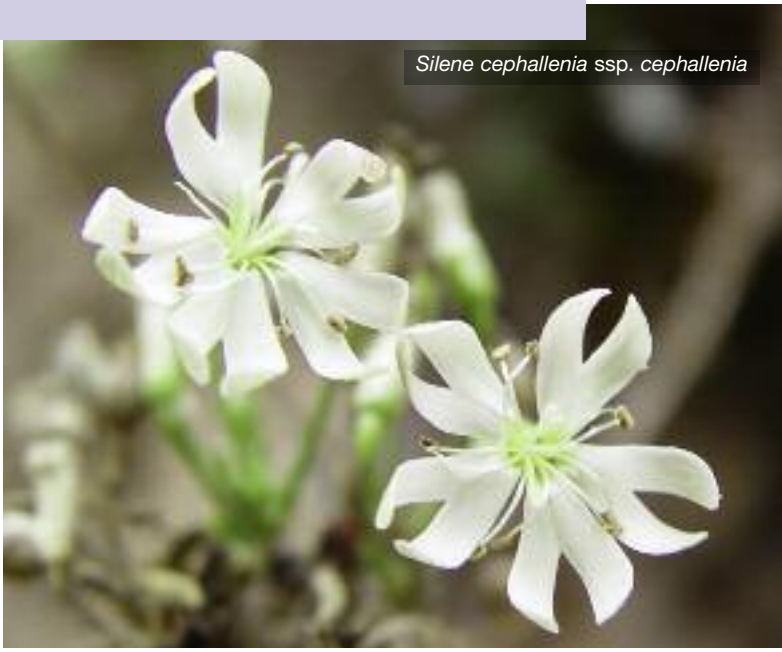
Species name	Distribution
Deschampsia littoralis	Austria, France, Germany, Switzerland
Epipactis pontica	Austria, Hungary, Slovakia, Slovenia
Pinus heldreichii var. *leucodermis*	Albania, Former Yugoslavia, Greece, Italy
Pinus peuce	Albania, Bulgaria, Former Yugoslavia, Greece
Consolida uechtritziana	Croatia, Greece, Kosovo, Montenegro, Serbia
Leucojum aestivum ssp. *pulchellum*	Balearic Is., Corsica, France, Sardinia, Sicily
Bromus grossus	Belgium, Czech Republic, France, Germany, Italy, Luxembourg, Switzerland
Coleanthus subtilis	Austria, Czech Republic, France, Germany, Italy, Norway, Slovakia
Apium repens	Austria, Belgium, Germany, Hungary, Italy, Netherlands, Poland, Romania, Slovakia, Slovenia, Switzerland, U.K.
Asplenium adulterinum	Austria, Bosnia & Herzegovina, Czech Republic, Finland, Germany, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, Switzerland
Gladiolus palustris	Albania, Austria, Bulgaria, Czech Republic, Former Yugoslavia, France, Germany, Hungary, Italy, Liechtenstein, Lithuania, Poland, Romania, Slovakia, Slovenia, Switzerland

Source	No. of matching records
Alterra list of 'target species'	612 (out of 2,968)
Habitats Directive – Annex II	141 (out of 431)
Habitats Directive – Annex IV	57 (out of 128)
Bern Convention	179 (out of 642)
IUCN 2008 Red List	76 (out of 183)

Table 2: Matching records with BGCI's threatened plant list

Threatened taxa are concentrated in the Mediterranean and Balkan regions, with the country with the highest number of species included on the list being Italy with 586 taxa. This is followed by Spain (432 taxa), Greece (317 taxa), France (171 taxa), UK (137 taxa) and Romania (115 taxa). The high number of threatened species in the UK is probably due to the inclusion of many apomitic *Hieracium* taxa in the UK's national Red List. Indeed 103 out of 137 threatened plants from the UK included on the list are *Hieracium* species.

Gentiana pannonica



Silene cephallenia ssp. *cephallenia*

Comparison with other lists of European threatened plants

Table 2 provides details of matches between BGCI's threatened plant list and other available lists of threatened species in Europe:

A total of 115 species are found on 4 of the lists (BGCI, Alterra, Habitats Directive and Bern Convention). These species may perhaps be considered the 'priority species' for conservation in Europe.

While our list of threatened plants in Europe is based on the best available data, it should be emphasized that this is not a European plant Red List. However, it is hoped that the list will help to guide conservation action towards the most threatened plants of Europe and will facilitate the development of an IUCN Red List for the region.
The list also provides, a basis for assessing progress towards European and global targets for conserving threatened species.

4. Progress in *ex situ* conservation of threatened plants in Europe

4.1 Addressing GSPC Target 8

Target 8 of the Global Strategy for Plant Conservation calls for: *60% of threatened plant species to be in accessible* ex situ *collections, preferably in the country of origin, and 10% of them to be in recovery and restoration programmes.*

The importance of achieving this target has been brought into focus in recent years, as evidence mounts on the fundamental impact climate change is already having on plant behaviour and distribution. Models of future plant distribution indicate that a temperature rise of 2-3°C over the next hundred years could result in half the world's plant species being threatened with extinction. Doing nothing is clearly not an option, and in the face of an uncertain future, urgent priority must surely be given to *ex situ* conservation through seed banking and living collections for as many plant species as possible as an insurance policy (Hawkins *et al*, 2008). As well as playing a key role in securing the conservation of plant diversity, *ex situ* plant collections also provide the basic material required for restoring natural populations and reintroducing plant species into the wild.

Historically European botanic gardens have given more focus to the display of exotic species and the development of collections of taxonomic and research interest. However, a change in emphasis was called for more than 30 years ago, in the resolutions of a conference held at the Royal Botanic Gardens, Kew: "*This conference recommends that institutions maintaining plant collections (including seed collections) should, in general, give priority to their local flora…*" In response to this, in the 1970s some gardens started to give particular emphasis to the conservation of native species, and this is increasingly the model for European botanic gardens. A greater focus on local plant diversity – both in terms of conservation and for education and display purposes – reflects the way botanic gardens throughout history have changed in line with the changing needs of modern society and provides relevance and purpose for the botanic gardens of today.

Since its establishment in 1987, BGCI has always been involved in monitoring the conservation of threatened species in botanic gardens and has taken a lead on collecting and consolidating data on threatened plants in botanic garden collections.

In 2004, BGCI launched an on-line, publicly accessible database of plants in botanic gardens collections around the world (PlantSearch). This database provides a tool to monitor progress in the implementation of GSPC Target 8. The number of records in the database has increased from 130,000 at its launch, to 575,865 in 2009. These records relate to some 178,788 taxa in cultivation in 694 botanic gardens around the world, including 257 European gardens. Similarly ENSCONET has developed a database of plants in seedbank collections in participating institutions. This database now includes records for more than 41,000 accessions, relating to over 9,000 species, which are stored in 29 institutions across Europe.

The PlantSearch and ENSCONET databases together provide comprehensive information on plants in *ex situ* collections in Europe. A comparison of the list of threatened plants in Europe with these two databases can provide the best information presently available on the extent to which threatened plants are held in *ex situ* collections and therefore progress towards achieving Target 8 of the GSPC in Europe.

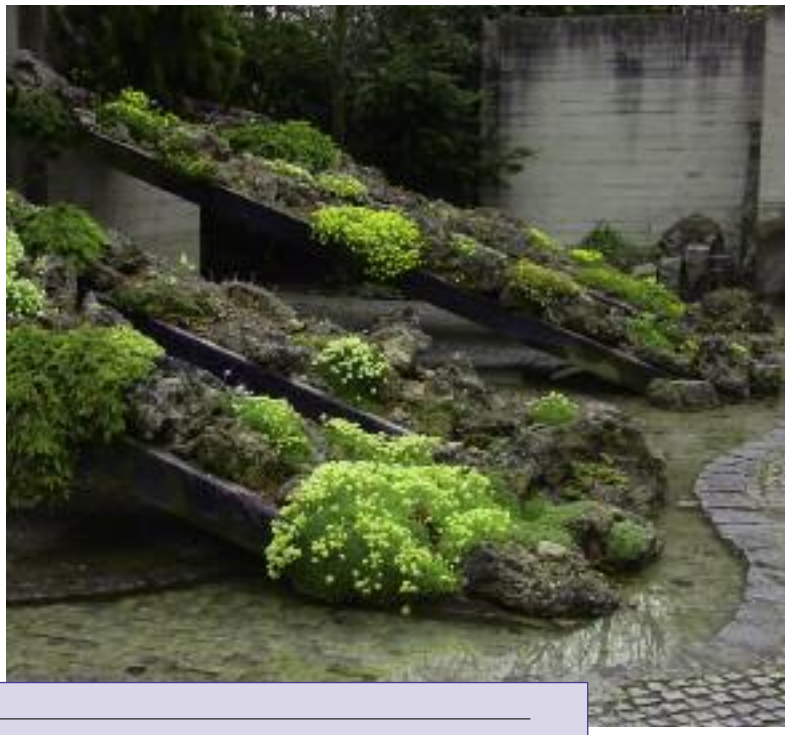
4.2 Assessing progress

Comparing the list of European threatened plants with the list of plants included in the PlantSearch database reveals that 547 threatened European taxa (28% of the total) are held in botanic garden collections. Of these, 541 taxa are held in European collections. A similar comparison with the ENSCONET list reveals that 515 regionally threatened taxa (27%) are held in seed bank collections. 248 taxa are held in both living and seedbank collections and therefore a total of 808 taxa are held in *ex situ* collections in Europe.

This means that, within Europe, **42% of threatened taxa are in accessible *ex situ* collections within their region of origin.**

While the above analysis is based on the list of threatened species presented in Annex I, an additional 2,408 taxa have been identified at some level as species of conservation concern in Europe. These include taxa which are listed in either IUCN global lists, Habitats Directive or Bern Convention lists, or are narrow endemics, but which are not included in BGCI's consolidated list.

A comparison of this additional list with the PlantSearch database, reveals that 535 (22%) of these taxa are also in cultivation in botanic gardens, of which 529 taxa are in European collections, and 815 (34%) are in ENSCONET seed bank collections. 278 taxa (11%) are in both living collection and seed bank collections and a total of 1,072 taxa (45%) are conserved in *ex situ* collections of one type or another.



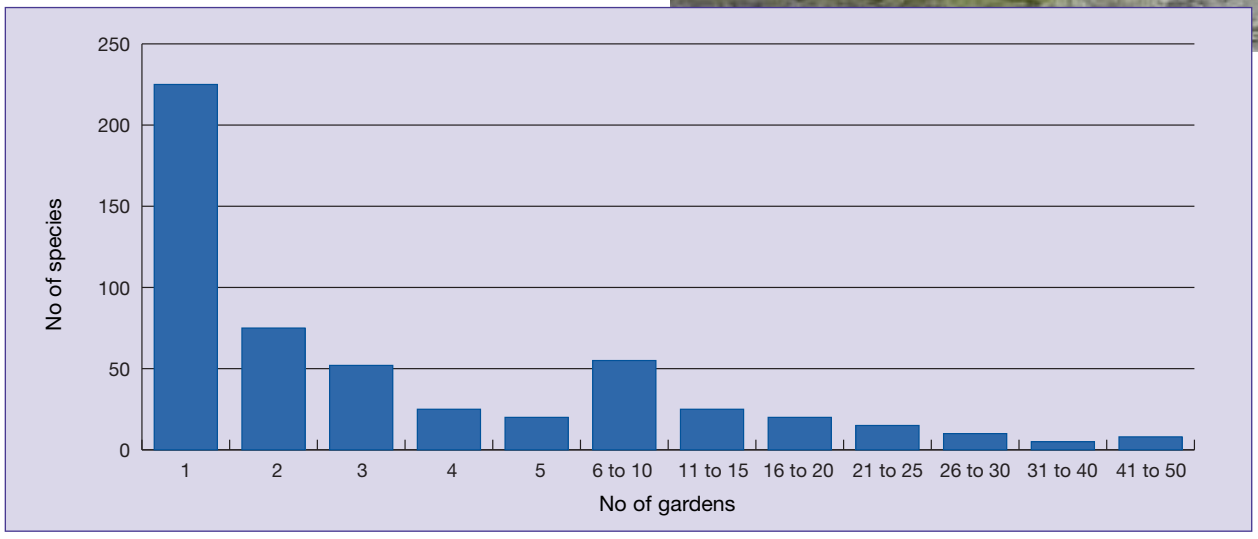


Figure 2: The distribution of threatened plant species in European botanic garden collections

Centaurea pontica

It is of concern that in Europe, where relative to other regions of the world, there is less plant diversity but a greater number of scientists, less than half the region's threatened species are in secure *ex situ* conservation collections.

Quality of collections

It is recognised that species conservation must be based on more than a few plants in cultivation in one botanic garden (although even this may be enough to avoid extinction). Further information is clearly needed on the conservation value of the plant collections in botanic gardens. What is the origin of the material – how much is from known wild origin and what extent of genetic diversity is represented in the collections? Without this supplementary information, it is impossible to assess the effectiveness of the conservation role of botanic gardens.

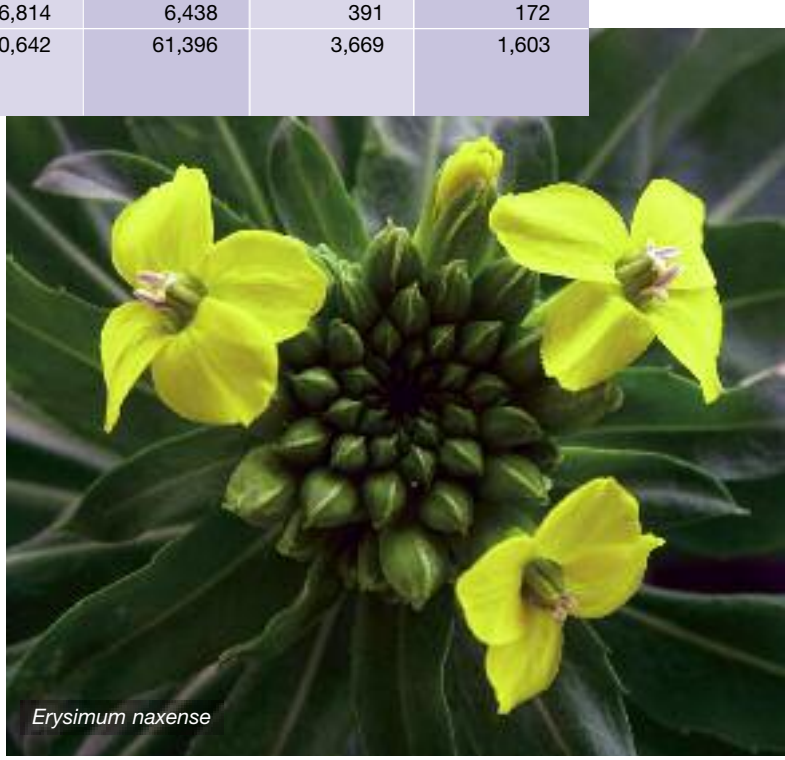
In attempt to gather further information on the 'security' of threatened plants in botanic garden collections, further analysis of the PlantSearch database was carried out. This analysis looked at the number of different botanic garden collections individual species are held in. The results showed that a significant number (228 or 43%) of the threatened taxa that are held in botanic garden collections are found in only one garden. Relatively few taxa are widely distributed in botanic gardens, with the most widely distributed threatened species being *Forsythia europaea*, which is found in 66 gardens worldwide. Figure 2 indicates the distribution of taxa in botanic garden collections. Other species that are widely distributed in collections include: *Campanula raineri, Aster pyrenaeus, Abies nebrodensis, Primula palinuri, Allium fistulosum, Saxifraga cochlearis, Phoenix theophrasti, Galanthus elwesii, Crocus angustifolius, Sempervivum pittonii, Tetraclinis articulate* and *Pinus peuce*.

4.3 Data deficiences

The above analysis is based on information provided by botanic gardens to BGCI for inclusion in the PlantSearch database, as well as data provided to the ENSCONET database by the project partners. As with all such analyses, the results are only as good as the data available. In the case of living collection data recorded in PlantSearch, to date, only 285 gardens, out of a total of more than 700 in

Country	PlantSearch database				ENSCONET database	
	No of gardens	No of gardens providing plant records	No. of plant records	No of taxa	No. of accessions	No. of taxa
Austria	20	6	66	60	32	31
Belgium	28	10	31,402	23,512	775	431
Bosnia-Herzegovina	4	1	23	23	22	17
Bulgaria	10	1	29	29	469	408
Croatia	14	3	54	54	17	12
Cyprus	0	0	0		551	221
Czech Republic	27	10	1,412	1,386	68	59
Denmark	10	5	13,315	13,201	55	37
Estonia	3	2	129	128	0	0
Finland	8	4	3,739	3,631	9	4
France	97	30	55,216	37,068	3,539	1,648
Germany	104	49	117,633	40,039	1,336	816
Greece	10	6	1,176	996	3,083	1,436
Hungary	13	3	14	13	108	85
Ireland	16	6	7,316	7,165	204	88
Italy	104	16	4,379	4,009	3,905	1,135
Latvia	2	2	4,304	4,257	0	0
Lithuania	9	2	2,750	2,737	0	0
Luxembourg	1	1	438	438	94	55
Malta	1	0	0	0	10	9
Netherlands	52	16	26,724	21,638	31	5
Norway	6	3	4,910	4,883	72	54
Poland	32	6	2,980	2,905	343	83
Portugal	12	7	3,053	2,338	2,221	880
Romania	15	6	312	262	584	169
Slovakia	10	3	86	86	220	178
Slovenia	5	3	4,396	4,042	30	27
Spain	27	11	3,949	3,427	14,637	3,821
Sweden	9	3	6,030	5,969	41	38
Switzerland	25	25	6,814	6,438	391	172
United Kingdom	114	48	100,642	61,396	3,669	1,603

Table 3 – The number of plant records provided by botanic gardens to PlantSearch and the number of accessions and taxa per country included in the ENSCONET database



Erysimum naxense

Europe, have provided plant lists for inclusion in PlantSearch. It is therefore likely that we are under-estimating the number of European threatened species in cultivation in European botanic gardens. Table 3 provides an overview of data available for European countries in PlantSearch and ENSCONET databases.

Futhermore, the list of European threatened plants is based on the best available information on threatened species in Europe, but it is known that there are some gaps in geographical coverage and that information is not provided in a consistent way from country to country. Therefore it is not possible to provide information on the level of threat, with for example, species that are listed as Critically Endangered being treated in the same way as those listed as Vulnerable.

5. The role of botanic gardens in conserving threatened plants in Europe

Many botanic gardens are involved in local plant conservation projects – often in partnership with local or national conservation organisations. An increasing number are developing seed banks for the long term conservation of native plant diversity, such as those that are members of ENSCONET. The Millennium Seed Bank of the Royal Botanic Gardens, Kew for example, will, together with its partners around the world, have banked seed from 10% of the world's wild plant species by the end of the decade, including 96% of the flora of the UK.

While seed banks provide an essential insurance policy against future extinction risk, it is the living collections of botanic gardens that are of particular interest. As well as specific conservation collections, botanic gardens maintain living collections to fulfil their education and display needs. Together these collections can provide material for use in research - from plant taxonomy and classification to ecology and breeding system studies as well as plants for species recovery programmes. Maintaining such collections requires botanic garden staff to develop propagation and cultivation methods for plants which have perhaps never before been in cultivation - essential knowledge for species recovery programmes and for the reintroduction of plants into the wild. Botanic gardens collections can also play a useful role in informing the selection of plants that can, for example, withstand degraded and changing environments (especially important in face of the threats posed by climate change).

The plant conservation work of Europe's botanic gardens is extensive and varied and the following case studies serve to illustrate the range of activities that are being undertaken. Although much of this work is local and small-scale, it clearly makes an extremely valuable contribution to the huge task of ensuring the long-term survival of Europe's threatened flora.

Salvia pratense

5.1 Implementing Target 8 in the UK -

Practical horticulture in support of conservation of the flora of Britain and Ireland

Plant Diversity Challenge: the UK's response to the Global Strategy for Plant Conservation (2004) calls for greater linkage between *ex situ* and *in situ* conservation efforts. The aim of the Target 8 project is to develop ways in which horticulture, in particular through *ex situ* cultivation, can support conservation of the native flora. The project encourages member gardens of the Plant Collections Network of Britain and Ireland (PlantNetwork) to cultivate one or more threatened species in the flora of Britain and Ireland, and in so doing to develop scientific and horticultural expertise in *ex situ* conservation in order to assist and support *in situ* conservation work. Seed material for the project is provided by the Millennium Seed Bank (MSB) of the Royal Botanic Gardens, Kew, and the project thus also provides important seed viability information for the MSB. (*Source: www.plantnetwork.org*)

5.2 The National Botanic Garden of Belgium - conserving threatened native plants

Phylogeny and population dynamics of *Sempervivum funckii* var. *aqualiense*

Sempervivum funckii var. *aqualiense* (Crassulaceae) appears to be the only endemic vascular plant taxon in Belgium. In the wild it occurs in only one locality, in the natural reserve "Heid des Gattes", Aywaille (Wallonia). The high conservation value of this taxon and the necessity to preserve it are indisputable. However, its taxonomic status is uncertain and its


Luronium natans

phytogeographic origin is still unclear. The National Botanic Garden of Belgium is working to verify the taxonomic status of the species and investigating the genetic diversity and structure of the population in the "Heid des Gattes", in order to contribute to the sustainable conservation of this taxon through a better understanding of population functioning.

Conservation of *Bromus bromoideus*, a species extinct in the wild in Belgium

Bromus bromoideus is a grass species that was found on calcareous soils of south Belgium, where it was first discovered in 1821. It is an over-wintering winter annual that grew in association with spelt (*Triticum spelta*) on poor chalk soils in Meuse and Ardenne region. This species is strictly protected under Appendix 1 of the Bern Convention. It is an endemic species of Belgium and northern France and is considered to have been extinct in the wild since the 1930's. Preserved seeds kept in the vaults of the National Botanic Garden of Belgium seed bank were successfully germinated. In collaboration with the Royal Botanic Gardens, Kew, viability testing and germination experiments were carried out at a range of temperatures and conditions. Currently, more than 200,000 seeds are preserved *ex situ*. Discussions are on-going to identify suitable sites for reintroduction into protected reserves in south Belgium.

Conservation biology of Habitat Directive species

Four Belgian plant species (*Apium repens, Bromus grossus, Liparis loeselii* and *Luronium natans*) are listed on the European Habitats Directive. The National Botanic Garden of Belgium has adopted a multidisciplinary approach to conserving these species, including: taxonomy for clear identification of taxa; floristics for their distribution; population biology for their status and trends; molecular genetics for genetic diversity within and between populations; and ecology and phytosociology for their habitat requirements.
(*Source: Sandrine Godefroid - pers. comm., 2009*)


Bromus bromoides

5.3 Plant micro-reserves in Spain

Many rare and threatened plants and plant habitats are confined to extremely small areas, especially in the heavily used landscapes of lowland Europe. The Botanic Gardens of Valencia is an important partner in an innovative project to conserve plant diversity in the Valencian Community in Spain through a special statutory category of micro-reserve. The Valencian region is home to 3,150 plant species, 350 of which are endemic (60 of them are endemic to the region itself). Many of these species live in micro-habitats, e.g. non-zonal vegetation types occupying small surface areas (such as temporary ponds, dunes, cliffs etc.). Over 200 sites have so far been identified and seeds of species found in these sites are stored at the germplasm bank at the Botanic Gardens of Valencia. The micro-reserves are legally protected by the Valencian Government and have their own management plans. Plant micro-reserves are a valuable tool for plant conservation in this diverse region and the model is now being adopted by other Spanish territories and beyond. Networks of micro-reserves have been set up on the islands of Minorca and Crete as well as in Slovenia.
(*Source: Natura 2000 Newsletter 23. Dec 2007*)

5.4 Botanic gardens – contributing to plant conservation in Austria

Conserving flagship species

The Botanic Garden of the University of Vienna is involved in the conservation of two flagship Austrian plant-species (*Dracocephalum austriacum* and *Artemisia pancicii*). The conservation work is carried out as part of habitat restoration and protection projects funded by the EU Life programme. In the context of these projects, the botanic garden has been given responsibility for the *ex situ* conservation, propagation and reintroduction of these two highly threatened species. This work includes carrying out research on the reproduction ability and propagation of the species and monitoring the genetic diversity within the *in situ* populations.

In the case of *Dracocephalum austriacum*, *in situ* surveys resulted in the identification of more than 70 plants in five small (sub)populations, including seedlings and young individuals, not just the three individuals that were previously thought to be present in the area. Specific management measures were put into place to secure the five (sub)populations. *Ex situ* germination tests showed divergent results for seeds from the different

(sub)populations. Until molecular characterisation of the population genetics of the (sub)populations has been finished, no planting-out of *ex situ* propagated material will be done. Instead special management measures (including small scale removal of shrubs) are being taken to increase the survival rate of seedlings *in situ*.

Seed banking of native species

The establishment of the seed bank at the Botanic Garden, University of Vienna, began in 2004 with the main emphasis on populations of endangered Austrian species of aquatic and semiaquatic habitats, including species listed on Annex II of the EU-Habitats Directive and aquatic species of the *Red List of Endangered Austrian Plant Species*. Taxa stored include *Cochlearia macrorrhiza* or *Coleanthus subtilis*. More recently, regional collections from Vienna and Lower Austria have been added (mainly dryland species, currently 120 populations of 28 species).

The seed bank at the Botanical Garden of the Karl-Franzens University, Graz was established in 2008 and currently holds material of 125 specimens originating from Styria. (*Source: Michael Kiehn and Frank Schumacher – Pers. Comm., 2009*)

Dracocephalum austriacum

5.5 Conserving threatened plants in Slovenia

The University Botanic Garden Ljubljana has a long tradition of conserving endangered species. Situated on the margins of the one-time southernmost high moor, the Garden plays a very important role in conserving the remaining moorland plants, most of which have disappeared over the past 200 years due to human intervention. Some of the rare species have been multiplied in the Botanic Garden from where they will be re-introduced into their original habitat, should this prove necessary. In addition to *ex situ* conservation, the Botanic Garden also actively protects certain plants *in situ*. The Garden has taken a seven-year lease on a dry meadow

Pastinaca sativa var. *fleischmanni*

in the vicinity of Ljubljana, where the plants are monitored and protected *in situ*. The meadow, which is an isolated area in the midst of an intensively cultivated flatland, is home to more than 120 species.

The garden is conserving a number of threatened species, for example the endemic monotypic genus *Hladnikia pastinacifolia*. Although in the garden conditions the plant is a rather aggressive species, its area is not spreading in natural habitats. Another species of concern is *Cerastium dinaricum*. In Slovenia the natural population is very small. However, some years ago, the Botanical Garden managed to breed some plants from the seeds of this population, thus creating the possibility of reintroducing the plant into its natural habitat. Efforts are also being made to cultivate *Degenia velebitica*, an endemic of Croatia. It has been found that in spite of the harsh conditions typical of its natural habitat, it is difficult to cultivate in garden conditions. (*Source: Joze Bavcon - Pers. Comm., 2009*)

5.6 Raising awareness of plant conservation

A rare plants trail at the Conservatoire Botanique National de Brest, France

Created in 1975, the French Conservatoire Botanique National de Brest was one of the first botanic gardens in the world committed to the conservation of threatened plants. To raise public awareness, the garden has developed a trail focusing on the rescue of endangered plants. The trail, inside the educational glasshouses, consists of interpretative panels that provide general information and a pamphlet on 36 endangered plants. The arrangement of the glasshouses, in particular the footpaths, the layout of the boards and their contents, has been specifically designed to meet the needs of a diverse public (including groups, individuals, children and the physically disabled). The pamphlet is available in French, English and German. (*Source BGCI, 2000*).

Dianthus gratianopolitanus var. *subulosus*

5.7 *Ex situ* plant conservation in Germany

The work of the network

So far, 35 botanic gardens in Germany have recognised *ex situ* conservation as a chance to demonstrate their commitment to the conservation of native plants. These gardens coordinate their activities in a project group within the German Association of Botanic Gardens (Verband Botanischer Gärten) that includes both garden curators and gardeners.

As a first step, the project group defined minimum requirements for *ex situ* cultivation. These specify that garden populations of German native plant taxa are recognised as *ex situ* collections if their provenance from a wild population in Germany is documented. Further, genetic identity of the garden population must be safeguarded if the plants are propagated by seeds, i.e. cross-breeding with other plants of the same taxon or close relatives in the garden must be excluded. In a second step, an existing national priority list was used to decide which plant taxa should be saved first. According to this list, conservation priority is high if a taxon is endemic or subendemic (high proportion of global occurrence) in Germany. Further taxa are included if they have isolated occurrences in Germany. The priority list includes 64 taxa that are either threatened by extinction or extremely rare in Germany. For 60 of them, a botanic garden has now taken responsibility for *ex situ* conservation, in consultation with the conservation authorities. If the *ex situ* population is large enough, material is distributed to other gardens as insurance against accidental loss. In all 35 gardens, further taxa are in *ex situ* cultivation, usually according to regional or local priorities, adding up to a total of approx. 400 taxa.

Species conservation projects

Armeria alpina subsp. *purpurea*, endemic to Lake Constance, is among the most prominent taxa in Germany. All lakeside populations are extinct in the wild. Fortunately, offspring of a lakeside population that has been cultivated in the Bern Botanic Garden (Switzerland) is now propagated in the Botanic Garden of the University of Konstanz for reintroduction. Populations of the extinct flax weeds *Cuscuta epilinum, Silene linicola* and *Lolium remotum* are cultivated in a specifically-designed flax field in the Bonn University Botanic Gardens. In the federal state of Brandenburg, a project was carried out to help the single population of *Dianthus gratianopolitanus* var. *sabulosus*, one of only three surviving wild populations worldwide. This pink is found in open *Pinus sylvestris* forests. For the original wild population, a litter removal regime was established to optimise habitat management. The wild population was further strengthened with plants propagated *ex situ*, both with seeds sown directly *in situ* and with young plants that were pre-cultivated in the Heidegarten Langengrassau, a small regional botanic garden. Both reintroduction measures were successful within 2 years. (*Source: Michael Burkart - Pers. Comm., 2009)*

5.8 Developing conservation action plans for *Zelkova* spp.

Two *Zelkova* species are endemic to Europe. The most endangered of these is *Z. sicula*, discovered only recently in Sicily. The only known population consists of some 200-250 individuals. The other species, *Z. abelicea*, is endemic to Crete (Greece) and is classified as Vulnerable (VU) in the IUCN Red List (Walter Gillett, 1998). BGCI is working with the Botanic Garden of the University of Fribourg, Switzerland on the development of conservation action plans for these species, as well as for the Caucasian and Asian *Zelkova* taxa, based on detailed assessments of their conservation status both *in situ* and *ex situ*. The study will include genetic analyses of wild and cultivated material to determine the

Zelkova sicula

extent to which intra-specific genetic diversity is represented by specimens in *ex situ* collections. The research will provide useful information on the degree to which a number of individuals in different collections can together form a viable conservation collection. Building on the initial research findings, pilot restoration projects will be initiated in selected sites in close collaboration with local stakeholders to ensure coordination and ownership of all parties involved.


Angelica palustris

5.9 *In vitro* propagation of endangered species in Latvia

One of the goals of National Botanic Garden of Latvia is to develop methodologies to preserve the endangered flora of Latvia. At the moment there are 131 species of rare and endangered Latvian plants in the *ex situ* collection (*in vivo* and *in vitro*) - 50% of nationally threatened vascular plants. The field (*in vivo*) collection consists of 123 species, including 6 species that are native to the local area.
The tissue culture laboratory at the botanic garden uses *in vitro* techniques to both conserve threatened species and multiply plant material for further research projects.
At present 462 taxa from 35 families are stored *in vitro*, including ornamentals and other cultivated plants, as well as rare and endangered native plants of Latvian origin.
Investigations over the last few years have resulted in the establishment of a tissue culture collection of 75 rare and endangered native plant species. Particular attention is given to species protected by the European Habitats Directive - 16 of them grow in Latvia and *in vitro* cultivation techniques are being developed for 12 of them.
Physiological studies are being carried out to develop a theoretical basis for cold storage of *in vitro* collections in conditions of slow growth. (*Source – Ludmila Vishnevska, Pers. Comm., 2009*)

5.10 *Ex situ* conservation of threatened Polish plants in botanic garden collections

446 species of vascular plants are listed as nationally threatened in the Polish Red List and in the Red Data Book of Poland. Among them 404 vascular species are legally protected by national law and 35 species are protected in Europe according to the Bern Convention. The Botanical Garden of the Polish Academy of Sciences in Warsaw carried out a survey of the *ex situ* collections of the 33 institutions included in the national botanic garden network. Responses were received from 24 of them. On the basis of the information obtained, a national database on *ex situ* collections of threatened or protected vascular plants in Poland was established. It was found that 275 taxa out of 446 threatened plants (54.4%) are available in *ex situ* collections. For the species protected legally by law in Poland 74% are cultivated as living plant collections or seed bank collections in botanical gardens. However it was also noted that 124 plant species were conserved *ex situ* in only one botanic garden.
(*Source: W. Gawryś and J. Puchalski. Proceedings of EuroGard IV, 2006.*)

5.11 Conservation of Greek endemic plant species

The Balkan Botanic Garden of Kroussia maintains *ex situ* collections of native Greek plants, including over 60 local Greek endemic taxa. These taxa are found only in a very restricted area of Greece (e.g. a single mountain summit or a single island, or only in a few localities). Efforts are underway to develop effective propagation protocols for these taxa, with the aim of being able to re-introduce them into the wild if and when necessary.

Among these taxa, a few are local Balkan endemics found around the border between Greece and other Balkan countries (e.g. *Lilium rhodopeum, Dianthus gracilis, Dianthus orbelicus*) or are Aegean local endemics, found exclusively in Greece and one or a few localities in Turkey (e.g. *Dianthus arpadianus, Phoenix theophrasti*). (*Source: Nikos Krigas, Pers. Comm., 2009*)


Phoenix theophrastis

6. Conclusion and recommendations

Campanula andrewsii ssp. *andrewsii*

It is well recognised that wild plant diversity in Europe is under severe threat and rapid climate change is compounding the problem. Ongoing actions to conserve threatened species are clearly insufficient given the scale of the problem and urgent action is required.

We believe that the information we have compiled during the preparation of this report, and the list of threatened plants in Europe we have developed, provide a valuable basis for assessing progress in *ex situ* conservation at the regional level and will facilitate the prioritisation of future actions. This information is now freely available for all to use. Full IUCN Red Listing is also presently being undertaken for a selection of European threatened plant species and the development of this is strongly encouraged to guide botanic garden conservation actions on a European scale.

We have identified 547 regionally threatened taxa in the *ex situ* collections of botanic gardens and therefore know that at least 42% of Europe's regionally threatened plants are stored in seed banks or in living collections. However, although we know how many collections each of these species are represented in, we need to know more about the conservation value of the living collections of priority species within botanic gardens, and the extent to which these species are included in recovery and restoration programmes (the second part of GSPC Target 8).

Botanic garden collections have considerable value for long term conservation and species restoration where they are derived from documented wild source material. In the absence of this background information they should be used with great caution for conservation purposes, as they may be derived from cultivated stock and may represent only a sub-set of the wild genetic diversity. Such material may nevertheless have considerable value for research purposes - for example into propagation techniques. The horticultural skills and knowledge developed by botanic gardens in cultivating European rare and threatened plant species represent a valuable resource that can be used to support conservation and restoration programmes. Moreover the material held by the gardens has a great value for informing and educating the visiting public about the diversity, value and conservation needs of the European flora.

Integrated *in situ* / *ex situ* conservation should be the goal for all threatened plant species in Europe and botanic gardens are obviously major players in achieving this goal. However, greater efforts are needed in the development of working partnerships with other conservation agencies, in prioritising and coordinating actions and in sharing data.

The Action Plan for Botanic Gardens in the European Union goes someway towards addressing the need for European standards of practice for the management of threatened


Astralagus pseudopurpureus

Box 8: Action Plan for Botanic Gardens in the European Union - Objective C2 Develop management of *ex situ* collections

"Botanic gardens should expand their traditional role in *ex situ* conservation to ensure that they are conserving sufficient genetically controlled and documented diversity for the evolutionary potential of the conserved material not to be compromised… Gardens should prioritise their conservation collections, ideally by concentrating their efforts on selected, high-priority, threatened, indigenous taxa.… Many conservation collections can be used to assist recovery programmes by providing material for reinforcement of small and vulnerable populations; however, the problems of potential disease transfer and hybridisations in cultivated stock should not be ignored. Such recovery activities must be very closely linked with appropriate field survey and data acquisition."

taxa in cultivation, as called for by Maunder and Higgins in 1998, but there is still a lack of coordination in the management of cultivated stocks and in the location and utilisation of resources and facilities.

If the European Union is to meet its 2010 biodiversity target, plant diversity must be conserved, and while the focus may be on conservation *in situ* through habitat protection, the role of *ex situ* conservation in support of this approach needs to be more explicitly stated. In addition therefore to the call for greater support for plant-focused conservation action at the European level, the following recommendations are made:


Limonium densiflorum

A European-wide action plan for recovery of threatened plant species should be developed based on a prioritisation of species in trouble, taking into account regionally threatened species and those vulnerable to climate change (e.g. alpine and island species). BGCI will endeavour to support this by:

- Drawing attention to the 58% of European threatened plants that are not currently in *ex situ* collections, working with the European Botanic Gardens Consortium and other relevant networks, such as Planta Europa and ENSCONET to develop plans and support fundraising to address this situation;
- Facilitating the development of the GSPC post-2010 with full engagement of European conservation agencies;
- Maintaining and developing the PlantSearch Database for use in supporting the planning of priority conservation and restoration actions;
- Reviewing and making available information on the impact of climate change on plant diversity.

In addition, botanic gardens should:

- Make greater efforts to integrate *ex situ* conservation with *in situ* programmes focused on the restoration of species in the wild by engaging with local and national conservation authorities;
- Record and share plant propagation protocols as a support to restoration and reintroduction programmes;
- Provide regular up-dates to BGCI's PlantSearch database to ensure that an up-to-date register of plants in cultivation in the region is available;
- Ensure the highest standards of record keeping, cultivation, propagation, display and exchange for globally threatened European species within their collections.

Finally, it is clear that the long-term, secure *ex situ* conservation of wild plant diversity in Europe requires action from a wide range of players, but should be particularly centred on botanic gardens and their associated seedbanks. Conservation actions need to meet agreed standards and be focused, prioritised and coordinated. Mechanisms to ensure such prioritisation and coordination throughout Europe therefore need to be maintained and strengthened to ensure that no wild plant species becomes needlessly extinct.

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Campanula incurva

Annex 1: List of National Red Lists and other sources of threatened species data

Regional/Global Lists

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Crocus oreocreticus

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Annex 2: The European threatened plant list

Species name	Authority	No. of botanic garden collections	ENSCONET record	Distribution in the wild	Bern Convention	Habitat Directive Annex II	Habitat Directive Annex IV	IUCN 1997 Red List	IUCN 2008 Red List
Abies nebrodensis	(Lojac.) Mattei	31		Sicily	x	x		E	CR
Abies pinsapo ssp.*pinsapo*	Boiss.			Spain					
Achillea alexandri-regis	Bornm. & Rudski			Serbia					
Achillea ambrosiaca	(Boiss. & Heldr.) Boiss.	3	x	Greece					
Achillea barbeyana	Heldr. & Heimerl			Greece				R	
Achillea coarctata ssp. *millefoliata*	Poir.			Romania					
Achillea horánszkyi	J.Ujhelyi			Hungary					
Achillea impatiens	L.	4		Romania					
Achillea rupestris ssp. *calcarea*	Huter, Porta et Rigo			Italy					
Achillea rupestris ssp. *rupestris*	Huter, Porta et Rigo			Italy					
Achillea tuzsonii	Ujhelyi	1		Hungary, Romania					
Acinos troodi ssp. *troodi*	(Post) Leblebici		x	Cyprus					
Aconitum napellus ssp. *corsicum*	L.			Corsica					
Aconitum variegatum ssp. *pyrenaicum*	L.			France, Spain					
Adenocarpus desertorum	Castrov.			Spain					
Adenocarpus gibbsianus	Castrov. & Talavera		x	Spain					
Adenostyles alpina ssp. *australis*	(L.) Bluff & Fingerh.			Italy, Sicily					
Adonis pyrenaica	DC.	8		France, Spain					
Aethionema retsina	Phitos & Snogerup	1	x	Greece				R	CR
Aethionema thomasianum	Gay	12		France, Italy				V	
Agropyron brandzae	Pantu & Solacolu			Romania					
Agrostis barceloi	Sáez & Rosselló		x	Balearic Is.					
Agrostis cypricola	Lindb.f.			Cyprus					
Agrostis moldavica	Dobrescu & Beldie			Romania				R	
Alchemilla aroanica	(Buser) Rothm.	2		Greece					
Alchemilla cleistophylla	Rothm. & O. Schwarz			Germany					
Alchemilla dolichotoma	Plocek			Romania					
Alchemilla fontqueri	Rothm.		x	Spain					
Alchemilla kerneri	Rothm.			Austria, Germany					
Alisma wahlenbergii	(Holmb.) Juz.	1		Finland, Sweden	x	x		R	
Alkanna sartoriana	Boiss, & Heldr.			Greece				I	
Allium aethusanum	Garbari			Sicily					
Allium agrigentinum	Brullo et Pavone			Sicily					
Allium autumnale	P.H. Davis		x	Cyprus					
Allium calamarophilon	Phitos & Tzanoud.			Greece					DD
Allium chrysonemum	Stearn		x	Spain				R	
Allium circinnatum	Sieber	1		Crete				R	
Allium corsicum	Jauzein, J.M. Tison, Deschâtres & H. Couderc			France					
Allium dilatatum	Zahar.			Crete				R	
Allium exaltatum	(Meikle) Brullo, Pavone, Salmeri & Venora			Cyprus					
Allium fistulosum	L.	34		Norway					
Allium frigidum	Boiss. & Heldr.			Greece				R	
Allium grosii	Font Quer	3	x	Balearic Is.	x	x		R	
Allium heldreichii	Boiss.	11	x	Greece				R	
Allium insubricum	Boiss. & Reuter	26	x	Italy				R	
Allium jubatum	MacBride	1		Bulgaria				V	
Allium lehmannii	Lojac.			Sicily					
Allium lojaconoi	Brullo, Lanfranco & Pavone			Malta					
Allium longanum	Pamp.			Greece				R	
Allium lopadosanum	Bartolo, Brullo & Pavone			Sicily					
Allium lopadusanum	Bartolo, Brullo et Pavone			Sicily					
Allium luteolum	Halácsy			Greece				R	
Allium macedonicum	Zahar.	5		Greece				R	
Allium marathasicum	Brullo , P.Pavone & C.Salmeri			Cyprus					
Allium melananthum	Coincy			Spain				R	
Allium melitense	(Sommier & Car.-Gatto) Ciferri & Giacom.			Malta					
Allium narcissiflorum	Vill.	18	x	Italy				R	
Allium nebrodense	Guss.			Sicily					
Allium obtusiflorum	DC.			Sicily				R	
Allium pardoi	Loscos			Spain					
Allium parnassicum	(Boiss.) Halácsy	1		Greece				R	
Allium pentadactyli	Brullo, Pavone et Spampinato			Italy					
Allium pilosum	Sibth. & Smith			Greece				R	
Allium pyrenaicum	Costa & Vayr.	9		Spain				R	
Allium rhodiacum	Brullo, Pavone & Salmeri			Greece					
Allium ritsi	Iatroú & Tzanoud.			Greece					
Allium rouyi	Gaut.		x	Spain				E	CR
Allium singulifolium	Rech. fil.			Greece					
Allium sphaerocephalon ssp. *ebusitanum*	L.			Balearic Is.					
Allium stojanovii	Kov.			Bulgaria					
Allium willeanum	Holmboe		x	Cyprus					

Species name	Authority	No. of botanic garden collections	ENSCONET record	Distribution in the wild	Bern Convention	Habitat Directive Annex II	Habitat Directive Annex IV	IUCN 1997 Red List	IUCN 2008 Red List
Alopecurus thracicus	Penev. & Kozuharov			Bulgaria				V	
Althaea vranjensis	Diklic & Nikolic			Serbia					
Alyssum akamasicum	B.L.Burtt		x	Cyprus	x				
Alyssum fallacinum	Hausskn.		x	Crete				R	
Alyssum fragillimum	(Bald.) Rech. fil.	1	x	Crete				V	
Alyssum loiseleurii	P. Fourn.		x	France, Spain					
Alyssum montanum var. *pluscanescens*	L.			Croatia, Slovenia					
Alyssum nebrodense ssp. *nebrodense*	Tineo		x	Sicily					
Alyssum nebrodense ssp. *tenuicaule*	Tineo			Greece					
Alyssum robertianum	Bernard, Godron & Gren.		x	Corsica				V	
Alyssum sphacioticum	Boiss. & Heldr.	1	x	Crete				V	
Anacamptis urvilleana	Sommier & Caruana	1		Malta					
Anacyclus alboranensis	Esteve & Varo		x	Spain					
Anchusa caespitosa	Lam.	4	x	Crete					
Anchusa capellii	Moris			Sardinia					
Anchusa crispa ssp. *crispa*	Viv.		x	Corsica, Sardinia					
Anchusa crispa ssp. *maritima*	Viv.			Sardinia					
Anchusa formosa	F. Selvi, M. Bigazzi & L.G. Bacchetta	1		Sardinia					
Anchusa littorea	Moris			Sardinia					
Androcymbium europaeum	(Lange) K. Richt.	4	x	Spain	x		x	E	
Androcymbium rechingeri	Greuter	8	x	Crete	x	x		E	
Androsace brevis	(Hegetschw.) Ces.	2	x	Italy, Switzerland				R	
Androsace cantabrica	(Losa & P. Monts.) Kress			Spain					
Androsace cylindrica ssp. *cylindrica*	DC.			France, Spain					
Androsace cylindrica ssp. *hirtella*	DC.			France, Spain					
Androsace elongata ssp. *breistrofferi*	L.			France, Sicily, Spain					
Androsace rioxana	A. Segura			Spain					
Androsace villosa ssp. *arachnoidea*	L.			Romania					
Androsace vitaliana ssp. *assoana*	(L.) Lapeyr.		x	Spain					
Androsace vitaliana ssp. *aurelii*	(L.) Lapeyr.			Spain					
Androsace vitaliana ssp. *praetutiana*	(L.) Lapeyr.			Italy					
Androsace wulfeniana	Sieber ex W.D.J. Koch	1		Austria, Italy					
Andryala agardhii	Haens ex DC.	12	x	Spain					
Andryala levitomentosa	(Nyar.) P.D. Sell			Romania	x			E	
Antennaria nordhageniana	Rune & Rønning			Finland, Norway					
Anthemis aetnensis	Schouw	3	x	Sicily					
Anthemis argyrophylla	(Halacsy & St Georg.) Vel.			Bulgaria				V	
Anthemis asperula	Bertol.			Corsica, Sardinia					
Anthemis bourgaei	Boiss. & Reut.		x	Spain				V	
Anthemis carpatica ssp. *pyrethriformis*	Willd.			Romania					
Anthemis chrysantha	J. Gay			Spain					
Anthemis chrysantha ssp. *jimenezii*	J. Gay			Spain					
Anthemis glaberrima	(Rech. fil.) Greuter	1	x	Crete	x	x		E	CR
Anthemis hydruntina	H. Groves	1		Italy				R	
Anthemis ismelia	Lojac.	1		Sicily				V	
Anthemis lopadusana	Lojac.			Sicily					
Anthemis muricata	(DC.) Guss.			Sicily					
Anthemis rhodensis	Boiss.			Greece					
Anthemis rosea ssp. *rosea*	Sm.			Greece					
Anthemis sibthorpii	Griseb.	1	x	Greece				R	
Anthemis tinctoria ssp. *fussii*	L.			Romania					
Anthemis urvilleana	(DC.) Sommier et Caruana			Malta					
Anthyllis tejedensis ssp. *plumosa*	Boiss.		x	Spain					
Anthyllis vulneraria ssp. *busambarensis*	L.		x	Sicily					
Antirrhinum subbaeticum	Güemes, Mateu & Sánchez-Gómez		x	Spain					EN
Aphanes lusitanica	Frost-Olsen			Portugal					
Apium bermejoi	L. Llorens	3	x	Balearic Is.	x				CR
Apium graveolens ssp. *butronensis*	L.			Spain					
Apium repens	(Jacq.) Lag.	17	x	Austria, Belgium, Germany, Hungary, Italy, Netherlands, Poland, Romania, Slovakia, Slovenia, Switzerland, U.K.	x	x			
Aquilegia barbaricina	Arrigoni & E. Nardi		x	Sardinia				E	CR
Aquilegia bertolonii	Schott	21		Italy, Slovenia	x	x			
Aquilegia champagnatii	Moraldo, E. Nardi et La Valva			Italy				R	
Aquilegia litardierei	Briq.	1		Corsica				E	
Aquilegia magellensis	F. Conti et Soldano	1		Italy					
Aquilegia nigricans ssp. *subscaposa*	Baumg.			Romania					
Aquilegia nugorensis	Arrigoni et E. Nardi		x	Sardinia				V	
Aquilegia nuragica	Arrigoni & E. Nardi			Sardinia					CR
Aquilegia ottonis ssp. *taygetea*	Orph. ex Boiss.			Greece					
Aquilegia pyrenaica ssp. *cazorlensis*	DC.	2	x	Spain					
Aquilegia vulgaris ssp. *nevadensis*	L.		x	Spain					
Aquilegia vulgaris ssp. *pauii*	L.			Spain					
Arabidopsis pedemontana	(Boiss.) O'Kane & Al-Shehbaz			Italy					
Arabis kennedyae	Meikle	3	x	Cyprus	x	x	x		
Arabis margaritae	Talavera		x	Spain					
Arenaria bolosii	(Cañigueral) L. Sáez & Rosselló			Balearic Is.					CR
Arenaria cinerea	DC.			France					

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Arenaria gionae	L. - ?. Gustavsson			Greece				R	
Arenaria gothica var. *fugax*	Fries	1		Switzerland					
Arenaria leucadia	Phitos & Strid			Greece					
Arenaria nevadensis	Boiss. & Reut.	5		Spain	x	x		E	CR
Arenaria norvegica ssp. *anglica*	Halliday	2	x	U.K.					
Arenaria phitosiana	Greuter & Burdet			Greece				I	
Aristolochia merxmuelleri	Greuter & E. Mayer			Serbia					
Aristolochia sicula	Tineo	1		Sicily				R	
Armeria belgenciensis	Donadille ex Kerguélen	1		France					
Armeria bigerrensis ssp. *legionensis*				Spain					
Armeria cantabrica ssp. *vasconica*	Boiss. & Reut. ex Willk.			Spain					
Armeria colorata	Pau	2	x	Spain				V	
Armeria filicaulis ssp. *nevadensis*	Boiss.			Spain					
Armeria filicaulis ssp. *trevenqueana*	Boiss.		x	Spain					
Armeria genesiana ssp. *belmonteae*	Nieto Fel.			Spain					
Armeria genesiana ssp. *genesiana*	Nieto Fel.			Spain					
Armeria gussonei	Boiss.			Sicily					
Armeria helodes	Martini & Poldini	2		Italy					
Armeria malinvaudii	Coste & Soulié	1		France					
Armeria marginata	(Levier) Bianchini		x	Italy					
Armeria maritima ssp. *barcensis*	(Miller) Willd.	1		Romania					
Armeria merinoi	(Bernis) Nieto Fel. & Silva Pando			Spain					
Armeria nebrodensis	(Guss.) Boiss.	1		Sicily					
Armeria rothmaleri	Nieto Fel.			Spain					
Armeria soleirolii	(Duby) Godron	3		Corsica	x	x		R	
Armeria sulcitana	Arrigoni	1		Sardinia					
Armeria villosa ssp. carratracensis	Girard		x	Spain					
Arnebia densiflora	(Ledeb.) Ledeb.			Greece					
Artemisia campestris ssp. *bottnica*	L.	1		Finland, Sweden					
Artemisia charnaemelifolia ssp. *cantabrica*	Vill.			Spain					
Artemisia gallica ssp. *densiflora*	Willd.			Sardinia					
Artemisia granatensis	Boiss.	5	x	Spain	x	x		E	
Artemisia molinieri	Quézel, Barbero & R. Loisel	7	x	France					
Artemisia nivalis	Braun-Blanq.			Switzerland				I	
Arum apulum	(Carano) Bedalov	3		Italy					
Arum purpureospadiceum	Boyce			Crete					
Arum purpureospathum	P. Boyce	4	x	Crete	x				
Arum sintenisii	(Engl.) P.C.Boyce	1		Cyprus					
Asparagus aetnensis	Tornab.			Sicily					
Asparagus litoralis	Steven			Bulgaria, Romania				R	
Asparagus pastorianus	Webb & Berthel.	2	x	Italy					
Asperula baenitzii	Heldr. ex Boiss.			Greece				R	
Asperula carpatica	Morariu			Romania					
Asperula crassifolia	L.			Italy					
Asperula crassula	Greuter & Zaffran	1	x	Crete					
Asperula deficiens	Viv.			Sardinia					
Asperula elonea	Iatrou & Georg.			Greece					
Asperula garganica	Huter, Porta et Rigo ex Ehrend. et Krendl			Italy				R	
Asperula gussonei	Boiss.	5		Sicily					
Asperula muscosa	Boiss. & Heldr.			Greece				R	
Asperula paui ssp. *dianensis*	Font Quer			Spain					
Asperula paui ssp. *paui*	Font Quer		x	Spain					
Asperula rupestris	Tineo			Sicily					
Asperula samia	Christodoulakis & Georgiadis			Greece					
Asperula saxicola	Ehrend.			Greece				R	
Asperula staliana ssp. *diomedea*	Vis.			Italy					
Asphodelus bento-rainhae	P. Silva		x	Portugal	x	x		E	
Asplenium adulterinum	Milde	14		Austria, Bosnia & Herzegovina, Czech Republic, Finland, Germany, Norway, Poland, Romania, Slovakia, Slovenia, Sweden, Switzerland		x	x	R	
Asplenium balearicum	Shivas			Balearic Is., Corsica, Italy, Sardinia, Sicily, Spain				R	
Asplenium bourgaei	Boiss. ex Milde			Greece				R	
Asplenium creticum	Lovis, Reichst. & Zaffran			Crete				R	
Asplenium jahandiezii	(Litard.) Rouy			France	x	x		R	
Asplenium majoricum	Litard.			Balearic Is., Spain				R	
Asplenium petrarchae var. *bivalens*	(Guérin) DC.			Spain					
Asplenium ruta-muraria ssp. *dolomiticum*	Lovis. et Reichst. var. eberlei L.			Italy					
Asplenium seelosii ssp. *glabrum*	Leybold			France, Spain					
Aster linosyris ssp. *armoricanus*	(L.) Bernh.	1		France					
Aster pyrenaeus	DC.	30	x	France, Spain	x	x			
Aster sorrentinii	(Tod.) Lojac.	1	x	Sicily					
Astragalus agraniotii	Boiss.			Greece				R	
Astragalus alopecuroides	L.	2	x	France, Spain					
Astragalus aquilanus	Anzal.	1	x	Italy	x				

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Astragalus australis ssp. *bucsecsii*	(L.) Lam.			Romania					
Astragalus caprinus ssp. *huetii*	L.			Sicily					
Astragalus cavanillesii	Podlech			Spain					CR
Astragalus devesae	Talavera, A. Gonzalez & G. Lopez			Spain					
Astragalus drupaceus	Orph. ex Boiss.		x	Greece				R	
Astragalus echinus var. *chionistrae*			x	Cyprus					
Astragalus exscapus ssp. *transsilvanicus*	L.			Romania					
Astragalus gines-lopezii	Talavera , Podlech , Devesa & F.M.Vázquez			Spain					
Astragalus idaeus	Bunge	1	x	Crete				Ex/E	
Astragalus macrocarpus ssp. *lefkarensis*	DC.		x	Cyprus	x	x	x		
Astragalus maritimus	Moris	1	x	Sardinia	x	x		V	
Astragalus nitidiflorus	Jiménez & Pau			Spain					EX
Astragalus peregrinus ssp. *warionis*	Vahl			Sicily					
Astragalus peterfii	Jav.	5		Romania	x			E	
Astragalus pseudopurpureus	Gusul.	1		Romania	x			V	
Astragalus raphaelis	Ferro			Sicily					
Astragalus roemeri	Simonkai	6		Romania				V	
Astragalus sempervirens ssp. *catalaunicus*	Lam.			France, Spain					
Astragalus thermensis	Valsecchi			Sardinia, Sicily					
Astragalus tremolsianus	Pau		x	Spain	x	x		R	
Astragalus verrucosus	Moris		x	Sardinia	x	x		V	
Astrantia pauciflora ssp. *tenorei*	Bertol.			Italy					
Asyneuma comosiforme	Hayek & Janch.			Albania				R	
Asyneuma giganteum	(Boiss.) Bornm.			Crete, Greece	x				
Athamanta cortiana	Ferrarini			Italy	x	x		V	
Athamanta turbith ssp. *hungarica*	(L.) Brot.			Romania					
Aubrieta erubescens	Griseb.	4	x	Greece				R	
Aubrieta glabrescens	Turrill			Greece					
Aubrieta scyria	Halácsy		x	Greece				I	
Aubrietia intermedia ssp. *falcata*	Heldr. & Orph. ex Boiss.			Romania					
Avellara fistulosa	(Brot.) Blanca & C. Díaz			Portugal, Spain					
Avena saxatilis	(Lojac.) Rocha Afonso			Sicily				R	
Avenula crassifolia	(Font Quer) Holub	1	x	Balearic Is., Spain				R	
Avenula delicatula	Franco			Portugal, Spain				R	
Avenula hackelii	(Henriq.) Holub			Portugal	x	x		V	
Barbarea lepuznica	Nyar.			Romania				I	
Bassia saxicola	(Guss.) A.J. Schott			Italy, Sicily	x	x		E	
Bellevalia brevipedicellata	Turrill	1	x	Crete				V	
Bellevalia hackelii	Freyn	1	x	Portugal			x	E	
Bellis cordiflora	(Kunze) Willk.			Spain					
Bellis rotundifolia	(Desf.) Boiss. & Reut.	1		Spain					
Bellium crassifolium	Moris	1		Sardinia				V	
Berberis vulgaris ssp. *aetnensis*	L.	4		Italy, Sardinia, Sicily					
Beta nana	Boiss. & Heldr.	3	x	Greece				R	
Betula etnensis	Raf.			Sicily					
Biarum davisii	Turrill	11		Crete, Greece				V	
Biarum davisii ssp. *davisii*	Turrill	3		Crete					
Biarum dispar	(Schott) Talavera	2	x	Sardinia					
Biarum fraasianum	(Schott) N.E. Brown			Greece					
Biarum galiani	Talavera	1		Portugal, Spain				R	
Biarum mendax	P.C. Boyce	1		Spain					
Biarum spruneri	Boiss.	6		Crete				R	
Biarum tenuifolium ssp. *idomenaeum*	(L.) Schott		x	Crete					
Biscutella arvernensis	Jordan			France				V	
Biscutella ebusitana	Rosselló & al.			Spain					
Biscutella incana	Ten.			Italy				V	
Biscutella lamottei	Jordan			France				V	
Biscutella neustriaca	Bonnet	3	x	France	x	x		V	
Biscutella pichiana ssp. *ilvensis*	Raffaelli			Italy					
Biscutella rotgesii	Fouc.	1	x	Corsica				V	CR
Biscutella stenophylla ssp. *leptophylla*	Dufour		x	Spain					
Boerhavia repens ssp. *repens*	L.			Spain					
Bolanthus intermedius	Phitos		x	Greece					
Bongardia chrysogonum	(L.) Griseb.	11		Greece					
Borago morisiana	Bigazzi et Ricceri			Sardinia					
Borago pygmaea	(DC.) Chater et Greuter	17		Italy, Sardinia					
Borderea chouardii	(Gaussen) Heslot	2	x	Spain	x	x		E	
Bothriochloa insculpta	(Hochst.) A. Camus			Sicily					
Brachypodium firmifolium	H. Lindb.		x	Cyprus					
Brachypodium sanctum	(Janka) Janka			Bulgaria					
Brachypodium sylvaticum var. creticum	Beau.			Crete					
Brassica cadmea	Heldr. ex O.E. Schulz			Greece				R	
Brassica glabrescens	Poldini			Italy	x	x		V	
Brassica hilarionis	Post		x	Cyprus	x	x	x		
Brassica insularis var. *aquellae*	Moris	1		Corsica					
Brassica macrocarpa	Guss.	2	x	Sicily	x	x		E	
Brassica repanda ssp. *almeriensis*	(Willd.) DC.		x	Spain					
Brassica repanda ssp. *galissieri*	(Willd.) DC.			France					
Brassica repanda ssp. *repanda*	(Willd.) DC.	1	x	Italy					
Brassica rupestris ssp. *hispida*	Raf.		x	Sicily					
Brassica rupestris ssp. *rupestris*	Raf.		x	Italy, Sicily					

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Brassica tyrrhena	Giotta, Piccitto & Arrigoni			Sardinia					
Brassica villosa ssp. *bivoniana*	Biv.		x	Sicily					
Brassica villosa ssp. *brevisiliqua*	Biv.			Sicily					
Brassica villosa ssp. *drepanensis*	Biv.	1	x	Sicily					
Brassica villosa ssp. *tinei*	Biv.		x	Sicily					
Brassica villosa ssp. *villosa*	Biv.		x	Sicily					
Brimeura duvigneaudii	(L. Llorens) Rosselló & al.		x	Balearic Is.					CR
Bromus brachystachys	Hornung			Germany				Ex	
Bromus bromoideus	(Lej.) Crépin	3	x	Belgium, France, Luxembourg					
Bromus grossus	Desf. ex DC.	1		Belgium, Czech Republic, France, Germany, Italy, Luxembourg, Switzerland	x	x		E	
Bromus interruptus	(Hack.) Druce	10	x	U.K.	x			Ex	
Bromus moesiacus	Velen.		x	Bulgaria	x			R	
Bufonia euboica	Phitos & Kamari			Greece					
Buglossoides calabra	(Ten.) I.M. Johnst.			Italy					
Buphthalmum inuloides	Moris			Sardinia				R	
Bupleurum aira	Snogerup			Greece				R	
Bupleurum bourgaei	Boiss. & Reut.		x	Spain				V	
Bupleurum capillare	Boiss. & Heldr.		x	Greece	x	x		E	
Bupleurum dianthifolium	Guss.			Sicily	x			R	CR
Bupleurum elatum	Guss.			Sicily				V	CR
Bupleurum gaudianum	Snogerup		x	Crete					
Bupleurum greuteri	Snogerup			Greece					
Bupleurum kakiskalae	Greuter	1	x	Crete	x				CR
Calamagrostis scotica	(Druce) Druce		x	U.K.				V	
Calamintha sandaliotica	Bacchetta & Brullo			Sardinia					
Calendula maritima	Guss.	1		Sicily					CR
Calendula suffruticosa ssp. *maritima*	Vahl	2	x	Sicily					
Callianthemum kernerianum	A. Kern.	2		Italy				V	
Callitriche pulchra	Schotsman	1	x	Crete					
Campanula aizoon	Boiss. & Spruner	1		Crete, Greece					
Campanula albicans	(Buser) Engler			France					
Campanula asperuloides	(Boiss. & Orph.) Engler	1		Greece					
Campanula calycialata	V. Randjelovic & Zlatkovic			Serbia					
Campanula columnaris	Contandr. & al.			Greece					
Campanula cymaea	Phitos			Greece				R	
Campanula cymbalaria	Smith	2		Greece					
Campanula fragilis ssp. *cavolinii*	Cirillo	2		Italy					
Campanula garganica ssp. *garganica*	Ten.			Italy					
Campanula hierapetrae	Rech. fil.	2	x	Crete				R	
Campanula incurva	Aucher	24	x	Greece				R	
Campanula isophylla	Moretti	28		Italy				V	
Campanula laciniata	L.	3	x	Crete, Greece				I	
Campanula marcenoi	Brullo			Sicily					
Campanula merxmuelleri	Phitos		x	Greece				I	
Campanula morettiana	Rchb.	2		Italy	x		x	R	
Campanula raineri	Perp.	30	x	Italy				R	
Campanula reatina	Lucchese			Italy					
Campanula reiseri	Halácsy	1		Greece				R	
Campanula rupestris	Sm.	2	x	Greece				R	
Campanula sabatia	De Not.	5		Italy	x	x		V	
Campanula sartorii	Boiss. & Heldr.	9		Greece				R	
Campanula scheuchzeri ssp. *pollinensis*	Vill.			Italy					
Caralluma munbyana ssp. *hispanica*	(Decne.) N.E.Br.		x	Spain					
Carduncellus matritensis	Pau			Spain					
Carduus aurosicus	Chaix			France				V	
Carduus fasciculiflorus	Viv.			Italy, Sardinia					
Carduus kerneri ssp. *lobulatiformis*	Simonk.			Romania					
Carduus lusitanicus ssp. *santacreui*	Rouy			Spain					
Carduus myriacanthus	Salzm. ex DC.		x	Spain	x	x			
Carduus rivasgodayanus	Devesa & Talavera			Spain					
Carex camposii	Boiss. & Reut.	2	x	Portugal, Spain				V	
Carex cretica	Gradst. & J. Kern			Greece				V	
Carex durieui	Steud.			Portugal, Spain				V	
Carex ferruginea ssp. *macrostachys*	Scop.			Italy					
Carex fimbriata	Schkuhr			France, Italy, Switzerland				R	
Carex idaea	Greuter, Matthäs & Risse			Crete					
Carex markgrafii	Kük.			Albania				R	
Carex panormitana	Guss.			Sardinia, Sicily					
Carlina diae	(Rech. f.) Meusel & Kästner	2	x	Crete	x			V	
Carlina macrocephala ssp. *macrocephala*	Moris			Italy, Sardinia					
Carthamus tenuis ssp. *gracillimus*	(Boiss. & Bl.) Bornm.			Greece					
Carum apuanum ssp. *apuanum*	(Viv.) Grande			Italy					
Castrilanthemum debeauxii	(Degen & al.) Vogt & Oberpr.		x	Spain					
Cedrus brevifolia	(Hook.f.) Henry	23	x	Cyprus					
Centaurea aeolica ssp. *aeolica*	Guss. ex Lojac.			Sicily					
Centaurea aeolica ssp. *pandataria*	Guss. ex Lojac.			Italy					

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Centaurea aetolica	Phitos & Georgiadis			Greece					
Centaurea akamantis	T. Georgiadis & Hadjik.	1	x	Cyprus	x	x	x		
Centaurea angelescui	G. Grint			Romania					
Centaurea avilae	Pau			Spain					
Centaurea balbisiana ssp. *aemilii*	Soldano			France					
Centaurea balbisiana ssp. *jordaniana*	Soldano			France					
Centaurea balbisiana ssp. *verguinii*	Soldano			France					
Centaurea baldaccii	Degen ex Halácsy		x	Crete				V	
Centaurea bombycina	Boiss		x	Spain				R	
Centaurea borjae	Valdés Berm. & Rivas Goday		x	Spain	x				
Centaurea carratracensis	Lange		x	Spain				R	
Centaurea centaurium	L.			Italy					
Centaurea charrelii	Halácsy & Dörfler			Greece					
Centaurea chrysocephala	Phitos & Georg.			Greece					
Centaurea cineraria ssp. *circae*	L.			Italy					
Centaurea cithaeronea	Phitos & Const.	1		Greece					
Centaurea corymbosa	Pourret	2	x	France	x	x		V	
Centaurea coziensis	Nyar.			Romania					
Centaurea diomedea	Gasp.			Italy					
Centaurea forojulensis	(Poldini) Poldini			Italy					
Centaurea gadorensis	Blanca		x	Spain					
Centaurea genesii-lopezii	Fern. Casas & Susanna			Spain					
Centaurea globurensis	Nyar			Romania					
Centaurea gymnocarpa	Moris et De Not.	2 x	x	Italy					EN
Centaurea haenseleri	(Boiss.) Boiss. & Reut.	2	x	Spain				R	
Centaurea haenseleri ssp. *epapposa*	(Boiss.) Boiss.			Spain					
Centaurea hanryi ssp. *shuttleworthii*	Jordan			France					
Centaurea haynaldiformis	Prodan			Romania					
Centaurea heldreichii	Halácsy	1		Greece					
Centaurea horrida	Badarò	1		Sardinia	x	x		V	
Centaurea incompleta	Halácsy			Greece					
Centaurea janeri ssp. *gallaecica*	Graells			Spain					
Centaurea jankae	Brandza	2		Romania	x			E	
Centaurea kalambakensis	Freyn & Sint.			Greece	x	x		E	
Centaurea kartschiana	Scop.			Italy	x	x		R	
Centaurea kunkelii	García Jacas		x	Spain					
Centaurea lactiflora	Halácsy			Greece	x	x		E	
Centaurea lactucifolia	Boiss.		x	Greece					
Centaurea lactucifolia var. *halkensis*	Boiss.			Greece					
Centaurea lainzii	Fern. Casas	1	x	Spain					
Centaurea lancifolia	Sieber ex Sprengel	1	x	Crete					
Centaurea leucadea	Lacaita	1		Italy					
Centaurea leucophaea ssp. *biformis*	Jordan			France					
Centaurea leucophaea ssp. *pseudocoerulescens*	Jordan	1		France					
Centaurea litigiosa	(Fiori) Arrigoni			Italy					
Centaurea macroacantha	Guss.			Sicily					
Centaurea maculosa ssp. *albida*	Lam.			France					
Centaurea maculosa ssp. *subalbida*	Lam.			France					
Centaurea mariana	Willk.			Spain					
Centaurea maroccana	Ball.			Spain					
Centaurea monticola	DC.		x	Spain				V	
Centaurea montisborlae	Soldano		x	Italy					
Centaurea musarum	Boiss. & Orph.		x	Greece				R	
Centaurea nevadensis	Boiss. & Reut.			Spain					
Centaurea niederi	Heldr.	1		Greece	x	x		E	
Centaurea nobilis	(H. Groves) Brullo	1		Italy					
Centaurea paniculata ssp. *esterellensis*	L.	1	x	France					
Centaurea paniculata ssp. *subciliata*	L.			Italy					
Centaurea peucedanifolia	Boiss. & Orph.		x	Greece	x	x		E	
Centaurea phrygia ssp. *rarauensis*	L.			Romania					
Centaurea phrygia ssp. *ratezatensis*	L.			Romania					
Centaurea pinnata	Pau		x	Spain					
Centaurea pinnatifida	Schur			Romania				R	
Centaurea pinnatifida ssp. *sooana*	Schur			Romania					
Centaurea poculatoris	Greuter	1	x	Crete				V	
Centaurea podospermifolia	Loscos & Pardo			Spain					
Centaurea pontica	Prodán & Nyár.			Romania	x			E	
Centaurea princeps	Boiss. & Heldr.			Greece					
Centaurea prolongoi	Boiss.			Spain					
Centaurea pulvinata	(Blanca) Blanca		x	Spain	x				
Centaurea sagredoi	Blanca		x	Spain					
Centaurea saxicola ssp. *jimenezii*	Lag.			Spain					
Centaurea saxicola ssp. *saxicola*	Lag.		x	Spain					
Centaurea scannensis	Anzal., Soldano et F. Conti			Italy					
Centaurea subtilis	Bertol.	1		Italy					
Centaurea tauromenitana	Guss.	3	x	Sicily				R	
Centaurea tenoreana	Willk.	3		Italy					
Centaurea tenorei	Guss. ex Lacaita			Italy					
Centaurea trichocephala ssp. *simonkaiana*	Bieb. ex Willd.			Romania					
Centaurea tuntasia	Heldr. ex Hal.			Greece				Ex	
Centaurea ucriae ssp. *todari*	Lacaita			Sicily					

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Centaurea ucriae ssp. *ucriae*	Lacaita			Sicily					
Centaurea ucriae ssp. *umbrosa*	Lacaita			Sicily					
Centaurea ultreiae	Silva Pando	1	x	Spain					
Centaurea vlachorum	Hartvig			Greece					
Centaurea xylobasis	Rech. fil.			Greece					
Centaurium quadrifolium ssp. *parviflorum*	(L.) G.López			Spain					
Centranthus amazonum	Fridl. & A. Raynal	1		Sardinia					CR
Cephalanthera cucullata	Boiss. & Heldr.		x	Crete	x	x		V	
Cephalaria radiata	Griseb. & Schenk	6		Romania				R	
Cephalaria squamiflora ssp. *ebusitana*	(Sieber) Greuter			Balearic Is.					
Cephalaria tenuiloba	Strid	1		Greece					
Cephalaria uralensis ssp. *multifida*	(Murray) Roemer & Schult.			Romania					
Cerastium alsinifolium	Tausch 2			Czech Republic	x	x	x	E	
Cerastium fontanum ssp. *scoticum*	Baumg.			U.K.					
Cerastium illyricum ssp. *crinitum*	Ard.			Greece					
Cerastium lineare	All.			Italy					
Cerastium neoscardicum	Niketic			Serbia					
Cerastium nigrescens	(H.C.Watson) H.C.Watson	1	x	Norway, U.K.					
Cerastium palustre	Moris			Sardinia					
Cerastium soleirolii	Duby	3		Corsica					
Cerastium theophrasti	Merxm. & Strid	1	x	Greece				R	
Cerastium thomasii	Ten.			Italy					
Cerastium transsilvanicum	Schur			Romania				R	
Ceratocapnos claviculata ssp. *picta*	(L.) Lidén			Portugal					
Chaenorhinum grandiflorum ssp. *carthaginense*	(Coss.) Willk.			Spain					
Chaenorrhinum minus ssp. *pseudorubrifolium*	(L.) Lange			Corsica					
Chaerophyllum creticum	Boiss. & Heldr.	1	x	Crete				V	
Chaetopogon fasciculatus ssp. *prostratus*	(Link) Hayek			Portugal, Spain					
Chamaecytisus nejceffii	(Urum.) Rothm.			Bulgaria				E	
Cheirolophus crassifolius	(Bertoloni) Susanna	1	x	Malta					CR
Cheirolophus lagunae	Olivares & al.	1	x	Spain					
Cheirolophus mansanetianus	Stübing & al.		x	Spain					
Chenopodium wolffii	Simonkai			Romania					
Chiliadenus bocconei	Brullo			Malta					
Chiliadenus lopadusanus	Brullo			Sicily					
Chionodoxa lochiae	Meikle	1	x	Cyprus	x	x	x		
Cicer graecum	Orph. ex Boiss.			Greece				R	
Cirsium alpis-lunae	Brilli-Catt. et Gubellini			Italy					
Cirsium carniolicum ssp. *rufescens*	Scop.	2	x	France					
Cirsium furiens	Griseb. & Schenk			Hungary, Romania					
Cirsium misilmerense	Ces., Pass. et Gibelli			Sicily					
Cirsium rosulatum	Talavera & Valdés		x	Spain					
Cirsium steirolepis	Petrak			Greece					
Cistus albanicus	E.F.Warb. ex Heywood	14	x	Albania				R	
Cistus heterophyllus ssp. *carthaginensis*	Desf.	2	x	Spain					
Clematis elisabethae-carolae	Greuter	1	x	Crete					
Clypeola eriocarpa	Cav.	1	x	Spain					
Cochlearia aragonensis ssp. *navarrana*	Coste & Soulié			Spain					
Cochlearia polonica	Fröhlich	1	x	Poland	x	x	x	Ex/E	
Coincya longirostra	(Boiss.) Greuter & Burdet	1	x	Spain					
Coincya monensis ssp. *puberula*	(L.) Greuter & Burdet		x	Portugal, Spain					
Coincya nivalis	(Boiss. & Heldr.) Greuter & Burdet	1	x	Greece					
Coincya richeri	Greuter et Burdet	1		Italy					
Coincya rupestris ssp. *leptocarpa*	Rouy	1	x	Spain					
Coincya rupestris ssp. *rupestris*	Porta & Rigo ex Rouy	1	x	Spain					
Coincya wrightii	(O.Schulz) Stace	2	x	U.K.				R	
Colchicum arenasii	Fridlender			Corsica					
Colchicum borisii	Stef.	1		Bulgaria				V	
Colchicum callicymbium	Stearn & Stefanov			Bulgaria, Greece					
Colchicum corsicum	Baker	3		Corsica, Sardinia	x		x	V	
Colchicum cousturieri	Greuter		x	Crete	x		x	V	
Colchicum davidovii	Stef.			Bulgaria	x			V	
Colchicum diampolis	Delip. & Ceschm.			Bulgaria				R	
Colchicum fominii	Bordz.	5		Moldova, Romania	x			I	
Colchicum gonarei	Camarda			Sardinia					
Colchicum macedonicum	Košanin	1		Serbia				R	
Colchicum pieperanum	Markgraf			Albania				R	
Colchicum rhodopaeum	Kov.			Bulgaria				R	
Coleanthus subtilis	(Tratt.) Seidl.	1		Austria, Czech Republic, France, Germany, Italy, Norway, Slovakia	x	x		R	
Consolida arenaria	Carlström			Greece					
Consolida brevicornis	(Vis.) Soó			Croatia					
Consolida samia	P.H. Davis			Greece	x				CR
Consolida tuntasiana	(Halácsy) Soó			Greece				I	
Consolida uechtritziana	(Pancic ex Huth) Soó			Croatia, Greece, Kosovo, Montenegro, Serbia					
Convolvulus argyrothamnos	Greuter	1	x	Crete					CR

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Convolvulus sabatius ssp. *sabatius*	Viv.	1		Italy, Sicily					
Convolvulus valentinus ssp. *suffruticosus*	Cav.			Spain					
Convolvulus valentinus ssp. *valentinus*	Cav.	1	x	Spain					
Coritospermum huteri	(Porta) L. Sáez & Rosselló			Spain					
Coronopus navasii	Pau	1	x	Spain	x	x		E	
Cotoneaster delphinensis	Châtenier			France					
Crassula basaltica	Brullo & Siracusa			Sicily					
Cremnophyton lanfrancoi	Brullo & Pavone	1		Malta		x	x		CR
Crepis arcuata	Kamari & Strid			Greece					
Crepis auriculifolia	Sieber & Spengel	1	x	Crete					
Crepis bivoniana	(Rchb.) Soldano et F. Conti			Sicily					
Crepis crocifolia	Boiss. & Heldr.			Greece	x	x			
Crepis granatensis	(Willk.) Blanca & Cueto		x	Spain	x				
Crepis heldreichiana	(O. Kuntze) Greuter			Greece					
Crepis merxmuelleri	Kamari & Hartvig			Greece					
Crepis novoana	S. Ortiz, Soñora & Rodr. Oubiña			Spain					
Crepis pusilla	(Sommier) Merxm.	1		Cyprus, Malta, Spain		x	x	R	
Crepis sibthorpiana	Boiss. & Heldr.	1	x	Crete					
Crepis vesicaria ssp. *hyemalis*	L.			Sardinia, Sicily					
Crithopsis delileana	(Schult.) Roshev.	1		Cyprus, Greece				R	
Crocus angustifolius	Weston	44		Moldova				I	
Crocus biflorus ssp. *stridii*	Miller	2		Greece					
Crocus cyprius	Boiss. & Kotschy	4	x	Cyprus	x	x	x		
Crocus discolor	G. Reuss			Slovakia					
Crocus etruscus	Parl.	12		Italy	x		x	R	
Crocus goulimyi	Turrill	26		Greece				R	
Crocus hartmannianus	Holmboe		x	Cyprus	x	x	x		
Crocus imperati	Ten.	15		Italy				I	
Crocus olivieri var. *balansae*	Gay			Greece					
Crocus oreocreticus	B.L. Burtt	8		Crete				R	
Crocus robertianus	C.D. Brickell	5		Greece	x			V	
Crocus rujanensis	Randjelovic & D.A. Hill	3		Serbia					
Crocus siculus	Tin.			Sicily					
Crocus versicolor	Ker Gawl.	12		Italy					
Crypsis hadjikyriakou	Raus & H.Scholz			Cyprus					
Cyathophylla chlorifolia	(Poiret) Bocquet & Strid			Greece					
Cymbalaria fragilis	(J.J. Rodr.) Cheval.	1	x	Balearic Is.					
Cymbalaria pallida	(Ten.) Wettst.	9		Italy					
Cynoglossum nebrodense	Guss.		x	Sicily					
Cynoglossum sphacioticum	Boiss. & Heldr.	1	x	Crete		x		R	
Cynoglossum troodi	H. Lindb.		x	Cyprus					
Cyperus cyprius	Post			Cyprus					
Cyperus teneriffae	Poiret			Spain					
Cytisus ardoini	E. Fourn.	5		France					
Cytisus emeriflorus	Rchb.	25	x	Italy, Switzerland				R	
Cytisus insularis	S. Ortiz & Pulgar			Spain					
Cytisus sauzeanus	Burnat & Briq.			France					
Dactylis smithii	Link	4		Spain				R	
Dactylorhiza fuchsii var. *sooana*	(Druce) Soó			Poland, Slovakia, U.K.					
Dactylorhiza kalopissii	Erich Nelson			Bulgaria, Greece					
Dactylorhiza purpurella ssp. *majaliformis*	(T.Stephenson & T.A.Stephenson) Soó			Denmark					
Dactylorhiza pythagorae	Gölz & Reinhard			Greece					
Daphne petraea	Leyb.	11	x	Italy	x	x		R	
Daphne reichsteinii	Landolt et Hauser			Italy					
Darniella melitensis	(Botsch.) Brullo	1		Malta					
Daucus carota ssp. *rupestris*	L.			Sicily					
Daucus conchitae	W. Greuter			Greece					
Daucus lopadusanus	Tineo			Italy, Malta, Sicily					
Daucus siculus	Tineo			Sicily					
Degenia velebitica	(Degen) Hayek	23		Croatia				V	
Delphinium bolosii	C. Blanché & Molero		x	Spain					
Delphinium caseyi	B.L.Burtt			Cyprus	x	x	x		
Delphinium emarginatum ssp. *nevadense*	J.Presl & C.Presl		x	Spain					
Delphinium fissum ssp. *sordidum*	Waldst. & Kit.		x	Spain					
Delphinium longipes	Moris			Sardinia					
Delphinium pentagynum ssp. *formenteranum*	Lam.			Balearic Is.					
Delphinium pictum ssp. *requienii*	Willd.	2	x	France					
Delphinium simonkaianum	Pawl.			Romania				V	
Deschampsia littoralis	(Gaudin) Reuter			Austria, France, Germany, Switzerland				I	
Deschampsia rhenana	Gremli			Germany, Switzerland					
Desmazeria pignattii	Brullo et Pavone			Malta, Sicily					
Dianthus androsaceus	(Boiss. & Heldr.) Hayek			Greece					
Dianthus callizonus	Schott & Kotschy	13		Romania				R	
Dianthus carthusianorum ssp. *sudeticus*	L.			Czech Republic					
Dianthus fruticosus ssp. *karavius*	L.			Greece					
Dianthus furcatus ssp. *gyspergerae*	Balbis			Corsica					
Dianthus furcatus ssp. *lereschii*	Balb.			Italy					
Dianthus gasparrini	Guss.			Sicily					
Dianthus geminiflorus	Loisel.	1		France					
Dianthus giganteus ssp. *banaticus*	d'Urv.	4		Romania					

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Dianthus glacialis ssp. *gelidus*	Haenke			Romania					
Dianthus guttatus ssp. *racovitzae*	Bieb.			Romania					
Dianthus henteri	Heuffel ex Griseb. & Schenk	1		Romania					
Dianthus japigicus	Bianco et Brullo	1		Italy					
Dianthus juniperinus ssp. *kavusicus*	Sm.			Crete					
Dianthus morisianus	Vals.			Sardinia					
Dianthus multinervis	Vis.			Croatia					
Dianthus paniculatus	Lojac.			Sicily					
Dianthus pratensis ssp. *racovitzae*	M. Bieb.			Romania					
Dianthus rupicola ssp. *aeolicus*	Biv.			Sicily					
Dianthus rupicola ssp. *bocchoriana*	Biv.	1	x	Balearic Is.					
Dianthus spiculifolius	Schur	18		Romania				R	
Dianthus urumoffii	Sloj. & Acht.			Bulgaria	x				
Dianthus xylorrhizus	Boiss. & Heldr.	4	x	Crete				V	
Digitalis leucophaea ssp. *ikarica*	Sibth. & Sm.			Greece					
Diplotaxis scaposa	DC.			Sicily					
Diplotaxis siettiana	Maire	3	x	Spain	x	x		Ex	CR
Dorycnium eriophthalmum	Webb & Berth.	3	x	Spain				R	
Dorycnium fulgurans	(Porta) Lassen	3	x	Balearic Is.					
Draba dorneri	Heuffel	2		Romania	x			E	
Draba haynaldii	Stur	7		Romania				V	
Draba loiseleurii	Boiss.	9		Corsica				V	
Draba olympicoides	Strobl			Sicily					
Draba simonkaiana	Jav.			Romania				V	
Dryopteris ardechensis	Fraser-Jenkins	7		France					
Dryopteris corleyi	Fraser-Jenkins	1		Spain	x	x		I	
Dryopteris pallida var. *balearica*	(Bory) C. Chr. ex Maire & Petitm.			Balearic Is.					
Echinospartium algibicum	Talavera & Aparicio			Spain					
Echium valentinum	Lag.			Spain					EN
Elatine gussonei	(Sommier) Brullo, Lanfranco, Pavone & Ronsisvalle			Italy, Malta		x	x		
Elizaldia calycina ssp. *multicolor*	Maire			Spain					
Elytrigia corsica	(Hackel) J. Holub			Corsica					
Ephedra helvetica	C.A. Mey.	3		Italy, Switzerland					
Epilobium vernonicum	Snogerup			Greece					
Epipactis albensis	Nováková & Rydlo		x	Austria, Czech Republic, Germany, Hungary, Poland, Slovakia					
Epipactis cretica	J. Kalopissis & K. Robatsch			Crete					
Epipactis helleborine ssp. *neerlandica* var. *renzii*	(L.) Crantz			Denmark					
Epipactis mecsekensis	Molnár & Robatsch			Hungary					
Epipactis pontica	Taub.			Austria, Hungary, Slovakia, Slovenia					
Epipactis troodi	Lindb.f.			Cyprus					
Erigeron frigidus	DC.	3	x	Spain	x	x		V	
Erigeron paolii	Gamisans	1		Corsica					
Erodium astragaloides	Boiss. & Reut.			Spain	x	x			
Erodium daucoides ssp. *macrocalyx*	Boiss.			Spain					
Erodium manescavi	Coss.	10	x	France, Spain				R	
Erodium neuradifolium var. *linosae*	Delile			Sicily					
Erodium paularense	Fern. Gonz. & Izco		x	Spain	x				
Erucastrum palustre	(Pirona) Vis.	2		Italy	x	x		E	
Eryngium amorginum	Rech. fil.	1	x	Crete, Greece				R	
Eryngium crinitum	C. Presl			Sicily					
Eryngium spinalba	Vill.	22		Italy					
Eryngium ternatum	Poiret	1	x	Crete				R	
Erysimum humile ssp. *penyalarense*	Pers.			Spain					
Erysimum kykkoticum	Hadjik. & Alziar		x	Cyprus					
Erysimum metlesicsii	Polatschek		x	Sicily					
Erysimum naxense	Snogerup	1	x	Greece				R	
Erysimum pieninicum	(Zapal.) Pawl.	3	x	Poland					
Erysimum senoneri ssp. *amorginum*	(Reuter) Wettst.			Greece					
Erysimum senoneri ssp. *icaricum*	(Reuter) Wettst.			Greece					
Erysimum sylvestre ssp. *aurantiacum*	(Crantz) Scop.			Italy					
Erythronium dens-canis var. *niveum*	L.			Hungary, Romania					
Euphorbia corsica	Req.	1		Corsica				V	
Euphorbia flavicoma ssp. *costeana*	DC.	1		France					
Euphorbia fontqueriana	Greuter			Balearic Is.				V	
Euphorbia gaditana	Coss.		x	Spain				E	
Euphorbia gasparrinii ssp. *gasparrinii*	Boiss.			Sicily					
Euphorbia hyberna ssp. *insularis*	L.	1		Italy, Sardinia					
Euphorbia maresii ssp. *balearica*	Knoche			Balearic Is.					
Euphorbia margalidiana	Kühbier & Lewej.	7	x	Balearic Is.	x				CR
Euphorbia megalatlantica ssp. *briquetii*	Ball			Spain					
Euphorbia melapetala	Gasp.		x	Sicily					
Euphorbia melitensis	Parlatore			Malta					
Euphorbia papillaris	(Boiss.) Raffaelli et Ricceri			Sicily					
Euphorbia seguieriana ssp. *loiseleurii*	Necker			France					
Euphorbia valliniana	Belli			Italy					
Euphrasia arctica ssp. *minor*	Lange ex Rostr.			Denmark					

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Euphrasia cambrica	Pugsley		x	U.K.				R	
Euphrasia genargentea	(Feoli) Diana			Sardinia					
Euphrasia marchesettii	Wettst.			Croatia, Italy, Slovenia	x	x		R	
Euphrasia marshallii	Pugsley		x	U.K.					
Euphrasia mendoncae	Samp.			Portugal				V	
Euphrasia rivularis	Pugsley		x	U.K.				R	
Euphrasia rotundifolia	Pugsley			U.K.				R	
Euphrasia vigursii	Davey	1	x	U.K.				R	
Femeniasia balearica	(J.J. Rodr.) Susanna	2	x	Balearic Is.				E	CR
Ferula arrigonii	Bocchieri	1		Sardinia					
Ferula sadleriana	Ledeb.	2		Hungary, Romania, Slovakia	x	x	x		
Festuca apuanica	Markgr.- Dann.			Italy					
Festuca breistrofferi	Chas, Kerguélen & Plonka			France					
Festuca brigantina	(Markgr.-Dann.) Markgr.-Dann.			Portugal		x		E	
Festuca clementei	Boiss.	2	x	Spain				R	
Festuca durandoi var. *capillifolia*	Clauson			Spain					
Festuca duriotagana	Franco & R. Afonso			Portugal					
Festuca frigida	(Hackel) K. Richt.		x	Spain				R	
Festuca gautieri ssp. *lutea*	(Hackel) K. Richter			Romania					
Festuca grandiaristata	Markgr.-Dann.			Greece				R	
Festuca henriquesii	Hack.	1	x	Portugal		x		E	
Festuca lahonderei	Kerguélen & Plonka	1		France					
Festuca macedonica	J. Vetter			Greece				R	
Festuca morisiana	Parl.			Sardinia				V	
Festuca nitida ssp. *flaccida*	Kit.			Romania					
Festuca olympica	J. Vetter	1	x	Greece				R	
Festuca oviniformis	J. Vetter			Greece				R	
Festuca pachyphylla	Degen ex Nyar.			Romania					
Festuca pirinica	Horvat ex Markgr.-Dann.			Bulgaria				R	
Festuca pseudoeskia	Boiss.		x	Spain					
Festuca pseudosupina	Vetter			Greece					
Festuca querana	Litard.			Spain				R	
Festuca reverchonii	Hack.			Spain				R	
Festuca sardoa	(Hack. in Barbey) K. Richt.			Sardinia					
Festuca scheuchzeriformis	Schur			Romania					
Festuca versicolor ssp. *dominii*	Tausch			Romania					
Festuca wagneri	(Degen, Thaisz & Flatt) Krajina			Hungary, Romania				R	
Festucopsis serpentini	(C.E.Hubb.) Melderis	1		Albania					
Ficaria verna ssp. *fertilis*	Huds.			Denmark					
Filago lojaconoi	(Brullo) Greuter			Sicily					
Filago petro-ianii	Rita & Dittrich			Spain					
Forsythia europaea	Degen & Bald.	66		Albania					
Fritillaria conica	Boiss.	8		Greece	x		x	V	
Fritillaria davisii	Turrill	12		Greece				R	
Fritillaria drenovskii	Degen & Stoj.	8		Bulgaria, Greece	x		x	R	
Fritillaria epirotica	Turrill ex Rix	5	x	Greece	x			R	
Fritillaria euboeica	Rix	2		Greece	x			E	
Fritillaria gussichiae	(Degen & Dörfl.) Rix	8	x	Bulgaria, Former Yugoslavia, Greece	x		x	R	
Fritillaria involucrata	All.	16		France, Italy				R	
Fritillaria macedonica	Bornm.			Albania, Former Yugoslavia, Serbia				R	
Fritillaria messanensis var. *gracilis*	Raf.			Albania, Croatia, Serbia					
Fritillaria nervosa ssp. *falcata*	Willd.			Spain					
Fritillaria obliqua	Ker Gawl.	8		Greece	x		x	R	
Fritillaria obliqua ssp. *obliqua*	Ker-Gawler			Greece					
Fritillaria pelinaea	Kamari			Greece					
Fritillaria pontica	Wahlenb.	27	x	Bulgaria				R	
Fritillaria rhodia	Hansen	3		Greece					
Fritillaria rhodocanakis	Orph. ex Baker	8		Greece	x		x	R	
Fritillaria spetsiotica	Kamari			Greece					
Fritillaria sporadum	Kamari	3		Greece					
Fritillaria thessala ssp. *reiseri*	(Boiss.) Kamari			Greece					
Fritillaria tubaeformis	Gren. & Godron			Italy					
Fritillaria tubiformis ssp. *tubiformis*	Gren. et God.		x	Italy					
Fritillaria tuntasia	Heldr. ex Halácsy	7		Greece	x			R	
Fumana laciduleriensis	Güemes		x	Spain					
Fumaria caroliana	Pugsley	2		France				E	
Fumaria jankae	Hausskn.			Romania				I	
Fumaria munbyi	Boiss. & Reut.			Spain					
Gagea mauritanica	Durieu	1		Italy, Sicily, Spain					
Galanthus elwesii	Hook.f.	41		Romania				I	
Galanthus ikariae	Baker	26		Greece					
Galeopsis reuteri	Rchb. f.			Italy					
Galium baillonii	Brandza			Romania				R	
Galium cinereum	All.	1		Italy					
Galium cracoviense	Ehrend.			Poland	x	x	x	V	
Galium erythrorrhizon	Boiss. & Reut.		x	Spain					
Galium glaucophyllum	Em. Schmid			Sardinia				R	

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Galium litorale	Guss.			Sicily	x	x		V	
Galium montis-arerae	Merxm. et Ehrend.	1	x	Italy				R	
Galium palaeoitalicum	Ehrend.			Italy				R	
Galium pseudohelveticum	Ehrend.	3		Italy					
Galium pulvinatum	Boiss.			Spain				R	
Galium tendae	Rchb.			Italy					
Gaudinia hispanica	Stace & Tutin		x	Spain	x	x		I	
Genista aristata	C. Presl			Sicily					
Genista cilentina	Vals.			Italy					
Genista demarcoi	Brullo, Scelsi & Siracusa			Sicily					
Genista dorycnifolia ssp. *dorycnifolia*	Font Quer		x	Balearic Is.					
Genista dorycnifolia ssp. *grosii*	Font Quer		x	Balearic Is.					
Genista ephedroides	DC.	2	x	Sardinia					
Genista gasparrinii	(Guss.) C. Presl			Italy, Sicily					
Genista hassertiana	(Bald.) Bald. ex Buchegger			Albania					
Genista longipes ssp. *viciosoi*	Rouy			Spain					
Genista melia	Boiss.			Greece				Ex	
Genista morisii	Colla			Sardinia				V	
Genista tinctoria ssp. *prostrata*	L.	1		France					
Genista toluensis	Valsecchi			Sardinia					
Gentiana lutea ssp. *auranthiaca*	L.		x	Spain					
Gentianella amarella ssp. *hibernica*	(L.) Börner			Ireland					
Geocaryum bornmuelleri	(Wolff) Engstrand			Greece					
Geocaryum divaricatum	(Boiss. & Orph.) Engstrand			Greece					
Geranium cazorlense	Heywood	4	x	Spain				E	
Geum micropetalum	Gasp.			Italy					
Gladiolus felicis	Mirek			Czech Republic, Lithuania, Poland	x				
Gladiolus palustris	Gaudin	21	x	Albania, Austria, Bulgaria, Czech Republic, Former Yugoslavia, France, Germany, Hungary, Italy, Liechtenstein, Lithuania, Poland, Romania, Slovakia, Slovenia, Switzerland		x	x	I	
Gladiolus reuteri	Boiss.			Spain				R	
Globularia neapolitana	O. Schwarz			Italy				V	
Globularia stygia	Boiss.			Greece	x	x		E	
Goniolimon italicum	Tammaro, Frizzi et Pignatti	2		Italy					
Gouffeia arenarioides	DC.			France					
Gymnigritella runei	Teppner & Klein			Sweden					
Gymnospermium shqipëtarum	K.Paparisto & Xh.Qosja			Albania					
Gypsophila papillosa	Porta	1		Italy	x	x		V	
Gyrocaryum oppositifolium	Valdés			Spain					CR
Haplophyllum bastetanum	F.B.Navorro, V.N.Suarez-Santiago & Blanca		x	Spain					
Hedysarum cyprium	Boiss.		x	Cyprus					
Helianthemum apenninum ssp. *estevei*	Mill.		x	Spain					
Helianthemum guerrae	Sánchez-Gómez, J.S. Carrión & M.Á. Carrión		x	Spain					EN
Helianthemum morisianum	Bertol.			Sardinia					
Helianthemum oelandicum ssp. *levigatum*	DC.			U.K.					
Helianthemum oleandicum ssp. *nebrodense*	(L.) Dum. Cours.			Sicily					
Helianthemum polygonoides	Peinado, Mart. Parras, Alcaraz & Espuelas		x	Spain					
Helianthemum raynaudii	A. Ortega Olivencia, Romero García & C. Morales			Spain					
Helianthemum scopulicolum	L. Sáez, Rosselló & Alomar		x	Balearic Is.					
Helichrysum amorginum	Boiss. & Orph.			Greece				R	
Helichrysum heldreichii	Boiss.	1	x	Crete				V	
Helichrysum hyblaeum	Brullo			Sicily					
Helichrysum melitense	(Pignatti) Brullo & al.			Malta		x	x		CR
Helichrysum montelinasanum	Ed. Schmid			Sardinia					
Helichrysum nebrodense	Heldr.		x	Sicily					
Helichrysum pendulum	(C. Presl) C. Presl			Sicily					
Helichrysum rupestre	(Raf.) DC.	4	x	Italy, Sicily					
Helichrysum sibthorpii	Rouy	10	x	Greece	x		x	V	
Helichrysum taenari	Rothm.	2		Greece				R	
Helictotrichon filifolium ssp. *arundanum*	(Lag.) Henrard		x	Spain					
Helictotrichon murcicum	Holub			Spain				R	
Helictotrichon petzense	H. Melzer			Austria, Former Yugoslavia				R	
Helictotrichon sarracenorum	(Gand.) Holub			Spain				R	
Helleborus lividus	Aiton	20	x	Balearic Is.				R	
Heptaptera angustifolia	(Bertol.) Tutin			Italy				R	
Heptaptera macedonica	(Bornm.) Tutin			Macedonia				I	
Heracleum pumilum	Vill.			France					
Herniaria bornmuelleri	Chaudhri			Italy					
Herniaria fontanesii ssp. *empedocleana*	Gay			Sicily					

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Herniaria latifolia ssp. *litardierei*	Lapeyr.			Corsica, Sardinia					
Herniaria litardierei	(Gamisans) Greuter et Burdet	1		Corsica, Sardinia					
Hesperis inodora	L.			France					
Hesperis moniliformis	Schur			Romania					
Hesperis oblongifolia	Schur			Romania				V	
Hieracium aequiserratum	P.D. Sell			U.K.					
Hieracium aguilari	Pau			Spain					
Hieracium amaurostictum	W.Scott & R.C.Palmer			U.K.					
Hieracium amnicola	P.D. Sell			U.K.					
Hieracium ampliatiforme	P.D. Sell			U.K.					
Hieracium anguinum	(W.R.Linton) Roffey			U.K.					
Hieracium apheles	P.D. Sell			U.K.					
Hieracium armadalense	P.D. Sell			U.K.					
Hieracium ascendentidens	P.D. Sell			U.K.					
Hieracium asteridiophyllum	Sell & C.West		x	U.K.					
Hieracium attenuatifolium	Sell & C.West		x	U.K.					
Hieracium australius	(Beeby) Pugsley			U.K.					
Hieracium backhousei	Hanbury		x	U.K.					
Hieracium bakeranum	Pugsley			U.K.					
Hieracium basalticola	Pugsley		x	Ireland					
Hieracium bettyhillense	P.D. Sell			U.K.					
Hieracium borbasii	Uechtr.			Romania					
Hieracium bowlesianum	Arv.-Touv. & Gaut.			Spain					
Hieracium breacense	P.D. Sell			U.K.					
Hieracium breconense	P.D. Sell			U.K.					
Hieracium breconicola	P.D. Sell			U.K.					
Hieracium breve	Dahlst. ex Skottsb. & Vesterg.			U.K.					
Hieracium britanniciforme	Pugsley		x	U.K.					
Hieracium britannicoides	P.D. Sell		x	U.K.					
Hieracium cacuminum	Druce		x	U.K.					
Hieracium calvum	P.D.Sell & D.J.Tennant	1	x	U.K.					
Hieracium cambricogothicum	Pugsley		x	U.K.					
Hieracium cambricum	Hanbury	1	x	U.K.					
Hieracium cavanillesianum	Arv.-Touv. & Gaut.			Spain					
Hieracium chaixianum	Arvet-Touvet & Gaut.			France					
Hieracium charitodon	P.D. Sell			U.K.					
Hieracium chrysolorum	Sell & C.West			U.K.					
Hieracium cillense	Pugsley		x	U.K.					
Hieracium cophanense	Lojac.			Sicily					
Hieracium deargicola	P.D.Sell & D.J.Tennant			U.K.					
Hieracium difficile	Sell & C.West			U.K.					
Hieracium dilectum	Sell & C.West			U.K.					
Hieracium diversidens	Sell & C.West	1	x	U.K.					
Hieracium einichense	P.D.Sell & D.J.Tennant			U.K.					
Hieracium eriophorum	St.-Amans	4	x	France					
Hieracium eriophorum var. *eriophorum*	St.-Amans			France					
Hieracium fagaraense	(Nyar. & Zahn) Nyar.			Romania					
Hieracium filisquamum	P.D. Sell			U.K.					
Hieracium fratrum	Pugsley			U.K.					
Hieracium fulvocaesium	Pugsley			U.K.					
Hieracium gallurense	Arrigoni			Sardinia					
Hieracium glaucocerinthe	Arv.-Touv. & Gaut.			Spain					
Hieracium graniticola	W.R. Linton	1	x	U.K.					
Hieracium gratum	Sell & C.West			U.K.					
Hieracium gredense	Rouy			Spain					
Hieracium griffithii	(F. Hanb.) F. Hanb.			U.K.					
Hieracium grovesii	Pugsley	1	x	U.K.					
Hieracium hartii	(Hanb.) Sell & C.West			Ireland					
Hieracium hethlandiae	(Hanbury) Pugsley			U.K.					
Hieracium hibernicum	Hanbury			Ireland					
Hieracium hypophalacrum	P.D. Sell			U.K.					
Hieracium insigne	Backh.f. ex P.D.Sell, C.West & D.J.Tennant		x	U.K.					
Hieracium inspissatum	P.D. Sell			U.K.					
Hieracium insulare	Rouy			U.K.					
Hieracium iolai	Arrigoni			Sardinia					
Hieracium itunense	Pugsley		x	U.K.					
Hieracium jaculifolium	F.Hanb. ex H.H.Johnston		x	U.K.					
Hieracium kennethii	P.D.Sell & D.J.Tennant	1	x	U.K.					
Hieracium kintyricum	P.D. Sell		x	U.K.					
Hieracium klingshousense	Walter Scott & R.C. Palmer			U.K.					
Hieracium lagganense	P.D. Sell			U.K.					
Hieracium larigense	(Pugsley) P.D.Sell & C.West		x	U.K.					
Hieracium leptodon	P.D.Sell & D.J.Tennant	1	x	U.K.					
Hieracium leyanum	(Zahn) Roffey		x	U.K.					
Hieracium limbarae	Arrigoni			Sardinia					
Hieracium linguans	(Zahn) Roffey		x	U.K.					
Hieracium lucidum	Guss.			Sicily					CR
Hieracium macrocarpum	Pugsley	1	x	U.K.					
Hieracium magniceps	Omang			U.K.					
Hieracium mariae	P.D. Sell			U.K.					
Hieracium melanochloricephalum	Pugsley			U.K.					

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Hieracium mucronellum	Sell & C.West			U.K.					
Hieracium naegelianum ssp. *andreae*	Pancic			Italy					
Hieracium naviense	J.N.Mills			U.K.					
Hieracium negoiense	(Ravarut & Nyár.) Soó			Romania					
Hieracium neocoracinum	Pugsley	1	x	U.K.					
Hieracium northroense	Pugsley		x	U.K.					
Hieracium notabile	Sell & C.West	2	x	U.K.					
Hieracium ochthophilum	P.D. Sell			U.K.					
Hieracium oenophyllum	P.D. Sell			U.K.					
Hieracium oliastrae	Arrigoni			Sardinia					
Hieracium optimum	P.D.Sell & C.West			U.K.					
Hieracium ovaliforme	P.D. Sell			U.K.					
Hieracium oxyodus	Linton			U.K.					
Hieracium pachyphylloides	Zahn		x	U.K.					
Hieracium pauculidens	Sell & C.West			U.K.					
Hieracium pentaploideum	P.D.Sell & D.J.Tennant			U.K.					
Hieracium peroblongum	P.D. Sell			U.K.					
Hieracium pollinarium	F. Hanb.			U.K.					
Hieracium porphyriticum	A. Kern.			Romania					
Hieracium portanum	Belli			Italy					
Hieracium praebiharicum	Boros			Romania					
Hieracium promontoriale	P.D. Sell			U.K.					
Hieracium protentum	P.D. Sell			U.K.					
Hieracium pruinale	(Zahn) Sell & C.West			U.K.					
Hieracium pseudocurvatum	(Zahn) Pugsley			U.K.					
Hieracium pseudoleyi	(Zahn) Roffey		x	U.K.					
Hieracium pseudopetiolatum	(Zahn) Roffey		x	U.K.					
Hieracium pusillifolium	P.D. Sell			U.K.					
Hieracium queraltense	Retz			Spain					
Hieracium radyrense	(Pugsley) Sell & C.West		x	U.K.					
Hieracium raveniorum	P.D. Sell			U.K.					
Hieracium recoderi	Retz			Spain					
Hieracium repandulare	Druce		x	U.K.					
Hieracium riddelsdellii	Pugsley	1	x	U.K.					
Hieracium robertsii	P.D. Sell			U.K.					
Hieracium ronasii	P.D. Sell			U.K.					
Hieracium sanguineum	Zahn		x	U.K.					
Hieracium sannoxense	P.D. Sell		x	U.K.					
Hieracium schultesii ssp. *soleirolianum*	F.W. Schultz			Sardinia					
Hieracium scottii	P.D. Sell			U.K.					
Hieracium scullyi	Linton		x	Ireland					
Hieracium snowdoniense	Sell & C.West	1	x	U.K.					
Hieracium solum	Sell & C.West		x	U.K.					
Hieracium sowadeense	P.D. Sell			U.K.					
Hieracium sparsifrons	Sell & C.West		x	Ireland					
Hieracium stenolepiforme	(Pugsley) Sell & C.West			U.K.					
Hieracium subgracilentipes	(Zahn) Roffey	1	x	U.K.					
Hieracium subminutidens	(Zahn) Pugsley		x	U.K.					
Hieracium tavense	Ley		x	U.K.					
Hieracium telekianum	Boros & Lengyel			Romania					
Hieracium templare	Arrigoni			Sardinia					
Hieracium texedense	Pau		x	Spain					
Hieracium thalassinum	P.D. Sell		x	U.K.					
Hieracium triangularifolium	P.D. Sell			U.K.					
Hieracium vagicola	P.D. Sell		x	U.K.					
Hieracium varifolium	P. D. Sell & C. West		x	U.K.					
Hieracium vellereum	Scheele ex Fries			Spain					
Hieracium vinifolium	P.D. Sell			U.K.					
Hieracium vinyasianum	Font Quer			Spain					
Hieracium vorlichense	P.D. Sell			U.K.					
Hieracium westii	P.D. Sell			U.K.					
Hippocrepis grosii	(Pau) Boira, Gil & L. Llorens		x	Spain					
Hippocrepis prostrata	Boiss.		x	Spain					
Hippocrepis tavera-mendozae	Talavera & E. Domínguez			Spain					
Holcus caespitosus	Boiss.			Spain				V	
Holcus grandiflorus	Boiss. & Reuter		x	Spain				R	
Holcus notarisii	Nyman			Italy					
Holcus setiglumis var. *duriensis*	Boiss. & Reuter			Portugal, Spain					
Horstrissea dolinicola	Greuter, Gerstberger & Egli	1	x	Crete					CR
Hyacinthella atchleyi	(A.K. Jacks. & Turrill) Feinbrun	3		Greece				R	
Hyacinthella dalmatica	(Baker) Chouard	4		Croatia, Former Yugoslavia				R	
Hyacinthella vicentina	(Hoffmanns. & Link) Rothm.			Portugal					
Hymenostemma pseudoanthemis	(Kunze) Willk.		x	Spain					
Hyoseris frutescens	Brullo & Pavone			Malta		x	x		
Hypericum aciferum	(Greuter) N. Robson	1	x	Crete	x	x		E	
Hypericum haplophylloides	Halácsy & Bald.	4		Albania				R	
Hypericum jovis	Greuter	2	x	Crete					
Hypericum kelleri	Bald.	4	x	Crete				V	
Hypericum setiferum	Stef.			Bulgaria					
Hypochoeris rutea	Talavera		x	Spain					
Iberis aurosica ssp. *nana*	Chaix			Italy					

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Iberis bernardiana	Godron & Gren.			France, Spain					
Iberis carnosa ssp. *embergeri*	Willd.		x	Spain					
Iberis carnosa ssp. *nafarronana*	Willd.			Spain					
Iberis integerrima	Moris		x	Italy					
Iberis linifolia ssp. *violettii*	L.		x	France					
Iberis runemarkii	Greuter & Burdet			Greece					
Ilex perado ssp. *platyphylla*	Aiton	7		Spain					
Inula helenioides	DC. 1		x	France, Spain					
Inula subfloccosa	Rech. fil			Greece				R	
Iris cengialti	Ambrosi ex A. Kern. s.l.	6		Italy					
Iris marsica	Ricci & Colasante	6		Italy	x			R	
Iris relicta	Colas.			Italy					
Iris revoluta	Colasante	2		Italy					
Iris sabina	N. Terracc.	1		Italy					
Iris serotina	Willk.			Spain				R	
Iris setina	Colas.			Italy					
Iris sicula	Tod.	1		Malta, Sicily					
Iris todaroana	Cif. et Giacom.			Sardinia, Sicily					
Isatis grammotis	Kit Tan			Albania, Greece					
Isatis vermia	Papan.			Greece					
Isoetes boryana	Durieu			France	x	x		V	
Isoetes brochonii	Moteley			France					
Isoetes heldreichii	Wettst.			Greece				V	
Isoetes malinverniana	Ces. & De Not.	4		Italy	x	x		E	
Isoetes velata var. *asturicense*	A. Braun			Spain					
Isoetes velata var. *tenuissima*	A. Braun			France					
Ixanthus viscosus	(Sm.) Griseb	18	x	Spain					
Jankaea heldreichii	(Boiss.) Boiss.	10		Greece	x		x	V	
Jasione mansanetiana	R. Rosselló & Peris		x	Spain				EN	
Jasione orbiculata var. *italica*	Griseb.			Italy					
Jasione sphaerocephala	Brullo, Marcenò et Pavone			Italy					
Juncus valvatus	Link			Portugal		x		R	
Jurinea fontqueri	Cuatrec.		x	Spain	x	x		V	
Jurinea mollis ssp. *dolomittica*	(Torn. ex. L.) Rchb.			Hungary					
Jurinea mollis ssp. *transsylvanica*	(L.) Reichenb.			Romania					
Kleinia mandraliscae	Tineo	3		Sicily					
Knautia gussonei	Szabó			Italy					
Knautia kitaibelii ssp. *tomentella*	(Schult.) Borbás			Hungary					
Knautia lebrunii	Prudhomme			France					
Koeleria majorifolia	Borb.			Hungary					
Lactuca longidentata	Moris			Sardinia				R	
Lactuca tetrantha	B.L.Burtt & P.H.Davis			Cyprus					
Lagurus ovatus ssp. *nanus*	L.			Sicily					
Lamottea diania	(Webb) G. López	3	x	Spain					
Lamyropsis microcephala	(Moris) Dittrich et Greuter		x	Sardinia		x		E	CR
Larix decidua var. *polonica*	Mill.	17		Poland, Romania					
Laserpitium latifolium ssp. *nevadensis*	L.		x	Spain					
Laserpitium longiradium	Boiss.		x	Spain	x	x		E	
Lathyrus nissolia ssp. *futakii*	L.			Slovakia					
Lathyrus pancicii	(Jurišic) Anamovic			Bulgaria, Serbia				R	
Lavatera plazzae	Atzei		x	Sardinia					
Leontodon farinosus	Merino & Pau			Spain					
Leontodon hellenicus	Phitos			Greece					
Leontodon siculus	(Guss.) Nyman			Sicily	x	x			
Leopoldia gussonei	Parl.			Sicily					
Lepidium villarsii	Gren. & Godron		x	France				V	
Lereschia thomasii	(Ten.) Boiss.	2	x	Italy				R	
Leucanthemum arundanum	(Boiss.) Cuatrec		x	Spain					
Leucanthemum burnatii	Briq. & Cavillier	1		France				V	
Leucanthemum corsicum ssp. *fenzlii*	(Lessing) DC.			Corsica					
Leucanthemum decipiens	Pomel			Spain					
Leucanthemum gallaecicum	Rodr. Oubiña S. Ortiz			Spain					
Leucanthemum meridionale	Le Grand			France					
Leucanthemum paludosum ssp. *ebusitanum*	(Poir.) Bonnet & Barratte			Spain					
Leucanthemum vulgare ssp. *meridionale*	Lam.			France					
Leucojum aestivum ssp. *pulchellum*	L.	1		Balearic Is., Corsica, France, Sardinia, Sicily					
Leucojum fabrei	Quézel & B. Girerd	2		France					
Leucojum nicaeense	Ardoino	24		France, Italy	x	x		V	
Leucojum roseum	Martin	17		Sardinia					
Leucojum valentinum ssp. *vlorense*	Pau	2		Albania					
Leucojum vernum ssp. *carpaticum*	L.	1		Poland, Slovakia					
Leuzea longifolia	Hoffmanns. & Link		x	Portugal		x		E	
Ligusticum albanicum	Jáv.			Albania				Ex/E	
Ligusticum huteri	Porta	1	x	Balearic Is.					CR
Ligusticum lucidum ssp. *cuneifolium*	Mill.			Italy					
Lilium carniolicum var. *artvinense*	Bernh. ex K. Koch			Italy					
Lilium pomponium	L.	16		France, Italy				V	
Lilium rhodopaeum	Delip.	3	x	Bulgaria, Greece	x			R	
Limonium aegusae	Brullo			Sicily					

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Limonium albidum	(Guss.) Pignatti			Sicily					
Limonium albomarginatum	Brullo			Greece					
Limonium algusae	(Brullo) Greuter			Sicily					
Limonium ampuriense	Arrigoni et Diana			Sardinia				V	
Limonium antonii-llorensii	L. Llorens			Spain					
Limonium aphroditae	Artelari & Georgiou			Greece					
Limonium aragonense	(Debeaux ex Willk.) Pignatti			Spain				I	
Limonium barceloi	Gil & L. Llorens		x	Spain					
Limonium bosanum	Arrigoni et Diana			Sardinia				R	
Limonium brutium	Brullo			Italy					
Limonium calabrum	Brullo			Italy					
Limonium calcarae	(Tod.) Pignatti		x	Sicily				V	
Limonium camposanum	Erben		x	Balearic Is.					
Limonium capitis-marci	Arrigoni et Diana			Sardinia					
Limonium carvalhoi	Rosselló & L. Sáez		x	Balearic Is.					
Limonium catalaunicum	(Willk. & Costa) Pignatti			Spain					
Limonium catanense	(Tineo) Brullo			Sicily					
Limonium catanzaroi	Brullo			Sicily					
Limonium cordatum	(L.) Mill.	1		Italy				R	
Limonium coronense	Artelari			Greece					
Limonium cosyrense	(Guss.) Kuntze	5		Sicily				R	
Limonium creticum	Artelari	1	x	Crete					
Limonium cumanum	(Ten.) Kuntze			Italy					
Limonium cunicularium	Arrigoni et Diana			Sardinia					
Limonium damboldtianum	Phitos & Artelari	1	x	Greece					
Limonium dianium	Pignatti			Italy					
Limonium doriae	(Sommier) Pignatti			Italy					
Limonium dufourii	(Girard) Kuntze		x	Spain					
Limonium ejulabilis	Rosselló, Mus & Soler		x	Balearic Is.					
Limonium erectum	Erben			Spain				V	
Limonium estevei	Fern. Casas		x	Spain					
Limonium etruscum	Arrigoni et Rizzotto			Italy				V	
Limonium exaristatum	(Murb.) P. Fourn.			Sicily					
Limonium flagellare	(Lojac.) Brullo			Sicily					
Limonium fontqueri	(Pau) L. Llorens ex Erben			Balearic Is.					
Limonium formenterae	L. Llorens		x	Balearic Is.				R	
Limonium furnarii	Brullo			Sicily					
Limonium geronense	Erben			Spain					
Limonium gorgonae	Pignatti			Italy					
Limonium grosii	L. Llorens		x	Balearic Is.				R	
Limonium hyblaeum	Brullo			Sicily					
Limonium ilvae	Pignatti			Italy					
Limonium inarimense	(Guss.) Pignatti			Italy					
Limonium inexpectans	L. Sáez & J.A. Rosselló		x	Balearic Is.					
Limonium insulare	(Bég. et Landi) Arrigoni et Diana			Sardinia					
Limonium intermedium	(Guss.) Brullo			Sicily				R	
Limonium ionicum	Brullo			Sicily					
Limonium ithacense	Artelari	1		Greece					
Limonium lacinium	Arrigoni			Italy					
Limonium laetum	Pignatti			Sardinia				E	
Limonium lausianum	Pignatti			Sardinia				E	
Limonium leonardi-llorensii	L. Sáez, Carvalho & Rosselló			Balearic Is.					
Limonium lilybaeum	Brullo			Sicily					
Limonium lojaconoi	Brullo			Sicily					
Limonium lopadusanum	Brullo			Sicily				R	
Limonium magallufianum	L. Llorens	1	x	Balearic Is.					
Limonium majoricum	Pignatti		x	Balearic Is.				E	
Limonium majus	(Boiss.) Erben		x	Spain					
Limonium malacitanum	Díez Garretas	1	x	Spain					
Limonium mazarae	Pignatti			Sicily					
Limonium melancholicum	Brullo, Marcenò et S. Romano			Sicily					
Limonium merxmuelleri	Erben			Sardinia					
Limonium messeniacum	Artelari & Kamari			Greece					
Limonium migjornense	L. Llorens			Balearic Is.					
Limonium minutiflorum	(Guss.) Kuntze			Sicily					
Limonium morisianum	Arrigoni	1		Sardinia					
Limonium mucronulatum	(H.Lindb.) Greuter & Burdet			Cyprus					
Limonium multiforme	(Martelli) Pignatti	1	x	Italy					
Limonium optimae	Raimondo	1		Sicily					
Limonium opulentum	(Lojac.) Brullo			Sicily				V	
Limonium pachynense	Brullo			Sicily					
Limonium pandatariae	Pignatti			Italy					
Limonium panormitanum	(Tod.) Pignatti			Sicily				V	
Limonium parvifolium	(Tineo) Pignatti			Sicily				V	
Limonium pavonianum	Brullo			Sicily					
Limonium perplexum	L. Sáez & Rosselló	1	x	Spain					
Limonium peucetium	Pignatti			Italy					
Limonium phitosianum	Artelari			Greece					
Limonium planesiae	Pignatti			Italy					
Limonium ponzoi	(Fiori et Bég.) Brullo			Sicily					
Limonium protohermaeum	Arrigoni et Diana			Sardinia					
Limonium pseudodictyocladum	(Pignatti) L. Llorens		x	Balearic Is.					

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Limonium pseudolaetum	Arrigoni et Diana			Sardinia					
Limonium pulviniforme	Arrigoni et Diana			Sardinia					
Limonium quesadense	Erben		x	Spain					
Limonium ramosissimum	(Poir.) Maire			Sardinia, Sicily					
Limonium recurvum ssp. *pseudotranswallianum*	Ingr.			Ireland					
Limonium remotispiculum	(Lacaita) Pignatti			Italy				V	
Limonium retusum	L. Llorens		x	Balearic Is.				R	
Limonium secundirameum	(Lojac.) Brullo		x	Sicily					
Limonium sibthorpianum ssp. *sibthorpianum*	(Guss.) Kuntze			Sicily					
Limonium soboliferum	Erben			Spain					
Limonium sommierianum	(Fiori) Arrigoni			Italy					
Limonium strictissimum	(Salzm.) Arrigoni			Corsica, Sardinia		x		V	CR
Limonium subglabrum	Erben		x	Spain					
Limonium syracusanum	Brullo			Sicily					
Limonium tarcoense	Arrigoni & Diana			Corsica					
Limonium tauromenitanum	Brullo			Sicily					
Limonium tenoreanum	(Guss.) Pignatti			Italy				V	
Limonium tenuiculum	(Tineo) Pignatti			Sicily					
Limonium tenuifolium	(Bertol. ex Moris) Erben			Sardinia					
Limonium tharrosianum	Arrigoni et Diana			Sardinia				R	
Limonium todaroanum	Raimondo et Pignatti			Sicily				E	
Limonium ugijarense	Erben		x	Spain					
Limonium vigoi	L. Sáez, Curcó & Rosselló			Spain					
Limonium zacynthium	Artelari			Greece					
Limonium zeraphae	Brullo			Malta					
Linaria aguillonensis	(García Martínez) García Martínez & Silva Pando			Spain					
Linaria arcusangeli	Atzei et Camarda		x	Sardinia					
Linaria benitoi	Fern. Casas		x	Spain					
Linaria capraria	Moris et De Not.	3	x	Italy					
Linaria cossonii var. *brevipes*	Barratte			Italy					
Linaria coutinhoi	Valdés		x	Spain					
Linaria dalmatica	(L.) Mill.	6	x	Italy					
Linaria flava ssp. *sardoa*	(Poir.) Desf.			Corsica, Sardinia					
Linaria orbensis	Carretero & Boira		x	Spain					
Linaria pseudolaxiflora	Lojac.			Italy, Malta, Sicily		x	x		
Linaria reflexa ssp. *lubbockii*	(L.) Desf.			Sicily					
Linaria ricardoi	Coutinho		x	Portugal	x	x		V	
Linaria tenuis	(Viv.) Sprengel			Greece					
Linaria thymifolia	(Vahl) DC.	2	x	France				R	
Linaria tonzigii	Lona	2	x	Italy		x		R	
Linum borzeanum	Nyar.			Romania					
Linum dolomiticum	Borbás	17		Hungary	x	x	x	E	
Linum hellenicum	Iatrou			Greece					
Linum muelleri	Moris			Sardinia					
Linum phitosianum	Christodoulakis & Iatrou			Greece					
Linum punctatum ssp. *punctatum*	C. Presl		x	Sicily					
Linum uninerve	(Rochel) Jav.			Romania					
Lithodora nitida	(Ern) R. Fern.	1	x	Spain	x	x		E	EN
Lithodora zahnii	(Heldr. ex Halácsy) I.M. Johnston	11		Greece				R	
Lobularia maritima ssp. *columbretensis*	(L.) Desv.	1	x	Spain					
Lomelosia minoana ssp. *asterusica*	(P.H. Davis) Greuter & Burdet		x	Crete					
Lonicera stabiana	Pasquale			Italy				R	
Lunaria telekiana	Jáv.			Albania				R	
Lupinus mariae-josephae	H. Pascual		x	Spain					
Luzula deflexa	Kozuharov			Bulgaria				R	
Luzula elegans	Lowe			Portugal				R	
Luzula multiflora ssp. *hibernica*	(Ehrh.) Lej.			Ireland					
Lychnis nivalis	Kit. 1			Romania				V	
Lysimachia minoricensis	J.J. Rodr.	22	x	Balearic Is.	x			E	EW
Lythrum linifolium	Kar. & Kir.			Hungary					
Lythrum thesioides ssp. *thesioides*	M. Bieb.			France, Hungary, Italy					
Malcolmia nana var. *glabra*	(DC.) Boiss.		x	Cyprus					
Marcetella moquiniana	(Webb & Berth.) Svent.	23	x	Spain					
Marsilea batardae	Launert	1	x	Portugal, Spain	x	x		I	
Matthiola incana ssp. *pulchella*	(L.) R. Br.		x	Sicily					
Matthiola incarna ssp. *melitensis*	(L.) R. Brown			Malta					
Melilotus arenaria	Grec.			Romania					
Mentha requienii ssp. *bistaminata*	Benth.			Italy					
Mentha requienii ssp. *requienii*	Benth.			Sardinia					
Merendera androcymbioides	Valdés			Spain					
Merendera rhodopaea	Velen.			Bulgaria					
Micromeria microphylla	(d'Urv.) Benth.			Italy, Malta, Sicily					
Micropyropsis tuberosa	Romero-Zarco & Cabezudo		x	Spain	x				
Minuartia athoa ssp. *neoiraklitsa*	(Griseb.)			Greece					
Minuartia cataractarum	Janka			Romania					
Minuartia cherlerioides ssp. *rionii*	(Hoppe) Bech.			Italy, Switzerland					
Minuartia dirphya	Trigas & Iatrou			Greece					CR
Minuartia glomerata ssp. *trichocalycina*	(M. Bieb.) Degen			Italy					

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Minuartia greuteriana	Kamari	1	x	Greece					
Minuartia laricifolia ssp. *ophiolitica*	(L.) Schinz et Thell.		x	Italy					
Minuartia moraldoi	Conti			Italy					
Minuartia parnonia	(Kamari) Iatrou, Trigas & Kit Tan			Greece					
Minuartia pichleri	(Boiss.) Maire & Petitmengin			Greece				R	
Minuartia verna ssp. *oxypetala*	(L.) Hiern			Romania					
Minuartia wettsteinii	Mattf.	1	x	Crete, Greece				E	
Minuartia wettsteinii ssp. *parnonia*	Mattf.			Greece					
Minuartia wettsteinii ssp. *wettsteinii*	Mattf.		x	Crete					
Moehringia bavarica ssp. *insubrica*	(L.) Gren.			Italy					
Moehringia concarenae	F. Fen. et F. Martini			Italy					
Moehringia dielsiana	Mattf.	2	x	Italy				R	
Moehringia fontqueri	Pau		x	Spain					EN
Moehringia glaucovirens	Bertol.		x	Italy					
Moehringia intermedia	Loisel. ex Panizzi			France				R	
Moehringia intricata ssp. *giennensis*	Willk.		x	Spain					
Moehringia intricata ssp. *intricata*	Willk.		x	Spain					
Moehringia intricata ssp. *tejedensis*	Willk.		x	Spain					
Moehringia lebrunii	Merxm.	1		France, Italy				R	
Moehringia markgrafii	Merxm. et Gutermann			Italy				R	
Moehringia papulosa	Bertol.	1		Italy				R	
Moehringia sedoides	(Pers.) Loisel.			France, Italy				R	
Moehringia tommasinii	Marchesetti			Croatia, Italy, Slovenia	x	x		R	
Moltkia doerfleri	Wettst.	15		Albania				R	
Moltkia suffruticosa	(L.) Brand	7	x	Italy				R	
Muscari dionysicum	Rech.f.	2	x	Greece				R	
Muscari gussonei	(Parl.) Tod.	1		Sicily	x	x			
Muscari kerkis	Karlén	1		Greece					
Muscari lafarinae	(Lojac.) Garbari	2		Sicily					
Myosotis refracta ssp. *aegagrophila*	Boiss.			Crete					
Myosotis rehsteineri	Wartm.	6		Austria, France, Germany, Italy, Liechtenstein, Switzerland	x	x		E	
Myosotis solange	Greuter & Zaffran			Crete					
Myosotis transsylvanica	Porcius			Romania				R	
Najas tenuissima	(A. Braun) Magnus			Estonia, Finland	x	x		I	
Nananthea perpusilla	(Loisel.) DC.	2		Corsica, Sardinia				V	
Narcissus alcaracensis	Ríos, D. Rivera, Alcaraz & Obón	1		Spain					EN
Narcissus bugei	(Fern. Casas) Fern. Casas	1	x	Spain					EN
Narcissus bujei	(Fern. Casas) Fern.			Spain					
Narcissus calcicarpetanus	Fernandez Casas			Spain					
Narcissus calcicola	Mendonça	13	x	Portugal, Spain		x		I	
Narcissus conspicuus	(Haw.) Sweet	1		Spain					
Narcissus gaditanus	Boiss. & Reuter	7	x	Portugal, Spain				R	
Narcissus genesii-lopezii	Fernández Casas			Spain					
Narcissus longispathus	Pugsley	4	x	Luxembourg, Spain	x		x	R	EN
Narcissus munozii-garmendiae	Fernández Casas			Spain					
Narcissus nevadensis ssp. *enemeritoi*	Pugsley			Spain					
Narcissus nevadensis ssp. *nevadensis*	Pugsley		x	Spain					
Narcissus perez-chiscanoi	Fernández Casas			Spain					
Narcissus pseudonarcissus ssp. *nevadensis*	L.			Spain					
Narcissus pseudonarcissus ssp. *primigenius*	L.			Spain					
Narcissus radinganorum	Fernández Casas	3	x	Spain					EN
Narcissus scaberulus	Henriq.	7	x	Portugal	x	x		E	
Narcissus tortifolius	Fernández Casas	2	x	Spain					
Narcissus triandrus ssp. *capax*	L.	2		France					
Narthecium scardicum	Kosanin			Albania, Former Yugoslavia, Greece				R	
Naufraga balearica	Constance & Cannon	9	x	Balearic Is., Corsica	x	x		E	CR
Nepeta amethystina ssp. *anticaria*	Desf. ex Poir.		x	Spain					
Nepeta coerulea ssp. *sanabrensis*	[Soland.]			Spain					
Nepeta foliosa	Moris		x	Sardinia				R	
Nepeta hispanica ssp. *hispanica*	Boiss. & Reut.			Spain					
Nepeta latifolia ssp. *oscensis*	DC.			Spain					
Nepeta mallophora	Webb & Heldr.			Spain					
Nepeta mallophora ssp. *microglandulosa*	Webb & Heldr.			Spain					
Nepeta rtanjensis	Diklic & Milojevic			Serbia					
Nepeta sphaciotica	P.H. Davis	1	x	Crete		x		E	
Nigella degenii ssp. *minor*	Vierh.			Greece					
Nigritella corneliana	(Beauverd) Gölz et H.R. Reinhard	1		Italy					
Nigritella lithopolitanica	Ravnik			Austria, Slovenia				R	
Noccaea arenaria	(Duby) F.K. Meyer			France					
Nolletia chrysocomoides	(Desf.) Less.	1		Spain					
Nonea cesatiana	(Fenzl & Fried.) Greuter & Burdet			Greece					
Odontites asturicus	(M. Laínz) M. Laínz			Spain					
Odontites corsicus	(Loisel.) G. Don			Sardinia					
Odontites granatensis	Boiss.	1	x	Spain	x	x		E	
Odontites jaubertianus ssp. *cebennensis*	(Boreau)D. Dietr. ex Walpers			France					
Odontites pyrenaeus ssp. *abilianus*	(Bubani) Rothm.			Spain					

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Oenanthe foucaudii	Tesseron	2	x	France				V	
Omphalodes kuzinskyanae	Willk.	4		Portugal	x	x			
Omphalodes littoralis	Lehm.	3	x	France	x	x		V	
Omphalodes littoralis ssp. *gallaecica*	Lehm.			Spain					
Onobrychis peloponnesiaca	(Iatroú & Kit Tan) Iatroú & Kit Tan		x	Greece					
Onobrychis sphaciotica	Greuter	1	x	Crete				V	
Onobrychis transsilvanica	Simonkai			Romania					
Ononis azcaratei	Devesa		x	Spain					
Onopordum eriocephalum	Rouy	1	x	France					
Onosma austriaca	(G. Beck) Fritsch			Austria, Hungary					
Onosma caespitosa			x	Cyprus					
Onosma elegantissima	Rech. fil. & Goulimy	1		Greece				V	
Onosma fastigiata ssp. *atlantica*	(Br. - Bl.) Lacaita			France					
Onosma sangiasense	Teppner & Iatroú			Greece					
Onosma stridii	Teppner			Greece					
Onosma tornensis	Jáv.	7		Hungary, Slovakia	x	x	x	I	
Onosma troodi	Kotschy		x	Cyprus	x				
Ophrys aesculapii	Renz			Greece					
Ophrys argolica	H. Fleischm.			Greece	x		x		
Ophrys argolica var. *elegans*	Fleischm.			Cyprus					
Ophrys aveyronensis	(J.J. Wood) Delforge			France					
Ophrys discors	Bianca			Sicily					
Ophrys gottfriediana	Renz			Greece					
Ophrys holosericea var. *holubyana*	(Burnm.f.) Greuter			Slovakia					
Ophrys kotschyi	Fleischm. & Soo		x	Cyprus	x	x	x		
Ophrys lunulata	Parl.			Malta, Sardinia, Sicily	x	x		V	
Ophrys oestrifera	M. Bieb.			Hungary					
Ophrys oxyrrhynchos ssp. *celiensis*	(Tod.) Soó			Italy					
Ophrys panormitana	(Tod.) Soó			Sicily					
Ophrys sp. nov.				Malta					
Ophrys sphegodes var. *helenae*	Mill.			Greece					
Ophrys splendida	Golz & Reinhard			France					
Ophrys tarentina	Gölz et H.R. Reinh.	1		Italy					
Ophrys umbilicata ssp. *rhodia*	Desf.			Greece					
Orchis albanica	Goelz & Reinhard			Albania					
Orchis prisca	Hautzinger	1		Crete					
Orchis spitzelii var. *nitidifolia*	Saut. ex W.D.J. Koch			Crete					
Origanum cordifolium	Vog.	1	x	Cyprus	x				
Origanum dictamnus	L.	26	x	Crete	x	x		V	
Origanum symes	Carlström			Greece					
Origanum vetteri	Briq. & Barbey			Crete				V	
Ornithogalum adalgisae	H. Groves	1		Italy					
Ornithogalum ambiguum	A. Terracc.			Italy					
Ornithogalum amphibolum	Zahar.			Bulgaria, Moldova, Romania				R	
Ornithogalum atticum	Boiss. & Heldr.			Greece				R	
Ornithogalum costatum	Zahar.	1		Greece				R	
Ornithogalum etruscum	Parl.			Italy					
Ornithogalum exaratum	Zahar.			Greece				R	
Ornithogalum oreoides	Zahar.			Bulgaria, Moldova, Romania				R	
Ornithogalum orthophyllum	Ten.	6		Italy					
Ornithogalum orthophyllum var. *acuminatum*	Ten.			Romania					
Ornithogalum orthophyllum var. *psammophilum*	Ten.			Romania					
Orobanche chironii	Lojac.			Sicily					
Oxytropis jabalambrensis	(Pau) Podlech		x	Spain					
Oxytropis kozhuharovii	Pavlova, Dimitrov & Nikolova			Bulgaria					
Paeonia clusii ssp. *rhodia*	F.C. Stearn			Greece					
Paeonia mascula ssp. *corsica*	(L.) Miller			Corsica					
Paeonia parnassica	Tzanoud.		x	Greece	x	x		V	
Palaeocyanus crassifolius	(Bertol.) Dostál	3		Malta		x	x	R	
Pancratium angustifolium	Lojac.			Sicily					
Pancratium canariense	Ker-Gawl.	17	x	Germany				R	
Panicum bivonianum	Brullo, Minissale, Scelsi et Spampinato			Sicily					
Papaver alpinum ssp. *kerneri*	L.	3		Austria, Italy					
Papaver corona-sancti-stephani	Zapal.	3		Romania					
Papaver rhoeas ssp. *cyprium*	L.			Cyprus					
Paronychia bornmuelleri	Chaudhri			Greece				R	
Pedicularis asparagoides	Lapeyr.			France, Spain				R	
Pedicularis baumgartenii	Simonkai			Romania				R	
Petagnaea gussonei	(Spreng.) Rausch.			Sicily					EN
Petasites doerfleri	Hayek			Albania				R	
Petrorhagia grandiflora	Iatrou			Greece					
Peucedanum achaicum	Halácsy	1		Greece				R	
Peucedanum kyriakae	Hadjik. & Alziar			Cyprus					
Peucedanum nebrodense	(Guss.) Strobl			Sicily					
Peucedanum officinale ssp. *brachyradium*	L.		x	Spain					
Phagnalon metlesicsii	Pignatti			Sicily				R	

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Phleum crypsoides var. *sardoum*	(d.Urv.) Hack.			Sardinia					
Phleum sardoum	(Hack.) Hack.	1	x	Sardinia					
Phlomis brevibracteata	Turrill		x	Cyprus	x	x	x		
Phlomis cypria ssp. *cypria*	Post		x	Cyprus					
Phlomis cypria ssp. *occidentalis*	(Meikle) Hand	2		Cyprus					
Phlomis margaritae	Silvestre & Aparicio			Spain					
Phlomis tenorei	Soldano			Italy					
Phoenix theophrasti	Greuter	36	x	Crete	x	x		V	LR/nt
Phyllis viscosa	Webb ex Christ	4	x	Spain					
Phyllitis hybrida	(Milde) C. Chr.	1		Croatia, Former Yugoslavia					
Physoplexis comosa	(L.) Schur	28	x	Austria, Italy	x		x	R	
Phyteuma cordatum	Balb.	1		France, Italy				R	
Phyteuma humile	Schleich. ex Gaudin	12	x	Italy, Switzerland				R	
Picris willkommii	(Sch. Bip.) Nyman	1	x	Spain	x		x	R	
Pilosella aranii	G. Mateo			Spain					
Pilosella dichotoma	(Fr. ex Lindeb.) Soják			Sweden					
Pilosella flagellaris ssp. *bicapitata*	(Willd.) P.D.Sell & C.West	1	x	U.K.					
Pilosella gudarica	G. Mateo			Spain					
Pimpinella bicknellii	Briq.	1	x	Balearic Is.				R	
Pimpinella lutea	Desf.	3	x	Corsica, Italy, Sardinia, Sicily					
Pimpinella pretenderis	(Heldreich) Halácsy			Crete, Greece				R	
Pinguicola fiorii	Tammaro et Pace			Italy					
Pinguicula bohemica	Krajina			Czech Republic					
Pinguicula longifolia ssp. *reichenbachiana*	DC.			France					
Pinguicula poldinii	Steiger & Casper			Italy					
Pinguicula reichenbachiana	Schindl.			Italy					
Pinus halepensis var. *ceciliae*	Miller	1	x	Balearic Is.					
Pinus heldreichii var. *heldreichii*	H. Christ			Greece					
Pinus heldreichii var. *leucodermis*	H. Christ	7		Albania, Former Yugoslavia, Greece, Italy					
Pinus nigra ssp. *dalmatica*	J.F.Arnold	4		Croatia, Former Yugoslavia					
Pinus nigra var. *banatica*	J.F. Arnold			Czech Republic, Slovakia					
Pinus peuce	Griseb.	55		Albania, Bulgaria, Former Yugoslavia, Greece				R	LR/nt
Pinus sylvestris var. *nevadensis*	L.			Spain					
Plantago afra ssp. *zwierleinii*	L.			Sicily					
Plantago algarbiensis	Samp.		x	Portugal					
Plantago almogravensis	Franco			Portugal					
Plantago holosteum var. *littoralis*	Scop.	1		France					
Plantago peloritana	Lojac.			Sicily					
Platycapnos tenuilobus ssp. *parallelus*	Pomel			Spain					
Poa aitosensis	Koz. & Stoeva			Bulgaria					
Poa granitica	Braun.-Blanq.			Poland, Slovakia	x			I	
Poa granitica ssp. *disparilis*	Braun-Blanq.			Romania					
Poa laxa ssp. *pruinosa*	Haenke			Romania					
Poa legionensis	Fernandez Casas & Lainz			Spain					
Poa margilicola	Bernátová et Májovský			Slovakia					
Poa molineri var. *glacialis*	Balbis			Romania					
Poa pannonica var. *scabra*	A. Kern.			Hungary					
Poa pirinica	Stoj. & Acht.			Bulgaria, Greece				R	
Poa rehmannii	(Asch. & Graebn.) Wol			Romania				R	
Poa riphaea	(Asch. & Graebn.) Fritsch			Czech Republic, Slovakia					
Poa sejuncta	Bernatova, Majovsky & Obush			Slovakia					
Poa trichophylla	Heldr. & Sart. ex Boiss.			Greece				R	
Polycarpon polycarpoides ssp. *herniarioides*	(Biv.) Zodda			Spain					
Polygala apiculata	Porta			Italy					
Polygala carueliana	(Benn.) Burnat			Italy				R	
Polygala helenae	Greuter			Greece					CR
Polygala pisaurensis	Caldesi			Italy				R	
Polygala sinisica	Arrigoni		x	Sardinia					CR
Polygala subuniflora	Boiss. Heldr.			Greece					
Polygonum aviculare ssp. *excelsius*	L.			Sweden					
Polygonum idaeum	Hayek	1	x	Crete				R	
Polygonum papillosum	Hartvig			Greece					
Potentilla chrysantha ssp. *pastorum*	Trev.			Romania					
Potentilla grammopetala	Moretti	9		Italy, Switzerland				R	
Potentilla kionaea	Halácsy			Greece					
Potentilla rhenana	P.J. Mueller ex Zimmerer			Germany					
Potentilla rupestris ssp. *corsica*	L.			Sardinia					
Potentilla wismariensis	T. Gregor & Henker			Germany					
Prangos carinata	Griseb.			Romania					
Primula albenensis	Banfi et Ferlinghetti	1	x	Italy					
Primula allionii	Loisel.	18		France, Italy				R	
Primula apennina	Widmer	2	x	Italy	x	x		V	

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Primula elatior ssp. *leucophylla*	(L.) Hill	3		Romania					
Primula elatior ssp. *lofthousei*	(L.) Hill		x	Spain					
Primula glaucescens	Moretti s.l.	28	x	Italy	x		x	R	
Primula palinuri	Petagna	31	x	Italy	x	x		V	
Primula wulfeniana ssp. *baumgarteniana*	Schott			Romania					
Pseudarrhenatherum pallens	(Link) Holub			Portugal		x		V	
Pseudomisopates rivas-martinezii	(Sánchez Mata) Güemes			Spain					
Pseudoscabiosa grosii	(Font Quer) Devesa		x	Spain					
Pseudoscabiosa limonifolia	(Vahl) Devesa			Sicily					
Psilotum nudum var. *molesworthiae*	L.			Spain					
Ptilostemon abylensis	(Maire) Greuter			Spain					
Ptilostemon niveus	(C. Presl) Greuter	2	x	Italy, Sicily				R	
Puccinellia fasciculata var. *pungens*	(Torr.) E.P. Bicknell		x	Spain					
Puccinellia foucaudii	(Hackel) Holmberg			France					
Puccinellia gussonei	Parl.			Sicily					
Puccinellia svalbardensis	Rönning			Norway				R	
Pyrus magyarica	Terpó			Hungary		x	x		
Quercus alpestris	Boiss.			Spain					
Quercus euboica	Papaïoannou			Greece					
Quercus mestensis	Bondev & Gancev			Bulgaria					
Quercus pauciradiata	A. Penas, Llamas, Pérez Morales & Acedo			Spain					
Quercus soluntina	Lojac.			Sicily					
Ranunculus altitatrensis	Paclová et Murín			Slovakia					
Ranunculus batrachioides ssp. *brachypodus*	Pomel			Spain					
Ranunculus bilobus	Bertol.	3		Italy				R	
Ranunculus bulbosus ssp. *adscendens*	L.			Malta					
Ranunculus cordiger	Viv. s.l.			Sardinia					
Ranunculus elisae	Gamisans			Corsica					
Ranunculus kykkoensis	Meikle		x	Cyprus	x	x	x		
Ranunculus magellensis	Ten.			Italy					
Ranunculus monspeliacus ssp. *aspromontanus*	L.			Italy, Sicily					
Ranunculus montserratii	Grau			Spain					
Ranunculus parnassifolius ssp. *muniellensis*	L.		x	Spain					
Ranunculus radinotrichus	Greuter & Strid	1	x	Crete				E	
Ranunculus revelierei ssp. *revelierei*	Boreau			Corsica					
Ranunculus revelieri ssp. *rodiei*	Boreau			France					
Ranunculus seguieri ssp. *cantabricus*	Vill.			Spain					
Ranunculus stojanovii	Delip.			Bulgaria					
Ranunculus sylviae	Gamisans			Corsica					
Ranunculus veronicae	Böhling			Crete					
Ranunculus weyleri	Marès ex Willk.	3	x	Balearic Is.	x	x		E	
Retama raetam ssp. *gussonei*	(Forssk.) Webb			Italy, Sicily					
Rhamnus glaucophylla	Sommier			Italy					
Rhamnus legionensis	Rothm.			Spain					
Rhamnus lojaconoi	Raimondo			Sicily					
Rhamnus persicifolia	Moris		x	Sardinia					
Rhazya orientalis	(Decne) A.DC.	23		Greece	x				
Rhizobotrya alpina	Tausch	2		Italy				R	
Ribes multiflorum ssp. *sandalioticum*	Kit. ex Roem. et Schult.		x	Sardinia					
Ribes sardoum	Martelli	1		Sardinia	x	x		E	CR
Ricotia isatoides	(W. Barbey) B.L. Burtt			Crete				V	
Romulea insularis	Sommier			Italy					
Romulea limbarae	Béguinot	4		Sardinia					
Romulea linaresii ssp. *linaresii*	Parl.			Sicily					
Romulea melitensis	Bég.			Malta					
Romulea revelierei	Jord. & Fourr.	2		Corsica				V	
Romulea revelieri	Jord. et Fourr.			Italy, Sardinia					
Rorippa icarica	Rechinger			Greece					
Rorippa valdes-bermejoi	(Castrov.) Mart. Laborde & Castrov.			Spain					
Rosa coziae	Nyár.			Romania					
Rosa strobliana	Burnat et Gremli			Sicily					
Rosa viscosa	Jan ex Guss.			Italy					
Rosmarinus tomentosus	Huber-Morath & Maire		x	Spain					
Rothmaleria granatensis	(DC.) Font Quer	1	x	Spain				E	
Rubia balearica ssp. *caespitosa*	(Willk.) G.López		x	Balearic Is.					
Rubus hesperius	Rogers			Ireland					
Rubus lettii	Rogers			Ireland					
Rumex aetnensis	C. Presl			Sicily					
Rumex scutatus ssp. *gallaecicus*	L.			Spain					
Rupicapnos africana ssp. *decipiens*	(Lam.) Pomel		x	Spain					
Ruscus hypophyllum	L.	21	x	Malta					
Ruta corsica	DC.	13		Sardinia					
Salicornia emericii var. *vicensis*	Duval-Jouve			France					
Salicornia veneta	Pignatti et Lausi	1		Italy, Romania, Sardinia	x	x		E	
Salix crataegifolia	Bertol.	4		Italy					
Salix gussonei	Brullo et Spampinato	1		Sicily					
Salix hastata ssp. *sierrae-nevadae*	L.			Spain					

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Salix hegetschweileri	Heer	5		Austria, Italy, Switzerland				R	
Salix mielichoferi	Saut.			Italy					
Salsola agrigentina	Guss.			Sicily					
Salvia ceratophylloides	Ard.	1		Italy					
Salvia desoleana	Atzei	2		Sardinia					
Salvia transsilvanica	(Schur ex Griseb.) Schur	8		Romania					
Salvia veneris	Hedge		x	Cyprus	x	x			
Sanguisorba albanica	András. & Jáv.			Albania				R	
Sanguisorba dodecandra	Moretti	18	x	Italy				R	
Santolina ageratifolia	Barnades ex Asso			Spain					
Santolina etrusca	(Lacaita) Marchi et D'Amato		x	Italy					
Santolina leucantha	Bertol.		x	Italy					
Santolina ligustica	Arrigoni			Italy					
Santolina melidensis	(Rodr. Oubiña & S. Ortiz) Rodr. Oubiña & S. Ortiz			Spain					
Santolina neapolitana	Jord. et Fourr.	1	x	Italy					
Saponaria jagelii	Phitos & Greuter			Greece					CR
Saponaria lutea	L.	18		France, Italy, Switzerland				R	
Sarcocapnos baetica ssp. *integrifolia*	Nyman		x	Spain					
Satureja acropolitana	(Halácsy) Greuter & Burdet			Greece					
Saussurea porcii	Degen			Romania					
Saxifraga arachnoidea	Sternb.			Italy				R	
Saxifraga berica	(Bég.) D.A. Webb	2		Italy					
Saxifraga biternata	Boiss.	2	x	Spain				R	
Saxifraga cochlearis	Rchb.	35		Italy					
Saxifraga depressa	Sternb.	1	x	Italy					
Saxifraga etrusca	Pignatti			Italy					
Saxifraga exarata ssp. *delphinensis*	Vill.			France					
Saxifraga facchinii	Koch			Italy				R	
Saxifraga florulenta	Moretti	2		France, Italy	x	x		R	
Saxifraga genesiana	P. Vargas			Spain					
Saxifraga hartii	D. A.Webb	2		Ireland					
Saxifraga italica	D.A. Webb			Italy				R	
Saxifraga mutata ssp. *demissa*	L.			Romania					
Saxifraga presolanensis	Engl.	3	x	Italy	x		x	R	
Saxifraga rosacea ssp. *hartii*	Moench	3		Ireland					
Saxifraga tombeanensis	Boiss. ex Engl.	7	x	Italy	x	x		V	
Saxifraga valdensis	DC.	13		France, Italy	x		x	R	
Saxifraga vandellii	Sternb.	7	x	Italy				R	
Scabiosa achaeta	Vis. & Pancic			Serbia					
Scabiosa columbaria ssp. *pseudobanatica*	L			Hungary, Romania					
Scilla beirana	Samp.			Portugal			x	V	
Scilla corsica	Boullu			Corsica, Sardinia					
Scilla cupanii	Guss.	1		Sicily				R	
Scilla dimartinoi	Brullo et Pavone	2		Sicily					
Scilla hughii	Tineo ex Guss.	4		Italy, Sicily				R	
Scilla litardierei	Breistr.	22		Croatia, Italy, Slovenia		x	x	V	
Scilla messeniaca	Boiss.	9		Greece				R	
Scilla morrisii	Meikle	4	x	Cyprus	x	x	x		
Scilla odorata	Link	1		Portugal, Spain	x		x	R	
Scilla paui	Lacaita		x	Spain					
Scilla reverchonii	Degen & Hervier	4	x	Spain				R	
Scilla sicula	Tineo	2		Malta, Sicily					
Scleranthus aetnensis	Strobl			Sicily					
Scleranthus perennis ssp. *prostratus*	L.	2	x	U.K.					
Scleranthus perennis ssp. *vulcanicus*	L.			Sicily					
Scorzonera reverchonii	Debeaux ex Hervier			Spain					
Scorzonera scyria	Gustafsson & Snogerup			Greece					
Scrophularia spinulescens	Hausskn. & Degen			Greece				I	
Scrophularia viciosoi	Ortega Olivencia & Devesa		x	Spain					
Scutellaria rupestris ssp. *rechingeri*	Hornem.			Greece					
Scutellaria rupestris ssp. *rupestris*	Hornem.	1	x	Greece					
Secale rhodopaecum	Delip.			Bulgaria					
Sedum annuum ssp. *gussonei*	L.			Italy					
Sedum microstachyum	Boiss.		x	Cyprus					
Selinum carvifolia ssp. *broteri*	(L.) L.			Spain					
Sempervivum dolomiticum	Facchini	8		Italy				R	
Sempervivum pittonii	Schott, Nyman & Kotschy	45		Austria				R	
Sempervivum riccii	Iberite et Anzal.			Italy					
Senecio ambiguus ssp. *gibbosus*	(Biv.) DC.			Sicily					
Senecio ambiguus ssp. *nebrodensis*	(Biv.) DC.			Sicily					
Senecio coincyi	Rouy	1	x	Spain				E	
Senecio eboracensis	Abbott & Lowe			U.K.					
Senecio elodes	Boiss. ex DC.		x	Spain	x	x		E	
Senecio gibbosus ssp. *bicolor*	(Guss.) DC.			Italy, Sicily					
Senecio gibbosus ssp. *gibbosus*	(Guss.) DC.			Sicily					
Senecio nevadensis	Boiss, & Reut.		x	Spain	x	x		V	
Senecio pygmaeus	DC.			Malta, Sicily					

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Senecio quinqueradiatus	Boiss.	1	x	Spain				R	
Senecio rosinae	Gamisans			Corsica					
Senecio ruthenensis	Mazuc & Timb.Lagr.			France					
Serapias aphroditae	P. Delforge			Cyprus					
Serapias ionica	E. Nelson ex H. Baumann & Künkele			Greece					
Serapias nurrica	Corrias			Corsica, Sardinia, Spain					
Serapias orientalis ssp. *apulica*	(Greuter) H.Baumann & Künkele [Nelson]	1		Italy					
Serapias orientalis ssp. *siciliensis*	Nelson			Sicily					
Serratula legionensis	Lacaita			Spain					
Seseli djianeae	Gamisans			Corsica					
Seseli farrenyi	Molero & Pujadas	2		Spain					
Seseli intricatum	Boiss.		x	Spain	x	x		V	
Seseli leucospermum	Waldst. & Kit.	2		Hungary		x	x	R	
Seseli polyphyllum	Ten.			Italy					
Sesleria doerfleri	Hayek	1	x	Crete				R	
Sesleria heuflerana ssp. *hungarica*	Schur			Hungary, Poland, Slovakia					
Sesleria insularis ssp. *morisiana*	Sommier			Sardinia					
Sesleria klasterskii	Deyl			Bulgaria					
Sesleria taygetea	Hayek			Greece				R	
Sesleria tuzsonii	Ujhelyi			Italy					
Sideritis arborescens ssp. *pauli*	Salzm. ex Benth.		x	Spain					
Sideritis arborescens ssp. *perezlarae*	Salzm. ex Benth.			Spain					
Sideritis cypria	Post		x	Cyprus	x	x	x		
Sideritis lurida ssp. *borgiae*	J. Gay			Spain					
Sideritis pusilla ssp. *alhamillensis*	(Lange) Pau			Spain					
Sideritis serrata	Lag.		x	Spain	x	x		R	
Silene ammophila	Boiss. & Heldr.			Crete				V	
Silene ammophila ssp. *ammophila*	Boiss. & Heldr.			Crete					
Silene ammophila ssp. *carpathae*	Boiss. & Heldr.	3	x	Crete					
Silene badaroi	Breistr.			Italy					
Silene calabra	Brullo, Scelsi et Spamp.			Italy					
Silene caliacrae	D.Jord. & P.Pan		x	Bulgaria					
Silene campanula	Pers.	7		Italy				R	
Silene cephallenia ssp. *cephallenia*	Heldr.	1	x	Greece					
Silene conglomeratica	Melzh.			Greece					
Silene diclinis	(Lag.) M. Laínz	5	x	Spain				V	EN
Silene dinarica	Sprengel	9		Romania				R	
Silene dirphya	Greuter & Burdet			Greece					
Silene elisabethae	Jan	9	x	Italy				R	
Silene fernandezii	Jeanmonod		x	Spain					EN
Silene flavescens ssp. *dictaea*	Waldst. & Kit.		x	Crete					
Silene gazulensis	A.Galán de Mera , J.E.Cortés, J.A.Vicente Orellana & R.Morales Alonso		x	Spain					CR
Silene gemmata	Meikle		x	Cyprus					
Silene guicciardii	Boiss. & Heldr.			Greece					
Silene hicesiae	Brullo et Signorello			Sicily		x			CR
Silene ichnusea	Brullo, De Marco & De Marco fil.			Sardinia					
Silene inaperta ssp. *serpentinicola*	DC.		x	Spain					
Silene integripetala ssp. *elaphonesiaca*	Bory & Chaub.			Greece					
Silene integripetala ssp. *greuteri*	Bory & Chaub.			Crete					
Silene integripetala ssp. *lidenii*	Bory & Chaub.			Greece					
Silene linicola	C.C. Gmel.	12		Austria, France, Germany, Italy, Slovenia, Spain					
Silene martinoli	Bocchieri et Mulas			Sardinia					
Silene orphanidis	Boiss.	8	x	Greece	x	x		E	
Silene roemeri ssp. *staminea*	Friv.			Italy					
Silene rosulata ssp. *sanctae-therasiae*	Soy.-Will. et Godr.			Sardinia					
Silene sanctae-therasiae	(Jeanmonod) Jeanmonod			Sardinia					
Silene scabriflora ssp. *megacalycina*	Brot.			Spain					
Silene sennenii	Pau		x	Spain					EN
Silene stockenii	A.O. Chater		x	Spain				E	
Silene succulenta ssp. *corsica*	Forssk.		x	Sardinia					
Silene turbinata	Guss.			Sicily					
Silene valsecchiae	Bocchieri			Sardinia					
Silene velutina	Pourr. ex Loisel.	1	x	Corsica, Sardinia	x	x		V	
Sisymbrella dentata	(L.) O.E. Schulz	1		Italy, Sicily					
Soldanella calabrella	Kress			Italy					
Soldanella minima ssp. *samnitica*	Hoppe			Italy					
Soldanella pelia	Raus			Greece					
Soldanella villosa	Darracq ex Labarrère	7		France, Spain	x	x		V	
Solenanthus reverchonii	Degen		x	Spain				E	CR
Solenopsis antiphonitis	Hadjik. & Hand			Cyprus					
Solidago virgaurea ssp. *rupicola*	L.		x	France					
Sonchus pustulatus	Willk.in Willk. & Lange		x	Spain					
Sorbus adamii	Kárpáti	4		Hungary					
Sorbus andreanszkyana	Kárpáti			Hungary					
Sorbus arranensis	Hedl.	16	x	U.K.				R	VU

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Sorbus bakonyensis	(Jáv.) Kárpáti	5		Hungary					
Sorbus balatonica	Kárpáti	1		Hungary					
Sorbus barthae	Kárpáti			Hungary					
Sorbus borbasii	Jav.	8		Romania				R	
Sorbus borosiana	Kárpáti			Hungary					
Sorbus bristoliensis	Wilmott	18	x	U.K.					EN
Sorbus budaiana	Kárpáti			Hungary					
Sorbus dacica	Borb.	9		Romania				R	
Sorbus degenii	Jáv.	4		Hungary					
Sorbus eminens	E.F.Warb.	5	x	U.K.					VU
Sorbus eugenii-kelleri	Kárpáti	2		Hungary					
Sorbus gayeriana	Kárpáti	1		Hungary					
Sorbus gerecseensis	Boros & Kárpáti			Hungary					
Sorbus hibernica	E.F.Warb.	8	x	Ireland					
Sorbus huljakii	Kárpáti			Hungary					
Sorbus karpatii	Boros	2		Hungary					
Sorbus latissima	Kárpáti	3		Hungary					
Sorbus leptophylla	E.F.Warb.	6	x	U.K.					CR
Sorbus leyana	Wilmott	6	x	U.K.					CR
Sorbus minima	(Ley) Hedl.	16	x	U.K.					
Sorbus parumlobata	Irmisch ex Düll			Germany					CR
Sorbus paxiana	Jav.			Romania					
Sorbus pseudobakonyensis	Kárpáti	2		Hungary					
Sorbus pseudodanubialis	Kárpáti			Hungary					
Sorbus pseudofennica	E.F.Warb.	7	x	U.K.					VU
Sorbus pseudolatifolia	Boros	1		Hungary					
Sorbus pseudomeinichii	A. Robertson			U.K.					
Sorbus pseudosemiincisa	Boros			Hungary					
Sorbus pseudovertesensis	Boros	5		Hungary					
Sorbus redliana	Kárpáti	1		Hungary					
Sorbus semiincisa	Borb.	5		Hungary					
Sorbus simonkaiana	Kárpáti	5		Hungary					
Sorbus subcuneata	Wilmott	6	x	U.K.					VU
Sorbus ulmifolia	Kárpáti			Hungary					
Sorbus vajdae	Boros	1		Hungary					
Sorbus vertesensis	Boros	3		Hungary					
Sorbus vexans	E.F.Warb.	6	x	U.K.					VU
Sorbus whiteana	T.C.G. Rich & L. Houston			U.K.					
Sorbus wilmottiana	E.F.Warb.	4	x	U.K.					CR
Stachys aimerici	Gamisans			Corsica					
Stachys albanica	Markgraf			Albania				R	
Stachys euboica	Rech. fil.			Greece				R	
Stachys pangaea	Phitos			Greece					
Stachys spreintzenhoferi	Heldr.			Greece					
Stachys spreintzenhoferi ssp. *virella*	Heldr.			Greece					
Stipa apertifolia	Martinovsky			Spain				R	
Stipa aquilana	Moraldo			Italy					
Stipa austroitalica	Martinovsky	2		Italy, Sicily	x	x		E	
Stipa austroitalica ssp. *appendiculata*	Martinovský			Italy, Sicily					
Stipa bavarica	Martinovsky & H. Scholz	1		Germany	x	x		V	
Stipa crassiculmis ssp. *heterotricha*	Smirnow			Romania					
Stipa danubialis	Dihoru & Roman			Romania	x			V	
Stipa dasyphylla	(Lindem.) Trautv.	10		Austria, Czech Republic, Germany, Hungary, Romania, Slovakia				R	
Stipa gigantea ssp. *donyanae*	Link			Spain					
Stipa gussonei	Moraldo			Italy, Sicily					
Stipa mayeri	Martinovsky			Former Yugoslavia				R	
Stipa novakii	Martinovsky			Former Yugoslavia				R	
Stipa pulcherrima ssp. *bavarica*	C. Koch			Germany					
Stipa rechingeri	Martinovsky			Greece				R	
Stipa sicula	Moraldo, La Valva, Ricciardi & Caputo			Sicily					
Stipa styriaca	Martinovsky			Austria	x	x		V	
Stipa veneta	Moraldo	1		Italy					
Stipa zalesskii	Wilensky	6		Czech Republic, Slovakia					
Suaeda pelagica	Bartolo, Brullo et Pavone			Sicily				R	
Suaeda pruinosa var. *kochii*	Lange			Sicily					
Succisa pinnatifida	Lange			Portugal, Spain					
Succisella andreae-molinae	Escudero & Pajarón			Spain					EN
Symphytum gussonei	F.W. Schultz			Sicily				R	
Tanacetum audibertii	(Req.) DC.	1		Corsica, Sardinia					
Tanacetum funkii	(Sch. Bip.) ex Willk.			Spain				I	
Tanacetum siculum	(Guss.) Strobl.	1	x	Sicily					
Tanacetum vahlii	DC.			Spain					
Taraxacum abietifolium	Saarsoo			Sweden					
Taraxacum amarellum	Kirschner & Štepánek			Ireland					
Taraxacum aphrogenes	Meikle		x	Cyprus					
Taraxacum balearicum van	Soest		x	Spain					
Taraxacum claviflorum	Sahlin			Spain					

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Taraxacum clovense	A.J. Richards	1	x	U.K.					
Taraxacum coryphorum	Sahlin			Spain					
Taraxacum crocinum	G. E. Haglund & Nord.			Sweden					
Taraxacum cyrtum	Sahlin			Spain					
Taraxacum decrepitum	Kirschner & Stepanek			Greece					
Taraxacum dentilobum van	Soest			Spain					
Taraxacum dovrense	(Dahlst.) Dahlst.			Norway					
Taraxacum erythrocarpum	Kirschner et Štepánek			Slovakia					
Taraxacum faucicola	Sahlin			Spain					
Taraxacum gaditanum	Talavera		x	Spain					
Taraxacum gallaecicum van	Soest			Spain					
Taraxacum geirhildae	(Beeby) R. C. Palmer & W. Scott			U.K.					
Taraxacum glaciale	E. et A. Huet ex Hand.-Mazz.			Italy					
Taraxacum holmboei	H.Lindb.			Cyprus					
Taraxacum iberanthum	Sahlin			Spain					
Taraxacum ibericum van	Soest			Spain					
Taraxacum litophyllum	Langhe & van Soest			Spain					
Taraxacum merinoi van	Soest			Spain					
Taraxacum miltinum	Sahlin			Spain					
Taraxacum mimosinum	Sahlin			Spain					
Taraxacum pieninicum	Pawl.		x	Poland					
Taraxacum polium	Dahlst.			Sweden					
Taraxacum praesigne	Sahlin			Spain					
Taraxacum pseudosuecicum	Kirschn. & Stepanek			Sweden					
Taraxacum ptilotoides	Sahlin			Spain					
Taraxacum rivulare	Soest			Luxembourg					
Taraxacum serpenticola	A.J. Richards			U.K.					
Taraxacum solenanthinum	Sahlin			Spain					
Taraxacum stenospermum	Sennen			Spain					
Taraxacum vinosum van	Soest			Spain					
Taraxacum webbii	A.J.Richards			Ireland					
Telekia speciosissima	(L.) Less.	17	x	Italy				R	
Teline pallida ssp. *gomerae*	(Poir. In Lam.) G.Kunkel		x	Spain					
Teline tribracteolata	(Webb) Talavera & P.E. Gibbs		x	Spain					
Tephroseris helenitis ssp. *candida*	(L.) B. Nordenstam			France					
Tephroseris helenitis ssp. *macrochaeta*	(L.) B. Nordenstam			France, Spain					
Tephroseris integrifolia ssp. *maritima*	(L.) Holub			U.K.					
Tephroseris integrifolia ssp. *vindelicorum*	(L.) Holub			Germany					
Tephroseris longifolia s. *moravica*	(Jacq.) Griseb. & Schenk			Czech Republic, Slovakia	x	x			
Tetraclinis articulata	(Vahl) Masters	54	x	Malta, Spain				R	LR/nt
Teucrium aristatum	Pérez Lara			France, Spain					
Teucrium balthazaris	Sennen		x	Spain					NT
Teucrium brachyandrum	S. Puech	1		France					
Teucrium cyprium ssp. *kyreniae*	Boiss.		x	Cyprus					
Teucrium francisci-werneri	Rech. fil.			Greece				V	
Teucrium intricatum	Lange		x	Spain				R	
Teucrium oxylepis ssp. *marianum*	Font Quer			Spain					
Teucrium oxylepis ssp. *oxylepis*	Font Quer		x	Spain					
Teucrium polium ssp. *clapae*	L.	1		France					
Thesium vlachorum	Aldén			Greece					
Thlaspi brevistylum	(DC.) Mutel			Sardinia					
Thlaspi dacicum ssp. *banaticum*	Heuffel			Romania					
Thlaspi sylvium	Gaudin			Italy, Switzerland					
Thlaspi zaffranii	(F.K. Meyer) Greuter & Burdet		x	Crete					
Thymbra calostachya	(Rech. fil.) Rech. fil.	1	x	Crete				R	
Thymus bihoriensis	Jalas			Romania				R	
Thymus comosus	Heuffel ex. Griseb.	3		Romania					
Thymus funkii ssp. *burilloi*	Coss.			Spain					
Thymus herba-barona ssp. *bivalens*	Loisel.	1		Balearic Is.					
Thymus hyemalis ssp. *millefloris*	Lange		x	Spain					
Thymus oehmianus	Ronniger			Macedonia				Ex	
Thymus rechingeri	Hartvig			Greece					
Thymus rechingeri ssp. *macrocalyx*	Hartvig			Greece					
Thymus rechingeri ssp. *rechingeri*	Hartvig			Greece					
Thymus richardii ssp. *ebusitanus*	Pers.	2	x	Balearic Is.					
Thymus richardii ssp. *nitidus*	Pers.	3		Sicily					
Thymus webbianus	Rouy		x	Spain					
Trachelium coeruleum ssp. *lanceolatum*	L.			Sicily					
Tragopogon gorskianus	Rchb.f.			Lithuania					
Tragopogon lassithicus	Rech. fil.	1	x	Crete				V	
Tragopogon pseudocastellanus	Blanca & Díez de la Guardia		x	Spain					
Trapa annosa	Jankovic			Serbia					
Trichomanes speciosum	Willd.	13		Belgium, Czech Republic, France, Ireland, Italy, Spain	x	x		R	
Trifolium barbeyi	Gibelli & Belli			Crete				V	
Trifolium bivonae	Guss.			Sicily				R	
Trifolium campestre ssp. *paphium*	Schreb.		x	Cyprus					
Trifolium isthmocarpum ssp. *jaminianum*	Brot.			Sicily					
Trifolium uniflorum ssp. *savianum*	L.			Sicily					
Trisetaria dufourei	(Boiss.) Paunero			Portugal, Spain				V	

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Trisetum antonii-josephii	Font Quer & Muñoz Medina			Spain					
Trisetum burnoufii	Req. ex Parl.			Corsica				Ex/E	
Trisetum conradiae	Gamisans			Corsica				V	
Trisetum gracile	(Moris) Boiss.			Corsica, Sardinia				V	
Tulipa aximensis	E.P. Perrier & Songeon	2		France, Switzerland					
Tulipa billietiana	Jord.	1		France					
Tulipa cypria	Stapf	1	x	Cyprus	x	x	x		
Tulipa didieri	Jord.	5		France, Switzerland					
Tulipa doerfleri	Gand.	5		Crete					
Tulipa goulimyi	Sealy & Turrill	5		Crete, Greece	x			V	
Tulipa grengiolensis	Thommen	7		Switzerland					
Tulipa lortetii	Jord.			France					
Tulipa marjoletii	Perr. & Song.			France					
Tulipa mauriana	Jord. & Fourr.			France					
Tulipa montisandrei	J. Prudhomme	1		France					
Tulipa planifolia	Jord.	2		France					
Tulipa platystigma	Jord.	3		France					
Tulipa rhodopaea	Vel.	1		Bulgaria					
Tulipa serbica	Tatic & Krivošej			Serbia					
Tulipa urumoffii	Hayek	4	x	Bulgaria				V	
Urtica atrovirens ssp. *atrovirens*	Req. ex Loisel.			Spain					
Urtica atrovirens ssp. *bianorii*	Req. ex Loisel.	2	x	Spain					
Urtica rupestris	Guss.			Sicily				R	
Valantia calva	Brullo			Sicily					
Valeriana crinii	Orph. ex Boiss			Albania, Greece				R	
Valeriana officinalis ssp. *hispidula*	L.			France, Norway, U.K.					
Vella pseudocytisus ssp. *paui*	L.		x	Spain					
Vella pseudocytisus ssp. *pseudocytisus*	L.	1	x	Spain					
Verbascum argenteum	Ten.			Italy				R	
Verbascum charidemi	Murb.		x	Spain					
Verbascum cylleneum	(Boiss. & Heldr.) O. Kuntze			Greece	x			E	
Verbascum fontqueri	Benedí & J.M. Montserrat		x	Spain					
Verbascum glabratum ssp. *brandzae*	Friv.			Romania					
Verbascum magellense	Ten.			Italy					
Verbascum rotundifolium	Ten.		x	Italy, Sicily					
Verbascum rotundifolium ssp. *ripacurcicum*	Ten.			Spain					
Verbascum siculum	Tod.			Sicily				R	
Veronica allionii	Vill.	11		Italy					
Veronica chamaepithyoides	Lam.			Spain					
Veronica euxina	Turrill			Bulgaria, Moldova	x				
Veronica oetaea	L. - ? Gustavsson			Greece	x				
Veronica tenuifolia ssp. *fontqueri*	Asso			Spain					
Veronica verna ssp. *brevistyla*	L.			Sardinia					
Vicia argentea	Lapeyr.			France, Spain					
Vicia bifoliolata	J.J. Rodr.		x	Balearic Is.	x	x		E	
Vicia cusnae	Foggi et Ricceri		x	France, Italy					
Vicia davisii	Greuter			Greece					
Vicia giacominiana	Segelb.	1		Italy					
Vicia serinica	Uechtr. et Huter			Italy					
Vincetoxicum pannonicum	(Borhidi) Holub	5		Hungary	x	x	x	V	
Viola aethnensis ssp. *aethnensis*	(DC.) Strobl			Sicily					
Viola argenteria	Moraldo et Forneris			Italy					
Viola arsenica	G. Beck			Macedonia					
Viola bertolonii	Pio emend. Merxm. et W. Lippert	3		Italy					
Viola comollia	Massara	3	x	Italy				R	
Viola corsica ssp. *ilvensis*	Nyman			Italy					
Viola cryana	Gillot			France	x			Ex	
Viola dubyana	Burnat ex Gremli	3	x	Italy				R	
Viola dukadjinica	W.Becker & Košanin			Albania					
Viola hispida	Lam.	8	x	France	x	x		V	
Viola jaubertiana	Marès & Vigin.	8	x	Balearic Is.	x	x		R	
Viola jooi	Janka	19		Romania				R	
Viola magellensis	Porta et Rigo ex Strobl			Italy				R	
Viola nebrodensis	C. Presl			Sicily					
Viola oligyrtia	Tiniakou			Greece					
Viola pseudogracilis ssp. *cassinensis*	Strobl			Italy					
Viola pseudomirabilis	Coste			France					
Viola striis-notata	(J. Wagner) Merxm. & Lippert			Greece					
Viola tineorum	Erben et Raimondo			Sicily					
Viola ucriana	Erben et Raimondo			Sicily					CR
Viola valderia	All.			Italy					
Vulpia fontquerana	Melderis & Stace		x	Spain				V	
Wulfenia baldaccii	Degen.	25		Albania				Ex/E	
Zelkova abelicea	(Lam.) Boiss.	13	x	Crete	x	x		V	VU
Zelkova sicula	Di Pasq., Garfi et Quézel	1		Sicily					CR

BGCI
Plants for the Planet

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