Current research on the biology of threatened plant species of the Mediterranean Basin and Macaronesia: a database

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Introduction

One of the most basic tools needed to confront the loss of biodiversity on our planet is information. Once priorities are set for the species where the danger of extinction is most imminent, conservation planmakers and managers need information on the biology of those species and their habitats in order to adopt appropriate action measures. In many cases, such information already exists dispersed in different institutions. However, it is not always easily available due to the large number of disciplines involved and the diverse character of the institutions concerned with conservation activities.

At the VI OPTIMA Meeting in Delphi (Greece) in 1989, the session of the OPTIMA Commission for the Conservation of Plant Resources agreed that the Commission should be involved in the collection of data on current and past research on the biology of threatened plants of the Mediterranean Basin and Macaronesia. Four years later, at the VII OPTIMA Meeting in Borovetz (Bulgaria), a preliminary draft containing data on 201 species was presented. Further information on these and other species has been added to obtain the present edition.

The main objectives in this project are to:

1. Elaborate a list of threatened plant species of the Mediterranean Basin and Macaronesia subjected to some type of biological study.
2. Provide information on research teams that work with threatened plant species in specific areas of biological study.
3. Facilitate communication among research teams that study threatened plant species belonging to a particular taxonomic group.
4. Provide bibliographical references related to studies on the biology of threatened plant species of the Mediterranean Basin and Macaronesia.
5. Give planners and managers a complete picture on the overall state of the knowledge of a particular threatened plant species.

The information contained in this database covers the period 1805-1994. At the present time it is not yet an exhaustive compilation of all data published during this period. However, it provides biologists, managers and planners an information base so that past efforts are not duplicated, gaps in knowledge can be identified and filled and we can efficiently proceed with the conservation of rare plants in the Mediterranean Basin and Macaronesia.

It is satisfying to see that the relevance of information for biodiversity conservation is now seriously being considered by governments. Thus, Article 6 of the Biodiversity Convention requires ratifying countries to develop an information base for promoting national biodiversity strategies and action plans. Among the up-to-date and reliable data required for the effective implementation of the activities prescribed in the articles of the Convention on Biological Diversity, data on threatened species is considered to be a priority.

Data have been gathered mainly through a questionnaire distributed to institutions that work in this field (Figure 1). The questionnaire asks for information about plant species of the Mediterranean Basin and Macaronesia classified as endangered (E), vulnerable (V) or rare (R) according to IUCN criteria.

The entries in the questionnaire are:

* Name of the species
* Family
* IUCN category
* Distribution
* Name of researcher/s
* Institution
* Postal address
* Area of study
* Bibliography
* Current research

Additionally, information has been gathered from publications obtained through computerized bibliography search at the main international databases. Currently, this database holds information on 281 Mediterranean plant species (including Macaronesia) classified as endangered (E), vulnerable (V) or rare (R) according to IUCN criteria. Indeterminate (I) and insufficiently known (K) categories have been accepted since they are actually referring to the above-mentioned categories of threat. Furthermore, three species extinct (Ex) in their natural habitats have also been included.

A considerable number of questionnaires have been completed with information regarding species threatened in a particular country but not worldwide. In some other cases, information on infraspecific taxa has been submitted. This information has not been included in the present work, but is being stored for future use.

The 281 species belong to a wide taxonomic range (56 different families) (Table 1). The largest-represented family in the draft is Asteraceae, followed by Brassicaceae, Plumbaginaceae, Caryophyllaceae, Apiaceae and Liliaceae. Together they cover 50 % of the species present in this database. Regarding the categories of threat, the rare category (R) has been the most abundant with 103 species (37 % of the total).

Table 1. List of families represented in the database and number of species in each one.

Family	Species	Family	Species
Amaryllidaceae	6	Lamiaceae	8
Apiaceae	14	Lauraceae	1
Aquifoliaceae	1	Lentibulariaceae	2
Araceae	1	Liliaceae	12
Asteraceae	38	Malvaceae	3
Boraginaceae	10	Myricaceae	1
Brassicaceae	31	Myrsinaceae	1
Campanulaceae	3	Oleaceae	1
Caprifoliaceae	1	Papaveraceae	1
Caryophyllaceae	27	Pinaceae	2
Celastraceae	2	Plumbaginaceae	19
Chenopodiaceae	1	Poaceae	1
Cistaceae	4	Poligonaceae	1
Convolvulaceae	4	Primulaceae	3

Family	Species	Family	Species
Crassulaceae	6	Ranunculaceae	6
Cupressaceae	1	Rhamnaceae	2
Cyperaceae	1	Rosaceae	1
Dipsacaceae	1	Rutaceae	2
Ericaceae	2	Salicaceae	1
Euphorbiaceae	7	Sapotaceae	1
Fabaceae	16	Scrophulariaceae	8
Gentianaceae	1	Solanaceae	2
Geraniaceae	6	Terntroemiaceae	1
Gesneriaceae	3	Thymelaceae	1
Globulariaceae	3	Ulmaceae	1
Guttiferae	3	Urticaceae	1
Iridaceae	2	Valerianaceae	1
Isoetaceae	1	Violaceae	1

This work gathers the research of teams in 52 institutions from 15 different countries. The distribution of the species included shows that so far the collection of data from countries other than Spain has been less intensive. Canary Islands (84 species) and Peninsular Spain (64 species) hold together more than half of the species present in this work (Table 2).

Table 2. Geographical distribution of the species contained in the database. The number of species endemic of each country or area in parenthesis.

Distribution	Species	Distribution	Species
Albania	2 (0)	Irak	1 (0)
Algeria	2 (1)	Iran	1 (0)
Austria	1 (0)	Italy*	18 (11)
Azores	17(15)	Madeira	5 (2)
Balearic Is.	9 (6)	Morocco	2 (1)
Bulgaria	9 (3)	Portugal*	6 (5)
Canary Is.	84 (82)	Romania	4 (0)
Caucasia	2 (0)	Sardinia	6 (0)
Corsica	14 (6)	Sicily	14 (9)
Crete	4 (3)	Spain	64 (61)
Czechoslovakia	1 (0)	Tunisia	1 (0)
France*	4 (1)	Turkey	21 (19)
Greece*	12 (9)	Yugoslavia	8 (2)
Hungary	2 (0)		

*: mainland excluding major islands.

The most frequent areas of study have been propagation methods, germination-dormancy, culture techniques and micropropagation. One must notize that the areas of study section and the index on areas of study only refer to the current activities held by the researchers. In many cases, the bibliography section contains additional information on studies of the species on several other different disciplines of biology. In this bibliography section, only references that deal specifically with the species or give substantial information on some aspect of its biology have been included. It is our aim to improve the content of this database and keep it up to date. You can contribute to this project by filling a copy of the questionnaire shown in Figure 1. Any corrections or updates on current data will be also greatly appreciated. If you are interested in taking a more active role in the collection of data of your country or region, please contact us.

Fig. 1. Questionnaire on current research on the biology of endangered plant species of the Mediterranean Basin and Macaronesia.

Since 1989, the OPTIMA Commission for the Conservation of Plant Resources is involved in the collection of data on what has been done and what's being done in the biology of threatened plants of the Mediterranean basin.

If you work in this area we would very much appreciate you spent a few minutes filling this short questionnaire.

Please use a separate form for each species. Make photocopies of this form if necessary. Please, read the appended notes first.

Species (1):_____

Family:_____ IUCN category (2): _____

Distribution (3): _____

Name of researcher/s: _____

Institution:_____

Postal address (4): _____

_____

Area of study (5):

0 - Anatomy
0 - Genetics
0 - Metabolism, enzymes
0 - Germination, dormancy
0 - Growth, development
0 - Flowering, pollination
0 - Reproduction
0 - Dispersal
0 - Propagation methods
0 - Micropropagation
0 - Culture techniques
0 - Pathology
0 - Phenology
0 - Demography, pop. dynamics
0 - Ecology
0 - Other: _____

Bibliography (6):

Current research (7):

Fig. 1. Questionnaire on current research on the biology of endangered plant species of the Mediterranean Basin and Macaronesia (Page 2).

Notes:

(1) Species of interest are those classified as R, V or E (rare, vulnerable or endangered) in a worldwide scale, by IUCN.
(2) IUCN category.
(3) Country or countries and/or geographical region.
(4) Address of the organisation or institution. Please include telephone, telex and fax numbers if applicable.
(5) Check the area/s most closely related to your investigation.
(6) Please include published articles as well as those "in press" from your group or other sources. Make reference to the author, year, title, publication, pages.
(7) Please use a format similar to (6) omitting the name of journal and giving a provisional title and tentative year of publication.

Please send this questionnaire to the following address:

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