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CONSERVATION OF THREATENED PLANTS
IN THE MEDITERRANEAN ISLANDS

SUMMARY

The “TOP 50” campaign of the IUCN/SSC Mediterranean Islands Plant Specialist Group presents a selection of 50 of the most threatened plant species growing on Mediterranean islands. It aims to draw the attention of both the public and politicians to the vulnerability of island floras in the Mediterranean, and calls for urgent conservation measures. The impact of increasing human activity and changes in agricultural practices must not lead to the extinction of these and other species.

RIASSUNTO

Conservazione delle piante minacciate nelle isole del Mediterraneo. Nel quadro della campagna “TOP 50”, il gruppo di specialisti delle piante delle isole del Mediterraneo (all'interno della Commissione per la Sopravvivenza delle Specie della IUCN) ha selezionato 50 delle specie vegetali più minacciate presenti in queste isole. Scopo di tale iniziativa, che si è concretizzata anche in un piccolo volume illustrato, è di informare e sensibilizzare l'opinione pubblica e il mondo politico sulla vulnerabilità delle flore insulari nel Mediterraneo, evidenziando l'urgenza di azioni di tutela. Bisogna evitare che l'impatto delle crescenti attività umane e dei mutamenti nelle pratiche agricole conducano all'estinzione di queste e di altre specie.

INTRODUCTION

The Mediterranean basin contains nearly 5'000 islands and islets. While many of these are quite small (4'000 cover an area of less than 10 km²), there are also many larger islands such as Sicily, Cyprus, Sardinia or Crete. This great diversity in island size as well as differences in altitude and geology

means that a large number of habitats are represented in the region. Different geographic situations (some islands are close, and others far away from the mainland), and their geographic history (some islands have been isolated for a long time, and others not), have produced a flora of exceptional diversity. In addition, many Mediterranean plants are closely tied to traditional human activities which maintain this species richness.

Nearly 25'000 species of flowering plants and ferns are native to the countries surrounding the Mediterranean basin, and 60% of these plants are found nowhere else in the world (DAVIS *et al.*, 1994-1997). This extreme richness means that the Mediterranean is considered one of the world's 34 biodiversity "hotspots" (MITTERMEIER *et al.*, 2004).

Thanks to their isolation on islands, some ancient plant species have managed to survive, while their relatives on the mainland became extinct. This is because some mainland species could not compete with the migration into their habitat of new species, mainly caused by climate change during the last glacial periods. Because natural exchange of genetic material between the island and mainland species has been limited or non-existent, successive mutations caused the gradual formation of new species unique to each island.

The number of "endemic" species, that is in this case those which are only found on one or a group of islands, is therefore very high. On the larger islands, around 10% of the species are endemic or unique to the island. These endemic species are often very localized and have a small number of individuals, which makes them particularly susceptible to extinction.

The Mediterranean Islands Plant Specialist Group was formed in 1995, and it currently includes some forty members. It belongs to the Species Survival Commission (SSC), the largest commission of the International Union for the Conservation of Nature (IUCN). Its objectives are to evaluate and monitor changes in Mediterranean island plant diversity; to establish, co-ordinate and implement conservation action plans; and to promote sustainable conservation of plants and their habitats among decision makers and the public. The work of the Mediterranean Islands Plant Specialist Group is part of IUCN's activities in the Mediterranean.

THE "TOP 50" MEDITERRANEAN ISLANDS PLANT SPECIES

In order to draw attention to the vulnerability of island flora in the Mediterranean and call for urgent conservation measures, the IUCN/SSC/ Mediterranean Islands Plant Specialist group has selected 50 of the most threatened plants growing on Mediterranean islands, published a booklet (MONTMOLLIN & STRAHM, 2005) and began to implement conservation actions on the field.

According to the IUCN Red List categories and criteria (IUCN, 2001), most of them (46) are classified as Critically Endangered (CR), examples of species evaluated as Extinct in the Wild (EW), Endangered (EN) and Data Deficient (DD) are also included. For each species, the following information is presented:

- The Latin name as well as any local common name which exists
- A photo or drawing of the species (in three cases the species is so rare and poorly-known that no good photo exists)
- General distribution information. The exact location where these species occur is not given as readers are asked not to try to find the species until their conservation status has improved
- A brief description
- Additional information and interesting facts
- IUCN Red List threat category and reasons for it
- Existing conservation measures both *in situ* and *ex situ*
- Proposed conservation actions

All the information has been gathered by the members of the Specialist Group.

The 50 species (49 plants and one mushroom) are presented below in alphabetical order of the islands or groups of islands on which they are found, then in alphabetical order:

Aeolian Islands: *Silene bicesiae*

Alboran: *Diploaxis siettiana*

Balearic Islands: *Apium bermejoi*, *Arenaria bolosii*, *Brimeura duvineaudii*, *Euphorbia margalidiana*, *Femeniasia balearica*, *Ligusticum buteri*, *Lysimachia minoricensis*, *Naufraga balearica*

Columbretes: *Medicago citrina*

Corsica: *Anchusa crispa*, *Biscutella rotgesii*, *Centranthus trinervis*, *Limonium strictissimum*

Crete: *Anthemis glaberrima*, *Bupleurum kakiskalae*, *Convolvulus argyrothamnos*, *Horstrissea dolinicola*

Cyprus: *Arabis kennedyae*, *Astragalus macrocarpus* subsp. *lefkarensis*, *Centaurea akamantis*, *Delphinium caseyi*, *Erysimum kykkoticum*, *Salvia veneris*, *Scilla morrisii*

Greek Islands: *Aethionema retsina*, *Allium calamarophilon*, *Consolida samia*, *Minuartia dirphyia*, *Polygala helenae*, *Saponaria jagelii*

Malta: *Cheirolophus crassifolius*, *Cremonophyton lanfrancoi*, *Helichrysum melitense*

Sardinia: *Aquilegia barbaricina*, *Aquilegia nuragica*, *Lamyropsis microcephala*, *Polygala sinisica*, *Ribes sardoum*

Sicily: *Abies nebrodensis*, *Bupleurum dianthifolium*, *Bupleurum elatum*, *Calendula maritima*, *Hieracium lucidum*, *Petagnaea gussonei*, *Pleurotus nebrodensis*, *Viola ucriana*, *Zelkova sicula*

Tuscan Archipelago: *Centaurea gymnocarpa*

THREATS TO THE MEDITERRANEAN FLORA

The main factor raising the risk of extinction for these 50 species is linked to the size of their population and their distribution. In almost every case, due to the small number of individuals or tiny area of distribution, any major disturbance (for example, fire or construction work) might just push the species to extinction or seriously reduce its chances of survival. For four of these species, fewer than 50 individuals are known in the wild.

In addition, when the number of individuals in a population falls below a certain threshold, the species loses genetic diversity which reduces its ability to adapt to change, and therefore further increases its extinction risk.

The main threats faced by these 50 species, and by extrapolation, by numerous other Mediterranean plant species, are mostly due to direct or indirect human activities. These fall under the following categories (in decreasing order of importance):

- Urbanization
- Tourism and recreation
- Fires
- Change in agricultural practices (intensification or abandonment)
- Invasive alien species
- Collecting pressure

It is also clear that climate change will increase these threats. In effect, not only are plants by their nature relatively immobile, it is also difficult to change altitude if the species relies on specific ecological conditions. Island floras also have limited scope to migrate horizontally, especially on small islands.

RECOMMENDATIONS FOR CONSERVATION ACTION

Nearly 75% of the “TOP 50” species benefit from some sort of legal protection, whether at a national or international level. About 50% have some or all of their population included in a protected area. However these conservation measures, while very valuable, are often not sufficient to com-

pletely reduce the risk of extinction, notably due to problems in applying the law as well as inadequate management of the protected areas.

Half of these 50 species are conserved in botanical gardens or seedbanks (known as *ex situ* conservation or cultivation), but there is no guarantee that if the species disappears in the wild, it will be possible to reintroduce it or to maintain its genetic diversity in the long-term. It is in all cases preferable, and certainly less costly, to try to maintain the species in its natural habitat (known as *in situ* conservation). However, when a species does become threatened, cultivation can serve as an “insurance policy” in case the species becomes extinct in the wild. A good example of this is *Diplotaxis siettiana* from the island of Alborán. The species disappeared from the island but has been re-introduced using cultivated plants.

Conservation for each species requires specific, targeted actions. These are outlined in each datasheet and fall under the following categories (in decreasing order of importance for the 50 species studied):

- Legal protection at regional, national or international levels
- Improved biological and ecological knowledge to better target conservation measures
- Establishment of management plans for the species and its habitat
- Creation and management of protected areas
- Cultivation in botanical gardens or maintenance in seedbanks
- Reintroduction or reinforcement of populations
- Management of grazing
- Control of invasive species
- Fire prevention

The planning, financing and implementation of conservation measures require substantial resources that can only be put into place by decision-makers, managers and the public who are convinced by their importance and relevance to people. It is therefore essential to increase public awareness about the importance of plant conservation and its fundamental value to human well-being.

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