



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 28.05.1997  
COM(97) 195 final

Proposal for a  
COUNCIL DIRECTIVE

**adapting to technical and scientific  
progress Directive 92/43/EEC on the conservation of natural habitats and of  
wild fauna and flora**

(presented by the Commission)



## EXPLANATORY MEMORANDUM

**Subject: Proposal for a Council Directive (EC) adapting to technical and scientific progress Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora**

1. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive") provides for the creation, in several stages, of a network of protected natural habitats called Natura 2000.
2. Under the terms of Article 2(2) of Directive 92/43/EEC, measures taken pursuant to the Directive must be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest.
3. Pursuant to Article 4 of Directive 92/43/EEC, each Member State is required, on the basis of the criteria set out in Annex III (Stage 1) and relevant scientific information, to propose a list of sites indicating which natural habitat types in Annex I and which species in Annex II that are native to its territory the sites host.
4. Annexes I and II to Directive 92/43/EEC may be amended in accordance with the first paragraph of Article 19. The amendments necessary for adaptation to technical and scientific progress must be adopted by the Council acting by qualified majority on a proposal from the Commission.
5. When Austria, Finland and Sweden acceded to the Union, Annexes I and II were amended (OJ No L1, 1.1.1995, p. 135).
6. However, several Member States and the Scientific Working Group set up by the "Habitats" Committee (established by the Directive) wanted Annexes I and II to Directive 92/43/EEC to be adapted to technical and scientific progress. Adaptation was requested to cover:
  - the description of the habitat types of Community interest in the Boreal region to better define the additions made to the original lists when Sweden and Finland acceded.
  - the scientific nomenclature of several species, which has changed since the original annexes were drawn up.

All up-to-date scientific information on natural habitat types and the relevant species of Community interest indicates that it is necessary to adapt Annexes I and II.

As regards Annex I, the process of updating the classification of European habitats, carried out on the basis of the Corine biotopes project,<sup>1</sup> led to the production of an Interpretation Manual of European Union Habitats. This Manual includes the new Natura 2000 codes which identify each natural habitat type. The first EUR 12 version of the Manual was published by the Commission in April 1995 and contained updated information for twelve Member States. A second EUR 15 version was published in April 1996, incorporating the new priority habitats of Community interest which were added when the three new Member States acceded.

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<sup>1</sup> Corine biotopes - Technical Handbook, Volume 1, pp. 73-109; Corine/Biotopes/89-2.2, 19 May 1988, partially updated 14 February 1989.

7. At the "Habitats" Committee meeting of 13 September 1996, Member States' delegates unanimously approved the following amendments:

\* Annex I:

- to replace the reference to Corine biotopes for classifying habitat types with a reference to the new Interpretation Manual of European Union Habitats, EUR 15 version of April 1996;
- to replace the 1989 Corine code with the Natura 2000 code, now the standard scientific reference;
- to describe new types of Boreal habitats, including seven priority habitats, in line with the opinion of the Scientific Working Group of the Habitats Committee.
- to remove the habitat sub-types (e.g. "grey dunes") which are now described in the Interpretation Manual, EUR 15 version;
- to take account of the recent scientific identification of the habitat type Turloughs outside Ireland; to therefore delete the word "(Ireland)" from the habitat type "\*Turloughs (Ireland)";
- to reclassify the habitat "\**Taxus baccata* woods" in keeping with scientific advice so that formations in the British Isles will be placed in the sub-category "Forests of temperate Europe" rather than "Mediterranean mountainous forests";
- to replace a number of titles causing habitat types to be confused by more explicit titles from the Interpretation Manual, EUR 15 version;
- to replace the common names of species under each title by their Latin names, so as to conform to scientific usage.

\* Annex II:

- to adapt the names of species not correctly identified when the Annexes were drawn up, to the taxonomy and nomenclature currently in force in the scientific community;
- to add certain Nordic species identified jointly by scientists in Sweden and Finland.

Member States are not expected to experience any additional difficulty in complying with the amendments to this Directive.

8. In conformity with the principle of subsidiarity and with the principle of proportionality it turns out to be necessary that the present proposal is carried out at the Community level because it concerns the simple adaptation to technical and scientific progress of a basic act which emanates from the Community.

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The Commission proposes to the Council to adopt the attached proposal for a Council Directive.

**Proposal for a Council Directive (EC) adapting to technical and scientific  
progress Directive 92/43/EEC on the conservation of natural habitats and of  
wild fauna and flora**

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora,<sup>1</sup> and in particular the first paragraph of Article 19 thereof,

Having regard to the proposal from the Commission,

Whereas certain natural habitat types and species in Annexes I and II to Directive 92/43/EEC should be adapted to technical and scientific progress;

Whereas the Interpretation Manual of European Union Habitats (EUR 15 version of April 1996) includes the new Natura 2000 codes which identify each natural habitat type; whereas the reference to the Corine code in Annex I to Directive 92/43/EEC should be replaced by a reference to the Natura 2000 code;

HAS ADOPTED THIS DIRECTIVE:

Article 1

Annexes I and II to Directive 92/43/EEC shall be replaced by the text in the Annex to this Directive.

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<sup>1</sup> OJ No L 206, 22.7.1992, p. 7, amended by the Act of Accession of Austria, Finland and Sweden.

## Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December 1997. They shall forthwith inform the Commission thereof.

The provisions adopted pursuant to this paragraph shall contain a reference to this Directive or shall be accompanied by such reference at the time of their official publication. The procedure for such reference shall be adopted by the Member States.

## Article 3

This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Communities.

## Article 4

This Directive is addressed to the Member States.

Done at ..., ...

*For the Council*

*The President*

# ANNEX

## “ANNEX I

### NATURAL HABITAT TYPES OF COMMUNITY INTEREST WHOSE CONSERVATION REQUIRES THE DESIGNATION OF SPECIAL AREAS OF CONSERVATION

#### Interpretation

Guidance on the interpretation of habitat types is given in the 'Interpretation Manual of European Union Habitats' as approved by the committee set up in Article 20 ('Habitats Committee') and published by the European Commission<sup>1</sup>.

The code corresponds to the NATURA 2000 code.

The sign '\*' indicates priority habitat types.

## 1. COASTAL AND HALOPHYTIC HABITATS

### 11. Open sea and tidal areas

- 1110 Sandbanks which are slightly covered by sea water all the time
- 1120 \* *Posidonia* beds (*Posidonion oceanicae*)
- 1130 Estuaries
- 1140 Mudflats and sandflats not covered by seawater at low tide
- 1150 \*Coastal lagoons
- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1180 Submarine structures made by leaking gases

### 12. Sea cliffs and shingle or stony beaches

- 1210 Annual vegetation of drift lines
- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts
- 1240 Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.
- 1250 Vegetated sea cliffs with endemic flora of the Macaronesian coasts

### 13. Atlantic and continental salt marshes and salt meadows

- 1310 *Salicornia* and other annuals colonizing mud and sand
- 1320 *Spartina* swards (*Spartinion maritimi*)
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 1340 \* Inland salt meadows

### 14. Mediterranean and thermo-Atlantic salt marshes and salt meadows

- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)
- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)
- 1430 Halo-nitrophilous scrubs (*Pegano-Salsoletea*)

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<sup>1</sup> "Interpretation manual of European Union habitats, version EUR15" adopted by the Habitats Committee on 25 April 1996, European Commission, DGXI.

## **15. Salt and gypsum inland steppes**

- 1510 \* Mediterranean salt steppes (*Limnietalia*)
- 1520 \* Iberian gypsum vegetation (*Gypsophiletalia*)
- 1530 \* Pannonic salt steppes and salt marshes

## **16. Boreal Baltic archipelago, coastal and landupheaval areas**

- 1610 Baltic esker islands with sandy, rocky and shingle beach vegetation and sublittoral vegetation
- 1620 Boreal Baltic islets and small islands
- 1630 \* Boreal Baltic coastal meadows
- 1640 Boreal Baltic sandy beaches with perennial vegetation
- 1650 Boreal Baltic narrow inlets



## 2. COASTAL SAND DUNES AND INLAND DUNES

### 21. Sea dunes of the Atlantic, North Sea and Baltic coasts

- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
- 2130 \* Fixed coastal dunes with herbaceous vegetation ('grey dunes')
- 2140 \* Decalcified fixed dunes with *Empetrum nigrum*
- 2150 \* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- 2160 Dunes with *Hippophaë rhamnoides*
- 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
- 2180 Wooded dunes of the Atlantic, Continental and Boreal region
- 2190 Humid dune slacks
- 21A0 Machairs (\* in Ireland)

### 22. Sea dunes of the Mediterranean coast

- 2210 *Crucianellion maritimae* fixed beach dunes
- 2220 Dunes with *Euphorbia terracina*
- 2230 *Malcolmietalia* dune grasslands
- 2240 *Brachypodietalia* dune grasslands with annuals
- 2250 \* Coastal dunes with *Juniperus* spp.
- 2260 *Cisto-Lavenduletalia* dune sclerophyllous scrubs
- 2270 \* Wooded dunes with *Pinus pinea* and/or *Pinus pinaster*

### 23. Inland dunes, old and decalcified

- 2310 Dry sand heaths with *Calluna* and *Genista*
- 2320 Dry sand heaths with *Calluna* and *Empetrum nigrum*
- 2330 Inland dunes with open *Corynephorus* and *Agrostis* grasslands
- 2340 \* Pannonic inland dunes

### 3. FRESHWATER HABITATS

#### 31. Standing water

- 3110 Oligotrophic waters containing very few minerals of sandy plains  
(*Littorelletalia uniflorae*)
- 3120 Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with *Isoetes* spp.
- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation
- 3160 Natural dystrophic lakes and ponds
- 3170 \* Mediterranean temporary ponds
- 3180 \* Turloughs

#### 32. Running water - sections of water courses with natural or semi-natural dynamics (minor, average and major beds) where the water quality shows no significant deterioration

- 3210 Fennoscandian natural rivers
- 3220 Alpine rivers and the herbaceous vegetation along their banks
- 3230 Alpine rivers and their ligneous vegetation with *Myricaria germanica*
- 3240 Alpine rivers and their ligneous vegetation with *Salix elaeagnos*
- 3250 Constantly flowing Mediterranean rivers with *Glaucium flavum*
- 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- 3270 Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation
- 3280 Constantly flowing Mediterranean rivers with *Paspalo-Agrostidion* species and hanging curtains of *Salix* and *Populus alba*
- 3290 Intermittently flowing Mediterranean rivers of the *Paspalo-Agrostidion*

#### 4. TEMPERATE HEATH AND SCRUB

- 4010 Northern Atlantic wet heaths with *Erica tetralix*
- 4020 \* Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*
- 4030 European dry heaths
- 4040 \* Dry Atlantic coastal heaths with *Erica vagans*
- 4050 \* Endemic macaronesian heaths
- 4060 Alpine and Boreal heaths
- 4070 \* Bushes with *Pinus mugo* and *Rhododendron hirsutum* (*Mugo-Rhododendretum hirsuti*)
- 4080 Sub-Arctic *Salix* spp. scrub
- 4090 Endemic oro-Mediterranean heaths with gorse

#### 5. SCLEROPHYLLOUS SCRUB (MATORRAL)

##### 51. Sub-Mediterranean and temperate scrub

- 5110 Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.)
- 5120 Mountain *Cytisus purgans* formations
- 5130 *Juniperus communis* formations on heaths or calcareous grasslands
- 5140 \* *Cistus palhinhae* formations on maritime wet heaths

##### 52. Mediterranean arborescent matorral

- 5210 Arborescent matorral with *Juniperus* spp.
- 5220 \* Arborescent matorral with *Zyziphus*
- 5230 \* Arborescent matorral with *Laurus nobilis*

##### 53. Thermo-Mediterranean and pre-steppe brush

- 5310 *Laurus nobilis* thickets
- 5320 Low formations of *Euphorbia* close to cliffs
- 5330 Thermo-Mediterranean and pre-desert scrub

##### 54. Phrygana

- 5410 West Mediterranean clifftop phryganas (*Astragalo-Plantaginetum subulatae*)
- 5420 *Sarcopoterium spinosum* phryganas
- 5430 Endemic phryganas of the *Euphorbio-Verbascion*

## 6. NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS

### 61. Natural grasslands

- 6110 \* Rupicolous calcareous or basophilic grasslands of the *Alyso-Sedion albi*
- 6120 \* Xeric sand calcareous grasslands
- 6130 Calaminarian grasslands of the *Violetalia calaminariae*
- 6140 Siliceous Pyrenean *Festuca eskia* grasslands
- 6150 Siliceous alpine and boreal grasslands
- 6160 Oro-Iberian *Festuca indigesta* grasslands
- 6170 Alpine and subalpine calcareous grasslands
- 6180 Macaronesian mesophile grasslands

### 62. Semi-natural dry grasslands and scrubland facies

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites)
- 6220 \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*
- 6230 \* Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)
- 6240 \* Sub-Pannonic steppic grasslands
- 6250 \* Pannonic loess steppic grasslands
- 6260 \* Pannonic sand steppes
- 6270 \* Fennoscandian lowland species-rich dry to mesic grasslands
- 6280 \* Nordic alvar and precambrian calcareous flatrocks

### 63. Sclerophyllous grazed forests (dehesas)

- 6310 Dehesas with evergreen *Quercus* spp.

### 64. Semi-natural tall-herb humid meadows

- 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- 6420 Mediterranean tall humid grasslands of the *Molinio-Holoschoenion*
- 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
- 6440 Alluvial meadows of river valleys of the *Cnidion dubii*
- 6450 Northern boreal alluvial meadows

### 65. Mesophile grasslands

- 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)
- 6520 Mountain hay meadows
- 6530 \* Fennoscandian wooded meadows

## 7. RAISED BOGS AND MIRES AND FENS

### 71. Sphagnum acid bogs

- 7110 \* Active raised bogs
- 7120 Degraded raised bogs still capable of natural regeneration
- 7130 Blanket bogs (\* if active bog)
- 7140 Transition mires and quaking bogs
- 7150 Depressions on peat substrates of the *Rhynchosporion*
- 7160 Fennoscandian mineral-rich springs and springfens

### 72. Calcareous fens

- 7210 \* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- 7220 \* Petrifying springs with tufa formation (*Cratoneurion*)
- 7230 Alkaline fens
- 7240 \* Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*

### 73. Boreal mires

- 7310 \* Aapa mires
- 7320 \* Palsa mires

## 8. ROCKY HABITATS AND CAVES

### 81. Scree

- 8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
- 8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
- 8130 Western Mediterranean and thermophilous scree
- 8140 Eastern Mediterranean screes
- 8150 Medio-European upland siliceous screes
- 8160 \* Medio-European calcareous scree of hill and montane levels

### 82. Rocky slopes with chasmophytic vegetation

- 8210 Calcareous rocky slopes with chasmophytic vegetation
- 8220 Siliceous rocky slopes with chasmophytic vegetation
- 8230 Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*
- 8240 \* Limestone pavements

### 83. Other rocky habitats

- 8310 Caves not open to the public
- 8320 Fields of lava and natural excavations
- 8330 Submerged or partially submerged sea caves
- 8340 Permanent glaciers

## 9. FORESTS

(Sub)natural woodland vegetation comprising native species forming forests of tall trees, with typical undergrowth, and meeting the following criteria: rare or residual, and/or hosting species of Community interest

### 90. Forests of Boreal Europe

- 9010 \* Western Taïga
- 9020 \* Fennoscandian hemiboreal natural old broad-leaved deciduous forests (*Quercus*, *Tilia*, *Acer*, *Fraxinus* or *Ulmus*) rich in epiphytes
- 9030 \* Natural forests of primary succession stages of landupheaval coast
- 9040 Nordic subalpine/subarctic forests with *Betula pubescens* ssp. *czerepanovii*
- 9050 Fennoscandian herb-rich forests with *Picea abies*
- 9060 Coniferous forests on, or connected to, glaciofluvial eskers
- 9070 Fennoscandian wooded pastures
- 9080 \* Fennoscandian deciduous swamp woods

### 91. Forests of Temperate Europe

- 9110 *Luzulo-Fagetum* beech forests
- 9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Illici-Fagenion*)
- 9130 *Asperulo-Fagetum* beech forests
- 9140 Medio-European subalpine beech woods with *Acer* and *Rumex arifolius*
- 9150 Medio-European limestone beech forests of the *Cephalanthero-Fagion*
- 9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*
- 9170 *Galio-Carpinetum* oak-hornbeam forests
- 9180 \* *Tilio-Acerion* forests of slopes, screes and ravines
- 9190 Old acidophilous oak woods with *Quercus robur* on sandy plains
- 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- 91B0 Thermophilous *Fraxinus angustifolia* woods
- 91C0 \* Caledonian forest
- 91D0 \* Bog woodland
- 91E0 \* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- 91F0 Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*)
- 91G0 \* Pannonic woods with *Quercus petraea* and *Carpinus betulus*
- 91H0 \* Pannonian woods with *Quercus pubescens*
- 91I0 \* Euro-Siberian steppic woods with *Quercus* spp.
- 91J0 \* *Taxus baccata* woods of the British Isles

### 92. Mediterranean deciduous forests

- 9210 \* Apeninne beech forests with *Taxus* and *Ilex*
- 9220 \* Apeninne beech forests with *Abies alba* and beech forests with *Abies nebrodensis*
- 9230 Galicio-Portuguese oak woods with *Quercus robur* and *Quercus pyrenaica*
- 9240 *Quercus faginea* and *Quercus canariensis* Iberian woods
- 9250 *Quercus trojana* woods
- 9260 *Castanea sativa* woods
- 9270 Hellenic beech forests with *Abies borisii-regis*

- 9280 *Quercus frainetto* woods
- 9290 *Cupressus* forests (*Acero-Cupression*)
- 92A0 *Salix alba* and *Populus alba* galleries
- 92B0 Riparian formations on intermittent Mediterranean water courses with *Rhododendron ponticum*, *Salix* and others
- 92C0 *Platanus orientalis* and *Liquidambar orientalis* woods (*Platanion orientalis*)
- 92D0 Southern riparian galleries and thickets (*Nerio-Tamaricetea* and *Securinegion tinctoriae*)

**93. Mediterranean sclerophyllous forests**

- 9310 Aegean *Quercus brachyphylla* woods
- 9320 *Olea* and *Ceratonia* forests
- 9330 *Quercus suber* forests
- 9340 *Quercus ilex* and *Quercus rotundifolia* forests
- 9350 *Quercus macrolepis* forests
- 9360 \* Macaronesian laurel forests (*Laurus*, *Ocotea*)
- 9370 \* Palm groves of *Phoenix*
- 9380 Forests of *Ilex aquifolium*

**94. Temperate mountainous coniferous forests**

- 9410 Acidophilous *Picea* forests of the montane to alpine levels (*Vaccinio-Piceetea*)
- 9420 Alpine *Larix decidua* and/or *Pinus cembra* forests
- 9430 Subalpine and montane *Pinus uncinata* forests (\* if on gypsum or limestone)

**95. Mediterranean and Macaronesian mountainous coniferous forests**

- 9510 \* Southern Apennine *Abies alba* forests
- 9520 *Abies pinsapo* forests
- 9530 \* (Sub-) Mediterranean pine forests with endemic black pines
- 9540 Mediterranean pine forests with endemic Mesogean pines
- 9550 Canarian endemic pine forests
- 9560 \* Endemic forests with *Juniperus* spp.
- 9570 \* *Tetraclinis articulata* forests
- 9580 \* Mediterranean *Taxus baccata* woods

## ANNEX II

### ANIMAL AND PLANT SPECIES OF COMMUNITY INTEREST WHOSE CONSERVATION REQUIRES THE DESIGNATION OF SPECIAL AREAS OF CONSERVATION

#### Interpretation

- (a) Annex II follows on from Annex I for the establishment of a consistent network of special areas of conservation.
- (b) The species listed in this Annex are indicated :
- by the name of the species or subspecies, or
  - by the all the species belonging to a higher taxon or to a designated part of that taxon.

The abbreviation 'spp.' after the name of a family or genus designates all the species belonging to that family or genus.

(c) *Symbols*

An asterisk (\*) before the name of a species indicates that it is a priority species.

Most species listed in this Annex are also listed in Annex IV.

Where a species appears in this Annex but does not appear in either Annex IV or Annex V, the species name is followed by the symbol (o); where a species which appears in this Annex also appears in Annex V but does not appear in Annex IV, its name is followed by the symbol (V).

#### (a) ANIMALS

##### VERTEBRATES

##### MAMMALS

##### INSECTIVORA

###### *Talpidae*

Galemys pyrenaicus

##### CHIROPTERA

###### *Rhinolophidae*

Rhinolophus blasii

Rhinolophus euryale

Rhinolophus ferrumequinum

Rhinolophus hipposideros

Rhinolophus mehelyi

###### *Vespertilionidae*

Barbastella barbastellus

Miniopterus schreibersi

Myotis bechsteini

Myotis blythii

Myotis capaccinii

Myotis dasycneme



Myotis emarginatus

Myotis myotis

## RODENTIA

### *Sciuridae*

\* Pteromys volans (Sciuropterus russicus)

Spermophilus citellus (Citellus citellus)

### *Castoridae*

Castor fiber (except the Finnish and Swedish populations)

### *Microtidae*

Microtus cabreræ

\* Microtus oeconomus arenicola

## CARNIVORA

### *Canidae*

\* Alopex lagopus

\* Canis lupus (Spanish populations: only those south of the Duero; Greek populations: only south of the 39th parallel; Finnish populations excepted).

### *Ursidae*

\* Ursus arctos (except the Finnish and Swedish populations)

### *Mustelidae*

\* Gulo gulo

Lutra lutra

Mustela lutreola

### *Felidae*

Lynx lynx (except the Finnish populations)

\* Lynx pardinus

### *Phocidae*

Halichoerus grypus (V)

\* Monachus monachus

Phoca hispida bottnica (o)

\* Phoca hispida saimensis

Phoca vitulina (V)

## ARTIODACTYLA

### *Cervidae*

\* Cervus elaphus corsicanus

Rangifer tarandus fennicus (o)

### *Bovidae*

Capra aegagrus (natural populations)

\* Capra pyrenaica pyrenaica

Ovis gmelini musimon (Ovis ammon musimon) (natural populations - Corsica and Sardinia)

\* Rupicapra pyrenaica ornata (Rupicapra rupicapra ornata)

Rupicapra rupicapra balcanica

## CETACEA

Tursiops truncatus

Phocoena phocoena

## REPTILES

### CHELONIA (TESTUDINES)

#### *Testudinidae*

Testudo hermanni  
Testudo graeca  
Testudo marginata

#### *Cheloniidae*

\* Caretta caretta

#### *Emydidae*

Emys orbicularis  
Mauremys caspica  
Mauremys leprosa

### SAURIA

#### *Lacertidae*

Lacerta bonnali (Lacerta monticola)  
Lacerta monticola  
Lacerta schreiberi  
Gallotia galloti insulanagae  
\* Gallotia simonyi  
Podarcis lilfordi  
Podarcis pityusensis

#### *Scincidae*

Chalcides simonyi (Chalcides occidentalis)

#### *Gekkonidae*

Phyllodactylus europaeus

### OPHIDIA (SERPENTES)

#### *Colubridae*

Elaphe quatuorlineata  
Elaphe situla

#### *Viperidae*

\* Macrovipera schweizeri (Vipera lebetina schweizeri)  
Vipera ursinii

## AMPHIBIANS

### CAUDATA

#### *Salamandridae*

Chioglossa lusitanica  
Mertensiella luschani (Salamandra luschani)  
\* Salamandra atra aurorae  
Salamandrina terdigitata  
Triturus carnifex (Triturus cristatus carnifex)  
Triturus cristatus (Triturus cristatus cristatus)  
Triturus dobrogicus (Triturus cristatus dobrogicus)  
Triturus karelinii (Triturus cristatus karelinii)

#### *Proteidae*

Proteus anguinus

#### *Plethodontidae*

Hydromantes (Speleomantes) ambrosii  
Hydromantes (Speleomantes) flavus

Hydromantes (Speleomantes) genei  
Hydromantes (Speleomantes) imperialis  
Hydromantes (Speleomantes) strinatii  
Hydromantes (Speleomantes) supramontes

## ANURA

### *Discoglossidae*

Bombina bombina  
Bombina variegata  
Discoglossus galganoi (including Discoglossus "jeanneae")  
Discoglossus montalentii  
Discoglossus sardus  
\* Alytes muletensis

### *Ranidae*

Rana latastei

### *Pelobatidae*

\* Pelobates fuscus insubricus

## FISHES

### PETROMYZONIFORMES

#### *Petromyzonidae*

Eudontomyzon spp. (o)  
Lampetra fluviatilis (V) (except the Finnish and Swedish populations)  
Lampetra planeri (o) (except the Finnish and Swedish populations)  
Lethenteron zanandreaei (V)  
Petromyzon marinus (o) (except the Swedish populations)

### ACIPENSERIFORMES

#### *Acipenseridae*

\* Acipenser naccarii  
\* Acipenser sturio

### CLUPEIFORMES

#### *Clupeidae*

Alosa spp. (V)

### SALMONIFORMES

#### *Salmonidae*

Hucho hucho (natural populations) (V)  
Salmo salar (only in fresh water) (V) (except the Finnish populations)  
Salmo marmoratus (o)  
Salmo macrostigma (o)

#### *Coregonidae*

\* Coregonus oxyrhynchus (anadromous populations in certain sectors of the North Sea)

### CYPRINIFORMES

#### *Cyprinidae*

Alburnus albidus (o) (Alburnus vulturius)  
Anaecypris hispanica  
Aspius aspius (o) (except the Finnish populations)  
Barbus plebejus (V)  
Barbus meridionalis (V)  
Barbus comiza (V)

Chalcalburnus chalcoides (o)  
Chondrostoma soetta (o)  
Chondrostoma polylepis (o) (including C. willkommi)  
Chondrostoma genei (o)  
Chondrostoma lusitanicum (o)  
Chondrostoma toxostoma (o)  
Gobio albipinnatus (o)  
Gobio uranoscopus (o)  
Iberocypris palaciosi (o)  
\*Ladigesocypris ghigii (o)  
Leuciscus lucumonis (o)  
Leuciscus souffia (o)  
Phoxinellus spp. (o)  
Rutilus pigus (o)  
Rutilus rubilio (o)  
Rutilus arcasii (o)  
Rutilus macrolepidotus (o)  
Rutilus lemmingii (o)  
Rutilus frisii meidingeri (o)  
Rutilus alburnoides (o)  
Rhodeus sericeus amarus (o)  
Scardinius graecus (o)

*Cobitidae*

Cobitis trichonica (o)  
Cobitis taenia (o) (except the Finnish populations)  
Misgurnus fossilis (o)  
Sabanejewia aurata (o)  
Sabanejewia larvata (o) (Cobitis larvata and Cobitis conspersa)

SILURIFORMES

*Siluridae*

Silurus aristotelis (V)

ATHERINIFORMES

*Cyprinodontidae*

Aphanius iberus (o)  
Aphanius fasciatus (o)  
\* Valencia hispanica  
\* Valencia letourneuxi (Valencia hispanica)

PERCIFORMES

*Percidae*

Gymnocephalus schraetzer (V)  
Zingel spp. [(o) except Zingel asper and Zingel zingel (V)]

*Gobiidae*

Pomatoschistus canestrini (o)  
Knipowitschia (Padogobius) panizzae (o)  
Padogobius nigricans (o)

SCORPAENIFORMES

*Cottidae*

Cottus petiti (o)  
Cottus gobio (o) (except the Finnish populations)

## INVERTEBRATES

### ARTHROPODS

#### CRUSTACEA

##### *Decapoda*

Austropotamobius pallipes (V)

#### INSECTA

##### *Coleoptera*

Agathidium pulchellum (o)  
Boros schneideri (o)  
Buprestis splendens  
\*Carabus menetriesi pacholei (o)  
\* Carabus olympiae  
Cerambyx cerdo  
Corticaria planula (o)  
Cucujus cinnaberinus  
Dytiscus latissimus  
Graphoderus bilineatus  
Limoniscus violaceus (o)  
Lucanus cervus (o)  
Macroplea pubipennis (o)  
Mesosa myops (o)  
Morimus funereus (o)  
\*Osmoderma eremita  
Oxyporus mannerheimii (o)  
Pytho kolwensis (o)  
\*Rosalia alpina  
Stephanopachys linearis (o)  
Stephanopachys substriatus (o)  
Xyletinus tremulicola (o)

##### *Hemiptera*

Aradus angularis (o)

##### *Lepidoptera*

Agriades glandon aquilo (o)  
\*Callimorpha (Euplagia, Panaxia) quadripunctaria (o)  
Clossiana improba (o)  
Coenonympha oedippus  
Erebia calcaria  
Erebia christi  
Erebia medusa polaris (o)  
Eriogaster catax  
Euphydryas (Eurodryas, Hypodryas) aurinia (o)  
Graellsia isabellae (V)  
Hesperia comma catena (o)  
Hypodryas maturna  
Lycaena dispar  
Maculinea nausithous  
Maculinea teleius

Melanargia arge  
Papilio hospiton  
Plebicula golgus  
Xestia borealis (o)  
Xestia brunneopicta (o)

*Mantodea*

Apteromantis aptera

*Odonata*

Coenagrion hylas (o)  
Coenagrion mercuriale (o)  
Cordulegaster trinacriae  
Gomphus graslinii  
Leucorrhinia pectoralis  
Lindenia tetraphylla  
Macromia splendens  
Ophiogomphus cecilia  
Oxygastra curtisii

*Orthoptera*

Baetica ustulata

ARACHNIDA

*Pseudoscorpiones*

Anthrenochernes stellae (o)

MOLLUSCS

GASTROPODA

Caseolus calculus  
Caseolus commixta  
Caseolus sphaerula  
Discula leacockiana  
Discula tabellata  
Discus guerinianus  
Elona quimperiana  
Geomalacus maculosus  
Geomitra moniziana  
\*Helicopsis striata austriaca (o)  
Idiomela (Helix) subplicata  
Leiostyla abbreviata  
Leiostyla cassida  
Leiostyla corneocostata  
Leiostyla gibba  
Leiostyla lamellosa  
Vertigo angustior (o)  
Vertigo genesii (o)  
Vertigo geyeri (o)  
Vertigo moulinsiana (o)

BIVALVIA

*Unionoida*

Margaritifera durrovensis (Margaritifera margaritifera) (V)  
Margaritifera margaritifera (V)

Unio crassus

(b) PLANTS

**PTERIDOPHYTA**

**ASPLENIACEAE**

*Asplenium jahandiezii* (Litard.) Rouy

**BLECHNACEAE**

*Woodwardia radicans* (L.) Sm.

**DICKSONIACEAE**

*Culcita macrocarpa* C. Presl

**DRYOPTERIDACEAE**

*Diplazium sibiricum* (Turcz. ex Kunze) Kurata

\* *Dryopteris corleyi* Fraser-Jenk.

*Dryopteris fragans* (L.) Schott

**HYMENOPHYLLACEAE**

*Trichomanes speciosum* Willd.

**ISOETACEAE**

*Isoetes boryana* Durieu

*Isoetes malinverniana* Ces. & De Not.

**MARSILEACEAE**

*Marsilea batardae* Launert

*Marsilea quadrifolia* L.

*Marsilea strigosa* Willd.

**OPHIOGLOSSACEAE**

*Botrychium simplex* Hitchc.

*Ophioglossum polyphyllum* A. Braun

**GYMNOSPERMAE**

**PINACEAE**

\* *Abies nebrodensis* (Lojac.) Mattei

**ANGIOSPERMAE**

**ALISMATACEAE**

\* *Alisma wahlenbergii* (Holmberg) Juz.

*Caldesia parnassifolia* (L.) Parl.

*Luronium natans* (L.) Raf.

**AMARYLLIDACEAE**

*Leucojum nicaense* Ard.

*Narcissus asturiensis* (Jordan) Pugsley

*Narcissus calcicola* Mendonça

*Narcissus cyclamineus* DC.

*Narcissus fernandesii* G. Pedro

*Narcissus humilis* (Cav.) Traub

\* *Narcissus nevadensis* Pugsley

*Narcissus pseudonarcissus* L. subsp. *nobilis* (Haw.) A. Fernandes

*Narcissus scaberulus* Henriq.

*Narcissus triandrus* L. subsp. *capax* (Salisb.) D. A. Webb.  
*Narcissus viridiflorus* Schousboe

#### BORAGINACEAE

\* *Anchusa crispa* Viv.  
\* *Lithodora nitida* (H. Ern) R. Fernandes  
*Myosotis lusitanica* Schuster  
*Myosotis rehsteineri* Wartm.  
*Myosotis retusifolia* R. Afonso  
*Omphalodes kuzinskyanae* Willk.  
\* *Omphalodes littoralis* Lehm.  
*Solenanthus albanicus* (Degen & al.) Degen & Baldacci  
\* *Symphytum cycladense* Pawl.

#### CAMPANULACEAE

*Asyneuma giganteum* (Boiss.) Bornm.  
\* *Campanula sabatia* De Not.  
*Jasione crispa* (Pourret) Samp. subsp. *serpentinica* Pinto da Silva  
*Jasione lusitanica* A. DC.

#### CARYOPHYLLACEAE

*Arenaria ciliata* L. ssp. *pseudofrigida* Ostenf. & O.C. Dahl  
*Arenaria humifusa* Wahlenberg  
\* *Arenaria nevadensis* Boiss. & Reuter  
*Arenaria provincialis* Chater & Halliday  
*Dianthus arenarius* L. subsp. *arenarius*  
*Dianthus cintranus* Boiss. & Reuter subsp. *cintranus* Boiss. & Reuter  
*Dianthus marizii* (Samp.) Samp.  
*Dianthus rupicola* Biv.  
\* *Gypsophila papillosa* P. Porta  
*Herniaria algarvica* Chaudhri  
\* *Herniaria latifolia* Lapeyr. subsp. *litardierei* Gamis  
*Herniaria lusitanica* (Chaudhri) subsp. *berlengiana* Chaudhri  
*Herniaria maritima* Link  
*Moehringia laterifolia* (L.) Fenzl.  
*Moehringia tommasinii* Marches.  
*Petrocoptis grandiflora* Rothm.  
*Petrocoptis montsicciana* O. Bolos & Rivas Mart.  
*Petrocoptis pseudoviscosa* Fernandez Casas  
*Silene furcata* Rafin. ssp. *angustiflora* (Rupr.) Walters  
\* *Silene hicesiae* Brullo & Signorello  
*Silene hifacensis* Rouy ex Willk.  
\* *Silene holzmanii* Heldr. ex Boiss.  
*Silene longicilia* (Brot.) Otth.  
*Silene mariana* Pau  
\* *Silene orphanidis* Boiss.  
\* *Silene rothmaleri* Pinto da Silva  
\* *Silene velutina* Pourret ex Loisel.

#### CHENOPODIACEAE

\* *Bassia* (*Kochia*) *saxicola* (Guss.) A. J. Scott  
\* *Salicornia veneta* Pignatti & Lausi



## CISTACEAE

- Cistus palhinhae* Ingram
- Halimium verticillatum* (Brot.) Sennen
- Helianthemum alypoides* Losa & Rivas Goday
- Helianthemum caput-felis* Boiss.
- \* *Tuberaria major* (Willk.) Pinto da Silva & Rozeira

## COMPOSITAE

- \* *Anthemis glaberrima* (Rech. f.) Greuter
- Artemisia campestris* L. subsp. *bottnica* A.N. Lundström ex Kindb.
- \* *Artemisia granatensis* Boiss.
- \* *Artemisia laciniata* Willd.
- Artemisia oelandica* (Besser) Komaror
- \* *Artemisia pancicii* (Janka) Ronn.
- \* *Aster pyrenaicus* Desf. ex DC
- \* *Aster sorrentinii* (Tod) Lojac.
- \* *Carduus myriacanthus* Salzm. ex DC.
- \* *Centaurea alba* L. subsp. *heldreichii* (Halacsy) Dostal
- \* *Centaurea alba* L. subsp. *princeps* (Boiss. & Heldr.) Gugler
- \* *Centaurea attica* Nyman subsp. *megarensis* (Halacsy & Hayek) Dostal
- \* *Centaurea balearica* J. D. Rodriguez
- \* *Centaurea borjiae* Valdes-Berm. & Rivas Goday
- \* *Centaurea citricolor* Font Quer
- Centaurea corymbosa* Pourret
- Centaurea gadorensis* G. Blanca
- \* *Centaurea horrida* Badaro
- \* *Centaurea kalambakensis* Freyn & Sint.
- Centaurea kartschiana* Scop.
- \* *Centaurea lactiflora* Halacsy
- Centaurea micrantha* Hoffmanns. & Link subsp. *herminii* (Rouy) Dostál
- \* *Centaurea niederi* Heldr.
- \* *Centaurea peucedanifolia* Boiss. & Orph.
- \* *Centaurea pinnata* Pau
- Centaurea pulvinata* (G. Blanca) G. Blanca
- Centaurea rothmalerana* (Arènes) Dostál
- Centaurea vicentina* Mariz
- \* *Crepis crocifolia* Boiss. & Heldr.
- Crepis granatensis* (Willk.) B. Blanca & M. Cueto
- Crepis tectorum* L. subsp. *nigrescens*
- Erigeron frigidus* Boiss. ex DC.
- Hymenostemma pseudanthemis* (Kunze) Willd.
- \* *Jurinea cyanoides* (L.) Reichenb.
- \* *Jurinea fontqueri* Cuatrec.
- \* *Lamyropsis microcephala* (Moris) Dittrich & Greuter
- Leontodon microcephalus* (Boiss. ex DC.) Boiss.
- Leontodon boryi* Boiss.
- \* *Leontodon siculus* (Guss.) Finch & Sell
- Leuzea longifolia* Hoffmanns. & Link
- Ligularia sibirica* (L.) Cass.
- Santolina impressa* Hoffmanns. & Link

*Santolina semidentata* Hoffmanns. & Link

\* *Senecio elodes* Boiss. ex DC.

*Senecio jacobea* L. subsp. *gotlandicus* (Neuman) Sterner

*Senecio nevadensis* Boiss. & Reuter

#### CONVOLVULACEAE

\* *Convolvulus argyrothamnus* Greuter

\* *Convolvulus fernandesii* Pinto da Silva & Teles

#### CRUCIFERAE

*Alyssum pyrenaicum* Lapeyr.

*Arabis sadina* (Samp.) P. Cout.

\* *Biscutella neustriaca* Bonnet

*Biscutella vincentina* (Samp.) Rothm.

*Boleum asperum* (Pers.) Desvaux

*Brassica glabrescens* Poldini

*Brassica insularis* Moris

\* *Brassica macrocarpa* Guss.

*Braya linearis* Rouy

\* *Coincya rupestris* Rouy

\* *Coronopus navasii* Pau

*Diploaxis ibicensis* (Pau) Gomez-Campo

\* *Diploaxis siettiana* Maire

*Diploaxis vicentina* (P. Cout.) Rothm.

*Draba cacuminum* Elis Ekman

*Draba cinerea* Adams

*Erucastrum palustre* (Pirona) Vis.

\* *Iberis arbuscula* Runemark

*Iberis procumbens* Lange subsp. *microcarpa* Franco & Pinto da Silva

\* *Jonopsidium acaule* (Desf.) Reichenb.

*Jonopsidium savianum* (Caruel) Ball ex Arcang.

*Rhynchosinapis erucastrum* (L.) Dandy ex Clapham subsp. *cintrana* (Coutinho)

Franco & P. Silva (*Coincya cintrana* (P. Cout.) Pinto da Silva)

*Sisymbrium cavanillesianum* Valdes & Castroviejo

*Sisymbrium supinum* L.

#### CYPERACEAE

*Carex holostoma* Drejer

\* *Carex panormitana* Guss.

*Eleocharis carniolica* Koch

#### DIOSCOREACEAE

\* *Borderea chouardii* (Gaussen) Heslot

#### DROSERACEAE

*Aldrovanda vesiculosa* L.

#### EUPHORBIACEAE

\* *Euphorbia margalidiana* Kuhbier & Lewejohann

*Euphorbia transtagana* Boiss.

#### GENTIANACEAE

\* *Centaurium rigualii* Esteve

\* *Centaurium somedanum* Lainz

*Gentiana ligustica* R. de Vilm. & Chopinet

*Gentianella angelica* (Pugsley) E. F. Warburg

## GERANIACEAE

- \* *Erodium astragaloides* Boiss. & Reuter
- Erodium paularense* Fernandez-Gonzalez & Izco
- \* *Erodium rupicola* Boiss.

## GLOBULARIACEAE

- \**Globularia stygia* Orph. ex Boiss.

## GRAMINEAE

- Arctagrostis latifolia* (R. Br.) Griseb.
- Arctophila fulva* (Trin.) N. J. Anderson
- Avenula hackelii* (Henriq.) Holub
- Bromus grossus* Desf. ex DC.
- Calamagrostis chalybaea* (Laest.) Fries
- Cinna latifolia* (Trev.) Griseb.
- Coleanthus subtilis* (Tratt.) Seidl
- Festuca brigantina* (Markgr.-Dannenb.) Markgr.-Dannenb.
- Festuca duriotagana* Franco & R. Afonso
- Festuca elegans* Boiss.
- Festuca henriquesii* Hack.
- Festuca summilusitanica* Franco & R. Afonso
- Gaudinia hispanica* Stace & Tutin
- Holcus setiglumis* Boiss. & Reuter subsp. *duriensis* Pinto da Silva
- Micropyropsis tuberosa* Romero - Zarco & Cabezudo
- Pseudarrhenatherum pallens* (Link) J. Holub
- Puccinellia phryganodes* (Trin.) Scribner + Merr.
- Puccinellia pungens* (Pau) Paunero
- \* *Stipa austroitalica* Martinovsky
- \* *Stipa bavarica* Martinovsky & H. Scholz
- \* *Stipa styriaca* Martinovsky
- \* *Stipa veneta* Moraldo
- Trisetum subalpestre* (Hartman) Neuman

## GROSSULARIACEAE

- \* *Ribes sardoum* Martelli

## HIPPURIDACEAE

- Hippuris tetraphylla* L. Fil.

## HYPERICACEAE

- \* *Hypericum aciferum* (Greuter) N.K.B. Robson

## JUNCACEAE

- Juncus valvatus* Link
- Luzula arctica* Blytt

## LABIATAE

- Dracocephalum austriacum* L.
- \* *Micromeria taygetea* P. H. Davis
- Nepeta dirphyia* (Boiss.) Heldr. ex Halacsy
- \* *Nepeta sphaciotica* P. H. Davis
- Origanum dictamnus* L.
- Sideritis incana* subsp. *glauca* (Cav.) Malagarriga
- Sideritis javalambrensis* Pau
- Sideritis serrata* Cav. ex Lag.
- Teucrium lepicephalum* Pau

*Teucrium turredanum* Losa & Rivas Goday

\* *Thymus camphoratus* Hoffmanns. & Link

*Thymus carnosus* Boiss.

\* *Thymus lotocephalus* G. López & R. Morales (*Thymus cephalotos* L.)

#### LEGUMINOSAE

*Anthyllis hystrix* Cardona, Contandr. & E. Sierra

\* *Astragalus algarbiensis* Coss. ex Bunge

\* *Astragalus aquilanus* Anzalone

*Astragalus centralpinus* Braun-Blanquet

\* *Astragalus maritimus* Moris

*Astragalus tremolsianus* Pau

\* *Astragalus verrucosus* Moris

\* *Cytisus aeolicus* Guss. ex Lindl.

*Genista dorycnifolia* Font Quer

*Genista holopetala* (Fleischm. ex Koch) Baldacci

*Melilotus segetalis* (Brot.) Ser. subsp. *fallax* Franco

\* *Ononis hackelii* Lange

*Trifolium saxatile* All.

\* *Vicia bifoliolata* J.D. Rodriguez

#### LENTIBULARIACEAE

*Pinguicula nevadensis* (Lindb.) Casper

#### LILIACEAE

*Allium grosii* Font Quer

\* *Androcymbium rechingeri* Greuter

\* *Asphodelus bento-rainhae* P. Silva

*Hyacinthoides vicentina* (Hoffmans. & Link) Rothm.

\* *Muscari gussonei* (Parl.) Tod.

#### LINACEAE

\* *Linum muelleri* Moris (*Linum maritimum muelleri*)

#### LYTHRACEAE

\* *Lythrum flexuosum* Lag.

#### MALVACEAE

*Kosteletzkya pentacarpos* (L.) Ledeb.

#### NAJADACEAE

*Najas flexilis* (Willd.) Rostk. & W.L. Schmidt

*Najas tenuissima* (A. Braun) Magnus

#### ORCHIDACEAE

*Calypso bulbosa* L.

\* *Cephalanthera cucullata* Boiss. & Heldr.

*Cypripedium calceolus* L.

*Gymnigritella runei* Teppner & Klein

*Liparis loeselii* (L.) Rich.

\* *Ophrys lunulata* Parl.

*Platanthera obtusata* (Pursh) subsp. *oligantha* (Turez.) Hulten

#### PAEONIACEAE

*Paeonia cambessedesii* (Willk.) Willk.

*Paeonia parnassica* Tzanoudakis

*Paeonia clusii* F.C. Stern subsp. *rhodia* (Stearn) Tzanoudakis

## PALMAE

*Phoenix theophrasti* Greuter

## PAPAVERACEAE

*Corydalis gotlandica* Lidén

*Papaver laestadianum* (Nordh.) Nordh.

*Papaver radicatum* Rottb. subsp. *hyperboreum* Nordh.

## PLANTAGINACEAE

*Plantago algarbiensis* Sampaio (*Plantago bracteosa* (Willk.) G. Sampaio)

*Plantago almogravensis* Franco

## PLUMBAGINACEAE

*Armeria berlengensis* Daveau

\**Armeria helodes* Martini & Pold

*Armeria neglecta* Girard

*Armeria pseudarmeria* (Murray) Mansfeld

\**Armeria rouyana* Daveau

*Armeria soleirolii* (Duby) Godron

*Armeria velutina* Welw. ex Boiss. & Reuter

*Limonium dodartii* (Girard) O. Kuntze subsp. *lusitanicum* (Daveau) Franco

\**Limonium insulare* (Beg. & Landi) Arrig. & Diana

*Limonium lanceolatum* (Hoffmans. & Link) Franco

*Limonium multiflorum* Erben

\**Limonium pseudolaetum* Arrig. & Diana

\* *Limonium strictissimum* (Salzmann) Arrig.

## POLYGONACEAE

*Persicaria foliosa* (H. Lindb.) Kitag.

*Polygonum praelongum* Coode & Cullen

*Rumex rupestris* Le Gall

## PRIMULACEAE

*Androsace mathildae* Levier

*Androsace pyrenaica* Lam.

\**Primula apennina* Widmer

*Primula nutans* Georgi

*Primula palinuri* Petagna

*Primula scandinavica* Bruun

*Soldanella villosa* Darracq.

## RANUNCULACEAE

\**Aconitum corsicum* Gayer (*Aconitum napellus* subsp. *corsicum*)

*Adonis distorta* Ten.

*Aquilegia bertolonii* Schott

*Aquilegia kitaibelii* Schott

\**Aquilegia pyrenaica* D.C. subsp. *cazorlensis* (Heywood) Galiano

\**Consolida samia* P.H. Davis

*Pulsatilla patens* (L.) Miller

*Ranunculus lapponicus* L.

*Pulsatilla vulgaris* Hill. subsp. *gotlandica* (Johanss.) Zaemelis & Paegle

\**Ranunculus weyleri* Mares

## RESEDACEAE

\**Reseda decursiva* Forssk.

## ROSACEAE

- Agrimonia pilosa* Ledebour
- Potentilla delphinensis* Gren. & Godron
- Sorbus teodorii* Liljefors

## RUBIACEAE

- \**Galium litorale* Guss.
- \**Galium viridiflorum* Boiss. & Reuter

## SALICACEAE

- Salix salvifolia* Brot. subsp. *australis* Franco

## SANTALACEAE

- Thesium ebracteatum* Hayne

## SAXIFRAGACEAE

- Saxifraga berica* (Beguinot) D.A. Webb
- Saxifraga florulenta* Moretti
- Saxifraga hirculus* L.
- Saxifraga osloënsis* Knaben
- Saxifraga tombeanensis* Boiss. ex Engl.

## SCROPHULARIACEAE

- Antirrhinum charidemi* Lange
- Chaenorrhinum serpyllifolium* (Lange) Lange  
subsp. *lusitanicum* R. Fernandes
- \**Euphrasia genargentea* (Feoli) Diana
- Euphrasia marchesettii* Wettst. ex Marches.
- Linaria algarviana* Chav.
- Linaria coutinhoi* Valdés
- \**Linaria ficalhoana* Rouy
- Linaria flava* (Poiret) Desf.
- \**Linaria hellenica* Turrill
- \**Linaria ricardoi* Cout.
- \**Linaria tursica* B. Valdes & Cabezudo
- Linaria tonzigii* Lona
- Odontites granatensis* Boiss.
- Verbascum litigiosum* Samp.
- Veronica micrantha* Hoffmanns. & Link
- \**Veronica oetaea* L.-A. Gustavsson

## SOLANACEAE

- \**Atropa baetica* Willk.

## THYMELAEACEAE

- Daphne petraea* Leybold
- \**Daphne rodriguezii* Texidor

## ULMACEAE

- Zelkova abelicea* (Lam.) Boiss.

## UMBELLIFERAE

- \* *Angelica heterocarpa* Lloyd
- Angelica palustris* (Besser) Hoffm.
- \* *Apium bermejoi* Llorens
- Apium repens* (Jacq.) Lag.
- Athamanta cortiana* Ferrarini
- \* *Bupleurum capillare* Boiss. & Heldr.

- \* *Bupleurum kakiskalae* Greuter
- Eryngium alpinum* L.
- \* *Eryngium viviparum* Gay
- \* *Laserpitium longiradium* Boiss.
- \* *Naufraga balearica* Constans & Cannon
- \* *Oenanthe conioides* Lange
- Petagnia saniculifolia* Guss.
- Rouya polygama* (Desf.) Coincy
- \* *Seseli intricatum* Boiss.
- Thorella verticillatinundata* (Thore) Briq.

#### VALERIANACEAE

- Centranthus trinervis* (Viv.) Beguinot

#### VIOLACEAE

- \* *Viola hispida* Lam.
- Viola jaubertiana* Mares & Vigineix
- Viola rupestris* F.W. Schmidt
- subsp. *relicta* Jalas

#### Lower plants

#### BRYOPHYTA

- Bruchia vogesiaca* Schwaegr. (o)
- Bryhnia novae-angliae* (Sull & Lesq.) Grout (o)
- \**Bryoerythrophyllum campylocarpum* (C. Müll.) Crum. (*Bryoerythrophyllum machadoanum* (Sergio) M. O. Hill) (o)
- Buxbaumia viridis* (Moug.) Moug. & Nestl. (o)
- Cephalozia macounii* (Aust.) Aust. (o)
- Cynodontium suecicum* (H. Arn. & C. Jens.) I. Hag. (o)
- Dichelyma capillaceum* (Dicks) Myr. (o)
- Dicranum viride* (Sull. & Lesq.) Lindb. (o)
- Distichophyllum carinatum* Dix. & Nich. (o)
- Drepanocladus (Hamatocaulis) vernicosus* (Mitt.) Warnst. (o)
- Encalypta mutica* (I. Hagen) (o)
- Hamatocaulis lapponicus* (Norrl.) Hedenäs (o)
- Herzogiella turfacea* (Lindb.) I. Wats. (o)
- Hygrohypnum montanum* (Lindb.) Broth. (o)
- Jungermannia handelii* (Schiffn.) Amak. (o)
- Mannia triandra* (Scop.) Grolle (o)
- \* *Marsupella profunda* Lindb. (o)
- Meesia longiseta* Hedw. (o)
- Nothothylas orbicularis* (Schwein.) Sull. (o)
- Orthothecium lapponicum* (Schimp.) C. Hartm. (o)
- Orthotrichum rogeri* Brid. (o)
- Petalophyllum ralfsii* (Wils.) Nees & Gott. (o)
- Plagiomnium drummondii* (Bruch & Schimp.) T. Kop. (o)
- Riccia breidlerii* Jur. (o)
- Riella helicophylla* (Bory & Mont.) Mont. (o)
- Scapania massolongi* (K. Müll.) K. Müll. (o)
- Sphagnum pylaisii* Brid. (o)

Tayloria rudolphiana (Garov) B. & S. (o)  
Tortella rigens (N. Alberts) (o)

## SPECIES FOR MACARONESIA

### PTERIDOPHYTA

#### HYMENOPHYLLACEAE

Hymenophyllum maderensis Gibby & Lovis

#### DRYOPTERIDACEAE

\* Polystichum drepanum (Sw.) C. Presl.

#### ISOETACEAE

Isoetes azorica Durieu & Paiva ex Milde

#### MARSILEACEAE

\* Marsilea azorica Launert & Paiva

### ANGIOSPERMAE

#### ASCLEPIADACEAE

Caralluma burchardii N. E. Brown

\*Ceropegia chrysantha Svent.

#### BORAGINACEAE

Echium candicans L. fil.

\* Echium gentianoides Webb & Coincy

Myosotis azorica H. C. Watson

Myosotis maritima Hochst. in Seub.

#### CAMPANULACEAE

\* Azorina vidalii (H. C. Watson) Feer

Musschia aurea (L. f.) DC.

\* Musschia wollastonii Lowe

#### CAPRIFOLIACEAE

\* Sambucus palmensis Link

#### CARYOPHYLLACEAE

Spergularia azorica (Kindb.) Lebel

#### CELASTRACEAE

Maytenus umbellata (R. Br.) Mabb.

#### CHENOPODIACEAE

Beta patula Ait.

#### CISTACEAE

Cistus chinamadensis Banares & Romero

\* Helianthemum bystropogophyllum Svent.

#### COMPOSITAE

Andryala crithmifolia Ait.

\* Argyranthemum lidii Humphries

Argyranthemum thalassophyllum (Svent.) Hump.

Argyranthemum winterii (Svent.) Humphries

\* Atractylis arbuscula Svent. & Michaelis

Atractylis preauxiana Schultz.

Calendula maderensis DC.

Cheirolophus duranii (Burchard) Holub



Cheirolophus ghomerytus (Svent.) Holub  
Cheirolophus junonianus (Svent.) Holub  
Cheirolophus massonianus (Lowe) Hansen & Sund.  
Cirsium latifolium Lowe  
Helichrysum gossypinum Webb  
Helichrysum oligocephala (Svent. & Bzaww.)  
\* Lactuca watsoniana Trel.  
\* Onopordum nogalesii Svent.  
\* Onopordum carduelinum Bolle  
\* Pericallis hadrosoma Svent.  
Phagnalon benettii Lowe  
Stemmacantha cynaroides (Chr. Son. in Buch) Ditt  
Sventenia bupleuroides Font Quer  
\* Tanacetum ptarmiciflorum Webb & Berth

#### CONVOLVULACEAE

\* Convolvulus caput-medusae Lowe  
\* Convolvulus lopez-socasii Svent.  
\* Convolvulus massonii A. Dietr.

#### CRASSULACEAE

Aeonium gomeraense Praeger  
Aeonium saundersii Bolle  
Aichryson dumosum (Lowe) Praeg.  
Monanthes wildpretii Banares & Scholz  
Sedum brissemoretii Raymond-Hamet

#### CRUCIFERAE

\* Crambe arborea Webb ex Christ  
Crambe laevigata DC. ex Christ  
\* Crambe sventenii R. Petters ex Bramwell & Sund.  
\* Parolinia schizogynoides Svent.  
Sinapidendron rupestre (Ait.) Lowe

#### CYPERACEAE

Carex malato-belizii Raymond

#### DIPSACACEAE

Scabiosa nitens Roemer & J. A. Schultes

#### ERICACEAE

Erica scoparia L. subsp. azorica (Hochst.) D. A. Webb

#### EUPHORBIACEAE

\* Euphorbia handiensis Burchard  
Euphorbia lambii Svent.  
Euphorbia stygiana H. C. Watson

#### GERANIACEAE

\* Geranium maderense P. F. Yeo

#### GRAMINEAE

Deschampsia maderensis (Haec. & Born.) Buschm.  
Phalaris maderensis (Menezes) Menezes

#### GLOBULARIACEAE

\* Globularia ascanii D. Bramwell & Kunkel  
\* Globularia sarcophylla Svent.

## LABIATAE

- \* *Sideritis cystosiphon* Svent.
- \* *Sideritis discolor* (Webb ex de Noe) Bolle
- Sideritis infernalis* Bolle
- Sideritis marmorea* Bolle
- Teucrium abutiloides* L'Hér.
- Teucrium betonicum* L'Hér.

## LEGUMINOSAE

- \* *Anagyris latifolia* Brouss. ex. Willd.
- Anthyllis lemariniana* Lowe
- \* *Dorycnium spectabile* Webb & Berthel
- \* *Lotus azoricus* P. W. Ball
- Lotus callis-viridis* D. Bramwell & D. H. Davis
- \* *Lotus kunkelii* (E. Chueca) D. Bramwell & al.
- \* *Teline rosmarinifolia* Webb & Berthel.
- \* *Teline salsoloides* Arco & Acebes.
- Vicia dennesiana* H. C. Watson

## LILIACEAE

- \* *Androcymbium psammophilum* Svent.
- Scilla maderensis* Menezes
- Semele maderensis* Costa

## LORANTHACEAE

- Arceuthobium azoricum* Wiens & Hawksw.

## MYRICACEAE

- \* *Myrica rivas-martinezii* Santos.

## OLEACEAE

- Jasminum azoricum* L.
- Picconia azorica* (Tutin) Knobl.

## ORCHIDACEAE

- Goodyera macrophylla* Lowe

## PITTOSPORACEAE

- \* *Pittosporum coriaceum* Dryand. ex. Ait.

## PLANTAGINACEAE

- Plantago malato-belizii* Lawalree

## PLUMBAGINACEAE

- \* *Limonium arborescens* (Brouss.) Kuntze
- Limonium dendroides* Svent.
- \* *Limonium spectabile* (Svent.) Kunkel & Sunding
- \* *Limonium sventenii* Santos & Fernandez Galvan

## POLYGONACEAE

- Rumex azoricus* Rech. fil.

## RHAMNACEAE

- Frangula azorica* Tutin

## ROSACEAE

- \* *Bencomia brachystachya* Svent.
- Bencomia sphaerocarpa* Svent.
- \* *Chamaemeles coriacea* Lindl.
- Dendriopoterium pulidoi* Svent.
- Marcetella maderensis* (Born.) Svent.

*Prunus lusitanica* L.

subsp. *azorica* (Mouillef.) Franco

*Sorbus maderensis* (Lowe) Dode

#### SANTALACEAE

*Kunkeliella subsucculenta* Kammer

#### SCROPHULARIACEAE

\* *Euphrasia azorica* H.C. Watson

*Euphrasia grandiflora* Hochst. in Seub.

\* *Isoplexis chalcantha* Svent. & O'Shanahan

*Isoplexis isabelliana* (Webb & Berthel.) Masferrer

*Odontites holliana* (Lowe) Benth.

*Sibthorpia peregrina* L.

#### SOLANACEAE

\* *Solanum lidii* Sunding

#### UMBELLIFERAE

*Ammi trifoliatum* (H. C. Watson) Trelease

*Bupleurum handiense* (Bolle) Kunkel

*Chaerophyllum azoricum* Trelease

*Ferula latipinna* Santos

*Melanoselinum decipiens* (Schrader & Wendl.) Hoffm.

*Monizia edulis* Lowe

*Oenanthe divaricata* (R. Br.) Mabb.

*Sanicula azorica* Guthnick ex Seub.

#### VIOLACEAE

*Viola paradoxa* Lowe

#### Lower plants

#### BRYOPHYTA

\* *Echinodium spinosum* (Mitt.) Jur. (o)

\* *Thamnobryum fernandesii* Sergio (o)

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ISSN 0254-1475

COM(97) 195 final

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Catalogue number : CB-CO-97-211-EN-C

ISBN 92-78-19665-7

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Office for Official Publications of the European Communities

L-2985 Luxembourg