

Target Species - Species of European concern

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Target species – Species of European concern

A database driven selection of plant and animal species for the implementation of the Pan European Ecological Network

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ABSTRACT

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The concept of ecological networks is becoming increasingly important in both policies and practices of nature conservation throughout Europe. The establishment of the Pan Ecological European Network (PEEN) can be seen as one of the priority issues for nature conservation. For the establishment of such networks, it is essential to have adequate information on the threat status and distribution of plant and animal species throughout Europe. As there are thousands of plant and animal species, it is necessary to make a selection of species that are considered to be of specific conservation concern, so-called 'target species'. In this report the concept of target species is developed, on the basis of a common set of criteria (legal protection, threat status and degree of endemism). A database has been developed which includes complete species lists for Europe for the following groups of organisms: vascular plants, vertebrates (freshwater fishes, reptiles, amphibians, birds and mammals) and butterflies. Based on the three criteria a provisional selection of target species has been carried out.

Keywords: Target species, Birds Directive, Habitats Directive, Natura 2000, IUCN Red List, Endemic species, Pan European Ecological Network

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Preface

The ecological network model has been under development in Europe as a practical conservation tool for more than a decade. The concept of ecological networks is gradually becoming more and more important in both international policies and practices of nature conservation. In this respect, the establishment of the Pan Ecological European Network (PEEN) can be seen as one of the priority issues for nature conservation.

For the establishment of the ecological network, it is essential to have adequate information on the status and distribution of plant and animal species throughout Europe. As there are thousands of plant and animal species, it is necessary to make a selection of species that are considered to be of specific importance, so-called 'target species'. In this report the concept of target species is further developed, on the basis of a common set of criteria: legal protection, threat and distribution.

In 2000, a pilot study was carried out for a limited area and a limited set of species to research the attainability of a more comprehensive survey on the wider European scale. This pilot study concentrated on vascular plant species of Northern Europe, and resulted in the publication 'Endemic and characteristic plant species in Europe – Northern Europe' (Van Opstal et al. 2000). In the present study, target species are determined for vascular plants, vertebrates (freshwater fishes, reptiles, amphibians, birds, and mammals) and butterflies.

The report is intended to be a contribution to the realisation of the Pan European Ecological Network. It is compiled with the help of many persons and institutions, including Centre for Ecology and Hydrology (UK), Euro+Med PlantBase (University of Reading, UK), Dutch Butterfly Conservation (Wageningen, the Netherlands), Societas Europaea Mammalogica (Paris, France), Muséum National d'Histoire Naturelle (MNHN, Paris, France), SOVON (Beek-Ubbergen, the Netherlands), RIVO (IJmuiden, the Netherlands) and English Nature (Peterborough, UK). We would like to express our special thanks to Jan-Willem Snee and Sander van Opstal (Dutch Ministry of Agriculture, Nature and Food quality), Tony Mitchell-Jones (English Nature), Patrick Haffner (Muséum National d'Histoire Naturelle), Caroline Pollock (IUCN, SSC Red List Programme, UK), Harriet Gillett (UNEP World

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*Wim Ozinga, Stephan Hennekens, Joop Schaminée & Nina Smits,
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Summary

The concept of ecological networks is becoming increasingly important in both policies and practices of nature conservation throughout Europe. The establishment of the Pan Ecological European Network (PEEN) can be seen as one of the priority issues for nature conservation. For the establishment of such networks, it is essential to have adequate information on the status and distribution of plant and animal species throughout Europe. Conservation priorities must be developed in such a way that limited resources can be directed towards those species most in need of conservation efforts. As there are thousands of plant and animal species, it is necessary to make a selection of species that are considered to be of specific importance, so-called '*target species*'. In this report the concept of target species is further developed, on the basis of a common set of criteria, and a provisional selection has been carried out.

Target species are defined as species of European importance, which fulfil at least one of the following criteria:

- *Legal protection*: Listing of species in international conventions (species for which European legislation imposes to its contracting parties specific measures);
- *Threat*: Listing on IUCN Red lists (species whose survival in the near future is threatened on a global level, based on a combination of two criteria: rarity and trend);
- *Geographical distribution (endemism)*: European endemics (species for which the global distribution is restricted to Europe or that are highly characteristic for Europe).

Within the present project a database has been developed which includes complete species lists for Europe for the following groups of organisms: vascular plants, vertebrates (freshwater fishes, reptiles, amphibians, birds and mammals) and butterflies. For each species information is given on degree of endemism for Europe, legal status and threat status. Both single and multiple criteria can be used for the selection of target species. This makes it possible to derive user-defined, objective lists of target species.

The highest proportions of target species occur in the Southern parts of Europe. Especially the Mediterranean Islands and the Iberian, Italian and Balkan Peninsulas are very rich in target species. It appears that the species priority lists of the legal documents do not cover all species that are globally threatened (and therefore are in need of protection). With the exception of birds (5 %) and amphibians (11 %) these 'legal gaps' encompass at least 40 %. In other words: there are many species for which Europe has a special responsibility, that are not on any European legal priority list. Especially species occurring in Eastern Europe are under-represented in the legal documents.

For the linkage of the resulting lists of target species to other PEEN initiatives, the information system SynBioSys Europe is suggested as a platform.

1 Introduction

1.1 The Pan European Ecological Network

It is increasingly acknowledged that endangered species cannot be conserved by the establishment of isolated nature reserves alone. In principle the successful conservation of areas with important populations of endangered species, may result in an increase in mean population density in the short term. However, these high densities will only be temporary if the core populations are dependent on periodic immigrations from populations in the surroundings that have gone extinct. This emphasises the need for an international approach in policies and practices of nature conservation, rather than a site-by-site approach.

The Birds Directive and the Habitats Directive have given species policy a clear European dimension. A major instrument for preventing population decline by these directives is the establishment of a series of protected nature areas. At the same time in Europe, the concept of ecological networks is gradually becoming more and more important in both policies and practices of nature conservation. Although the primary aim of the resulting set of nature reserves is to safeguard threatened species and habitats instead of forming a coherent network, the selected sites ultimately may function as such. In this respect, the establishment of the Pan European Ecological Network (PEEN), a tool of the [Pan European Biological and Landscape Diversity Strategy](#) (PEBLDS), can be seen as one of the priority issues for nature conservation in Europe (Council of Europe, UNEP & ECNC 1996).

The [Pan European Biological and Landscape Diversity Strategy](#) (PEBLDS) is an initiative of the Council of Europe at the Sofia Conference of 55 European Ministers for Nature and the Environment in 1995. In order to implement the diversity strategy, a list of policy recommendations including financial mechanisms has been formulated. PEBLDS focuses on the conservation of landscapes, habitats, and species of European importance, including their genetic diversity. The strategy addresses all biological and landscape initiatives under one European approach. It reinforces the implementation of existing measures and identifies additional actions that need to be taken over the next two decades. PEBLDS also provides a framework to promote a

consistent approach and common objectives for national and regional actions to implement the Convention on Biological Diversity. The above-mentioned Pan European Ecological Network (PEEN) has the following objectives (after Bennett 1994 and Council of Europe 2000):

- To maintain characteristic natural and semi-natural ecosystems;
- To maintain viable populations of species of European importance;
- To maintain the ecological processes on which these ecosystems and species depend;
- To restore in a sufficient degree these ecosystems and processes.

Regions of Europe with high species richness and with high concentrations of threatened species ('biodiversity hotspots' cf. Myers et al. 2000, [Conservation International](#)) may form an important fundament for the establishment of the Pan European Ecological Network. For the identification of 'Important Species Areas' in Europe, information on the distribution of endangered species of 'European conservation concern' may play a key role, in contributing to the identification and establishment of the aimed coherent systems of core-areas. Recently, several initiatives have been set up to identify the most important (prime) areas in Europe for various groups of target species (see chapter 4.4).

1.2 Target species

While the conservation of ecosystems is essential to preserve environmental, ecological and evolutionary processes, species can be regarded as the natural unit to form the basis for conservation policy and management (Mace 2004). Although management at the ecosystem level is necessary, it is probably not sufficient for the conservation of biodiversity. Management at the ecosystem level might serve many of the composing species, but since the species may differ fundamentally in their optimal habitat requirements the fit is often far from perfect (e.g. Kremen et al. 2000). The species level is therefore suitable as the fundamental unit for the development of a Pan European Ecological Network (PEEN).

For the establishment of the Pan European Ecological Network (PEEN), it is essential to have adequate information on the status and

distribution of plant and animal species throughout Europe. Conservation priorities must be developed in such a way that limited resources can be directed towards those species most in need of conservation efforts. As there are thousands of plant and animal species, it is necessary to make a selection of species that are considered to be of specific importance, so-called 'target species'.

Within the framework of the Pan European Biological and Landscape Diversity Strategy (PEBLDS), particular attention is paid to characteristic, threatened and endangered species, bearing in mind the intercontinental setting (Council of Europe, UNEP & ECNC 1996). However, there is currently no Pan European overview of species of European concern. In order to make the Pan European Ecological Network operational there is an urgent need for the compilation of such a list of 'target-species' for which the network should be designed. In this report the concept of target species is further developed, on the basis of a common set of criteria, and a provisional selection has been carried out.

Thousands of plant species and animal species occur in Europe only. These endemic species can be considered as Europe's specific contribution to global biodiversity. Following the IUCN Red Data Books, hundreds of these European species are threatened. These species merit special nature conservation efforts in Europe. However, only several hundreds of species (not covering all species that are threatened according to IUCN-criteria) are protected under European regulations.

For political and practical reasons, it is impossible to give all endemic and all threatened species legal protection. The target species concept provides a practical tool to overcome part of these problems, although actual all threatened species deserve appropriate nature conservation measures.

Target species are defined as species of European importance, and are delimited in this project as species of European importance, which fulfil at least one of the following criteria:

- Legal protection: European legislation imposes to its contracting parties specific measures;

- Threat: Survival in the near future is threatened on a global level;
- Geographical distribution (endemism): global distribution is restricted to Europe or highly characteristic for Europe.

The target species approach provides an important ‘bridge’ to European legislation and the National Red Lists of threatened species. Target species can be a valuable tool:

- To present the specific conservational value of each species in a standardised and reliable way, using explicit criteria;
- To identify and promote awareness of the most important species in Europe for species conservation;
- To the identification of the Key Biodiversity Areas and ecological networks (indicator function);
- To help direct conservation activity and available funding towards these species and their sites;
- To provide a tool for planning and management, at practical and political levels, through the presentation of key information on species, sites, land uses, threats, legal protection and conservation status.

1.3 Scope of the report

Within the current project a database has been developed which includes complete species lists for Europe for the following groups of organisms: vascular plants, vertebrates (freshwater fishes, reptiles, amphibians, birds and mammals) and butterflies. For each species information is given on degree of endemism for Europe, legal status and threat status. Both single and multiple criteria can be used for the selection of target species. This makes it possible to derive user-defined, objective lists of target species.

2 Methods

2.1 Geographical delimitation of Europe

The covered area of Europe in principle reflects the present administrative borders of Europe, including European Turkey and Cyprus (see Figure 1). For some taxonomic groups of species also Asiatic Turkey, Macaronesia (Azores, Canary Islands, Madeira Islands, but excluding Cape Verdian Islands) is taken into account. The east-border of Europe in Russia is situated from the south of Novaya Zemlya, along the Ural Mountains to the Caspian Sea. This east-border follows the delimitation of Europe according to Flora Europaea (Tutin et al. 1964-1980). However, for certain taxonomic groups, the data are geographically incomplete. Flora Europaea, for instance, is not covering Cyprus, whereas the distribution data on amphibians and reptiles are truly pan European, including the whole of Turkey. For this reason, in the explanatory text of the databases of the individual taxonomic groups, the geographical coverage is always specified.



Figure 1 Geographical delimitation of Europe within the scope of the current project.

2.2 Criteria for target species

Target species are defined in this report as *species of European importance, which fulfil at least one of the following criteria*:

- *Legal protection*: Listing of species in international conventions (species for which European legislation imposes to its contracting parties specific measures);
- *Threat*: Listing on IUCN Red lists (species whose survival in the near future is threatened on a global level, based on a combination of two criteria: rarity and trend);
- *Geographical distribution (endemism)*: European endemics (species for which the global distribution is restricted to Europe or that are highly characteristic for Europe).

Various existing international instruments already provide the identification and conservation of species of European or global significance. These include the Bern Convention (Emerald Network), the Bonn Convention, and the European Union Habitats and Birds Directive (Natura 2000). These instruments provide the legal basis for the conservation of target species and valuable sites across Europe. The physical realisation of PEEN should be based on existing initiatives and European directives.

The species lists from the Birds Directive and the Habitats Directive are intended to set conservation priorities, whereas the IUCN Red Lists are intended to estimate the risk of extinction of species. In fact, the threat status is derived from a combination of two criteria: rarity and trend (see § 2.4). For the selection of species of European importance, IUCN Red Lists deliver a sound starting point, although the discussion on its scope and application is still going on. The IUCN Red Lists should feed into any priority setting system, but these lists should not be used as the sole determinants (De Iongh et al. 2003). For the setting of conservation priorities, other factors should also be considered, including the conservation status of species, the degree to which species function as keystone species within ecosystems, and the degree to which species may serve as flagship species for other threatened species and ecosystems.

The three criteria will be discussed in more detail further on in this chapter. For some species groups there exist already selections for ‘target species’. For birds and butterflies various categories for species of European conservation concern (SPECs) have been defined already (see Tucker & Heath 1994 and BirdLife International 2004 for birds and Van Swaay & Warren 1999 for butterflies). For more information on these SPEC categories we refer to the sections about these respective groups.

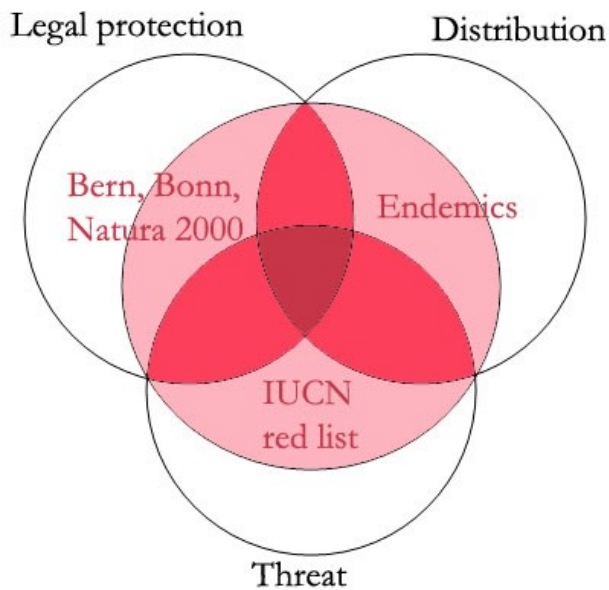


Figure 2: Target species can be assigned according to three criteria: 1) Legal protection: listing of species in international conventions; 2) Threat status: listing on IUCN Red lists, 3) Geographical distribution (degree of endemism): species for which the geographical distribution is restricted to Europe. Depending on the user-defined combination of criteria, various lists of target species can be selected from the database.

2.3 Legal protection

During the last decades, a set of international conventions and treaties has come into effect for the protection of threatened species in Europe. The most notable are the Convention on the conservation of European wildlife and natural habitats (usually referred to as the Convention of Bern), the Convention on the Conservation of Migratory Species of Wild Animals (usually referred to as the Convention of Bonn), both set up in

1979, the EU Birds Directive (1979, implemented in 1981) and the EU Habitats Directive (1992, implemented in 1994). The implementation of these instruments, and particularly the establishment of Natura 2000 under the Birds Directive and the Habitats Directive (European Union), and the Emerald Network under the Bern Convention (wider European), is of vital importance in the development of the Pan European Ecological Network (PEEN), since these instruments provide the conservation of many valuable sites across Europe. The physical realisation of PEEN should be based on existing initiatives and European directives.

For the selection of target species, the listings of species on the appendices of the treaties and conventions are of particular importance, since the conservation of these species has the strongest legal basis. The status of species on the various appendices with species listings is included in the database. These species listings are intended to set conservation priorities.

Although there is a certain overlap between the various existing international instruments, there are important differences in scope, legal basis, and geographical delimitation (see Table 1). Only within PEEN, Natura 2000 (Birds Directive and Habitats Directive) and the Emerald Network (Bern Convention), a wide scope of ecosystems is covered. Both Natura 2000 and PEEN aim at a vast network of nature areas, but Natura 2000 is geographically more limited, as it covers only the EU member states. The Emerald network should be the complementary part of the Natura 2000 network in the Bern-signing countries outside the EU. Most of the instruments aim only at core areas. Only the Pan European Ecological Network concentrates on both core areas, corridors and bufferzones, and gives the possibility for nature-development areas.

With regards to the possibilities for the creation of an adequate functioning ecological network, PEEN seems to deliver the best possibilities. From a legal point of view the Natura 2000 network and the Emerald Network have the strongest basis (Van Opstal 2001). The Natura 2000 and the Emerald Network are therefore the two principal European instruments to realize the basic structure of PEEN in practice.

Table 1: Overview of characteristics of the most relevant international nature conservation instruments (after Van Opstal 2001).

Name of international instrument	Name of ecological network	Character	Scope	Geographical delimitation	Legal basis
Convention on Wetlands (1971)	-	International	wetlands including natural, semi-natural and artificial waters	Global	Legally binding for contracting parties
Bonn Convention	-	International	migratory species and important habitats of these species	Global	Legally binding for contracting parties
Bern Convention (1979)	Emerald Network	Council of Europe	natural habitats and wild fauna and flora.	Europe	Recommendation of the standing committee of the Bern convention
Biogenetic reserves (1976)	-	Council of Europe	natural or near-natural ecosystems	Europe	Ministerial resolutions
Pan European Biological and Landscape Diversity Strategy (PEBLDS, 1995)	Pan European Ecological Network (PEEN)	Council of Europe & UNEP	natural and semi-natural ecosystems, habitats, species and landscapes that are of European importance	Europe	Strategy
E.U. Birds Directive (1979)	Natura 2000	European Commission	all species of naturally occurring birds in Europe	European Union territory	Legally binding for EU member States
E.U. Habitats Directive (1992)	Natura 2000	European Commission	(semi-) natural habitats and wild fauna and flora	European Union territory	Legally binding for EU member States
Helsinki Convention (1974, 1992)	-	Helsinki Commission: International convention	natural coastal and marine habitats and biological diversity; ecological processes	Baltic Sea region	Legally binding for contracting parties
Barcelona Convention (1976/1995) and Geneva/Barcelona Protocol (1982/1995)	-	UN: international convention	representative and/or endangered ecosystems of adequate size to maintain their biodiversity	Mediterranean region	Legally binding for contracting parties

2.3.1 Bonn Convention on Migratory Species

The [Bonn Convention on Migratory Species](#) aims to conserve terrestrial, marine and avian migratory fauna throughout their range. The need for countries to co-operate in the conservation of animals that migrate across national boundaries was recognized in a recommendation of the 1972 United Nations Conference on the Human Environment, held in Stockholm. This statement gave way to the elaboration of the convention which came into force in November 1983. Since then its membership has grown steadily, and now includes 86 contracting parties from five geographic regions (see Fig. 3). The Bonn Convention is an example of an intergovernmental treaty concerned with the conservation of wildlife and wildlife habitats on a global scale.

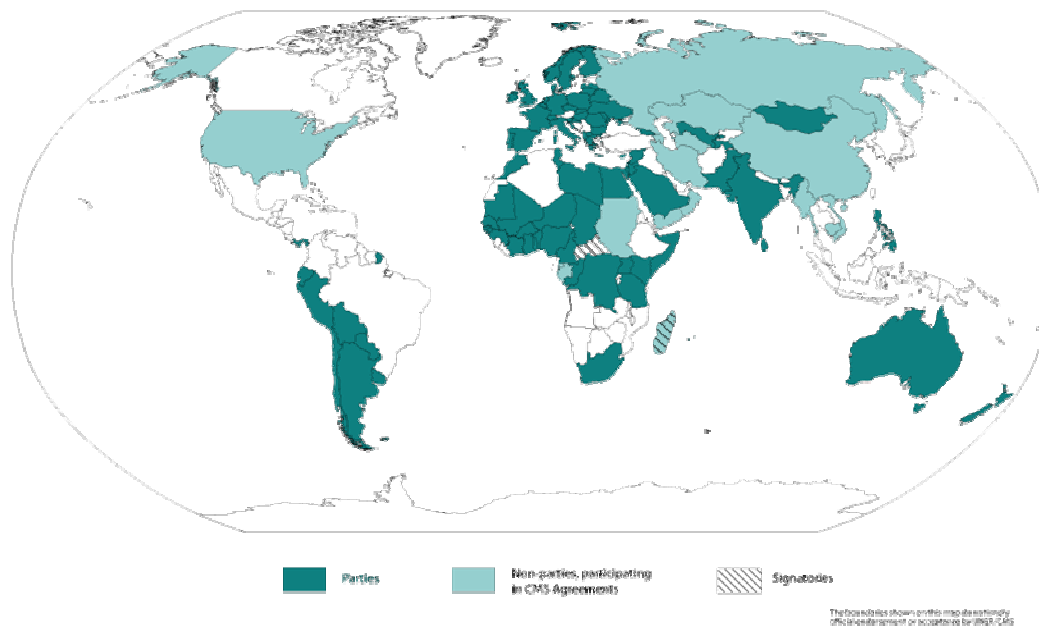


Figure 3: Map of contracting parties for the Convention on Migratory Species (© UNEP / CMS Secretariat 2004).

Migratory species that have been categorized as being in danger of extinction throughout all or a significant proportion of their range are listed on [Appendix I](#) of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the habitats in which they live, mitigating obstacles to migration and controlling other factors that might endanger them. Besides establishing obligations for each State joining the Convention, CMS promotes concerted action among the Range States of many of these species.

Migratory species that have an unfavourable conservation status or would benefit significantly from international co-operation organised by tailored agreements are listed in [Appendix II](#) to the Convention. For this reason, the Bonn Convention encourages the ‘range states’ to conclude global or regional Agreements for the conservation and management of individual species or, more often, of a group of species listed on Appendix II. In this respect, CMS acts as a framework convention from which independent instruments evolve. The Agreements may range from legally binding treaties to less formal instruments, such as Memoranda of Understanding, and can be adapted to the requirements of particular

regions. The listing on both Appendix I and II is included in the ‘target species’ –database. Since Appendix II gives no strict legal protection, only Appendix I is used in the present study as a selection criterion for ‘target species’.

Additional migratory species can be listed on Appendix I or II if a Party considers that they are endangered, and submits a proposal, which meets the requirements of Resolution 1.5. Upon the recommendation of the Scientific Council, the Conference of the Parties would then decide whether to adopt the proposed. Migratory species can be removed from Appendix I when the Conference of the Parties determines that there is reliable evidence that the species is no longer endangered and that it is not likely to become endangered again.

2.3.2 Bern Convention

The Bern Convention (Emerald Network), aiming to ensure the conservation of wild plants and animals and their habitats, is an initiative of the Council of Europe. It is based on recommendations made in 1973 by the Consultative Assembly of the Council, asking for “a coherent policy for the protection of wildlife, with a view to establishing European regulations - if possible by means of a convention - and involving severe restrictions on hunting, shooting, capture of animals needing protection, fishing and egg-collecting, and the prohibition of bird netting”. The final convention not only comprises fauna, but also flora, and came into force in 1982. The Convention falls into four parts, including a set of appendices. *Appendix I* comprises a list of strictly protected flora species, *Appendix II* a list of strictly protected fauna species, and *Appendix III* a list of protected fauna species for which a certain exploitation is possible if the population level permits. All species of birds (with the exception of eleven species), amphibians and reptiles occurring on the territories of the States that had elaborated the Convention and not covered by Appendix II have been included in Appendix III. The selection of species for Appendix I and II of the Bern Convention is mainly based on threat and endemism, whereas rareness is not included as a criterion. Only Appendix I and II are used in the present study as a selection criterion for ‘target species’.

2.3.3 Birds Directive

The Directive for the conservation of wild birds (79/409/EEC) was adopted in 1979 by nine Member States, and was the first EU Directive on nature conservation. Since its adoption it has been a vital legal instrument for the conservation of all birds that occur naturally across the EU, acting in the broadest public interest to conserve Europe's natural heritage for present and future generations. Together with the definitions and objectives of the Habitats Directive (see below), adopted in 1992, it offers useful legal conceptual models and a set of standards and norms in common use. The Birds Directive applies to all 25 EU countries since May 2004.

The Birds Directive is a primary tool for delivering against EU obligations under global Conventions, including the Convention on Biological Diversity (CBD), the Ramsar and Bonn Conventions and the plan of implementation of the World Summit on Sustainable Development (WWSN). Apart from its global obligations the EU has further committed itself to halting biodiversity decline by the year 2010. The full and proper implementation of both the Birds and the Habitats Directive including the proper designation and adequate management of Natura 2000 sites will be crucial to achieving this target.

The Birds and Habitats Directives both require the EU Member States to take a number of measures in order to protect all listed species and habitats, as well as their sites. Measures required by the Birds Directives include:

- Take measures to conserve all naturally occurring bird species across the EU;
- Classify as *Special Protection Areas* (SPAs) the most suitable territories for species in need of special habitat protection as listed on [Annex I](#);
- Maintain SPAs in Favourable Conservation Status;
- Prepare and implement management plans, setting clear conservation objectives for all SPAs in the EU 25;
- Provide co-financing for the management of these protected sites (SPAs);
- Regulate the hunting of species listed in [Annex II](#);
- Regulate the trade of species listed in [Annex III](#);

- Follow the procedure outlined in Article 6 of the Habitats Directive for carrying out appropriate assessments of environmental impacts on SPAs.

Special Protection Areas (SPAs) are classified under article 4 of the Birds Directive. Together with the Special Areas of Conservation (SACs), designated under article 4 of the Habitats Directive, they make up the Natura 2000 Network.

2.3.4 Habitats Directive

The Habitats Directive (Directive 92/43/EEC), adopted in 1992, is a Community legislative instrument in the field of nature conservation that establishes a common framework for the conservation of wild animal and plant species and natural habitats of Community importance; it provides for the creation of a network of special areas of conservation within Natura 2000, to “maintain and restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest” (European Commission 2003). The Habitats Directive sets the goal of establishing a European network for nature conservation, so-called ‘*Special Areas of Conservation*’ (SACs). The Habitats Directive is legally binding for the 25 EU Member States. It is expected that the network will eventually cover some 450,000 km², which means on average 10–15 % of EU territory.

The enlargement of the European Union with 10 new member states (Estonia, Latvia, Lithuania, Poland, Hungary, Czech Republic, Slovakia, Slovenia, Malta and Cyprus) means that EU nature conservation legislation will have to be applied to a much larger territory. The high richness in nature and wildlife is one of the environmental assets acceding countries bring to the EU. These countries still host species and habitat types that have nearly vanished from Western Europe. Moreover they hold nature values that currently do not occur at all in the European Union. This is why the Birds and the Habitats Directives had to be adapted to cover these unique assets of the new member states.

An overview of the purposes of the annexes is given in Table 2. There are several geographical exceptions concerning the listings of species. Some species are considered to be of conservation concern at European

level, but have a favourable conservation status in one or several member states. It should be emphasized however that in these cases the countries for which exceptions apply, have a special responsibility in maintaining the favourable status of these species. Geographical restrictions are given in accompanying notes in the database.

Table 2: Relevant annexes of the Habitats Directive with their purpose.

Annex I	Natural and semi-natural habitat types of community interest whose conservation requires the designation of special areas of conservation.
Annex II	Animal and plant species of community interest whose conservation requires the designation of special areas of conservation.
Annex IV	Animal and plant species of community interest in need of strict protection.
Annex V	Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures.

2.4 Threat

Global Red Lists

The IUCN Red Lists are widely recognized as the most comprehensive, apolitical global approach for evaluating the conservation status of plant and animal species. From their small beginnings, the IUCN Red Lists have grown in size and complexity. The introduction in 1994 of a scientifically rigorous approach to determine risks of extinction that is applicable to all species and infra-specific taxa, has become a virtual world standard (WCMC 2000). In order to produce Red Lists of all threatened species worldwide, the [Species Survival Commission](#) (SSC) has to draw on and mobilize a network of scientists and partner organizations working in almost every country in the world, who collectively hold what is likely the most complete scientific knowledge base on the biology and conservation status of species. The process for achieving this was largely uncoordinated and opportunistic. As a result,

in 1998 the SSC Executive Committee agreed to the development of a coherent well-conceived Red List Programme with a management and governance plan that would ensure the highest standards of documentation, information management, training, and scientific oversight. The IUCN Red List Programme and its companion information management system (the Species Information Service) will provide fundamental baseline information on the status of biodiversity as it changes over time.

The IUCN Red List Categories and Criteria have the following aims (IUCN 2001):

- To provide a system that can be applied consistently by different people;
- To improve objectivity by providing users with clear guidance on how to evaluate different factors which affect the risk of extinction;
- To provide a system which will facilitate comparisons across widely different taxa;
- To give people using threatened species lists a better understanding of how individual species were classified.

The [IUCN Red List Categories and Criteria](#) are intended to provide an explicit, objective framework for the classification of the broadest range of species according to their extinction risk (IUCN 2001). The Red List distinguishes nine hierarchically related Red List Categories (Fig. 4). The present IUCN criteria are based on estimates of rates of decline and extinction risk as well as rarity, and produce a different, but more useful, assessment compared to the former criteria which had a more subjective basis. One result of the new criteria is the inclusion of widespread but rapidly declining species, highlighting large-scale changes that might otherwise have been ignored until species reached critical levels. The new criteria are felt to be the best available method for assessing conservation priorities and identifying species requiring conservation action.

For assignment to one of the Red List Categories there is a range of quantitative criteria. Meeting any one of these criteria qualifies a taxon for listing at that level of threat. Each taxon should be evaluated against all the criteria. The relevant factor is whether any one criterion is met, not whether all are appropriate or all are met. Because it will never be clear in advance which criteria are appropriate for a particular taxon,

each taxon should be evaluated against all the criteria, and all criteria met at the highest threat category must be listed. It should be kept in mind that extinction is a chance process. Thus, a listing in a higher extinction risk category implies a higher probability of extinction, and over the time-frames specified more taxa listed in a higher category are expected to go extinct than those in a lower one (without effective conservation action). However, the persistence of some taxa in high-risk categories does not necessarily mean their initial assessment was inaccurate.

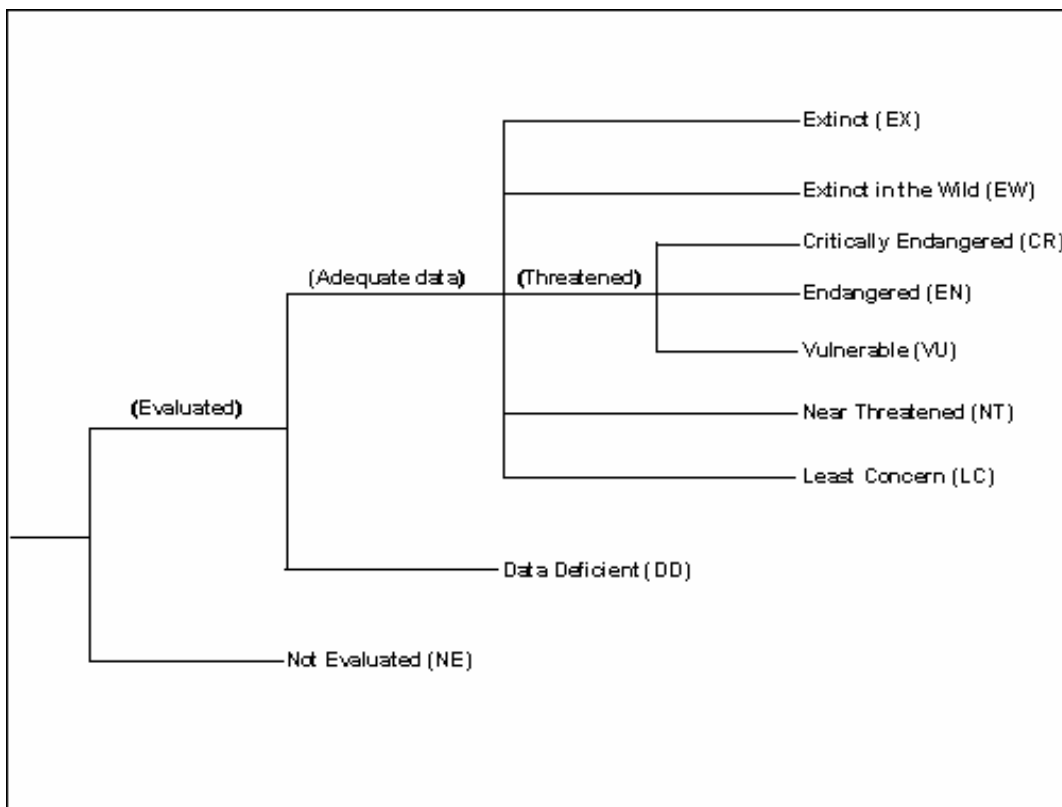


Figure 4: Structure of the Red List categories (from IUCN 2001). All taxa listed as Critically Endangered, Endangered and Vulnerable qualify as Threatened. The threatened categories form a part of the overall scheme. It will be possible to place all taxa into one of the categories. The category Data Deficient is not a threatened category, although it indicates a need to obtain more information on a taxon to obtain the appropriate listing. The old IUCN category Lower Risk (LR in IUCN 1994) is replaced by Near Threatened (close to qualifying for Vulnerable) and Least Concern (evaluated but not threatened).

Regional Red Lists

The IUCN Red List Categories and Criteria were originally designed for global taxon assessments. Later on, guidelines have been developed by the IUCN for the application at regional, national or local levels (e.g. Gärdenfors et al. 2001). When applied at national or regional levels, it must be recognized that a global category may not be the same as a national or regional category for a particular taxon. For example, taxa classified as 'Least Concern' globally might be 'Critically Endangered' within a particular region where numbers are very small or declining, perhaps only because they are at the margins of their global range. Conversely, taxa classified as 'Vulnerable' on the basis of their global declines in numbers or range might be 'Least Concern' within a particular region where their populations are stable.

2.5 Geographical distribution

For the evaluation of the geographic distribution of species, the degree to which species are characteristic for Europe is considered to be the most important selection criterion. Species for which the geographical distribution is restricted to a certain area are called 'endemic species'. Therefore, the definition of endemism is scale dependent. Within the scope of the present publication, endemism is defined at the European scale, and thus the European proportion of the global distribution area of a given species is indicative. In Van Opstal et al. (2000), a distinction in five categories was proposed with a declining degree of endemism: strictly endemic (e); highly characteristic, with > 90 % of distribution area in Europe (hc); characteristic, with 50-90 % of distribution area in Europe (c); not characteristic, with < 50 % of distribution area in Europe (nc); and outside Europe (o). For some taxonomic groups the available distribution data are only partly compatible with the proposed geographic delimitation of the Europe. In discussing the results, these aspects are taken into account.

2.6 Data-sources and data-processing

2.6.1 Vascular plants

The database for vascular plants is based on the species checklist as used in [SynBioSys Europe](#) (see Table 3). Flora Europaea (Tutin et al. 1964-1980) formed the basis for this SynBioSys species list, but Flora Europaea is geographically incomplete and taxonomically outdated. Therefore [SynBioSys Europe](#) is developing a more updated (although provisional) species list for the European vascular and cryptogam flora, including bryophytes, lichens and stoneworts (Schaminée & Hennekens 2005). This list will be compiled by bringing together and analysing national floras, using the software package [Turboveg](#) (Hennekens & Schaminée 2001). Currently about 275,000 species records are imported from 25 Turboveg species lists and stored in a database. It should be noted that the species list of Flora Europaea, which forms the basis of our study, is not complete with regard to geographical coverage (several species list are not yet fully integrated) and not fully compatible with the taxonomy as used in the 2004 IUCN Red List and legal lists. Furthermore, the taxonomy of Flora Europaea is rather old-fashioned, which means that quite a number of recently described species are not taken into account.

The delimitation of plant families and genera is according to Brummitt (1992), but for the content of genera reference is made to a wide range of taxonomic treatments including papers on individual species, monographic treatments, standard floras, and global checklists (e.g. Farjon 2001). The taxonomy of plant families and orders is undergoing major revision at present (see for example, the [Angiosperm Phylogeny Site](#)). Until such time that some level of stability is achieved, the orders of Cronquist (1981, 1988) are followed. Specific names are frequently checked against the [International Plant Names Index](#) that incorporates Index Kewensis. The Species Checklist will be linked to the [Euro+Med PlantBase](#). The Euro+Med Project will provide an on-line database and information system for the vascular plants of Europe and the Mediterranean region, against an up-to-date and critically evaluated consensus taxonomic core of the species concerned (Caddick 2002, see also www.euromed.org.uk/).

Within [SynBioSys Europe](#) it is possible to show country-based distribution patterns for each individual plant species, based on Flora Europae and national species lists. For 3,556 species more detailed spatial information is included based on distribution maps from the [Atlas Florae Europaeae](#) project (Jalas et al. 1972-1999, Kurtto et al. 2004; © Finnish Museum of Natural History). The Atlas Florae Europaeae uses a 50 x 50 km grid modified from Military Grid Reference System (MGRS).

Table 3: Characteristics of the database for vascular plant species.

<i>Database source</i>	The database is compiled in the present project in close cooperation with the SynBioSys Europe initiative (Alterra, European Vegetation Survey) and includes many external data sources (see text).
<i>Geographic coverage</i>	All 45 countries from the Council of Europe, as covered in Flora Europaea (including Azores, Faeroe Islands, Iceland and Svalbard, but excluding Madeira, the Canary Islands, Cyprus, the East Aegean Islands (Greece), Novaya Zemlya, Franz Joseph, and the whole of the Caucasus); the eastern border is defined by the Ural Mountains and the Ural River to the Caspian Sea.
<i>Source distribution data</i>	Country-based data are compiled in close cooperation with the SynBioSys Europe project. Grid based data from the Atlas Florae Europaeae project (© Finnish Museum of Natural History) were used.
<i>Number of species included</i>	15,974 species, including 1,909 apomictic species and some relevant subspecies (listed in legal documents or on the IUCN Red List).

Between 1972 and 2004, the [Committee and Societas Biologica Fennica Vanamo](#) have published thirteen volumes of the Atlas. Until now, the

maps are covering more than 20 % of the vascular plants of the European flora (> 4,300 taxa). The distribution maps will be incorporated in [SynBioSys Europe](#). For the degree of endemism we used two data sources. First, we screened Flora Europaea for species that are indicated as European endemics. Additionally, we used the distribution maps of Hultén & Fries (1986) and from the Atlas Florae Europaeae project. Species that are endemic to a single country (or two for species occurring in small countries) were marked as ‘single country endemics’.

Table 4: Red List categories from the 1997 IUCN Red List of Threatened Plants (Walter & Gillett 1998).

RL Category	Criteria
Extinct (EX)	Taxa that are no longer known to exist in the wild after repeated searches of the type localities and other known or likely places.
Endangered (E)	Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are taxa whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.
Vulnerable (V)	Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating. Included are taxa of which most or all the populations are decreasing because of over-exploitation, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.
Rare (R)	Taxa with small world populations that are not at present Endangered or Vulnerable but are at risk. These taxa are usually localised within restricted geographic areas or habitats or are thinly scattered over a more extensive range.
Indeterminate (I)	Taxa known to be Extinct, Endangered, Vulnerable, or Rare but where there is not enough information to say which of the four categories is appropriate.

The list of single country endemics is based on old distribution data as given in *Flora Europaea* and should therefore be regarded as preliminary. Information on endemism is lacking in the database for species not included in *Flora Europaea*.

For the global Red List status we included both the 2004 listing (IUCN 2004) and the 1997 listing (Walter & Gillett 1998). The 2004 Red List does not include all the plants that were assessed for the 1997 Red List of Threatened Plants. This is because the 1997 list uses the pre-1994 Categories (see Table 4) which are incompatible with the more recent Categories and Criteria (IUCN 2001). The database with vascular plant species (see Table 3) not only includes information relevant to the three main criteria (legal protection, threat and geographical distribution) but also additional information on aspects like taxonomic status (e.g. indication for apomictic reproduction, subspecies), administrative data (e.g. species number, county codes, number of countries covered by the distribution area), and remarks.

Within SynBioSys Europe it will be possible to link the information at the species level, as compiled in the present project, to information at the level of habitats and landscapes. This enables the development of query routines to highlight environmental conditions necessary for sustaining plant communities and habitats (see Chapter 4.3).

2.6.2 Butterflies

For the analysis of butterfly species, we could make use of a database from Butterfly Conservation Europe (managed by Van Swaay) with information on global and European threat status, legal protection, degree of endemism and country-based distribution data (see Table 5). In 1999 the Council of Europe published the Red Data Book of European Butterflies, written by Van Swaay from [Dutch Butterfly Conservation](#) and Warren from British Butterfly Conservation (Van Swaay & Warren 1999). Distribution and trend data were collected for each country through a network of over 50 expert national compilers who each completed a questionnaire in 1997. Data were obtained for all countries except Iceland and the Caucasian Republics. The resulting database allowed an objective quantitative assessment of each species' threat and conservation status. Threat status was assessed by following the 1994 IUCN criteria as closely as possible, adapting them for use with the

distributional data available for butterflies. For species restricted to Europe (189 endemic species, 33 % of the total), the 1994 IUCN-criteria were applied directly while for species that also occur outside Europe the criteria were adapted for use at the continental level. For butterflies, the species lists from the Bern Convention and the Habitats Directive are the same, and therefore these lists are combined in the ‘target species’ database.

Table 5: Characteristics of the database for butterflies.

<i>Database source</i>	Swaay & Warren (1999) from Dutch Butterfly Conservation (Vlinderstichting) and British Butterfly Conservation, with some additions in the present project (e.g. new species on Habitats Directive).
<i>Geographic coverage</i>	All 45 countries within the Council of Europe, including the Macaronesian Islands (Azores, Madeira, and the Canary Islands), Russia to the Ural mountains and the whole of Turkey.
<i>Source distribution data</i>	Country-based data from Van Swaay & Warren (1999) will be incorporated in SynBioSys Europe.
<i>Number of species included</i>	576 (including 118 species that are restricted to the Asian part of Turkey).

The database on European butterflies from the Butterfly Conservation Europe also includes an assessment of the threat status in Europe and a classification of the conservation status in Europe (SPEC category, see Table 6). The assessment includes five categories based on the degree of endemism and threat status. The assessment used the method developed for birds by Tucker & Heath (1994).

Table 6: Categories of the conservation status of species of European conservation concern (SPECs) as used in 'The red data book of European butterflies' (Van Swaay & Warren 1999).

SPEC category	Description
SPEC 1	Globally threatened species that are restricted to Europe: 22 species.
SPEC 2	Concentrated in Europe (endemics) and threatened in Europe (unfavourable conservation status): 5 species.
SPEC 3	Not concentrated in Europe but threatened in Europe (unfavourable conservation status): 47 species.
SPEC 4a	Concentrated in Europe (endemics) but not threatened in Europe (favourable conservation status): 167 species.
SPEC 4b	Not concentrated in Europe and not threatened in Europe (favourable conservation status): 33 species.

2.6.3 Freshwater fishes

For freshwater fishes there was no appropriate Pan European species list available and the 'target species' database for fishes was therefore compiled from various sources (see Table 7). The names of families and their classification into species follows Eschmeyer (1990), but a number of species have been adapted to the new classification concept as presented in Eschmeyer (1998). Some of the fish names used are derived from national sources or from IUCN Specialist Groups. Extensive recent taxonomic changes will mean that the status of many fish species on the Red List needs to be re-assessed. This was not possible for the current Red List, and the names and assessments are left as they appeared in the 1996 Red List. An updated version of Eschmeyer's work is maintained as part of a comprehensive database (FishBase, Froese et al. 2003) developed at the WorldFish Center. [FishBase](#) along with a number of other taxonomic datasets is available through [Species 2000](#). Species that are migratory according to Maitland 1991 and Froese et al. 2003 are marked. The present database should be regarded as a preliminary list, since several rare species are lacking, synonyms are not fully checked and distribution data are coarse and incomplete. Moreover, the IUCN assessment of the threat status in the 2004 Red List dates from 1994 and needs revision.

Table 7: Characteristics of the database for freshwater fishes.

<i>Database source</i>	European species list based on Elek 1980, Maitland 1991, 1994, Foppen 2000, and the listings of legal conventions and the IUCN 2004 Red List. The species list was checked against the EUNIS species database for fishes. Relevant data for the species list were derived from Froese et al. 2003 (FishBase): water type, distribution, legal protection, and IUCN threat status.
<i>Geographic coverage</i>	All 45 countries within the Council of Europe.
<i>Source distribution data</i>	Muus & Dahlstrøm 1967, Maitland 1991, Froese et al. 2003 (FishBase).
<i>Number of species included</i>	341 species and 9 relevant subspecies (listed in legal documents or on the IUCN Red List).

2.6.4 Amphibians

The database for amphibians is based on Stumpel (2002a) and includes 88 species (see Table 8). Three new species were added to this database (marked in the field ‘new’). The resulting database with 91 species covers Europe in a broad sense, including the whole area of Turkey and the Caucasus. The species occurring in Europe as delimited in this study are marked. This list sums up to a total of 85 species. Nomenclature generally follows Frost (1985) as updated by Duellman (1993). The [Amphibian Species of the World Database 3.0](#) is now available on the World Wide Web and is updated regularly, so this has become the major data-source for recent taxonomic changes. Another important web site for documentation on amphibian species, especially those in decline is the [Amphibian Web Database](#). Within the framework of the project

‘Important Herpetofaunal Areas in Europe’ an updated species list is in preparation (Stumpel et al. in prep.).

Table 8: Characteristics of the database for amphibians.

<i>Database source</i>	Stumpel 2002a; Baillie & Groombridge 1996, IUCN 2004.
<i>Geographic coverage</i>	Europe sensu stricto: all 45 countries from the Council of Europe, as covered in Flora Europaea (including Azores, Faeroe Islands, Iceland, Jan Mayen and Spitsbergen, but excluding Madeira, the Canary Islands, Cyprus, Novaya Zemlya, and the whole of the Caucasus; the eastern border is defined by the Ural Mountains and the Ural River to the Caspian Sea). Europe sensu lato: including Asiatic Turkey, Cyprus, Transcaucasia, the Canary Islands, Salvagens Islands, and Madeira.
<i>Source distribution data</i>	Gasc et al. 1997, © Societas Europaea Herpetologica (SEH) and Muséum National d’Histoire Naturelle (MNHN, Paris, France): 50*50 grid cell data for Europe sensu stricto; supplemented with Baran & Atatür 1997.
<i>Number of species included</i>	88 species in Europe sensu lato; 82 in Europe sensu stricto; 4 relevant subspecies (listed in legal documents or on the IUCN Red List).

Distribution data on amphibians in Europa were collected in ‘The atlas of amphibians and reptiles in Europe’ (Gasc et al. 1997) by the [Societas Europaea Herpetologica](#) (SEH) under the supervision of the Committee,

the Muséum National d'Histoire Naturelle (Paris, France). The Service du Patrimoine Naturel drew the maps for 85,067 data concerning 62 Amphibian and 123 Reptile species, and covers all countries west of the Ural Mountains. Each species is represented in the Atlas by a distribution map using 50 x 50 km UTM meshes. These are supplemented by a bibliography containing more than 1,300 entries. Information on the extinction or introduction of certain species is also shown on the distribution maps. This preliminary set of distribution maps will have to be completed and regularly updated. The grid based distribution data are integrated within SynBioSys-Europe. The frequency of occurrence within 11 geographical regions (see Table 9) is given in the 'target species' database. The judgment of endemism is mainly based on Andrén et al. 1991, 1993, and Gasc et al. 1997.

Table 9: Geographical regions used in the database.

Number	Geographical region
1	North, western and central Europe
2	Iberian peninsula and Mediterranean France, Madeira
3	Balearic islands
4	Corsica and Sardinia
5	Italy, Sicily and Malta
6	East Adriatic coastal area
7	South-eastern Europe
8	South-West Russian peninsula
9	Caucasus-area (e.g. Dagestan, Azerbaijan, Armenia, Georgia)
10	Macaronesian Islands
11	Turkey, Cyprus

2.6.5 Reptiles

The database for reptiles is based on Stumpel (2002b) and includes 217 species (see Table 10). The database covers Europe in a broad sense, including the whole area of Turkey and the Caucasus. The species occurring in Europe as delimited in this study are marked. This list sums up to a total of 146 species. Distribution data on reptiles in Europa were collected in 'The atlas of amphibians and reptiles in Europe' (Gasc et al. 1997) by the [Societas Europaea Herpetologica](#) (SEH) under the supervision of the Committee, the Muséum National d'Histoire Naturelle (Paris, France). See under 'Amphibians' for further details. The

nomenclature of reptiles generally follows the [EMBL Reptile Database](#) compiled by Peter Uetz (Uetz and Etzold 1996). This is rapidly becoming the standard global checklist for reptiles. Within the framework of the project ‘Important Herpetofaunal Areas in Europe’ an updated species list is in preparation (Stumpel et al. in prep.).

Table 10: Characteristics of the database for reptiles.

<i>Database source</i>	Stumpel 2002b with some supplements
<i>Geographic coverage</i>	Europe sensu stricto: all 45 countries from the Council of Europe, as covered in Flora Europaea (including Azores, Faeroe Islands, Iceland and Svalbard, but excluding Madeira, the Canary Islands, Cyprus, Novaya Zemlya, and the whole of the Caucasus; the eastern border is defined by the Ural Mountains and the Ural River to the Caspian Sea). Europe sensu lato: including Asiatic Turkey, Cyprus, Transcaucasia, Canary Islands, Salvagens Islands, and Madeira.
<i>Source distribution data</i>	Gasc et al. 1997, © Societas Europaea Herpetologica (SEH) and Muséum National d’Histoire Naturelle (MNHN, Paris, France): 50*50 grid cell data for Europe sensu stricto, supplemented with Baran & Atatür 1997 and Böhme 1998.
<i>Number of species included</i>	Europe sensu lato: 217 species and 11 relevant subspecies (listed in legal documents or on the IUCN Red List); Europe sensu stricto: 146 species and 7 relevant subspecies.

2.6.6 Birds

The ‘target species’ database is based on a species list for birds managed by SOVON Dutch Centre for Field Ornithology and includes (after some additions) 514 species (see Table 11). Some species names have been changed according to the nomenclature followed in ‘Birds in Europe 2’, BirdLife International 2004b). Subspecies are not included in the database, although several subspecies are acknowledged at the species level in recent taxonomic studies. For species that are considered as species of conservation concern (‘SPEC’), it may be worthwhile to treat these (sub)species separately for the further implementation of the concept of ‘target species’. This applies for example for the Great Grey Shrike (*Lanius excubitor* s.l., SPEC3) which has been divided into Northern Gray Shrike (*Lanius excubitor* s.s.) and the Southern Gray Shrike (*Lanius meridionalis*). Another example of a taxon that is of interest from a nature conservation perspective is the island-endemic Corsican Finch (*Serinus corsicanus*) which is considered specifically distinct from Citril Finch (*Serinus citronella* s.l., Non-SPEC). These two recently acknowledged species of conservation concern have been added to the species list, although information on population size and threat status is incomplete.

In November 2004, BirdLife International published a fully updated overview of the bird species occurring in the European Union (BirdLife International 2004a) and in Pan-Europe (‘Birds in Europe 2’, BirdLife International 2004b). Both publications presents data on population size and distribution for 484 respectively 453 species occurring in Europe and identifies those that are Species of European Conservation Concern (SPEC). Furthermore the publication gives data on population trends since 1994, when the last BirdLife International publication on the status of birds in Europe was published (‘Birds in Europe 1’, Tucker and Heath 1994).

In the bird-database, information of the European threat status (SPEC category) is derived from ‘Birds in Europe 2’ (Birdlife International 2004a,b), while the global threat status is derived from IUCN (2004). BirdLife International is appointed by IUCN as the official global Red List Authority for birds. It has prepared four global Red List assessments to date (in 1988, 1994, 2000 and 2004).

Table 11: Characteristics of the database for birds.

<i>Database source</i>	Database compiled by Henk Sierdsema (SOVON, based on Tucker & Heath 1994, and Van Duuren 1994) for the basic list of 514 Pan European species and BirdLife International (2004a) for the list of 453 species in the European territory of the 25 Member States of the European Union (as of May 2004).
<i>Geographic coverage</i>	Pan Europe, including the the Macaronesian Islands (Azores, Madeira and the Canary Islands), Cyprus and the whole of Turkey.
<i>Source distribution data</i>	Hagemeijer & Blair 1997.
<i>Number of species included</i>	514 in the basic Pan European species list and 453 species that breed or winter regularly in the 25 EU member states.

The analysis in ‘Birds in Europe 2’ was fed into the 2004 IUCN Red List of Threatened Animals (see table 12). At the European scale, BirdLife International has developed objective criteria for assessing the conservation status of birds at the European scale, taking into account the requirements of the EU Birds and Habitats Directives and the IUCN guidelines on using Red List categories at regional scale. This resulted in a classification of various categories for Species of European Conservation Concern (SPECs) according to the methodology of Tucker & Heath (1994; see Table 13). The SPEC status refers to many more species than just those meeting the global IUCN Red List criteria. The selection of ‘target species’ is based on the SPEC status in ‘Birds in Europe 2’ (Birdlife International 2004a, 2004b) and includes species categorized as SPEC 1, 2, and 3.

Distribution data are based on Hagemeijer & Blair 1997. In accordance with Tucker & Heath (1994) we marked species in the ‘target species’ database as endemic or characteristic for Europe if more than 50 % of

the breeding or wintering population or range occurs in Europe. This assessment is based on data in 'Birds in Europe 2' (BirdLife International 2004b).

Table 12: Population status categories in Birds in Europe 2 and their relation to the IUCN Red List and the Habitats Directive's conservation status categories (from BirdLife International 2004b, 2004c)

Categories under the Habitats Directive	Population status categories in Birds in Europe 2	IUCN Red List Categories
Favourable conservation status	Secure	Least concern
Unfavourable conservation status	Rare Localized Declining Depleted	Near threatened
	Vulnerable Endangered Critically endangered Extinct	Threatened

Table 13: Categories of species of European conservation concern (SPECs) as used in Birds in Europe 1 and 2 (Tucker & Heath 1994, BirdLife International 2004) based on a combination of threat status in the European Union and the degree of endemism in Europe. W indicates that the category relates to the winter population.

SPEC category	Description
SPEC 1	Globally threatened species, i.e. classified as globally threatened, Near Threatened or Data Deficient.
SPEC 2	Concentrated in Europe and with an Unfavourable Conservation Status.
SPEC 3	Not concentrated in Europe but with an Unfavourable Conservation Status.
Non-SPECE	Concentrated in Europe but with a Favourable Conservation Status.
Non-SPEC	Not concentrated in Europe and with a Favourable Conservation Status.

2.6.7 Mammals

The database of European mammals is based on ‘The atlas of European mammals’ Mitchell Jones et al. (1999) with some additions (see Table 14). The names of mammal families and contents of families follows ‘Mammal Species of the World’ (Wilson and Reeder 1993). Species nomenclature generally also follows this source with very few exceptions (see Mitchell Jones et al. 1999, pg. 5 for details). The recent sixth edition of Walker’s ‘Mammals of the World’ (Novak 1999) proved to be very useful in clarifying various species concepts and for obtaining information for the documentation requirements for the IUCN Red List. Although the ‘target species’ database only includes species, an exception is made for subspecies that are globally threatened and that would be missed in the selection of target species otherwise.

Table 14: Characteristics of the database for mammals.

<i>Database source</i>	Based on Appendix 1 in Mitchell Jones et al. 1999 (with some additions for new listings on legal conventions).
<i>Geographic coverage</i>	All countries from the Council of Europe (including Macaronesië (Azores, Madeira, Canary Islands) Faeroes Islands, Iceland and Svalbard, but excluding Cyprus, Novaya Zemlya and the whole of the Caucasus; the eastern border is defined by the Ural Mountains and the Ural River to the Caspian Sea).
<i>Source distribution data</i>	Mitchell Jones et al. 1999, © Societas Europaea Mammalogica. Due to a lack of data Russia, Belarus, Ukraine and Moldova are not covered.
<i>Number of species included</i>	295 species and 9 relevant subspecies (listed in legal documents or on the IUCN Red List).

The distribution data of European mammals are derived from 'The atlas of European mammals' Mitchell Jones et al. (1999). As for several other major species mapping projects at the European scale (e.g. vascular plants, birds, amphibians and reptiles) the distribution data in this atlas are stored in the UTM grid system. The basic mapping unit was the 50x50 grid cell.

The distribution data were linked in the present project to the major Biogeographical Zones such as distinguished by the Council of Europe. The presence degree in the various zones was indicated according to the scale in Table 15. Because Russia, Belarus, Ukraine and Moldova are not covered in the distribution maps, the presence of species in the Biogeographical Zones at the eastern border of Europe (Boreal, Continental, Steppic, Black Sea and Anatolian) is indicated with 'x'. For the zones 'Alpine' and 'Mediterranean' an assessment is given based on the area covered in the atlas (>75 %).

2.7 Taxonomic notes

Species level

Since taxonomy is a dynamic discipline, it is not possible to provide absolute species numbers that are stable over time. The database is focussed on the species level. For most species groups there is too much controversy on the taxonomic delimitation of subspecies and therefore it is not feasible to provide a relatively stable listing of subspecies (e.g. Mace 2004). In accordance to this, the listings of species in the Birds Directive and the Habitat Directive also focus on the species level. Endemic subspecies are only included if they are considered of particular conservation concern. Examples include: Tenerife Great Spotted Woodpecker (*Dendrocopos major canariensis*), Sicilian Rock Partridge (*Alectoris graeca whitakeri*), Tatra Chamois (*Rupicapra rupicapra tatarica*), Corsican Red Deer (*Cervus elaphus corsicanus*), the Dutch Root Vole (*Microtus oeconomus arenicola*), and the Aurora's Alpine Salamander (*Salamandra atra aurorae*) from the French / Italian Alps. Subspecies listed on one of these listings are included in the database and marked as subspecies.

Apomictic species

Many genera of vascular plants in Europe include morphologically distinct taxa characterised by asexual seed production (apomixes). These apomictic taxa are often treated as species. Genera with a high proportion of apomictic taxa include: *Alchemilla*, *Hieracium*, *Potentilla*, *Rubus*, *Sorbus*, and *Taraxacum*. When apomictic taxa are treated as species, it may be recommendable to admit only taxa into regional Red Lists that are stabilized as an independent taxon within certain ecosystems (Gregor & Matzke-Hajek 2002). The inclusion of threatened apomictic taxa into the list of 'target species' only makes sense if the taxonomic delimitation of the taxon relative to non-threatened species is known. For many apomictic groups the taxonomy, however, is problematic. A large study of 44 sections or species groups within the genus *Taraxacum*, for example, revealed conflicting results between DNA-sequences and morphological classifications (Kirschner et al. 2003). Within the database the option is given to exclude apomictic species from the list of target species. Some species are not apomictic in a strict sense, but more or less behave like apomicts because of specific sexual reproduction mechanisms. This applies to genera such as *Rosa* and *Crataegus*.

2.8 Database structure

The structure of the database on target species is fully compatible with the database structure of the expert system SynBioSys Europe (see Schaminée & Hennekens 2001). This enhances the possibility to integrate the target species database within SynBioSys Europe. Therefore, in the near future, the information system SynBioSys Europe may function as a platform for target species (see Chapter 4.3).

The proportion of species regarded as target species is dependent on choices with regard to the application of the selection criteria. For each taxonomic group, the database includes information of relevance to the various criteria, thereby enabling user-defined data queries. In this report, for comparative means, provisional selections have been carried out, based on species that fulfil at least one criterion. For most taxonomic groups, the resulting lists were relatively long, and therefore additional criteria were used for vascular plants, butterflies, amphibians, reptiles, and birds (see chapter 3 for details per taxonomic group). Thus, while the usage of the three criteria was comparable across taxonomic groups,

the further selection of target species from these criteria was differentiated between the various taxonomic groups.

The grid-based distribution data might also be integrated in SynBioSys Europe. The application of distribution data is constrained by sampling bias and determined by the scale of the information. As an example two different distribution maps of the European Beaver are shown, one based on 50x50 km² grid cells and the other based on more detailed raster information (Fig 5). For the selection of actual and potential PEEN habitats, this problem can be resolved partly by combining distribution maps with other thematic maps (e.g. Mùcher et al. 2004).

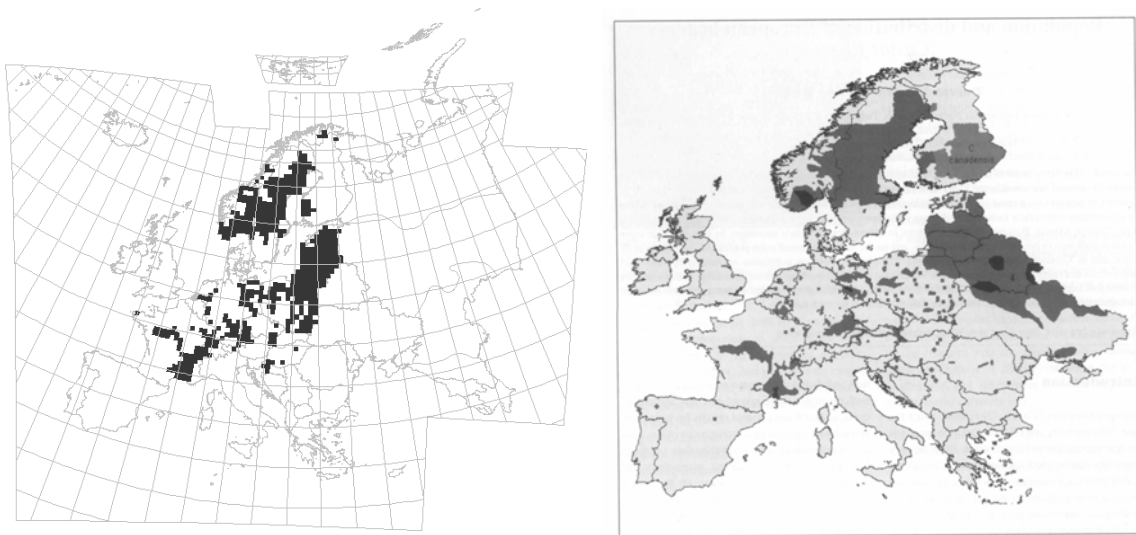


Figure 5: Distribution maps of European Beaver (Castor fiber). Left: based on “The atlas of European mammals” (Mitchell-Jones et al. 1999, © Societas Europaea Mammalogica). Right: based on a more extensive and detailed overview of Hallay & Rosell (2003). Squares are reintroduction sites.

An example of such a thematic map is the digital map of environmental zones within Europe (see Fig. 6). This map can be linked to the available grid-based distribution data in order to give an ecological characteristic of species distribution patterns. Within the individual geographical regions, the presence degree of the species in question is simplified according to Table 15.

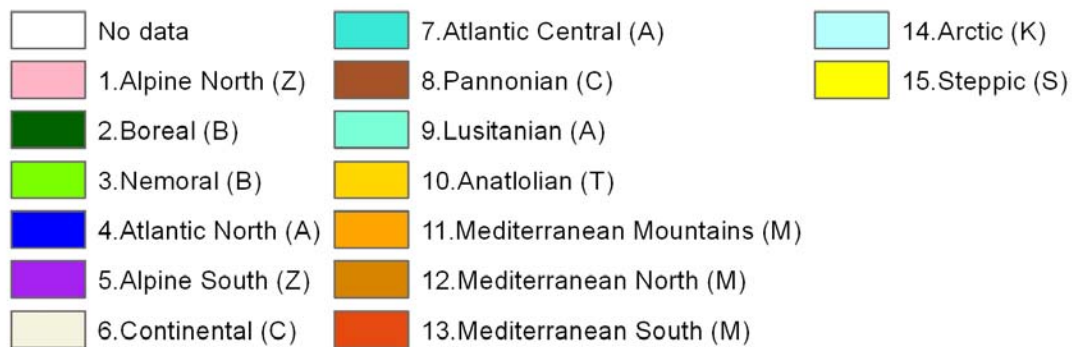
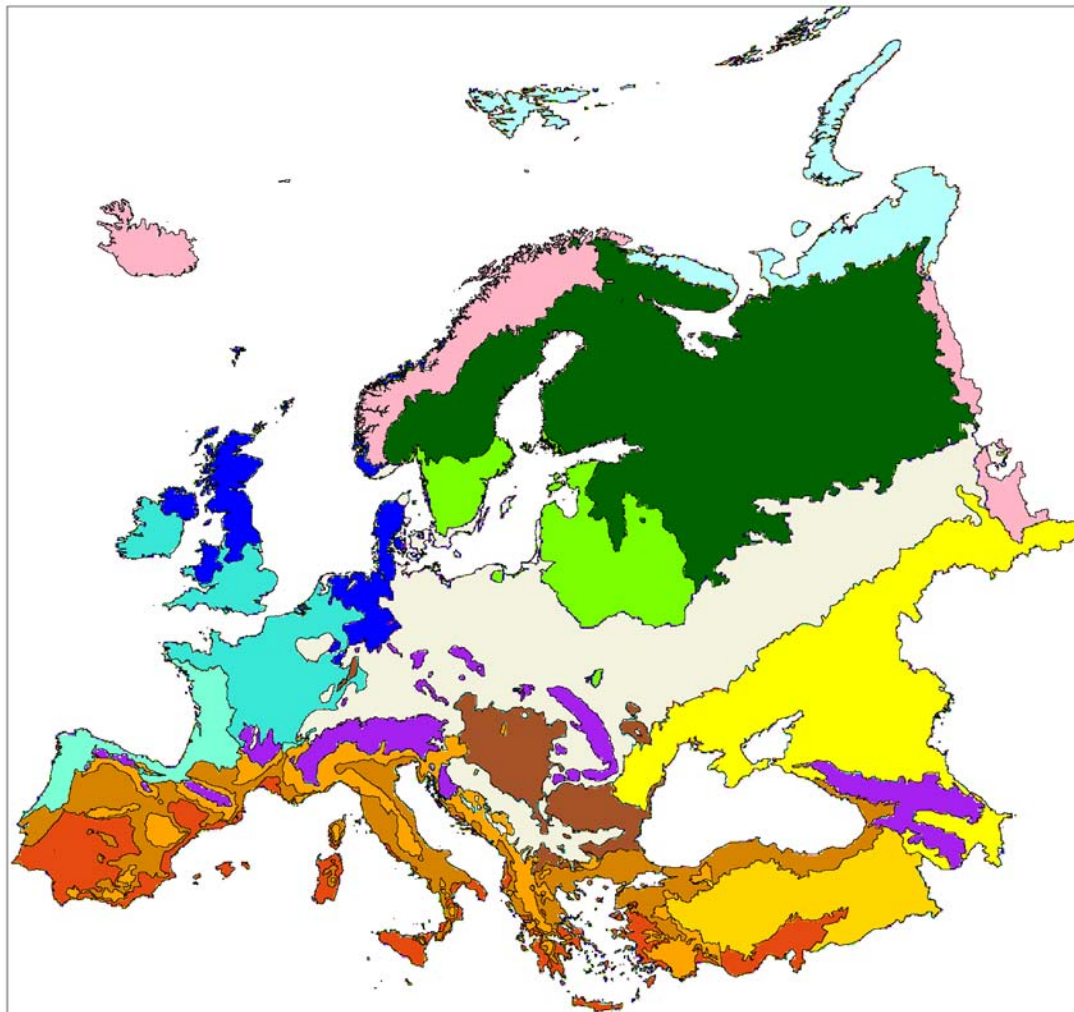


Figure 6: Environmental classification of Europe based on bioclimatic conditions relevant for vascular plants through principal component analysis and statistical clustering of climatic and topographic variables (based on Múcher et al. 2004; and Metzger et al. in prep.).

Table 15: Coding of the presence degree within geographical regions or environmental zones.

Code	Presence degree (frequency of occurrence)
	No data available
x	Present, frequency not known
-	0 %
+	0-5 %
1	5-25 %
2	25-50 %
3	50-75 %
4	> 75 %

3 Results

3.1 Plants

3.1.1 Vascular plants

Geographical distribution

The database for vascular plant species includes 15,974 species, including 1,909 apomictic species. Since the taxonomy of apomictic species is complicated and their distribution is often insufficiently known, we only considered non-apomictic species. For the species for which we have distribution data (12,698; apomictic species excluded), 5,029 species (40 %) are European endemics. Endemism in itself should not be the sole criterion to assign species as ‘target species’. Some European endemics have a large range in Europe and are common within large parts of this range. Examples of European endemics that occur in more than 25 European countries include: *Carex pilulifera*, *Epilobium collinum*, *Arum maculatum*, *Bromus ramosus*, *Carex pilulifera*, *Quercus petraea*, *Fagus sylvatica*, *Galeopsis tetrahit*, and *Thymus pulegioides*. On the other hand the list with European endemics, contains 1,818 species that occur only in a single county. These so called ‘single country endemics’ have, a relatively high extinction risk, due to their small range size. Of this group 1,118 (61 %) are listed on the IUCN global Red List (IUCN 1998, 2004).

The highest proportions of endemic species occur in the Southern parts of Europe (Table 16). Especially the Mediterranean Islands and the Iberian, Italian and Balkan Peninsulas are very rich in endemic species. The northern part of Europe is relatively poor in endemic species.

Threat

From the 14,065 non-apomictic vascular plant species included in the database, 1,888 plant taxa can be considered as globally threatened according to the IUCN 1997 global Red List (Walter & Gillett 1998). In combination with the new assessments for the IUCN 2004 global Red

List, 1,939 European vascular plant species (14 %) can be regarded as globally threatened. From these species, the great majority (94 %) is endemic for Europe. The threatened taxa are concentrated in the Mediterranean Islands and the Iberian, Italian and Balkan Peninsulas (Table 16).

Table 16: Number of target species across various countries and regions.

	Number of species	Target species	Legal protection	Global threat	European endemics	1 country endemics
Albania	4234	111	19	90	951	20
Austria	4773	81	47	29	1298	19
Azores	1006	46	33	37	156	?
Belgium	2482	17	12	5	647	1
Britain	3127	49	17	31	739	27
Bulgaria	4865	150	55	104	1006	57
Corsica	3018	69	20	33	493	28
Crete	2410	202	27	138	354	147
Czechoslovakia, former	4235	83	63	39	992	8
Denmark	2230	18	14	3	635	2
Finland	2099	31	30	3	499	0
France	7309	181	70	113	1770	66
Germany	4404	62	45	25	1125	11
Greece	5906	492	64	338	1316	367
Hungary	3414	55	42	21	694	5
Iceland	772	10	9	1	112	2
Ireland	1808	11	6	4	433	1
Italy	7420	277	94	166	1770	136
Netherlands	2256	15	12	2	574	1
Norway	2439	48	41	7	633	7
Poland	3376	56	46	20	830	5
Portugal	3645	149	81	105	687	76
Romania	4976	131	61	79	1150	42
Russia, Baltics	2082	32	30	2	550	1
Russia, Caucasus	2888	86	23	49	382	46
Russia, Central	3127	90	53	41	614	14
Russia, East	2831	93	39	58	373	24
Russia, North	1944	44	37	9	302	6
Russia, West	4027	109	51	65	816	18
Sardinia	2673	70	26	49	344	30
Sicily	3242	87	29	57	400	45
Spain	7160	554	102	301	1750	445
Svalbard	274	13	12	1	11	1
Sweden	2752	43	38	7	771	4
Switzerland	4352	51	30	23	1186	4
Yugoslavia, former	6857	278	67	188	1730	127

It should be noted however that many rare species are not yet assessed by the IUCN with regard to their global threat status. Especially rare species that are recently described are probably underrepresented on the global Red List.

The European Topic Centre on Nature Protection and Biodiversity (ETC/NPB) has launched in 2003 a survey on the most threatened endemic and sub-endemic species in Europe. For all taxa falling under the categories 'extinct', 'extinct in the wild' and 'critically rare' in the IUCN global Red List for plants (Walter & Gillett 1998), useful information is stored in standard fact sheets and incorporated into a database (Richard et al. 2004).



Figure 7: *Iris marsica* (© photo: Orto Botanico dell'Università di Camerino). This rare and threatened *Iris* species occurs in Mediterraneo-montane grasslands and is endemic to Italy.

Legal protection

The Bern Convention lists 642 vascular plant species (4.6 %), while the Habitats Directive lists 484 plant species (3.4 %). Together both legal listings cover 774 species (5.5 %). From the 1,939 species that are globally threatened, 79 % is not listed on the Bern Convention or the Habitats Directive. This result shows that the European legal instruments provide no adequate protection for many threatened vascular plant species.

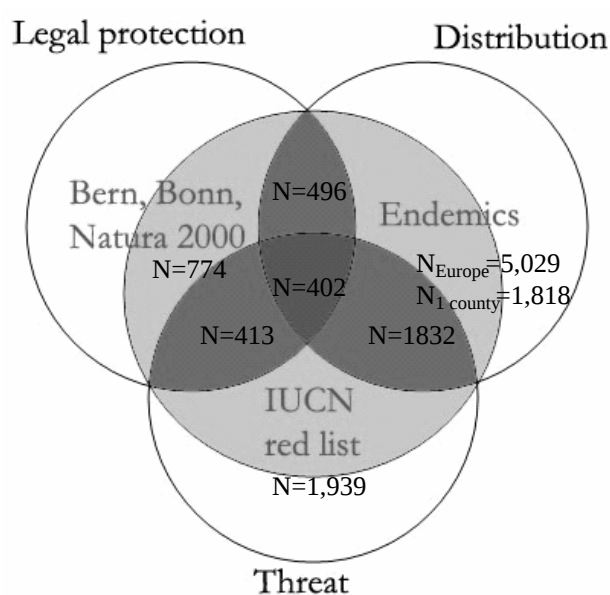


Figure 8: Excerpt of database target species for vascular plants (total number of vascular plant species is 14,065).

Selection of target species

Vascular plants were selected as 'target species' if they fulfil at least one criterion (see Fig. 8). Due to the high number of European endemics, we confined the selection of target species to those species that are endemic to a single county. This selection procedure does not take into account the range size or the abundance within these countries. For a more sophisticated selection of target species based on endemism, it is recommended to consult national Red Listings supplemented with

expert knowledge from regional specialists. The total list of target species for vascular plants comprises 2,968 species (Appendix 1). It should be noted that the species list of Flora Europaea, which forms the basis of our study, is not complete with regard to geographical coverage and not fully compatible with the taxonomy as used in the Red List and legal lists. Furthermore, the taxonomy of Flora Europaea is rather old-fashioned, which means that quite a number of recently described species are not taken into account.

3.2 Animals

3.2.1 Butterflies

Geographical distribution

Europe has a great diversity of butterflies, with 576 resident species. Only one-third of these species (190) are endemic for Europe, which means that they are found nowhere else in the world. From these endemic species 92 occur only within a single country.

Threat

Out of the 576 European species, 23 are globally threatened. According to the Red Data Book of European Butterflies (Van Swaay & Warren 1999) an additional 51 European species are threatened at the European scale because either they are restricted to a few sites or because they are declining rapidly in Europe as a whole. Van Swaay & Warren 1999 recommend that all 74 species that are assessed as threatened in Europe (i.e. classified as SPEC 1, 2 or 3) are subject to Species Action Plans, either individually or by grouping species with similar habitat requirements. Another 43 species are considered to be 'near threatened' because they are declining in a substantial part of their range. Thus 117 species are very rare or declining seriously in Europe, over 20 % of the total species number. All European countries (except Malta) contain one or more threatened species, but the highest concentrations are in the east, notably the European part of Russia, Ukraine and the Asian part of Turkey. Although low numbers of threatened species occur on the

Azores and Madeira, these islands are of considerable importance for several endemic and globally threatened species (SPEC1).

According to Van Swaay & Warren (1999) the most important habitats used by threatened European butterflies are grasslands (over half of species), followed by woodland and scrub (about 22 % of species); heath, bogs and fens (about 12 %). Many of these habitats are not climax communities and are maintained by traditional systems of farming, for example extensive grazing or cutting for hay.

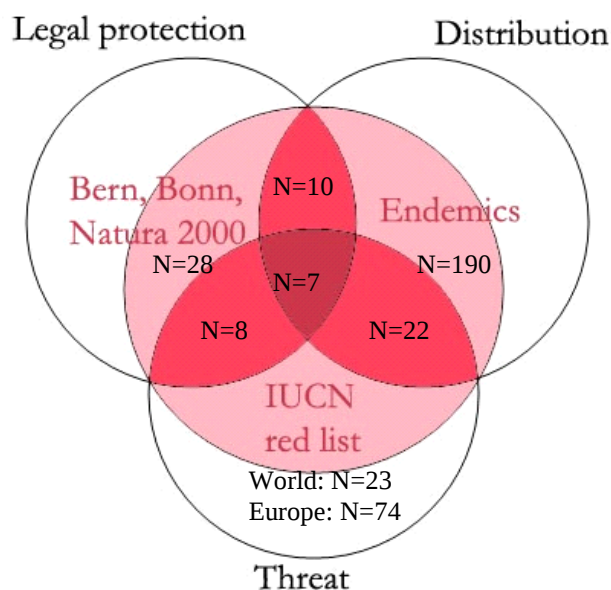


Figure 9: Excerpt of database target species for butterflies (total number of butterfly species is 576).

Legal protection

Only 28 butterfly species are listed on the Bern Convention or on the Habitats Directive, which implies that many threatened species do not have legal protection. From the globally threatened species eight species (38 %) do not have legal protection, while this number is 54 (73 %) for the species that are threatened at the European scale. Van Swaay & Warren (1999) propose that all globally threatened species (SPEC 1) and all species assessed to be ‘extinct’, ‘critically endangered’ or ‘endangered’ are added to the appendix II of the Bern Convention and to ad relevant

species to the EC Habitats Directive. The inclusion of species that are considered as 'vulnerable' at the European scale would considerably lengthen the list and may deflect the focus from other, higher priorities.

Selection of target species

For the use of butterflies as target species for the Pan European Ecological Network several selections are possible. We selected all 74 species that are assessed as threatened in Europe (i.e. classified as SPEC 1, 2 or 3) by Van Swaay & Warren (1999), as target species (see Appendix 2). This number can be further restricted by selecting only species classified as 'SPEC 1' (22 species). Alternatively species can be selected that fulfil at least two of the selection criteria (34 species). The latter approach has been taken by Van Swaay & Warren (2003) for the selection of Prime Butterfly Areas.

3.2.2 Freshwater fishes

Geographical distribution

Due to the limitations of the geographical coverage of the database for freshwater fishes (see § 2.6.3), the presented results are highly preliminary. Accurate information on the degree of endemism was not available. Nevertheless, such information would be of great importance for an appropriate judgement. It is known that many threatened fish species do have a small distribution range and must be regarded as European endemics. Some of these endemic species are vulnerable to extinction due to their very restricted range size. Examples include Ohrid salmon (*Acantholingua ohridana*) which occurs only in Lake Ohrid and its associated waters in Albania and Macedonia and Dalmatian barbelgudgeon (*Anlopyge huegelii*) which is restricted to Croatia and Bosnia-Herzegovina.

Threat

On a global scale 72 European species are threatened, while for another 71 species there was not enough information for an assessment of the

threat status ('Data Deficient'). Among these threatened species 10 are regarded as 'Critically Endangered' (IUCN 2004), while *Chondrostoma scodrensis*, endemic to Scutari, Albania and Montenegro, is considered by Harrison and Stiassny (1999) as possibly extinct.

The proportion of threatened species is remarkably high among the migratory species. From the 32 migratory species nearly half (15) are globally threatened and included on the IUCN Red List, while another seven species are classified as 'Data Deficient'. For this set of species the PEEN initiative may be of special importance. All of these 15 threatened migratory species have legal protection, except Macedonia Shad (*Alosa macedonica*).



Figure 10: The Fringebarbel sturgeon (*Acipenser nudipectus*) is included on the IUCN global Red List as endangered. This sturgeon species only occurs in the Caspian Sea and very rarely in the Black Sea and the Sea of Azov, while it recently became extinct in Aral Sea. For spawning it migrates from the feeding grounds in the seas to the associated northern and western rivers like the Danube, Kura and the Ural River (© photo: M. Pourkazemi from the IUCN Sturgeon Specialist Group).

Among the endangered migratory species are several Sturgeon species (see Figure 10). Especially the Amur River, the Black Sea, Azov Sea, and the Caspian Sea harbour several endemic species, such as Baical sturgeon (*Acipenser baerii*), Russian sturgeon (*Acipenser gueldenstaedtii*), and Fringebarbel sturgeon (*Acipenser nudiiventris*). Sturgeon species are highly valued for both caviar and meat. In the CITES Convention sturgeons are placed on Appendix II, meaning that all international trade in caviar and other sturgeon products would be strictly controlled by both importing and exporting countries. Given the continuing urgent situation, CITES has recommended highly reduced international trade until producer countries can show that any proposed trade will not threaten the species in the wild. Attention should be directed at threats posed by dams, mining, pollution, and the lack of reliable stock assessments, adequate legislation and enforcement effort (M. Pourkazemi, IUCN Sturgeon Specialist Group 2001).

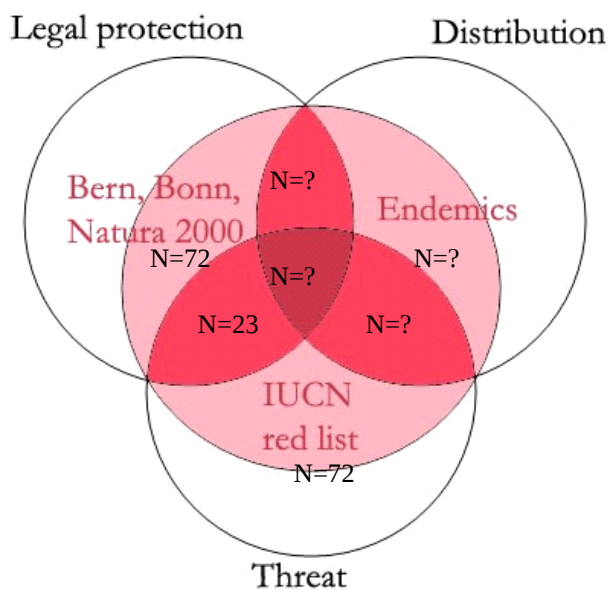


Figure 11: Excerpt of database target species for freshwater fishes (total number of species is 305).

Legal protection

In total 72 freshwater fishes have a strict legal protection and the great majority of these species is listed on Annex II of the Habitats Directive.

The Bern Convention includes 34 species on Appendix II, while an additional 111 species is included on Appendix III. From the 72 globally threatened species only 23 have a strict legal protection.

Selection of target species

A preliminary overview of the species numbers that fulfil the criteria 'globally threatened' and 'under legal protection' is given in Figure 11. All 117 species that fulfil at least one of the selection criteria were selected as target species (Appendix 3). Because for many species the geographical distribution and population trends are insufficiently known, the contents of the selection of target species in Appendix 3 should be regarded as indicative.

3.2.3 Amphibians

Geographical distribution

The European list of amphibian species includes a high proportion of species that are endemic to Europe (67 %), including many island endemics. Especially the Tyrrhenian Islands Sardinia and Corsica are important in this respect with seven endemic species (e.g. Tyrrhenian Tree Frog, Fig. 12). Other areas with high numbers of endemic species include the Iberian, Italian and Balkan Peninsulas.

Threat

According to the IUCN 2004 global Red List, 15 European species and two subspecies are 'globally threatened', whereas ten species as 'near threatened'. At the European scale, amphibians are still in decline (IUCN 2004). However there are some positive exceptions. The Mallorcan Midwife Toad (*Alytes muletensis*) is restricted to the island of Mallorca and in view of the severe population fragmentation and continuing decline of the already small global population, it was listed as 'critically endangered' in the 1996 IUCN Red List (Baillie & Groombridge 1996). Thanks to reintroductions and associated habitat creation and management programmes, both the range and number of populations of the Mallorcan Midwife Toad have moderately, but constantly, increased.



Figure 12: Tyrrhenian Tree Frog (*Hyla sarda*) is an endemic species on the Tyrrhenian Islands. © P. Mazzai. A potential danger to this species comes from its isolated island distribution. It has been studied little and there is insufficient data to make further statements about threat status, and therefore the species has no IUCN Listing.

The conservation status of the species is considered to have improved so much that it has been listed as ‘vulnerable’ in the 2004 IUCN Red List of Threatened Species (IUCN 2004). All globally threatened species are endemic to Europe and the six most threatened species (listed as ‘endangered’) are restricted to very small ranges: Sardinian Brook Salamander (*Euproctus platycephalus*; Sardinia), Supramonte Cave Salamander (*Speleomantes supramontis*; Sardinia), Karpathos Frog (*Rana cerigensis*; Karpathos Island and Rhodes Islands), Cretan Frog (*Rana cretensis*; island of Crete), Albanian Water Frog (*Rana shqipërica*; western Albania and southern Montenegro) and Luschan's Salamander (*Salamandra luschani*; Turkey and the Greek islands of Karpathos, Kasos and Saria).

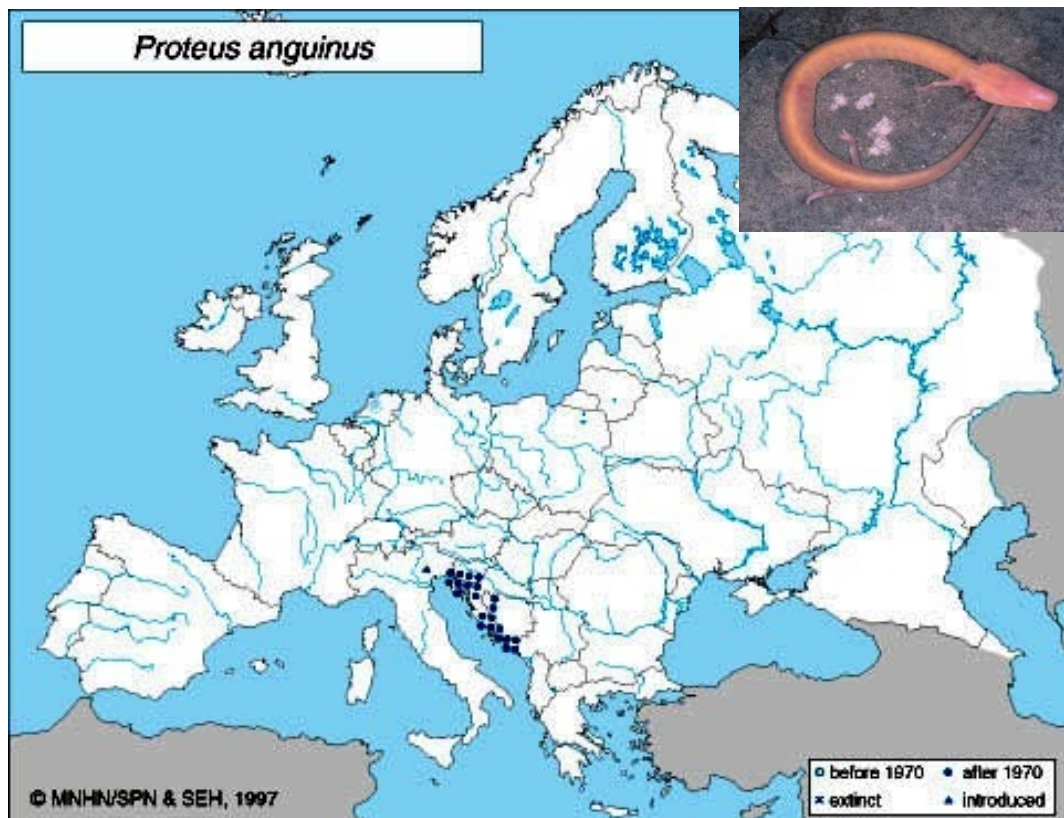


Figure 13: Distribution of the Olm or Blind cave salamander - *Proteus anguinus* (source: Gasc et al. 1997). The species is endemic to Europe, and is threatened due to its very specific habitat requirements. It prefers underground water systems in Karst formations, with calm, well oxygenated water and a constant low water temperature between 6° C and 12° C (Honnegger, 1981, Gasc et al. 1997). The species has a low dispersal ability and a high adult longevity, which is estimated at up to 58 years (Noellert and Noeller, 1992) and is therefore dependent on stable conditions in its core habitats. Photo: © J. McGuire.

Legal protection

The Bern Convention covers all European species of amphibians. The most threatened species are included in Annex II (46 ‘strictly protected fauna species’) and all other species are listed on Annex III (34 ‘protected fauna species’). In contrast to the Bern Convention the Habitats Directive does not include all amphibian species: Annex I includes 20 species and Annex II list an additional number of 26 species. Together the Bern Convention and the Habitats Directive provide a strict legal protection for 51 species. Some globally endangered species

are not covered, such as for example Karpathos frog (*Rana cerigensis*), and Cretan frog (*Rana cretensis*). This makes it difficult to designate areas for conservation for such species (Stumpel 2004). After the compilation of the species lists for the Bern Convention and the Habitats Directive some new species have been described from Europe or have changed taxonomic level from subspecies towards the species-level, e.g. *Bombina pachypus*, *Rana kurtmuelleri*, *Speleomantes strinatii*. These new species should be considered for inclusion on the appendices of the Bern Convention and the Habitats Directive. From the 15 globally threatened species, six species have no strict legal protection, although four of these species are include on Appendix III of the Bern Convention.

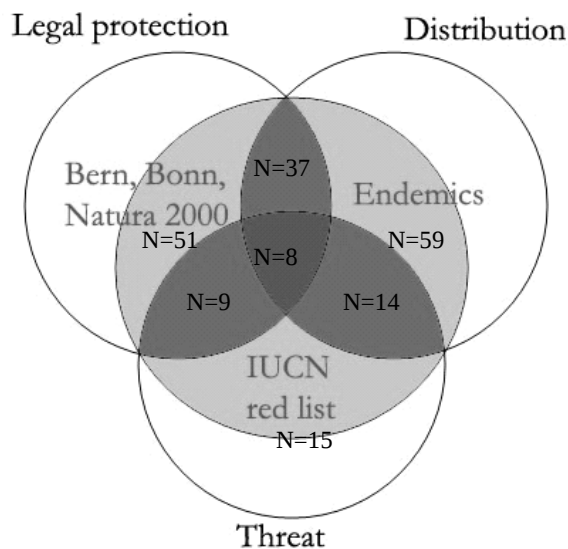


Figure 14: Excerpt of database target species for amphibians. The total number of species is 88.

Selection of target species

From the 88 European amphibian species 73 species fulfil at least one of the criteria (Fig 14). In order to make the concept of target species efficient for amphibians, it is recommended to use more strict selection criteria. One of the possibilities is the selection of species that fulfil at least two of the criteria. This approach is followed in the selection of species for the project 'Important Herpetofaunal Areas' (Stumpel & Corbett 2003) and in the present project we conform to this approach. The resulting list of 44 species and 3 subspecies is given in Appendix 4.



Figure 15: The four European Tree Frog species may be used as flagship species in the design of a Pan European Ecological Network. Photo on top: Larva of the European Tree Frog - *Hyla arborea* (© P. Weish). Although the Common Tree Frog has a large range, it displays a considerable decline in West and Central Europe, mainly caused by loss of habitats. However, in large areas of its southern part of the range, e.g. in Ukraine and the Caucasus, the species is still common and does not display population declines. The species is classified as 'near threatened' on the IUCN Global Red List. Photo on bottom: Mediterranean Tree Frog - *Hyla meridionalis* (© P.-Y. Vaucher). The threat status of this species is less well known. The main areas of distribution of the species in SW Iberia and S France seem to maintain a relatively high number of populations, although the rapid destruction of breeding biotopes and the use of pesticides, both a consequence of the loss of traditional agricultural methods, could modify the present situation in a short period of time.



Figure 16: Danube Crested Newt (Triturus dobrogicus). This species inhabits valleys within the Danube River system and lives in plain habitats with mixed deciduous forests, flooded meadows and swamps. It is declining due to habitat loss and classified in the IUCN Red List as 'near threatened'. For this relatively mobile newt species the PEEN initiative may be helpful in facilitating exchange between subpopulations. Photo by Boris I. Timofeev (© Pensoft Publishers).

3.2.4 Reptiles

Geographical distribution

Among the 217 European reptiles, 73 species are endemic to Europe (34 %). This list includes many island endemics for the Mediterranean area, among with characteristic species for the Tyrrhenian Islands (Sardinia, Corsica and Sicily), the Macaronesian Islands (Azores, Madeira, and the Canary Islands), and the Aegean Islands. One of the most spectacular examples is the Hierro Giant Lizard (*Gallotia simonyi*) which occurs only on 2 hectares of cliffs on the Island of Hierro in the Canaries. The population-size is estimated 150-200 individuals and it is therefore considered as 'critically endangered' in the global Red List (IUCN 2004). Other areas with high numbers of endemic species include Iberian peninsula, Balkan peninsula and the Caucasian area. Among the 11 subspecies that are included in the 'target species' database, 10 are endemic to Europe, and the majority is restricted to a restricted range.



Figure 17: European Leaf-Toed Gekko (Euleptes europaeus) occurs only in France, Italy, and Tunisia. It fulfils all three selection criteria. © photo: Lars Bergendorf.



Figure 18: Mediterranean Chameleon - Chamaeleo chamaeleon (© photo: Jan Van Der Voort.) This Chameleon fulfils only one selection criterion (legal protection) and is therefore not included as the list of target species based on multiple criteria. Its range is circum-Mediterranean, and it is therefore not strictly endemic to Europe.

Threat

The IUCN Red List includes 19 European reptile species and 6 subspecies that are globally threatened (IUCN 2004). All but two of these species have a strict legal protection. The lack of legal protection for *Vipera dinniki* can be explained by the occurrence in the Caucasus in the border-zone of Pan-Europe. *Coluber gyarusensis* is regarded as ‘critically endangered’ and occurs only in Greece and should therefore be included on legal listings. In the Bern Convention this species is regarded as subspecies of *Coluber gemonensis* and therefore not mentioned explicitly. Five species and four subspecies are classified as ‘critically endangered’: *Coluber gyarusensis*, *Eretmochelys imbricata*, *Gallotia simonyi*, *Lepidochelys kempii*, *Macrovipera schweizeri*, *Natrix natrix cetti*, *Natrix natrix schweizeri*, *Testudo graeca nikolskii* and *Vipera ursinii moldavica*.

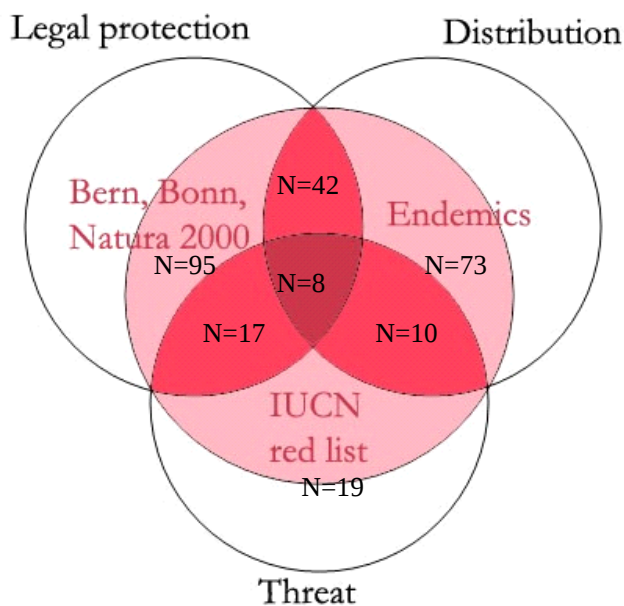


Figure 19: Excerpt of database target species for reptiles (total number of species is 217).

Legal protection

The Bern Convention covers all European species of reptiles. The most threatened species are included in Annex II (83 ‘strictly protected fauna

species’) and all other species are listed on Annex III (116 ‘protected fauna species’). In contrast to the Bern Convention the Habitats Directive does not include all reptile species. Annex II and IV of the Habitats Directive lists 81 species, including 12 species that are not covered by Annex II of the Bern Convention. Together all appendices of the Bern Convention and the Habitats Directive include 199 species. The remaining 18 species are restricted to the eastern border of Pan-Europe in a broad sense (e.g. eastern Caucasus). The Bonn Convention on migratory species lists 5 species of turtles. These species are also covered by the Bern Convention and the Habitats Directive.

Selection of target species

For the selection of ‘target species’ we follow the recommendation of Stumpel & Corbett (2003) by selecting species that fulfil at least two criteria. We made an exception for the addition of two (sub)species that are globally threatened but that do not fulfil another criterion. This results in a list of 53 species and 9 subspecies marked as ‘target species’ (see Appendix 5).

3.2.5 Birds

Geographical distribution

Within the Pan European territory 152 species (30 %) are endemic or sub-endemic. Among them are several species with a very restricted range size, such as: Azores Bullfinch (*Pyrrhula murina*, Fig. 20), Zino’s Petrel (*Pterodroma madeira*), Scottish Crossbill (*Loxia scotica*), Spanish Imperial Eagle (*Aquila adalberti*), Fuerteventura Chat (*Saxicola dacotiae*), Madeira Laurel Pigeon (*Columba trocaz*), Blue Chaffinch (*Fringilla teydea*), and Corsican Finch (*Serinus corsicanus*). Due to their limited range size these species are relatively sensitive for extinction and many of these species are included on the global Red List (IUCN 2004). An example of an island endemic that became extinct in the 20th century is the Canary Islands Oystercatcher (*Haematopus meadewaldi*).



Figure 20: Azores Bullfinch - *Pyrrhula murina*. This bird species is endemic for Europe and is listed on the Global Red List (IUCN 2004) as Endangered as a result of its extremely small population, which is restricted to a very small range on a single island in the Azores (eastern StMiguel). It was locally abundant in the 19th century, but become rare after 1920, probably due to widespread loss of native forest. The total population size is estimated 150-300 individuals (BirdLife International 2003). (© distribution map: BirdLife International 2003; © photo: Ricardo Guerreiro)

Threat

On the IUCN 2004 Red List 19 European bird species (4 %) are listed as globally threatened, while 16 species (3 %) are classified as 'near threatened' (IUCN 2004). For three rare species there were no reliable data to make a reliable classification in Red List categories: Black-winged Pratincole (*Glareola nordmanni*), Scottish Crossbill (*Loxia scotica*) and Caucasian Grouse (*Tetrao mlokosiewiczi*). According to Birds in Europe 2 (BirdLife International 2004), 226 species out of 524 have an 'unfavourable conservation status' at a Pan European level (43 % of the European avifauna). Many of these species are associated especially with farmland habitats (Tucker & Heath 1994, BirdLife International 2004).

The species identified by BirdLife International (2004a,b) as being 'species of European conservation concern' are listed in three SPEC categories (see § 2.6). According to BirdLife International (2004) there are 40 species (8 %) in the SPEC 1 category of globally threatened species, 45 (9 %) species in the SPEC 2 category, which is the category that includes species with 'unfavourable conservation status'

in Europe and their global population concentrated in Europe, and 141 (27 %) species in the SPEC 3 category, the species group with 'unfavourable conservation status' in Europe but whose global population is not concentrated in Europe.

For the most seriously endangered species local actions are unlikely to be sufficiently strong or coherent to prevent extinction. For a subset of the 54 most threatened (sub)species, BirdLife International has developed Species Action Plans. The Bern Convention is playing a fundamental role in promoting the implementation of these Species Action Plans.



Figure 21: *Slender-billed Curlew (Numenius tenuirostris)* is probably the rarest European bird species and categorized on the IUCN Red List as 'critical endangered'. *Numenius tenuirostris* has only been confirmed breeding near Tara, north of Omsk in Siberia, Russia, between 1914-1924. The only known nests were recorded in 1924 on the northern limit of the forest-steppe zone in a taiga marsh. It migrates from its presumed breeding grounds in Siberia through Eastern and Southern Europe (Russia, Kazakhstan, Ukraine, Bulgaria, Hungary, Romania, Yugoslavia, Greece, Italy, and Turkey), to its wintering grounds in North Africa (Algeria, Morocco and Tunisia). Reports of birds wintering in Iran persist but require confirmation. The species was regarded as very common in the 19th century, but declined dramatically during the 20th century. The total world population is estimated to be less than 50 birds. Most recent records are of 1-3 birds with the exception of a flock of 19 birds in Italy in 1995. The last confirmed sighting in the world was of four birds in Greece in 1999 (BirdLife International 2003). The bird on the photo was observed in October 2004 on the Suffolk coast and awaits formal confirmation by DNA research. © photo: Roy Harvey.

For target bird species not only the preservation of breeding grounds is important but also of wintering grounds and migration routes. For several target species high mortality in autumn and winter (e.g. by hunting) may be a bottleneck for long-term species survival. Examples include Slender-billed Curlew (*Numenius tenuirostris*; Fig. 21), Lesser White-fronted Goose (*Anser erythropus*) and Red-breasted Goose (*Branta ruficollis*; Fig. 22). The fact that many long-distance migrants are declining (Birdlife International 2004a) highlights the need for the European Union to look behind its borders.

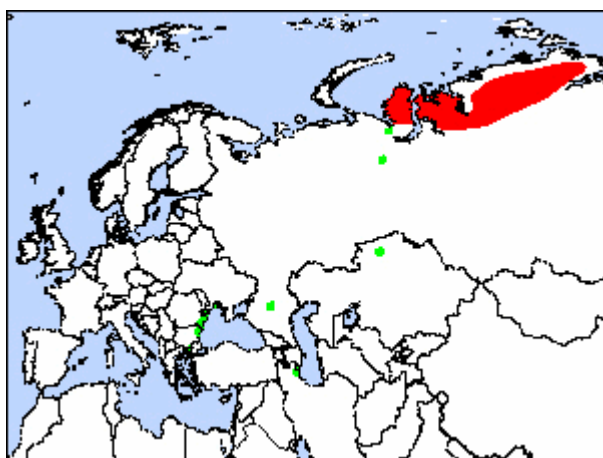


Figure 22: Distribution of Red-breasted Goose - *Branta ruficollis* (©: BirdLife International 2003). Red-breasted Goose breeds in Siberia and 80-90 % of the birds congregate at five roost sites in Bulgaria and Romania. The main causes of threat are loss of key feeding-sites, reductions in the land area under winter wheat cultivation, the intensification of agriculture, shooting and scaring of geese (BirdLife International 2003).

Legal protection

The Birds Directive forms the principal means for legal protection of bird species within the 25 European Union member states. From the total list of 514 European bird species there are 172 species listed on Annex I of the Birds Directive. Additionally 20 subspecies are included on Annex I, mostly consisting of marginal populations of widespread species (marked in the database with 'I*'). For the Annex I species, the EU member states are obliged to assign 'Special Protection Areas' for

the most suitable territories. Hunting is regulated for 77 species listed in Annex II, while trade is regulated for 26 Annex III species. Most species listings that are listed on Annex I of the Birds Directive are also included Appendix II of the Bern Convention. Additionally Appendix II of the Bern Convention lists 146 species that are not included in the Birds Directive. Nearly all European migratory song-birds (*Passeriformes*) have been included in Appendix II of the Bern Convention, regardless of their conservation status. Together with Appendix I of the Bonn Convention, which lists 17 migratory species, these three legal documents provide legal protection for 355 species. Most globally threatened bird species as listed on the IUCN 2004 Red List are covered by Annex I of the Birds Directive and Appendix II of the Bern Convention. Some species occurring in the South-Eastern border of Pan-Europe lack however legal protection. These include the ‘critically endangered’ Sociable Lapwing (*Chettusia gregaria*; Figure 23) and Northern Bald Ibis (*Geronticus eremita*). The latter species has become extinct from Europe, but re-introductions in Turkey are planned.



Figure 23: Sociable Lapwing (Vanellus gregarius) breeds only in southern Russia and Kazakhstan in the transition zones between Stipa and Artemisia steppes where bare saline areas occur near water-bodies. This relative of the Northern Lapwing has suffered a very rapid decline and range contraction and it is estimated that there may be as few as 600-1,800 individuals left in the wild (BirdLife International 2004). © photo: M. van Dijk.

Selection of target species

For the selection of target species we included all species which are considered in 'Birds in Europe 2' (BirdLife International 2004a,b) as 'species of European conservation concern' (SPEC 1, 2 or 3), summing to 219 species (Appendix 6).

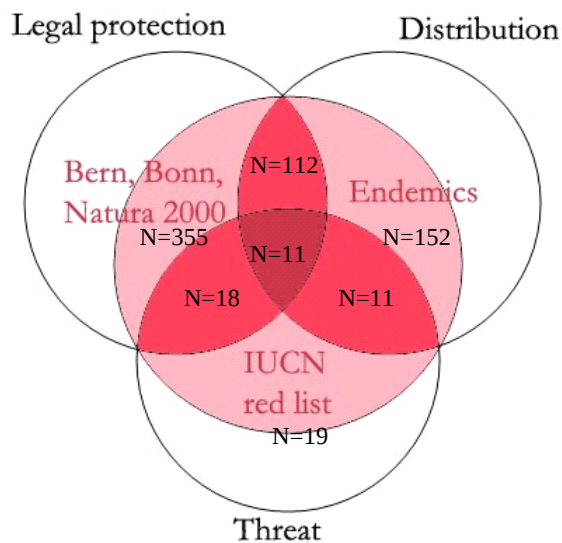


Figure 24: Excerpt of database target species for birds (total number of species is 514).

3.2.6 Mammals

Geographical distribution

The Pan European territory harbours 295 mammal species. Among these species, 46 (16 %) are endemic to Europe. These include several species with a small range, that are therefore relatively vulnerable for extinction, such as Iberian lynx (*Lynx pardinus*), Rumanian hamster (*Mesocricetus newtoni*), Balkan mole rat (*Spalax graecus*). Furthermore the Mediterranean Islands harbour several Island endemics, such as: Cretan spiny mouse (*Acomys minous*), Sicilian shrew (*Crocidura sicula*), and Corsican hare (*Lepus corsicanus*). An example of an extinct island endemic is the Sardinian Pika

(*Prolagus sardus*) which disappeared after devegetation for pasturage in the 18th century (Nilsson 1990). Additionally the 9 subspecies that are included in the ‘target species’ database are all endemic. These endemic subspecies are all included on the global Red List. The Dutch Root Vole (*Microtus oeconomus arenicola*) is classified as ‘critically endangered’ due to the substantial decrease in recent years. On the other hand several European endemics have a large range size and are common throughout their range, such as Western hedgehog (*Erinaceus europaeus*), Common vole (*Microtus arvalis*) and Western polecat (*Mustela putorius*). European endemism on its own is therefore not a sufficient selection criterion for ‘target species’.

Threat

The IUCN Red List includes 118 European mammalian species (40 %) and 9 subspecies that are globally threatened species (IUCN 2004). At least three species and one subspecies have become extinct in the wild from Europe in recent times: Wild Horse (*Equus ferus*), Auroch (*Bos taurus primigenius*) and Sardinian Pika (*Prolagus sardus*), while the European Bison (*Bison bonasus*) has been re-introduced (see Figure 27). The Pyrenean ibex (*Capra pyrenaica pyrenaica*) became extinct as recent as 2000. Formerly this sub-species of Spanish ibex was widespread over the whole of the southern slopes of the Pyrenees. Since the beginning of the twentieth century, the population never rose above 40 individuals and in the 1990’s this figure had fallen to only 10 animals. The reasons behind the extinction of this species are largely unknown. Two species are at the brink of extinction and are included on the Red List as ‘critically endangered’, namely Iberian Lynx (*Lynx pardinus*) and Mediterranean Monk Seal (*Monachus monachus*).

Legal protection

The legal documents provide strict protection to 123 mammalian species, although for several species geographical restrictions are included (see notes in Appendix 7). There is a large degree of overlap between the Bern Convention and the Habitats Directive in coverage of species. The Bern Convention lists 116 species and 4 subspecies on Appendix II, while the Habitats Directive includes 110 species and 8

subspecies on Annex II or IV. The Bonn Convention includes 5 migratory species on Appendix I (Mediterranean monk seal and four whale species). The trade is regulated by the CITES Convention for 15 species on appendix I and 36 species on Appendix II. Out of the 123 globally threatened species only 43 species (35 %) have legal protection.

Selection of target species

For the selection of target species, we included all species that are globally threatened or that have a strict legal protection. European endemics that not fulfil the former two criteria were only included if they are listed on the global Red List as ‘data deficient’ or as ‘lower risk’. The resulting list of target species includes 147 species (50 %) and 9 subspecies (see Appendix 7). For some less well known species, occurring in the eastern border of Pan Europe, more data should be collected to assess the degree to which they fulfil the selection criteria. This applies for species such as Kazbeg Birch Mouse (*Sicista kazbegica*), Kluchor Birch Mouse (*Sicista kluchorica*).

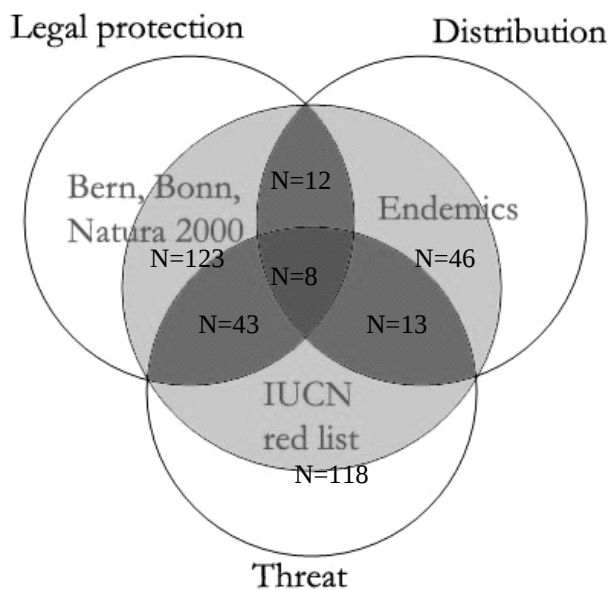


Figure 25: Excerpt of database target species for mammals (total number of species is 295).



Figure 26: The European Mink (*Mustela lutreola*) is endemic to Europe. This species was once widespread through large parts of Europe, but now restricted to France, Spain and Estonia. The main courses are habitat destruction and competition with the introduced American Mink (*Mustela vison*). © photo: Tiit Maran.



Figure 27: The European Bison (*Bison bonasus*) is listed on the global Red List as 'endangered'. A conservation action plan for the European Bison has recently been published by the IUCN Bison Specialist Group. The present number of free-ranging animals is slightly over 300, but the populations are geographically distant and there is no evidence of any exchange (Pucek et al. 2004). © photo: Gernot Pohl.

4 Discussion and prospects

4.1 Comparisons across taxonomic groups

Applicability of selection criteria across taxonomic groups

In this report the concept of ‘target species’ is elaborated, on the basis of a common set of criteria (legal protection, threat status and degree of endemism). A database has been developed which includes complete species lists for Europe for the following groups of organisms: vascular plants, vertebrates (freshwater fishes, reptiles, amphibians, birds and mammals) and butterflies. For each taxonomic group, the database includes relevant information to the three criteria, thereby enabling user-defined data queries. The proportion of species regarded as target species is dependent on choices with regard to the application of the selection criteria. In the present project a provisional selection of target species is presented, based on species that fulfil at least one criterion. The lists with target species should ultimately facilitate the efficiency of nature conservation by directing the (limited) efforts towards the species and habitats with the highest conservation concern. The set of criteria is further refined for taxonomic groups where the data availability and data quality was appropriate. For vascular plants, butterflies, amphibians, reptiles, and birds we excluded species from the selection that 1) are endemic to Europe, but that are common in large parts of Europe, and 2) that are included on legal documents but that are not threatened within Europe. For more details on the refined criteria for each taxonomic group we refer to chapter 2 and 3. The value of the target species database may further increase by filling the information gaps for the various taxonomic groups. These information gaps include lack of detailed distribution data (especially for freshwater fishes and vascular plants) and lack of assessment on the global threat status of rare species (especially vascular plants). Additionally the database may gain in functionality by extending the content with habitat preferences and functional traits (see chapter 4.2).

A consequence of the methodological differences across taxonomic groups is that comparison across taxonomic groups should be interpreted with care. Comparison across taxonomic groups is only

applicable for the proportion of species fulfilling the ‘broad criteria’ such as presented in Table 17, as the refinements are not possible for all taxonomic groups. Despite the methodological reservations there are some generalizations possible.

Table 17: Overview of the species richness in Europe per taxonomic group and the number of species that meet the three selection criteria or combinations of these criteria. A: absolute numbers, B percentages. The numbers should be regarded as tentative.

A: Absolute numbers.

Taxonomic group	Total number of species	Legal protection	Endemic	Global threat	Endemic & Legal protection	Global threat & Legal protection	Endemic & Global threat	All three criteria
Vascular plants	14,065	774	Europe: 5,029 1 country: 1,818	1,939	496	413	1,832	402
Butterflies	576	28	190	23	10	8	22	7
Freshwater fishes	305	72	?	72	?	23	?	?
Amphibians	88	51	59	15	37	9	14	8
Reptiles	217	95	73	19	42	17	10	8
Birds	514	355	152	19	112	18	11	11
Mammals	295	123	46	118	12	43	13	8

B: Percentages.

Taxonomic group	Total number of species	Legal protection	Endemic	Global threat	Endemic & Legal protection	Global threat & Legal protection	Endemic & Global threat	All three criteria
Vascular plants	14,065	5.5	Europe: 40 1 country: 13	14	3.5	2.9	13	2.9
Butterflies	576	4.9	33	4.0	1.7	1.4	3.8	1.2
Freshwater fishes	305	24	?	24	?	7.6	?	?
Amphibians	88	58	67	17	42	10	16	9.1
Reptiles	217	44	34	8.8	19	7.8	4.6	3.7
Birds	514	69	30	3.7	22	3.5	2.1	2.1
Mammals	295	42	16	40	4.1	15	4.4	2.7

The various taxonomic groups, as analysed within the scope of this project, differ largely in species numbers as well as in the degree to which the species meet the various criteria. Most obvious is the great difference between the number of vascular plant species and the number of animal species (Table 17), whereas the proportion of species fulfilling the individual criteria differs remarkably across taxonomic groups. This will be illustrated in the following paragraph.

Geographical distribution

With regard to endemism the proportion of species that are endemic in Europe is highest for amphibians (67 %) and vascular plants (40 %) and lowest for birds (16 %). These differences are probably mainly driven by underlying range-size distributions among taxonomic groups (e.g., birds tend to have much larger range sizes than amphibians) and by ecological limitations of specific taxa (e.g., birds are better able to disperse over long distances than amphibians). The highest proportions of endemic species occur in the southern parts of Europe. Especially the Mediterranean Islands and the Iberian, Italian and Balkan Peninsulas are very rich in endemic species.

The group of European endemics encompasses both species with a large range size across Europe and species that are restricted to a limited area within a single country. The conservation value is obviously much larger for the latter group. Ideally the use of European endemism as a selection criterion should be complemented by information on the size of the geographical range of species. For further discussions we refer to the treatment of the individual taxonomic groups.

Threat

Among the taxonomic groups included in this study, the percentage of globally threatened species ranges between 4 % for birds and butterflies and 40 % for mammals (see Table 17). These numbers should be interpreted with caution since the taxonomical groups differ largely in the proportion of species that was assessed. For birds and butterflies the 'target species' database therefore also includes assessments at the European scale.

Legal protection

The database enables an analysis of the relative occurrence of species from different species groups in the appendices of legal conventions (see Table 17). It appears that there are striking differences in this respect, for instance between amphibians, reptiles and birds on the one hand, and vascular plants and mammals on the other hand. Amphibians and birds do have the highest coverage in these legal documents, since a large proportion of the species is listed in Appendix II of the Bern Convention. On the other hand, vascular plants, butterflies and mammals (except bats) are only poorly covered in the legal documents.

It appears that the species priority lists of the Birds and Habitats Directives and the Bern Convention do not cover all species that are globally threatened (and therefore in need of protection). The proportion of globally threatened species not listed on priority lists of international legal documents differs across taxonomic groups (see Chapter 4.4 for a discussion of the consequences of these ‘legal gaps’).

4.2 Extensions to the target species database

The value of the target species database may increase by filling the information gaps for the various taxonomic groups (especially with regard to geographical distribution) and by extending the content with other species characteristics, such as habitat preferences and functional traits.

Geographical extensions

For various taxonomic groups the geographical coverage of Pan-Europe is incomplete. This is especially true for vascular plant species. The geographic area as delimited in Flora Europaea for example does not include the Macaronesian Islands, Cyprus and Asiatic Turkey. Although we had access to species list for these areas, the data quality of the species lists was not yet appropriate for inclusion in the present ‘target species’ database. These areas include however a relatively high number of endemic and threatened species, and therefore the extension of the ‘target species’ database for plants with these areas is strongly recommended. Moreover the SynBioSys Europe species checklist

includes many taxa that are not included in Flora Europaea; also for these species we do not have reliable data on geographical range (and degree of endemism).

Another improvement of the database would be the inclusion of more complete and detailed distribution data within the geographic areas covered. Gaps in distribution data are especially large for freshwater fishes and vascular plants.

Taxonomic extensions

There are major gaps in our knowledge of the status of threatened species. While the status of vertebrates is relatively well documented (worldwide roughly 40 % assessed), we know little about non-terrestrial systems (freshwater and marine) or species-rich groups such as invertebrates, non-vascular plants and fungi (which together compose the overwhelming majority of species). For some groups there are already initiatives at the European level which may be integrated in the selection of target species for the Pan European Ecological Network. For fungi for example, Dahlberg & Croneborg (2003) proposed 33 threatened European fungi as candidates for listing in Appendix I of the Bern Convention. A European Red List of bryophytes is already available (European Committee for the Conservation of Bryophytes 1995), while a European Red List of macrofungi is in progress (Courtecuisse in prep.). With regard to animals, taxonomic extensions may include dragonflies, hoverflies, grasshoppers and molluscs.

One of the aims of the Pan European Ecological Network is the conservation of genetic diversity. Part of this variation may be expressed in subspecies, provided that there is sufficient genetic basis for the distinction of these taxa. Phylogenetic research is rapidly advancing our knowledge of genetic variation for some taxonomic groups. In several cases subspecies have been shown to have relatively large genetic differences, sometimes even leading to the acknowledgments of the species rank. On the other hand, several subspecies appeared to be no more than points in a subtle gradient of relatively small genetic differences, apparently not justifying the subspecies level. Although this knowledge is far from complete, the inclusion of genetically well differentiated subspecies into the database may improve the accuracy of

the conservation of genetic diversity. This extension might be restricted to some well studied taxonomic groups.

Linkage to habitat classifications and functional traits

Inclusion of information on species specific habitat requirements enables the aggregation of species on the habitat level and will thereby facilitate the efficiency of the implementation of a Pan European Ecological Network (PEEN) and European legislation instruments like the Birds and Habitats Directives. Analyses at the habitat or landscape scale will also help in focussing the limited resources for nature conservation and restoration projects. Currently there is no scientifically sound overview of the degree of threat and/or of endemism of ecosystems. Linkages of the database with target species to habitat classifications enable the compilation of such a European survey.

Within the PEEN initiative an important role is ascribed to dispersal processes at various spatial scales. Although there is a wealth of theoretical dispersal models and case studies on individual species that underline the importance of dispersal, there is a large gap in our knowledge with regard to dispersal characteristics (traits) of target species. An important extension of the ‘target species’ database would therefore be the inclusion of species specific migration and dispersal characteristics. This applies especially for vascular plants, which often have a very limited dispersal potential. The present PEEN concept concentrates on vertebrate species (e.g. Bouwma et al. 2004) and a functional concept for plants has not yet been developed due to fundamental differences in life-history. The increased availability of databases with dispersal traits now opens the way towards a supplementation of the network concept with regard to plants (e.g. Ozinga et al. 2004, 2005).

Keystone species and Flagship species

Within the listings of target species, priorities can be set according to the degree of threat among others. Additionally criteria for the setting of priorities may involve the degree to which species play a vital role in ecosystem functioning (*‘keystone species’*) or the degree to which species

have a high symbolic value from an educative point of view (*'flagship species'*).

Keystone species have a special role in the ecosystem where they occur which is disproportional large in comparison to their abundance (e.g. as structuring the ecosystem by browsing, grazing, building dams, or a key-role in litter-decomposing). The recognition of the important ecological role of keystone species, which may be abundant and widespread, and the need for their conservation, is perhaps foreign to the traditional conservation ethic, but deserves serious consideration. Ambiguity in the use of the term keystone and the lack of an operational definition have led to criticism of its continued application in research and policy contexts. We follow the pragmatic concept by Power et al. (1996), who also provided an operational definition for keystone species (see text box).

Definition of keystone species

Keystone species differ from dominant species in that their effects are much larger than would be predicted from their abundance. We follow Power et al (1996) in defining a keystone species as one whose impact on its community or ecosystem is disproportionately large relative to its abundance. To develop a more operational definition for keystone species, one must define the strength of the effect of a species on a community or ecosystem characteristic. This measure, which Power et al. (1996) called Community Importance (CI), is the change in a community or ecosystem characteristic per unit change in the abundance of the species. Potential ecosystem characteristics include: productivity, nutrient cycling, species richness, or the abundance of one or more functional groups of species or of dominant species. Keystone species have traits that make them outliers, rather than part of a uniform distribution of species traits. Keystone species can exert effects, not only through the commonly known mechanism of consumption, but also through such interactions and processes as competition, mutualism, dispersal, pollination, disease, and by modifying habitats and abiotic factors. Possible examples include large predators, megaherbivores, vertebrates that act as effective seed-dispersers, and beavers, but also less obvious groups such as mycorrhizafungi.



Figure 28: An example of the effect of a keystone species on the ecosystem. Browsing by European Beavers has a relatively large effect on vegetation structure and it facilitates the food quality of the remaining vegetation for other herbivorous species. The picture shows the effects of browsing on Willow species. Photo E. Hazebroek.

Other species can be of importance for nature conservation value due to their symbolic value from an educative point of view; these species are called flagship species. These species can be used to anchor a conservation campaign because they arise public interest and sympathy. In most cases this regards large species, which require substantial areas for their long-term survival. Flagship species need not to be good keystone species, and the other way around (Simberloff 1998).

4.3 Implementation of the database in ecological information systems

The common denominator for all these related projects is that the data are spatial explicit and that they are linkage to the ecosystem or landscape scale. For plant species the expert system SynBioSys Europe integrates spatial information across the levels of species, ecosystems and landscapes. SynBioSys Europe may therefore function as a platform for the integration of the various PEEN-projects.

On the community level, [SynBioSys Europe](#) uses the newly completed conspectus of European vegetation types (Rodwell et al. 2002). This hierarchic overview comprises 15 formations, 80 vegetation classes, 233 orders and 933 alliances. Information will be presented for each vegetation unit, including general descriptions, species composition, structure and dynamics, ecology, geographic distribution, nature conservation and bibliography. On the lowest level, the alliance, lists of associations will be presented and key associations will be considered in more detail. Two types of vegetation tables will be presented: based on synoptic tables and based on individual plots. The latter will be extracted from national databases, using the Turboveg software package (Hennekens & Schaminée 2001). A cross-walk to the EUNIS Habitat Classification (Davies & Moss 1999) is designed to help implement the Natura 2000 and Emerald networks.

On the landscape level, the recently published Map of the Natural Vegetation of Europe (Bohn et al. 2003; Bundesamt für Naturschutz, Bonn, Germany) will be used as a basis. More than 100 geobotanists from 31 European countries cooperated on this map, its legend and the explanatory text. The map has been printed in 9 sheets at a scale of 1:2.5 million. The legend is built-up of different hierarchical levels. It comprises 19 major formations and 700 mapping units. Each mapping unit, representing specific landscape types, will be documented by a general description and information on composition and structure of the main natural vegetation types, on distribution, ecology, land use, landscape pattern, actual plant communities, and nature conservation. As an example, Figure 29 gives a map of the vegetations of flood-plains and estuaries as classified at the highest hierarchical level.

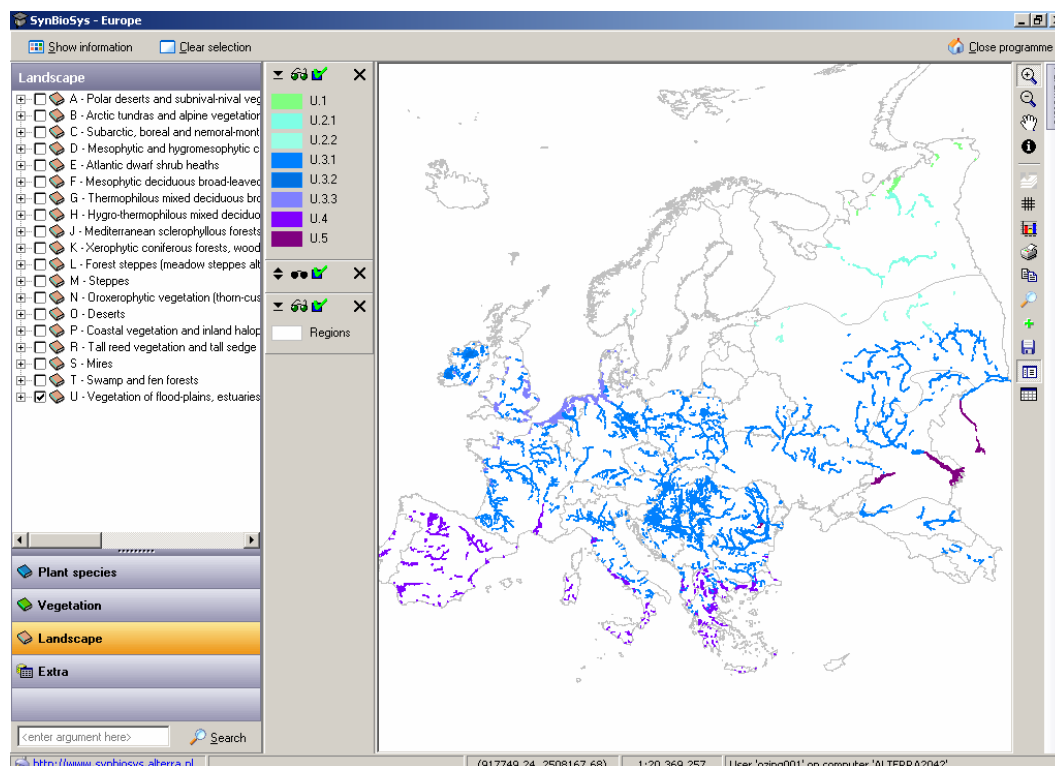


Figure 29: Example of the application of SynBioSys at the landscape level. The screen gives a selection of potential natural vegetations of flood-plains, estuaries and freshwater polders. These dynamic habitats have in general a high potential for the creation of ecological networks. The maps can be used as GIS overlays in the selection of actual and potential PEEN habitats.

The linkage of habitat characteristics and functional traits may be implemented within SynBioSys Europe. Both sets of species specific parameters may be integrated in a 'parameter framework'. A possible outline of such a parameter framework is shown in Figure 30. Within SynBioSys Europe ecological parameters can subsequently be analysed on the levels of species, habitats and landscapes.

Incorporation of habitat requirements and life-history traits will also allow SynBioSys to support European-scale, policy-oriented scenario studies. In these scenarios major socio-economic changes are translated into changes in biodiversity-relevant pressures such as climate change, land use change, nitrogen deposition and fragmentation. The impact of these pressures is species-specific and can be analysed using species-specific ecological information, such as climatic envelopes, habitat requirements, response to eutrophication and dispersal distances. Thus

the integrated impacts on biodiversity of autonomous developments and policy measures can be calculated under various scenarios, using the SynBioSys information.

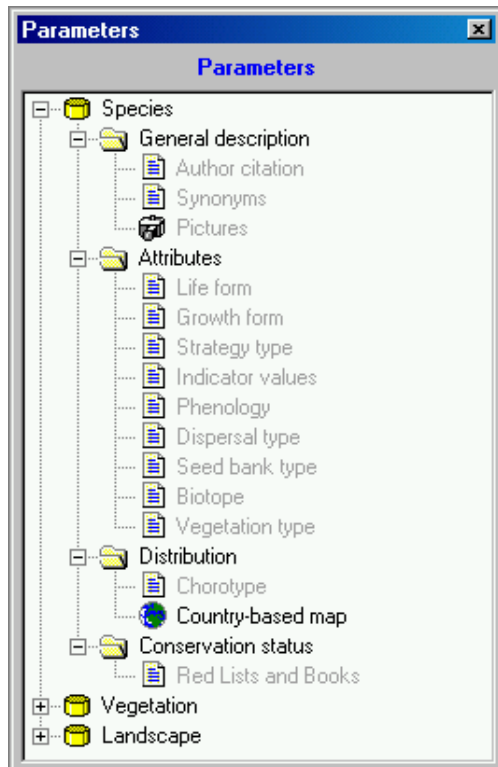


Figure 30: Example of possible database structure for the integration of habitat characteristics and functional traits into the present target species-database.

Last, habitat requirements and life-history traits can be used in the further development of biodiversity indicators. Recently two species trend indicators for Europe have been published (De Heer et al. 2005; Gregory et al. 2005) and species selection and representativeness are listed as one of the major points for further improvement. Species-based ecological information is essential to assess the representativeness of the species used in the indicator for biodiversity as a whole. Also, the information can be used to produce thematic indicators by making sub-selections of species (e.g. migratory species, species with dispersal distance < 1 km, species with specific food-preferences etc. etc.). This application of SynBioSys might be especially relevant in the context of the process of the Implementation of European Biodiversity Indicators for 2010 (IEBI 2010 process).

4.4 Incorporating target species in European and national nature policies

Legal gaps

Various existing international instruments provide the legal basis for the conservation of endangered species and valuable sites across Europe (see Chapter 2.3). These include the Bern Convention (Emerald Network), the Bonn Convention, and the European Union Habitats and Birds Directive (Natura 2000). The physical realisation of PEEN should be based on existing initiatives and European directives. It appears, however, that the species priority lists of international legal documents (including amendments for new EU member states) do not cover all species that are globally threatened and therefore are in need of strict protection (Table 18). With the exception of birds (5 %) and amphibians (11 %) these 'legal gaps' are at least 40 %. In other words: there are many species for which Europe has a special responsibility, that are not on any European legal priority list.

Table 18: Overview of globally threatened species (numbers and percentages) that are not covered by priority lists of legal documents (Bern Convention, Bonn Convention, European Union Habitats and Birds Directive).

Taxonomic group	Global Red List (species number)	No legal protection	
		Number of species	Percentage
Vascular plants	1,939	1,526	79
Butterflies	23	8	65
Freshwater fishes	89	52	42
Amphibians	19	17	11
Reptiles	15	9	40
Birds	19	18	5
Mammals	118	43	64

Especially species occurring in Eastern Europe are under-represented in the legal documents. Ideally these species should be added to priority species lists of the Bern Convention or the Habitats Directive. For species with a very restricted range size (such as single country endemics), that are not legally protected at the European level, the legal gaps might be mitigated by national legislation. This provides an opportunity for individual countries to emphasize their responsibility to the sustainable maintenance of characteristic flora and fauna elements.

Design of ecological networks

It is increasingly acknowledged that endangered species cannot be conserved by the establishment of isolated nature reserves alone. In this respect, the design and establishment of the Pan European Ecological Network (PEEN) can be seen as one of the priority issues for nature conservation within Europe. For the establishment of the Pan European Ecological Network (PEEN), it is essential to have adequate information on the threat status and distribution of plant and animal species throughout Europe. As there are thousands of plant and animal species, the 'target species' approach may be helpful in directing efforts towards species that have the highest conservation concern. Initiatives to design ecological networks are generally based on a small number of 'umbrella species' (Bloemmen & Van der Sluis 2004). Ecological networks that are only based on small numbers of umbrella species are, however, unlikely to halt the loss of biodiversity since many functional groups and habitat types are probably not covered in this approach. This list of target species may be useful to enable a better coverage of species of European concern in ecological networks. In species rich areas it may be helpful to aggregate target species at the habitat level.

The design and establishment of such a network should be based as far as possible on regional and national initiatives. Many European countries are attempting to realise national or regional ecological networks (Jongman & Kristiansen 2001). In 1995, a project made a primarily selection of core-areas for the Pan European Ecological Network in Western Europe. In the period 1999-2002 a similar project was carried out for Central and Eastern Europe, producing an indicative map of PEEN with core-areas, corridors, buffer zones and zones for nature development (Bouwma et al. 2003; Klijn et al. 2003). All these initiatives

can be brought together in a future indicative map of PEEN, covering the whole of Europe.

Regions of Europe with high species richness and with high concentrations of threatened species ('biodiversity hotspots' cf. Myers et al. 2000, [Conservation International](#)) may form an important fundament for the establishment of the Pan European Ecological Network. For the identification of 'Important Species Areas' in Europe, information on target species may play a key role, in contributing to the identification and establishment of the aimed coherent systems of core-areas. Recently, several initiatives have been set up to identify the most important (prime) areas in Europe for various groups of target species. The projects are carried out through international co-operation and are all bottom-up. The first results have been published for birds (Important Bird Areas, Heath & Evans 2000, BirdLife International 2001), and butterflies (Prime Butterfly Areas, Van Swaay & Warren 2003, [Dutch Butterfly Conservation](#) & [Butterfly Conservation UK](#)), whereas the projects for Herpetofauna (Important Herpetofaunal Areas, Stumpel & Edgar in press, [Alterra](#) & [Herpetological Conservation Trust](#)), dragonflies (Important Dragonfly Areas, [Dutch Dragonfly Association](#)) plants (Important Plant Areas, Anderson 2002, [Plantlife International](#) & [IUCN](#)) and macrofungi (Important Mushroom Areas, [European Council for the Conservation of Fungi](#)) are in progress. Preliminary studies suggest that the congruence between IBAs and important sites for other taxonomic groups is high (Brooks 2004). Other related projects include the initiative around keystone species-groups such as the [Large Carnivore Initiative Europe](#) (LCIE) and the [Large Herbivore Foundation](#) (LHF).

The European Environmental Ministries and Heads of States have set themselves the ambitious goal to halt the loss of biodiversity in Europe by 2010. In order to make nature policies more efficient, better knowledge of the ecology of the target species (habitat requirements and dispersal, see Chapter 4.2) is urgently required. Special attention should be directed towards taxonomic groups with many species with limited dispersal ability, such as herpetofauna and vascular plants.

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Appendix 1 : Vascular plants

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Abies cephalonica</i>				.	.		LR/nt	3
<i>Abies nebrodensis</i>	x	x		x	x	E	CR	1
<i>Abies pinsapo</i>				x	.	R	LR/nt	3
<i>Abies pinsapo</i> var. <i>pinsapo</i>				x	x		VU	1
<i>Acer lobelii</i>				x	x			1
<i>Acer stevenii</i>				x	x			1
<i>Achillea absinthoides</i>				x	x	R		1
<i>Achillea ambrosiaca</i>				x	x			1
<i>Achillea barbeyana</i>				x	x	R		1
<i>Achillea barrelieri</i>				x	x			1
<i>Achillea glaberrima</i>	x			x	x			1
<i>Achillea lucana</i>				x?		R		
<i>Achillea oxyloba</i>				x	.	R		5
<i>Achillea thracica</i>	x			x	.	R		2
<i>Achillea umbellata</i>				x	x			1
<i>Acinos corsicus</i>				x	x	R		1
<i>Aconitum firmum</i> s. <i>moravicum</i>		x	x					
<i>Aconitum lasiocarpum</i>	x							
<i>Adenocarpus ombriosus</i>	x			x?		E		
<i>Adenophora lilifolia</i>		x	x	.	.			13
<i>Adenophora taurica</i>				x	x	R		1
<i>Adonis cyllenea</i>	x			x	x	E		1
<i>Adonis distorta</i>	x	x		x	x	R		1
<i>Aeonium balsamiferum</i>	x			x?		V		
<i>Aeonium ciliatum</i>				x?		V		
<i>Aeonium cuneatum</i>				x?		V		
<i>Aeonium gomerense</i>	x	x		x?	x	V		1
<i>Aeonium goochiae</i>				x?		R		
<i>Aeonium haworthii</i>				x?		R		
<i>Aeonium nobile</i>				x?		V		
<i>Aeonium pseudourbicum</i>				x?		R		
<i>Aeonium rubrolineatum</i>				x?		V		
<i>Aeonium saundersii</i>	x							
<i>Aeonium sedifolium</i>				x?		V		
<i>Aeonium smithii</i>				x?		V		
<i>Aeonium tabuliforme</i>				x?		R		
<i>Aeonium valverdense</i>				x?		V		
<i>Aeonium virgineum</i>				x?		R		
<i>Aethionema carlsbergii</i>				x?	x	R		1
<i>Aethionema cordatum</i>				x?	x	V		1
<i>Aethionema orbiculatum</i>				x	x	R		1
<i>Aethionema retsina</i>				x?	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Aethionema thomasianum</i>				x?	x	V		1
<i>Agrimonia pilosa</i>		x		.	.			9
<i>Agropyron cimmericum</i>				x	.	I		2
<i>Agropyron dasyanthum</i>				x	x	R		1
<i>Agropyron tanaiticum</i>				x	.	R		3
<i>Agrostemma gracile</i>				x?	x	I		1
<i>Agrostis gracililaxa</i>	x			x	.			2
<i>Agrostis moldavica</i>				x?	x	R		1
<i>Aichryson bethencourtianum</i>				x?		E		
<i>Aichryson bollei</i>				x?		R		
<i>Aichryson dumosum</i>	x	x		x?	x	V		1
<i>Aichryson palmense</i>				x?		R		
<i>Aichryson villosum</i>				x?	.	R		2
<i>Aira scoparia</i>				x	x			1
<i>Ajuga piskoi</i>				x	x	R		1
<i>Ajuga tenorii</i>				x	.	R		2
<i>Aldrovanda vesiculosa</i>	x	x		.	.			16
<i>Alisma wahlenbergii</i>	x	x		x	.	R		4
<i>Alkanna calliensis</i>				x	x	R		1
<i>Alkanna methanaea</i>				x	x	I		1
<i>Alkanna noneiformis</i>				x	x	R		1
<i>Alkanna orientalis</i>				.	x	R		1
<i>Alkanna pelia</i>				x	x	R		1
<i>Alkanna pinardii</i>	x							
<i>Alkanna primuliflora</i>				x	.	R		2
<i>Alkanna pulmonaria</i>				x	x	R		1
<i>Alkanna sandwithii</i>				x	x			1
<i>Alkanna sartoriana</i>				x	x	I		1
<i>Alkanna sieberi</i>				x	x	R		1
<i>Alkanna sibirnyi</i>				x	.	R		2
<i>Allagoppapus viscosissimus</i>				x?		V		
<i>Allium chrysonemum</i>				x	x	R		1
<i>Allium circinnatum</i>				x	x	R		1
<i>Allium dilatatum</i>				x	x	R		1
<i>Allium favosum</i>				x	x			1
<i>Allium frigidum</i>				x	x	R		1
<i>Allium grosii</i>	x	x		x	x	R		1
<i>Allium heldreichii</i>				x	x	R		1
<i>Allium borvatii</i>				x	x			1
<i>Allium hymettium</i>				x	x			1
<i>Allium insubricum</i>				x	x	R		1
<i>Allium integerrimum</i>				x	x			1
<i>Allium jubatum</i>				.	x	V		1
<i>Allium longanum</i>				x?	.	R		2
<i>Allium luteolum</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Allium macedonicum</i>				x	x	R		1
<i>Allium melananthum</i>				x	x	R		1
<i>Allium narcissiflorum</i>				x	.	R		3
<i>Allium obtusiflorum</i>				x	.	R		2
<i>Allium palentinum</i>				x	x			1
<i>Allium parnassicum</i>				x	x	R		1
<i>Allium pervestitum</i>				.	x	R		1
<i>Allium phthioticum</i>				x	x			1
<i>Allium pilosum</i>				x?	x	R		1
<i>Allium proponticum</i>				x	x			1
<i>Allium pruinatum</i>				x	x			1
<i>Allium pruinatum</i>				x	x			1
<i>Allium pyrenaicum</i>				x	x	R		1
<i>Allium regelianum</i>	x			x	.	R		2
<i>Allium rouyi</i>				x	x	E		1
<i>Allium scaberrimum</i>				x	x			1
<i>Allium schmitzii</i>				x	x			1
<i>Allium tardans</i>				x	x			1
<i>Allium vuralii</i>	x							
<i>Alopecurus thracicus</i>				.	x	V		1
<i>Althaea longiflora</i>				x?	.	R		3
<i>Alyssum akamasicum</i>	x							
<i>Alyssum borzaeanum</i>	x			.	.			4
<i>Alyssum cadevallianum</i>				x?	x	R		1
<i>Alyssum calycocarpum</i>				x	x	R		1
<i>Alyssum densistellatum</i>				x	x	R		1
<i>Alyssum doerfleri</i>				x	.	R		2
<i>Alyssum euboicum</i>				x	x	R		1
<i>Alyssum fallacinum</i>				x?	.	R		2
<i>Alyssum fastigiatum</i>				x	x	E		1
<i>Alyssum fragillimum</i>				x	x	V		1
<i>Alyssum heldreichii</i>				x	x	R		1
<i>Alyssum idaeum</i>				x	x	R		1
<i>Alyssum lassiticum</i>				x	x	V		1
<i>Alyssum longicaule</i>				x	x			1
<i>Alyssum macrocarpum</i>				x	x			1
<i>Alyssum markgrafii</i>				x	.	R		2
<i>Alyssum moellendorffianum</i>				x	x	R		1
<i>Alyssum purpureum</i>				x?	x	R		1
<i>Alyssum pyrenaicum</i>	x	x		x	x			1
<i>Alyssum reverchonii</i>				x	x			1
<i>Alyssum robertianum</i>				x	.	V		2
<i>Alyssum smolikanum</i>				x	.	R		2
<i>Alyssum sphacioticum</i>				x	x	V		1
<i>Alyssum taygeteum</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Abyssum wulfenianum</i>				x	.	R		3
<i>Ammi buntii</i>				x	.	R		2
<i>Ammi trifoliatum</i>	x	x		x	.	R		2
<i>Anacyclus latealatus</i>	x							
<i>Anagyris latifolia</i>	x	x		x	x	E		1
<i>Anarrhinum longipedicellatum</i>				x	x	V		1
<i>Anchusa cespitosa</i>				x	x	R		1
<i>Anchusa crispa</i>	x	x		x	.	V		2
<i>Anchusa macrosyrinx</i>				x	x	R		1
<i>Anchusa sartorii</i>				x	x	R		1
<i>Anchusa serpentinicola</i>				x	.	R		2
<i>Anchusa spruneri</i>				x	x	I		1
<i>Anchusa subglabra</i>				x?	x	R		1
<i>Androcymbium europaeum</i>	x		x	x	x	E		1
<i>Androcymbium psamphyllum</i>	x	x		x?	x	V		1
<i>Androcymbium rechingeri</i>	x	x		x?	x	E		1
<i>Androsace brevis</i>				x	.	R		2
<i>Androsace chaixii</i>				x	x	R		1
<i>Androsace cylindrica</i>	x		x	x	.	R		2
<i>Androsace mathildae</i>	x	x		x	x			1
<i>Androsace pyrenaica</i>	x	x		x	.			2
<i>Andryala agardhii</i>				x	x			1
<i>Andryala crithmifolia</i>	x							
<i>Andryala levitomentosa</i>	x			x	x	E		1
<i>Anemone pavoniana</i>				x	x			1
<i>Anemone uralensis</i>	x			x	x	E		1
<i>Angelica angelicastrum</i>				x	x	R		1
<i>Angelica heterocarpa</i>	x	x		x	x	V		1
<i>Angelica pachycarpa</i>				x	.	R		2
<i>Angelica palustris</i>	x	x		.	.			13
<i>Anthemis abrotanifolia</i>				x	x	R		1
<i>Anthemis aetnensis</i>				x	x			1
<i>Anthemis ammanthus</i>				x	.	R		2
<i>Anthemis argyrophylla</i>				x	x	V		1
<i>Anthemis bourgaei</i>				x?	x	V		1
<i>Anthemis brachmannii</i>				x	x			1
<i>Anthemis dubia</i>				x	x			1
<i>Anthemis filicaulis</i>				x	x			1
<i>Anthemis flexicaulis</i>				x	x	V		1
<i>Anthemis gaudium-solis</i>				x	x	I		1
<i>Anthemis gerardiana</i>				x	x	V		1
<i>Anthemis glaberrima</i>	x	x		x	x	E		1
<i>Anthemis halophila</i>	x							
<i>Anthemis hydruntina</i>				x	x	R		1
<i>Anthemis ismelia</i>				x	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Anthemis jaiensis</i>				x	x			1
<i>Anthemis lithuanica</i>				x	.	R		2
<i>Anthemis macrantha</i>				x	.	R		2
<i>Anthemis meteorica</i>				x	.	R		2
<i>Anthemis monantha</i>				x	x			1
<i>Anthemis muricata</i>				x	x			1
<i>Anthemis orbicula</i>				x	x	R		1
<i>Anthemis panachaica</i>				x	x	R		1
<i>Anthemis pindicola</i>				x	x	R		1
<i>Anthemis regis-borisii</i>				.	x	R		1
<i>Anthemis rumelica</i>				x	x	R		1
<i>Anthemis sancti-johannis</i>				x	x	R		1
<i>Anthemis scopulorum</i>				x	x			1
<i>Anthemis sibthorpü</i>				x	x	R		1
<i>Anthemis spruneri</i>				x	x			1
<i>Anthemis sterilis</i>				x	x	V		1
<i>Anthemis stribrnyi</i>				x	x	R		1
<i>Anthemis tomentella</i>				x	x	R		1
<i>Anthemis trotzkiana</i>	x			.	x	R		1
<i>Anthemis virescens</i>				x	x	R		1
<i>Anthemis wernerii</i>				x	x	I		1
<i>Antbericum baeticum</i>				x	x			1
<i>Anthoxanthum pauciflorum</i>				x	x			1
<i>Anthriscus tenerrima</i>				x	x			1
<i>Anthyllis aegaea</i>				x	.	R		2
<i>Anthyllis hystrix</i>	x							
<i>Anthyllis lemmaniana</i>	x	x		x?	x	E		1
<i>Anthyllis onobrychoides</i>				x	x			1
<i>Anthyllis ramburii</i>				x	x			1
<i>Anthyllis rupestris</i>				x?	x	R		1
<i>Antirrhinum australe</i>				x	x			1
<i>Antirrhinum charidemi</i>	x	x		x	x	R		1
<i>Antirrhinum grosii</i>				x	x	R		1
<i>Antirrhinum lopesianum</i>			x	x?	x	E		1
<i>Antirrhinum microphyllum</i>				x	x	V		1
<i>Antirrhinum pertegasii</i>				x?	x	V		1
<i>Antirrhinum pulverulentum</i>				x	x	R		1
<i>Antirrhinum rupestre</i>				x?	x	R		1
<i>Antirrhinum valentinum</i>				x?	x	R		1
<i>Apium bermejoi</i>	x							
<i>Apium repens</i>	x	x		x	.			20
<i>Apollonias barbujana</i>							LR/nt	
<i>Apollonias barbujana s. ceballosi</i>							EN	
<i>Aquilegia alpina</i>			x	x	.			4
<i>Aquilegia barbaricina</i>				x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Aquilegia bernardii</i>				x	x			1
<i>Aquilegia bertolonii</i>	x	x		x	.			3
<i>Aquilegia champagnatii</i>				x?	x	R		1
<i>Aquilegia dinarica</i>				x	.	R		2
<i>Aquilegia grata</i>				x	x	R		1
<i>Aquilegia kitaibelii</i>	x	x		.	.			2
<i>Aquilegia litardierei</i>				x	x	E		1
<i>Aquilegia nugorensis</i>				x?	x	V		1
<i>Aquilegia ottonis</i>				x	.	R		4
<i>Aquilegia pancicii</i>				x	x			1
<i>Aquilegia thalictrifolia</i>				x	x	R		1
<i>Arabis cebennensis</i>				x	x	R		1
<i>Arabis ferdinandi-coburgi</i>				.	x	R		1
<i>Arabis kennedyae</i>	x	x	x					
<i>Arabis longistyla</i>				x	x			1
<i>Arabis pedemontana</i>				x	x	R		1
<i>Arabis sadina</i>		x		x?	x	V		1
<i>Arabis scopoliana</i>		x	x	x	.			3
<i>Arabis subflava</i>				x	x	R		1
<i>Arbutus canariensis</i>							VU	
<i>Arceuthobium azoricum</i>		x		.	.			2
<i>Arctagrostis latifolia</i>		x		.	.			4
<i>Arctophila fulva</i>		x		.	.			4
<i>Arenaria alfacarensis</i>				x?	x	R		1
<i>Arenaria capillipes</i>				x	x	R		1
<i>Arenaria cephalotes</i>				x	x			1
<i>Arenaria cinerea</i>				x	x			1
<i>Arenaria conica</i>				x	x	R		1
<i>Arenaria controversa</i>				x	x	R		1
<i>Arenaria fragillima</i>				x	.	R		2
<i>Arenaria gionae</i>				x?	x	R		1
<i>Arenaria gracilis</i>				x	x			1
<i>Arenaria guicciardii</i>				x?	.	R		2
<i>Arenaria halacsyi</i>				x	x	R		1
<i>Arenaria hispida</i>				x	x	I		1
<i>Arenaria humifusa</i>		x		.	.			4
<i>Arenaria buteri</i>				x	x	R		1
<i>Arenaria nevadensis</i>	x	x		x	x	E		1
<i>Arenaria obtusiflora</i>				x	x			1
<i>Arenaria phitosiana</i>				x?	x	I		1
<i>Arenaria pomelii</i>				x?	x	I		1
<i>Arenaria provincialis</i>	x	x		x	x	R		1
<i>Arenaria retusa</i>				x	x			1
<i>Arenaria rigida</i>				x	.	R		4
<i>Arenaria tomentosa</i>				x?	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Arenaria valentina</i>				x	x			1
<i>Argyranthemum callichrysum</i>				x?		V		
<i>Argyranthemum coronopifolium</i>				x?		V		
<i>Argyranthemum dissectum</i>				x?		R		
<i>Argyranthemum escarrei</i>				x?		V		
<i>Argyranthemum filifolium</i>				x?		V		
<i>Argyranthemum foeniculaceum</i>				x?		R		
<i>Argyranthemum baemathomma</i>				x?		V		
<i>Argyranthemum hierrense</i>				x?		V		
<i>Argyranthemum lidii</i>	x							
<i>Argyranthemum maderense</i>				x?		V		
<i>Argyranthemum pinnatifidum</i>	x							
<i>Argyranthemum sundingii</i>				x?		E		
<i>Argyranthemum sventenii</i>				x?		V		
<i>Argyranthemum teneriffae</i>				x?		R		
<i>Argyranthemum thalasophyllum</i>		x		x	x	E		1
<i>Argyranthemum vincentii</i>				x?		E		
<i>Argyranthemum webbii</i>				x?		R		
<i>Argyranthemum winterii</i>	x	x		x?	x	V		1
<i>Aristolochia bianorii</i>				x	x			1
<i>Aristolochia microstoma</i>				x	x			1
<i>Aristolochia samsunensis</i>	x							
<i>Aristolochia sicula</i>				x	x	R		1
<i>Aristolochia tyrrhena</i>				x?	.	R		2
<i>Armeria arcuata</i>				x	x	Ex		1
<i>Armeria berlangensis</i>		x		x	x	V		1
<i>Armeria colorata</i>				x	x	V		1
<i>Armeria denticulata</i>				x	x			1
<i>Armeria girardii</i>				x	x			1
<i>Armeria hirta</i>				x	x			1
<i>Armeria hispalensis</i>				x	x	R		1
<i>Armeria humilis</i>				x	x	E		1
<i>Armeria juniperifolia</i>				x	x			1
<i>Armeria leucocephala</i>				x	x			1
<i>Armeria littoralis</i>		x		x	.			2
<i>Armeria macropoda</i>				x	x			1
<i>Armeria maderensis</i>				x?		R		
<i>Armeria multiceps</i>				x	x			1
<i>Armeria pinifolia</i>				x	x			1
<i>Armeria pocutica</i>				x	x	Ex/E		1
<i>Armeria psendarmeria</i>	x	x		x	.	E		2
<i>Armeria rouyana</i>	x	x		x	x	V		1
<i>Armeria rouyana</i>				x	x	V		1
<i>Armeria rouyana</i>				x		V		
<i>Armeria sancta</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Armeria sardoa</i>				x	x			1
<i>Armeria soleirolii</i>	x	x		x	x	R		1
<i>Armeria splendens</i>				x	x			1
<i>Armeria trachyphylla</i>				x	x			1
<i>Armeria vandasii</i>				x	x	R		1
<i>Armeria velutina</i>	x	x		x	.	V		2
<i>Armeria vestita</i>				x	x	I		1
<i>Armeria villosa</i>				x	x			1
<i>Armeria welwitschii</i>				x	x	V		1
<i>Armoracia macrocarpa</i>	x			x	.			4
<i>Arrhenatherum calderae</i>				x?		R		
<i>Artemisia barrelieri</i>				x	x			1
<i>Artemisia granatensis</i>	x	x		x	x	E		1
<i>Artemisia hololeuca</i>				x	.	V		3
<i>Artemisia insepida</i>	x			x	x	Ex		1
<i>Artemisia laciniata</i>	x	x		.	.			5
<i>Artemisia nitida</i>				x	.	R		3
<i>Artemisia nivalis</i>				x?	x	I		1
<i>Artemisia oelandica</i>		x		x	x	R		1
<i>Artemisia pancicii</i>	x	x		x?	.	R		4
<i>Artemisia ramosa</i>				x?		R		
<i>Artemisia salsoloides</i>				.	.	R		3
<i>Arum creticum</i>				x	x			1
<i>Arum purpureospathum</i>	x							
<i>Asparagus arboreus</i>				x?		R		
<i>Asparagus fallax</i>				x?		E		
<i>Asparagus litoralis</i>				x	x	R		1
<i>Asparagus lycanicus</i>	x							
<i>Asparagus nesiotis</i>				x?		V		
<i>Asparagus plocamoides</i>				x?		R		
<i>Asperula abbreviata</i>				x	x	R		1
<i>Asperula arcadiensis</i>				x	x			1
<i>Asperula baenitzii</i>				x	x	R		1
<i>Asperula baldacci</i>				x	x	R		1
<i>Asperula beckiana</i>				x	x	R		1
<i>Asperula boissieri</i>				x	x			1
<i>Asperula boryana</i>				x	x			1
<i>Asperula calabra</i>				x	x	R		1
<i>Asperula garganica</i>				x	x	R		1
<i>Asperula gussonii</i>				x	.	R		2
<i>Asperula hercegovina</i>				x	x	R		1
<i>Asperula hexaphylla</i>				x?	.	R		2
<i>Asperula idaea</i>				x	x			1
<i>Asperula lutea</i>				x	x			1
<i>Asperula muscosa</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Asperula neglecta</i>				x	x	R		1
<i>Asperula oetaea</i>				x	x	R		1
<i>Asperula ophiolithica</i>				x	x	I		1
<i>Asperula pani</i>				x?	x	R		1
<i>Asperula pulvinaris</i>				x	x			1
<i>Asperula pumila</i>				x	x			1
<i>Asperula rigida</i>				x	x			1
<i>Asperula rupestris</i>				x	x			1
<i>Asperula savranica</i>				x	x			1
<i>Asperula saxicola</i>				x	x	R		1
<i>Asperula scutellaris</i>				x	.	V		3
<i>Asperula staliana</i>				x	x	R		1
<i>Asperula suberosa</i>				x	.	R		2
<i>Asperula suffruticosa</i>				x	x	I		1
<i>Asperula taygetea</i>				x	.	R		2
<i>Asperula tephrocarpa</i>				x	.	R		3
<i>Asperula tournefortii</i>				x?	.	R		2
<i>Asperula wettsteinii</i>				x	x	R		1
<i>Asphodelus bento-rainhae</i>	x	x		x	x	E		1
<i>Asplenium adulterinum</i>		x	x	x	.	R		12
<i>Asplenium azoricum</i>	x			.	.			2
<i>Asplenium balearicum</i>				x?	.	R		5
<i>Asplenium bourgaei</i>				x?	x	R		1
<i>Asplenium creticum</i>				x?	x	R		1
<i>Asplenium hemionitis</i>	x		x	.	.			3
<i>Asplenium hybridum</i>				x?	x	R		1
<i>Asplenium jabandiezii</i>	x	x		x	x	R		1
<i>Asplenium majoricum</i>				x?	x	R		1
<i>Aster creticus</i>				x	x			1
<i>Aster linosyris</i>				x	.	V		22
<i>Aster pyrenaicus</i>	x	x		x	x			1
<i>Aster sibiricus</i>	x			.	.			3
<i>Aster tarbagatensis</i>				.	x	R		1
<i>Aster willkommii</i>				x	x			1
<i>Astragalus agraniotii</i>				x	x	R		1
<i>Astragalus aitosenis</i>	x							
<i>Astragalus algarbiensis</i>	x	x		x	.			2
<i>Astragalus aquilanus</i>	x							
<i>Astragalus arnacantha</i>				x	.	R		2
<i>Astragalus austroaegaeus</i>				x?	x	R		1
<i>Astragalus antratii</i>				x	x	R		1
<i>Astragalus baldacii</i>				x?	.	R		2
<i>Astragalus balearicus</i>				x	x			1
<i>Astragalus centralpinus</i>	x	x		x	.			3
<i>Astragalus clerceanus</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Astragalus clusii</i>				x	x			1
<i>Astragalus dasyanthus</i>				.	.	R		8
<i>Astragalus drupaceus</i>				x	x	R		1
<i>Astragalus giennensis</i>				x	x	R		1
<i>Astragalus grossii</i>				x	x	R		1
<i>Astragalus hegelmaieri</i>				x	x	I		1
<i>Astragalus henningii</i>				x	.	R		2
<i>Astragalus hispanicus</i>				x	x			1
<i>Astragalus buetii</i>				x	x	I		1
<i>Astragalus idaeus</i>				x	x	Ex/E		1
<i>Astragalus karelinianus</i>				x	x	R		1
<i>Astragalus lacteus</i>				x	x	R		1
<i>Astragalus longipetalus</i>				.	x	V		1
<i>Astragalus macrocarpus s. lefkarensis</i>	x	x	x	x	x			1
<i>Astragalus maritimus</i>	x	x		x?	x	V		1
<i>Astragalus nummularius</i>				x	x	R		1
<i>Astragalus pallescens</i>				x	.	I		2
<i>Astragalus peterfii</i>	x			x	x	E		1
<i>Astragalus physocalyx</i>	x			x	x	Ex/E		1
<i>Astragalus pseudopurpureus</i>	x			x?	x	V		1
<i>Astragalus ptilodes</i>				x?		R		
<i>Astragalus reduncus</i>				x	.	I		3
<i>Astragalus roemerii</i>				x	x	V		1
<i>Astragalus setosulus</i>	x			x	x	E		1
<i>Astragalus tanaiticus</i>	x			x	.	V		2
<i>Astragalus tremolsianus</i>	x	x		x	x	R		1
<i>Astragalus verrucosus</i>	x	x		x?	x	V		1
<i>Astragalus wilmottianus</i>				x	x	R		1
<i>Astragalus wolgensis</i>	x			.	.			2
<i>Astragalus zingeri</i>				.	.	V		2
<i>Astrantia pauciflora</i>				x	x	R		1
<i>Asyneuma comosiforme</i>				x	x	R		1
<i>Asyneuma giganteum</i>	x							
<i>Athamanta cortiana</i>	x	x		x	x	V		1
<i>Athamanta densa</i>				x	.	R		2
<i>Atractylis arbuscula</i>	x	x		x	x	E		1
<i>Atractylis preauxiana</i>	x							
<i>Atractylis tutinii</i>				x	x			1
<i>Atropa baetica</i>	x	x		.	x			1
<i>Aubrieta erubescens</i>				x	x	R		1
<i>Aubrieta scyria</i>				x	x	I		1
<i>Aubrieta thessala</i>				x?	x	R		1
<i>Aurinia leucadea</i>				x?	.	R		2
<i>Aurinia uechtritziiana</i>	x			.	.			2
<i>Avena canariensis</i>				x?		R		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Avena saxatilis</i>				x	x	R		1
<i>Avenula aetolica</i>				x	x			1
<i>Avenula crassifolia</i>				x	x	R		1
<i>Avenula delicatula</i>				x	.	R		2
<i>Avenula gervaisii</i>				x	x			1
<i>Avenula gonzaloi</i>				x	x			1
<i>Avenula hackelii</i>	x	x		x	x	V		1
<i>Avenula occidentalis</i>				x	x			1
<i>Azorina vidalii</i>	x	x		x?	.	V		2
<i>Ballota frutescens</i>				x	.	R		2
<i>Barbarea bosniaca</i>				x	x	R		1
<i>Barbarea conferta</i>				x	x	R		1
<i>Barbarea lepuznica</i>				x?	x	I		1
<i>Barbarea sicula</i>				x	.	V		3
<i>Barlia metlesicsiana</i>	x			x?		E		
<i>Bartsia spicata</i>				x	.	R		2
<i>Bassia saxicola</i>	x	x		x?	.	E		2
<i>Bellevalia brevipedicellata</i>				x	x	V		1
<i>Bellevalia hackelii</i>			x	x	x	E		1
<i>Bellevalia lipskyi</i>				x	x	R		1
<i>Bellevalia webbiana</i>				x	x			1
<i>Bellis azorica</i>	x			x	.	I		2
<i>Bellis bernardii</i>				x	x			1
<i>Bellis longifolia</i>				x	x			1
<i>Bellium crassifolium</i>				x	x	V		1
<i>Bencomia brachystachya</i>	x	x		x	x	E		1
<i>Bencomia caudata</i>				x?		I		
<i>Bencomia exstipulata</i>	x			x?		E		
<i>Bencomia sphaerocarpa</i>	x	x		x	x	E		1
<i>Berardia subacaulis</i>				x	.	R		2
<i>Berberis maderensis</i>	x							
<i>Berteroa gintlui</i>				x	x	E		1
<i>Beta adanensis</i>	x			.	.			2
<i>Beta nana</i>				x	x	R		1
<i>Beta patula</i>		x		x?	x	R		1
<i>Beta trojana</i>	x							
<i>Betula oycoviensis</i>				.	x		VU	1
<i>Betula pendula s. fontqueri</i>							EN	
<i>Betula pendula var. parvibracteata</i>							EN	
<i>Betula szajferi</i>				x	x		EW	1
<i>Biarum carratracense</i>				x	x			1
<i>Biarum davisii</i>				x	x	V		1
<i>Biarum galiani</i>				x?	.	R		4
<i>Biarum spruneri</i>				x	x	R		1
<i>Biscutella apricorum</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Biscutella arvernensis</i>				x	x	V		1
<i>Biscutella brevicaulis</i>				x	.	R		2
<i>Biscutella controversa</i>				x	x			1
<i>Biscutella divionensis</i>				x	x	E		1
<i>Biscutella foliosa</i>				x	x	R		1
<i>Biscutella glacialis</i>				x	x			1
<i>Biscutella gredensis</i>				x	x	R		1
<i>Biscutella guillonii</i>				x	x			1
<i>Biscutella incana</i>				x?	x	V		1
<i>Biscutella intricata</i>				x	x			1
<i>Biscutella lamottei</i>				x?	x	V		1
<i>Biscutella neustricta</i>	x	x		x	x	V		1
<i>Biscutella pinatifida</i>				x	x			1
<i>Biscutella polyclada</i>				x	x			1
<i>Biscutella rotgesii</i>				x	x	V		1
<i>Biscutella sclerocarpa</i>				x	x	R		1
<i>Biscutella variegata</i>				x	x	V		1
<i>Biscutella vincentina</i>		x		x	x	V		1
<i>Bolanthus creutzbergii</i>				x?	x	R		1
<i>Bolanthus fruticosus</i>				x	x	R		1
<i>Bolanthus graecus</i>				x	x			1
<i>Bolanthus laconicus</i>				x	x	R		1
<i>Bolanthus thessalus</i>				x	x			1
<i>Boleum asperum</i>	x	x		x	x	R		1
<i>Borderea chonardii</i>	x	x		x	x	E		1
<i>Bornmuellera dieckii</i>				x	x	R		1
<i>Bornmuellera tymphaea</i>				x	x			1
<i>Botrychium matricariifolium</i>	x			.	.			21
<i>Botrychium multifidum</i>	x			.	.			18
<i>Botrychium simplex</i>	x	x		.	.			19
<i>Brachypodium arbuscula</i>				x?		R		
<i>Brassica balearica</i>				x	x	R		1
<i>Brassica cadmea</i>				x	x	R		1
<i>Brassica glabrescens</i>	x	x		x?	x	V		1
<i>Brassica hilarionis</i>	x	x	x					
<i>Brassica insularis</i>	x	x		x	.			3
<i>Brassica macrocarpa</i>	x	x		x	x	E		1
<i>Brassica oleracea</i>	x			x	.			8
<i>Brassica repanda</i>				x?	.	V		3
<i>Brassica villosa</i>				x	x	R		1
<i>Braya linearis</i>		x		.	.			2
<i>Braya purpurascens</i>	x			.	.			4
<i>Bromus brachystachys</i>				x?	x	Ex		1
<i>Bromus grossus</i>	x	x		x	.	E		3
<i>Bromus interruptus</i>	x			x	x	Ex		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Bromus moellendorffianus</i>				x	x			1
<i>Bromus moesiacus</i>	x			x	x	R		1
<i>Bromus pindicus</i>				x	x			1
<i>Bromus psammophilus</i>	x							
<i>Bufonia macropetala</i>				x	x			1
<i>Bufonia perennis</i>				x	.	R		2
<i>Bufonia tuberculata</i>				x	x			1
<i>Buglossoides calabra</i>				x	x			1
<i>Buglossoides gastonii</i>				x	x	R		1
<i>Buglossoides glandulosa</i>				x	.	I		2
<i>Bunium brevifolium</i>	x		x	x?	.	E		2
<i>Buphthalmum inuloides</i>				x	x	R		1
<i>Bupleurum acutifolium</i>				x?	.	R		2
<i>Bupleurum aira</i>				x	x	R		1
<i>Bupleurum barceloi</i>				x	x			1
<i>Bupleurum bourgaei</i>				x	x	V		1
<i>Bupleurum capillare</i>	x	x		x?	x	E		1
<i>Bupleurum dianthifolium</i>	x			x?	x	R		1
<i>Bupleurum elatum</i>				x	x	V		1
<i>Bupleurum foliosum</i>				x?	x	R		1
<i>Bupleurum handiense</i>	x	x		x?	x	V		1
<i>Bupleurum kekiskalae</i>	x							
<i>Bystropogon canariensis</i>				x?		R		
<i>Bystropogon maderensis</i>				x?		R		
<i>Bystropogon odoratissimum</i>				x?		V		
<i>Bystropogon plumosus</i>				x?		V		
<i>Bystropogon wilddpretii</i>				x?		E		
<i>Cachrys ferulacea</i>				x?	.	V		7
<i>Calamagrostis chalybaea</i>		x		x	.			3
<i>Calamagrostis scotica</i>				x	x	V		1
<i>Calamintha cretica</i>				x	x	R		1
<i>Caldesia parnassifolia</i>	x	x		.	.			14
<i>Calendula maderensis</i>	x	x		x?	x	V		1
<i>Callianthemum kernerianum</i>				x?	x	V		1
<i>Calypso bulbosa</i>		x		.	.			5
<i>Campanula abietina</i>	x							
<i>Campanula affinis</i>				x	x			1
<i>Campanula anchusiflora</i>				x	x			1
<i>Campanula andrewsii</i>				x	x			1
<i>Campanula apennina</i>				x?	x	R		1
<i>Campanula arvensis</i>				x	x			1
<i>Campanula beckiana</i>				x	.	R		2
<i>Campanula bertolae</i>				x	x			1
<i>Campanula bohemica</i>		x	x	x?	.	V		2
<i>Campanula calaminthifolia</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Campanula carpatha</i>				x	x	R		1
<i>Campanula celsii</i>				x	x			1
<i>Campanula constantini</i>				x	x	R		1
<i>Campanula cymaea</i>				x	x	R		1
<i>Campanula damboldtiana</i>	x							
<i>Campanula decumbens</i>				x	x			1
<i>Campanula delicatula</i>				x?	.	R		3
<i>Campanula elatines</i>				x	x			1
<i>Campanula elatinoides</i>				x	x	R		1
<i>Campanula euboica</i>				x	x	R		1
<i>Campanula fenestrellata</i>				x	.	R		2
<i>Campanula forsythii</i>				x	x	V		1
<i>Campanula fragilis</i>				x	x			1
<i>Campanula fritschii</i>				x	x			1
<i>Campanula gelida</i>	x	x	x	x?	.	E		2
<i>Campanula goulmyi</i>				x	x	R		1
<i>Campanula hercegovina</i>				x	x	V		1
<i>Campanula heterophylla</i>				x	x	R		1
<i>Campanula hierapetræ</i>				x?	x	R		1
<i>Campanula incurva</i>				x	x	R		1
<i>Campanula isophylla</i>				x	x	V		1
<i>Campanula jaubertiana</i>				x	.	R		2
<i>Campanula justiniana</i>				x	x			1
<i>Campanula laciniata</i>				x?	.	I		2
<i>Campanula lanata</i>	x			x	.	R		2
<i>Campanula lawrensis</i>				x	x	R		1
<i>Campanula longisepala</i>				x	x	R		1
<i>Campanula lycica</i>	x							
<i>Campanula merxmülleri</i>				x	x	I		1
<i>Campanula moravica</i>				x	.	R		5
<i>Campanula morettiana</i>	x		x	x	x	R		1
<i>Campanula oreadum</i>				x	x			1
<i>Campanula papillosa</i>				x	x	R		1
<i>Campanula pelviformis</i>				x	x			1
<i>Campanula portenschlagiana</i>				x	x	R		1
<i>Campanula poscharskyana</i>				x	x	R		1
<i>Campanula praesignis</i>				x	x			1
<i>Campanula primulifolia</i>				x	x	R		1
<i>Campanula pseudostenocodon</i>				x	x	R		1
<i>Campanula pulla</i>				x	x			1
<i>Campanula radicata</i>				x	x			1
<i>Campanula raineri</i>				x	x	R		1
<i>Campanula rechingeri</i>				x	x	R		1
<i>Campanula reiseri</i>				x?	x	R		1
<i>Campanula romanica</i>	x			x	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Campanula rupestris</i>				x?	x	R		1
<i>Campanula rupicola</i>				x	x	R		1
<i>Campanula sabatia</i>	x	x		x	x	V		1
<i>Campanula sartorii</i>				x	x	R		1
<i>Campanula saxatilis</i>				x?	.	V		2
<i>Campanula sciatbia</i>				x	x	R		1
<i>Campanula scopelia</i>				x	x	R		1
<i>Campanula secundiflora</i>				x	x	E		1
<i>Campanula serrata</i>		x	x	x	.			4
<i>Campanula specularioides</i>				x	x			1
<i>Campanula stenosphon</i>				x	x			1
<i>Campanula tanjanii</i>				x	x			1
<i>Campanula thessala</i>				x	x			1
<i>Campanula topaliana</i>				x	x			1
<i>Campanula transsilvanica</i>				x	.	R		2
<i>Campanula tubulosa</i>				x	x			1
<i>Campanula waldsteiniana</i>				x	x			1
<i>Campanula wiedmannii</i>				x?	x	I		1
<i>Campanula willkommii</i>				x	x	R		1
<i>Campanula xylocarpa</i>				x	x	R		1
<i>Campanula zoyzii</i>		x	x	x	.			3
<i>Campylanthus salsoloides</i>				x?		V		
<i>Canarina canariensis</i>				x?		V		
<i>Caralluma burchardii</i>	x	x		x?	x	V		1
<i>Cardamine caldeirarum</i>				x	.	R		2
<i>Cardamine maritima</i>				x	x			1
<i>Cardamine trifida</i>				.	x	R		1
<i>Cardaminopsis croatica</i>				x	x			1
<i>Carduncellus araneosus</i>				x	x			1
<i>Carduncellus dianius</i>				x	.	R		2
<i>Carduus adpressus</i>				.	x	R		1
<i>Carduus affinis</i>				x	x			1
<i>Carduus aurosicus</i>				x	x	V		1
<i>Carduus baecephalus</i>				x?		V		
<i>Carduus bourgaei</i>				x?		V		
<i>Carduus granatensis</i>				x	x			1
<i>Carduus myriacanthus</i>	x	x		.	x			1
<i>Carduus ramosissimus</i>				x	.	R		2
<i>Carduus squarrosus</i>				x?		V		
<i>Carduus thessalus</i>				x	x			1
<i>Carduus thracicus</i>				.	x	R		1
<i>Carex acuta</i>		x		.	.			37
<i>Carex composii</i>				x	.	V		2
<i>Carex canariensis</i>				x?		V		
<i>Carex cretica</i>				x	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Carex duriei</i>				x	.	V		2
<i>Carex fimbriata</i>				x	.	R		3
<i>Carex holostoma</i>		x		.	.			5
<i>Carex malato-belizii</i>	x							
<i>Carex markgrafii</i>				x	x	R		1
<i>Carex perrauderiana</i>				x?		E		
<i>Carex rorulenta</i>				x	x			1
<i>Carex secalina</i>	x			.	.			8
<i>Carex tricolor</i>				x	x			1
<i>Carlina barnebiana</i>				x	x	R		1
<i>Carlina canariensis</i>				x?		V		
<i>Carlina diae</i>	x			x	x	V		1
<i>Carlina fiumensis</i>				x	x	R		1
<i>Carlina onopordifolia</i>	x	x	x	x?	.	V		3
<i>Carlina sitiensis</i>				x?	x	V		1
<i>Castilleja schrenkii</i>				x	x	R		1
<i>Caulerpa olliivieri (Med.)</i>	x							
<i>Caulinia tenuissima</i>	x							
<i>Centaurea achaia</i>				x	x	R		1
<i>Centaurea aemulans</i>				x	x			1
<i>Centaurea akamantis</i>	x	x	x	x	x			1
<i>Centaurea amblensis</i>				x	x			1
<i>Centaurea antennata</i>				x	x			1
<i>Centaurea argecilensis</i>				x	x	R		1
<i>Centaurea argentea</i>				x	x			1
<i>Centaurea attica</i>				x	x			1
<i>Centaurea attica s. megarensis</i>	x							
<i>Centaurea baldaccii</i>				x	x	V		1
<i>Centaurea balearica</i>	x			x				
<i>Centaurea balearica</i>	x	x		x	x	R		1
<i>Centaurea biokovensis</i>				x	x	R		1
<i>Centaurea bombycina</i>				x	x	R		1
<i>Centaurea borjae</i>	x							
<i>Centaurea bovina</i>				x	x	I		1
<i>Centaurea candelabrum</i>				x	x	R		1
<i>Centaurea carratracensis</i>				x	x	R		1
<i>Centaurea centaurium</i>				x	x			1
<i>Centaurea centauroides</i>				x	x			1
<i>Centaurea cephalariifolia</i>				x	x			1
<i>Centaurea chalcidicaea</i>				x	x	R		1
<i>Centaurea charrelii</i>				x	x			1
<i>Centaurea citricolor</i>	x							
<i>Centaurea clementei</i>				x	x	R		1
<i>Centaurea cordubensis</i>				x?	x	R		1
<i>Centaurea corymbosa</i>	x	x		x	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Centaurea crithmifolia</i>				x	x	R		1
<i>Centaurea cuspidata</i>				x	x	R		1
<i>Centaurea cytherea</i>				x	x	R		1
<i>Centaurea dalmatica</i>				x	x	R		1
<i>Centaurea ebenoides</i>				x	x	R		1
<i>Centaurea emigrantis</i>				x?	x	R		1
<i>Centaurea exarata</i>				x	.	R		2
<i>Centaurea ferulacea</i>				x	x			1
<i>Centaurea filiformis</i>				x	x			1
<i>Centaurea fraylensis</i>		x		x	x	V		1
<i>Centaurea friderici</i>				x	x	R		1
<i>Centaurea glaberrima</i>				x	x	R		1
<i>Centaurea granatensis</i>				x	x			1
<i>Centaurea grbavacensis</i>				x	x	R		1
<i>Centaurea haenseleri</i>				x	x	R		1
<i>Centaurea bermannii</i>	x			.	x			1
<i>Centaurea horrida</i>	x	x		x	x	V		1
<i>Centaurea buljakii</i>				x?	x	R		1
<i>Centaurea byssopifolia</i>				x	x			1
<i>Centaurea idaea</i>				x	x			1
<i>Centaurea incompta</i>				x	x	R		1
<i>Centaurea ipsaria</i>				x	x	R		1
<i>Centaurea janeri</i>				x	x	R		1
<i>Centaurea jankae</i>	x			x	x	E		1
<i>Centaurea kalambakensis</i>	x	x		x	x	E		1
<i>Centaurea kartschiana</i>	x	x		x	.	R		2
<i>Centaurea kernerana</i>				x	x	R		1
<i>Centaurea kosaninii</i>				x	x	R		1
<i>Centaurea laconica</i>				x	x	R		1
<i>Centaurea lactiflora</i>	x	x		x	x	E		1
<i>Centaurea lagascae</i>				x	x			1
<i>Centaurea laureotica</i>				x	x	R		1
<i>Centaurea linaresii</i>				x?	x	E		1
<i>Centaurea linifolia</i>				x	x			1
<i>Centaurea loscosii</i>				x	x	R		1
<i>Centaurea macrorrhiza</i>				x	x	R		1
<i>Centaurea mannagettae</i>				x	x	R		1
<i>Centaurea margaritacea</i>				.	.	V		3
<i>Centaurea micracantha</i>				x	x	R		1
<i>Centaurea monticola</i>				x	x	V		1
<i>Centaurea murbeckii</i>				x	x	R		1
<i>Centaurea musarum</i>				x	x	R		1
<i>Centaurea nicolai</i>				x	.	R		2
<i>Centaurea nicopolitana</i>				x	x			1
<i>Centaurea niederi</i>	x	x		x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Centaurea oliverana</i>				x	x			1
<i>Centaurea orphanidea</i>				x	x			1
<i>Centaurea pannosa</i>				x	x			1
<i>Centaurea paxorum</i>				x?		V		
<i>Centaurea pelia</i>				x	x			1
<i>Centaurea peucedanifolia</i>	x	x		x	x	E		1
<i>Centaurea pinnatifida</i>				x?	x	R		1
<i>Centaurea poculatoris</i>				x?	x	V		1
<i>Centaurea polymorpha</i>				x	x	R		1
<i>Centaurea pontica</i>	x			x	x	E		1
<i>Centaurea procumbens</i>				x	.	R		2
<i>Centaurea psilacantha</i>				x	x	R		1
<i>Centaurea pulvinata</i>	x							
<i>Centaurea pumilio</i>				x?	x	R		1
<i>Centaurea ragusina</i>				x	x			1
<i>Centaurea rechingeri</i>				x	x	R		1
<i>Centaurea redempta</i>				x	x			1
<i>Centaurea rothmalerana</i>		x		x	x	V		1
<i>Centaurea rufidula</i>				x	x	R		1
<i>Centaurea sadlerana</i>				x	.	R		3
<i>Centaurea schousboei</i>				x	.	R		2
<i>Centaurea sibthorpii</i>				x	x			1
<i>Centaurea soskai</i>				x	x	R		1
<i>Centaurea spinosociliata</i>				x	.	R		2
<i>Centaurea spruneri</i>				x	.	R		3
<i>Centaurea sterilis</i>				x	x			1
<i>Centaurea subsericans</i>				x	x			1
<i>Centaurea subtilis</i>				x	x			1
<i>Centaurea taliensis</i>				.	.	I		3
<i>Centaurea tauromenitana</i>				x	x	R		1
<i>Centaurea tchibatcheffii</i>	x							
<i>Centaurea toletana</i>				x	x			1
<i>Centaurea transiens</i>				x	x	R		1
<i>Centaurea tuntasia</i>				x	x	Ex		1
<i>Centaurea wettsteinii</i>				x	x	R		1
<i>Centaurea zlatarskyana</i>				.	x	I		1
<i>Centaureum enclausense</i>				x?	x	R		1
<i>Centaureum rigualii</i>	x	x		x	x	E		1
<i>Centaureum somedanum</i>	x							
<i>Centaureum triphyllum</i>				x	x	R		1
<i>Centranthus nevadensis</i>				x?	.	R		2
<i>Cephalanthera cucullata</i>	x	x		x?	x	V		1
<i>Cephalaria litvinovii</i>				x	.	I		2
<i>Cephalaria radiata</i>				x	x	R		1
<i>Cerastium alsinifolium</i>	x	x	x	x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Cerastium azoricum</i>	x			x?	.	R		2
<i>Cerastium candidissimum</i>				x	x			1
<i>Cerastium dinaricum</i>		x	x	x	.			2
<i>Cerastium runemarkii</i>				x	x	I		1
<i>Cerastium scaposum</i>				x	x			1
<i>Cerastium smolikanum</i>				x?	x	I		1
<i>Cerastium sventenii</i>				x?		V		
<i>Cerastium theophrasti</i>				x?	x	R		1
<i>Cerastium transsilvanicum</i>				x	x	R		1
<i>Cerastium vagans</i>				x?	.	R		2
<i>Ceropegia chrysantha</i>	x							
<i>Ceropegia fusca</i>				x?		R		
<i>Ceropegia kainzii</i>				x?		V		
<i>Chaenorhinum glareosum</i>				x	x	R		1
<i>Chaenorhinum grandiflorum</i>				x	x			1
<i>Chaenorhinum macropodum</i>				x	x			1
<i>Chaenorhinum robustum</i>				x	x			1
<i>Chaenorhinum tenellum</i>				x?	x	E		1
<i>Chaerophyllum azoricum</i>	x	x		x?	.	I		2
<i>Chaerophyllum coloratum</i>				x	.	R		2
<i>Chaerophyllum creticum</i>				x	x	V		1
<i>Chaerophyllum heldreichii</i>				x	x	R		1
<i>Chamaecytisus blockianus</i>				x	x	R		1
<i>Chamaecytisus creticus</i>				x	x			1
<i>Chamaecytisus dorycnoides</i>				x	x			1
<i>Chamaecytisus graniticus</i>				x	x			1
<i>Chamaecytisus kovacevii</i>				x	x	R		1
<i>Chamaecytisus litwinowii</i>				x	x			1
<i>Chamaecytisus nejceffii</i>				x	x	E		1
<i>Chamaecytisus paezoskii</i>				x	x	R		1
<i>Chamaecytisus podolicus</i>				x	x	R		1
<i>Chamaecytisus skrobiszewskii</i>				x	x	R		1
<i>Chamaemeles coriacea</i>	x	x		x?	x	E		1
<i>Chamomilla tzyzelevii</i>				x	x			1
<i>Cheirolophus arboreus</i>				x?		E		
<i>Cheirolophus canariensis</i>				x?		R		
<i>Cheirolophus duranii</i>	x	x		x	x	E		1
<i>Cheirolophus falcisectus</i>	x			x?		E		
<i>Cheirolophus gomerythus</i>	x	x		x	x	E		1
<i>Cheirolophus junonianus</i>	x	x		x	x	E		1
<i>Cheirolophus massonianus</i>		x		x?	x	E		1
<i>Cheirolophus metlesicsii</i>	x			x?		E		
<i>Cheirolophus santos-abreu</i>	x			x?		E		
<i>Cheirolophus satarataensis</i>	x			x?		E		
<i>Cheirolophus tagananensis</i>	x			x?		E		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Cheirolophus webbianus</i>				x?		V		
<i>Cbiliadenus lopadusanum</i>				x?		V		
<i>Chionodoxa cretica</i>				x	x			1
<i>Chionodoxa lochiaie</i>	x	x	x	x	x			1
<i>Chionodoxa luciliae</i> Boiss.	x							
<i>Chionodoxa nana</i>				x	x			1
<i>Chrysochamela draboides</i>				x	x	V		1
<i>Cicer canariensis</i>	x							
<i>Cicer graecum</i>				x	x	R		1
<i>Cinna latifolia</i>		x		.	.			6
<i>Cirsium boujartii</i>				x	.	R		4
<i>Cirsium bourgaeum</i>				x	x	R		1
<i>Cirsium brachycephalum</i>		x	x	x	.			5
<i>Cirsium costae</i>				x	x			1
<i>Cirsium epiroticum</i>				x?	x	R		1
<i>Cirsium giraudiasii</i>				x	x			1
<i>Cirsium beldreichii</i>				x	x			1
<i>Cirsium hypopsilum</i>				x	x			1
<i>Cirsium lacaitae</i>				x	x			1
<i>Cirsium latifolium</i>		x		x?	x	V		1
<i>Cirsium lobelii</i>				x	x			1
<i>Cirsium mairei</i>				x	x	R		1
<i>Cirsium morinifolium</i>				x	x	R		1
<i>Cirsium tenoreanum</i>				x	x			1
<i>Cirsium valentinum</i>				x	x			1
<i>Cistus albanicus</i>				x	x	R		1
<i>Cistus chinamadensis</i>	x			.	x			1
<i>Cistus palhinhae</i>		x		x	x			1
<i>Clematis elisabethae-caroli</i>				x?	x	E		1
<i>Cochlearia polonica</i>	x	x	x	x	x	Ex/E		1
<i>Cochlearia tatrae</i>		x	x	x	.	R		2
<i>Coincya rupestris</i>	x	x		x?	x	E		1
<i>Coincya wrightii</i>				.	x	R		1
<i>Colchicum arenarium</i>	x	x	x	x	.			3
<i>Colchicum boissieri</i>				x	x			1
<i>Colchicum borisii</i>				.	x	V		1
<i>Colchicum corsicum</i>	x		x	x	.	V		2
<i>Colchicum consturieri</i>	x		x	x?	x	V		1
<i>Colchicum davidovii</i>	x			.	x	V		1
<i>Colchicum diampolis</i>				.	x	R		1
<i>Colchicum fominii</i>	x			x?	.	I		2
<i>Colchicum macedonicum</i>				x?	x	R		1
<i>Colchicum micranthum</i>	x			.	x			1
<i>Colchicum parlatoris</i>				x	x			1
<i>Colchicum parnassicum</i>				x	x			1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Colchicum pieperanum</i>				x?	x	R		1
<i>Colchicum psaridis</i>				x	x			1
<i>Colchicum rhodopaeum</i>				.	x	R		1
<i>Coleanthus subtilis</i>	x	x		.	.	R		9
<i>Comperia comperiana</i>	x			.	x			1
<i>Conopodium bunioides</i>				x	x			1
<i>Conopodium thalictroidifolium</i>				x	x			1
<i>Consolida samia</i> P.H.Davis	x							
<i>Consolida tenuissima</i>				x	x			1
<i>Consolida tuntasiana</i>				x	x	I		1
<i>Convolvulus argyrotamnus</i>	x	x		x?	x	E		1
<i>Convolvulus canariensis</i>				x?		V		
<i>Convolvulus caput-medusae</i>	x	x		x?	x	R		1
<i>Convolvulus fruticosus</i>				x?		R		
<i>Convolvulus glandulosus</i>				x?		R		
<i>Convolvulus lopezocasi</i>	x	x		x	x	E		1
<i>Convolvulus massonii</i>	x	x		x?	x	E		1
<i>Convolvulus perraudieri</i>				x?		V		
<i>Convolvulus pulvinatus</i>	x							
<i>Convolvulus volubilis</i>				x?		V		
<i>Coris hispanica</i>				x	x	V		1
<i>Corispermum algidum</i>				x	x	R		1
<i>Coronilla globosa</i>				x	x			1
<i>Coronopus navasii</i>	x	x		x?	x	E		1
<i>Corydalis integra</i>				x?	.	R		2
<i>Corydalis uniflora</i>				x?	x	R		1
<i>Cotoneaster cinnabarinus</i>				x	x	R		1
<i>Cotoneaster granatensis</i>				x	x		LR/cd	1
<i>Cotoneaster tauricus</i>				.	x	R		1
<i>Crambe arborea</i>	x	x		x	x	E		1
<i>Crambe fruticosa</i>				x?		R		
<i>Crambe gomerae</i>				x?		V		
<i>Crambe koktebelica</i>	x			.	x			1
<i>Crambe laevigata</i>	x	x		x?	x	V		1
<i>Crambe scaberrima</i>				x?		R		
<i>Crambe scoparia</i> Svent.	x							
<i>Crambe steveniana</i>				x?	.	I		2
<i>Crambe sventenii</i>	x	x		x	x	E		1
<i>Crambe tataria</i>	x	x	x	.	.			10
<i>Crataegus dikmensis</i> Pojark	x							
<i>Crataegus karadaghensis</i>				x	x	R		1
<i>Crataegus pycnoloba</i>				x	x			1
<i>Crataegus sphaenophylla</i>				x	x			1
<i>Crataegus taurica</i>				.	x	R		1
<i>Crataegus ucrainica</i>				x	.	R		2

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Cremonophyton lanfrancoi</i>		x	x	.	x			1
<i>Crepis albanica</i>				x	.	R		2
<i>Crepis atboa</i>				x	x	R		1
<i>Crepis auriculifolia</i>				x	x			1
<i>Crepis baldacci</i>				x	.	R		2
<i>Crepis bertisceae</i>				x?	x	R		1
<i>Crepis bithynica</i>				.	.	R		3
<i>Crepis canariensis</i>				x?		V		
<i>Crepis crocifolia</i>	x	x		x	x			1
<i>Crepis foliosa</i>				x	x			1
<i>Crepis granatensis</i>	x							
<i>Crepis guioliana</i>				x	x	R		1
<i>Crepis incana</i>				x	x			1
<i>Crepis lacera</i>				x	x			1
<i>Crepis nonbaea</i>				x?		R		
<i>Crepis oporinoides</i>				x	x			1
<i>Crepis purpurea</i>	x			.	x			1
<i>Crepis pusilla</i>		x	x	x?	.	R		5
<i>Crepis schachtii</i>				x	x			1
<i>Crepis sibthorpiana</i>				x	x			1
<i>Crepis suffreniana</i>				x	.	R		2
<i>Crepis taygetica</i>				x	x			1
<i>Crepis triasii</i>				x	x			1
<i>Crepis tybakiensis</i>				x	x			1
<i>Crithopsis delileana</i>				x?	.	R		2
<i>Crocus abantensis</i>	x							
<i>Crocus angustifolius</i>				x	x	I		1
<i>Crocus cambessedesii</i>				x	x			1
<i>Crocus corsicus</i>				x	x			1
<i>Crocus cyprius</i>	x	x	x	x	x			1
<i>Crocus etruscus</i>	x		x	x	x	R		1
<i>Crocus goulmyi</i>				x	x	R		1
<i>Crocus hadriaticus</i>				x	x			1
<i>Crocus hartmannianus</i>	x	x	x	x	x			1
<i>Crocus imperati</i>				x	x	I		1
<i>Crocus kosaninii</i>				x	x			1
<i>Crocus malyi</i>				x	x			1
<i>Crocus niveus</i>				x	x			1
<i>Crocus oreoreticus</i>				x?	x	R		1
<i>Crocus pelistericus</i>				x	x			1
<i>Crocus robertianus</i>	x			x	x	V		1
<i>Crocus scardicus</i>				x	x			1
<i>Cruciata balcanica</i>				x	x			1
<i>Culcita macrocarpa</i>	x	x		.	.			4
<i>Cupressus sempervirens</i>				.	.		LR/nt	17

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Cuscuta atrans</i>				x	x	I		1
<i>Cyanopsis muricata</i>				x	x			1
<i>Cyclamen coum</i>	x			.	.			3
<i>Cyclamen creticum</i>				x	x			1
<i>Cyclamen fatrense</i>		x	x					
<i>Cyclamen kuznetsovii</i>	x							
<i>Cyclamen mirabile</i> Hildebr.	x							
<i>Cymbalaria hepaticifolia</i>				x	x			1
<i>Cymbalaria muelleri</i>				x	.	R		2
<i>Cymodocea nodosa</i>	x			.	.			14
<i>Cynara alba</i>				x	x			1
<i>Cynara algarbiensis</i>				x	x			1
<i>Cynoglossum magellense</i>				x	x			1
<i>Cynoglossum sphacioticum</i>		x		x	x	R		1
<i>Cypripedium calceolus</i>	x	x		.	.			27
<i>Cystoseira amentacea</i>	x							
<i>Cystoseira mediterranea</i> (Med.)	x							
<i>Cystoseira sedoides</i> (Med.)	x							
<i>Cystoseira spinosa</i> (Med.)	x							
<i>Cystoseira zosteroides</i> (Med.)	x							
<i>Cytisus aeolicus</i>	x	x		x	x	V		1
<i>Cytisus ardoinii</i>				x?	x	R		1
<i>Cytisus commutatus</i>				x	x			1
<i>Cytisus emeriflorus</i>				x	.	R		2
<i>Cytisus ingramii</i>				x	x			1
<i>Cytisus patens</i>				x	x			1
<i>Cytisus reverchonii</i>				x	x			1
<i>Cytisus sauzeanus</i>				x	x			1
<i>Cytisus tribacteolatus</i>				x	x			1
<i>Daboecia azorica</i>	x			x	.	R		2
<i>Dactylis smithii</i>				x?		R		
<i>Dactylorhiza chubensis</i>	x							
<i>Daphne arbuscula</i>	x	x	x	x?	x	V		1
<i>Daphne jasminea</i>				x?	x	R		1
<i>Daphne malyana</i>				x	x	V		1
<i>Daphne petraea</i>	x	x		x	x	R		1
<i>Daphne rodriguezii</i>	x	x		x	x	E		1
<i>Daphne sophia</i>				x	.	I		3
<i>Datisca cannabina</i>				x?	.	V		2
<i>Degenia velebitica</i>				x	x	V		1
<i>Delphinium caseyi</i>	x	x	x	x	x			1
<i>Delphinium fissum</i>				.	.	I		11
<i>Delphinium hirscheifeldianum</i>				x	x	I		1
<i>Delphinium oxyspalum</i>				x?	.	V		2
<i>Delphinium puniceum</i>				x?	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Delphinium simonkaianum</i>				x	x	V		1
<i>Dendranthema zavadskii</i>	x			.	.			6
<i>Dentropoterium pulidoi</i>	x	x		.	x			1
<i>Deschampsia littoralis</i>				x?	.	I		4
<i>Deschampsia maderensis</i>	x	x		x?	x	E		1
<i>Descurainia artemisioides</i>				x?		R		
<i>Descurainia gilva</i>				x?		R		
<i>Descurainia gonzalezii</i>				x?		V		
<i>Dianthus aciphyllus</i> Ser.				x?	x	R		1
<i>Dianthus alpinus</i>				x	x			1
<i>Dianthus anticarius</i>				x	x			1
<i>Dianthus arenarius</i> s. <i>bobemicus</i>		x	x					
<i>Dianthus biflorus</i>				x	x			1
<i>Dianthus callizonus</i>				x	x	R		1
<i>Dianthus costae</i>				x	x	R		1
<i>Dianthus crassipes</i>				x	x			1
<i>Dianthus diutinus</i>		x	x	x	.	V		2
<i>Dianthus freynii</i>				.	x	R		1
<i>Dianthus fruticosus</i>				x?	.	R		2
<i>Dianthus gallicus</i>				x	.	R		2
<i>Dianthus graniticus</i>				x	x	R		1
<i>Dianthus henteri</i>				x	x			1
<i>Dianthus hypanicus</i>	x			x	x	I		1
<i>Dianthus ingoldbyi</i>				x	x			1
<i>Dianthus juniperinus</i>				x	x	R		1
<i>Dianthus knappii</i>				x	x	R		1
<i>Dianthus krylovianus</i>				x	x			1
<i>Dianthus lanceolatus</i>				x	.	R		4
<i>Dianthus langeanus</i>				x?	.	V		2
<i>Dianthus laricifolius</i>		x		x	.			2
<i>Dianthus lumnitzeri</i>		x	x	.	.			2
<i>Dianthus moravicus</i>		x	x	x?	x	V		1
<i>Dianthus myrtinervius</i>				x	.	R		2
<i>Dianthus nardiformis</i>				x	.	R		2
<i>Dianthus nitidus</i>	x	x	x	x	.	V		2
<i>Dianthus pallidiflorus</i> Ser.				.	.	R		6
<i>Dianthus pulviniformis</i>				x?	x	V		1
<i>Dianthus rupicola</i>	x	x		.	.			3
<i>Dianthus serotinus</i>	x			x	.	V		4
<i>Dianthus sphacioticus</i>				x	x	R		1
<i>Dianthus spiculifolius</i>				x	.	R		2
<i>Dianthus stamatiadae</i>				x?	x	R		1
<i>Dianthus tesquicola</i>				x	x			1
<i>Dianthus urumoffii</i>	x			x	x			1
<i>Dianthus xylorrhizus</i>				x?	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Dictamnus hispanicus</i>				x?	x	R		1
<i>Digitalis dubia</i>				x	x			1
<i>Digitalis parviflora</i>				x	x			1
<i>Diphysastrum madeirense</i>				x?	.	R		2
<i>Diphysium maderense</i>	x			x				
<i>Diplazium sibiricum</i>		x		.	.			5
<i>Diplotaxis ibicensis</i>	x	x		x?	.	R		2
<i>Diplotaxis siettiana</i>	x	x		x?	x	Ex		1
<i>Diplotaxis vicentina</i>		x		x?	x	V		1
<i>Dipsacus cephalarioides</i>	x							
<i>Doronicum cataractarum</i>				x	x	R		1
<i>Doronicum corsicum</i>				x	x			1
<i>Dorycnium broussonetii</i>				x?		R		
<i>Dorycnium eriophthalmum</i>				x?		R		
<i>Dorycnium spectabile</i>	x							
<i>Draba cinerea</i>		x		.	.			4
<i>Draba cretica</i>				x	x			1
<i>Draba cuspidata</i>				x	x	R		1
<i>Draba dedeana</i>				x	x			1
<i>Draba dorneri</i>	x			x?	x	E		1
<i>Draba glabella</i>		x		.	.			6
<i>Draba haynaldii</i>				x	x	V		1
<i>Draba hispanica</i>				x	x			1
<i>Draba kotschyi</i>				x	x			1
<i>Draba lacaitae</i>				x	x			1
<i>Draba ladina</i>				x	x	R		1
<i>Draba loiseleurii</i>				x	x	V		1
<i>Draba parnassica</i>				x	x			1
<i>Draba simonkaiana</i>				x?	x	V		1
<i>Draba stellata</i>				x	x			1
<i>Dracaena draco</i>	x		x	x?	x	V	VU	1
<i>Dracocephalum austriacum</i>	x	x		.	.			11
<i>Dracocephalum rneyschiana</i>	x			.	.			15
<i>Dracunculus canariensis</i>				x?		V		
<i>Dryopteris corleyi</i>	x	x		x?	x	I		1
<i>Dryopteris fragrans</i>	x	x		.	.			2
<i>Ebenus cretica</i>				x	x			1
<i>Ebenus sibthorpii</i>				x?	x	R		1
<i>Echinodium renauldii</i>				x	x		VU	1
<i>Echinodium setigerum</i>				x	x		VU	1
<i>Echinodium spinosum</i>	x							
<i>Echinops graecus</i>				x	x			1
<i>Echinops spinosus</i>				x?	x	R		1
<i>Echinopartum boissieri</i>				x	x			1
<i>Echium acanthocarpum</i>				x?		V		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Echium albicans</i>				x	x			1
<i>Echium auerianum</i>				x?		E		
<i>Echium bethencourtii</i>				x?		V		
<i>Echium callithyrsus</i>				x?		V		
<i>Echium candicans</i>		x		.	x			1
<i>Echium decasnei</i>				x?		V		
<i>Echium gentianoides</i>	x	x		x?	x	V		1
<i>Echium giganteum</i>				x?		V		
<i>Echium handiense</i>	x			x?		V		
<i>Echium hierrense</i>				x?		V		
<i>Echium leucophaeum</i>				x?		V		
<i>Echium onosmifolium</i>				x?		V		
<i>Echium pininana</i>	x			x?		V		
<i>Echium russicum</i>		x	x	.	.			12
<i>Echium simplex</i>				x?		V		
<i>Echium sventenii</i>				x?		V		
<i>Echium virescens</i>				x?		R		
<i>Echium webbii</i>				x?		R		
<i>Echium wildpretii</i>				x?		R		
<i>Edraianthus dalmaticus</i>				x	x	R		1
<i>Edraianthus dinaricus</i>				x	x	R		1
<i>Edraianthus parnassicus</i>				x	x			1
<i>Edraianthus pumilio</i>				x	x			1
<i>Edraianthus wettsteinii</i>				x	.	R		2
<i>Elatine gussonei</i>		x	x					
<i>Eleocharis carniolica</i>	x	x		.	.			11
<i>Elymus curvifolius</i>				x	x			1
<i>Endressia castellana</i>				x	x			1
<i>Epilobium tundrarum</i>				.	x	R		1
<i>Epipactis dunensis</i>				x	x			1
<i>Eragrostis diarrhena</i>				x	x	R		1
<i>Eremopoa mardinensis</i>	x			x				
<i>Eremosparton aphyllum</i>				x?	x	V		1
<i>Eremurus tauricus</i>				x	x			1
<i>Erica maderensis</i>				x?		R		
<i>Erigeron candidus</i>				x?	x	R		1
<i>Erigeron frigidus</i>	x	x		x	x	V		1
<i>Erigeron major</i>				x	x	R		1
<i>Erigeron nanus</i>				x	.	R		3
<i>Eriosynaphe longifolia</i>				.	.	V		2
<i>Erodium astragaloides</i>	x	x		x	x			1
<i>Erodium beketovii</i>				x	x	E		1
<i>Erodium boissieri</i>				x	x	R		1
<i>Erodium carvifolium</i>				x	x			1
<i>Erodium cazorlanum</i>				x?	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Erodium daucoides</i>				x?	x	V		1
<i>Erodium guicciardii</i>				x	.	R		3
<i>Erodium gussonii</i>				x?	x	I		1
<i>Erodium manescavi</i>				x	.	R		2
<i>Erodium pau</i>				x	x	R		1
<i>Erodium paularense</i>	x							
<i>Erodium reichardii</i>				x	.	R		2
<i>Erodium rodiei</i>				x	x	V		1
<i>Erodium rupestre</i>				x	x	R		1
<i>Erodium rupicola</i>	x	x		x	x	E		1
<i>Erodium sanguis-christi</i>				x?	x	R		1
<i>Erodium sibthorpiianum</i>				x?		R		
<i>Erucastrum palustre</i>	x	x		x	x	E		1
<i>Eryngium alpinum</i>	x	x		x	.	R		9
<i>Eryngium amorginum</i>				x	x	R		1
<i>Eryngium serbicum</i>				x	x	R		1
<i>Eryngium ternatum</i>				x	x	R		1
<i>Eryngium viviparum</i>	x	x		x	.	V		3
<i>Erysimum arbuscula</i>				x?		V		
<i>Erysimum calycinum</i>				x	x			1
<i>Erysimum favargerii</i>				x?	x	R		1
<i>Erysimum hungaricum</i>	x			.	.			5
<i>Erysimum leptostylum</i>				x	.	R		3
<i>Erysimum mutabile</i>				x	x			1
<i>Erysimum myriophyllum</i>				x	x			1
<i>Erysimum naxense</i>				x?	x	R		1
<i>Erysimum olympicum</i>				x	x	R		1
<i>Erysimum pectinatum</i>				x	x			1
<i>Erysimum penyalarensis</i>				x?	x	R		1
<i>Erysimum raulinii</i>				x	x			1
<i>Erysimum ucrainicum</i>				.	.	R		2
<i>Euphorbia anachoreta</i>				x		E		
<i>Euphorbia bourgaeana</i>	x							
<i>Euphorbia corsica</i>				x?	x	V		1
<i>Euphorbia duvalii</i>				x	x	R		1
<i>Euphorbia fontqueriana</i>				x?	x	V		1
<i>Euphorbia gaditana</i>				x?	x	E		1
<i>Euphorbia gasparrinii</i>				x	.	R		2
<i>Euphorbia gibelliana</i>				x?	x	R		1
<i>Euphorbia gregersenii</i>				x	x	R		1
<i>Euphorbia handiensis</i>	x	x		x	x	E		1
<i>Euphorbia isatidifolia</i>				x	x			1
<i>Euphorbia lambii</i>	x	x		x?	x	V		1
<i>Euphorbia maresii</i>				x	x	R		1
<i>Euphorbia margalidiana</i>	x							

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Euphorbia mellifera</i>				x?		R		
<i>Euphorbia minuta</i>				x	x			1
<i>Euphorbia monchiquensis</i>				x	x	V		1
<i>Euphorbia montenegrina</i>				x	x			1
<i>Euphorbia nevadensis</i>	x		x	x	x	R		1
<i>Euphorbia orphanidis</i>				x?	x	R		1
<i>Euphorbia polygalifolia</i>				x	x			1
<i>Euphorbia rechingeri</i>				x?	x	V		1
<i>Euphorbia ruscinonensis</i>				x	x			1
<i>Euphorbia stygiana</i>	x	x		x	.	R		2
<i>Euphorbia transtagana</i>		x		x	x	V		1
<i>Euphrasia azorica</i>	x	x		x	.	I		2
<i>Euphrasia calida</i>				x	x	R		1
<i>Euphrasia cambrica</i>				x	x	R		1
<i>Euphrasia campbelliae</i>				x	x	R		1
<i>Euphrasia christii</i>				x	.	R		2
<i>Euphrasia dunensis</i>				x	x	R		1
<i>Euphrasia exaristata</i>				x?	.	I		2
<i>Euphrasia grandiflora</i>	x	x		x	.	I		2
<i>Euphrasia heslop-harrisonii</i>				.	x	R		1
<i>Euphrasia marchesettii</i>	x	x		x	.	R		3
<i>Euphrasia marshallii</i>				x	x			1
<i>Euphrasia mendoncae</i>				x?	x	V		1
<i>Euphrasia portae</i>				x	x			1
<i>Euphrasia rivularis</i>				x	x	R		1
<i>Euphrasia rotundifolia</i>				x	x	R		1
<i>Euphrasia taurica</i>				x	x			1
<i>Euphrasia tricuspidata</i>				x	x			1
<i>Euphrasia vigursii</i>				x	x	R		1
<i>Euphrasia willkommii</i>				x	x	V		1
<i>Euzomodendron bourgaeum</i>				x	x	R		1
<i>Evax nevadensis</i>				x	x			1
<i>Evax perpusilla</i>				x	x			1
<i>Evax rotundata</i>				x	.	R		2
<i>Femeniasia balearica</i>				x?		E		
<i>Ferula halophila</i>	x							
<i>Ferula lacerottensis</i>				x?		V		
<i>Ferula latipinna</i>	x	x		x	x	E		1
<i>Ferula orientalis</i>	x			.	.			3
<i>Ferula sadleriana</i>	x	x	x	.	.			3
<i>Ferulago sartorii</i>				x	x	R		1
<i>Ferulago thyrsiflora</i>				x	x	R		1
<i>Festuca agustini</i>				x?		R		
<i>Festuca apuanica</i>				x	x			1
<i>Festuca balcanica</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Festuca brevipila</i>				x	x			1
<i>Festuca brigantina</i>		x		x	x	E		1
<i>Festuca calabrica</i>				x	x			1
<i>Festuca carnuntina</i>				x	x			1
<i>Festuca clementei</i>				x	x	R		1
<i>Festuca degenii</i>				x	x			1
<i>Festuca donax</i>				x?		V		
<i>Festuca eggleri</i>				x	x			1
<i>Festuca elegans</i>		x		.	.			2
<i>Festuca frigida</i>				x	x	R		1
<i>Festuca galicicae</i>				x	x			1
<i>Festuca glauca</i>				x	x			1
<i>Festuca grandiaristata</i>				x	x	R		1
<i>Festuca henriquesii</i>		x		x	x	E		1
<i>Festuca buonii</i>				x	x			1
<i>Festuca igoschiniae</i>				x	x			1
<i>Festuca illyrica</i>				x	x			1
<i>Festuca inops</i>				x	x			1
<i>Festuca lapidosa</i>				x	x			1
<i>Festuca macedonica</i>				x	x	R		1
<i>Festuca morisiana</i>				x	x	V		1
<i>Festuca ochroleuca</i>				x	x			1
<i>Festuca oelandica</i>				x	x			1
<i>Festuca olympica</i>				x	x	R		1
<i>Festuca oviniformis</i>				x	x	R		1
<i>Festuca pachyphylla</i>				x	x			1
<i>Festuca pindica</i>				x	x			1
<i>Festuca pirinica</i>				x	x	R		1
<i>Festuca pobleana</i>				x	x			1
<i>Festuca pseudeskia</i>				x	x	R		1
<i>Festuca querana</i>				x	x	R		1
<i>Festuca reverchonii</i>				x	x	R		1
<i>Festuca wagneri</i>				x	.	R		4
<i>Festucopsis serpentini</i>				x	x			1
<i>Fibigia triquetra</i>				x	x			1
<i>Filago duriaei</i>				x?	x	I		1
<i>Frangula azorica</i>	x	x		.	.		LR/nt	2
<i>Frankenia pulverulenta</i>				.	.	R		20
<i>Fritillaria conica</i>	x		x	x	x	V		1
<i>Fritillaria davisii</i>				x	x	R		1
<i>Fritillaria drenovskii</i>	x		x	x	.	R		2
<i>Fritillaria ebrhartii</i>				x	x			1
<i>Fritillaria epirotica</i>	x			x	x	R		1
<i>Fritillaria euboica</i>	x			x	x	E		1
<i>Fritillaria graeca</i>	x			x	.			4

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Fritillaria gussichiae</i>	x		x	x	.	R		3
<i>Fritillaria involucrata</i>				x	.	R		2
<i>Fritillaria macedonica</i>				x	.	R		2
<i>Fritillaria obliqua</i>	x		x	x	x	R		1
<i>Fritillaria orientalis</i>	x			.	.			8
<i>Fritillaria pontica</i>				.	.	R		5
<i>Fritillaria rhodocanakis</i>	x		x	x	x	R		1
<i>Fritillaria tubiformis</i>				x	.	R		2
<i>Fritillaria tuntasia</i>	x			x	x	R		1
<i>Fumana paradoxa</i>				x?	x	R		1
<i>Fumaria amarysia</i>				x	x			1
<i>Fumaria caroliana</i>				x	x	E		1
<i>Fumaria coccinea</i>				x?		R		
<i>Fumaria jankae</i>				x	x	I		1
<i>Fumaria occidentalis</i>				x	x	R		1
<i>Galanthus elwesii</i>				.	.	I		5
<i>Galium amorginum</i>				x?	.	R		2
<i>Galium baillonii</i>				x	x	R		1
<i>Galium baldense</i>				x	x			1
<i>Galium balearicum</i>				x	x	R		1
<i>Galium boissieranum</i>				x	x			1
<i>Galium brockmannii</i>				x	x			1
<i>Galium capitatum</i>				x	x			1
<i>Galium cracoviense</i>	x	x	x	x	x	V		1
<i>Galium crespianum</i>				x	x			1
<i>Galium cyllenium</i>				x	x	R		1
<i>Galium erythrorrhizon</i>				x	x			1
<i>Galium fruticosum</i>				x	x			1
<i>Galium glaucophyllum</i>				x	x	R		1
<i>Galium globuliferum</i>	x							
<i>Galium idubedae</i>				x	x			1
<i>Galium incrassatum</i>				x	x	R		1
<i>Galium litorale</i>	x	x		x	x	V		1
<i>Galium magellense</i>				x	x			1
<i>Galium margaritaceum</i>				x	x			1
<i>Galium melanantherum</i>				x	x			1
<i>Galium meliodorum</i>				x	x			1
<i>Galium moldavicum</i>	x			x	.	R		2
<i>Galium montis-arerae</i>				x	x	R		1
<i>Galium murcicum</i>				x	x			1
<i>Galium oelandicum</i>				x	x			1
<i>Galium palaeoitalicum</i>				x	x	R		1
<i>Galium peloponnesiacum</i>				x	x			1
<i>Galium productum</i>				x?		R		
<i>Galium pruinatum</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Galium pulvinatum</i>				x	x	R		1
<i>Galium reiseri</i>				x	x	R		1
<i>Galium rhodopeum</i>	x			x	.			3
<i>Galium rosellum</i>				x	x			1
<i>Galium saxosum</i>				x	.	R		2
<i>Galium stojanovii</i>				x	x	V		1
<i>Galium sudeticum</i>		x	x	x	.	R		3
<i>Galium thymifolium</i>				x	x			1
<i>Galium valentinum</i>				x	x			1
<i>Galium viridiflorum</i>	x	x		x	x	R		1
<i>Galium xeroticum</i>				x	x			1
<i>Gaudinia hispanica</i>	x	x		x	x	I		1
<i>Genista aristata</i>				x	x			1
<i>Genista baetica</i>				x	x			1
<i>Genista beneboavensis</i>	x							
<i>Genista cupanii</i>				x	x			1
<i>Genista dorycnifolia</i>	x	x		x	x	V		1
<i>Genista halacsyi</i>				x?	x	R		1
<i>Genista hassertiana</i>				x	x			1
<i>Genista holopetala</i>	x	x		x	.	V		3
<i>Genista lucida</i>				x	x			1
<i>Genista melia</i>				x?	x	Ex		1
<i>Genista millii</i>				x?	x	R		1
<i>Genista morisii</i>				x	x	V		1
<i>Genista nissana</i>				x	x	R		1
<i>Genista parnassica</i>				x?	x	R		1
<i>Genista pumila</i>				x	x			1
<i>Genista sakellariadis</i>				x?	x	R		1
<i>Genista teretifolia</i>				x	x	R		1
<i>Genista tinctoria</i>	x			x	.			26
<i>Gentiana boryi</i>				x	x	V		1
<i>Gentiana ligustica</i>	x	x		x	.			2
<i>Gentianella anglica</i>	x	x		x	x			1
<i>Gentianella bohemica</i>		x	x	x?	.	R		3
<i>Gentianella columnae</i>				x	x			1
<i>Geranium canariense</i>				x?		R		
<i>Geranium cazgorlense</i>				x?	x	E		1
<i>Geranium dolomiticum</i>				x?	x	R		1
<i>Geranium humbertii</i>				x	x			1
<i>Geranium maderense</i> Yeo	x			x				
<i>Geranium rubescens</i>				x?		R		
<i>Gesnouinia arborea</i>				x?		V		
<i>Geum bulgaricum</i>	x			x	.			3
<i>Gladiolus felicis</i> Mirek	x							
<i>Gladiolus palustris</i>		x	x	x	.	I		13

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Gladiolus reuteri</i>				x?	x	R		1
<i>Globularia ascanii</i>	x	x		x	x	E		1
<i>Globularia cambessedesii</i>				x	x	R		1
<i>Globularia incanescens</i>				x	x	R		1
<i>Globularia neapolitana</i>				x	x	V		1
<i>Globularia repens</i>				x	.	R		3
<i>Globularia sarcophylla</i>	x	x		x	x	E		1
<i>Globularia spinosa</i>				x	x			1
<i>Globularia stygia</i>	x	x		x	x	E		1
<i>Globularia valentina</i>				x	x			1
<i>Glycyrrhiza iconica</i> Hub.-Mor.	x							
<i>Glycyrrhiza korsbinskyi</i>				.	.	R		2
<i>Goniolimon graminifolium</i>				x	x	V		1
<i>Goniolimon heldreichii</i>				x	x	R		1
<i>Goniolimon sartorii</i>				x	x	R		1
<i>Goniolithon byssoides</i> (Med.)	x							
<i>Gonospermum canariense</i>				x?		R		
<i>Gonospermum gomerae</i>				x?		V		
<i>Goodyera macrophylla</i>	x	x		x?	x	E		1
<i>Greenovia aizoon</i>				x?		V		
<i>Greenovia dodrentalis</i>				x?		V		
<i>Guillonea scabra</i>				x	x			1
<i>Guiraoa arvensis</i>				x	x			1
<i>Gypsophila belorossica</i>				x	x			1
<i>Gypsophila macedonica</i>				x	.	R		2
<i>Gypsophila montserratii</i>				x?	x	V		1
<i>Gypsophila papillosa</i>	x	x		x	x	V		1
<i>Gypsophila petraea</i>				x	x			1
<i>Gypsophila struthium</i>				x	x			1
<i>Gypsophila tomentosa</i>				x	x			1
<i>Haberlea rhodopensis</i>	x			x	.	R		2
<i>Halacsya sendtneri</i>				x	.	R		2
<i>Halimium verticillatum</i>		x		x	x	E		1
<i>Hammotolobium lotoides</i>				x?	x	R		1
<i>Haplophyllum balcanicum</i>				x	.	R		2
<i>Haplophyllum boissierianum</i>				x	.	R		2
<i>Heberdenia excelsa</i>				x	x		VU	1
<i>Hedysarum boutignyanum</i>				x	x	R		1
<i>Hedysarum cretaceum</i>				x	x			1
<i>Hedysarum macedonicum</i>				x?	x	R		1
<i>Hedysarum razoumovianum</i>	x			.	x			1
<i>Hedysarum ucrainicum</i>				x	x	R		1
<i>Helianthemum alypoides</i>	x							
<i>Helianthemum asperum</i>				x	x			1
<i>Helianthemum brammwelliorum</i>				x?		E		

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Helianthemum brousseletii</i>				x?		R		
<i>Helianthemum bystropogophyllum</i>	x	x		x	x	E		1
<i>Helianthemum caput-felis</i>	x	x		.	.			3
<i>Helianthemum cirae</i>				x?		E		
<i>Helianthemum gonzales-ferreri</i>				x?		E		
<i>Helianthemum inaguae</i>				x?		E		
<i>Helianthemum juliae</i>				x?		E		
<i>Helianthemum lini</i>				x?		E		
<i>Helianthemum pannosum</i>				x	x	R		1
<i>Helianthemum rosmaessleri</i>				x	x			1
<i>Helianthemum salicifolium</i>				x?	.	I		18
<i>Helianthemum teneriffae</i>	x			x?		E		
<i>Helianthemum tholiforme</i>				x?		R		
<i>Helianthemum thymiphyllum</i>				x?		V		
<i>Helianthemum viscidulum</i>				x	x			1
<i>Helichrysum alucense</i>				x?		E		
<i>Helichrysum ambiguum</i>				x	x			1
<i>Helichrysum amorginum</i>				x	x	R		1
<i>Helichrysum doersleri</i>				x	x	V		1
<i>Helichrysum gossypinum</i>	x	x		x?	x	V		1
<i>Helichrysum heldreichii</i>				x?	x	V		1
<i>Helichrysum melitense</i>		x	x					
<i>Helichrysum monizii</i>				x?		R		
<i>Helichrysum monogynum</i>	x	x		x?	x	V		1
<i>Helichrysum sibthorpii</i>	x		x	x	x	V		1
<i>Helichrysum taenari</i>				x?	x	R		1
<i>Helictotrichon decorum</i>				x	x			1
<i>Helictotrichon muricatum</i>				x	x	R		1
<i>Helictotrichon petzense</i>				x?	.	R		2
<i>Helictotrichon sarracenorum</i>				x	x	R		1
<i>Heliotropium halacsyi</i>				x	x			1
<i>Helleborus lividus</i>				x	.	R		3
<i>Helleborus orientalis</i>				x?	.	R		2
<i>Hepatica transsilvanica</i>				x	x			1
<i>Heptaptera angustifolia</i>				x	x	R		1
<i>Heptaptera colladonioides</i>				x	x			1
<i>Heptaptera macedonica</i>				x	x	I		1
<i>Heracleum carpathicum</i>				x	.	R		2
<i>Heracleum ligusticifolium</i>				x	x	R		1
<i>Heracleum minimum</i>				x	x	V		1
<i>Heracleum pubescens</i>				x	.	I		4
<i>Herniaria algarvica</i>	x	x		x?	x	V		1
<i>Herniaria baetica</i>				x	x	R		1
<i>Herniaria canariensis</i>				x?		V		
<i>Herniaria fruticosa</i>				x	x			1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Herniaria maritima</i>	x	x		x	x	V		1
<i>Hesperis inodora</i>				x	x			1
<i>Hesperis oblongifolia</i>				x	x	V		1
<i>Hesperis vrabehyana</i>				x	x	V		1
<i>Himantoglossum adriaticum</i>		x	x					
<i>Hippocrepis balearica</i>				x	x			1
<i>Hippocrepis squamata</i>				x	x			1
<i>Hippocrepis valentina</i>				x	x	R		1
<i>Hippuris tetraphylla</i>		x		.	x			1
<i>Hladnikia pastinacifolia</i>		x	x	x	x	R		1
<i>Holcus caespitosus</i>				x	x	V		1
<i>Holcus grandiflorus</i>				x	x	R		1
<i>Holcus notarisii</i>				x	x			1
<i>Hornungia aragonensis</i>				x	x			1
<i>Huetia cretica</i>				x	x			1
<i>Huetia pumila</i>				x	x			1
<i>Hyacinthella atchleyi</i>				x?	x	R		1
<i>Hyacinthella dalmatica</i>				.	x	R		1
<i>Hyacinthella pallasiana</i>				.	.	I		3
<i>Hyacinthoides vicentina</i>		x		x?	x	V		1
<i>Hymenonema laconicum</i>				x	x			1
<i>Hymenophyllum maderense</i>	x			x				
<i>Hymenostemma pseudanthemis</i>	x	x		x	x	V		1
<i>Hyoseris frutescens</i>		x	x					
<i>Hyoseris taurina</i>				x	x	R		1
<i>Hypericum aciferum</i>	x	x		x	x	E		1
<i>Hypericum amblycalyx</i>				x?	x	R		1
<i>Hypericum atbom</i>				x	x	R		1
<i>Hypericum caprifolium</i>				x	x			1
<i>Hypericum delphicum</i>				x	x	R		1
<i>Hypericum fragile</i>				x?	x	R		1
<i>Hypericum glandulosum</i>				x?		R		
<i>Hypericum haplophyllodes</i>				x	x	R		1
<i>Hypericum kelleri</i>				x?	x	V		1
<i>Hypericum reflexum</i>				x?		E		
<i>Hypericum salsugineum</i>	x							
<i>Hypericum trichocaulon</i>				x	x			1
<i>Hypericum vesiculosum</i>				x	x			1
<i>Hypochoeris oligocephala</i>	x	x		x	x	E		1
<i>Hypochoeris tenuiflora</i>				x	x			1
<i>Iberis arbuscula</i> Runemark	x							
<i>Iberis aurosica</i>				x	.	V		2
<i>Iberis crenata</i>				x	x			1
<i>Iberis fontqueri</i>				x	x	R		1
<i>Iberis sampaoiana</i>				x?	x	V		1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Iberis semperflorens</i>				x	.	R		3
<i>Ilex canariensis</i>							LR/nt	
<i>Ilex perado</i>				.	.		LR/nt	2
<i>Ilex perado s. iberica</i>				x			CR	
<i>Ilex perado s. lópez-lilloi</i>				x			CR	
<i>Imperatoria lowei</i>				x?		V		
<i>Inula helvetica</i>				x	.	R		5
<i>Inula rotundifolia</i>				x?	x	R		1
<i>Inula serpentinica</i>				x?	x	R		1
<i>Inula subfloccosa</i>				x	x	R		1
<i>Ionopsidium acaule</i>	x							
<i>Ionopsidium savianum</i>	x							
<i>Iris aphylla s. hungarica</i>		x	x	x				
<i>Iris boissieri</i>			x	x	.			2
<i>Iris marsica</i>	x			x	x	R		1
<i>Iris serotina</i>				x?	x	R		1
<i>Isatis arenaria</i>				x	x			1
<i>Isatis lusitanica</i>				x?	x	V		1
<i>Isoetes azorica</i>	x	x		x	.	E		2
<i>Isoetes boryana</i>	x	x		x	x	V		1
<i>Isoetes beldreichii</i>				x	x	V		1
<i>Isoetes malinverniana</i>	x	x		x	x	E		1
<i>Isoplexis canariensis</i>				x?		R		
<i>Isoplexis chalcantha</i>	x	x		x	x	E		1
<i>Isoplexis isabelliana</i>	x	x		x	x	E		1
<i>Isoplexis sceptrum</i>				x?		R		
<i>Jankaea beldreichii</i>	x		x	x	x	V		1
<i>Jasione bulgarica</i>				x	x	R		1
<i>Jasione foliosa</i>				x	x			1
<i>Jasione lusitanica</i>	x	x		x	x	I		1
<i>Jasione penicillata</i>				x	x	R		1
<i>Jasminum azoricum</i> L.	x			x				
<i>Jobrenia distans</i>				x	x			1
<i>Jonopsidium acaule</i>		x		x?	.	V		3
<i>Jonopsidium savianum</i>		x		x?	x	R		1
<i>Juncus acutiflorus</i>				x	x			1
<i>Juncus pyrenaicus</i>				x	x			1
<i>Juncus requienii</i>				x	x			1
<i>Juncus valvatus</i>		x		x?	x	R		1
<i>Juniperus brevifolia</i>	x			x	.	E	EN	2
<i>Juniperus cedrus</i>				x?		E	EN	
<i>Jurinea cyanoides</i>	x	x		.	.			6
<i>Jurinea fontqueri</i>	x	x		x	x	V		1
<i>Jurinea glyccantha</i>				x?	.	I		6
<i>Jurinea tanaitica</i>				x	x			1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Jurinea taygetea</i>				x	.	R		2
<i>Jurinea țzar-ferdinandii</i>				x	x			1
<i>Justicia hyssopifolia</i>				x?		R		
<i>Kalidiopsis wagenitzii</i>	x							
<i>Kickxia scoparia</i>				x?		R		
<i>Knautia adriatica</i>				x	x			1
<i>Knautia baldensis</i>				x	x	I		1
<i>Knautia basaltica</i>				x	x	I		1
<i>Knautia carinthiaca</i>				x	x			1
<i>Knautia clementii</i>				x	x			1
<i>Knautia dalmatica</i>				x	x	R		1
<i>Knautia foreziensis</i>				x?	x	R		1
<i>Knautia gussonei</i>				x	x			1
<i>Knautia lucana</i>				x	x	R		1
<i>Knautia magnifica</i>				x	x			1
<i>Knautia nevadensis</i>				x	.	V		2
<i>Knautia panicii</i>				x	x	R		1
<i>Knautia pectinata</i>				x	x			1
<i>Knautia persicina</i>				x	x	R		1
<i>Knautia rupicola</i>				x	x			1
<i>Knautia sarajevensis</i>				x	x	R		1
<i>Knautia subscaposa</i>				x	x			1
<i>Knautia tatarica</i>				x	.	E		2
<i>Knautia travnicensis</i>				x	x	R		1
<i>Knautia velebitica</i>				x	x			1
<i>Knautia velutina</i>				x?	x	I		1
<i>Kosteletzkya pentacarpos</i>	x	x		.	.			4
<i>Kunkeliella canariensis</i>	x			x?		V		
<i>Kunkeliella psilotoclada</i>	x			x?		E		
<i>Kunkeliella subsiculenta</i>	x	x		x?	x	V		1
<i>Lactuca livida</i>				x	x	R		1
<i>Lactuca longidentata</i>				x	x	R		1
<i>Lactuca palmensis</i>				x?		V		
<i>Lactuca watsoniana</i>	x	x		x	.	R		2
<i>Lafuentea rotundifolia</i>				x	x	R		1
<i>Lagoseris purpurea</i>	x							
<i>Lagotis uralensis</i>				.	x	R		1
<i>Laminaria ochroleuca (Med.)</i>	x							
<i>Laminaria rodriguezii (Med.)</i>	x							
<i>Lamium glaberrimum</i>				x	x	R		1
<i>Lamyropsis cynaroides</i>	x			.	.			2
<i>Lamyropsis microcephala</i>		x		x	x	E		1
<i>Lappula echinophora</i>				x	x	R		1
<i>Larix decidua</i>				x?	.			18
<i>Laserpitium longiradium</i>	x	x		x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Laserpitium nitidum</i>				x	x			1
<i>Lathraea rhodopea</i>				x	.	R		2
<i>Lathyrus binatus</i>				x	x			1
<i>Lathyrus neurolobus</i>				x	x			1
<i>Lathyrus pancicii</i>				x	.	R		2
<i>Lathyrus tremolsianus</i>				x	x			1
<i>Launaea cervicornis</i>				x	x			1
<i>Launaea pumila</i>				x	x			1
<i>Laurus azorica</i>				.	.		LR/nt	2
<i>Lavandula buchii</i>				x?		E		
<i>Lavandula lanata</i>				x	x			1
<i>Lavatera acerifolia</i>				x?		R		
<i>Lavatera mauritanica</i>				x?	.	R		2
<i>Lavatera oblongifolia</i>				x	x			1
<i>Lavatera phoenicea</i>				x?		E		
<i>Leontodon boryi</i>	x	x		x	x			1
<i>Leontodon carpetanus</i>				x	x			1
<i>Leontodon duboisii</i>	x			x	.			2
<i>Leontodon bellicus</i>				x	x			1
<i>Leontodon microcephalus</i>	x	x		x	x	R		1
<i>Leontodon siculus</i>	x	x		x	.			2
<i>Lepidium cardamines</i>				x	x	E		1
<i>Lepidium villarsii</i>				x	.	V		2
<i>Lereschia thomasi</i>				x	x	R		1
<i>Leucanthemopsis pallida</i>				x	x			1
<i>Leucanthemum burnatii</i>				x	x	V		1
<i>Leucanthemum chloroticum</i>				x	x	R		1
<i>Leucanthemum corsicum</i>				x	x			1
<i>Leucanthemum gracilicaule</i>				x	x			1
<i>Leucanthemum graminifolium</i>				x	x			1
<i>Leucanthemum aestivum</i>				x?	.	I		24
<i>Leucanthemum longifolium</i>				x	x			1
<i>Leucanthemum nicaeense</i>	x	x		x	.	V		2
<i>Leucanthemum valentinum</i>				x	.	V		3
<i>Lenzea centauroides</i>		x		x	.			2
<i>Lenzea longifolia</i>		x		x	x	E		1
<i>Lenzea rhaeticoidea</i>				x	.	V		2
<i>Ligularia sibirica</i>	x	x		.	.			14
<i>Ligusticum albanicum</i>				x	x	Ex/E		1
<i>Ligusticum corsicum</i>				x	x	R		1
<i>Lilium jankae</i>	x			.	.			3
<i>Lilium pomponium</i>				x	.	V		3
<i>Lilium pyrenaicum</i>				x	x			1
<i>Lilium rhodopaeum</i>	x			x	.	R		2
<i>Limonium album</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Limonium ampuriense</i>				x?		V		
<i>Limonium anatolicum</i>	x			x				
<i>Limonium aragonense</i>				x	x	I		1
<i>Limonium arborescens</i>	x	x		x	x	E		1
<i>Limonium asterotrichum</i>				x	x	V		1
<i>Limonium biflorum</i>				x	x			1
<i>Limonium bocconeii</i>				x	x			1
<i>Limonium bosanum</i>				x?		R		
<i>Limonium bourgaei</i>				x?		V		
<i>Limonium brassicifolium</i>				x?	.	E		2
<i>Limonium caesium</i>				x	x	R		1
<i>Limonium calaminare</i>				x	x			1
<i>Limonium calcarae</i>				x?	x	V		1
<i>Limonium caprariense</i>				x	x			1
<i>Limonium carpathum</i>				x	x	R		1
<i>Limonium coinzii</i>				x	x	R		1
<i>Limonium compactum</i>				x?		E		
<i>Limonium cordatum</i>				x	.	R		2
<i>Limonium costae</i>				x	x			1
<i>Limonium cosyrense</i>				x?	x	R		1
<i>Limonium dendroides</i>	x	x		x	x	E		1
<i>Limonium densiflorum</i>				x?	.	R		3
<i>Limonium dichotomum</i>				x	x			1
<i>Limonium dubyi</i>				x?	.	Ex		2
<i>Limonium dufourei</i>				x	x	E		1
<i>Limonium emarginatum</i>				x	x	V		1
<i>Limonium erectum</i>				x?		V		
<i>Limonium etruscum</i>				x?		V		
<i>Limonium eugeniae</i>				x	x	R		1
<i>Limonium formenterae</i>				x?		R		
<i>Limonium frederici</i>				x?	.	R		2
<i>Limonium fruticans</i>	x			x?		E		
<i>Limonium furfuraceum</i>				x?	x	R		1
<i>Limonium gibertii</i>				x	x	R		1
<i>Limonium grosii</i>				x?		R		
<i>Limonium hermaeum</i>				x	x	R		1
<i>Limonium hierapetrae</i>				x?		V		
<i>Limonium imbricatum</i>				x?		E		
<i>Limonium insigne</i>				x	x			1
<i>Limonium intermedium</i>				x?		R		
<i>Limonium japygicum</i>				x	x	V		1
<i>Limonium jobannis</i>				x	.	V		2
<i>Limonium laetum</i>				x	x	E		1
<i>Limonium lausianum</i>				x	x	E		1
<i>Limonium lopadusanum</i>				x?		R		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Limonium lucentinum</i>				x	x	R		1
<i>Limonium majoricum</i>				x	x	E		1
<i>Limonium marisoli</i>				x?		R		
<i>Limonium melium</i>				x	x			1
<i>Limonium merxmulleri</i>				x?		V		
<i>Limonium ocymifolium</i>				x	x			1
<i>Limonium opulentum</i>				x?		V		
<i>Limonium ovalifolium</i>				x?	.	R		3
<i>Limonium panormitanum</i>				x	x	V		1
<i>Limonium parvibracteatum</i>				x?	x	R		1
<i>Limonium parvifolium</i>				x	x	V		1
<i>Limonium perezii</i>	x							
<i>Limonium pontium</i>				x	x			1
<i>Limonium preauxii</i>	x			x?		V		
<i>Limonium pseudodictyocladon</i>				x?		E		
<i>Limonium puberulum</i>				x?		V		
<i>Limonium redivivum</i>				x?		E		
<i>Limonium remotispiculum</i>				x	x	V		1
<i>Limonium retusum</i>				x?		R		
<i>Limonium ruizii</i>				x?		V		
<i>Limonium spectabile</i>	x	x		x	x	E		1
<i>Limonium strictissimum</i>		x		x?	x	V		1
<i>Limonium sventenii</i>	x	x		x	x	E		1
<i>Limonium tamaricoides</i>	x							
<i>Limonium tenoreanum</i>				x	x	V		1
<i>Limonium tenuiculum</i>				x	x			1
<i>Limonium tharrosianum</i>				x?		R		
<i>Limonium todaroanum</i>				x?		E		
<i>Limonium vestitum</i>				x	x	R		1
<i>Linaria algarviana</i>	x	x		x	x	V		1
<i>Linaria amoi</i>				x	x	R		1
<i>Linaria anticaria</i>				x	x			1
<i>Linaria badalii</i>				x	x			1
<i>Linaria biebersteinii</i>				x	.	I		4
<i>Linaria capraria</i>				x	x			1
<i>Linaria cavanillesii</i>				x?	x	R		1
<i>Linaria clementei</i>				x	x	R		1
<i>Linaria cretacea</i>				x	.	V		2
<i>Linaria depauperata</i>				x	x			1
<i>Linaria fancicola</i>				x	x	R		1
<i>Linaria ficalhoana</i>	x	x		x	x			1
<i>Linaria flava</i>	x	x		.	.			2
<i>Linaria glacialis</i>				x?	x	R		1
<i>Linaria glauca</i>				x	x			1
<i>Linaria hellenica</i>	x	x		x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Linaria buteri</i>				x	x	R		1
<i>Linaria lamarckii</i>				x?	x	R		1
<i>Linaria lilacina</i>				x	x			1
<i>Linaria loeselii</i>	x	x	x	x	.			3
<i>Linaria microsepala</i>				x	x	R		1
<i>Linaria nevadensis</i>				x?	x	R		1
<i>Linaria nigricans</i>				x?	x	R		1
<i>Linaria nivea</i>				x	x			1
<i>Linaria oligantha</i>				x	x			1
<i>Linaria platycalyx</i>				x?	x	R		1
<i>Linaria propinqua</i>				x	x			1
<i>Linaria pseudolacajiflora</i>		x	x	.	x			1
<i>Linaria ricardoi</i>	x	x		x	x	V		1
<i>Linaria thymifolia</i>				x	x	R		1
<i>Linaria tonzigii</i>		x		x	x	R		1
<i>Linaria tursica</i>	x							
<i>Linaria verticillata</i>				x	x			1
<i>Lindernia procumbens</i>	x		x	.	.			19
<i>Linum caespitosum</i>				x?	x	R		1
<i>Linum doerfleri</i>				x?	x	R		1
<i>Linum dolomiticum</i>	x	x	x	x?	x	E		1
<i>Linum elegans</i>				x	.	R		4
<i>Linum goulimyi</i>				x?	x	R		1
<i>Linum leonii</i>				x	.	V		2
<i>Linum leucanthum</i>				x	x			1
<i>Linum maritimum</i>		x		.	.			12
<i>Linum uninerve</i>				x	x			1
<i>Liparis loeselii</i>	x	x		.	.			25
<i>Liquidambar orientalis</i> var. <i>orientalis</i>				x	.		VU	2
<i>Lithodora nitida</i>	x	x		x	x	E		1
<i>Lithodora zahnii</i>				x	x	R		1
<i>Lithophyllum lichenoides</i> (Med.)	x							
<i>Loeflingia tavaresiana</i>				x	x			1
<i>Logfia neglecta</i>				x	.	Ex/E		3
<i>Lolium lowei</i>				x?		V		
<i>Lonicera glutinosa</i>				x	x			1
<i>Lonicera splendida</i>				x	x			1
<i>Lonicera stabiana</i>				x?	x	R		1
<i>Lotus aduncus</i>				x	x	R		1
<i>Lotus azoricus</i>	x	x		x	.	R		2
<i>Lotus berthelotii</i>				x?		E		
<i>Lotus callis-viridis</i>	x	x		x?	x	V		1
<i>Lotus campylocladus</i>				x?		R		
<i>Lotus dumetorum</i>				x?		V		
<i>Lotus eremiticus</i>	x			x?		E		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Lotus genistoides</i>				x?		E		
<i>Lotus granadensis</i>				x?	x	R		1
<i>Lotus holosericeus</i>				x?		R		
<i>Lotus kunkellii</i>	x	x		x	x	E		1
<i>Lotus leptophyllus</i>				x?		E		
<i>Lotus maculatus</i>	x			x?		E		
<i>Lotus pyranthus</i>	x			x?		E		
<i>Lotus spartioides</i>				x?		V		
<i>Lugoa revoluta</i>				x?		V		
<i>Lunaria telekiana</i>				x	x	R		1
<i>Luronium natans</i>	x	x		x	.			18
<i>Luzula arctica</i>		x		.	.			4
<i>Luzula canariensis</i>				x?		V		
<i>Luzula deflexa</i>				.	x	R		1
<i>Luzula elegans</i>				x?	x	R		1
<i>Luzula seubertii</i>				x?		R		
<i>Lycnis nivalis</i>				x	x	V		1
<i>Lysimachia minoricensis</i>	x			x?	x	E		1
<i>Lytbrum castellanum</i>				x	x	R		1
<i>Lytbrum flexuosum</i>	x	x		x	x	V		1
<i>Lytbrum thesioides</i>	x			.	.			4
<i>Malcolmia macrocalyx</i>				x	x			1
<i>Malus florentina</i>				x?	.	R		4
<i>Malus trilobata</i>				x?	.	R		2
<i>Malva stipulacea</i>				x	x			1
<i>Mandragora autumnalis</i>			x	x?	.	Ex		8
<i>Mandragora officinarum</i>	x			.	.	R		3
<i>Marcetella maderensis</i>	x	x		.	x			1
<i>Marsilea azorica</i>	x	x		x?	.	E		2
<i>Marsilea batardae</i>	x	x		x?	.	I		2
<i>Marsilea quadrifolia</i>	x	x		.	.			18
<i>Marsilea strigosa</i>	x	x		.	.			5
<i>Matricaria rosella</i>				x	x			1
<i>Matricaria tempskyana</i>				x	x			1
<i>Matthiola parviflora</i>				x?	.	V		3
<i>Mattiastrum lithospermifolium</i>				x?	x	R		1
<i>Maytenus canariensis</i>						LR/cd		
<i>Maytenus dryandri</i>				x?		V		
<i>Maytenus umbellata</i>		x		.	x			1
<i>Medicago cancellata</i>				x?	x	V		1
<i>Medicago hybrida</i>				x	x			1
<i>Medicago pironae</i>				x	x	R		1
<i>Melampyrum catalaunicum</i>				x	x			1
<i>Melampyrum ciliatum</i>				x	x	V		1
<i>Melampyrum doerfleri</i>				x	.	R		2

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Melampyrum heracleoticum</i>				x	.	R		2
<i>Melampyrum hoermannianum</i>				x	x			1
<i>Melampyrum italicum</i>				x	x			1
<i>Melampyrum trichocalycinum</i>				x	x	R		1
<i>Melampyrum variegatum</i>				x	x			1
<i>Melanoselinum decipiens</i>		x		x?	.	R		2
<i>Melica teneriffae</i>				x?		R		
<i>Melilotus physocarpa</i>				x	x			1
<i>Mentha requienii</i>				x	.	R		6
<i>Microcnemum coralloides</i>	x			.	x	V		1
<i>Micromeria acropolitana</i>				x	x	R		1
<i>Micromeria croatica</i>				x	x			1
<i>Micromeria frivaldszkyana</i>				x	x			1
<i>Micromeria glomerata</i>	x			x?		E		
<i>Micromeria belianthemifolia</i>				x?		R		
<i>Micromeria hispida</i>				x	x	R		1
<i>Micromeria kernerii</i>				x	x	R		1
<i>Micromeria leucantha</i>	x			x?		E		
<i>Micromeria nervosa</i>				x?	.	R		7
<i>Micromeria parviflora</i>				x	.	R		2
<i>Micromeria pineolens</i>				x?		E		
<i>Micromeria pulegium</i>				x	x			1
<i>Micromeria rivas-martinezii</i>				x?		E		
<i>Micromeria tapeinantha</i>				x?	x	R		1
<i>Micromeria taygetea</i>	x	x		x	x	E		1
<i>Micropyropsis tuberosa</i>	x							
<i>Minuartia bilykiana</i>				x	x	I		1
<i>Minuartia bulgarica</i>				x	x			1
<i>Minuartia glaucina</i>				x?		E		
<i>Minuartia grignensis</i>				x	x	I		1
<i>Minuartia handelii</i>				x	x	R		1
<i>Minuartia helmii</i>				x	x	I		1
<i>Minuartia krascheninnikovii</i>				x	x	R		1
<i>Minuartia langii</i>				x?		I		
<i>Minuartia pichleri</i>				x	x	R		1
<i>Minuartia taurica</i>				x	x	R		1
<i>Minuartia wettsteinii</i>				x	x	E		1
<i>Moebria dielsiana</i>				x	x	R		1
<i>Moebria diversifolia</i>				x	x			1
<i>Moebria glaucovirens</i>				x	x			1
<i>Moebria hypanica</i>	x			.	x	I		1
<i>Moebria intermedia</i>				x?	x	R		1
<i>Moebria intricata</i>				x	x			1
<i>Moebria jankae</i>	x			x	.	R		2
<i>Moebria lateriflora</i>		x		.	.			7

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Moebria lebrunii</i>				x?	.	R		2
<i>Moebria markgrafii</i>				x	x	R		1
<i>Moebria minutiflora</i>				x	x	R		1
<i>Moebria papulosa</i>				x	x	R		1
<i>Moebria sedoides</i>				x?	.	R		2
<i>Moebria tejedensis</i>	x		x	.	x			1
<i>Moebria tommasinii</i>	x	x		x	.	R		3
<i>Moebria villosa</i>		x	x	x	x			1
<i>Moltkia doerfleri</i>				x	x	R		1
<i>Moltkia suffruticosa</i>				x	x	R		1
<i>Monanthes adenoscepes</i>				x?		E		
<i>Monanthes anagaensis</i>				x?		V		
<i>Monanthes dasyphylla</i>				x?		E		
<i>Monanthes lowei</i>				x?		R		
<i>Monanthes minima</i>				x?		V		
<i>Monanthes muralis</i>				x?		R		
<i>Monanthes niphophylla</i>				x?		E		
<i>Monanthes pallens</i>				x?		R		
<i>Monanthes polyphylla</i>				x?		R		
<i>Monanthes silensis</i>				x?		R		
<i>Monanthes wildpretii</i>	x	x		x	x	E		1
<i>Monyzia edulis</i>	x	x						
<i>Moricandia foetida</i>				x	x	R		1
<i>Moricandia moricandioides</i>				x	x			1
<i>Murbeckiella sousae</i>	x		x	x	x	E		1
<i>Murbeckiella zanonii</i>				x	x			1
<i>Muscari dionysicum</i>				x?	x	R		1
<i>Muscari gussonei</i>	x	x		x	.			2
<i>Muschia aurea</i>	x							
<i>Muschia wollastonii</i>	x							
<i>Myosotis azorica</i>	x	x		x	.	R		2
<i>Myosotis corsicana</i>				x	x			1
<i>Myosotis gallica</i>				x	x	R		1
<i>Myosotis lusitanica</i>		x		x?	x	V		1
<i>Myosotis maritima</i>	x	x		.	.			2
<i>Myosotis rehsteineri</i>	x	x		x?	.	E		4
<i>Myosotis ruscinnensis</i>				x	x	E		1
<i>Myosotis scorpioides</i>	x			.	.			27
<i>Myosotis transylvanica</i>				x?	x	R		1
<i>Myrica rivas-martinezii</i>	x	x		x?	x	R	CR	1
<i>Najas flexilis</i>	x	x		.	.			12
<i>Najas tenuissima</i>	x	x		x	.	I		2
<i>Nananthea perpusilla</i>				x	.	V		2
<i>Narcissus asturiensis</i>		x		x	.			2
<i>Narcissus calcicola</i>		x		x	x	I		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Narcissus cuatrecasasii</i>				x	x			1
<i>Narcissus cyclamineus</i>		x		x	.			2
<i>Narcissus fernandesii</i>		x		.	x			1
<i>Narcissus gaditanus</i>				x	.	R		2
<i>Narcissus hedraeanthus</i>				x	x			1
<i>Narcissus humilis</i>		x		.	x			1
<i>Narcissus longispathus</i>	x		x	x	x	R		1
<i>Narcissus scaberrulus</i>	x	x		x	x	E		1
<i>Narcissus triandrus</i>	x		x	x	.			3
<i>Narcissus viridiflorus</i>	x	x		x	x			1
<i>Narthecium reverchonii</i>				x	x			1
<i>Narthecium scardicum</i>				x?	.	R		3
<i>Naufraga balearica</i>	x	x		x	x	E		1
<i>Nepeta agrestis</i>				x	x			1
<i>Nepeta beltranii</i>				x	x			1
<i>Nepeta boissieri</i>				x?	x	V		1
<i>Nepeta camphorata</i>				x	x	R		1
<i>Nepeta dirphyia</i>	x	x		x	x	V		1
<i>Nepeta foliosa</i>				x	x	R		1
<i>Nepeta heldreichii</i>				x	x	R		1
<i>Nepeta scordotis</i>				x	.	R		2
<i>Nepeta sphaciotica</i>		x		x?	x	E		1
<i>Nepeta teydea</i>				x?		R		
<i>Nigella carpatha</i>				x?	x	R		1
<i>Nigella degenii</i>				x	x			1
<i>Nigella doerfleri</i>				x	.	R		2
<i>Nigella fumariifolia</i>				x?	.	R		3
<i>Nigella stricta</i>				x?	.	R		2
<i>Nigritella lithopolitana</i>				x?		R		
<i>Normania navae</i>				x?		E		
<i>Normania triphylla</i>				x?		E		
<i>Ocotea foetens</i>				x?		R	LR/nt	
<i>Odontites bocconei</i>				x	x			1
<i>Odontites granatensis</i>	x	x		x	x	E		1
<i>Odontites holliana</i>		x		x?	x	V		1
<i>Odontites jaubertiana</i>				x	x	I		1
<i>Odontites kaliformis</i>				x	x			1
<i>Oenanthe conioidea</i>	x	x		x?	.	E		2
<i>Oenanthe divaricata</i>		x		.	x			1
<i>Oenanthe foucaudii</i>				x?	x	V		1
<i>Oenanthe lisae</i>				x	x			1
<i>Oenanthe millefolia</i>				x	x			1
<i>Omalothea roeseri</i>				x	x			1
<i>Omphalodes brassicifolia</i>				x?	x	R		1
<i>Omphalodes kuzinskyanae</i>	x	x		.	.			2

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Omphalodes littoralis</i>	x	x		x	x	V		1
<i>Omphalodes pavoniana</i>				x?	x	R		1
<i>Onobrychis degenii</i>				x	x	I		1
<i>Onobrychis ebenoides</i>				x	x			1
<i>Onobrychis pallasii</i>				x	x	R		1
<i>Onobrychis radiata</i>				.	x	R		1
<i>Onobrychis reuteri</i>				x	x			1
<i>Onobrychis sphaciotica</i>				x	x	V		1
<i>Onobrychis stenorhiza</i>				x	x			1
<i>Ononis christii</i>				x?		E		
<i>Ononis hebecarpa</i>				x?		R		
<i>Ononis maweana</i>	x	x		.	x			1
<i>Ononis saxicola</i>				x	x	I		1
<i>Ononis verae</i>				x	x	R		1
<i>Onopordum carduelinum</i> Bolle	x							
<i>Onopordum laconicum</i>				x	x			1
<i>Onopordum majorii</i>				x?	x	I		1
<i>Onopordum messeniacum</i>				x	x			1
<i>Onopordum nogalesii</i>	x	x		x	x	E		1
<i>Onosma bubanii</i>				x?	x	R		1
<i>Onosma elegantissima</i>				x	x	V		1
<i>Onosma euboica</i>				x	x	R		1
<i>Onosma fastigiata</i>				x	.	R		2
<i>Onosma halophilum</i>	x							
<i>Onosma leptantha</i>				x	x	R		1
<i>Onosma lucana</i>				x	x			1
<i>Onosma polyphylla</i>	x			x?	x	I		1
<i>Onosma propontica</i>	x			.	x			1
<i>Onosma pseudarenaria</i>				x?	x	E		1
<i>Onosma rhodopaea</i>				x	.	R		2
<i>Onosma spruneri</i>				x	x			1
<i>Onosma taygetea</i>				x?	x	I		1
<i>Onosma thracica</i>				x	x			1
<i>Onosma tornensis</i>	x	x	x	x	.	I		2
<i>Onosma tricrosperma</i>				x	x			1
<i>Onosma troodi</i> Kotschy	x							
<i>Onosma vaudensis</i>				x	x			1
<i>Ophioglossum polyphyllum</i>	x	x		.	.			2
<i>Ophrys argolica</i>	x		x	x	.			2
<i>Ophrys isaura</i> Renz & Taub.	x							
<i>Ophrys kotschyi</i>	x	x	x	x	x			1
<i>Ophrys lunulata</i>	x	x		x	.	V		3
<i>Ophrys hycia</i>	x			x				
<i>Ophrys melitensis</i>		x	x					
<i>Ophrys oestriphera</i>	x							

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Ophrys provincialis</i>	x			x				
<i>Orchis canariensis</i>				x?		V		
<i>Orchis punctulata</i>	x			.	.			5
<i>Orchis scopulorum</i>	x		x	x?	.	E		2
<i>Oreochloa confusa</i>				x	x			1
<i>Origanum cordifolium</i>	x							
<i>Origanum dictamnus</i>	x	x		x	x	V		1
<i>Origanum livium</i>				x	x			1
<i>Origanum microphyllum</i>				x	x			1
<i>Origanum scabrum</i>	x			x	x	V		1
<i>Origanum vetteri</i>				x	x	V		1
<i>Ornithogalum amphibolum</i>				x	.	R		3
<i>Ornithogalum atticum</i>				x	x	R		1
<i>Ornithogalum costatum</i>				x	x	R		1
<i>Ornithogalum exaratum</i>				x	x	R		1
<i>Ornithogalum oreoides</i>				x	.	R		3
<i>Ornithogalum prasinantherum</i>				x	x			1
<i>Ornithogalum reverchonii</i>	x		x	.	x			1
<i>Ornithogalum visianicum</i>				x	x			1
<i>Orobancha chironii</i>				x	x			1
<i>Orobancha densiflora</i>		x	x	x?	.	R		4
<i>Orobancha haenseleri</i>				x	x	R		1
<i>Orobancha trichocalyx</i>				x	.	R		2
<i>Oxytropis hippolytii</i>				.	x	R		1
<i>Oxytropis prenja</i>				x?	.	R		2
<i>Oxytropis purpurea</i>				x	.	R		2
<i>Oxytropis uralensis</i>				.	x	R		1
<i>Paeonia cambessedesii</i>	x	x		x	x	R		1
<i>Paeonia clusii</i>				x	x	V		1
<i>Paeonia parnassica</i>	x	x		x?	x	V		1
<i>Paeonia tenuifolia</i>	x			.	.			7
<i>Palaeocyanus crassifolius</i>		x	x	x	x	R		1
<i>Pancreatium canariense</i>				x?		R		
<i>Papaver bracteatum</i>				x?		I		
<i>Papaver laestadianum</i>		x		x	.	V		2
<i>Papaver lapponicum</i>	x			.	.			3
<i>Papaver nudicaule</i>						R		
<i>Papaver radicans</i>		x		x	.			5
<i>Papaver rupifragum</i>				x	x			1
<i>Paracaryum lithospermifolium</i>						R		
<i>Parietaria filamentosa</i>				x?		R		
<i>Parolinia schizogynoides</i>	x	x		.	x			1
<i>Paronychia aretioides</i>				x	x			1
<i>Paronychia bornmuelleri</i>				x?	x	R		1
<i>Pastinaca latifolia</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Pastinaca lucida</i>				x	x			1
<i>Pedicularis asparagoides</i>				x	.	R		2
<i>Pedicularis baumgartenii</i>				x	x	R		1
<i>Pedicularis elegans</i>				x	x			1
<i>Pedicularis ferdinandi</i>				x	x	R		1
<i>Pedicularis heterodonta</i>				x	x	R		1
<i>Pedicularis limnogenia</i>				x	.	R		2
<i>Pedicularis portenschlagii</i>				x	x			1
<i>Pedicularis schizocalyx</i>				x	x			1
<i>Pedicularis sudetica</i>	x	x	x	x	.	V		4
<i>Peltaria emarginata</i>				x	x			1
<i>Pericallis hadrosomus</i>	x	x		.	x			1
<i>Pericallis malvifolia</i>	x							
<i>Pericallis multijlorus</i>				x?		V		
<i>Persea indica</i>				x?	.	R	LR/cd	2
<i>Petagnia saniculifolia</i>	x	x		x	x	V		1
<i>Petasites doerfleri</i>				x	.	R		2
<i>Petrocoptis crassifolia</i>				x	x	R		1
<i>Petrocoptis grandiflora</i>	x	x		x	x	V		1
<i>Petrocoptis hispanica</i>				x	x			1
<i>Petrocoptis pardoii</i>	x	x		x	x	R		1
<i>Petrocoptis pseudoviscosa</i>	x	x		x?	x	V		1
<i>Petromarula pinnata</i>				x	x			1
<i>Petrorhagia candica</i>				x	x			1
<i>Petrorhagia dianthoides</i>				x	x	R		1
<i>Petrorhagia fasciculata</i>				x	x			1
<i>Petrorhagia glumacea</i>				x	x			1
<i>Petrorhagia graminea</i>				x	x			1
<i>Petrorhagia ochroleuca</i>				x	x			1
<i>Peucedanum acaicum</i>				x	x	R		1
<i>Peucedanum alpinum</i>				x	x			1
<i>Peucedanum aragonense</i>				x	x			1
<i>Phagnalon bennetii</i>	x			x?		R		
<i>Phagnalon metlesicsii</i>				x	x	R		1
<i>Phagnalon pumilum</i>				x	x			1
<i>Phagnalon umbelliforme</i>				x?		R		
<i>Phalacrocarpum hoffmannseggii</i>				x	.	R		2
<i>Phalaris maderensis</i>	x	x		x?	x	E		1
<i>Pharbitis preauxii</i>	x							
<i>Phlomis brevibracteata</i>	x	x	x	x	x			1
<i>Phlomis cypria</i>	x	x	x	x	x			1
<i>Phlomis ferruginea</i>				x	x			1
<i>Phlomis italica</i>				x	x			1
<i>Phlomis lanata</i>				x	x			1
<i>Phlomis pichleri</i>				x?	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Phoenix theophrasti</i>	x	x		x	x	V	LR/nt	1
<i>Physoplexis comosa</i>	x		x	x	.	R		4
<i>Phyteuma cordatum</i>				x	.	R		2
<i>Phyteuma gallicum</i>				x	x	R		1
<i>Phyteuma humile</i>				x	.	R		3
<i>Phyteuma pseudorbiculare</i>				x	.	R		2
<i>Phyteuma rupicola</i>				x	x			1
<i>Phyteuma serratum</i>				x	x			1
<i>Picconia azorica</i>	x	x		x	.	I	EN	2
<i>Picconia excelsa</i>				x?		V	VU	
<i>Picea omorika</i>				x	.		VU	4
<i>Picris algarbiensis</i>				x	x	V		1
<i>Picris spinifera</i>				x	x			1
<i>Picris willkommii</i>	x		x	x	.	R		2
<i>Pilularia minuta</i>	x			.	.			6
<i>Pimpinella anagodendron</i>				x?		V		
<i>Pimpinella bicknellii</i>				x	x	R		1
<i>Pimpinella gracilis</i>				x	x			1
<i>Pimpinella junoniae</i>				x?		R		
<i>Pimpinella pretenderis</i>				x	x	R		1
<i>Pimpinella procumbens</i>				x	x	R		1
<i>Pimpinella rigidula</i>				x	x			1
<i>Pimpinella rupicola</i>				x?		E		
<i>Pimpinella siifolia</i>				x	.	R		2
<i>Pinguicula corsica</i>				x	x			1
<i>Pinguicula crystallina</i>	x	x	x	x	.			3
<i>Pinguicula nevadensis</i>	x	x		x	x	V		1
<i>Pinguicula vallisneriifolia</i>				x	x	E		1
<i>Pinus canariensis</i>				x?	x	R		1
<i>Pinus halepensis</i>				x?	.	V		13
<i>Pinus peuce</i>				x	.	R	LR/nt	4
<i>Pittosporum coriaceum</i>	x	x		.	x		CR	1
<i>Plagius flosculosus</i>				x	.	R		2
<i>Plantago asperrima</i>				x	x			1
<i>Plantago asphodeloides</i>				x?		R		
<i>Plantago famarae</i>	x			x?		V		
<i>Plantago leiopetala</i>				x?		V		
<i>Plantago malato-belizii</i>	x							
<i>Plantago nivalis</i>				x	x			1
<i>Plantago reniformis</i>				x	.	R		2
<i>Plantago schwarzenbergiana</i>				x	.	R		3
<i>Plantago subspatulata</i>				x?		R		
<i>Platanthera micrantha</i>				x	.	V		2
<i>Pleioomeris canariensis</i>				x?		V	VU	
<i>Poa granitica</i>	x			x	.	I		4

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Poa laxa</i>	x			x	.			12
<i>Poa pirinica</i>				.	.	R		2
<i>Poa rehmannii</i>				x	.	R		2
<i>Poa trichophylla</i>				x	x	R		1
<i>Polemonium boreale</i>	x			.	.			3
<i>Polycarpha carnosae</i>				x?		R		
<i>Polycarpha smithii</i>				x?		R		
<i>Polycarpha tenuis</i>				x?		R		
<i>Polygala apiculata</i>				x	x			1
<i>Polygala carueliana</i>				x	x	R		1
<i>Polygala cristagalli</i>				x	x			1
<i>Polygala doerfleri</i>				x	.	R		2
<i>Polygala edmundii</i>				x	x			1
<i>Polygala pisaurensis</i>				x?	x	R		1
<i>Polygala sardoae</i>				x	x	R		1
<i>Polygala subuniflora</i>				x	x			1
<i>Polygala vayredae</i>				x	x	R		1
<i>Polygonum albanicum</i>				x?	.	E		3
<i>Polygonum aschersonianum</i>				x	x	R		1
<i>Polygonum foliosum</i>		x		x	.			6
<i>Polygonum icaricum</i>				x?	x	R		1
<i>Polygonum idaeum</i>				x	x	R		1
<i>Polygonum praelongum</i>	x							
<i>Polystichum drepanum</i>	x							
<i>Posidonia oceanica</i>	x			.	.			14
<i>Potentilla carniolica</i>				.	x	R		1
<i>Potentilla delphinensis</i>	x	x		x	x	V		1
<i>Potentilla deorum</i>				x	x			1
<i>Potentilla doerfleri</i>				x	x	R		1
<i>Potentilla emilii-popii</i>	x			.	.	R		2
<i>Potentilla eversmanniana</i>				x	.	V		2
<i>Potentilla grammopetala</i>				x	.	R		2
<i>Potentilla kionaea</i>				x	x			1
<i>Potentilla reuteri</i>				x?	x	R		1
<i>Potentilla silesiaca</i>	x			.	.			2
<i>Potentilla umbrosa</i>				x	x			1
<i>Potentilla visianii</i>				x	.	R		2
<i>Primula allionii</i>				x	.	R		2
<i>Primula apennina</i>	x	x		x	x	V		1
<i>Primula carniolica</i>		x	x	x	x			1
<i>Primula daonensis</i>				x	.	R		3
<i>Primula deorum</i>	x			x	x	R		1
<i>Primula egaliksensis</i>	x			.	x			1
<i>Primula frondosa</i>	x			x	x	R		1
<i>Primula glaucescens</i>	x		x	x	x	R		1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Primula kitaibeliana</i>				x	x	R		1
<i>Primula komarovii</i>				.	.	R		11
<i>Primula nutans</i>		x		x	.			5
<i>Primula palinuri</i>	x	x		x	x	V		1
<i>Primula scandinavica</i>		x		x	.			2
<i>Primula scotica</i>				x	x			1
<i>Primula spectabilis</i>	x		x	x	x			1
<i>Primula tyrolensis</i>				x	x			1
<i>Procopiana circinalis</i>				x?	x	R		1
<i>Procopiana insularis</i>				x?	.	R		2
<i>Prolongoa pectinata</i>				x	x			1
<i>Prunus lusitanica</i>				.	.		EN	5
<i>Prunus ramburii</i>				x	x	R	VU	1
<i>Pseudarrhenatherum pallens</i>		x		x	x	V		1
<i>Psilotum nudum</i>				x?	x	E		1
<i>Pterocephalus dumetorum</i>				x?		V		
<i>Pterocephalus porphyranthus</i>				x?		V		
<i>Pterocephalus spathulatus</i>				x	x			1
<i>Pterocephalus virens</i>				x?		E		
<i>Ptilophora mediterranea</i> (Med.)	x							
<i>Ptilostemon hispanicus</i>				x	x			1
<i>Ptilostemon niveus</i>				x	.	R		2
<i>Puccinellia phryganodes</i>		x		.	.			4
<i>Puccinellia svalbardensis</i>				x?	x	R		1
<i>Pulicaria burchardii</i>				x?		E		
<i>Pulmonaria filarszkyana</i>				x	.	R		2
<i>Pulmonaria kernerii</i>				x	x			1
<i>Pulmonaria vallsarsae</i>				x	x			1
<i>Pulsatilla grandis</i>	x							
<i>Pulsatilla patens</i>	x	x		.	.			14
<i>Pulsatilla subslavica</i>		x	x	x				
<i>Pyrus anatolica</i>	x			x				
<i>Pyrus magyarica</i>		x	x	x	x			1
<i>Pyrus rossica</i>				x	x			1
<i>Quercus aucheri</i>				x	.		LR/nt	2
<i>Quercus cerrioides</i>				.	x		LR/cd	1
<i>Quercus ilex</i> s. <i>ballota</i>				x	.		LR/nt	2
<i>Quercus petraea</i> s. <i>huguetiana</i>				x	.		LR/cd	2
<i>Quercus sicula</i>				x	x	I		1
<i>Ramonda nathaliae</i>				x	.	R		2
<i>Ramonda serbica</i>	x		x	x	.	R		4
<i>Ranunculus abnormis</i>				x	.	R		2
<i>Ranunculus acetosellifolius</i>				x	x	V		1
<i>Ranunculus barceloi</i>				x?	x	R		1
<i>Ranunculus bilobus</i>				x	x	R		1

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	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Ranunculus cacuminis</i>				x?	.	V		2
<i>Ranunculus clethrabilis</i>				x	x			1
<i>Ranunculus cupreus</i>				x	x	R		1
<i>Ranunculus cymbalariifolius</i>				x?	x	R		1
<i>Ranunculus degenii</i>				x	.	Ex/E		2
<i>Ranunculus dissectus</i>				x	x			1
<i>Ranunculus fontanus</i>	x			.	.			7
<i>Ranunculus hayekii</i>				x	.	Ex		3
<i>Ranunculus kykkoensis</i>	x	x	x	x	x			1
<i>Ranunculus lapponicus</i>		x		.	.			6
<i>Ranunculus marschlinii</i>				x	x			1
<i>Ranunculus miliarakesii</i>				x	x	R		1
<i>Ranunculus millii</i>				x	x	R		1
<i>Ranunculus radinotrichus</i>				x?	x	E		1
<i>Ranunculus subhomophyllus</i>				x?	.	R		2
<i>Ranunculus thasius</i>				x	x	R		1
<i>Ranunculus venetus</i>				x	x			1
<i>Ranunculus wettsteinii</i>				x	x	I		1
<i>Ranunculus weyleri</i>	x	x		x	x	E		1
<i>Reichardia crystallina</i>				x?		R		
<i>Reichardia famaræ</i>				x?		R		
<i>Reseda complicata</i>				x	x	R		1
<i>Reseda decursiva</i>	x	x		.	x			1
<i>Reseda gredensis</i>				x	x			1
<i>Reseda jacquinii</i>				x	.	R		2
<i>Reseda scoparia</i>				x?		R		
<i>Reseda tymphaea</i>				x	x	R		1
<i>Rhamnus crenulata</i>							LR/nt	
<i>Rhamnus glandulosa</i>				x?		V	LR/cd	
<i>Rhamnus integrifolia</i>				x?		R	VU	
<i>Rhamnus intermedius</i>				x	.	R		2
<i>Rhamnus persicifolius</i>				x	x	V		1
<i>Rhazya orientalis</i>	x			.	.			2
<i>Rheum rhaponticum</i>	x			x	.	R		2
<i>Rhinanthus carinthiacus</i>				x	x			1
<i>Rhinanthus dinaricus</i>				x	x	R		1
<i>Rhinanthus halophilus</i>				x	x	E		1
<i>Rhinanthus oesilensis</i>		x	x	x	x			1
<i>Rhinanthus pampaninii</i>				x	x			1
<i>Rhinanthus pindicus</i>				x	x	R		1
<i>Rhinanthus pubescens</i>				x	x			1
<i>Rhinanthus wettsteinii</i>				x	x			1
<i>Rhizobotrya alpina</i>				x	x	R		1
<i>Rhododendron luteum</i>		x	x	.	.			6
<i>Ribes sardoum</i>	x	x		x	x	E		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Ricotia cretica</i>				x	x			1
<i>Ricotia isatoides</i>				x	x	V		1
<i>Rindera graeca</i>				x?	x	R		1
<i>Romulea revelieri</i>				x	.	V		3
<i>Rosa mandonii</i>				x?		V		
<i>Rosmarinus eriocalix</i>	x		x	.	x			1
<i>Rothmaleria granatensis</i>				x	x	E		1
<i>Ronja polygama</i>	x	x		.	.			2
<i>Rumex azoricus</i>	x	x		x	.	R		2
<i>Rumex rupestris</i>	x	x		x?	.	V		3
<i>Rupicapnos africana</i>	x			.	x			1
<i>Ruscus streptophyllus</i>				x?		V		
<i>Ruta microcarpa</i>	x			x?		E		
<i>Ruta pinnata</i>				x?		V		
<i>Salicornia veneta</i>	x	x		x?	x	E		1
<i>Salix cantabrica</i>				x	x			1
<i>Salix crataegifolia</i>				x	x			1
<i>Salix hegetschweileri</i>				x	.	R		4
<i>Salix salviifolia</i>		x		.	.			2
<i>Salix tarraconensis</i>				x	x	V	CR	1
<i>Salsola anatolica</i>	x			x				
<i>Salsola carpatha</i>				x	.	R		2
<i>Salsola genistoides</i>				x	x			1
<i>Salsola papillosa</i>				x	x	V		1
<i>Salvia brachyodon</i>				x	x	R		1
<i>Salvia broussonetii</i>				x?		E		
<i>Salvia candelabrum</i>				x	x	R		1
<i>Salvia crassifolia</i>	x							
<i>Salvia eichlerana</i>				x	x			1
<i>Salvia herbanica</i>	x			x?		E		
<i>Salvia jurisicii</i>				x	x	R		1
<i>Salvia scabiosifolia</i>				x	.	R		2
<i>Salvia transsylvanica</i>				x	x	R		1
<i>Salvia valentina</i>				x	x			1
<i>Salvia veneris</i>		x	x	x	x			1
<i>Salvinia natans</i>	x			.	.			20
<i>Sambucus lanceolata</i>				x?		R		
<i>Sambucus palmensis</i>	x	x		x?	x	E	CR	1
<i>Sanguisorba albanica</i>				x?	.	R		2
<i>Sanguisorba cretica</i>				x?	x	R		1
<i>Sanguisorba dodecandra</i>				x	.	R		2
<i>Sanicula azorica</i>	x	x		x	.			2
<i>Santolina elegans</i>	x		x	x	x	V		1
<i>Santolina oblongifolia</i>				x	x			1
<i>Santolina viscosa</i>				x	x	R		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Saponaria balophila</i>	x							
<i>Saponaria lutea</i>				x	.	R		3
<i>Sarcocapnos baetica</i>				x	x			1
<i>Sarcocapnos saetabensis</i>				x?	x	R		1
<i>Satureja atboa</i>				x	x			1
<i>Satureja obovata</i>				x	x			1
<i>Satureja parnassica</i>				x	x			1
<i>Satureja rumelica</i>				x	x	R		1
<i>Satureja spinosa</i>				x	x			1
<i>Saxifraga arachnoidea</i>				x	x	R		1
<i>Saxifraga babiana</i>				x?	x	R		1
<i>Saxifraga biternata</i>				x	x	R		1
<i>Saxifraga camposii</i>				x	x			1
<i>Saxifraga canaliculata</i>				x	x			1
<i>Saxifraga cebennensis</i>				x?	x	R		1
<i>Saxifraga cintrana</i>	x		x	x	x	E		1
<i>Saxifraga conifera</i>				x	x			1
<i>Saxifraga depressa</i>				x	x			1
<i>Saxifraga diapsenioides</i>				x	.	R		3
<i>Saxifraga erioblasta</i>				x?	x	R		1
<i>Saxifraga facchinii</i>				x	x	R		1
<i>Saxifraga florulenta</i>	x	x		x	.	R		2
<i>Saxifraga gemmulosa</i>				x	x	R		1
<i>Saxifraga haenseleri</i>				x	x			1
<i>Saxifraga hirculus</i>	x	x		.	.			23
<i>Saxifraga irrigua</i>				x	x			1
<i>Saxifraga italica</i>				x	x	R		1
<i>Saxifraga latepetiolata</i>				x	x			1
<i>Saxifraga moncayensis</i>				x	x	V		1
<i>Saxifraga nevadensis</i>				x	x	R		1
<i>Saxifraga osloensis</i>		x		x	.			2
<i>Saxifraga porophylla</i>				x	x			1
<i>Saxifraga portosantana</i>	x		x	x?	.	R		2
<i>Saxifraga presolanensis</i>	x		x	x	x	R		1
<i>Saxifraga reuteriana</i>				x?	x	R		1
<i>Saxifraga rigoi</i>				x	x	I		1
<i>Saxifraga tombeanensis</i>	x	x		x	x	V		1
<i>Saxifraga trifurcata</i>				x	x			1
<i>Saxifraga valdensis</i>	x		x	x	.	R		2
<i>Saxifraga vandellii</i>				x	x	R		1
<i>Saxifraga vayredana</i>	x		x	x	x	R		1
<i>Scabiosa achæta</i>				x	x			1
<i>Scabiosa albocincta</i>				x	x	R		1
<i>Scabiosa fumarioides</i>				x	x	R		1
<i>Scabiosa hymettia</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Scabiosa limonifolia</i>				x?	x	R		1
<i>Scabiosa minoana</i>				x	x	R		1
<i>Scabiosa nitens</i>	x	x		x	.			2
<i>Scabiosa parviflora</i>				x	x			1
<i>Scabiosa pulsatilloides</i>				x	x	V		1
<i>Scabiosa rhodopensis</i>				x	.	R		2
<i>Scabiosa sphaciotica</i>				x	x			1
<i>Scabiosa vestina</i>				x	x			1
<i>Schimmelmanna schousboei</i> (Med.)	x							
<i>Schivereckia podolica</i>	x			x	.	I/R		5
<i>Scilla beirana</i>			x	x	x	V		1
<i>Scilla cupanii</i>				x?	x	R		1
<i>Scilla hugbii</i>				x?	x	R		1
<i>Scilla latifolia</i>				x?		R		
<i>Scilla litaridieri</i>		x	x	x	x	V		1
<i>Scilla maderensis</i>		x		x?	x	V		1
<i>Scilla messeniaca</i>				x	x	R		1
<i>Scilla morrisii</i>	x	x	x	x	x			1
<i>Scilla odorata</i>	x		x	x	.	R		2
<i>Scilla reverchonii</i>				x?	x	R		1
<i>Sclerochorton junceum</i>				x	x			1
<i>Scorzonera albicans</i>				x	x			1
<i>Scorzonera crocifolia</i>				x	x			1
<i>Scorzonera idaea</i>				x	x			1
<i>Scorzonera scyria</i>				x	x			1
<i>Scorzonera serpentinica</i>				x?	x	R		1
<i>Scrophularia bosniaca</i>				x	.	R		2
<i>Scrophularia calliantha</i>				x?		V		
<i>Scrophularia cretacea</i>				x	x	I		1
<i>Scrophularia hirta</i>				x?		R		
<i>Scrophularia lowei</i>				x?		R		
<i>Scrophularia racemosa</i>				x?		R		
<i>Scrophularia schousboei</i>				x?	.	I		2
<i>Scrophularia sciophila</i>				x	x			1
<i>Scrophularia spinulescens</i>				x	x	I		1
<i>Scrophularia taygetea</i>				x	x	R		1
<i>Scutellaria balearica</i>				x	x			1
<i>Scutellaria hirta</i>				x	x			1
<i>Scutellaria naxensis</i>				x?	x	R		1
<i>Scutellaria sieberi</i>				x	x			1
<i>Sedum borissovae</i>				x	x			1
<i>Sedum brissemoretii</i>		x		x?	x	R		1
<i>Sedum creticum</i>				x	x			1
<i>Sedum farinosum</i>				x?		R		
<i>Sedum hillebrandtii</i>				x?	.	R		5

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Sedum lagascae</i>				.	.	V		2
<i>Sedum pruinaum</i>				x	x	R		1
<i>Sedum tymphaeum</i>				x?	x	R		1
<i>Semele androgyna</i>		x		x?	x	R		1
<i>Semele gayae</i>				x?		V		
<i>Sempervivum cantabricum</i>				x	x			1
<i>Sempervivum dolomiticum</i>				x	x	R		1
<i>Sempervivum giuseppii</i>				x	x	R		1
<i>Sempervivum kindingeri</i>				x	.	R		2
<i>Sempervivum kosaninii</i>				x	x	R		1
<i>Sempervivum leucanthum</i>				x	x			1
<i>Sempervivum macedonicum</i>				x	.	R		2
<i>Sempervivum nevadense</i>				x	x			1
<i>Sempervivum octopodes</i>				x	x	R		1
<i>Sempervivum pittonii</i>				x	x	R		1
<i>Sempervivum thompsonianum</i>				x	x	R		1
<i>Senecio aethnensis</i>				x	x			1
<i>Senecio boissieri</i>				x	x			1
<i>Senecio bollei</i>				x?		V		
<i>Senecio cambrensis</i>				x	x	R		1
<i>Senecio carpetanus</i>				x	x	R		1
<i>Senecio cespitosus</i>				x?	x	E		1
<i>Senecio coinnyi</i>				x?	x	E		1
<i>Senecio elodes</i>	x	x		x	x	E		1
<i>Senecio eriopus</i>				x	x	R		1
<i>Senecio eubaeus</i>				x	x	R		1
<i>Senecio farfarifolius</i>				.	x	R		1
<i>Senecio gnaphalodes</i>				x	x	R		1
<i>Senecio hermosae</i>	x			x?		E		
<i>Senecio lopezii</i>				x	.	V		2
<i>Senecio minutus</i>				x	x			1
<i>Senecio nebrodensis</i>				x	x			1
<i>Senecio nevadensis</i>	x	x		x	x	V		1
<i>Senecio palmensis</i>				x?		R		
<i>Senecio persoonii</i>				x	x	R		1
<i>Senecio petraeus</i>				x	x	R		1
<i>Senecio quinquerradiatus</i>				x?	x	R		1
<i>Senecio siculus</i>				x	x			1
<i>Senecio teneriffae</i>				x?		I		
<i>Serratula bulgarica</i>				x	.	R		2
<i>Serratula cichoracea</i>				x?	.	R		4
<i>Serratula flavescens</i>				x?	.	R		2
<i>Serratula leucantha</i>				x	x			1
<i>Serratula lycopifolia</i>		x	x	x	.	R		9
<i>Serratula panana</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Serratula tanaitica</i>	x			.	x	I		1
<i>Seseli bulgaricum</i>				x	x			1
<i>Seseli cantabricum</i>				x	x			1
<i>Seseli degenii</i>				x	x	R		1
<i>Seseli globiferum</i>				x	x			1
<i>Seseli granatense</i>				x	x			1
<i>Seseli intricatum</i>	x	x		x	x	V		1
<i>Seseli lehmannii</i>				x	x	R		1
<i>Seseli leucospermum</i>		x	x	x	x	R		1
<i>Seseli malyi</i>				x	x	R		1
<i>Seseli parnassicum</i>				x	x	R		1
<i>Seseli peixoteanum</i>				x	x	V		1
<i>Seseli rhodopeum</i>				x	x			1
<i>Seseli tomentosum</i>				.	x	R		1
<i>Seseli vayredanum</i>				x	x			1
<i>Sesleria doerfleri</i>				x	x	R		1
<i>Sesleria klasterskyi</i>				.	x	R		1
<i>Sesleria taygetea</i>				x	x	R		1
<i>Sesleria vaginalis</i>				x	x			1
<i>Sibthorpia africana</i>				x	x			1
<i>Sibthorpia peregrina</i>		x		x?	x	V		1
<i>Sideritis barbellata</i>				x?		V		
<i>Sideritis brevicaulis</i>				x?		V		
<i>Sideritis canariensis</i>				x?		R		
<i>Sideritis candidans</i>				x?		R		
<i>Sideritis clandestina</i>				x	x			1
<i>Sideritis cypria</i>	x	x	x	x	x			1
<i>Sideritis cystosiphon</i>	x	x		x	x	E		1
<i>Sideritis discolor</i>	x	x		x	x	E		1
<i>Sideritis eriocephala</i>				x?		R		
<i>Sideritis foetens</i>				x	x			1
<i>Sideritis giennensis</i>				x?	x	R		1
<i>Sideritis gomerae</i>				x?		V		
<i>Sideritis ilicifolia</i>				x	x			1
<i>Sideritis infernalis</i>	x	x		x	x	E		1
<i>Sideritis javalambrensis</i>	x	x		x	x	V		1
<i>Sideritis knegleriana</i>				x?		V		
<i>Sideritis lacaitae</i>				x	x			1
<i>Sideritis leucantha</i>				x	x			1
<i>Sideritis macrostachys</i>				x?		V		
<i>Sideritis marmorea</i>	x	x		x	x	E		1
<i>Sideritis nervosa</i>				x?		E		
<i>Sideritis nutans</i>				x?		V		
<i>Sideritis ovata</i>				x	x	R		1
<i>Sideritis pumila</i>				x?		V		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Sideritis reverchonii</i>				x?	x	R		1
<i>Sideritis serrata</i>	x	x		x?	x	R		1
<i>Sideritis spinulosa</i>				x	x			1
<i>Sideritis stachydioides</i>				x	x	R		1
<i>Sideritis sventenii</i>				x?		V		
<i>Sideroxylon marmulano</i>	x		x	.	.		VU	2
<i>Silene almolae</i>				x	x	R		1
<i>Silene ammophila</i>				x	x	V		1
<i>Silene astrachanica</i>				.	x	I		1
<i>Silene barbeyana</i>				x	x	R		1
<i>Silene berthelotiana</i>				x?		R		
<i>Silene bourgaei</i>				x?		R		
<i>Silene campanula</i>				x	.	R		2
<i>Silene cerastoides</i>				x?	.	R		6
<i>Silene congesta</i>				x	x			1
<i>Silene cordifolia</i>				x	.	R		2
<i>Silene cretacea</i>	x			x	.	I		3
<i>Silene cythnia</i>				x	x	R		1
<i>Silene damboldtiana</i>				x?	.	R		2
<i>Silene diclinis</i>				x	x	V		1
<i>Silene dinarica</i>				x	x	R		1
<i>Silene dionysii</i>				x?	x	R		1
<i>Silene discolor</i>	x			.	.			2
<i>Silene echinata</i>				x	x			1
<i>Silene echinosperma</i>				x	x	R		1
<i>Silene elegans</i>				x?	.	V		2
<i>Silene elisabethae</i>				x?	x	R		1
<i>Silene gaditana</i>				x?	x	R		1
<i>Silene goulimyi</i>				x?	x	R		1
<i>Silene haussknechtii</i>	x			x?	x	V		1
<i>Silene hellmannii</i>				x	.	I		3
<i>Silene hicesiae</i>		x		.	x			1
<i>Silene hifacensis</i>	x	x		x	.	V		2
<i>Silene holzmannii</i>	x	x		x	.	V		2
<i>Silene insularis</i>				x	x	R		1
<i>Silene jailensis</i>				.	x	R		1
<i>Silene laconica</i>				x	x	R		1
<i>Silene lagunensis</i>				x?		V		
<i>Silene linifolia</i>				x	x			1
<i>Silene longicilia</i>		x		x?	x	V		1
<i>Silene macrantha</i>				x	.	R		2
<i>Silene mariana</i>	x	x		x?	x	V		1
<i>Silene mollissima</i>				x	x			1
<i>Silene niederi</i>				x	x	R		1
<i>Silene nocteolens</i>	x			x?		E		

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Silene oligantha</i>				x?	x	R		1
<i>Silene orphanidis</i>	x	x		x	x	E		1
<i>Silene pentelica</i>				x?	x	R		1
<i>Silene pindicola</i>				x	.	R		2
<i>Silene pinetorum</i>				x	x	R		1
<i>Silene pogonocalyx</i>				x?		R		
<i>Silene reichenbachii</i>				x	x			1
<i>Silene requienii</i>				x	x			1
<i>Silene retzdorffiana</i>				.	.	R		3
<i>Silene rothmaleri</i>	x	x		x?	x	E		1
<i>Silene sabinosae</i>				x?		V		
<i>Silene salsuginea</i>	x							
<i>Silene sangaria</i>	x			.	x			1
<i>Silene schmuckeri</i>				x	x	R		1
<i>Silene schwarzenbergeri</i>				x	.	R		3
<i>Silene spinescens</i>				x	x			1
<i>Silene stockenii</i>				x?	x	E		1
<i>Silene succulenta</i>				x?	.	R		3
<i>Silene variegata</i>				x	x			1
<i>Silene velutina</i>	x	x		x	.	V		2
<i>Silene viscariopsis</i>				x	x	R		1
<i>Silene zawadzkei</i>				x	.	R		2
<i>Sinapidendron rupestre</i>		x		.	x			1
<i>Sinapidendron sempervivifolium</i>	x							
<i>Sisymbrium arundanum</i>				x	x			1
<i>Sisymbrium assoanum</i>				x	x			1
<i>Sisymbrium confertum</i>	x			.	.			2
<i>Sisymbrium supinum</i>	x	x		x	.			9
<i>Smilax canariensis</i>	x			x?	.	R		2
<i>Sobolenskia sibirica</i>				x	x	R		1
<i>Solanum lidii</i>	x	x		x?	x	V		1
<i>Solanum vespertilio</i>				x?		V		
<i>Soldanella austriaca</i>				x	x			1
<i>Soldanella pindicola</i>				x	x	R		1
<i>Soldanella villosa</i>	x	x		x?	.	V		3
<i>Solenanthus albanicus</i>	x			x?	.	R		2
<i>Solenanthus reverchonii</i>				x	x	E		1
<i>Solenanthus scardicus</i>				x	.	R		2
<i>Solidago macrorrhiza</i>				x?	.	I		2
<i>Sonchus acaulis</i>				x?		R		
<i>Sonchus arboreus</i>				x?		E		
<i>Sonchus bornmuelleri</i>				x?		E		
<i>Sonchus brachylobus</i>				x?		R		
<i>Sonchus canariensis</i>				x?		V		
<i>Sonchus crassifolius</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Sonchus erzincanicus</i>	x							
<i>Sonchus fauces-orci</i>				x?		V		
<i>Sonchus gandogerii</i>	x			x?		E		
<i>Sonchus gonzalez-padronii</i>				x?		R		
<i>Sonchus gummifer</i>				x?		R		
<i>Sonchus pinnatus</i>				x?		R		
<i>Sonchus tectifolius</i>				x?		V		
<i>Sonchus tubifer</i>				x?		R		
<i>Sonchus willdpretii</i>				x?		E		
<i>Sorbus anglica</i>				.	.		VU	2
<i>Sorbus arranensis</i>				x	x	R	VU	1
<i>Sorbus badensis</i>				.	x		VU	1
<i>Sorbus bohemica</i>				x?	x	I		1
<i>Sorbus borbasii</i>				x?	x	R		1
<i>Sorbus bristolensis</i>				.	x		EN	1
<i>Sorbus dacica</i>				x	x	R		1
<i>Sorbus decipiens</i>				.	.		CR	2
<i>Sorbus eminens</i>				.	x		VU	1
<i>Sorbus franconica</i>				.	x		VU	1
<i>Sorbus heilingensis</i>				.	x		VU	1
<i>Sorbus lancastrensis</i>				.	x		LR/nt	1
<i>Sorbus lancifolia</i>				x	x	R		1
<i>Sorbus leptophylla</i>				.	x		CR	1
<i>Sorbus leyana</i>				.	x		CR	1
<i>Sorbus maderensis</i>		x		x?	x	E	CR	1
<i>Sorbus margittaiana</i>				x	x			1
<i>Sorbus meinichii</i>				x	x			1
<i>Sorbus minima</i>				x	x			1
<i>Sorbus multicrenata</i>				.	x		EN	1
<i>Sorbus neglecta</i>				x?	x	R		1
<i>Sorbus parumlobata</i>				.	x		CR	1
<i>Sorbus pseudofennica</i>				.	x		VU	1
<i>Sorbus pseudothuringiaca</i>				.	x		VU	1
<i>Sorbus subcordata</i>				.	x		VU	1
<i>Sorbus subcuneata</i>				.	x		VU	1
<i>Sorbus subpinnata</i>				x	x			1
<i>Sorbus subsimilis</i>				x	x			1
<i>Sorbus sudetica</i>				x	x	I		1
<i>Sorbus teodorii</i>		x		x?	x	R		1
<i>Sorbus velebitica</i>				.	x		DD	1
<i>Sorbus vexans</i>				.	x		VU	1
<i>Sorbus wilmottiana</i>				.	x		CR	1
<i>Spergularia azorica</i>		x		x	.	V		2
<i>Sphaerophysa kotschyana</i>	x							
<i>Spiranthes aestivalis</i>	x		x	.	.			19

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Stachys albanica</i>				x?	x	R		1
<i>Stachys beckeana</i>				x	.	R		2
<i>Stachys candida</i>				x	x	R		1
<i>Stachys canescens</i>				x	x	R		1
<i>Stachys chrysantha</i>				x	x	R		1
<i>Stachys decumbens</i>				x	.	R		2
<i>Stachys euboica</i>				x	x	R		1
<i>Stachys ionica</i>				x	x	R		1
<i>Stachys mucronata</i>				x	x			1
<i>Stachys parolinii</i>				x?	x	R		1
<i>Stachys sericophylla</i>				x	x			1
<i>Stachys spreitzenhoferi</i>				x	x	R		1
<i>Stachys spruneri</i>				x	x	R		1
<i>Stachys swainsonii</i>				x	x	R		1
<i>Stachys tetragona</i>				x	x	R		1
<i>Stachys tournefortii</i>				x?	x	R		1
<i>Stachys virgata</i>				x	x	R		1
<i>Staehelina arborea</i>				x	x			1
<i>Staehelina baetica</i>				x	x			1
<i>Staehelina fruticosa</i>				x?	.	R		2
<i>Stemmacantha cynaroides</i>	x							
<i>Sternbergia candida</i>	x							
<i>Steveniella satyrioides</i>	x			.	x			1
<i>Stipa anomala</i>				x	x	I		1
<i>Stipa apertifolia</i>				x	x	R		1
<i>Stipa austroitalica</i>	x	x		x?	.	E		2
<i>Stipa bavarica</i>	x	x		x	x	V		1
<i>Stipa celakovskii</i>				x	x			1
<i>Stipa cretacea</i>				x	x	R		1
<i>Stipa danubialis</i>	x			x	x	V		1
<i>Stipa dasyphylla</i>				x?	.	R		7
<i>Stipa endotricha</i>				x	x			1
<i>Stipa mayeri</i>				x	x	R		1
<i>Stipa novakii</i>				x	x	R		1
<i>Stipa rechingeri</i>				x	x	R		1
<i>Stipa styriaca</i>	x	x		x	x	V		1
<i>Stipa syreistchikovi</i>	x			x?	x	I		1
<i>Stipa zaleskyi</i>		x	x	x	.	R		5
<i>Strangveia spicata</i>				x	x			1
<i>Suaeda cucullata</i>	x							
<i>Suaeda pelagica</i>				x?	x	R		1
<i>Succisella carvalhoana</i>				x	x	R		1
<i>Succisella microcephala</i>				x	x			1
<i>Sutera canariensis</i>				x?		R		
<i>Sventenia bupleuroides</i>	x	x		x?	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Symphandra cretica</i>				x?	.	R		2
<i>Symphandra hofmannii</i>				.	x	R		1
<i>Symphytum cycladense</i>	x	x		x?	x	E		1
<i>Symphytum davisii</i>				x	x	R		1
<i>Symphytum gussonei</i>				x	x	R		1
<i>Symphytum nascicola</i>				x	x	R		1
<i>Syrenia talijevii</i>				x	x	V		1
<i>Syringa josikaea</i>	x			x	.	R		3
<i>Taeckholmia capillaris</i>				x?		R		
<i>Tanacetum ferulaceum</i>				x?		R		
<i>Tanacetum funkii</i>				x?	x	I		1
<i>Tanacetum mucronulatum</i>				x	x	V		1
<i>Tanacetum oshanabani</i>	x							
<i>Tanacetum paczoskii</i>				x	x	R		1
<i>Tanacetum ptarmiciflorum</i>	x	x		x?	x	V		1
<i>Telekia speciosissima</i>				x	x	R		1
<i>Teline nervosa</i>	x							
<i>Teline osyroides</i>				x?		R		
<i>Teline rosmarinifolia</i>	x	x		.	x			1
<i>Teline salsoloides</i>	x							
<i>Teline splendens</i>				x?		V		
<i>Tephrosieris longifolia s. moravica</i>		x	x					
<i>Tetralinis articulata</i>				x?	.	R	LR/nt	3
<i>Tetragonolobus wiedemannii</i>				x?	x	Ex		1
<i>Teucrium abutiloides</i>	x	x		x?	x	V		1
<i>Teucrium aragonense</i>				x	x			1
<i>Teucrium arduini</i>				x	.	R		2
<i>Teucrium aroanium</i>				x	x	R		1
<i>Teucrium asiaticum</i>				x	x			1
<i>Teucrium betonium</i>		x		x?	x	R		1
<i>Teucrium carthaginense</i>				x	x			1
<i>Teucrium charidemi</i>	x		x	x	x	R		1
<i>Teucrium cossonii</i>				x	x	R		1
<i>Teucrium cuneifolium</i>				x	x	R		1
<i>Teucrium eriocephalum</i>				x	x			1
<i>Teucrium fragile</i>				x	x			1
<i>Teucrium francisci-wernerii</i>				x	x	V		1
<i>Teucrium halacsyanum</i>				x?	x	R		1
<i>Teucrium heliotropifolium</i>				x	x			1
<i>Teucrium heterophyllum</i>				x?		V		
<i>Teucrium intricatum</i>				x	x	R		1
<i>Teucrium kerymense</i>				x	x			1
<i>Teucrium libanitis</i>				x	x			1
<i>Teucrium pumilum</i>				x	x			1
<i>Teucrium salviastrum</i>				x	x	V		1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Teucrium thymifolium</i>				x	x			1
<i>Teucrium turretanum</i>	x	x		x	x	R		1
<i>Teucrium webbianum</i>				x	x			1
<i>Thalictrum calabricum</i>				x	.	R		2
<i>Thalictrum maritimum</i>				x?	x	V		1
<i>Thalictrum uncinatum</i>				x	x	R		1
<i>Thamnobryum fernandesii</i>	x							
<i>Thermopsis turcica</i>	x							
<i>Thesium auriculatum</i>				x	.	R		2
<i>Thesium ebracteatum</i>	x	x		x	.			13
<i>Thesium italicum</i>				x	x			1
<i>Thesium kernerianum</i>				x?	x	R		1
<i>Thlaspi bulbosum</i>				x	x	R		1
<i>Thlaspi caricense</i>	x			x				
<i>Thlaspi epirotum</i>				x	x	R		1
<i>Thlaspi graecum</i>				x	x			1
<i>Thlaspi jankae</i>	x	x	x	x	.	R		2
<i>Thlaspi nevadense</i>				x	x	R		1
<i>Thlaspi stenopterum</i>				x	x			1
<i>Thlaspi stylosum</i>				x	x			1
<i>Thorella verticillatunundata</i>	x	x		x	.	V		2
<i>Thymbra calostachya</i>				x	x	R		1
<i>Thymelaea broterana</i>	x		x	x	x	E		1
<i>Thymelaea coridifolia</i>				x	x			1
<i>Thymelaea granatensis</i>				x?	x	R		1
<i>Thymelaea myrtifolia</i>				x	x			1
<i>Thymelaea ruijii</i>				x	x			1
<i>Thymelaea tartonraira</i>				x?	.	R		10
<i>Thymus antoninae</i>				x	x	V		1
<i>Thymus aran juezii</i>				x	x			1
<i>Thymus aznavourii</i>	x			x	x			1
<i>Thymus biboriensis</i>				x?	x	R		1
<i>Thymus binervulatus</i>				x	x	R		1
<i>Thymus borystheneus</i>				.	.	R		3
<i>Thymus bracteatus</i>				x	x			1
<i>Thymus bracteosus</i>				x	x			1
<i>Thymus camphoratus</i>	x	x		x	x			1
<i>Thymus capitatus</i>			x	.	.			13
<i>Thymus capitellatus</i>				x	x	V		1
<i>Thymus carnosus</i>	x	x		x	x	R		1
<i>Thymus cephalotos</i>	x	x		.	x			1
<i>Thymus comosus</i>				x	x			1
<i>Thymus granatensis</i>				x	x	R		1
<i>Thymus holosericeus</i>				x	x			1
<i>Thymus laconicus</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Thymus leptophyllus</i>				x	x			1
<i>Thymus loscosii</i>				x	x	R		1
<i>Thymus mastichina</i>				x	.	R		2
<i>Thymus mastigophorus</i>				x	x			1
<i>Thymus membranaceus</i>				x	x			1
<i>Thymus nitens</i>				x	x	R		1
<i>Thymus oehmianus</i>				x	x	Ex		1
<i>Thymus origanoides</i>				x?		R		
<i>Thymus piperella</i>				x	x			1
<i>Thymus plasonii</i>				x	x	V		1
<i>Thymus talijevii</i>				.	.	V		2
<i>Thymus willkommii</i>				x	x			1
<i>Tilia dasystyla</i>				x	x			1
<i>Tinguarra cervariaefolia</i>				x?		R		
<i>Todaroa aurea</i>				x?		R		
<i>Tolpis azorica</i>				x	.	R		2
<i>Tolpis crassiuscula</i>				x?		V		
<i>Tolpis glabrescens</i>	x							
<i>Tolpis macrorhiza</i>				x?		R		
<i>Tordylium pestalozzae</i>				x?	.	R		2
<i>Trachelium asperuloides</i>	x			x?	x	V		1
<i>Trachelium jacquinii</i>				x	.	R		3
<i>Tragopogon cretaceus</i>				x	x			1
<i>Tragopogon kindingeri</i>				x	x			1
<i>Tragopogon lassitibicus</i>				x	x	V		1
<i>Trapa natans</i>	x			x	.			21
<i>Trichomanes speciosum</i>	x	x		x?	.	R		8
<i>Trifolium banaticum</i>	x							
<i>Trifolium barbeyi</i>				x?	x	V		1
<i>Trifolium bionae</i>				x	x	R		1
<i>Trifolium brutium</i>				x	x			1
<i>Trifolium dolopium</i>				x	x	R		1
<i>Trifolium ottonis</i>				x	x			1
<i>Trifolium pachycalyx</i>	x							
<i>Trifolium saxatile</i>	x	x		x	.	R		4
<i>Trifolium velebiticum</i>				x	x	R		1
<i>Trigonella arenicola</i>	x							
<i>Trigonella graeca</i>				x	x			1
<i>Trigonella halophila</i>	x							
<i>Trigonella polycarpa</i>	x							
<i>Trigonella rechingeri</i>				x	.	R		2
<i>Trinia crithmifolia</i>				x	x	R		1
<i>Trinia guicciardii</i>				x	x			1
<i>Trinia kitaibelii</i>				x	x	R		1
<i>Trisetaria dufourei</i>				x?	.	V		2

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Trisetum bertolonii</i>				x	x			1
<i>Trisetum burnoufii</i>				x	x	Ex/E		1
<i>Trisetum conradiae</i>				x?	.	V		2
<i>Trisetum glaciale</i>				x	x			1
<i>Trisetum gracile</i>				x	.	V		2
<i>Trisetum laconicum</i>				x	x			1
<i>Trisetum subalpestre</i>	x	x		.	.			3
<i>Trisetum velutinum</i>				x	x			1
<i>Tuberaria major</i>	x	x		x	x	E		1
<i>Tulipa cretica</i>				x	x			1
<i>Tulipa cypria</i>	x	x	x	x	x			1
<i>Tulipa goulmyi</i>	x			x	x	V		1
<i>Tulipa hungarica</i>	x			.	.			2
<i>Tulipa praecox</i>	x			.	.			6
<i>Tulipa sprengeri</i>	x							
<i>Tulipa urumoffii</i>				.	x	V		1
<i>Typha minima</i>	x			.	.			9
<i>Typha shuttleworthii</i>	x			.	.			11
<i>Ulex densus</i>				x	x	V		1
<i>Urtica rupestris</i>				x	x	R		1
<i>Urtica stachyoides</i>				x?		R		
<i>Vaccinium arctostaphylos</i>	x			.	.			2
<i>Valeriana asarifolia</i>				x	x			1
<i>Valeriana bertisceae</i>				x?	.	R		3
<i>Valeriana crinii</i>				x	.	R		2
<i>Valeriana longiflora</i>				x	x	R		1
<i>Valeriana olenaea</i>				x	x	R		1
<i>Valerianella divaricata</i>				x	x	R		1
<i>Valerianella martinii</i>				x	x	R		1
<i>Valerianella multidentata</i>				x?	x	V		1
<i>Vella pseudocytisus</i>				x	x			1
<i>Vella spinosa</i>				x	x			1
<i>Verbascum acaule</i>				x?	x	R		1
<i>Verbascum adeliae</i>				x	x	R		1
<i>Verbascum afyonense</i>	x							
<i>Verbascum anisophyllum</i>				x	x	V		1
<i>Verbascum arcturus</i>				x	x			1
<i>Verbascum argenteum</i>				x	x	R		1
<i>Verbascum basivelatum</i>	x							
<i>Verbascum boissieri</i>				x	x			1
<i>Verbascum botuliforme</i>				x?	x	R		1
<i>Verbascum cylindrocarpum</i>				x	x	I		1
<i>Verbascum cylleneum</i>	x			x?	x	E		1
<i>Verbascum davidoffii</i>				.	x	V		1
<i>Verbascum decorum</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Verbascum delphicum</i>				x	x	R		1
<i>Verbascum durmitoreum</i>				x	x	R		1
<i>Verbascum epixanthinum</i>				x	x			1
<i>Verbascum euboicum</i>				x	x	R		1
<i>Verbascum halacsyanum</i>				x	x			1
<i>Verbascum haussknechtii</i>	x			.	x			1
<i>Verbascum hervieri</i>				x	x	R		1
<i>Verbascum herzogii</i>				x	x	R		1
<i>Verbascum jankaeaeum</i>				.	x	V		1
<i>Verbascum laciniatum</i>				x	x	R		1
<i>Verbascum litigiosum</i>		x		x	x	V		1
<i>Verbascum macedonicum</i>				x	x	R		1
<i>Verbascum nevadense</i>				x	x	R		1
<i>Verbascum nicolai</i>				x	.	R		2
<i>Verbascum pelium</i>				x	x	R		1
<i>Verbascum pentelicum</i>				x?	x	R		1
<i>Verbascum purpureum</i>	x			x	.	R		3
<i>Verbascum reiseri</i>				x?	x	R		1
<i>Verbascum siculum</i>				x	.	R		2
<i>Verbascum spinosum</i>				x	x			1
<i>Verbascum stepporum</i>	x							
<i>Verbascum zuccarinii</i>				x	x			1
<i>Veronica aragonensis</i>				x	x			1
<i>Veronica chamaepithyoides</i>				x	x			1
<i>Veronica dabneyi</i>				x	.	I		2
<i>Veronica erinoides</i>				x	x			1
<i>Veronica euxina</i>	x			.	x			1
<i>Veronica karusica</i>				x?	x	R		1
<i>Veronica micrantha</i>		x		x	x	I		1
<i>Veronica oetaea</i>	x							
<i>Veronica rhodopaea</i>				x	x			1
<i>Veronica tenuifolia</i>				x	x			1
<i>Veronica turrilliana</i>	x			x	.	R		2
<i>Viburnum maculatum</i>				x	.		DD	2
<i>Vicia bifoliolata</i>	x	x		x	x	E		1
<i>Vicia capreolata</i>				x?		V		
<i>Vicia cirrhosa</i>				x?		R		
<i>Vicia dennesiana</i>	x	x		x?	.	Ex		2
<i>Vicia montenegrina</i>				x	.	R		2
<i>Vicia scandens</i>				x?		V		
<i>Vicia serinica</i>				x	x			1
<i>Vincetoxicum pannonicum</i>	x	x	x	x	x	V		1
<i>Vincetoxicum rossicum</i>				x	.	R		3
<i>Viola aethnensis</i>				x	x			1
<i>Viola arsenica</i>				x	x			1

Scientific name	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Viola atthois</i>	x		x	x	x	V		1
<i>Viola beckiana</i>				x	.	R		2
<i>Viola brachyphylla</i>				x	.	R		2
<i>Viola cazortensis</i>	x		x	x	x	R		1
<i>Viola cheiranthifolia</i>				x?		E		
<i>Viola comollia</i>				x?	x	R		1
<i>Viola crassiuscula</i>				x	x			1
<i>Viola cretacea</i>				x?	.	R		4
<i>Viola cretica</i>				x	x			1
<i>Viola cryana</i>	x			x?		Ex		
<i>Viola dacica</i>				x	.	I		7
<i>Viola delphinantha</i>	x		x	x	.	R		2
<i>Viola doerfleri</i>				x	x			1
<i>Viola dubyana</i>				x	x	R		1
<i>Viola elegantula</i>				x	.	R		2
<i>Viola eugeniae</i>				x	x			1
<i>Viola eximia</i>				x?	.	R		2
<i>Viola frondosa</i>				x	x			1
<i>Viola heldreichiana</i>				x?	.	R		2
<i>Viola hispida</i>	x	x		x	x	V		1
<i>Viola janbertiana</i>	x	x		x	x	R		1
<i>Viola jooi</i>				x	x	R		1
<i>Viola kosaninii</i>				x?	.	R		2
<i>Viola magellensis</i>				x?	.	R		3
<i>Viola nebrodensis</i>				x	x			1
<i>Viola oreades</i>				.	x	V		1
<i>Viola palmensis</i>				x?		V		
<i>Viola paradoxa</i> Lowe	x							
<i>Viola perinensis</i>				x	.	R		2
<i>Viola plantaginea</i>				x		Ex/E		
<i>Viola poetica</i>				x	x			1
<i>Viola pseudogracilis</i>				x	x			1
<i>Viola rhodopeia</i>				x	x			1
<i>Viola speciosa</i>				x	.	R		2
<i>Viola stojanowii</i>				x	.	R		2
<i>Viola willkommii</i>				x	x			1
<i>Visnea mocanera</i>				x?		R	LR/cd	
<i>Volutaria bollei</i>				x?		V		
<i>Vulpia fontquerana</i>				x	x	V		1
<i>Wagenitzia lancifolia</i>	x		x	x	x	V		1
<i>Woodwardia radicans</i>	x	x		.	.			8
<i>Wulfenia baldaccii</i>				x	x	Ex/E		1
<i>Zelkova abelicea</i>	x	x		x?	x	V	VU	1
<i>Zingeria biebersteiniana</i>				.	.	I		2
<i>Ziziphora acinoides</i>				x	x	R		1

<i>Scientific name</i>	Legal protection			Endemic		Globally threatened		Number of countries
	Bern	HD 2	HD 4	for Europe	1 country in EU	IUCN 1997	IUCN 2000	
<i>Zostera marina</i>	x			.	.			33

Appendix 2 : Butterflies

Scientific name	SPEC status	Legal protection (Bern & Hab. Dir)	Endemic in Europe	Globally threatened (IUCN category)	Threatened in Europe	Number of countries
<i>Anthocharis damone</i>	3				x	5
<i>Archon apollinaris</i>	3			LR	x	1
<i>Archon apollinus</i>	3				x	3
<i>Boloria frigga</i>	3				x	8
<i>Boloria thore</i>	3				x	12
<i>Boloria titania</i>	3				x	19
<i>Coenonympha hero</i>	3	x			x	19
<i>Coenonympha oedippus</i>	3	x		LR	x	14
<i>Coenonympha tullia</i>	3				x	28
<i>Colias chrysotheme</i>	3				x	8
<i>Colias hecla</i>	3				x	4
<i>Colias myrmidone</i>	2	x			x	15
<i>Colias nastes</i>	3				x	4
<i>Erebia christi</i>	1	x	x	VU	x	2
<i>Erebia embla</i>	3				x	6
<i>Erebia epistygne</i>	1		x	VU	x	2
<i>Erebia medusa</i>	3				x	26
<i>Erebia sudetica</i>	1	x	x	VU	x	5
<i>Euchloe simplonia</i>	3				x	3
<i>Euphydryas aurinia</i>	3	x			x	38
<i>Euphydryas intermedia</i>	3				x	7
<i>Euphydryas maturna</i>	3	x			x	24
<i>Euphydryas orientalis</i>	3				x	1
<i>Glaucopsyche alexis</i>	3				x	36
<i>Gonepteryx maderensis</i>	1		x	EN	x	1
<i>Hipparchia azorina</i>	1		x	VU	x	1
<i>Hipparchia maderensis</i>	1		x	VU	x	1
<i>Hipparchia miguelensis</i>	1		x	VU	x	1
<i>Hipparchia occidentalis</i>	1		x	VU	x	1
<i>Leptidea morsei</i>	3	x			x	14
<i>Lopinga achine</i>	3	x			x	26
<i>Lycena belle</i>	3	x			x	20
<i>Lycena ottomanus</i>	1		x	VU	x	8
<i>Maculinea alcon</i>	3			LR	x	27
<i>Maculinea arion</i>	3	x		LR	x	37
<i>Maculinea nausithous</i>	3	x		LR	x	19
<i>Maculinea rebeli</i>	1		x	VU	x	17
<i>Maculinea teleius</i>	3	x		LR	x	20
<i>Melanargia titea</i>	3				x	1
<i>Melitaea aetherie</i>	3				x	3

Scientific name	SPEC status	Legal protection (Bern & Hab. Dir)	Endemic in Europe	Globally threatened (IUCN category)	Threatened in Europe	Number of countries
<i>Melitaea aurelia</i>	3				x	25
<i>Melitaea britomartis</i>	3				x	16
<i>Muschampia proteides</i>	3				x	1
<i>Neolycaena rhymnus</i>	3				x	2
<i>Nymphalis vaualbum</i>	3	x			x	14
<i>Nymphalis xanthomelas</i>	3				x	21
<i>Papilio hospiton</i>	1	x	x	EN	x	2
<i>Parnassius apollo</i>	3	x		VU	x	28
<i>Parnassius phoebus</i>	3				x	7
<i>Pieris cheiranthi</i>	1		x	VU	x	1
<i>Pieris wollastoni</i>	1		x	CR	x	1
<i>Plebeius hesperica</i>	1		x	VU	x	1
<i>Plebeius trappi</i>	1		x	VU	x	2
<i>Polyommatus caeruleus</i>	3				x	1
<i>Polyommatus dama</i>	1		x	EN	x	1
<i>Polyommatus damone</i>	3				x	2
<i>Polyommatus eroides</i>	3		x		x	12
<i>Polyommatus galloi</i>	1	x	x	EN	x	1
<i>Polyommatus golgus</i>	1	x	x	EN	x	1
<i>Polyommatus humedasae</i>	1	x	x	CR	x	1
<i>Polyommatus poseidon</i>	3				x	2
<i>Pseudochazara euxina</i>	1		x	VU	x	2
<i>Pseudophilotes bavius</i>	3				x	7
<i>Pseudophilotes vicrama</i>	3				x	23
<i>Pyrgus centaureae</i>	3				x	4
<i>Pyrgus cirsii</i>	1		x	VU	x	10
<i>Scolitantides orion</i>	3				x	28
<i>Spialia osthelderi</i>	3				x	1
<i>Thymelicus acteon</i>	2				x	31
<i>Tomares ballus</i>	2				x	3
<i>Tomares callimachus</i>	2				x	3
<i>Tomares nogelii</i>	2				x	4
<i>Triphysa phryne</i>	3				x	3
<i>Zerynthia caucasica</i>	1		x	VU	x	1

Appendix 3 : Freshwater fishes

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Acantholingua ohridana</i>		II			Lake Ohrid and its associated waters in Al, Ma	Ohrid salmon
<i>Acipenser baerii (baicalensis)</i>	V		II	EN	former USSR	Baical sturgeon
<i>Acipenser gueldenstaedtii</i>	V		II	EN	Black + Caspian sea	Russian sturgeon
<i>Acipenser mikadoi</i>	V		II	EN	NW pacific	Sakhalin sturgeon
<i>Acipenser naccarii</i>	*II, IV	II	II	VU	Adriatic sea, pr,sp	Adriatic sturgeon
<i>Acipenser nudiiventris</i>	V	II	II	EN	W Black + W Caspian sea	Fringebarbel sturgeon
<i>Acipenser persicus</i>	V		II	EN	Caspian sea & rivers	Persian sturgeon
<i>Acipenser ruthenus</i>	V	III	II	VU	CE Europe, basins Black & Caspian seas	Sterlet
<i>Acipenser sinensis</i>	V		II	EN	NW pacific	Chinese sturgeon
<i>Acipenser stellatus</i>	V	III	II	EN	Adriatic, Black, Caspian sea	Starry sturgeon
<i>Acipenser sturio</i>	*II, IV	III	II	CR	All coast Europe	Common sturgeon
<i>Alburnus albidus</i>	II	III		VU	it, Balkan peninsula	Italian bleak
<i>Alosa alosa</i>	II, V	III		DD	Broadly coast	Allis shad
<i>Alosa fallax (fallax)</i>	II, V	III		DD	Atlantic to Baltic	Twite shad
<i>Alosa macedonica</i>				VU	Greece	Macedonia shad
<i>Alosa pontica (pontica)</i>	II, V	III		DD	Black sea, Azov sea	Pontic shad
<i>Anaocypris hispanica</i>	II, IV	II		EN	S Europe	-
<i>Aphanius fasciatus</i>	II	II/II I		DD	S Europe	-
<i>Aphanius iberus</i>	II	II/II I		DD	NW Algeria, S+E sp	Aphanius iberus
<i>Aspius aspius</i>	II	III		DD	from Elbe eastward	Asp
<i>Anlopyge huegelii</i>		II		VU	Dalmatia	Dalmatian barbelgudgeon
<i>Barbus barbus</i>	V				from fr Eastwards	Barbel
<i>Barbus bocagei</i>	V	III			pr,sp	-

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Barbus brachycephalus</i>	V	III			Basins Aral & Caspian sea	Aral barbel
<i>Barbus caninus</i>				LR	Italy, Switzerland	
<i>Barbus capito</i>	V	II			Basins Aral & Caspian sea	Bulatmai barbel
<i>Barbus comizo</i>	II, V	III		VU	pr,sp	Iberian barbel
<i>Barbus euboicus</i>				CR	Greece	-
<i>Barbus guiraonis</i>				VU	Spain	-
<i>Barbus meridionalis</i>	II, V	III			N pr, to E alps, Danube catchment area	Mediterranean barbel
<i>Barbus microcephalus</i>	V	III		VU	pr,sp	-
<i>Barbus peloponnesius</i>	V	III		DD	S Europe	-
<i>Barbus plebejus</i>	II, V	III		?	S of alps, mostly in it	-
<i>Barbus prespensis</i>				VU	Albania, Greece and Macedonia	-
<i>Barbus sclateri</i>	V	III		?	pr,sp	-
<i>Barbus steindachneri</i>	V	III		VU	pr (endemic)	-
<i>Barbus tyberinus</i>				LR	Italy (endemic)	-
<i>Caspiosoma caspium</i>		II			Black, Azov & Caspian sea	-
<i>Chalcalburnus belvica</i>				LR	Albania, Greece and Macedonia	-
<i>Chalcalburnus chalcoides</i>	II	III		DD	Alps, rivers into Black + Caspian sea	Danube bleak
<i>Chondrostoma genei</i>	II	III		LR	N it, fr,sn	-
<i>Chondrostoma polylepis</i>	II	III			pr,sp	Iberian nase
<i>Chondrostoma prespense</i>				LR	Albania, Greece and Macedonia	-
<i>Chondrostoma scodrensis</i>				CR	Scutari, Albania (Montenegro). Possibly extinct	-
<i>Chondrostoma soetta</i>	II	III			N it, Alps	-
<i>Chondrostoma toxostoma</i>	II	III			fr, sp	Soiffe
<i>Cobitis calderoni</i>				VU	Portugal and Spain	-
<i>Cobitis caucasia</i>		II			ru	Ciscaucasian spined loach
<i>Cobitis elongata</i>	II	III		DD	Danube basin	-
<i>Cobitis meridionalis</i>				LR	Greece, Albania, and Macedonia	-
<i>Cobitis paludicola</i>		III		LR	pr,sp	-

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Cobitis romanica</i>		II		DD	ro, Danube basin	?
<i>Cobitis taenia</i>	II	III			Broadly	Spined loach
<i>Cobitis trichonica</i>	II	III		DD	Greece (endemic)	-
<i>Coregonus albula</i>	V	III		DD	N Europe	White fish, Vendace
<i>Coregonus autumnalis</i>	V	III			UK	Irish pollan
<i>Coregonus lavaretus</i>	V	III		DD	N europe, Alpine	Common whitefish, Gwymiad
<i>Coregonus nasus</i>	V	III		DD	NE Europe	Broad whitefish
<i>Coregonus oxyrhynchus</i>	*II, IV	III		DD	N Europe	Houting
<i>Coregonus peled</i>	V	III		DD	Paleartic region	Northern whitefish
<i>Coregonus pidschian</i>	V	III		DD	NE Europe	Humpbacked whitefish
<i>Cottus ferruginosus</i>		II			Italy and Croatia	-
<i>Cottus gobio</i>	II	II			from N sp eastwards	Bullhead
<i>Cottus petiti</i>	II	II		CR		-
<i>Economidichthys pygmaeus</i>				VU	Greece	-
<i>Economidichthys trichonis</i>				VU	Greece (endemic to Lake Trichonis)	-
<i>Epinephelus marginatus</i>		III		EN		Dusky grouper
<i>Eudontomyzon danfordi</i>	II				Tisza in Danube catchment	Carpathian lamprey
<i>Eudontomyzon hellenicus</i>	II	III				Greek brook lamprey
<i>Eudontomyzon mariae</i>	II	III				Ukrainian brook lamprey
<i>Eudontomyzon vladykovi</i>	II	III			Danube	Vladykov's lamprey
<i>Gadus morhua</i>				VU	from the Bay of Biscay to the Barents Sea	Atlantic cod
<i>Gobio albipinnatus</i>	II	III		DD	EC + E Europe	White-finned gudgeon
<i>Gobio kessleri</i>	II	III		DD	Danube basin	Kessler's gudgeon
<i>Gobio uranoscopus</i>	II	III		DD	Danube basin	Danubian longbarbel gudgeon
<i>Gobius therssalus</i>		III		VU	Mediterranean Sea: Greece. Known only from the Pinios river system of Thessaly, which empties into the Thermaikos Gulf of the northern Aegean	Knipowitschia thessala
<i>Gymnocephalus acerinus</i>		II		DD	N of Black sea	-

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Gymnocephalus baloni</i>	II/I V	III		DD	Danube basin	Balon's ruffe
<i>Gymnocephalus schraetser</i>	II, V	III		VU	Danube basin	Schraetzer
<i>Hucho hucho</i>	II, V	III		EN	Danube catchment area	Huchen (Danube salmon)
<i>Huso dauricus</i>	V		II			Kaluga
<i>Huso huso</i>	V	II/II I	II	EN	SE Europe	Beluga
<i>Iberocypris palaciosi</i>	II	II		EN	Spain	-
<i>Knipovitschia croatica</i>				VU	endemic to Croatia	-
<i>Ladigesocypris ghiggii</i> (= <i>Leucaspis irideus</i>)	*II	II		VU	Mediterranean Sea: Rhodes, Greece and southwest Anatolia, Turkey	-
<i>Lampetra fluviatilis</i>	II, V	III		EN	NE to SW-Europe	Lampern
<i>Lampetra planeri</i>	II	III			NE to SW (France) Europe	Brook lamprey
<i>Lampetra zanadreae</i> (= <i>Letbenteron zanandreae</i>)	II, V	II/II I		EN	Italy, Croatia and Slovenia	Po brook lamprey
<i>Leuciscus illyricus</i>		III		VU		-
<i>Leuciscus lucumonis</i>	II	III		LR		-
<i>Leuciscus microlepis</i>		III		VU		-
<i>Leuciscus pleurobipunctatus</i>				LR		-
<i>Leuciscus polylepis</i>		III		EN		-
<i>Leuciscus souffia</i>	II	III			Rhone basin	Soufie
<i>Leuciscus svallige</i>		III		VU		-
<i>Leuciscus turskyi</i>		III		EX		-
<i>Leuciscus ukliva</i>		III		CR		-
<i>Messinobarbus haasi</i> (= <i>Barbus haasi</i>)				VU	Spain	
<i>Misgurnus fossilis</i>	II	III		LR	NF fr eastwards	Weatherfish
<i>Pachychilon macedonicum</i>				LR		-
<i>Pachychilon pictum</i>		III		LR		-
<i>Padogobius bonelli</i>				LR		
<i>Padogobius nigricans</i>	II	II/II I		VU	only in rivers of west central Italy (Serchio, Arno, Ombrone and Tiber basins)	Arno goby
<i>Padogobius panizzae</i>	II	III				

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Pelecus cultratus</i>	II/V	III		DD	Baltic, Danube, Caspian + Black sea	Sabre carp, Ziege
<i>Percarina demidoffi</i>		II				
<i>Petromyzon marinus</i>	II	III		EN	broadly	Sea lamprey
<i>Phloxinellus adspersus</i>	II	III		DD		-
<i>Phloxinellus hispanicus</i>	II	III				-
<i>Phloxinellus alepidotus</i>				VU		-
<i>Phloxinellus croaticus</i>				VU		-
<i>Phloxinellus ghetaldii</i>				VU		-
<i>Phloxinellus metobiensis</i>				VU		-
<i>Phoxinus phoxinus</i>	II/I V			DD	EC Europe	-
<i>Pomatoschistus canestrini</i>	II	II/II I		DD	?	-
<i>Pomatoschistus tortonesei</i>		II				
<i>Pseudophoxinus beoticus</i>				EN		
<i>Pseudophoxinus stymphalicus</i>		III		LR	endemic to Greece	-
<i>Pseudoscaphirhynchus fedtschenkoi</i>	V		II	CR	Endemic to Syr Darya basin of the Aral Sea	Syr Darya sturgeon
<i>Pseudoscaphirhynchus hermanni</i>	V		II	CR	Endemic to the basin of Amu Darya and Sir Darya rivers	Dwarf sturgeon
<i>Pseudoscaphirhynchus kaufmanni</i>	V		II	EN	Amu Darya River from the Pyandzh to the mouths and lower tributaries	Amu Darya sturgeon
<i>Pungitius hellenicus</i>		III		CR	Mediterranean Sea: Greece	-
<i>Rhodeus amarus</i>	II	II			NE fr eastwards	Bitterling
<i>Rhodeus sericeus</i>	?	III				Amur bitterling
<i>Romanichthys valsanicola</i>		II		CR	Vislan	-
<i>Rutilus alburnoides</i>	II	III				
<i>Rutilus arcasii</i>	II	III				
<i>Rutilus frisii (meidingeri)</i>	II	III		DD		
<i>Rutilus lemmingii</i> (= <i>Chondrostoma lemingi</i> = <i>Leusciscus lemingi</i>)	II	III		VU		
<i>Rutilus lusitanicum</i> (= <i>Chondrostoma lusitanicum</i>)	II	III		VU	pr	-
<i>Rutilus macrolepidotus</i>	II	III		VU		

Scientific name	Legal protection			Globally threatened (IUCN category)	Remarks distribution	Common name
	Hab. Dir.	Bern	Bonn			
<i>Rutilus meidingerii</i>				EN		
<i>Rutilus pigus</i>	II	III		DD	N it	-
<i>Rutilus rubilio</i>	II	III			it, Balkan, both sides of Darnadelles	-
<i>Sabanejewia aurata</i> (= <i>Cobitis aurata</i>)	II	III		DD	Danube basin, Balkan and Caucasian rivers, Baltic	Golden spinned loach
<i>Sabanejewia caspia</i> (= <i>Cobitis caspia</i>)		II			Caspian basin	Caspian spined loach
<i>Sabanejewia larvata</i> (= <i>Cobitis larvata</i>)	II	III		LR	N it	-
<i>Salmo carpio</i>				VU	Lake Garda, Italy (endemic)	
<i>Salmo letnica</i>		II		VU	Lake Ohrid, Macedonia	Ohrid trout
<i>Salmo macrostigma</i>	II	II			Mediterranean	-
<i>Salmo marmoratus</i>	II	II		DD	northern Italy, Adriatic basin of Slovenia and Croatia, Montenegro and Albania	-
<i>Salmo salar</i>	II, V	III			whole N coast	Salmon
<i>Salmothymus obtusirostris</i>				EN	Croatia and Montenegro to eastern Albania (mostly in Adriatic Sea drainages).	Adriatic trout
<i>Scardinius graecus</i>	II	II		VU		
<i>Sebastes fasciatus</i>				EN		
<i>Silurus aristotelis</i>	II, V	III		DD		
<i>Thunnus obesus</i>				VU		
<i>Thymallus thymallus</i>	V	III			C NE Europe	Grayling
<i>Umbra krameri</i>	II	II		VU	SE Europe	Mudminnow
<i>Valencia hispanica</i>	*II, IV	II		EN		
<i>Valencia letourneuxi</i>	*II	II		EN		
<i>Vimba melanops</i>				VU	rivers of the Aegean Sea basin in Greece	Macedonian vimba
<i>Zingel asper</i>	II, IV	II		CR	Rhone	-
<i>Zingel streber</i>		III		VU	Danube catchment area	-
<i>Zingel zingel</i>	II, V	III		VU	Danube and Dniester basins	Zingel

Appendix 4 : Amphibians

Scientific name	Legal protection	Endemic in Europe	Globally threatened (IUCN category)	Distribution
<i>Alytes cisternasii</i>	1	1	NT	SW Iberian peninsula
<i>Alytes dickhilleni</i>		1	VU	SE Iberian peninsula
<i>Alytes muletensis</i>	1	1	VU	Mallorca
<i>Bombina variegata</i>	1	1		Central Europe
<i>Bufo calamita</i>	1	1		SW to Central Europe
<i>Chioglossa lusitanica</i>	1	1	NT	NW Iberian peninsula
<i>Discoglossus galganoi</i>	1	1		Iberian peninsula
<i>Discoglossus jeanneae</i>	1	1		Iberian peninsula
<i>Discoglossus montalentii</i>	1	1	VU	Corsica
<i>Discoglossus sardus</i>	1	1		Sardinia, Corsica
<i>Euproctus asper</i>	1	1		Pyrenees
<i>Euproctus montanus</i>	1	1		Corsica
<i>Euproctus platycephalus</i>	1	1	EN	Sardinia
<i>Hyla meridionalis</i>	1	1		France, Iberia, N Italy
<i>Hyla sarda</i>	1	1		Sardinia, Corsica
<i>Mertensiella luschani</i>	1		EN	Aegean sea, Turkey
<i>Pelobates cultripes</i>	1	1		France, Spain, Portugal
<i>Pelobates fuscus</i>	1	1		Central, E, SE Europe
<i>Pelobates fuscus insubricus</i>	1	1	EN	Po valley, Italy
<i>Proteus anguinus</i>	1	1	VU	East coast Adriatic Sea
<i>Proteus anguinus parkelj</i>	1	1		Bela Krajina, SE Slovenia
<i>Rana cerigensis</i>		1	EN	Karpathos (Greece)
<i>Rana cretensis</i>		1	EN	Crete
<i>Rana dalmatina</i>	1	1		Central NS Europe
<i>Rana epeirotica</i>		1	VU	W Greece
<i>Rana graeca</i>	1	1		Greece, Balkan
<i>Rana iberica</i>	1	1	NT	NW Iberian peninsula
<i>Rana italica</i>	1	1		Italy
<i>Rana latastei</i>	1	1	VU	Italy, Switz, Slovenia, Croatia
<i>Rana pyrenaica</i>		1	VU	Pyrenees (Spain)
<i>Rana shqipericana</i>		1	EN	Montenegro, Albania
<i>Salamandra atra</i>	1	1		Alpine area
<i>Salamandra atra aurorae</i>	1	1	CR	NE Italy
<i>Salamandra lanzai</i>	1	1	VU	Alpine area
<i>Salamandrina terdigitata</i>	1	1		Apennine Italy
<i>Speleomantes ambrosii</i>	1	1	NT	SE French, NW Italy
<i>Speleomantes flavus</i>	1	1	NT	Sardinia
<i>Speleomantes genei</i>	1	1	VU	Sardinia
<i>Speleomantes imperialis</i>	1	1	NT	Sardinia

Scientific name	Legal protection	Endemic in Europe	Globally threatened (IUCN category)	Distribution
<i>Speleomantes italicus</i>	1	1	NT	Italy, Appennine
<i>Speleomantes supramontis</i>	1	1	EN	Sardinia
<i>Triturus carnifex</i>	1	1		Austria, Yugoslavia, Italy
<i>Triturus dobrogicus</i>	1	1	NT	Danube basin
<i>Triturus italicus</i>	1	1		Central, Southern Italy
<i>Triturus karelinii</i>	1	1		Balkan, Caucasus
<i>Triturus marmoratus</i>	1	1		France, Spain, Portugal
<i>Triturus montandoni</i>	1	1		Carpathian + Tatra mnts

Appendix 5 : Reptiles

Scientific name	Legal protection	Endemic in Europe	Globally threatened (IUCN category)	Distribution in Europe
<i>Algyroides fitzingeri</i>	x	x		Sardinia, Corsica
<i>Algyroides marchi</i>	x	x	VU	Spain
<i>Algyroides moreoticus</i>	x	x		Peloponnesos
<i>Algyroides nigropunctatus</i>	x	x		Balkan area
<i>Caretta caretta</i>	x		EN	Warm oceans, Mediterranean
<i>Chalcides bedriagai</i>	x	x		Iberian area
<i>Chalcides sexlineatus</i>	x	x		Cran Canaria
<i>Chalcides simonyi</i>	x	x		Fuerteventura
<i>Chalcides viridanus</i>	x	x		Canary islands
<i>Chelonia mydas</i>	x		EN	only Turkey, Cyprus
<i>Coluber cypriensis</i>	x	x		Cyprus
<i>Coluber gyarusensis</i>		x	CR	Cyclades
<i>Dermochelys coriacea</i>	x		EN	circumglobal
<i>Elaphe situla</i>	x		DD	South-eastern Europe
<i>Eretmochelys imbricata</i>	x		CR	Mediterranean area
<i>Euleptes europaeus</i>	x	x	VU	Mediterraneaen area
<i>Gallotia atlantica</i>	x	x		E Canary islands
<i>Gallotia galloti</i>	x	x		Tenerife, La Palma
<i>Gallotia galloti insulanagae</i>	x	x		Rocks in front of Tenerife
<i>Gallotia simonyi</i>	x	x	CR	El Hierro
<i>Gallotia stehlini</i>	x	x		Gran Canaria
<i>Lacerta bedriagae</i>	x	x		Corsica, Sardinia
<i>Lacerta bonnali</i>	x	x	VU	Pyrenees
<i>Lacerta dugesii</i>	x	x		Madeira, Selvagens, Azores
<i>Lacerta graeca</i>	x	x		Peloponnese area
<i>Lacerta horvathi</i>	x	x		E. Alps, N. Dinaric mnts
<i>Lacerta lepida</i>	x	x		Iberia., S. France, N-E Italy
<i>Lacerta monticola</i>	x	x	LR; cd	N-W Iberian peninsula
<i>Lacerta schreiberi</i>	x	x	LR; nt	Iberia
<i>Lacerta vivipara pannonica</i>			VU	Northern-central Europe*
<i>Lepidochelys kempii</i>	x		CR	Atlantic waters
<i>Macrovipera schweizeri</i>	x	x	CR	Western Cyclades islands
<i>Natrix megalcephala</i>	x	x		Russia, Caucasus, Turkey
<i>Natrix natrix cetti</i>	x	x	CR	Sardinia
<i>Natrix natrix corsa</i>	x	x		Corsica
<i>Natrix natrix cypriaca</i>	x	x		Cyprus
<i>Natrix natrix schweizeri</i>		x	CR	

Scientific name	Legal protection	Endemic in Europe	Globally threatened (IUCN category)	Distribution in Europe
<i>Podarcis atra</i>	x	x		Columbretes Islands (Spain)
<i>Podarcis filfolensis</i>	x	x		Malta and Pelargian Isl.
<i>Podarcis lilfordi</i>	x	x	VU	Balearic islands
<i>Podarcis milensis</i>	x	x	VU	Eastern Greek islands
<i>Podarcis peloponnesiaca</i>	x	x		Peloponnesos
<i>Podarcis pityusensis</i>	x	x	VU	Balearic islands
<i>Podarcis tiliguerta</i>	x	x		Sardinia Corsica
<i>Podarcis wagleriana</i>	x	x		Sicily
<i>Tarentola angustimentalis</i>	x	x		Canary islands
<i>Tarentola boettgeri</i>	x	x	EN	Canary islands
<i>Tarentola delelandii</i>	x	x		Canary islands
<i>Tarentola gomerensis</i>	x	x		La Gomera
<i>Testudo graeca</i>	x		VU	South Europe
<i>Testudo graeca nikolskii</i>		x	CR	Russia, Georgia
<i>Testudo hermanni</i>	x	x	LR; nt	Mediterranean area
<i>Testudo marginata</i>	x	x	LR; lc	Greece (Albania, Sardinia)
<i>Vipera albizona</i>	x	x		Turkey
<i>Vipera barani</i>	x	x		Endemic in Turkey
<i>Vipera dinniki</i>			VU	Central Caucasus
<i>Vipera kaznakovi</i>	x		EN	Caucasus
<i>Vipera pontica</i>	x	x		Endemic to Turkey
<i>Vipera seoanei</i>	x	x		Northern Spain
<i>Vipera ursinii</i>	x		EN	South and East Europe
<i>Vipera ursinii moldavica</i>		x	CR	E. Romania, Moldavia (still?)
<i>Vipera ursinii rakosiensis</i>	x	x	EN	Hungary, Romania

Appendix 6 : Birds

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Accipiter brevipes</i>	2	II	II	I	.		.	1	Levant Sparrowhawk
<i>Acrocephalus paludicola</i>	1	II	I	I	.		VU	1	Aquatic Warbler
<i>Actitis hypoleucos</i>	3			.	.		.		Common Sandpiper
<i>Aegypius monachus</i>	1	II		I	.		NT	1	Cinereous Vulture
<i>Alauda arvensis</i>	3			.	II		.		Eurasian Skylark
<i>Alcedo atthis</i>	3	II		I	.		.		Common Kingfisher
<i>Alectoris barbara</i>	3			I	II		.		Barbary Partridge
<i>Alectoris chukar</i>	3			.	II		.		Chukar
<i>Alectoris graeca</i>	2			I*	II**	* A. g. saxatilis + A. g. whitakeri only; ** all others	.	1	Rock Partridge
<i>Alectoris rufa</i>	2			.	II		.	1	Red-legged Partridge
<i>Anas acuta</i>	3		II	.	II		.		Northern Pintail
<i>Anas chipeata</i>	3		II	.	II		.		Northern Shoveler
<i>Anas querquedula</i>	3		II	.	II		.		Garganey
<i>Anas strepera</i>	3		II	.	II		.		Gadwall
<i>Anser erythropus</i>	1	II	I	I	.	* Reintroduced	VU	1	Lesser White-fronted Goose
<i>Anthus campestris</i>	3	II		I	.		.		Tawny Pipit
<i>Apus affinis</i>	3			.	.		.		Little Swift
<i>Apus unicolor</i>	2	II		.	.		.	1	Plain Swift
<i>Aquila adalberti</i>	1	II	I	I	.		EN	1	Spanish Imperial Eagle
<i>Aquila chrysaetos</i>	3	II		I	.		.		Golden Eagle
<i>Aquila clanga</i>	1	II	I	I	.		VU		Greater Spotted Eagle
<i>Aquila heliaca</i>	1	II	I	I	.		VU		Imperial Eagle
<i>Aquila nipalensis</i>	3	II		.	.				Steppe Eagle
<i>Aquila pomarina</i>	2	II		I	.		.	1	Lesser Spotted Eagle
<i>Ardea purpurea</i>	3	II	II	I	.		.		Purple Heron
<i>Ardeola ralloides</i>	3	II		I	.		.		Squacco Heron
<i>Asio flammeus</i>	3	II		I	.		.		Short-eared Owl
<i>Athene noctua</i>	3	II		.	.		.		Little Owl
<i>Aythya ferina</i>	2			.	II		.	1	Common Pochard
<i>Aythya fuligula</i>	3			.	II		.		Tufted Duck
<i>Aythya marila</i>	3W			.	II		.		Greater Scaup
<i>Aythya nyroca</i>	1		I	I	.		NT		Ferruginous Duck
<i>Botaurus stellaris</i>	3	II	II	I	.		.		Great Bittern
<i>Branta bernicla</i>	3W			.	II		.		Brent Goose
<i>Branta ruficollis</i>	1W	II	I	I	.		VU		Red-breasted Goose
<i>Bubo bubo</i>	3	II		I	.		.		Eurasian Eagle-owl
<i>Bucephala islandica</i>	3	II		.	.		.		Barrow's Goldeneye
<i>Bulweria bulwerii</i>	3	II		I	.		.		Bulwer's Petrel
<i>Burhinus oedipnemus</i>	3	II	II	I	.		.		Eurasian Thick-knee

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Buteo rufinus</i>	3	II		I	.		.		Long-legged Buzzard
<i>Calandrella brachydactyla</i>	3	II		I	.		.		Greater Short-toed Lark
<i>Calandrella rufescens</i>	3	II		.	.		.		Lesser Short-toed Lark
<i>Calidris alpina</i>	3	II		I*	.	* C. a. schinzii only	.		Dunlin
<i>Calidris canutus</i>	3W			.	II		.		Red Knot
<i>Calonectris diomedea</i>	2			I	.		.	1	Cory's Shearwater
<i>Caprimulgus europaeus</i>	2	II		I	.		.	1	Eurasian Nightjar
<i>Carduelis cannabina</i>	2	II		.	.		.	1	Eurasian Linnet
<i>Carpodacus rubicilla</i>	3			.	.				Great Rosefinch
<i>Cephus grylle</i>	2			.	.		.	1	Black Guillemot
<i>Ceryle rudis</i>	3	II		.	.		.		Pied Kingfisher
<i>Charadrius alexandrinus</i>	3	II	II	I	.		.		Kentish Plover
<i>Charadrius asiaticus</i>			II	.	.				Caspian Plover
<i>Charadrius leschenaultii</i>	3	II	II	.	.				Greater Sand Plover
<i>Chersophilus duponti</i>	3	II		I	.		.		Dupont's Lark
<i>Chettusia gregaria</i>	1			.	.		CR		Sociable Lapwing
<i>Chlamydotis undulata</i>	1	II	II	I	.		VU		Houbara Bustard
<i>Chlidonias hybrida</i>	3	II		I	.		.		Whiskered Tern
<i>Chlidonias niger</i>	3	II	II	I	.		.		Black Tern
<i>Ciconia ciconia</i>	2	II	II	I	.		.	1	White Stork
<i>Ciconia nigra</i>	2	II	II	I	.		.	1	Black Stork
<i>Circus gallicus</i>	3	II		I	.		.		Short-toed Snake-eagle
<i>Circus cyaneus</i>	3	II		I	.		.		Northern Harrier
<i>Circus macrourus</i>	1	II		I	.		NT		Pallid Harrier
<i>Columba bollii</i>	1	II		I	.		NT	1	Dark-tailed Laurel Pigeon
<i>Columba junoniae</i>	1	II		I	.		EN	1	White-tailed Laurel Pigeon
<i>Columba trocaz</i>	1			I	.		NT	1	Madeira Laurel Pigeon
<i>Coracias garrulus</i>	2	II	II	I	.		.	1	European Roller
<i>Coturnix coturnix</i>	3		II	.	II	Bonn: coturnix only	.		Common Quail
<i>Crex crex</i>	1	II	II	I	.		NT		Corncrake
<i>Cursorius cursor</i>	3	II		I	.		.		Cream-coloured Courser
<i>Cygnus columbianus</i>	3W	II*		I	.	* bewickii only	.		Tundra Swan
<i>Delichon urbica</i>	3	II		.	.		.		Northern House Martin
<i>Elanus caeruleus</i>	3	II		I	.		.		Black-winged Kite
<i>Emberiza aureola</i>	1	II		.	.		NT		Yellow-breasted Bunting
<i>Emberiza cia</i>	3	II		.	.		.		Rock Bunting
<i>Emberiza cineracea</i>	1	II		I	.		NT		Cinereous Bunting
<i>Emberiza hortulana</i>	2			I	.		.	1	Ortolan Bunting
<i>Emberiza melanocephala</i>	2	II		.	.		.	1	Black-headed Bunting
<i>Erythropygia galactotes</i>	3	II		.	.		.		Rufous-tailed Scrub-robin
<i>Falco biarmicus</i>	3	II	II	I	.		.		Lanner Falcon

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Falco cherrug</i>	1	II	II	I	.		EN	1	Saker Falcon
<i>Falco eleonorae</i>	2	II	II	I	.		.	1	Eleonora's Falcon
<i>Falco naumanni</i>	1	II	I, II	I	.		VU	1	Lesser Kestrel
<i>Falco rusticolus</i>	3	II	II	I	.		.		Gyr Falcon
<i>Falco tinnunculus</i>	3	II	II	.	.		.		Common Kestrel
<i>Falco vespertinus</i>	3	II	II	I	.		.		Red-footed Falcon
<i>Ficedula semitorquata</i>	2	II		I	.		.	1	Semicollared Flycatcher
<i>Francoelinus francoelinus</i>	3			.	II		.		Black Francolin
<i>Fratercula arctica</i>	2			.	.		.	1	Atlantic Puffin
<i>Fringilla teydea</i>	1	II		I	.		NT	1	Blue Chaffinch
<i>Fulica cristata</i>	3	II		I	.		.		Red-knobbed Coot
<i>Galerida cristata</i>	3			.	.		.		Crested Lark
<i>Galerida theklae</i>	3	II		I	.		.		Thekla Lark
<i>Gallinago gallinago</i>	3			.	II		.		Common Snipe
<i>Gallinago media</i>	1	II		I	.		NT		Great Snipe
<i>Gavia arctica</i>	3	II	II, II	I	.		.		Arctic Loon
<i>Gavia stellata</i>	3	II	II	I	.		.		Red-throated Loon
<i>Geronticus eremita</i>	1?		I			Re-introduced in Turkey	CR		Northern Bald Ibis
<i>Glareola nordmanni</i>	1	II	II	.	.		DD		Black-winged Pratincole
<i>Glareola pratincola</i>	3	II	II	I	.		.		Collared Pratincole
<i>Grus grus</i>	2	II	II	I	.		.	1	Common Crane
<i>Gypaetus barbatus</i>	3	II		I	.		.		Lammergeier
<i>Haliaeetus albicilla</i>	1	II	I	I	.		NT		White-tailed Eagle
<i>Hieraaetus fasciatus</i>	3	II		I	.		.		Bonelli's Eagle
<i>Hieraaetus pennatus</i>	3	II		I	.		.		Booted Eagle
<i>Hippolais pallida</i>	3	II		.	.		.		Olivaceous Warbler
<i>Hirundo rustica</i>	3	II		.	.		.		Barn Swallow
<i>Histrionicus histrionicus</i>	3	II		.			.		Harlequin Duck
<i>Ixobrychus minutus</i>	3	II	II	I	.		.		Little Bittern
<i>Jynx torquilla</i>	3	II		.	.		.		Eurasian Wryneck
<i>Lanius collurio</i>	3	II		I	.		.		Red-backed Shrike
<i>Lanius excubitor</i>	3	II		.	.		.		Great Grey Shrike
<i>Lanius meridionalis</i>	2?								Southern Gray Shrike
<i>Lanius minor</i>	2	II		I	.		.	1	Lesser Grey Shrike
<i>Lanius nubicus</i>	2	II		I	.		.	1	Masked Shrike
<i>Lanius senator</i>	2	II		.	.		.	1	Woodchat Shrike
<i>Larus armenicus</i>	2		II	.					Armenian Gull
<i>Larus audouinii</i>	1	II	II	I	.		NT	1	Audouin's Gull
<i>Larus canus</i>	2			.	II		.	1	Mew Gull
<i>Larus genei</i>	3	II	II	I	.		.		Slender-billed Gull
<i>Larus minutus</i>	3	II		I	.		.		Little Gull
<i>Limicola falcinellus</i>	3			.	.		.		Broad-billed Sandpiper
<i>Limosa limosa</i>	2			.	II		.	1	Black-tailed Godwit
<i>Loxia scotica</i>	1	II		I	.		DD	1	Scottish Crossbill
<i>Lullula arborea</i>	2			I	.		.	1	Wood Lark
<i>Lymnocyptes minimus</i>	3			.	II		.		Jack Snipe

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Marmaronetta angustirostris</i>	1	II	I	I	.		VU		Marbled Teal
<i>Melanitta fusca</i>	3			.	II		.		White-winged Scoter
<i>Melanocorypha calandra</i>	3	II		I	.		.		Calandra Lark
<i>Melanocorypha yeltoniensis</i>	3						.		Black Lark
<i>Mergellus albellus</i>	3	II		I	.		.		Smew
<i>Merops apiaster</i>	3	II	II	.	.		.		European Bee-eater
<i>Miliaria calandra</i>	2			.	.		.	1	Corn Bunting
<i>Milvus migrans</i>	3	II		I	.		.		Black Kite
<i>Milvus milvus</i>	2	II		I	.		.	1	Red Kite
<i>Monticola saxatilis</i>	3	II		.	.		.		Rufous-tailed Rock-thrush
<i>Monticola solitarius</i>	3	II		.	.		.		Blue Rock-thrush
<i>Muscicapa striata</i>	3	II	II	.	.		.		Spotted Flycatcher
<i>Neophron percnopterus</i>	3	II		I	.		.		Egyptian Vulture
<i>Numenius arquata</i>	2			.	II		.	1	Eurasian Curlew
<i>Numenius tenuirostris</i>	1	II	I	I	.		CR		Slender-billed Curlew
<i>Nyctea scandiaca</i>	3	II		I	.		.		Snowy Owl
<i>Nycticorax nycticorax</i>	3	II		I	.		.		Black-crowned Night-heron
<i>Oceanodroma castro</i>	3	II		I	.		.		Band-rumped Storm-petrel
<i>Oceanodroma leucorhoa</i>	3	II		I	.		.		Leach's Storm-petrel
<i>Oenanthe hispanica</i>	2	II		.	.		.	1	Black-eared Wheatear
<i>Oenanthe leucura</i>	3	II		I	.		.		Black Wheatear
<i>Oenanthe oenanthe</i>	3	II		.	.		.		Northern Wheatear
<i>Otis tarda</i>	1	II	I*, II	I	.	* M. Eur. Pop	VU	1	Great Bustard
<i>Otus scops</i>	2	II		.	.		.	1	Common Scops-owl
<i>Oxyura leucocephala</i>	1	II	I	I	.		EN	1	White-headed Duck
<i>Pagophila eburnea</i>	3	II		.					Ivory Gull
<i>Pandion haliaetus</i>	3	II	II	I	.		.		Osprey
<i>Parus cristatus</i>	2	II		.	.		.	1	Crested Tit
<i>Parus palustris</i>	3	II		.	.		.		Marsh Tit
<i>Passer domesticus</i>	3			.	.		.		House Sparrow
<i>Passer montanus</i>	3			.	.		.		Eurasian Tree Sparrow
<i>Pelagodroma marina</i>	3	II		I	.		.		White-faced Storm-petrel
<i>Pelecanus crispus</i>	1	II	I, II	I	.		VU	1	Dalmatian Pelican
<i>Pelecanus onocrotalus</i>	3	II	I, II	I	.		.		Great White Pelican
<i>Perdix perdix</i>	3			I*	II**	* P .p. italica + P. p. hispaniensis only; ** all others	.		Grey Partridge
<i>Perisoreus infaustus</i>	3	II		.	.		.		Siberian Jay
<i>Phalacrocorax pygmeus</i>	1	II	II	I	.		NT	1	Pygmy Cormorant
<i>Philomachus pugnax</i>	2			I	II		.	1	Ruff
<i>Phoenicopterus roseus</i>	3	II	II	I	.		.		Greater Flamingo
<i>Phoenicurus erythrogaster</i>	3			.					White-winged Redstart

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Phoenicurus phoenicurus</i>	2	II		.	.		.	1	Common Redstart
<i>Phylloscopus bonelli</i>	2			.	.		.	1	Bonelli's Warbler
<i>Phylloscopus sibilatrix</i>	2			.	.		.	1	Wood Warbler
<i>Phylloscopus sindianus</i>	3			.					Mountain Chiffchaff
<i>Picoides tridactylus</i>	3	II		I	.		.		Three-toed Woodpecker
<i>Picus canus</i>	3	II		I	.		.		Grey-faced Woodpecker
<i>Picus viridis</i>	2	II		.	.		.	1	Eurasian Green Woodpecker
<i>Platalea leucorodia</i>	2	II	II	I	.		.	1	Eurasian Spoonbill
<i>Plegadis falcinellus</i>	3	II	II	I	.		.		Glossy Ibis
<i>Podiceps auritus</i>	3	II	II	I	.		.		Horned Grebe
<i>Polysticta stelleri</i>	3W	II	I	I	.		.		Steller's Eider
<i>Porphyrio porphyrio</i>	3	II		I	.		.		Purple Swampphen
<i>Porzana pusilla</i>	3	II	II	I	.		.		Baillon's Crake
<i>Prunella atrogularis</i>	3	II		.					Black-throated Accentor
<i>Pterocles alchata</i>	3	II		I	.		.		Pin-tailed Sandgrouse
<i>Pterocles orientalis</i>	3	II		I	.		.		Black-bellied Sandgrouse
<i>Pterodroma feae</i>	1	II		I	.		NT	1	Fea's Petrel
<i>Pterodroma madeira</i>	1	II		I	.		CR	1	Zino's Petrel
<i>Puffinus assimilis</i>	3	II*		I	.	* baroli only	.		Little Shearwater
<i>Puffinus griseus</i>	1			.	.	Passage migrant only	NT		Sooty Shearwater
<i>Puffinus puffinus</i>	2	II		.	.		.	1	Manx Shearwater
<i>Pyrrhocorax pyrrhocorax</i>	3	II		I	.		.		Red-billed Chough
<i>Riparia riparia</i>	3	II		.	.		.		Sand Martin
<i>Saxicola dacotiae</i>	1	II		I	.		EN	1	Fuerteventura Chat
<i>Scolopax rusticola</i>	3		II	.	II		.		Eurasian Woodcock
<i>Sitta krueperi</i>	2	II		I	.		.	1	Krueper's Nuthatch
<i>Sitta whiteheadi</i>	2	II		I	.		.	1	Corsican Nuthatch
<i>Sterna albifrons</i>	3	II	II	I	.		.		Little Tern
<i>Sterna caspia</i>	3		II	I	.		.		Caspian Tern
<i>Sterna dougallii</i>	3	II	II	I	.		.		Roseate Tern
<i>Sterna nilotica</i>	3	II		I	.		.		Gull-billed Tern
<i>Sterna sandvicensis</i>	2	II	II	I	.		.	1	Sandwich Tern
<i>Streptopelia turtur</i>	3		II	.	II		.		European Turtle-dove
<i>Sturnus vulgaris</i>	3			.	II		.		Common Starling
<i>Sylvia hortensis</i>	3	II		.	.		.		Orphean Warbler
<i>Sylvia undata</i>	2	II		I	.		.	1	Dartford Warbler
<i>Tadorna ferruginea</i>	3	II		I	.		.		Ruddy Shelduck
<i>Tetrao mlokosieviczi</i>	1			.			DD		Caucasian Grouse
<i>Tetrao tetrix</i>	3			I*	II**	* T. t. tetrix only; ** all others; *** T. t. britannicus only	.		Black Grouse
<i>Tetraogallus caspius</i>	3			.					Caspian Snowcock
<i>Tetrax tetrax</i>	1	II		I	.		NT	1	Little Bustard
<i>Tringa erythropus</i>	3			.	II		.		Spotted Redshank

Scientific name	SPEC status 2004	Legal protection					Globally threatened (IUCN)	Endemic in Europe	Common name
		Bern	Bonn	Birds Dir.		Notes			
				I	II				
<i>Tringa glareola</i>	3	II		I	.		.		Wood Sandpiper
<i>Tringa totanus</i>	2			.	II		.	1	Common Redshank
<i>Turnix sylvatica</i>	3	II		I	.		.		Small Buttonquail
<i>Tyto alba</i>	3	II		.	.		.		Barn Owl
<i>Upupa epops</i>	3	II		.	.		.		Eurasian Hoopoe
<i>Uria lomvia</i>	3			.					Thick-billed Murre
<i>Vanellus spinosus</i>	3	II		I	.		.		Spur-winged Lapwing
<i>Vanellus vanellus</i>	2			.	II		.	1	Northern Lapwing

Appendix 7 : Mammals

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Acomys minous</i>	-	-	-	-	x	VU	Crete	Cretan spiny mouse
<i>Alopex lagopus</i>	II*/IV	II	-	-	.	-	Scandinavian mountain + Iceland	Arctic fox
<i>Ammotragus lervia</i>	-	-	-	II,B	.	VU	introd. Spain, Canary islands, Czech	Barbary sheep
<i>Apodemus agrarius</i>	-	-	-	-	.		E Europe	Striped field mouse
<i>Apodemus alpicola</i>	-	-	-	-	x	DD	Alps	Alpine mouse
<i>Arvicola sapidus</i>	-	-	-	-	x	LR/nt	SW Europe	Southern water vole
<i>Atelerix algirus</i>	IV	II	-	-	.	-	France, Balearic islands, Malta	Algerian hedgehog
<i>Balaena mysticetus</i>	IV	II	I	I,A	.	LR/CR*	Arctic, Atlantic, Pacific	Bowhead whale
<i>Balaenoptera acutorostrata</i>	IV	II*	-	I,A*	.	LR/nt	(Ant)Arctic Atl. Balt. Ind. Med. N.Pacific	Minke whale
<i>Balaenoptera borealis</i>	IV	II*	-	I,A*	.	EN	Antarctic Atl. Balt. Ind. Med. N.Pacific	Sei whale
<i>Balaenoptera edeni</i>	IV	II	-	I,A	.	DD	Atlantic, Indian, Pacific	Bryde's whale
<i>Balaenoptera musculus</i>	IV	II	I	I,A	.	EN	(Ant)Arctic Atl. Balt. Ind. Med. N.Pacific	Blue whale
<i>Balaenoptera physalus</i>	IV	II	-	I,A*	.	EN	(Ant)Arctic Atl. Balt. Ind. Med. N.Pacific	Fin whale
<i>Barbastella barbastellus</i>	II/IV	II	-	-	.	VU	Broadly	Barbastelle
<i>Bison bonasus</i>	II*/IV	-	-	-	x	EN	E Europe	European bison
<i>Canis lupus</i>	II*/IV	II	-	II	.	LR/VU*	scattered	Wolf
<i>Capra aegagrus</i>	II/IV	II	-	-	.	VU	Greek islands	Wild goat

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Capra cylindricornis</i>	-	-	-	-	.	VU	Azerb, Georgia, Eur. Russia	East caucasian tur
<i>Capra pyrenaica</i>	V	-	-	-	x	LR/VU*	Iberian peninsula	Spanish ibex
<i>Capra pyrenaica pyrenaica</i>	II*/IV	II	-	-	x	EX	Sp. Pyrenees; extinct	Pyrenean ibex
<i>Castor fiber</i>	II/IV	-	-	-	.	NT	scattered	Eurasian beaver
<i>Cervus elaphus corsicanus</i>	II*/IV	II	-	-	x	EN	Corsica	Corsican Red deer
<i>Cricetus cricetus</i>	IV/V	II	-	-	.	-	central E Europe	Common hamster
<i>Crocidura canariensis</i>	IV	II	-	-	.	VU	E Canary islands	Canary shrew
<i>Crocidura osorio</i>	-	-	-	-	.	VU	Gran Canaria	Osorio shrew
<i>Crocidura sicula</i>	IV	-	-	-	x	-	Sicily	Sicilian shrew
<i>Crocidura suaveolens</i>	-	II	-	-	.	-	scattered	Lesser white- toothed shrew
<i>Crocidura zimmermanni</i>	-	-	-	-	x	VU	Crete	Cretan white- toothed shrew
<i>Delphinapterus leucas</i>	IV	-	-	II,A	.	VU	Arctic, Atlantic, Pacific	White whale
<i>Delphinus delphis</i>	IV	II	-	-/II,A	.	-/EN*	Atlantic, Black sea, Medit.	Common dolphin
<i>Desmana moschata</i>	-	II	-	-	.	VU	European Russia, Ukraine, Kazakhstan	Russian desman
<i>Dinaromys bogdanovi</i>	-	-	-	-	x	LR/nt	Balkans	Balkan snow vole
<i>Dryomys nitedula</i>	IV	-	-	-	.	LR/nt	Balkan	Forest dormouse
<i>Eliomys quercinus</i>	-	-	-	-	x	VU	Broadly	Garden dormouse
<i>Eptesicus bottae</i>	IV	II	-	-	.	-	Rhodes	Botta's serotine
<i>Eptesicus nilssonii</i>	IV	II	-	-	.	-	N central Europe	Northern bat
<i>Eptesicus serotinus</i>	IV	II	-	-	.	-	Broadly	Serotine
<i>Equus ferus</i>						EW		Wild horse
<i>Enbalaena glacialis</i>	IV	-	I	I,A	.	EN	Arctic, Atlantic, Pacific	Right whale

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Felis chaus</i>	-	-	-	II,B	.		Caucasus, Eur. Russia, Asian Turkey	Jungle cat
<i>Felis silvestris</i>	IV	II	-	II,A	.	-	Scattered	Wildcat
<i>Felis silvestris grampia</i>	IV	II	-	II,A	x	VU	Scotland	Scottish Wildcat
<i>Feresa attenuata</i>	IV	-	-	II,A	.	DD	Atlantic, Indian, Medit, Pacific	Pygmy killer whale
<i>Galemys pyrenaicus</i>	II/IV	II	-	-	x	VU	Iberian peninsula	Pyrenean desman
<i>Genetta genetta isabellae</i>	V	-	-	-	x	VU	Ibiza	Ibiza Common genet
<i>Globicephala macrorhynchus</i>	IV	II	-	II,A	.	LR/cd	Atlantic, Indian, Pacific	Short-finned pilot whale
<i>Globicephala melas</i>	IV	II	-	II,A	.	-	Antartic, Atlantic, Medit, Pacific	Long-finned pilot whale
<i>Grampus griseus</i>	IV	II	-	II,A	.	DD	Atlantic, Baltic, Indian, Medit, North, Pacific	Risso's dolphin
<i>Gulo gulo</i>	II*/IV	II	-	-	.	VU	N Scandinavia	Wolverine
<i>Halichoerus grypus</i>	II/V	-	-	-	.	EN*	N europe	Grey seal
<i>Hyperoodon ampullatus</i>	IV	II	-	I,A	.	LR/cd	Arctic, Atlantic, North	Northern bottlenose whale
<i>Hystrix cristata</i>	IV	II	-	-	.	LR/nt	Italy	Crested porcupine
<i>Kogia breviceps</i>	IV	II	-	II,A	.	-	Atlantic, Indian, Pacific	Pygmy sperm whale
<i>Kogia simus</i>	IV	II*	-	II,A	.	-	Atlantic, Indian, Pacific	Dwarf sperm whale
<i>Lagenodelphis hosei</i>	IV	-	-	II,A	.	DD	Atlantic, Indian, Pacific	Fraser's dolphin
<i>Lagenorhynchus acutus</i>	IV	II	-	II,A	.	-	Atlantic, North sea	White-sided dolphin
<i>Lagenorhynchus albirostris</i>	IV	II	-	II,A	.	-	Atlantic, North sea	White-beaked dolphin
<i>Lasiurus cinereus</i>	IV	II					?	Hoary bat
<i>Lepus castroviejoi</i>	-	-	-	-	x	VU	Iberian peninsula	Broom hare
<i>Lutra lutra</i>	II/IV	II	-	I	.	-	Scattered	Otter
<i>Lynx lynx</i>	II/IV	-	-	II,A	.	-	Scattered	Lynx

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Lynx pardinus</i>	II*/IV	II	-	I,A	x	EN	SE Iberian peninsula	Iberian lynx, Pardel lynx
<i>Macaca sylvanus</i>	-	-	-	II,B	.	VU	S Spain	Barbary ape
<i>Marmota marmota</i>	II*/IV	-	-	-	x	-	Alps, Pyrenees and others	Alpine marmot
<i>Megaptera novaeangliae</i>	IV	II	I	I,A	.	VU	(Ant)Arctic Atlantic Baltic Indian Medit North Pac	Humpback whale
<i>Mesocricetus newtoni</i>	-	II	-	-	x	VU	E Balkans	Rumanian hamster
<i>Mesoplodon bidens</i>	IV	II	-	II,A	.	DD	Atlantic, North sea	Sowerby's beaked whale
<i>Mesoplodon densirostris</i>	IV	II*	-	II,A	.	DD	Atlantic, Indian, Pacific	Blainville's beaked whale
<i>Mesoplodon europaeus</i>	IV	-	-	II,A	.	DD	Atlantic	Gervais' beaked whale
<i>Mesoplodon grayi</i>	IV	-	-	II,A	.	DD	Antarctic, Atlantic, Indian, Pacific	Gray's beaked whale
<i>Mesoplodon mirus</i>	IV	II	-	II,A	.	DD	Atlantic, Indian	True's beaked whale
<i>Microtus cabrerai</i>	II/IV	-	-	-	x	LR/nt	Iberian	Cabrera's vole
<i>Microtus felteni</i>	-	-	-	-	x	LR/nt	Balkans	Balkan pine vole
<i>Microtus oeconomus arenicola</i>	II*	-	-	-	x	CR	Netherlands	Dutch Root vole
<i>Microtus oeconomus mehelyi</i>	IV	-	-	-	x	VU	Austria, Hungary, Slovakia	Root vole,ssp. mehelyi
<i>Microtus tatricus</i>	II/IV	II	-	-	x	LR/nt	Carpathians	Tatra vole
<i>Microtus thomasi</i>	-	-	-	-	x	LR/nt	SW Balkans	Thomas's vole
<i>Miniopterus schreibersii</i>	II/IV	II	-	-	.	-	S Europe	Schreibers' bat
<i>Monachus monachus</i>	II*/IV	II	I	I,A	.	CR	SE Europe, Mediterranean	Mediterranean monk seal
<i>Monodon monoceros</i>	IV	II	-	II,A	.	DD	Arctic, Atlantic	Narwhal
<i>Mus spicilegus</i>	-	-	-	-	x	LR/nt	SE Europe	Steppe mouse
<i>Muscardinus avellanarius</i>	IV	-	-	-	.	LR/nt	Broadly	Common dormouse
<i>Mustela eversmanni</i>	II*/IV	II	-	-	.	-	E Europe	Steppe polecat

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Mustela lutreola</i>	II*/IV	II	-	-	x	EN	3 scattered pop.	European mink
<i>Myomimus roachi</i>	-	II	-	-	.	VU	E Balkan peninsula	Mouse-tailed dormouse
<i>Myotis bechsteinii</i>	III/IV	II	-	-	.	VU	mainly C Europe	Bechstein's bat
<i>Myotis blythii</i>	III/IV	II	-	-	.	-	S Europe	Lesser mouse- eared bat
<i>Myotis brandtii</i>	IV	II	-	-	.	-	N Europe	Brandt's bat
<i>Myotis capaccinii</i>	II/IV	II	-	-	.	VU	Mediterranean	Long-fingered bat
<i>Myotis dasycneme</i>	II/IV	II	-	-	.	VU	NE Europe	Pond bat
<i>Myotis daubentonii</i>	IV	II	-	-	.	-	mainly central Europe	Daubenton's bat
<i>Myotis emarginatus</i>	II/IV	II	-	-	.	VU	S central Europe	Geoffroy's bat
<i>Myotis myotis</i>	II/IV	II	-	-	.	LR/nt	Broadly	Greater mouse-eared bat
<i>Myotis mystacinus</i>	IV	II	-	-	.	-	Broadly	Whiskered bat
<i>Myotis nattereri</i>	IV	II	-	-	.	-	Broadly	Natterer's bat
<i>Nannospalax leucodon</i>	-	-	-	-	.	VU	SE Europe	Lesser mole rat
<i>Nyctalus azoreum</i>	IV	II	-	-	.	VU	Azores	Azorean bat
<i>Nyctalus lasiopterus</i>	IV	II	-	-	.	LR/nt	scattered	Greater noctule
<i>Nyctalus leisleri</i>	IV	II	-	-	.	LR/nt	Broadly	Leisler's bat
<i>Nyctalus noctula</i>	IV	II	-	-	.	-	N central Europe	Noctule
<i>Ochotona pusilla</i>	-	-	-	-	.	VU	Eur. Russia, Kazakhstan	Steppe pika
<i>Odobenus rosmarus</i>	-	II	-	B	.	-	Svalbard, Norway	Walrus
<i>Orcinus orca</i>	IV	II	-	II,A	.	LR/cd	Arctic, Atlantic, Indian, Medit, North, Pacific	Killer whale
<i>Ovibos moschatus</i>	-	II	-	-	.	-	Sweden, Norway	Musk ox
<i>Ovis ammon</i>	II/IV	-	-	-	.	VU	scattered	Mouflon
<i>Peponocephala electra</i>	IV	-	-	-	.		Atlantic	Melon-headed whale

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Phoca caspica</i>	-	-	-	-	.	VU	Caucasus, Kazakhstan, Russia	Caspian seal
<i>Phoca hispida</i>	II*/IV	II*	-	-	.	VU/EN*	N Europe	Ringed seal
<i>Phoca vitulina</i>	II/V	-	-		.	-	N Europe	Common seal, Harbour seal
<i>Phocoena phocoena</i>	II/IV	II	-	II,A*	.	VU*	Arctic, Atlantic, Black, North sea, Pacific	Harbour porpoise
<i>Physeter catodon</i>	IV	II*	-	I,A*	.	VU	Antarctic, Arctic, Atlantic, Indian, Medit, Pacifi	Sperm whale
<i>Pipistrellus kuhlii</i>	IV	II	-	-	.	-	S+ W Europe	Kuhl's pipistrelle
<i>Pipistrellus maderensis</i>	IV	II	-	-	.	VU	Madeira, 4 Canary islands	Madeira pipistrelle
<i>Pipistrellus nathusii</i>	IV	II	-	-	.	-	Broadly	Nathusius' pipistrelle
<i>Pipistrellus pipistrellus</i>	IV	-	-	-	.	-	Broadly	Common pipistrelle
<i>Pipistrellus savii</i>	IV	II	-	-	.	-	S Europe	Savi's pipistrelle
<i>Plecotus auritus</i>	IV	II	-	-	.	-	Broadly	Brown long- eared bat
<i>Plecotus austriacus</i>	IV	II	-	-	.	-	Broadly	Grey long- eared bat
<i>Plecotus teneriffae</i>	IV	II	-	-	.	VU	Canary islands (3)	Tenerife long- eared bat
<i>Prolagus sardus</i>					x	EX	Sardinia	Sardinian Pika
<i>Pseudorca crassidens</i>	IV	II	-	II,A	.	-	Atlantic, Indian, Pacific	False killer whale
<i>Pteromys volans</i>	II*/IV	II	-	-	.	LR/nt	S Finland	Russian flying squirrel
<i>Rangifer tarandus</i>	II	-	-	-	.	-	Fennoscandia	Reindeer
<i>Rhinolophus blasii</i>	II/IV	II	-	-	.	LR/nt	SW Romania, Balkans	Blasius' horseshoe bat
<i>Rhinolophus euryale</i>	II/IV	II	-	-	.	VU	Mediterranean	Mediterranean horseshoe bat
<i>Rhinolophus ferrumequinum</i>	II/IV	II	-	-	.	LR/cd	S central Europe	Greater horseshoe bat
<i>Rhinolophus hipposideros</i>	III/IV	II	-	-	.	VU	W central S Europe	Lesser horseshoe bat
<i>Rhinolophus mehelyi</i>	III/IV	II	-	-	.	VU	Iberia, S France,	Mehely's horseshoe bat

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
							Sardinia, Balkan	
<i>Rupicapra pyrenaica</i>	V	-	-	-	x	LR/cd	Pyrenees, NW Spain, Abruzzo	Southern chamois
<i>Rupicapra pyrenaica ornata</i>	II*/IV	II	-	I,A	x	EN	Abruzzo (Italy)	Abruzzo chamois
<i>Rupicapra rupicapra cartusiana</i>	II/IV	-	-	-	x	CR	France	Chartreuse chamois
<i>Rupicapra rupicapra tatarica</i>	II/IV	-	-	-	x	CR	Poland, Slovakia	Tatra chamois
<i>Saiga tatarica</i>	-	-	-	II,B	.	VU	Kazakhstan, Russia	Saiga
<i>Sciurus anomalus</i>	IV	II	-	-	.	LR/nt	Aegean islands	Persian squirrel
<i>Sicista betulina</i>	IV	II	-	-	.	LR/nt	NE Europe	Northern birch mouse
<i>Sicista subtilis</i>	II/IV	II	-	-	.	LR/nt	E Europe	Southern birch mouse
<i>Sousa teuszii</i>	IV	II	-	I,A	.	DD	Atlantic	Atlantic hump-backed dolphin
<i>Spalax arenarius</i>	-	-	-	-	.	VU	Ukraine	(mole rat)
<i>Spalax giganteus</i>	-	-	-	-	.	VU	Asian Kazakhstan, Eur. Russia	(mole rat)
<i>Spalax graecus</i>	-	II	-	-	x	VU	Ukraine, Romania	Balkan mole rat
<i>Spalax microphthalmus</i>	-	-	-	-	.	VU	Eur. Russia, Ukraine	Greater mole rat
<i>Spermophilus citellus</i>	II/IV	II	-	-	x	VU	SE Europe	European souslik
<i>Spermophilus suslicus</i>	II*/IV	II	-	-	x	VU	E Poland	Spotted souslik
<i>Stenella attenuata</i>	IV	II	-	II,A	.	LR/cd	Atlantic, Indian, Pacific	Pantropical spotted dolphin
<i>Stenella clymene</i>	IV	II	-	II,A	.	DD	Atlantic	Clymene dolphin
<i>Stenella coeruleoalba</i>	IV	II	-	II,A	.	LR/cd	Atlantic, Medit. Indian, Pacific	Striped dolphin
<i>Stenella frontalis</i>	IV	II	-	II,A	.	DD	Atlantic	Atlantic spotted dolphin
<i>Steno bredanensis</i>	IV	II	-	II,A	.	DD	Atlantic, Indian, Pacific	Rough-toothed dolphin
<i>Tadarida teniotis</i>	IV	II	-	-	.	-	Mediterranean	European free-tailed bat

Scientific name	Legal protection				Endemic in Europe	Globally threatened (IUCN category)	Remarks distrib	Common English name
	Hab. Dir.	Bern	Bonn	CITES				
<i>Tursiops truncatus</i>	II/IV	II	-	II,A	.	DD	Atlantic, Black, Indian, Medit, North, Pacific	Bottlenose dolphin
<i>Ursus arctos</i>	II*; IV	II	-	II,A	.		Scattered	Brown bear
<i>Ursus maritimus</i>	-	II	-	II,B	.	LR/cd	Svalbard (Norway)	Polar bear
<i>Vespertilio murinus</i>	IV	II	-	-	.	-	central E Europe	Parti-coloured bat
<i>Vormela peregusna</i>	-	II	-	-	.	VU*	SE Europe	Marbled polecat
<i>Ziphius cavirostris</i>	IV	II	-	II,A	.	DD	Atlantic, Indian, Medit, Pacific	Cuvier's beaked whale