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Mediterranean Plant Collections: needs and options. Setting the scene: what we have inherited

Abstract

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The Mediterranean region houses ssome 25-30000 species of vascular plants and the herbarium collections that have been made of this flora are widely scattered not only in institutions within the region but important collections may be found in herbaria in non-Mediterranean Europe and other parts of the world, reflecting the range of botanists who have been involved in the study of the flora of this area. These herbaria range from major world class institutions with several million specimens to small barely adequate collections of the local flora. Most floristic work is undertaken today on a national basis and it is a mater of concern that National herbaria in several countries of the region are small and poorly supported. On the other hand, much of the floristic exploration and taxonomic studies on Mediterranean plants has been carried out by botanists foreign to the region, both professional and amateur. Also, a number of major Floras has been written by botanists from outside the country concerned and the collections on which they are based are also largely housed outside the Mediterranean region. Consequently much of the type material is to be found in other countries. The significance and implications of this historical inheritance will be considered and suggestions made for remedial action.

Introduction

The aim of this paper is to present a brief review of the present-day situation regarding Mediterranean herbarium collections.

The Mediterranean region houses some 25-30000 species of vascular plants and the herbarium collections that have been made of this flora are widely distributed not only in institutions within the region but also outside it. As Greuter (2001) has pointed out for the Balkan Peninsula, nearly all botanical exploration of the Mediterranean has been undertaken by naturalists and collectors from countries of northern and central Europe. Thus, important collections are to be found in herbaria in non-Mediterranean Europe and other parts of the world, reflecting the range of botanists who have been involved in the study of the flora of this area (cf. Heywood 1978), such as:

G. Andréanzsky
P. E. Boissier
C. C. Lacaita
J. M. C. Lange

J.F.N. Bornmüller
J. Ball
P. H. Davis
E. von Halácsy
A. von Hayek
T. H. H. von Heldreich
H. M. Willkomm
S. S. Murbeck
R. C. J. E. Maire
G. E. Post
K. H. Rechinger
J. Sibthorp
P. B. Webb

These botanists have often been responsible for writing major Floras of countries or areas of the Mediterranean region and their collections contain type material that needs to be consulted by modern authors engaged in new floristic enterprises. In addition, there were many skilled amateurs who made important contributions and collections such as Bicknell (Flora of Bordighera), Moggridge (Flora of Mentone), and also the professional plant collectors who played such an important role in floristic exploration of the Mediterranean, and in making valuable new material, often of new species, readily available to Herbaria and taxonomists. Examples are Bourgeau, Balansa, Rigo, Reverchon and Sintenis.

Herbarium resources in the Mediterranean

There are about 200 herbaria in the countries of the Mediterranean, ranging from world class institutions to small local collections. It is well known that one or two of the world's major herbaria are to be found in the Mediterranean region (or in countries with a Mediterranean coast), such as Paris and Florence. I have compiled a table of herbaria numbers and size of accessions in Mediterranean countries based on the data given in the 8th edition of Index Herbariorum (Table 1.), although it should be noted that the figures given are only approximate as new herbaria are constantly being created and specimens added to existing collections. While updates to Index Herbariorum are available on the Internet, they do not give sufficient detail toallow the Table to be updated except in terms of total numbers of herbaria per country. A more pro-active system of revision is desirable.

On examining this table, a stark contrast between the 'haves' and 'have nots' is very evident. Only three countries, France, Italy and Spain, house the bulk of herbaria and specimens – nearly 140 herbaria and c.32 million specimens – while all the other countries together house c. 50 herbaria and about 3,5 million specimens. Egypt, Greece, Israel and Turkey have collections in the 400 000-600 000 range. Three countries have no reported herbaria. In a sense, what is more disturbing is the fact that there are substantial and important collections (including types) of Mediterranean plant specimens in countries outside the region such as Switzerland (Geneva), Austria (Vienna), Czech Republic (Prague), Hungary (Budapest), Germany (Berlin), Sweden (Lund), the UK (Edinburgh, Kew, Natural History Museum) and various herbaria the United States. Such collections are much greater in size than those of most of the Mediterranean countries except the ones highlighted above.

The situation can therefore be judged to be very unsatisfactory and one that deserves serious attention both by taxonomists and by the biodiversity authorities of each country.

Although it is highly unlikely that herbaria as we understand them today will continue

to exist in the next 50–100 years (Heywood 2001), a great deal of floristic work is still needed in the Mediterranean – several of the individual territories still do not possess a complete or comprehensive modern Flora – and the herbarium will continue to play a significant role for the coming decades. To be effective, much more co-operation between institutions both within the region and outside will be needed and some suggestions for a strategy to achieve are made below (cf. Heywood 2001a).

There will be major changes in curation and preservation methods in the future, and in the ways in which label data, specimen information and associated data and images are captured and made available through the Internet. Several herbaria in the Mediterranean region, both large and small, are beginning to introduce modern electronic methods for specimen management and data handling (Pando 2001). Some Floras are being supported by electronic databases and the Euro+Med PlantBase project will play an important part in co-ordinating such efforts.

Capacity building and data repatriation and sharing

Amongst the issues that will have to be considered are capacity building, repatriation of data and information and possibly material, and access, which are now the subject of quite intensive debate in other parts of the world. They have been discussed, for example:

- in the context of the CBD by GBIF one of whose functionalities is repatriation of data and global sharing of the biodiversity knowledge-base;
- by the North America Biodiversity Information Network,
- by the UK Darwin Initiative which awarded the Royal Botanic Gardens, Kew bursaries for two Darwin Fellowships to: develop a strategy for the repatriation of data on the plant and fungal collections held at Kew to countries of origin (including to their own-country);
- by the Second BioNET International Global Workshop. with the aim of contributing to equality by putting less well provided colleagues on a more equal footing with their more fortunate colleagues art least in terms of access to data and ultimately specimens;
- by the São Paulo Declaration on Pollinators.

Table 1. Mediterranean herbaria (based largely on data from *Index Herbariorum* ed. 8, with additions and modifications).

Country	**Number of**	**Total number**
Herbaria	**of specimens**	
France	48	20 183 300
Italy	48	8 985 962
Spain	42	2 8229 792 *
Turkey	18	492 053
Egypt	6	527 000
Greece	6	422 000
Croatia	6	283 070
Israel	4	654 500
Slovenia	2	165 000

Morocco	2	120 000
Algeria	1	350 000
Bosnia	1	110 000
Jugoslavia	2	596 000
Lebanon	1	68 000
Libya	1	35 000
Malta	1	10 000
Tunisia	1	5000
Cyprus	1	4000

* Revised figures for Spain are given in the paper by Pando (2002, this volume)

Mediterranean herbaria outline strategy

We live today in a period of reassessment and consolidation, of targeted planning and strategies. It seems an appropriate time therefore for a critical look at the situation of Mediterranean herbaria and their role in floristics. Given the diversity of herbarium resources, the disparity between countries, the imbalance between floristic richness and institutional resources and infrastructure, it would seem sensible or a detailed analysis to be made and a strategy developed to resolve the problems and activities identified. This would include a consideration of the following:

1. National Herbaria and resources

- Size of collections
- Adequacy of collections
- Curation needs and status
- Staffing (technical and professional)
- Financial status
- State/degree of computerization of label and other data
- Access

2. International Resources

- Major collections of Mediterranean plant material – by country, if appropriate
- Major holdings of types of Mediterranean species
- Catalogues, access

3. Floristics

National Floras – country by country, including data on status and if active and incomplete, estimated date of completion, perspectives, limiting factors
Regional Floras – existing,
– desirable, e.g. North Africa, Levant

4. Electronic taxonomic databases and other resources

- availability
- status

5. Networking

- Existing networks, e.g Euro+Med PlantBase
- Planned or potential networks, e.g. NAFRINET

6. International programmes and initiatives

- Species 2000
- All Species Inventory
- GBIF
- ENBI

References

Carine, M., Heywood, V. & Jury, S., 2000: Euro+Med PlantBase: a new Euro-Mediterranean initaitive in plants systematics. — OPTIMA Newsletter 2000 **25:** 21-23.

Greuter, W. 2001: Source data for floristics and flora writing in the Balkans: an overview. — Pp. 25-32 in: Ozhatay, N. (ed.) Plants of the Balkan Peninsula: into the new millennium. Proceedings of the 2nd Balkan Botanical Congress (14-18 May 2000 Istanbul), **1**. — Istanbul.

Heywood, V. H. 1976: European floristics: past, present and future. ? — Pp. 275-289 in Street, H. E. (ed.): Essays in Plant Taxonomy. ? — London.

— 2001: Floristics and monography an uncertain future? ? — Taxon **50:** 361-380.

— 2001a.: Assessment, conservation and sustainability of the plant diversity of the Balkan Peninsula. — Pp. 1-12 in: Ozhatay, N. (ed.) Plants of the Balkan Peninsula: into the new millenium. Proceedings of the 2nd Balkan Botanical Congress (14-18 May 2000 Istanbul), **1**. — Istanbul.

Holmgren, P. K., Patricia K., Holmgren, N. H. & Barnett, L. C. 1990: Index herbariorum. Part I. Herbaria of the world. 8th ed. ? — New York Botanical Garden, Bronx, NY.

Pando de la Hoz, F. 2001: Mediterranean plant collections: the computerised way forward. — Bocconea (this volume p. **xx**).

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