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***Orobanche* sect. *Orobanche* (*Orobanchaceae*) in Andalucía, South of the Iberian Peninsula**

Abstract

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In order to determine the *Orobanche* L. Sect. *Orobanche* species living in Andalucía, as well as their geographical distribution, a survey was carried out, together with a revision of the main national and regional herbaria. Twenty different taxa have been identified and their regional distribution is analysed in comparison with the distribution provided in *Flora iberica*.

Introduction

It is ten years since we published the first progresses we made on the state of the genus *Orobanche* L. in Andalucía (Pujadas Salvà & al. 1994), a piece of work that nowadays is clearly outdated. The presence and chorological distribution of the species of *Orobanche* Sect. *Trionychon* Wallr. was recently analysed (Pujadas Salvà 2000). Hence we deal here with the other section of the genus, the Sect. *Orobanche*.

The recent publication of the genus in *Flora iberica* (Foley 2001) does not fully unravel its taxonomical problems and it definitely does not fill in the gaps regarding its regional distribution. As a result of the study on the different species of the genus *Orobanche* L., we provide new data to allow to improve its knowledge in Andalucía.

Andalucía is located in the south of the Iberian Peninsula, between parallels 38° 44' and 35° 59' N, and between meridians 7° 33' and 1° 37' W. It is constituted by eight provinces: Almería, Cádiz, Córdoba, Granada, Huelva, Jaén, Málaga and Sevilla. It has an area of 87.268 Km².

Material and Methods

As a starting point for the present study, a critical revision (total or partial) has been carried out on the specimens kept in the following herbaria ABH, ALME, BC, BCC, BCF,

COA, COFC, COLEGIO LA SALLE DE ALMERIA, GDA, GDAC, JACA, JAEN, MA, MAF, MGC, MPU, MUB, RNG and SEV together with the botanical prospecting in all Andalusia for the gathering of the living material, so as to achieve a higher accuracy in determination of the plants. The results of that revision is compared with the regional distribution afford in *Flora iberica* (cfr. Foley 2001).

Results and discussion

The features of the Sect. *Orobanche* are: stems simple; flowers sessile, without bracteoles; calyx divided in two lateral segments, sometimes connate abaxially; white, yellow, brown, violet or red corolla, rarely blue or purple; anthers yellow, greyish-brown or greyish, rarely white; stigma yellow, orange, red or purple, rarely white.

Twenty different taxa have been identified for this section (seven more than those acknowledged by Pujadas Salvà & al. 1994): *O. cernua* L., *O. cumana* Wallr. (Fig. 1), *O. alba* Stephan ex Willd., *O. haenseleri* Reut., *O. crenata* Forssk., *O. almeriensis* A. Pujadas (Fig. 2), *O. amethystea* Thuill. subsp. *amethystea*, *O. amethystea* subsp. *castellana* (Reut.) Rouy, *O. santolinae* Loscos & J. Pardo, *O. minor* Sm., *O. ballotae* A. Pujadas, *O. hederæ* Vaucher ex Duby, *O. clausonis* Pomel, *O. densiflora* Salzm. ex Reut., *O. foetida* Poir., *O. foetida* var. *broteri* (J.A. Guim.) Merino, *O. gracilis* Sm., *O. gracilis* var. *deludens* (Beck) A. Pujadas, *O. rapum-genistæ* Thuill., *O. latisquama* (F.W. Schultz) Batt.



Fig. 1. *O. cumana*, Monturque, Córdoba.



Fig. 2. *O. almeriensis*, El Saliente, Albox, Almería.

Table 1. Distribution of *Orobanchae* L. Sect. *Orobanchae* in Andalusia. Provincial distribution: AL= Almería; CA= Cádiz; CO= Córdoba; GR= Granada; HU= Huelva; JA= Jaén; MA= Málaga; SE= Sevilla. **P**: Distribution supported by herbarium material and checked by us; **F**: Distribution in Foley (2001) checked by the author himself; **P+F**: Distribution supported by herbarium material and checked also by Foley (2001); **(F)**: Distribution in Foley (2001) based only on bibliographical references; **P+(F)**: Distribution supported by herbarium material and checked by us and cited by Foley (2001) based only on bibliographical references.

	AL	CA	CO	GR	HU	JA	MA	SE
<i>O. cernua</i> L.	P+F	(F)	(F)	P+F	P+F	P	(F)	(F)
<i>O. cumana</i> Wallr.		P	P	P			P	P
<i>O. alba</i> Stephan. ex Willd.	P+(F)		F	P+(F)		P+(F)		
<i>O. haenseleri</i> Reut.	P+(F)			P+F		P+F	P+F	
<i>O. crenata</i> Forssk.	P+F	P+F	P+F	P+F	P+F	P+F	P+F	P+F
<i>O. almeriensis</i> A. Pujadas	P							
<i>O. amethystea</i> Thuill. subsp. <i>amethystea</i>	P+(F)	P	P+(F)	P+(F)	P+F	P+(F)	P+F	P
<i>O. amethystea</i> subsp. <i>castellana</i> (Reut.) Rouy					P	(F)		
<i>O. santolinae</i> Loscos & J. Pardo	P		P	P		P	P	
<i>O. minor</i> Sm.	P+(F)	P+F	P+(F)	P+F	P+F	P+(F)	P+F	P+F
<i>O. ballotae</i> A. Pujadas	P+(F)	P	P+F	P+(F)		P+(F)	P+(F)	
<i>O. hederæ</i> Vaucher ex Duby		P+F	P+(F)	P+F		P+(F)	P+(F)	
<i>O. clausonis</i> Pomel	(F)	P+(F)	P+(F)	P+F	P+(F)	P+(F)	P+F	
<i>O. densiflora</i> Salzm. ex Reut.		P+F						
<i>O. foetida</i> Poir.	F	P+F	P+F	P+F	P+F	P+(F)	P+F	P+F
<i>O. foetida</i> var. <i>broteri</i> (J.A. Guim.) Merino	P	P		P	P			
<i>O. gracilis</i> Sm.	P+F	P+F	P+F	P+F	P+F	P+F	P+F	F
<i>O. gracilis</i> var. <i>deludens</i> (Beck) A. Pujadas	P+F	P+F	P+F	P+F			P+F	F
<i>O. rapum-genistae</i> Thuill.	(F)			P	P			
<i>O. latisquama</i> (F.W. Schultz) Batt.	P+F	P+F	P+F	P+F		P+F	P+F	P+F



Fig. 3. *O. santolinae*, Rute (Córdoba).



Fig. 4. *O. amethystea* subsp. *castellana*, Rouy, Aracena (Huelva).

Taxa without specific category in the Flora iberica

O. cumana included by Foley (2001: 49) as synonym of *O. cernua*. However, Foley himself, under Observations, provides enough arguments for it to be considered as a quite different species.

O. almeriensis included by Foley (2001: 57) in *O. calendulae* Pomel. We regard *O. almeriensis* as close to *O. amethystea* and in any case not susceptible of being included in such a problematic taxa as is *O. calendulae*.

O. santolinae included by Foley (2001: 58) as synonym of *O. artemisiae-campestris* Vaucher ex Gaudin. We have observed that it shows some morphological characters that are very different from those of *O. artemisiae-campestris*. Besides, we believe that this last taxon has a middle European distribution which in all probability reaches only the extreme north of the Iberian Peninsula.

Conflictive Taxon

O. calendulae arises serious doubts regarding its taxonomical status. Many species which have been classified under this name are difficult to distinguish from others belonging to the *Grex Minores* Beck, especially *O. amethystea*. Biosystematic studies are need-

ed in order to clarify the status of that taxon. We have been unable to collect plants or identify herbarium material which allow us to ascertain its presence in Andalusia.

Taxa of incomplete chorological distribution in Flora iberica

For *O. alba*, *O. amethystea*, *O. amethystea* subsp. *castellana*, *O. ballotae*, *O. clausonis* *Flora iberica* contains scarce chorological information at region level or this information is based, in most cases, in bibliographical citations. We provide more complete chorological information at province level, which has been contrasted and supported by herbarium material (Table 1).

Species to be excluded

O. artemisiae-campestris, *O. crinita* Viv., *O. sanguinea* C. Presl., *O. variegata* Wallr., *O. reticulata* Wallr. and *O. caryophyllacea* Sm., whose occurrence in Andalusia is improbable, are not to be taken into account for their flora, as the references on such species are mistaken.

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