



## A contribution to the taxonomy and phytogeography of *Orobanche alba* Steph. ex Willd. (Orobanchaceae)

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### Abstract

The authors present new knowledge on the biology and distribution of the poorly known *Orobanche alba* f. *cuprea* (= *O. cuprea*) and suggest its reclassification as a subspecies. Furthermore, the authors present recent data on biology and distribution of *Orobanche alba* subsp. *xanthostigma*. Distribution maps are shown for both taxa. *Thymbra capitata* and *Thymus integer* are recorded as new hosts for *O. alba* subsp. *cuprea* and *Clinopodium vulgare* s. l. for *O. alba* subsp. *xanthostigma*. Further information on the taxonomic assessment of other infraspecific taxa of *O. alba* are given as follows: *O. alba* f. *maxima* (= *O. alba* subsp. *major*) is promoted to the rank of variety based on a discovered earlier valid name; *O. alba* subsp. *alba* var. *bidentata* is rejected as an autonomous taxon and incorporated in the variability of the species.

**Key words** *Orobanche*, Cyprus, Caucasus, taxonomy

### Introduction

The genus *Orobanche* Linnaeus (1753: 632) s. l. includes approximately 220 accepted species worldwide. About 125–150 species belong to the genus in the narrower sense of *Orobanche* s. str. [i. e. excluding the sections *Gymnocaulis* Nuttall (1818: 59) = genus *Aphyllon* Mitchell (1748: 221); *Myzorrhiza* (Philippi 1858: 36) Beck (1890: 78) = genus *Myzorrhiza* Philippi (1858: 36); *Trionychon* Wallroth (1822: 314) = genus *Phelipanche* Pomel (1874: 102), as well as the genus *Boulardia* (Schultz 1848: 103)]. Considering this narrower circumscription of the genus *Orobanche*, about 54–60 species (depending on the species concept) occur in the Mediterranean (for a definition of the area see, Greuter *et al.* 1986). Another real hot spot of *Orobanche* s.str. lies in the wider Caucasus region and West and Middle Asia, from where many taxa (ca. 66 species, of which 19 are endemic to the Caucasus and approximately 20 to Middle Asia) spread to other areas.

It should be noted additionally that there are current attempts to classify about 30 representatives of *Orobanche* section *Inflatae* (Beck 1882: 124) Tzvelev (1981: 328) as a separate genus *Orobanchella* Piwowarczyk (2014: 14). In our view, this step requires more extensive, wider scale studies.

In general, the genus *Orobanche* s.l. is considered taxonomically difficult with regard to the determination of taxa. The main reasons for this are that the genus is relatively poor in morphological characteristics, and that these characteristics are not always consistent and the morphological overlapping which occurs between taxa. In addition, many of the described taxa are still insufficiently known and it is also difficult to get an overview based on herbarium material, particularly regarding rarely collected taxa. Today, new technologies and international networking facilitate some aspects of taxonomic *Orobanche* research which has resulted in the different species concepts. In addition, due to the highly specialized holoparasitic way of life of these plants, host specificity plays an important role in the classification of taxa, but this often leads to identification errors, when the physical connection to the parasite host cannot be exactly identified *in situ*, or associated plants are erroneously assigned as host plants.

Beck (1890, 1930) was not the first person who has tried to get an overview of the genus, but he was the person who worked most profoundly and most comprehensively on *Orobanche* s.l. Over time, however, many new species have been added or taxa have been re-evaluated, which renders the classification of Beck (1890, 1930) outdated (or at least in need of revision).