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## The present and future of Mediterranean floristics. Introduction, with a special reference to the Flora iberica project

### Abstract

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The main floras and checklists covering the circum-Mediterranean countries are indicated with special reference to those published in the last 25 years (1989 to 2013). Flora iberica which covers the Iberian Peninsula and the Balearic Islands is analyzed, including its coverage, organization, content and publication data. A total of 17 volumes have already been published; vol. 20 is expected to be printed in 2013, vol. 9 in 2013 or 2014, vols. 16(1) and 16(2) most probably in 2014, vol. 16(3) along 2015 and vol. 19, covering Poaceae by 2018-2020, when all the 21 volumes of the Flora will be completed.

*Key words:* floras, Mediterranean checklists, Flora iberica.

### Introduction

The floristic knowledge of the Mediterranean flora is still rather uneven. Most N Mediterranean countries have a very wide botanical tradition and their flora is fairly well known. Besides, the publication of *Flora Europaea* (Tutin & al. 1964-1980) provided an updated synthetic revision of known flora of all N Mediterranean countries, including European Turkey, with useful keys which allow the easy identification, even if approximate, of any plant material from those countries. But S and E Mediterranean countries have not a similar tool. Along the XXth century, N African flora has been partially covered by the detailed *Flore de l'Afrique du Nord* by Maire (1952-1987) which will remain incomplete, the *Flore de l'Algérie* by Quezel & Santa (1962-1963), the *Flore de la Tunisie* by Pottier-Alapetite (1979-1981), the *Flora of Lybia* by Ali & al. (1977-1989) and the *Flora of Egypt* by Boulos (1999-2005). Four basic Floras cover part of E Mediterranean: *Flora Palaestina* (Zohary & Feinbrun-Dothan 1966-1986), which covers Israel, the Palestinian territories and W Jordan, *Nouvelle Flore du Liban et de la Syrie* (Mouterde 1966-1984), *Flora of Cyprus* (Meikle 1977-1985) and *Flora of Turkey* (Davis, 1965-1988), which covers European Turkey, the peninsula of Anatolia and part of the Eastern Aegean Islands.

The present situation around the Mediterranean, considering the floras or checklists published along the last 25 years (1989 to 2013) is as follows (only floras or checklists which cover

one or more of the territories which for chorological purposes have been recognized in Med-Checklist (Greuter 2008; Greuter & al. 1984-1989) are taken into consideration):

Two checklists cover all the Mediterranean area: *Med-Checklist* (Greuter l.c.; Greuter & al. l.c.; *Pteridophyta*, Gymnosperms and Angiosperms (Dicotyledones) from *Acanthaceae* to *Rhamnaceae*, alphabetically arranged) which covers all circum-Mediterranean countries, and *Euro+Med PlantBase*, an online publication still incomplete, which covers all Europe including the Caucasus, the E and S Mediterranean countries and the Macaronesia, except Cape Verd islands. The *Index Synonymique. Flore de l'Afrique du Nord* (Dobignard & Chatelain 2010-2013) covers all N African areas limited by the Mediterranean sea in the N and the 20th degree of latitude in the S. Consequently, this includes Egypt (except the Sinai peninsula), Lybia, Tunisia, Algeria, Morocco (including the old Spanish Sahara and the island of Alborán), the N half of Mauritania, part of the N of Mali and the Tibesti mountains (Chad), but it extends to the West to cover the Canary Island, Salvages and Madeira.

France is covered by a checklist by Kerguelen in two versions: printed (Kerguelen 1993) and on line (1999). Corsica is covered by this checklist and by a flora by Jeanmonod & Gamisans (2007) if which a second edition has been published in 2013.

Italy, Sardinia and Sicily are covered by a checklist by Conti & al. (2005). Besides, there is a general checklist of the Sicilian flora by Giardina & al. (2007) updated by Raimondo & al. (2010) and for Sardinia the Flora by Arrigoni (2006-2010) still in progress.

The Balkan peninsula vascular flora is covered by several floristic publications. For the territory of the former Yugoslavia, which for chorological purposes is considered as a single unit in Med-Checklist, there are several floras and checklist devoted to corresponding current countries: for Slovenia, Martinčič (2007) and Trpin & Vreš (1995); for Croatia, Nikolić (1994-2000); for Serbia, Josifović (1970-1976, 1977), Sarić & Diklić, (1986), Sarić (1992) and Stevanović (2012); for FYR Macedonia, Micevski (1985-2005) and Matevski (2010). The Flora of Bulgaria was published quite regularly from 1963 edited by: Jordanov & al. (1963, 1964), Jordanov & Kuzmanov (1966, 1970), Jordanov & al. (1973) Jordanov (1976), Jordanov & Kuzmanov (1979), Velčev & Kožuharov (1982, 1989), Kožuharov & Kuzmanov (1995) and Peev & al. (2012). This country is also covered by a key to vascular plants edited by Kožuharov (1992), a Conspectus by Dimitrov (2002, second edition) and by the detailed plant distribution maps by Assyov & al. (2001-2012). The Flora of Albania has been published in the period of 1988-2000, edited by Papparisto (1988), Qosja (1992, 1996) and Vangjeli (2000). In Greece, the Flora edited by Strid & Tan (1997, 2002) covers continental Greece, Crete and the Aegean islands, while the books also edited by Strid (1986) and Strid & Tan (1991) cover the mountain flora of continental Greece; an annotated checklist by Turland & al. (1993) updates the known vascular plants of Crete.

A second supplement of Davis' *Flora of Turkey* (Günner & al. 2000), and two supplementary checklists (Özhatay & Kültür 2006, Özhatay & al. 2009) covers Anatolia, European Turkey and part of the East Aegean Islands.

In N Africa, for Egypt, a checklist (Boulos 1995) preceded the publication of a general flora (Boulos, l.c.), an annotated checklist by Le Floc'h & al. (2010) covers Tunisia, and Morocco is covered by a complete checklist by Fennane & Ibn Tattou (2005) and Ibn Tattou & Fennane (2009) and by a *Flora* of which the first two volumes have already been published (Fennane & al. 1997, 2007).

A modern flora (Castroviejo & al. 1986-2012), still in progress, covers the Iberian peninsula and the Balearic Islands, which organization and content is explained below, while continental Portugal is covered by the third volume of the *Nuova Flora de Portugal* (Franco & Rocha Afonso 1994-2003), and the Balearic Island by the regional floras by Bolòs & Vigo (1984-2001) and Bolòs & al. (1990). A checklist includes the known vascular plants of Andorra (Carrillo & al. 2008).

As for the future, the publication of a new flora of France will start in 2014 (J. Molina, pers. comm.), a rather modern second edition of Pignatti's *Flora d'Italia* will start to be published also in 2014 (S. Pignatti, pers. comm.) and at the end of 2013 or beginning of 2014 an annotated checklist of the vascular plants of Greece will be published in *Englera* (G. Kamari, pers. comm.). A new flora of Tunisia is in preparation (M. E. Tchouk, pers. comm.), the third and last volume of the *Flore pratique du Maroc* is expected to be printed in 2014 (M. Fennane, pers. comm.) and *Flora iberica* will presumably complete its publication by 2018-2020, as indicated below.

It is impossible to cover the past, present and future of floristic for all Circum-Mediterranean territories in only one afternoon. The ongoing *Symposium* will summarize the situation in the Iberian Peninsula, Balearic Islands, Morocco, Algeria, Tunisia, Greece, Serbia and Mediterranean Turkey, the later with special reference to geophytes.

## The *Flora iberica* project

### Coverage

*Flora iberica* (Castroviejo & al. 1986-2012) covers all vascular plants native or naturalized which occur in the Iberian Peninsula, this is continental Portugal (89.257 km<sup>2</sup>), peninsular Spain (492.127 km<sup>2</sup>), Andorra (468 km<sup>2</sup>) and the Balearic Islands (4.991 km<sup>2</sup>).

The species richness for this territory has been estimated in 6.273 species. However, as the 18 volumes already published (see table 1) cover 4.466 species, with a total of 5.135 taxa, the final figure will most probably be higher, as according Greuter (2008), the number of *Compositae* (vol. 16 of *Flora iberica*) of peninsular Spain and Balearic Islands reaches 1.448 species and according Valdés & Scholz (2009) there are 573 species of *Poaceae* (vol. 19 of *Flora iberica*) in peninsular Spain and Balearic Islands. To these it is necessary to add the species recognized in vols. 9 and 20, these being the still unpublished four volumes.

### Organization

The project is centralized in the Royal Botanic Garden of Madrid (Consejo Superior de Investigaciones Científicas). His main editor has been Santiago Castroviejo since the beginning of the project till 2009, when he died. This role was then taken by Carlos Aedo, Research Professor of the Botanic Garden. Besides, each volume is edited by two or more botanists, usually those playing a higher role in the preparation of the different genera. In the so far published volumes (see table 1), 230 specialists have contributed, with a great weight of Spanish botanists (171 authors), followed by British (13 authors), Portuguese (10 authors), German (9 authors) and Swiss (6 authors). Two authors come from Austria, France and Sweden and one author from each one of the following countries: Denmark, Israel, Finland, Pakistan and USA.

### Content

The Flora contains keys to the families, genera, species, subspecies and varieties (when accepted), and all accepted taxa are described. For each specific and subspecific taxa the following information is included: accepted name with authority and place of publication, basyonym (when the name is a combination) or substituted basyonym with authority and place of publication, type locality, reference to published illustrations, description, chromosome number(s), general distribution, ecology in the area covered by the Flora, fenology, distribution in the territory province based, common names, uses, and observations when needed.

The flora contains at least one full page illustration for each genus, and illustrations for critical and endemic species, particularly those not previously illustrated. All illustrations are based on herbarium material from the area covered by the flora, which origin is indicated in the foot of each illustrations. Most illustrations for the first volumes were done by E. Sierra (Barcelona); most for the last volumes by R. Tavera (Sevilla). J. R. Castillo (Madrid), J. Pizarro (Madrid) and in a lesser extent M. Chirino (Madrid) and A. Jordán (Sevilla) are also responsible for illustrations.

### Publication data

All volumes but four have so far been published, as indicated in table 1. Vol. XX, covering *Liliaceae*, *Amarillydaceae*, *Iridaceae* and *Agaveaceae*, is completed and sent to the printers; it is expected to be printed before Christmas this year. Vol. IX, covering a series of families, including *Rhamnaceae*, *Polygalaceae*, *Geraniaceae* and *Liliaceae* is expected to be printed at the end of 2013 or the beginning of 2014; only *Erodium* and *Linum* are still needed of a last editing. Vol. 16, covering *Compositae*, will be published in three subvolumes; 16(1), *Lactuceae*, and 16(2), *Cardueae*, are expected to be printed along 2014; 16(3) covering the rest of *Compositae*, presumably in 2015. Vol. 19, covering *Poaceae*, will also be divided in three subvolumes; they will, presumably, be printed by 2018-2020, when the funding of the project will finish.

*Flora iberica* is available on line ([www.floraiberica.org](http://www.floraiberica.org)) which receives c. 165.000 calls per year.

Tab. 1. *Flora iberica*. Publication dates (vols. I-XXI).

<b>I -1986</b>	IX -2013 -14	XVI (3) – 2015?
<b>II -1990</b>	<b>X – 2003</b>	<b>XVII – 2010</b>
<b>III -1993</b>	<b>XI – 2012</b>	<b>XVIII – 2007</b>
<b>IV -1993</b>	<b>XII – 2010</b>	XIX (1) –
<b>V -1997</b>	<b>XIII – 2009</b>	XIX (2) –
<b>VI -1998</b>	<b>XIV – 2001</b>	XIX (3) –
<b>VII (1) -1999</b>	<b>XV – 2007</b>	XX – 2013
<b>VII (2) -2000</b>	XVI (1) – 2014	<b>XXI - 2005</b>
<b>VIII -1997</b>	XVI (2) -2014	

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