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AND NATURAL HABITATS

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**50 Threatened Species
of the European Flora
in need of urgent conservation measures**

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50 THREATENED SPECIES OF THE EUROPEAN FLORA IN NEED OF URGENT CONSERVATION MEASURES

The European flora includes about 13.000 species of vascular plants of which about 2 500 have to be considered as threatened. Among them, about 500 are nearing extinction and about 55 are extinct.

A part of those threatened species benefits from adequate protection measures. Another part needs urgent conservation measures either because these species are at the brink of extinction, or because they are key species in their habitat. The successful conservation of these species implies measures which should allow to preserve these species with their evolution potential as well as to maintain the direct relationships between plants and animals (pollinators, ...) and more generally the whole set of plants and animals belonging to the ecosystem.

I- METHODOLOGY

The selection of the 50 species was based on the following principles. It should be noted that many other species fill these criteria, so that ultimately, this choice is somewhat subjective.

- 1- The plants chosen do not benefit from effective conservation measures for their survival. The submission of this list of 50 species should elicit the drawing up of specific Recovery Plans.
- 2- The plants chosen are reasonably well known (taxonomy and distribution). No infraspecific or apomictic taxon has been retained. Conversely, supraspecific taxa have been retained as far as possible.
- 3- The species presumed to be extinct have been eliminated.
- 4- In order to cover the whole area of Europe, a certain geographic balance in representation has been aimed at. However, it has been necessary to take into account the fact that most of the endemic endangered species are mainly in the Mediterranean and in the Atlantic Regions. In the northern and central European countries, the selected species are mainly species with a relatively large area.
- 5- In the Mediterranean and the Atlantic Regions, we chose those really critically endangered plants which need urgent conservation measures if these species are to survive.
- 6- We have not retained species which are not threatened in any one part of their European area of distribution.
- 7- The choice of these species has been independent of official European protections (Bern Convention, Habitat Directive). Official protection should be given to all these 50 plants. The legal protection which most of these species already benefit from have been very effective towards their conservation, and sometimes their rescue. However, the selected species remain very much threatened and practical measures (Recovery Plans) should be drawn up and put into practice for each one of these species.

II- SOME COMMENTS ABOUT THE SHEETS

1- Distribution

Because of the glaciations, the tertiary relicts are generally limited to the Mediterranean and Atlantic regions. In many cases, these relicts correspond to a high taxonomic level and when they are threatened, their conservation is of high scientific and heritage priority. Therefore, in the Mediterranean and Atlantic regions, we had the choice between numerous taxa and as far as possible we have selected as far as possible old tertiary relicts of great significance (*cf.* Annex 1). In Malta, for example, 2 plants of the same family are growing in the same habitat with the same threats : *Cremnophyton lanfrancoi* and *Salsola melitensis*. We have chosen the monotypic *Cremnophyton*, on account of its relictual character.

Generally, North of 50°N – 45°N, endemic species are more recent, less well defined, mostly varieties or subspecies. The only exception is *Coleanthus subtilis* which is an isolated relict which was able to settle in newly created habitats after the Glaciations.

Among the chosen plants, a number are trans-frontier plants : Slovakia/Hungary/Romania for pannonic species, lakes of Central Europe, Mediterranean littoral plants, *etc.*.

2- Cultivation

If *ex-situ* conservation of plants is generally unimportant for common species or the lesser threatened species, it may be extremely important for the critically rare species (CR). In some cases, cultivated specimens largely exceed the number of wild specimens. More, cultivation may contribute to understand the biology of these species. Integrated *in-situ* and *ex-situ* practices are by far the best way to treat urgent rescue problems. Long-term conservation of seeds is an economic way to maintain the precious gene-pool for the future.

In Europe alone, several dozen of species survive in cultivation and have been sometimes reintroduced in the wild.

Among the 50 species treated here (*cf.* Annex II), 33 species are in cultivation (18 in less than 6 gardens and 4 in more than 20 gardens). The wide cultivation of these 4 species is no safeguard against extinction because of cultivation hazard as well as that of fashion. The conservation in cultivation is only efficient if done in conjunction with a Recovery Program and only 13 species are cultivated with this purpose.

Long term conservation is especially beneficial in the case of critically rare species. It is necessary to cultivate each taxon in genetically viable groups and isolated from genetically compatible taxa.

3- Legal protections

Among the 50 species, one is within the territory covered by Bern Convention and Habitats Directive because it is endemic of Russia.

Two have been described too recently to be in these conventions : *Horstrissea dolinicola* and *Zelkova sicula*.

Among the 47 others, 39 are protected by the Bern Convention (*cf.* Annex 3) and 27 by the Habitats Directive.

A number of the 50 species are also under national or regional regulations. All these protections are necessary for their conservation and sometimes their rescue. However, these legal protections are not Recovery Plans and these 50 species have been precisely chosen because they are still in danger of extinction. About 20 of these species benefit already of partial Recovery Plan.

For each one of these 50 species, a comprehensive Recovery Plan including appropriate measures (*in situ*, *ex-situ*, legal protection, *etc.*...) should be drawn.

4- Threats

We have used the threat categories of the Red List Assessment of the I.U.C.N. which have a universal value.

Eight main categories apply to the plants:

1-Habitat loss is involved.	95 times,
9- Intrinsic factors	31 times.
2- Invasive species	12 times.
6- Pollution	11 times.
10- Human disturbance	10 times
7- Natural disasters	7 times
3- Harvesting	3 times.
8-Changes in species dynamics	2 times.

- The main threat is **habitat loss** which is involved 95 times under different forms : infrastructure development is involved 32 times, agriculture 17 times, livestock (12), harvesting (11), land management (10), wood plantations (5).

- **Intrinsic factors** are reported 31 times. It is a very important factor of risk, but with the exception of 3 species, this factor is linked to other threats which affect small populations. However we do not forget that for its evolution potential , a species needs a certain population size and in many cases we see relicts of once abundant populations even if we do not know the prevailing previous situation.

- The third category: **invasive species** is involved 12 times. It is a relatively low number compared to oceanic islands where invasive species are the major threat. The continents are less prone to invasions.

- **Direct human disturbance** is involved 10 times of which 5 are related to disturbance by tourism.

- **Pollution** is reported 11 times. The main problem is oil spills (4 times).

- **Natural disasters** are reported 7 times of which drought 4 times. This natural disaster possibly being related to man-induced global change.

- **Harvesting** is reported 3 times. In Europe, it is not the main problem.

- **Changes in population dynamics** are mentioned twice.

5- Remaining gaps in our knowledge

Examining the years in which the description of these 50 species was done, one notices that 6 of them have been described after 1979. 4 are new monotypic genera (not reevaluation of well-known species) and 3 of them are trees or shrubs. 2 of them (*Horstrissea* and *Gyrocarium*) are very small plants and *Gyrocarium* is fugacious. This plant will probably be found in other therophytic communities. One can expect new discoveries of localized and endangered species. It is necessary to keep that in mind for conservation and research activities:

- *Cremnophyton lanfrancoi* 1987
- *Gyrocarium oppositifolium* 1983
- *Horstrissea dolonicola* 1990
- *Micropyropsis tuberosa* 1982
- *Myrica rivas-martinezii* 1980
- *Zelkova sicula* 1992

CONCLUSION

In spite of the heterogeneity of these species, resulting in the heterogeneity of the floras of the different countries, the chosen species are important plants either for their unique character as relict species and/or for their status as key species in their habitats.

These species present interesting and various problems in conservation or rescue. They are excellent flag species.

Part of them are officially protected by European Conventions. In spite of that, these species need complete Recovery Plans.

Their conservation should involve the conservation of their habitats along with their associated floras and faunas.

50 Sheets Headings for columns

Category : Category of threat as defined by the I.U.C.N. along with Criteria.

Cult. : Frequency in cultivation :

Not in cultivation : 0

Cultivated in 1 to 5 sites : 1

Cultivated in 6 to 20 sites : 2

Cultivated in more than 20 sites : 3

Data Deficient : 4

Not evaluated : 5

Cultivation : It is the list of the sites of cultivation when below 6. They are largely Botanic Gardens and a few collections and nurseries. The coverage is worldwide. The date mentioned is the last known occurrence in the site. In any cases, the sites involved in a Recovery Plan are indicated by a star *. An estimate of the number of sites is given.

Protection : Bern Convention & Habitats Directives

Threats : The categories of threat are those of the Red List Assessment of the I.U.C.N..

<i>Abies nebrodensis</i> (Lojac.) Mattei	Category CR Criteria D	Cult. 3	Distribution - Italy: Sicilia ()	Cultivation *PALERMO : ORTO BOTANICO *SICILIA : Nursery of Corpo Forestale	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priority species)	Threats 1.1.4 - Livestock 1.3.3.1 - Small- scale subsistence 1.3.3.2 - Logging 2.3 - Hybridizers 3.3 - Fuel 7.7 - Climatic change 9.2 - Poor regeneration 9.4 - Inbreeding
<i>PINACEAE</i> 2003				20-25 gardens		
<p align="center">Commentary</p> <p>This fir was widespread between 1400 and 1700 m. in the Madonie Mountains. Now it is reduced to 30 adult trees mostly of a small size. It was extensively felled for fuel and timber, and the soil has been washed by erosion.</p> <p>The tree benefits from a local protection act but the fences which protect the area have been repeatedly destroyed by local farmers. The Corpo Forestale de Sicilia has obtained more than 100.000 plants in cultivation, of which 30.000 have been reintroduced, but with a high failure rate. It is due to the current adverse conditions (erosion, grazing, climatic change). The introduction of other <i>Abies</i> species in the Madonie is another threat to the genetic integrity of the Sicilian fir. The pollen may disperse up to dozens of kms and fertile hybrids are easily produced especially among the group of Mediterranean species. For the same reason the widespread cultivation of <i>Abies nebrodensis</i> is not a guarantee for its safeguard. Special cultivation sites have to be devoted to this fir (genetically viable groups in isolation).</p>					<p align="center">References</p> <p>AKERROYD, J.R. 2001 CONTI, F., MANZI, A. & PEDROTTI, F. 1992. PIGNATTI, S. 1982. SCHELLEVIS, N. & SCHOUTEN, J. in FARJON, A. & PAGE, C.N. 1999.</p>	

<i>Aldrovanda vesiculosa</i> L.	Category	Cult.	Distribution	Cultivation	Protection	Threats
	LC Criteria	3	<ul style="list-style-type: none"> - Austria (EX) - Bulgaria (CR) - Belarus (DD) - Switzerland (EN) - Germany (VU) - France (EX) - Hungary (VU) - Italy (CR) - Poland (NT) - Romania (VU) - Russian Federation (VU) - Slovakia (EX) - Serbia (VU) - Ukraine () 		<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.4.3 - Tourism/recreation 2.1 - Competitors 6.3 - Water pollution
DROSERACEAE 2003				+20 gardens		
<p align="center">Commentary</p> <p><i>Aldrovanda</i> is a monotypic genus and a tertiary relict.</p> <p>It is a widespread plant in the Old World, but the distribution is patchy and probably relictual. It prefers the stagnant, oligotrophic acid waters.</p> <p>In Europe, the plant is certainly in serious decline through pollution, eutrophication and drainage. It is extinct in several countries and extremely threatened in others. This species occurs in several countries in Tropical and South Africa, Asia and Australia.</p> <p>Its occurrence in a habitat is a testimony of the good quality of the water. Recovery Plans for this species (as the '<i>Aldrovanda vesiculosa</i> Project' of the Botanical Institute of Trebon in the Czech Republic) could benefit many other plants and animals. <i>Aldrovanda</i> is listed under Recommendation n°40 (1993) of the Permanent Committee of the Bern Convention.</p>					<p align="center">References</p> <p>ADAMEC, L. & PASEK, K. 2003.</p> <p>CONTI, F., MANZI, A. & PEDROTTI, F. 1992.</p> <p>DIMITROV, D. <i>et al.</i> 2001.</p> <p>HAEUPLER, H. & SCHÖNFELDER, P. 1989.</p> <p>JALAS, J. <i>et al.</i> 1999.</p> <p>KÄSERMAN, C. & MOSER, D. 1999.</p> <p>OTAHELOVA, H. & FERA KOVA, V. <i>in</i> CEROVSKY, J. <i>et al.</i> 1999.</p> <p>RICHARD, P. <i>in</i> OLIVIER, L., GALLAND, J.-P. & MAURIN, H. 1995.</p> <p>WALTERS, S.M. <i>in</i> HEDBERG, I. 1979.</p>	

<p><i>Allium regelianum</i> A. Becker</p> <p><i>LILIACEAE</i> 2003</p>	Category	Cult.	Distribution	Cultivation	Protection	Threats
	EN Criteria B1+2ad	1	- Russian Federation: Volgograd ()	*ST PETERSBURG : Komarov Botanical Institute (1997)	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1 - Agriculture 1.2 - Land management of non-agricultural areas 1.4 - Infrastructure development
<p>Commentary</p> <p>This <i>Allium</i> has been considered as widespread in a large area between the lower Volga, the Dniepr & Caucasus. In the seventies, nobody was able to confirm its actual existence and it has been considered as extinct. More recently in 1984 & 1996, it has been discovered in several sites. Among the 7 known sites, two are now extinct of which one was in the suburbs of Volgograd. Others include only small populations.</p> <p>The plant grows in a wide range of steppic habitats from saline to freshwater meadows. The steppe with its various plants and animals is a seriously threatened habitat.</p> <p>Actions have to be taken to preserve large areas of this so important natural and cultural heritage. The plant is cultivated in St. Petersburg Botanic Garden.</p>					<p>References</p> <p>FIRSOV, G. 1997. STEARN, W.T. <i>in</i> TUTIN, T.G. <i>et al.</i> 1980. TAKHTAJAN, A. 1981. VVEDENSKII, A. <i>in</i> KOMAROV, V. 1968.</p>	

<p><i>Andryala levitomentosa</i> (E. I. Nyarady) P.D. Sell</p> <p>ASTERACEAE 2003</p>	Category	Cult.	Distribution	Cultivation	Protection	Threats
	<p>CR</p> <p>Criteria B1+3e, D2</p>	0	- Romania:Moldavia ()		<p><input checked="" type="checkbox"/> Bern Conv.</p> <p><input type="checkbox"/> Habitats Dir.</p>	<p>9.2 - Poor regeneration</p> <p>9.9 - Restricted range</p>
<p>Commentary</p> <p>Described as the monotypic genus <i>Pietrosia</i>, now a section of <i>Andryala</i>. One of the most critically endangered supraspecific taxon of Europe.</p> <p>This dwarf perennial was always extremely restricted in distribution. Now, it is said to be reduced to 4 specimens on a rocky slope of Mt Pietrosul (1600-1700 m.).</p> <p>Unless specific measures are taken for the propagation of this plant, the species is doomed. It seems to only reproduce vegetatively by detached buds forming new plants. It would be necessary to create <i>ex-situ</i> populations by cloning each survivor and then obtaining seeds by cross pollination of the different clones. This would minimize the loss of genes and would initiate a Recovery Plan.</p>					<p>References</p> <p>DIHORU, G. in LUCAS, G. & SYNGE, H. 1978.</p> <p>NYARADY, E.I. 1963.</p> <p>SÂRBU, A. 2001. (pers. comm.)</p> <p>TANASE, C. 2001. (pers. comm.)</p>	

<i>Angelica palustris</i> (Besser) Hoffm. <i>APIACEAE</i> 2003	Category LC Criteria	Cult. 2	Distribution - Austria () - Bulgaria (DD) - Belarus (DD) - Czech Republic (CR) - Germany (VU) - Estonia (DD) - Hungary (EN) - Lithuania (DD) - Latvia (DD) - Romania (VU) - Russian Federation (LC) - Slovakia (EX) - Serbia (VU) - Ukraine (DD)	Cultivation 6-20 gardens	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	Threats 1.1 - Habitat loss 1.4.6 - Dams 1.4.9 - Drainage
Commentary This isolated species is sometimes considered as the monotypic genus <i>Ostericum</i> . It grows in the marshes of Central Europe & Asia. Its actual distribution is not well known, but in well-studied areas, the situation of the species is precarious. In the Czech Republic, it survives in one square out of 5 and in Slovakia it is now extinct. It is also extinct in Austria, Bulgaria. Conversely it survives in well protected areas such as in the Pripjat marshes of Ukraine. A Recovery Program is urgently needed. Although this species is listed under Recommendation n°40 (1993) of the Permanent Committee of the Bern Convention.					References CANNON, J. in TUTIN, T.G. <i>et al.</i> 1968. KOROVIN, E. in SHISKIN, B. & BOBROV, E.G. 1974. SLAVIK, B. <i>et al.</i> in CEROVSKY, J. <i>et al.</i> 1999.	

<p><i>Anthemis glaberrima</i> (Rech. fil.) W. Greuter</p> <p>ASTERACEAE 2003</p>	<p>Category</p> <p>CR</p> <p>Criteria D, E</p>	<p>Cult.</p> <p>0</p>	<p>Distribution</p> <p>- Greece:Kriti:Khanya ()</p>	<p>Cultivation</p> <p>0 garden</p>	<p>Protection</p> <p><input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2</p>	<p>Threats</p> <p>2.2 - Predators (rabbits potentially) 6.3.6 - Oil slicks 9.9 - Restricted range</p>
<p>Commentary</p> <p>This plant which belongs to the section <i>Ammanthus</i> represents an isolated element.</p> <p>It is a small annual restricted to the coastal rocks of a small islet (Agria Gramvousa) which hosts a small population and to the neighbouring islet of Gramvousa with a few specimens.</p> <p>Agria Gramvousa has 9 endemic Greek species and is recommended as a reserve. If the mainland flora of Kriti has evolved with herbivorous (<i>Candiacervus</i> now extinct, <i>Capra aegagrus</i>, and then domestic animals), the small islets' flora has evolved free from herbivorous.</p>					<p>References</p> <p>PHITOS, D. & KYPRIOTAKIS, Z. in PHITOS, D. <i>et al.</i> 1995.</p>	

<i>Artemisia molinieri</i> Quézel, Barbero, R. Loisel	Category	Cult.	Distribution	Cultivation	Protection	Threats
ASTERACEAE 2003	EN Criteria B1+B2d	1	- France:PACA:Var (83) (EN)	*Porquerolles : Conservatoire Botanique National de Porquerolles (2003) BREST : Conservatoire Botanique National (2003) La Gacilly : BG La Gacilly MARBURG : Botanischer Garten der Philipps- Universität 4 gardens	<input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1.1.2 - Small- holder farming 1.1.8 - Drainage of fields 1.2.2 - Change of management regime of non- agricultural areas 6.3.2 - Domestic water pollution 6.3.7 - Water pollution by sediment
<p align="center">Commentary</p> <p>This mediterranean endemic is known from 4 vernal pools of karstic origin in the Provence region. Two of them have populations of a good size, whereas the other two have very small, quite erratic or secondary populations.</p> <p>Historically the plant has probably regressed on account of the drainage and the permanent cultivation of other vernal pools of the region. Temporary cultivation does not destroy the populations and extensive grazing probably favours the plant.</p> <p>It is the only hygrophilous <i>Artemisia</i> species. Cousteaux et Pons think that this species is of a remote hybrid origin on account of the peculiarities of its pollen. It is however a very fertile species.</p>					<p align="center">References</p> <p>ABOUCAYA, A. 2003. (pers. comm.)</p> <p>COUTEAUX, M., PONS, A. 1987.</p> <p>OLIVIER, L., GALLAND, J.-P. & MAURIN, H. 1995.</p>	

<i>Astragalus physocalyx</i> Fischer	Category CR Criteria B1+2abd, C2b, D2	Cult. 1	Distribution - Macedonia (DD) - Bulgaria:Plovdiv (CR)	Cultivation *SOFIA : Botanical Garden Balcik (1978)	Protection <input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.1.1.2 - Small-holder farming 1.4.2 - Urbanization
<p><i>FABACEAE</i> 2003</p>						
Commentary					References	
<p>This species of steppic affinities is known from 3 populations.</p> <p>The 2 populations of Bulgaria are now extinct. In Bulgaria, the plant lived on rocky slopes in a rather urbanized habitat. Living material from Plovdiv has been put in cultivation, propagated in the Botanic Garden of Sofia (Bulgarian Academy of Sciences) and reintroduced in the locality of origin which became a public park.</p> <p>Living material from the other Bulgarian locality (Kulata) is also cultivated in Sofia. The third locality is in Macedonia, and little is known about the species' status there. This plant is the only representative of section <i>Pogonotropis</i>.</p>					<p>KUZMANOV, B. in LUCAS, G. & SYNGE, H. 1978.</p>	

<i>Biarum fraasianum</i> (Schott) N. E. Br.	Category CR Criteria B1+2abcd, C2b, D1	Cult. 1	Distribution - Greece: Sterea Ellias ()	Cultivation KEW : Royal Botanic Gardens (2002) PATRAS : Patras Botanic Gardens (1995)	Protection <input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.1.1.2 - Cultivation 1.1.1.3 - Agro- industry farming 1.1.4.2 - Livestock 1.4.9 - Drainage 9.9 - Restricted range & small population
ARACEAE				2 gardens		
<p align="center">Commentary</p> <p>A distinct Greek aroid which has always been very rare. It is known from 2 localities. The type-locality (Thebes) has not been found again for at least 150 years. In the other locality (Lake Kopais), the species had not been seen for 55 years, until it was recently rediscovered recently by members of the Patras Botanical Institute. This population consists of about 10 individuals and is growing among a rocky mediterranean scrub.</p> <p>In the Lake Kopais area, the plant was more frequent before the drainage of the Lake and the intensive cultivation which now prevails in the valley. The area is grazed and inhabited.</p> <p>There is a probability to discover new sites because the plant is small and elusive. It would be important to produce viable groups in cultivation for rescue purposes.</p>					<p align="center">References</p> <p>BOYCE, P. 2003. (pers. comm.) PHITOS, D. & ATHANASIOU, K. <i>in</i> PHITOS, D. <i>et al.</i> 1995.</p>	

<i>Borderea chouardii</i> (Gaussen) Heslot	Category CR Criteria B1+2e	Cult. 1	Distribution - Spain:Aragon:Huesca ()	Cultivation	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priority species)	Threats 1.1.4.2 - Goats 1.4.3 - Road 1.4.6 - Dams 7.6 - Landslides 9.9 - Restricted range 10.1 - Tourism
<i>DIOSCOREACEAE</i> 2003				0 garden		
<p align="center">Commentary</p> <p>Small perennial with a local distribution in the Southern Pyrenees. It is a tertiary relict, being one of the 2 species in the genus <i>Borderea</i>, endemic to the Pyrenees, itself a member of a mainly tropical family.</p> <p>The plant lives in a gorge, under a vault of limestone rocks between 800 - 840 m. The number of plants is estimated to lie between 300 - 500 mostly juveniles, spreading along about 100 m. The microclimate is relatively humid and cold within a submediterranean type of climate.</p> <p>The plants would have been eliminated if the dam had been built 200 m. lower in the gorge. This dam has disturbed the flow of cold air which still flowed a few years ago. One of the 3 subpopulations has almost been eliminated by the road-works above. Presently, there is an excellent follow-up of the population. However, in such a place, any small disturbance could eliminate the species: natural fall of the vault, destruction of the nearby dam, vandalism, <i>etc.</i>. The actual threats include excessive browsing, tourism, road encroachment. The creation of 2 other viable populations in cultivation and in another site could avoid the multiple risks linked to its occurrence in a unique site. The plant has proved very difficult to cultivate.</p>					<p align="center">References</p> <p>MONTSERRAT RECODER, P. in GOMEZ-CAMPO, C. <i>et al.</i> 1987.</p>	

<i>Cephalaria litvinovii</i>	Category	Cult.	Distribution	Cultivation	Protection	Threats
Bobrov	CR Criteria B2a+3e	2	- Russian Federation:Voronej () - Russian Federation:Bielgorod () - Ukraine:Lougansk ()		<input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1 - Agriculture 9.9 - Restricted range
<i>DIPSACACEAE</i> 2003				6 gardens		
Commentary The species was known in several regions of Russia and Ukraine. It is in severe decline, having been considered as extinct. Now, it is known from very few populations. It lives in ravines, among scrub. The development of the area coupled with a restricted distribution of the plant has led to its near extinction. Fortunately the plant is in cultivation in several Botanic Gardens in Russia which have distributed the plant to other gardens.					References FERGUSON, I. in TUTIN, T.G. <i>et al.</i> 1976. TAKHTAJAN, A. 1981.	

<i>Colchicum arenarium</i> Waldst.& Kit.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>LILIACEAE</i> 2003	EN Criteria A1ac	2	- Hungary (EN) - Romania (EN) - Slovakia (CR) - Serbia (DD)	*NITRE : NITRE B.G. (1999) *PRESTANOCH : PRESTANOCH B.G. (1999) 6 gardens	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1.1.2 - Small- holder farming 1.1.1.3 - Agro- industry farming 1.1.2 - Wood plantations
<p align="center">Commentary</p> <p>This bulbous plant is a pannonic endemic adapted to sandy steppes.</p> <p>This habitat has been widely destroyed through cultivation, forestry, etc. As a result, this <i>Colchicum</i> only occurs in very small populations. In Slovakia, it is reduced to a few dozens of specimens in one locality. Elsewhere, it is also endangered.</p> <p>Slovakia has developed a conservation program for its habitat. In Hungary, this <i>Colchicum</i> has been selected as a priority species for conservation. A transnational Recovery Plan is urgently needed for this plant as well as for the associated animals and plants of this habitat.</p>					<p align="center">References</p> <p>FERAKOVA, V., REHOREK, V. & SVOBODOVA, Z. in CEROVSKY, J. <i>et al.</i> 1999.</p> <p>I.U.C.N., 1998.</p> <p>SIMON, T. 1992.</p> <p>SLOVAK AGENCY FOR ENVIRONMENT, 2002.</p>	

<i>Coleanthus subtilis</i> (Tratt.) Seidl	Category	Cult.	Distribution	Cultivation	Protection	Threats
	VU Criteria A1ac	1	<ul style="list-style-type: none"> - France:Bretagne (VU) - France:Pays de la Loire (CR) - Germany (EN) - Austria () - Czech Republic () - Slovakia (EX) - Italy (EX) - Norway (EX) - Russian Federation:Ladoga-Ilmen (EX) - Russian Federation:Ob (EX) - Russian Federation:Ussuri (DD) - China:China Northeast:Heilongjiang (DD) - Canada:British Columbia (DD) - United States:Oregon (DD) - United States:Washington (DD) 	BERLIN : Botanisch Garten und Museum Berlin-Dahlem (2002) BREST : Conservatoire Botanique National (2003)	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.4.3 - Tourism 1.4.5 - Channelling of rivers 1.4.6 - Dams
POACEAE 2003				2 gardens		
Commentary <p><i>Coleanthus subtilis</i> is the unique representative of the tribe <i>Coleantheae</i>, so that its conservation is extremely important.</p> <p>It is a widespread North temperate species with widely separated areas of occurrence. It is completely lost in some parts of its range. At present, no <i>Coleanthus</i> survives between the Czech Republic and the basin of Amur. On the other hand, some new populations have been recently detected in North America. The main concentrations occur in Brittany, in the Czech Republic and in the Amur Basin. Even in these strongholds, the plant has lost most of its populations. In the Czech Republic, the plant was present in 62 squares. Now it is present in only 25. In Brittany, the plant has lost half of its localities.</p> <p>This tiny and fugacious annual plant lives in 2 types of habitats : the river banks, its primary habitat, which is now almost destroyed by various managements. The man-made lakes and ponds have become a secondary habitat, and now a refuge. It appears in vast numbers at the margins of ponds in favourable years: dry autumn or draw-down period of a pond. The seed-bank of the soil is thus increased and seeds may be dispersed by migratory birds. The species is adapted to this cycle and in some cases, up to a century has been noted between 2 appearances of the species. The maintenance of the pond's water at a constant high level is detrimental to its populations. The species is a good indicator of the quality of the habitat: presence of waterfowl, free waters, etc...</p>					References HOLUB, J. in CEROVSKY <i>et al.</i> 1999. LESOUEF, J.Y. in OLIVIER, L., GALLAND, J.P. & MAURIN, H. 1995. NECAJEV, A.P. & NECAJEV, A.A. 1972. ROZHEVITS, R.Y. & SHISHKIN, B.K. 1963. TAKHTAJAN, A. 1981.	

<i>Cremnophyton lanfrancoi</i> Brullo & Pavone	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>CHENOPODIACEAE</i> 2003	VU Criteria B1+3c	1	- Malta:Gozo (VU) - Malta:Malta (VU)	*MALTE : Elysium nursery CATANIA : Istituto ed Orto Botanico dell'Universita 2 gardens	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.3.1 - Quarrying 1.4.9 - Dumping 2.1 - Invasive alien species 8.5 - Pathogens/parasites 9.2 - Low recruitment
<p align="center">Commentary</p> <p>This endemic monospecific genus represents a paleoendemic taxon with a high patrimonial value. It seems related to the ancestors of <i>Atriplex</i> and <i>Halimione</i>.</p> <p>This species is found growing on high cliffsides both in Malta and in Gozo. <i>Cremnophyton</i> is a large shrub with succulent leaves which usually grows up to 1.5m high in the wild. It grows mainly on the coralline and globigerine limestones sea-cliffs such as those of Migra Fehra, Ghar Hasan and Fomm ir-Rih in Malta, as well as patchily along the cliffs in the areas between Ta'Cenc and Rdum San Dimitri in Gozo, and on Haget il-General (Fungus Rock).</p> <p>Although this species lives in rather inaccessible areas (cliffs), it is highly threatened by extinction for various reasons: a fungal disease, a low natural recruitment, alien species, quarrying and dumping of tar.</p> <p>This plant is very difficult to propagate by conventional methods (seeds, cuttings). It benefits from a few measures of protection (<i>ex-situ</i> conservation, national protection, protected areas and recovery plan).</p>					<p align="center">References</p> <p>AKEROYD, J.R. in TUTIN, T.G. <i>et al.</i> 1993.</p> <p>BRULLO, S. & PAVONE, P. 1987.</p> <p>CONLIN, D. 2001.</p> <p>DEPARTMENT OF PLANT HEALTH, 2003.</p> <p>ENVIRONMENT PROTECTION DEPARTMENT, 1999.</p> <p>GUGLIELMO, A., MINISSALE, P. & PAVONE, P. 1999.</p> <p>LANFRANCO, E. 1995.</p> <p>SCHEMBRI, P.J. & SULTANA, J. 1989.</p> <p>THE GAIA FOUNDATION, 2000.</p>	

<i>Degenia velebitica</i> (Degen) Hayek	Category EN Criteria B1+2e	Cult. 2	Distribution - Croatia ()	Cultivation *LJUBLJANA : LJUBLJANA B.G. (2003)	Protection <input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.2.3 - Lack of grazing 9.9 - Restricted range
BRASSICACEAE 2003				15-20 gardens		
<p align="center">Commentary</p> <p>A small perennial adapted to windswept screes between 1150-1400 m.</p> <p>This monotypic genus and tertiary relict is known from only 2 localities in the Velebit Mountains of Croatia. Since their discovery, the populations are shrinking through competition with other plants. This competition probably arises with the reduction of grazing (by cattle and earlier by sheep and still earlier by wild ungulates). In Southern Velebit, there are 4 populations, the biggest covering 300 m² with 63 specimens in the 1970s. The 3 others are smaller and contain less than 100 specimens. In Northern Velebit, the situation is a little better.</p> <p>The Botanic Garden of Ljubljana maintains a large viable population (700 plants in 1978). Seeds are distributed and this gene pool could serve for an eventual reintroduction.</p>					<p align="center">References</p> <p>SKOBERNE, P. 1997.</p> <p>STRGAR, V. in SYNCE, H. & TOWNSEND, H. 1979</p> <p>WALTERS, S.M. & MAYER, E. in LUCAS, G. & SYNGE, H. 1978.</p>	

<i>Erucastrum palustre</i> (Pirona) Vis.	Category CR Criteria B1+2abc	Cult. 1	Distribution - Italy:Friuli ()	Cultivation PADOVA : ORTO BOTANICO (2001)	Protection ☒ Bern Conv. ☒ Habitats Dir. Annex : 2	Threats 1.1.1.2 - Small-holder farming 1.1.8 - Drainage of wetlands 1.2.2 - Change of management regime 1.4.2 - Human settlement
BRASSICACEAE 2003				1 garden		
Commentary <i>Erucastrum palustre</i> is an endemic species of Friuli growing in marshes, alkaline peat bogs or along springs. It is a neoendemic taxon which has evolved in response to climate variations during the postglacial age, which have favoured the formation of peat bogs. Ditch-work, drainage and lowering of the watertable level in these wetlands, as well as agricultural encroachment and urban development are the most dangerous threats for this species. The destruction of its habitat have caused the reduction of 60% of its distribution area between 1960 and 1970. At present the remaining marsh only covers 140 ha, and it contains other endemic species of a great interest: <i>Armeria helodes</i> , <i>Centaurea forojulensis</i> ...					References CONTI, F., MANZI, A. & PEDROTTI, F. 1992. CONTI, F., MANZI, A. & PEDROTTI, F. 1997. PIGNATTI, S. 1982.	

<i>Eryngium viviparum</i> Gay	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>APIACEAE</i> 2003	EN Criteria B1+B2d	1	- Spain:Galicia (EN) - France:Bretagne:Morbihan (56) (CR) - Spain:Castilla y Leon:Zamora (DD) - Portugal:Minho (EX)	*BREST : Conservatoire Botanique National (2003) *MULHOUSE : Jardin Botanique (2002) LYON : Jardin Botanique (2002) 3 gardens	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priority species)	1.1.5 - Abandonment of agriculture 1.1.8 - Drainage of fields 1.2.2 - Change of management regime of non- agricultural areas
<p align="center">Commentary</p> <p>This endemic eutlantic species is reduced to 2 or 3 distant populations, which are 1000 km apart. Everywhere it is restricted to a very small area in a moist depression of grazed heaths.</p> <p>The decline of traditionnal grazing and the increase of field drainage have almost lead the plant to a near extinction.</p> <p>In Brittany, it survives by only one population of 1000m2 which is under control.</p> <p>According to some research work, it seems that the plants from Brittany are taxonomically identical to the plants from Galicia.</p>					<p align="center">References</p> <p>BENSETTITI, F. <i>et al.</i> 2002. BUORD, S., COUDERC, M. & COUDERC, H. & REDURON, J.-P. 1999. CASASECA, B. 1971. OLIVIER, L., GALLAND, J.P. & MAURIN, H. 1995. VV.AA. 2000.</p>	

<i>Euphrasia grandiflora</i> Hochst.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>SCROPHULARIACEAE</i> 2003	CR Criteria B2abde, C1	0	- Portugal:Açores:Faial (EX) - Portugal:Açores:Pico (CR) - Portugal:Açores:São Jorge (DD) - Portugal:Açores:Terceira (EX)	0 garden	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.1.2 - Wood plantations 1.3.3 - Logging
<p align="center">Commentary</p> <p>This hemi-parasitic plant belongs to the section <i>Atlanticae</i>, endemic of the Açores along with <i>E. azorica</i>, also a threatened species.</p> <p>Along with <i>E. formosissima</i>, they are the only shrubby species of the genus in Juan Fernandez (Chile).</p> <p>It was known from 4 islands but it is possibly extinct on Faial & Terceira. It probably survives on Sao Jorge. On Pico, 5 populations are known, all of which are small. It only grows in the better preserved parts of the laurel forest, above 600 m., in small craters. The plant is obviously very sensitive to disturbance. The cultivation of hemi-parasites is notoriously difficult.</p>					<p align="center">References</p> <p>DIAS, E. 199?.</p> <p>RUMSEY, F.2001. (pers. comm.)</p> <p>SJOGREN, E. 1984.</p>	

<i>Ferula sadlerana</i> Ledeb.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>APIACEAE</i> 2003	VU Criteria A1c	1	- Hungary (VU) - Romania (VU) - Slovakia (CR)	*VACRATOT : RESEARCH INSTITUTE FOR BOTANY & ECOLOGY (1997) BREST : Conservatoire Botanique National (2003) COPENHAGEN : Kobenhavns Universitets Botaniske Have (1989) EDINBURGH : Royal Botanic garden (2003) TURKU 50 : University of Turku Botanical Garden (1984) 5 gardens	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1 - Agriculture 1.2.2 - Change of management regime
<p align="center">Commentary</p> <p>The distribution of this pannonic relictual species is centered in Hungary where it is known from an area with several localities. Two widely separated populations also occur in Slovakia and one other in Romania.</p> <p>It lives in dry, rocky places.</p> <p>Slovakia has developed a rescue program for this species in a Biosphere Reserve. In Hungary, it is a species of high priority in Plant conservation.</p>					<p align="center">References</p> <p>ANONYMOUS, 19??. CANNON, J.F.M. in TUTIN <i>et al.</i> 1968. KERESZTY, Z. & GALANTAI, M. 1994. SIMON, T. 1992. SLOVAK AGENCY FOR ENVIRONMENT 2002.</p>	

<i>Gyrocarum oppositifolium</i> Valdés	Category CR Criteria B1+2a	Cult. 0	Distribution - Spain:Andalucia (CR) - Spain:Castilla y Leon:Leon (CR)	Cultivation	Protection <input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.1.4 - Livestock 9.1 - Limited dispersal 9.8 - Population fluctuations 10.3 - Military manoeuvres
<i>BORAGINACEAE</i> 2003				0 garden		
<p align="center">Commentary</p> <p><i>Gyrocarum</i> is a newly discovered monotypic genus which has only been found on two occasions.</p> <p>In Andalusia it has been found in 1982 growing in a therophytic community under a <i>Quercus</i> forest cover (850 m.), on an acid soil. Despite repeated searches, it has not been found again. The population covered 100 m2. In Northern Spain (Leon), another population has been discovered in 1993 also occurring within a therophytic community among a clearing of oaks on granitic sands (600m.). The population extended over 1000 m2.</p> <p>The plant should be considered at the brink of extinction in Andalusia as well as in Leon, although there may be some probability to encounter other populations in Iberia.</p> <p><i>Gyrocarum</i> is protected by an act of the Junta de Andalusia.</p>					<p align="center">References</p> <p>BLANCA, G.B. <i>et al.</i> 2000.</p> <p>VALDES, B. 1983.</p> <p>VV. AA. 2000.</p>	

<p><i>Helictotrichon hackelii</i> (Henriq.) Herard</p> <p><i>POACEAE</i> 2003</p>	<p>Category</p> <p>CR</p> <p>Criteria B1+2abcd</p>	<p>Cult.</p> <p>0</p>	<p>Distribution</p> <p>- Portugal:Alentejo () - Portugal:Algarve ()</p>	<p>Cultivation</p> <p>0 garden</p>	<p>Protection</p> <p><input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2</p>	<p>Threats</p> <p>12 - Unknown</p>
<p>Commentary</p> <p>It is the unique representative of the isolated section <i>Scleravenastrum</i>.</p> <p>This perennial grass was known from 3 locations in sandy areas of SW Portugal. In 1989, Romero Zarco considered it was still abundant in its locus classicus near Vila Nova de Milfontes. However, R. Govaerts was unable to find it in this place in 1992 as well as in the second locality in the region of Cabo Sao Vicente. However, R. Govaerts discovered a new locality near Aljezur, 100 m. from the coast. The possible extinction of several populations is all the more regrettable since the species included two varieties of which var. <i>algarbiensis</i> may now be extinct.</p>					<p>References</p> <p>GOVAERTS, R. 1993. ROMERO-ZARCO, C. 1984.</p>	

<p><i>Horstrissea dolinicola</i> Greuter, Gerstberger & Egli</p> <p><i>APIACEAE</i> 2003</p>	<p>Category</p> <p>CR</p> <p>Criteria B1+2c, D</p>	<p>Cult.</p> <p>0</p>	<p>Distribution</p> <p>- Greece: Kriti ()</p>	<p>Cultivation</p> <p>0 garden</p>	<p>Protection</p> <p><input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.</p>	<p>Threats</p> <p>1.1.4.2 - Small holder livestock (sheep) 8.5 - Parasites 9.9 - Restricted range</p>
<p>Commentary</p> <p>An endemic and monotypic genus described in 1990.</p> <p>This dwarf perennial occurs within a very narrow area: 2 neighbouring dolinas at 1500m (restricted to a 40x80 m area for 25 plants). The species could have been overlooked since it is a geophyte. On the other hand, an in-depth ecological study of the dolines of central Kriti has been done so that, the plant may actually be restricted to this area where it is subject to overgrazing by sheep.</p> <p><i>In-vitro</i> and <i>in-vivo</i> germination has been tried without success, the seeds seem to be destroyed by parasitic wasps.</p>					<p>References</p> <p>EGLI, B. <i>in</i> PHITOS, D. <i>et al.</i> 1995.</p>	

<i>Hypericum aciferum</i> (W. Greuter) N.K.B. Robson	Category CR Criteria C2a	Cult. 1	Distribution - Greece: Kriti ()	Cultivation IRAKLION : IRAKLION B. G. (1995)	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priorityary species)	Threats 6.3.6 - Oil slicks 9.2 - Poor recruitment/reproduction/regeneration 9.9 - Restricted range
<i>HYPERICACEAE</i> 2003				1 garden		
Commentary <i>Hypericum aciferum</i> is an endemic species from Kriti. It behaves as a typical chasmophyte, living on vertical, coastal rocks (4-50 m), and tolerating frequent spraying by sea water. This species is only known from 2 very small populations (35 individuals in the <i>locus classicus</i> , 60 individuals in the second), both in SW Kriti. Natural regeneration is low and poor. These plants can be vegetatively propagated making <i>ex-situ</i> conservation possible without much difficulties. However the collection of ripe seeds in nature may be difficult. No conservation measures exist at present.					References KYPRIOTAKIS, Z. in PHITOS, D. <i>et al.</i> , 1995.	

<i>Isoetes malinverniana</i> Cesati et De Not.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>ISOETACEAE</i>	CR Criteria A2c, B2c	2	- Italy:Lombardia (CR) - Italy:Piemonte (CR)	6-20 gardens	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.3.6 - Groundwater extraction 1.4.1 - Industry 1.4.2 - Human settlement 6.3 - Water pollution 10.4 - Transport
<p align="center">Commentary</p> <p><i>Isoetes malinverniana</i> is a paleoendemic species localized in the Piedmont and in Lombardy.</p> <p>It lives in springs, and irrigation ditches of rice fields between 100 and 350 m.</p> <p>This relictual species only occurs in the areas of Torino, Novara, Vercelli and Pavia.</p> <p>Despite the conservation measures taken, its aquatic habitat is very much threatened by water pollution, country planning, industrial development, building and road works and especially by waterbody sediment extraction.</p> <p><i>Isoetes malinverniana</i> is frequently mentioned in aquarium literature as an item for aquatic plant collectors.</p>					<p align="center">References</p> <p>CONTI, F., MANZI, A. & PEDROTTI, F. 1992.</p> <p>CONTI, F., MANZI, A. & PEDROTTI, F. 1997.</p> <p>PIGNATTI, S. 1982.</p> <p>PRELLI, R. 2001.</p>	

<p><i>Lamyropsis microcephala</i> (Moris) Dittrich et Greuter</p> <p>ASTERACEAE 2003</p>	<p>Category</p> <p>CR Criteria</p>	<p>Cult.</p> <p>0</p>	<p>Distribution</p> <p>- Italy:Sardegna ()</p>	<p>Cultivation</p> <p>0 garden</p>	<p>Protection</p> <p><input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priority species)</p>	<p>Threats</p> <p>1.1.4.2 - Small holder livestock 1.4.3 - Infrastructure development for tourism 7.6 - Landslides 9.1 - Limited dispersal 9.9 - Restricted range</p>
<p>Commentary</p> <p><i>Lamyropsis microcephala</i> is one of the most threatened paleoendemic species of Sardinia. This genus is represented by 5 species with a relictual pattern of distribution : Sardinia, Greece, Turkey, Caucasus, Central Asia.</p> <p>This species occurs in a very restricted area located on a slope of Mt Bruncu Spina in the Gennargenta mountain range between 1500-1700m.</p> <p>Its reproductive capacities are low (20% in germinative rate). It lives on schistose and siliceous slopes and is actively threatened by various activities: tourism pressures, skying, grazing by pigs, etc.</p> <p>It is legally protected in Italy.</p>					<p>References</p> <p>AGOSTINI, R. <i>et al.</i> 1971. CONTI, F., MANZI, A. & PEDROTTI, F. 1992. CONTI, F., MANZI, A. & PEDROTTI, F. 1997. DITTRICH, M. 1971. PIGNATTI, S. 1982.</p>	

<p><i>Laserpitium longiradium</i> Boiss.</p> <p><i>APIACEAE</i> 2003</p>	<p>Category</p> <p>CR</p> <p>Criteria A2cd, B1+2c</p>	<p>Cult.</p> <p>1</p>	<p>Distribution</p> <p>- Spain:Andalucia:Granada ()</p>	<p>Cultivation</p> <p>CORTIJUELA : CORTIJUELA B.G.</p>	<p>Protection</p> <p>☒ Bern Conv.</p> <p>☒ Habitats Dir.</p> <p>Annex : 2 (priority species)</p>	<p>Threats</p> <p>1.1.4 - Goats, cows</p> <p>6.3.3 - Pollution (by mining & urbanization)</p> <p>8.2 - Predation by wild boars (Sus scrofa)</p>
	<p>Commentary</p> <p>A century ago this perennial was abundant on the banks of the rio Monachil between 1450-1550m. This habitat is very much damaged by pollution, tourism, excessive grazing, etc... Now the species is reduced to a unique locality with less than 1000 specimens within an area less than 1 km2, and the plant is still under threat in spite of a Recovery Plan started in 1994.</p> <p>The population known in the rio Genil in 1997 is not <i>Laserpitium longiradium</i> but a newly described taxon : <i>Laserpitium latifolium</i> subsp. <i>nevadensis</i>, also endangered.</p>					<p>References</p> <p>BLANCA, G.B. <i>et al.</i> 2000.</p> <p>MARTINEZ-LIROLA, M.J. & MOLERO MESA, J. 2002.</p> <p>MOLERO MESA, J., MARTINEZ PARRAS, J.M. & CASARES PORCEL, M. <i>in</i> GOMEZ-CAMPO, C. <i>et al.</i> 1987.</p>

<i>Limonium dendroides</i> Svent.	Category CR Criteria C2a, D2	Cult. 2	Distribution - Spain:Canarias:La Gomera ()	Cultivation *BREST : Conservatoire Botanique National (2003) *LAS PALMAS : Jardin Botanique "Viera y Clavijo" (2002) *PORQUEROLLES : Conservatoire Botanique National (2002) ALICANTE : ALICANTE B.G. (1997) KEW : Royal Botanic Gardens (2003) SOLLER : SOLLER B.G. (2001) 6 gardens	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	Threats 1.1.4.2 - Small -holder livestock 2.2 - Predators (rabbits) 9.2 - Poor recruitment/reproduction/regeneration 9.4 - Inbreeding 9.9 - Restricted range
<p><i>PLUMBAGINACEAE</i> 2003</p>						
<p>Commentary</p> <p>This is the only member of section <i>Limoni dendron</i>. It is probably the largest (2.5m.) & the most ligneous member of the family.</p> <p>It is limited to 3 populations in dry matorral between 200 & 600 meters. They clearly represent 2 taxa. The type species in the barranco de Cabrito is represented by 3 specimens. The same plant has recently been discovered in the eastern part (about 20 specimens). This population has been propagated in BG Las Palmas and 2 dozens of healthy plants have been reintroduced under the cliffs. Another population has been propagated in Brest.</p> <p>All the surviving plants grow on inaccessible cliffs but are not chasmophytes. They represent relictual and marginal populations, the remains from larger populations which would have grown on the flats. Recruitment is almost absent in the wild.</p> <p>Vegetative copies have been obtained by <i>in-vitro</i> propagation at the Conservatoire Botanique National de Porquerolles. In Brest, specimens have been obtained by layerings, but propagation by cutting has proved extremely difficult.</p> <p>Elena Camuñas has established that the plant is strongly allogame due to the pollen / stigma incompatibility. So that the 2 types of plants are needed to obtain seeds.</p>				<p>References</p> <p>CAMUNAS, E. 1995. (pers. comm.)</p> <p>MARRERO, A., LESOUËF, J.-Y. & CABRERA, M.A. 1992.</p> <p>SANTOS GUERRA, A. & FERNANDEZ GALVAN, M. in GOMEZ-CAMPO, C. <i>et al.</i> 1996.</p>		

<i>Linum dolomiticum</i> Borb.	Category CR Criteria B1+3e	Cult. 2	Distribution - Hungary ()	Cultivation *VACRATOT : RESEARCH INSTITUTE FOR BOTANY & ECOLOGY (1997)	Protection <input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 9.9 - Restricted range
<p>LINACEAE</p> <p>2003</p>						
<p>Commentary</p> <p><i>Linum dolomiticum</i> is a narrow endemic restricted to a very small area (4 hectares) of serpentine rocks nearby the village of Pilisszentivan, North of Budapest. It is a relictual species related to <i>L. elegans</i> or <i>L. capitatum</i> both from the Balkans.</p> <p>It is one of the rarest endemics of Hungary and, in spite of the protection it is under, it remains threatened because the population is so localized.</p> <p>It is now in cultivation in about 7 Botanic Gardens and is also distributed by several nurseries.</p>					<p>References</p> <p>BALAZS ORI 2003.</p> <p>KERESZTY, Z. & GALANTAI, M. 1994</p> <p>OCKENDON, D.J. & WALTERS, M.S. <i>in</i> TUTIN, T.G. 1968.</p>	

<i>Lythrum thesioides</i> Bieb.	Category CR Criteria A2ac, B1+3ab	Cult. 1	Distribution - France:Languedoc Roussillon:Gard (30) (CR) - France:PACA:Vaucluse (84) (EX) - France:Rhône Alpes:Drôme (26) (EX) - Italy:Emilia-Romagna (EX) - Italy:Veneto (EX) - Hungary (EX) - Russian Federation (DD) - Iran (Islamic Republic of):Fars (EX) - Afghanistan:Herat (EX)	Cultivation PORQUEROLLES : Conservatoire Botanique National (2003)	Protection <input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.1.1 - Agriculture 1.2.2 - Drainage
<i>LYTHRACEAE</i> 2003						
Commentary This small annual occurs in vernal pools and other temporary wet places. In spite of a large distribution from Southern France to Iran, it is almost extinct. Only a restricted number of localities were known. In recent years, it has been rediscovered only in one locality (in France). In the following years, the discoverers were not able to find the plant again. However the seeds of the species are adapted to long period of dormancie in the soil and the locality is therefore not considered here as extinct. In Europe and beyond, the other occurrences are old (France 4 localities, Hungary 1 loc., Italy 2 loc., Russia very few). A taxonomic confusion has arisen between <i>L. thesioides</i> and <i>L. linifolium</i> a widespread Asian species. Within <i>L. thesioides</i> , the plants of Western Europe show differences with the plants of Russia. The vernal pools are among the most threatened habitats of Europe with a specialized flora and fauna. They often occupy limited areas but depend on larger water-catchment.					References CONTI, F., MANZI, A. & PEDROTTI, F. 1992. CONTI, F., MANZI, A. & PEDROTTI, F. 1997. GARRAUD, L. 2003. (pers. comm.) GIRERD, B. 1978. GIRERD, B. 1991. KOEHNE, H. <i>in</i> ENGLER, A. 1903. LENOBLE, F. 1936. MOLINA, J. 2003. (pers. comm) MOLINIER, R. & TALLON, G. 1948. MURAV'EVA, O.A. <i>in</i> SHISHKIN, B.K. & BOBROV, E.G. 1974. PIGNATTI, S. 1982. POLATSCHEK, A. & RECHINGER, K.H. 1968. POUZOLZ DE, P.M.C. 1856-1862. PRUDHOMME, J. 1988. ROUY, G. 1901. TALLON, G. 1967.	

<i>Micropyropsis tuberosa</i> Romero-Zarco & Cabezudo	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>POACEAE</i> 2003	EN Criteria B1+3d	0	- Spain:Andalucia:Huelva (EN) - Morocco (DD)	0 garden	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.1.4 - Livestock 1.6 - Change in native species dynamics (directly impacting habitat) 7.1 - Drought
<p style="text-align: center;">Commentary</p> <p>This recently discovered monotypic genus is endemic to the marshes of Coto Doñana at the mouth of the Guadalquivir River and in Morocco (Wadi Loukhos).</p> <p>Despite its occurrence in the Parque Nacional de Doñana, this hemicryptophytic herb is threatened by both the gradual lowering of water-table level and excessive grazing by domestic livestock. The wild ungulates also contribute to the regression of this species given the present rarity of their natural predators.</p> <p>However, the species is known from 3 localities in 14 sites, so that it is not immediately endangered in Spain.</p> <p>Some populations are in the Biological Reserve of Coto Doñana.</p>					<p style="text-align: center;">References</p> <p>BLANCA, G.B. <i>et al.</i> 2000. CABEZUDO ARTERO, B. <i>in</i> GOMEZ-CAMPO, C. <i>et al.</i> 1987. DEVESA, J.A. & ROMERO ZARCO, C. 1996.</p>	

<i>Monizia edulis</i> Lowe	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>APIACEAE</i> 2003	CR Criteria B2de+3e	1	- Portugal:Madeira:Desertas (CR) - Portugal:Madeira:Madeira (CR) - Portugal:Madeira:Porto Santo (EX) - Portugal:Madeira:Selvagens (EX)	*FUNCHAL : Jardim Botanico da Madeira (2001) +6 gardens	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.1.1.2 - Small-holder farming 1.1.4.1 - Nomadic livestock 1.1.4.2 - Small-holder livestock 2.2 - Invasive alien species (rabbits) 3.1.1 - Harvesting food (subsistence use)
<p align="center">Commentary</p> <p>This endemic genus from Madeira, previously known from 4 groups of islands is reduced to 2 populations surviving precariously among rocks inaccessible to the introduced herbivorous.</p> <p>Therefore, the relationships between the different populations are now difficult to establish. The plants from Desertas look different as well as the plants from the Selvagens : this potentially different taxon is now extinct.</p> <p>In Madeira itself, it is restricted to a very small area nearby Curral das Freiras, above 1500 m. People use the leaves as a condiment. In Deserta Grande, the plant was eagerly sought after (Cenoura da rocha, Carrot-tree). The introduced rabbits and goats led the species to a near extinction. The Parque Natural da Madeira of which the islands are a part has eliminated these animals. The few surviving plants (c. 300 m.) may be expected to recover. The situation in the great eastern cliffs is difficult to ascertain. In Porto-Santo, Isla das Cenouras is a small islet where the plant probably existed. Susana Sa Fontinha sought the plant without success on this rugged islet. In the Selvagens (Selvagem Grande), it was collected by C. Cabral de Noronha before 1869 and it is certainly extinct.</p>					<p align="center">References</p> <p>COSTA NEVES, H. 2001. (pers. comm.)</p> <p>DANTON, P. 1999. (pers. comm.)</p> <p>FONTINHA, S. SA 1998. (pers.comm.)</p> <p>PRESS, J.R. & SHORT, M.J. 1994.</p>	

<i>Myosotis azorica</i> H.C. Watson	Category CR Criteria B2d+3de	Cult. 4	Distribution - Portugal:Açores:Corvo () - Portugal:Açores:Flores ()	Cultivation	Protection ☒ Bern Conv. ☒ Habitats Dir. Annex : 2	Threats 1 - Habitat loss 2.1 - Competitors 6.3.6 - Oil slicks 9.9 - Restricted range
<i>BORAGINACEAE</i> 2003				0 garden		
Commentary <i>Myosotis azorica</i> and <i>M. maritima</i> constitute an endemic group of the Azores. Much confusion has occurred regarding the taxonomy and distribution of these plants. <i>M. azorica</i> is one of the rarest plant of the Azores, living close to the sea in a very few localities of Corvo, and more recently in the South of Flores. A plant named " <i>M. azorica</i> " has been introduced in oceanic countries: California, Chile. The two species, more particularly <i>M. azorica</i> are especially beautiful plants, and a var. <i>alba</i> and a cultivar 'Imperatrice Elizabeth' have been mentioned. It is 'almost extinct' according to H. Schaffer.					References CHAPELLE, A. & VIDAL, G. 1998. (pers. comm.) DIAS, E. 1997. PALHINHA, R. 1966. SCHAFFER, H. 2002. SJOGREN, E. 1973.	

<i>Myosotis rehsteineri</i> Wartm.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<div><div>EN</div><div>Criteria</div><div>B1+2abcd</div></div> <div><div>BORAGINACEAE</div><div>2003</div></div>		3	<div><div>- France:Rhône Alpes:Hte Savoie (74) (EX)</div><div>- Germany:Bayern (EN)</div><div>- Switzerland:Thurgau (EN)</div><div>- Switzerland:Ticino (EX)</div><div>- Switzerland:Vaud (EX)</div><div>- Austria:Voralberg (CR)</div><div>- Liechtenstein (DD)</div><div>- Italy:Lombardia (CR)</div><div>- Italy:Piemonte (CR)</div></div>		<div><div>☑ Bern Conv.</div><div>☑ Habitats Dir.</div><div>Annex : 2</div></div>	<div><div>1.2.2 - Change of regulation of water level</div><div>1.4.2 - Management of banks</div><div>6.3 - Water pollution</div><div>10.1 - Destruction of banks of lakes and rivers</div></div>
<div><div>Commentary</div><div><div>It is the component of a small assemblage of endemics from the shores of the great lakes of Central Europe. This habitat (<i>Deschampsietum rhenanae</i>) is extremely threatened by human activities and it is extinct around most of the lakes:</div><div><div>-<i>Arenaria gothica</i> var. <i>fugax</i> (Switzerland) : extinct,</div><div>- <i>Armeria alpina</i> var. <i>purpurea</i> (Switzerland, Germany): near extinction,</div><div>- <i>Deschampsia littoralis</i> (Switzerland, Germany, Austria, France): endangered,</div><div>-<i>Saxifraga oppositifolia</i> var. <i>amphibia</i> (Switzerland, Germany, Austria): extinct.</div></div><div><div><i>Myosotis rehsteineri</i> grows on bare soils which are poor in nutrients on the inundated shores of lakes in Switzerland, Germany, Austria, Lichtenstein, Italy and France. Now it is extinct in most parts of this area. The last stronghold is the Bodensee where it grows as a few dozen of populations in the 3 bordering countries (Austria, Germany, Switzerland). Most of the populations are small and perhaps opportunistic. In 1994 in Switzerland, out of 2500 individuals, 1500 were in a single locality. Since the 1990s, the conservation measures taken have allowed the situation to improve. It now survives in less than 1 hectare in Switzerland.</div><div><div>Pollution, maintenance of a high permanent water level and tourist activities have altogether greatly contributed to the artificialisation of this habitat.</div><div><div>A Recovery Program is certainly needed to preserve this original habitat.</div></div></div></div></div></div>					<div><div>References</div><div><div>CHARPIN, A. & JORDAN, D. 1990.</div><div>CONTI, F., MANZI, A. & PEDROTTI, F. 1992.</div><div>CONTI, F., MANZI, A. & PEDROTTI, F. 1997.</div><div>HAEUPLER, H. & SCHÖNFELDER, P. 1989.</div><div>KÄSERMANN, C. & MOSER, D. 1999.</div><div>PIGNATTI, S. 1982.</div></div></div>	

<i>Myrica</i> <i>rivas-</i> <i>martinezii</i> Santos	Category CR Criteria D	Cult. 1	Distribution - Spain:Canarias:Hierro (CR) - Spain:Canarias:La Gomera (CR) - Spain:Canarias:La Palma (CR)	Cultivation LA GOMERA : Centro de Visitantes (2003) LE PALAIS : BRIEN Y. (2003)	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priority species)	Threats 1.4.3 - Tourism/recreation 1.4.4 - Forest lanes 9.2 - Poor recruitment/reproduction/regeneration 9.5 - Isolation of the adult trees 10.5 - Fire
<i>MYRICACEAE</i> 2003				2 gardens		
Commentary A recently discovered tree from the laurel forest of the Canary islands. The species is dioecious and the sex-ratio is biased. Out of the 7 specimens in La Gomera, only one female is found. In El Hierro, there is only one population of about 20 trees at 1200m. In La Gomera and La Palma, the trees are very few and widely scattered. It would be important to propagate each individual by cloning so as to create an orchard of these clones and avoid gene-losses.					References SANTOS-GUERRA, A. <i>in</i> GOMEZ-CAMPO, C. <i>et al.</i> 1996. BANARES BAUDET, A., ROMERO MANRIQUE, P. & RODRIGUEZ PINERO, C. 1992.	

<i>Omphalodes kuzinskyana</i> Willk.	Category	Cult.	Distribution	Cultivation	Protection	Threats
	CR Criteria B1+2ade	2	- Portugal:Estremadura ()		<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.4.4 - Road construction 6.3.6 - Oil slicks 10.1 - Recreation/tourism
<i>BORAGINACEAE</i> 2003				7 gardens		
<p align="center">Commentary</p> <p>This species was very localized within a small region covering the municipalities of Sintra, Cascais and Estoril. Now rapidly declining, it survives in less than a few square metres between Cabo da Roca and Praia do Abano. The greatest concentration occurs within 1 m2.</p> <p>At present, the plant is threatened by a road development scheme, despite the occurrence of this last population within the Parque Natural de Sintra-Cascais.</p> <p>This plant is the most threatened among a series of 3 taxa living in the sand dunes and ranging from Western Brittany to the Northern half of Portugal. This habitat is very much threatened by tourism and potential oil slicks. A single hazard could lead this species to extinction.</p> <p>At this level of threat <i>ex-situ</i> conservation is of paramount importance. The plant is erratically cultivated in a few gardens of Europe.</p>					<p align="center">References</p> <p>BINGRE, P. & ROMAO, J. 2000. INSTITUTO DE CONSERCAO DA NATUREZA, 2000. MACHADO, A. 2001.</p>	

<i>Onosma tornensis</i> Jav.	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>BORAGINACEAE</i> 2003	EN Criteria B1+2c	2	- Hungary (CR) - Slovakia (EN)	7 gardens	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1.2 - Wood plantations 1.3.1 - Quarrying 1.4.1 - Industrial development 1.4.3 - Tourism development
<p align="center">Commentary</p> <p><i>Onosma tornensis</i> is the most northern member of the section <i>Stelligera</i>.</p> <p>This endemic species of the karstic Torna mountains only occurs in 4 localities within a 10 x 20 km range (3 in southern Slovakia and 1 in Hungary) . This area is rich in rare and relictual plant populations. This perennial, xerothermic herb grows in dry, open grassland. The Hungarian subpopulation includes 200-250 mature plants, the Slovakian subpopulations are somewhat larger, and reproduction and dispersal seem effective.</p> <p>Threatened by sheep overgrazing in the past, this is no longer a significant problem, but today quarrying activities, industrial development and tourism may have a negative impact.</p> <p><i>Onosma tornensis</i> is protected by law and benefits from the protection of the area of its occurrence in Slovakia (<i>locus classicus</i>) and Hungary.</p>					<p align="center">References</p> <p>HOLUB, J. in CEROVSKY, J. <i>et al.</i> 1999.</p> <p>HOLUB, J. in LUCAS, G. & SYNGE, H. 1978.</p> <p>SCHNITTLER, 2001.</p>	

<i>Phleum sardoum</i> (Hackel) Hackel	Category	Cult.	Distribution	Cultivation	Protection	Threats
	EN Criteria B1+2c	1	- Italy:Sardegna (EN) - France:Corse (DD) - France:PACA:Var (83) (DD)	BREST : Conservatoire Botanique National (2003)	<input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	6.3.6 - Oil slicks 10.1 - Recreation/tourism
<i>POACEAE</i> 2003				1 garden		
<p align="center">Commentary</p> <p>This endemic Sardinian plant is now restricted to only two localities (Santa Teresa di Gallura and Arbus) on coastal sand dunes. These populations seem very threatened by the development of seaside tourism.</p> <p>Also, the observations of <i>Maillea crypsoides</i> Boiss. reported by Coste (1937) on the Corsican littoral and in Toulon could correspond to <i>Phleum sardoum</i>. Recent botanical survey works seem to ignore this.</p>					<p align="center">References</p> <p>CONTI, F., MANZI, A. & PEDROTTI, F. 1992. CONTI, F., MANZI A. & PEDROTTI, F. 1997. COSTE, H. 1899-1906. PIGNATTI, S. 1982.</p>	

<i>Pilularia minuta</i> Durieu ex A. Braun	Category VU Criteria A1ac, B2b+3be	Cult. 0	Distribution	Cultivation	Protection	Threats
<i>MARSILEACEAE</i> 2003			<ul style="list-style-type: none"> - France:Languedoc Roussillon () - France:PACA (EX) - France:Corse (EN) - Spain:Baleares (DD) - Portugal:Algarve (CR) - Italy:Lazio (EX) - Italy:Sardegna (VU) - Italy:Sicilia (EX) - Serbia (DD) - Greece (VU) - Ukraine:Crimea (EX) - Turkey:Aegean:Izmir (DD) - Algeria (EX) - Morocco (DD) 	0 garden	<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.1.1.2 - Small-holder farming 1.4.2 - Human settlement 7.1 - Drought
Commentary This tiny Pteridophyte grows in seasonally inundated areas in the Mediterranean region. In recent years, the species has been discovered in several new countries. They are probably not new localities but newly discovered sites. The destruction of a number of well known sites has been documented. Other sites could probably be discovered if searched at the appropriate time. The populations are widely separated, most of them are small and threatened by habitat degradation and drought. Waterfowl is certainly important for the dispersal of the species.					References BOUDRIE, M. <i>in</i> OLIVIER, L., GALLAND, J.-P. & MAURIN, H. 1995. BYFIELD, A.J. <i>in</i> GÜNER, A. <i>et al.</i> 2000. CRABBE, J.A. <i>in</i> TUTIN, T. G. <i>et al.</i> 1993. GREUTER, W., BURDEL, M. & LONG, G. 1984. MOLINA, J. 2003. (pers. comm.) PAIVA, J. <i>in</i> CASTROVIEJO, S. <i>et al.</i> 1986. PRELLI, R. 2001.	

<i>Pittosporum coriaceum</i> Dryander ex. Aiton	Category CR Criteria D	Cult. 2	Distribution - Portugal:Madeira:Madeira ()	Cultivation *FUNCHAL : Jardim Botânico da Madeira (2002)	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	Threats 1.1.1.2 - Small-holder farming 1.1.2 - Wood plantations 1.3.3 - Wood exploitation 2.1 - Alien competitors 9.2 - Poor recruitment/reproduction/regeneration
PITTOSPORACEAE 2003				8-12 gardens		
<p align="center">Commentary</p> <p><i>Pittosporum coriaceum</i>, an endemic of Madeira is known from the ravines of the laurisylva. About 30 specimens are known to exist and no regeneration has been observed. The distribution range of the species is included in the Parque Natural.</p> <p>The plant is cultivated in a dozen of sites. These plants probably come from very few clones.</p> <p>A <i>Pittosporum</i> sp. considered to be closely related to <i>Pittosporum coriaceum</i> has been discovered in the volcanic tufa of Faial (Azores) (-4000 years). Mention has been made of a native <i>Pittosporum</i> in the Canary islands.</p> <p><i>Pittosporum coriaceum</i> survives precariously in Madeira where the best laurisylva fragments of Macaronesia are to be found. The relations between these populations are very difficult to study due to the probable extinction of 2 populations (taxons?).</p> <p><i>Pittosporum coriaceum</i> is very isolated from the other members of the genus so that it can be considered it as a supraspecific entity.</p>					<p align="center">References</p> <p>FERNANDEZ, F. 1997.</p> <p>PRESS, J.R. & SHORT, M.J. 1994.</p>	

<i>Polygonum robertii</i> Loisel.	Category	Cult.	Distribution	Cultivation	Protection	Threats
	EN Criteria B1+2c,d	0	<ul style="list-style-type: none"> - France:Languedoc Roussillon:Aude (11) () - France:Languedoc Roussillon:Hérault (34) () - France:Languedoc Roussillon:Pyrénées O. (66) () - France:PACA:Alpes Maritimes (06) () - France:PACA:Bouches du Rhône (13) () - France:PACA:Var (83) () - Spain:Cataluña:Gerona (EN) - Spain:Cataluña:Barcelona (EN) - Italy:Liguria (EN) - Italy:Toscana (CR) - Italy:Sardegna (EX) 		<input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.4.3 - Development of touristic infrastructures 6.3.6 - Oil slickes 10.1 - Balneal tourism
POLYGONACEAE 2003				0 garden		
Commentary <p>Sometimes considered as a subspecies, <i>Polygonum robertii</i> is a perennial herb which occurs on sands, dunes and sandy-rocky soil near the sea.</p> <p>In Italy, this species is restricted to a very few coastal localities of Tuscany, Liguria and Sardinia. In Spain, it is strictly restricted to Catalonia. <i>P. robertii</i> seems to be rare in France (+ 8 localities), than in these two previous countries.</p> <p>Its habitat is very threatened by the development of coastal tourism.</p> <p>No conservation measure is currently taken.</p>					References AKEROYD, J.R. in TUTIN T.G. <i>et al.</i> 1993. BONNIER, G. 1911-35. Volume 9. CONTI, F., MANZI, A. & PEDROTTI, F. 1992. CONTI, F., MANZI, A. & PEDROTTI, F. 1997. GOMEZ-CAMPO, C. <i>et al.</i> 1987. GREUTER, W., BURDET, H.M. & LONG, G. 1989. JALAS, J. <i>et al.</i> 1979. KERGUELEN, M. 1993. MOLINA, J. 2003. (pers. comm.) RAFFAELLI, M. 1981. ROUY, G. 1910. VILLAR, L. in CASTROVIEJO <i>et al.</i> 1990.	

Ranunculus kykkoensis Meikle	Category	Cult.	Distribution	Cultivation	Protection	Threats
	CR Criteria B1+2c	0	- Cyprus ()		<input checked="" type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	1.4.4 - Opening and widening of roads 9.9 - Restricted range 10.2 - Collects by botanists 10.6 - Amateur collectors
<i>RANUNCULACEAE</i> 2003				0 garden		
Commentary <i>Ranunculus kykkoensis</i> is an endemic species of Cyprus which is only known from 2 localities around Kykkos Monastery. This perennial plant grows on steep, moist, shaly slopes in pine forests (700-1200 m). The most serious danger for this species is the opening and the widening of the roads that pass through its habitat. Another threat is picking by amateur collectors and botanists. Kykkos forest is designated as a Natura 2000 site.					References MEIKLE, R.D. 1977.	

<i>Rhazya thracica</i> Davidov <
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<i>Stemmacantha cynaroides</i> (Chr. Sm.) Dittrich	Category EN Criteria B1+2cde	Cult. 1	Distribution - Spain:Canarias:Tenerife (0)	Cultivation *TENERIFE : Teide National Park BREST : Conservatoire Botanique National (2003) LAS PALMAS : Jardin Botanico "Viera y Clavijo"	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	Threats 1.4.3 - Off-sites vehicules 2.2 - Alien predators (rabbits & wild sheeps) 3.5 - Collection 10.3 - Military manoeuvres
ASTERACEAE 2003				3 gardens		
<p align="center">Commentary</p> <p>This perennial is endemic to the highlands of Tenerife (Cañadas) occurring between 2000 and 2600 m. Now it is endangered, being reduced to 9 populations, most of them with a small number of specimens.</p> <p>The species is endangered by military manoeuvres, off-site vehicles, plant collecting, <i>etc.</i> But by far the greatest threat, is the introduction of game: <i>Ovis musimon</i>, a wild sheep. As is the case for other oceanic islands where, regrettably, they have been introduced, these animals are a serious threat to the canarian ecosystem. A definitive loss of diversity is likely to happen. The management of the rarest plants is expensive and hazardous. The only solution is the complete elimination of the wild sheep as has been done in Deserta Grande de Madeira for the goats.</p>					<p align="center">References</p> <p>GARCIA-GALLO, A. <i>et al.</i> 1993.</p> <p>RODRIGUEZ PINERO, J.C. <i>in</i> GOMEZ-CAMPO, C. <i>et al.</i> 1996.</p>	

<i>Thesium ebracteatum</i> Hayne	Category	Cult.	Distribution	Cultivation	Protection	Threats
<i>SANTALACEAE</i> 2003	VU Criteria A1bc	0	<ul style="list-style-type: none"> - Austria (CR) - Belarus (DD) - Czech Republic (CR) - Germany (EN) - Denmark (EN) - Estonia (DD) - Italy (DD) - Lithuania (DD) - Latvia (CR) - Poland (DD) - Romania (EN) - Russian Federation (VU) - Ukraine (DD) 	0 garden	<input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2	1.1.1 - Agriculture 1.1.2 - Wood plantations 1.4 - Infrastructure development 12 - Unknown
Commentary <p>This hemiparasite was relatively widespread in Central Europe where it is almost an endemic having a few occurrences East of the European border in Ural.</p> <p>It is a plant of forest glades, forest margins, scrub zones.</p> <p>Its precise status is not fully known, but in well-studied areas, the regression is very marked: in the Czech Republic, it survives in one square out of 20 in the <i>Atlas Europaea</i>. We can therefore expect catastrophic losses if no step is taken to reverse the trend.</p> <p>In Europe, out of 26 species of <i>Thesium</i>, 7 are narrow endemics (occurring in less than 3 squares). If these species suffer such regressions, some of them may soon become extinct.</p> <p><i>Thesium</i> are considered as difficult or impossible to cultivate. <i>Thesium ebracteatum</i> benefits from Recommendation n°40 (1993) of the Permanent Committee of the Bern Convention.</p>					References HAEUPLER, H. & SCHÖNFELDER, P. 1989. JALAS, J. <i>et al.</i> 1999. CEROVSKY, J. <i>in</i> CEROVSKY, J. <i>et al.</i> 1999.	

<i>Veronica dabneyi</i> Hochst.	Category EN Criteria B2b+3d	Cult. 1	Distribution - Portugal:Açores:Corvo (CR) - Portugal:Açores:Faiãl (EX) - Portugal:Açores:Flores (EN) - Portugal:Açores:São Miguel (EX)	Cultivation FAIAL : Jardim botânico do Faial (2003)	Protection <input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1 - Habitat loss 2.3 - Hybridization
<i>SCROPHULARIACEAE</i> 2003				1 garden		
<p align="center">Commentary</p> <p>This shrubby <i>Veronica</i>, an insular relative of <i>V. officinalis</i> was known from 4 islands. It had not been seen since 1938. In 1999, J.C. Pereira rediscovered a few plants on Flores and Hanna Schafer found a further 16 populations with between 5-80 specimens each. The plant has also been rediscovered on Corvo in 2001. Conversely it is possibly extinct on Sao Miguel and Faial, .</p> <p>The comparison of the distribution areas of <i>Veronica dabneyi</i> and the introduced <i>Veronica officinalis</i> shows that <i>V. dabneyi</i> has become extinct in the islands where <i>Veronica officinalis</i> has established itself (competition or hybridization effects). <i>V. officinalis</i> is widespread and covers large areas. Only the western group of islands is still free from this plant where <i>V. dabneyi</i> survives.</p> <p>The species was in cultivation in the first part of the twentieth century. However, these plants which probably originated from Faial are also extinct in cultivation. It only survives as a sterile hybrid with <i>V. officinalis</i>.</p>					<p align="center">References</p> <p>PEREIRA, J.C, SCHAFER, H. & PAIVA, J. 2000.</p> <p>PEREIRA, J.C., SCHAFER, H. & PAIVA, J. 2002.</p> <p>SJOGREN, E. 1973.</p>	

<i>Veronica oetaea</i> L.-A. Gustavsson <i>SCROPHULARIACEAE</i> 2003	Category CR Criteria B1+2c	Cult. 0	Distribution - Greece: Sterea Ellias ()	Cultivation 0 garden	Protection <input checked="" type="checkbox"/> Bern Conv. <input checked="" type="checkbox"/> Habitats Dir. Annex : 2 (priorityary species)	Threats 1.3.1 - Potential Threat of mining 1.4.4 - Building of a road 9.9 - Limited area of occupation
Commentary <p><i>Veronica oetaea</i> is a species which has been recently described in 1978. It belongs to the subsection <i>Acinifolia</i>, so that this species would have a closer affinity with the species with an Asiatic distribution.</p> <p>This plant endemic to Mount Iti is only known from 2 small populations (1850-1950m) occuring in two melt-water pools. Anthesis occurs while the pools are still filled with water.</p> <p>These localities occur in the Iti National Park. Nevertheless, bauxite extraction from the slopes near one of the pool could be a potential threat for the small population, especially since roads have been built only a few meters away from them.</p>					References PHITOS, D. in PHITOS, D. <i>et al.</i> 1995.	

<i>Zelkova sicula</i> Di Pasquale, Garfi & Quezel	Category CR Criteria B1+2ce, C2b	Cult. 1	Distribution - Italy:Sicilia ()	Cultivation BREST : Conservatoire Botanique National (2003)	Protection <input type="checkbox"/> Bern Conv. <input type="checkbox"/> Habitats Dir.	Threats 1.1.4.2 - Small- holder livestock 7.1 - Drought 9.2 - Poor reproduction
ULMACEAE 2003				1 garden		
<p align="center">Commentary</p> <p>This newly discovered tree is known from a unique population spreading along 200m in a ravine at 500m.</p> <p>The population is possibly largely clonal. A genetic study is necessary to explore the variability.</p> <p>It lives in a vestigial community of <i>Quercus suber</i> and the habitat is damaged by human activities (wood logging, domestic animals). The area has been fenced.</p> <p>This discovery should be placed in the context of other existing relictual <i>Zelkova</i> species in the Mediterranean basin:</p> <ul style="list-style-type: none"> - <i>Z. cretica</i>, threatened in Crete, - <i>Z. sp.</i> discovered by Kotschy in Cyprus in 1882 and probably extinct, - <i>Z. sp.</i> discovered as fossil in the Latium and in the region of Rome (31000BP). <p><i>Zelkova sicula</i> has been put in cultivation. If this species is to survive, a Recovery Plan including <i>in-situ</i> and <i>ex-situ</i> measures is necessary. In the event of global climatic change, the species is certainly doomed to extinction.</p>					<p align="center">References</p> <p>CONTI, F., MANZI, A. & PEDROTTI, F. 1997.</p> <p>DI PASQUALE, G., GARFI, G. & QUEZEL, P. 1992.</p> <p>FOLLIERI, M., GRI, D. & SADARI, L. 1988.</p> <p>GARFI, G. 1994. (pers. comm.)</p> <p>QUEZEL, P., DI PASQUALE, G. & GARFI, G. 1993.</p>	

REFERENCES

- ADAMEC, L. & PASEK, K. 2003. *Aldrovanda vesiculosa* project. <http://bestcarnivorousplants.com/>
- AGOSTINI, R. *et al.* 1971. *Censimento dei biotopi di rilevante interesse vegetazionale meritevoli di conservazione in Italia*. Istituto di Botanica dell'Università, Camerino.
- AKEROYD, J.R. 2001. Rare firs and fan-palms lead conservation in Sicily. *Plant Talk*, **24** : 26-30.
- ANONYMOUS, 19??. *Abecedny zoznam druhov*. <http://sozo.fns.uniba.sk>
- AYMONIN, G.G. 1974. *Etudes sur les regressions d'espèces végétales en France*. Rapport n°1. Ministère de la Qualité de la Vie.
- BALAZS ORI 2003. <http://www.thealpinegarden.com/lindol.htm>
- BANARES BAUDET, A., ROMERO MANRIQUE, P. & RODRIGUEZ PINERO, C. 1992. Adiciones corológicas de algunas endemismos canarios en peligro de extinción. *Botanica Macaronésica*, **19-20** : 141-150.
- BENSETTITI, F. *et al.* 2002. Espèces végétales. « *Cahiers d'habitats* » *Natura 2000*, Tome **6** : 141-144.
- BINGRE, P. & ROMAO, J. 2000. Uma visita botânica ao Cabo da Roca. <http://www.naturlink.pt/canais/Artigo.asp?iArtigo:2554>
- BLANCA, G. B. *et al.* 2000. *Libro Rojo de la Flora Silvestre Amenazada de Andalucía*. Tomo **I** : Especies en Peligro de Extinción. Consejería de Medio Ambiente, Junta Andalucía.
- BONNIER, G. 1911-1935. *Flore complète illustrée en couleurs de France, Suisse et Belgique*. 13 volumes. Librairie Générale de l'Enseignement, E. Orlhac ed., Paris.
- BRULLO, S. & PAVONE, P. 1987. *Cremnophyton lanfrancoi* : a new genus and species of *Chenopodiaceae* from Malta. *Candollea*, **42**(2) : 621-625.
- BUORD, S., COUDERC, M. & COUDERC, H. & REDURON, J.-P. 1999. Incidences conservatoires et systématiques d'une étude morphologique, biologique et cytogénétique de l'*Eryngium viviparum* Gay, taxon au bord de l'extinction. *Bull. de la Soc. Bot. Du Centre-Ouest*, n.s., **19** : 197-208.
- CASASECA, B. 1971. 'Plantas de Zamora' (segunda nota). *Trabajos del Departamento de Botanica y Fisiologica Vegetal*, Universidad de Madrid, **3** : 3-8.
- CASTROVIEJO, S. *et al.* 1986-. *Flora Iberica*. 14 volumes. C.S.I.C., Madrid.
- CEROVSKY, J. *et al.* 1999. *Cervena Kniha ohrozenych a vzacnych druhu rostlin a živo cichu CR a SR* (Red Data Book of Plants of Czech Republic & Slovakia). Priroda a. s., Bratislava.
- CHARPIN, A. & JORDAN, D. 1990. Catalogue floristique de la Haute-Savoie. *Mémoires de la Société botanique de Genève*, **2**(1) : 150.
- CONLIN, D. 2001. The Proact Cyprus Project. <http://www.proaction.tripod.com/projectcyprus/id3.html>
- CONTI, F., MANZI, A. & PEDROTTI, F. 1992. *Libro Rosso delle Plante d'Italia*. WWF Italia, Roma.
- CONTI, F., MANZI, A. & PEDROTTI, F. 1997. *Liste Rosse Regionali delle Plante d'Italia*. Università di Camerino.
- COSTE, H. 1899-1906. *Flore illustrée de France*. 3 volumes. P. Klincksieck, Paris.
- COUTEAUX, M. & PONS, A. 1987. La signification écologique du pollen d'*Artemisia* dans les sédiments quaternaires. *Bull. Soc. Bot. Fr.*, **134**, *Lettres Bot.*, **3** : 283-292.
- DAVIS, P.H. 1965. *Notes R.B.G. Edinb.*, **26** : 172.
- DAVIS, P.H. 1978. *Flora of Turkey*, Volume **6**. Edinburgh University Press.
- DEPARTEMENT OF PLANT HEALTH, Ministry for Rural Affairs & the Environment, Government of Malta 2003. <http://www.planthealth.gov.mt/courses.htm>
- DEVESA, J.A. & ROMERO ZARCO, C. 1996. Floristic biodiversity of N. Morocco, 33, *Micropyropsis tuberosa*. *Lagascalia*, **18**(2).
- DIAS, E. 199?. *Flora natural dos Açores, Status of rare plants*.

- DIMITROV, D. *et al.* 2001. *Conspectus of the Bulgarian vascular flora*. Bulgarian-Swiss Biodiversity Conservation Programme, Sofia.
- DI PASQUALE, G., GARFI, G. & QUEZEL, P. 1992. Sur la présence d'un *Zelkova* nouveau en Sicile sud-orientale (*Ulmaceae*). *Biocosme Méditerranéen*, Nice, **8**(4)-**9**(1) : 401-409.
- DITTRICH, M. 1971. *Lamyropsis* (Charadze) Dittrich- Zur Frucht- und Blütenmorphologie einer kritischen Gruppe aus der *Ptilostemon*- Verwandtschaft. *Candollea*, **26**(1) : 97-102.
- ENGLER, A. 1903. *Das Pflanzenreich*, **17**.
- ENVIRONMENT PROTECTION DEPARTMENT 1999.
<http://www.geocities.com/RainForest/Andes/2113/bjanka.html>
- FARJON, A. & PAGE, C.N. 1999. *Status Survey and Conservation Action Plan .Conifers*. I.U.C.N., Cambridge.
- FERNANDEZ, F. 1997. Restoration Programme for Madeira's Endangered Plants. *Plant Talk*, **10** : 97.
- FIRSOV, G. 1997. *Allium regelianum* A. Beck, a rare Russian endemic. *Botanic Garden Conservation News*, **2** (8) : 41-42.
- FOLLIERI, M., GRI, D. & SADARI, L . 1988. *Pollen & spores*, **3** (3-4) : 229-256.
- GARCIA-GALLO, A., ACEBES, J.R., VERA, M.A. MARRERO, M.V. & PEREZ DE PAZ, P.L.. 1993. Avance del Atlas Cartografico de los Endemismos Canarios. *Itinera Geobotanica*, **7** : 431.
- GIRERD, B. 1978. *Inventaire écologique et biogéographique de la flore du département du Vaucluse*. Soc. Et. Sci. Nat. Vaucluse, Avignon.
- GIRERD, B. 1991. *La flore du département du Vaucluse, nouvel inventaire*. Conseil Général du Vaucluse, Soc. Bot. Vaucluse, Avignon.
- GOMEZ-CAMPO, C. *et al.* 1987. *Libro Rojo deEspecies Vegetales Amenazadas de España Peninsular e Islas Baleares*. Icona, Madrid.
- GOMEZ-CAMPO, C. *et al.* 1996. *Libro Rojo de Especies Vegetales Amenazadas de las Islas Canarias*. Gobierno de Canarias.
- GOVAERTS, R. 1993. *Boletim Sociedade Broteriana* : 292-294.
- GREUTER, W., BURDET, H.M. & LONG, G. 1984-89. *Med-Checklist*, Volumes 1, 3, 4. Conservatoire et Jardin botaniques, Ville de Genève.
- GUGLIELMO, A., MINISSALE, P. & PAVONE, P. 1999. *Orto Botanico dell'Università di Catania*. <http://www.dipbot.unict.it/orto/orto.html>
- GUINOCHET, M. & VILMORIN de, R. 1973-84. *Flore de France*. 5 volumes. Editions du Centre National de la Recherche Scientifique, Paris.
- GÜNER, A. *et al.* 2000. *Flora of Turkey*. Suppl. 2.
- HAEUPLER, H. & SCHÖNFELDER, P. 1989. *Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland*. Ulmer & Co, Stuttgart.
- HEDBERG, I. 1979. Systematic Botany, plant utilization and biosphere conservation. 76-82.
- INSTITO DE CONSERVACAO DA NATUREZA 2000. <http://www.darwin.icn.pt>
- I.U.C.N. 1998. <http://www.fns.uniba.sk/zp/iucn/eng/projekty/dec/all.htm>
- JALAS, J. *et al.* 1972-99. *Atlas Florae Europaeae*. 12 volumes. The Committee for Mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki.
- KÄSERMAN, C. & MOSER, D. 1999. *Fiches pratiques pour la conservation – Plantes à fleurs et fougères*. Office fédéral de l'environnement, des forêts et du paysage, Berne.
- KERESZTY, Z. & GALANTAI, M. 1994. Hazai Védett Növényfajok *ex-situ* konzervacioja. *Bot. Közlem*, **81** (2) : 141-155
- KERGUELEN, M. 1993. *Index synonymique de la flore de France*. Museum National d'Histoire Naturelle, Paris.

- KOMAROV, V. 1968. *Flora of the U.S.S.R.* Vol. **IV**. Academy of Sciences of the U.S.S.R.. Israël Program for Scientific Translations, Jerusalem.
- LANFRANCO, E. 1995. The Maltese flora and conservation. *Ecologia Mediterranea* **XXI** (1/2) : 165-168.
- LUCAS, G. & SYNGE, H. 1978. *The I.U.C.N. Red Data Book*. I.U.C.N., Morges.
- LENOBLE, F. 1936. Catalogue raisonné des plantes vasculaires de la Drôme. *Bull. Soc. Sci. Dauphiné*, **55** : 1-506.
- MACHADO, A. 2001. *Entulho Soterrou Parte do Lapiaz do Abano Publico*, 23 Junho 2001. <http://www.geopor.pt/progeo/jornais/guincho.htm>
- MARRERO, A., LESOUËF, J.-Y. & CABRERA, M.A. 1992. Estudios previos para un programa de rescate genetico de *Limonium dendroides* Svent. *Botanica Macaronesica*, **19-20** : 3-14.
- MARTINEZ-LIROLA, M.J. & MOLERO MESA, J. 2002. La identidad de los taxones endemicos de *Laserpitium* L. (*Umbelliferae*) en Sierra Nevada (Sur de España). *Anales Jardin Botanico de Madrid*, **59** (2) : 339-342.
- MEIKLE, R.D. 1977. *Flora of Cyprus*. Bentham-Moxon Trust, Royal Botanic Gardens, Kew.
- MOLINIER, R. & TALLON, G. 1948. L'Isoëtien en Costiere nimoise. *Bull. Soc. Bot. France*, **95** : 343-353.
- NECAJEV, A.P. & NECAJEV, A.A. 1972. *Coleanthus subtilis* (Tratt.) Seidl. in the Amus Basin. *Folia Geobotanica et Phytotaxonomica*, **7** : 340-347.
- NYARADY, E.I. 1963. Bereicherung der Wissenschaft mit einer für die Flora del RVD endemischen neue Gattung und drei neuen endemischen Arten. *Revue Biol. Boc.*, **8**(3) : 247-670.
- OLIVIER, L., GALLAND, J.-P. & MAURIN, H. 1995. *Livre Rouge de la Flore Menacée de France. Tome I : espèces prioritaires*. Service du Patrimoine Naturel, Muséum National d'Histoire Naturelle / Ministère de l'environnement, Direction de la Nature et des Paysages.
- PALHINHA, R. 1966. *Catalogo das plantas vasculares dos Açores*.
- PEREIRA, J.C., SCHAFER, H. & PAIVA, J. 2000. *Biological Conservation Newsletter*
- PEREIRA, J.C., SCHAFER, H. & PAIVA, J. 2002. *Botanic Journal of Linnean Society*, **139** (3) : 311-315.
- PHITOS, D., STRID, A., SNOGERUP, S. & GREUTER, W. 1995. *The Red Data Book of rare and threatened plants of Greece*. WWF, Athens.
- PIGNATTI, S. 1982. *Flora d'Italia*. 3 volumes. Edagricola, Bologna.
- POLATSCHEK, A. & RECHINGER, K.H. 1968. *Flora iranica* **51**/28.2.
- POUZOLZ DE, P.M.C. 1856-1862. *Flore du département du Gard ou description des plantes qui croissent naturellement dans ce département*. Teissier, Nîmes.
- PRELLI, R. 2001. *Les fougères et plantes alliées de France et d'Europe occidentale*. Belin, Paris.
- PRESS, J.R. & SHORT, M.J. 1994. *Flora of Madeira*. London H.M.S.O.
- PRUDHOMME, J. 1988. Pélerinages amers après 40 ans d'herborisations. *Monde des plantes*, **431** : 32-36.
- QUEZEL, P., DI PASQUALE, G. & GARFI, G. 1993. Découverte d'un *Zelkova* en Sicile sud-orientale. Incidences biogographiques et historiques. *C.R. Acad. Sci. Paris*, **316** (3) : 21-26.
- RAFFAELLI, M. 1981. Contributi alla conoscenza del genere *Polygonum* L. - 3. *P. robertii* Loisel. *Webbia*, **35** : 63-77.
- ROMERO-ZARCO, C. 1984. *Avenula* en la Peninsula Iberica. *Lagascalia*, **13** (1) : 136.
- ROUY, G. 1893-1927. *Flore de France*. 14 volumes + *conspectus*. Imp. Deslis Frères et Cie, Tours.
- ROZHEVITS, R.Y. & SHISHKIN, B.K. 1963. *Flora of the U.S.S.R.* Vol. **II** published for the National Science Foundation, Washington by the Israël program for Scientific Translations, Jerusalem.
- SCHAFER, H. 2002. *Flora of Azores: a field guide*.
- SCHEMBRI, P.J. & SULTANA, J. 1989. *Red Data Book for the Maltese Islands*. Department of Information, Malta.
- SCHNITTLER 2001. *Detailed information for the I.U.C.N. criteria*. http://141.53.8.94/asbot/lehre/vorlesungen/botartsch/V5/IUCN_criteria.doc

- SHISKIN, B. & BOBROV, E.G. 1974. Flora of the U.S.S.R., Vol. **XV**.
- SIMON, T. 1992. *A magyarországi edemyes flora határozója*. Tankönyvkiado, Budapest.
- SJOGREN, E. 1973. Recent changes in the vascular flora & vegetation of the Açores islands. *Memorias da Sociedade Broteriana*, **22** : 1-453.
- SJOGREN, E. 1984. *Açores Flores*.
- SKOBERNE, P. 1997. Croatian coin honors rare endemic plant. *Plant Talk*, **8** : 17.
- SLOVAK AGENCY FOR ENVIRONMENT, 2002. *Components of the environment and their protection*. <http://www.sazp.sk/slovak/periodika>
- SYNGE, H. & TOWNSEND, H. 1979. *Survival or extinction*. The Bentham-Moxon Trust, Royal Botanic Gardens, Kew.
- TAKTHAJAN, A. 1981. *Rare and vanishing plants of the U.S.S.R. to be protected*.
- TALLON, G. 1967. *Trifolium angulatum* W. & K. et *Ranunculus lateriflorus* D.C. dans l'*Isoetum* de la Costière Nimoise. *Bull. Soc. Bot. France*, **114** : 329-331.
- THE GAIA FOUNDATION 2000. http://www.projectgaia.org/ely_3.html
- TUTIN, T.G. *et al.* 1964-1993. *Flora Europaea*. 5 volumes. Cambridge University Press.
- VALDES, B. 1983. *Gyrocarum* Valdés *gen. novum* (Boraginaceae, Erytrichieae). *Willdenowia*, **13** : 107-109.
- VV.AA. 2000. Lista Roja de la Flora Vascular Española. *Conservación Vegetal* **6** : 11-38.
- ZAHARIADI, C. 1973. Quelques taxons rares ou nouvellement découverts de la flore de la Grèce. *Ann. Mus. Goulandris*, **1** : 165-183.

ANNEX 1 – DISTRIBUTION BY COUNTRY

Austria	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Myosotis rehsteineri</i> Wartm.
	<i>Thesium ebracteatum</i> Hayne
Belarus	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Thesium ebracteatum</i> Hayne
Bulgaria	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Astragalus physocalyx</i> Fischer
Croatia	<i>Degenia velebitica</i> (Degen) Hayek
Cyprus	<i>Ranunculus kykkoensis</i> Meikle
Czech Republic	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
Denmark	<i>Thesium ebracteatum</i> Hayne
Estonia	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Thesium ebracteatum</i> Hayne
France	<i>Aldrovanda vesiculosa</i> L.
	<i>Artemisia molinieri</i> Quézel, Barbero, R. Loisel
	<i>Cardaminopsis pedemontana</i> (Boiss.) Burdet
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Eryngium viviparum</i> Gay
	<i>Lythrum thesioides</i> Bieb.
	<i>Myosotis rehsteineri</i> Wartm.
	<i>Phleum sardoum</i> (Hackel) Hackel
	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Polygonum robertii</i> Loisel.
Germany	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Myosotis rehsteineri</i> Wartm.
	<i>Thesium ebracteatum</i> Hayne
Greece	<i>Anthemis glaberrima</i> (Rech. fil.) W. Greuter
	<i>Biarum fraasianum</i> (Schott) N. E. Br.

	<i>Consolida samia</i> P. H. Davis
	<i>Horstrissea dolinicola</i> Greuter, Gerstberger & Egli
	<i>Hypericum aciferum</i> (W. Greuter) N.K.B. Robson
	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Rhazya thracica</i> Davidov
	<i>Veronica oetaea</i> L.-A. Gustavsson
Hungary	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Colchicum arenarium</i> Waldst. & Kit.
	<i>Ferula sadlerana</i> Ledeb.
	<i>Linum dolomiticum</i> Borb.
	<i>Lythrum thesioides</i> Bieb.
	<i>Onosma tornensis</i> Jav.
Italy	<i>Abies nebrodensis</i> (Lojac.) Mattei
	<i>Aldrovanda vesiculosa</i> L.
	<i>Cardaminopsis pedemontana</i> (Boiss.) Burdet
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Erucastrum palustre</i> (Pirona) Vis.
	<i>Isoetes malinverniana</i> Cesati et De Not.
	<i>Lamyropsis microcephala</i> (Moris) Dittrich et Greuter
	<i>Lythrum thesioides</i> Bieb.
	<i>Myosotis rehsteineri</i> Wartm.
	<i>Phleum sardoum</i> (Hackel) Hackel
	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Polygonum robertii</i> Loisel.
	<i>Thesium ebracteatum</i> Hayne
	<i>Zelkova sicula</i> Di Pasquale, Garfi & Quezel
Latvia	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Thesium ebracteatum</i> Hayne
Liechtenstein	<i>Myosotis rehsteineri</i> Wartm.
Lithuania	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Thesium ebracteatum</i> Hayne
Macedonia	<i>Astragalus physocalyx</i> Fischer
Malta	<i>Cremnophyton lanfrancoi</i> Brullo & Pavone
Norway	<i>Coleanthus subtilis</i> (Tratt.) Seidl
Poland	<i>Aldrovanda vesiculosa</i> L.

Portugal	<i>Thesium ebracteatum</i> Hayne
	<i>Eryngium viviparum</i> Gay
	<i>Helictotrichon hackelii</i> (Henriq.) Herard
	<i>Omphalodes kuzinskyana</i> Willk.
Portugal:Açores	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Euphrasia grandiflora</i> Hochst.
	<i>Myosotis azorica</i> H.C. Watson
Portugal:Madeira	<i>Veronica dabneyi</i> Hochst.
	<i>Monizia edulis</i> Lowe
Romania	<i>Pittosporum coriaceum</i> Dryander ex. Aiton
	<i>Aldrovanda vesiculosa</i> L.
	<i>Andryala levitomentosa</i> (E. I. Nyarady) P.D. Sell
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Colchicum arenarium</i> Waldst. & Kit.
	<i>Ferula sadlerana</i> Ledeb.
Russian Federation	<i>Thesium ebracteatum</i> Hayne
	<i>Aldrovanda vesiculosa</i> L.
	<i>Allium regelianum</i> A. Becker
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Cephalaria litvinovii</i> Bobrov
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Lythrum thesioides</i> Bieb.
	<i>Thesium ebracteatum</i> Hayne
Serbia	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Colchicum arenarium</i> Waldst. & Kit.
	<i>Pilularia minuta</i> Durieu ex A. Braun
Slovakia	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Colchicum arenarium</i> Waldst. & Kit.
	<i>Coleanthus subtilis</i> (Tratt.) Seidl
	<i>Ferula sadlerana</i> Ledeb.
Spain	<i>Onosma tornensis</i> Jav.
	<i>Borderea chouardii</i> (Gaussen) Heslot
	<i>Eryngium viviparum</i> Gay
	<i>Gyrocarum oppositifolium</i> Valdés
	<i>Laserpitium longiradium</i> Boiss.

	<i>Micropyropsis tuberosa</i> Romero-Zarco & Cabezudo
	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Polygonum robertii</i> Loisel.
Spain:Canarias	<i>Echium gentianoides</i> Webb ex Coincy
	<i>Limonium dendroides</i> Svent.
	<i>Myrica rivas-martinezii</i> Santos
	<i>Stemmacantha cynaroides</i> (Chr. Sm.) Dittrich
Switzerland	<i>Aldrovanda vesiculosa</i> L.
	<i>Myosotis rehsteineri</i> Wartm.
Turkey	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Rhazya thracica</i> Davidov
Ukraine	<i>Aldrovanda vesiculosa</i> L.
	<i>Angelica palustris</i> (Besser) Hoffm.
	<i>Cephalaria litvinovii</i> Bobrov
	<i>Pilularia minuta</i> Durieu ex A. Braun
	<i>Thesium ebracteatum</i> Hayne

ANNEX 2 – EVALUATION OF THE CULTIVATION BY SPECIES

	Number of garden(s)	Garden(s) participating to a Recovery Plan
<i>Abies nebrodensis</i> (Lojac.) Mattei	20-25	2
<i>Aldrovanda vesiculosa</i> L.	+20	0
<i>Allium regelianum</i> A. Becker	1	1
<i>Andryala levitomentosa</i> (E. I. Nyarady) P.D. Sell	0	0
<i>Angelica palustris</i> (Besser) Hoffm.	6-20	0
<i>Anthemis glaberrima</i> (Rech. fil.) W. Greuter	0	0
<i>Artemisia molinieri</i> Quézel, Barbero, R. Loisel	4	1
<i>Astragalus physocalyx</i> Fischer	1	1
<i>Biarum fraasianum</i> (Schott) N. E. Br.	2	0
<i>Borderea chouardii</i> (Gaussen) Heslot	0	0
<i>Cardaminopsis pedemontana</i> (Boiss.) Burdet	0	0
<i>Cephalaria litvinovii</i> Bobrov	6	0
<i>Colchicum arenarium</i> Waldst. & Kit.	6	1
<i>Coleanthus subtilis</i> (Tratt.) Seidl	2	0
<i>Consolida samia</i> P. H. Davis	0	0
<i>Cremnophyton lanfrancoi</i> Brullo & Pavone	2	1
<i>Degenia velebitica</i> (Degen) Hayek	15-20	1
<i>Echium gentianoides</i> Webb ex Coincy	10-20	0
<i>Erucastrum palustre</i> (Pirone) Vis.	1	0
<i>Eryngium viviparum</i> Gay	3	1
<i>Euphrasia grandiflora</i> Hochst.	0	0
<i>Ferula sadlerana</i> Ledeb.	5	1
<i>Gyrocarum oppositifolium</i> Valdés	0	0
<i>Helictotrichon hackelii</i> (Henriq.) Herard	0	0
<i>Horstrissea dolinicola</i> Greuter, Gerstberger & Egli	0	0
<i>Hypericum aciferum</i> (W. Greuter) N.K.B. Robson	1	0
<i>Isoetes malinverniana</i> Cesati et De Not.	6-20	0
<i>Lamyropsis microcephala</i> (Moris) Dittrich et Greuter	0	0
<i>Laserpitium longiradium</i> Boiss.	1	0

<i>Limonium dendroides</i> Svent.	6	3
<i>Linum dolomiticum</i> Borb.	10-15	1
<i>Lythrum thesioides</i> Bieb.	1	0
<i>Micropyropsis tuberosa</i> Romero-Zarco & Cabezudo	0	0
<i>Monizia edulis</i> Lowe	+6	1
<i>Myosotis azorica</i> H.C. Watson	0	0
<i>Myosotis rehsteineri</i> Wartm.	+20	0
<i>Myrica rivas-martinezii</i> Santos	2	0
<i>Omphalodes kuzinskyana</i> Willk.	7	0
<i>Onosma tornensis</i> Jav.	7	0
<i>Phleum sardoum</i> (Hackel) Hackel	1	0
<i>Pilularia minuta</i> Durieu ex A. Braun	0	0
<i>Pittosporum coriaceum</i> Dryander ex. Aiton	8-12	1
<i>Polygonum robertii</i> Loisel.	0	0
<i>Ranunculus kykkoensis</i> Meikle	0	0
<i>Rhazya thracica</i> Davidov	+100	0
<i>Stemmacantha cynaroides</i> (Chr. Sm.) Dittrich	3	1
<i>Thesium ebracteatum</i> Hayne	0	0
<i>Veronica dabneyi</i> Hochst.	1	0
<i>Veronica oetaea</i> L.-A. Gustavsson	0	0
<i>Zelkova sicula</i> Di Pasquale, Garfi & Quezel	1	0

ANNEX 3

LEGAL PROTECTION IN THE TWO EUROPEAN CONVENTIONS BY SPECIES

	Bern Convention	Habitats Directive
<i>Abies nebrodensis</i> (Lojac.) Mattei	YES	YES
<i>Aldrovanda vesiculosa</i> L.	YES	YES
<i>Allium regelianum</i> A. Becker	YES	NO
<i>Andryala levitomentosa</i> (E. I. Nyarady) P.D. Sell	YES	NO
<i>Angelica palustris</i> (Besser) Hoffm.	YES	YES
<i>Anthemis glaberrima</i> (Rech. fil.) W. Greuter	YES	YES
<i>Artemisia molinieri</i> Quézel, Barbero, R. Loisel	NO	NO
<i>Astragalus physocalyx</i> Fischer	YES	NO
<i>Biarum fraasianum</i> (Schott) N. E. Br.	NO	NO
<i>Borderea chouardii</i> (Gaussen) Heslot	YES	YES
<i>Cardaminopsis pedemontana</i> (Boiss.) Burdet	NO	NO
<i>Cephalaria litvinovii</i> Bobrov	NO	NO
<i>Colchicum arenarium</i> Waldst. & Kit.	YES	NO
<i>Coleanthus subtilis</i> (Tratt.) Seidl	YES	YES
<i>Consolida samia</i> P. H. Davis	YES	YES
<i>Cremnophyton lanfrancoi</i> Brullo & Pavone	YES	NO
<i>Degenia velebitica</i> (Degen) Hayek	NO	NO
<i>Echium gentianoides</i> Webb ex Coincy	YES	YES
<i>Erucastrum palustre</i> (Pirona) Vis.	YES	YES
<i>Eryngium viviparum</i> Gay	YES	YES
<i>Euphrasia grandiflora</i> Hochst.	YES	YES
<i>Ferula sadlerana</i> Ledeb.	YES	NO
<i>Gyrocarum oppositifolium</i> Valdés	NO	NO
<i>Helictotrichon hackelii</i> (Henriq.) Herard	YES	YES
<i>Horstrissea dolincola</i> Greuter, Gerstberger & Egli	NO	NO
<i>Hypericum aciferum</i> (W. Greuter) N.K.B. Robson	YES	YES
<i>Isoetes malinverniana</i> Cesati et De Not.	YES	YES
<i>Lamyropsis microcephala</i> (Moris) Dittrich et Greuter	YES	YES
<i>Laserpitium longiradium</i> Boiss.	YES	YES
<i>Limonium dendroides</i> Svent.	YES	YES
<i>Linum dolomiticum</i> Borb.	YES	NO
<i>Lythrum thesioides</i> Bieb.	YES	NO

<i>Micropyropsis tuberosa</i> Romero-Zarco & Cabezudo	YES	YES
<i>Monizia edulis</i> Lowe	YES	YES
<i>Myosotis azorica</i> H.C. Watson	YES	YES
<i>Myosotis rehsteineri</i> Wartm.	YES	YES
<i>Myrica rivas-martinezii</i> Santos	YES	YES
<i>Omphalodes kuzinskyana</i> Willk.	YES	YES
<i>Onosma tornensis</i> Jav.	YES	NO
<i>Phleum sardoum</i> (Hackel) Hackel	NO	NO
<i>Pilularia minuta</i> Durieu ex A. Braun	YES	NO
<i>Pittosporum coriaceum</i> Dryander ex. Aiton	YES	YES
<i>Polygonum robertii</i> Loisel.	NO	NO
<i>Ranunculus kykkoensis</i> Meikle	YES	NO
<i>Rhazya thracica</i> Davidov	YES	NO
<i>Stemmacantha cynaroides</i> (Chr. Sm.) Dittrich	YES	YES
<i>Thesium ebracteatum</i> Hayne	YES	YES
<i>Veronica dabneyi</i> Hochst.	NO	NO
<i>Veronica oetaea</i> L.-A. Gustavsson	YES	YES
<i>Zelkova sicula</i> Di Pasquale, Garfi & Quezel	NO	NO