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Phylogenetic position and taxonomy of the enigmatic *Orobanche krylowii* (Orobanchaceae), a predominatly Asian species newly found in Albania (SE Europe)

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Abstract

We report on the occurrence of *Orobanche krylowii* in the Alpet Shqiptare (Prokletije, Albanian Alps) mountain range in northern Albania (Balkan Peninsula). The species was previously known only from eastern-most Europe (Volga-Kama River in Russia), more than 2500 km away, and from adjacent Siberia and Central Asia. We used morphological evidence as well as nuclear ribosomal ITS sequences to show that the Albanian population indeed belongs to *O. krylowii* and that its closest relative is the European *O. lycoctoni*, but not *O. elatior* as assumed in the past. Both *Orobanche krylowii* and *O. lycoctoni* parasitize Ranunculaceae (*Thalictrum* spp. and *Aconitum lycoctonum*, respectively). We provide an identification key and a taxonomic treatment for *O. krylowii*, and suggest the IUCN category CE (critically endangered) for the highly disjunct Albanian population.

Key words: *Orobanche*, taxonomy, critically endangered, Albania

Introduction

In spite of the peculiarity of its rich flora and its importance for European phytogeography (Markgraf 1932) Albania is one of the botanically least explored regions of Europe. After the last editions of the national flora (Paparisto *et al*. 1988, Qosja *et al*. 1992, 1996, Vangjeli *et al*. 2000) including 3758 taxa (3250 species) of vascular plants a multitude of species new for Albania were published (e.g., Barina & Pifko 2008, Rakaj 2009, Ball 2011, Barina *et al*. 2011, Meyer 2011, Barina *et al*. 2013). For instance, Meyer (2011), based on his botanical explorations of Albania during four months in 1959–1961, described 37 new taxa for science (28 species and 9 subspecies).

The holoparasitic broomrapes (*Orobanche* L., Orobanchaceae) belong to the taxonomically most difficult non-apomictic genera. This is due to the, compared to other plants, strongly reduced number of potentially useful characters, especially vegetative ones, the high phenotypic variability and the uniform darkening during desiccation resulting in the loss of potentially useful coloration characters in herbarium specimens (Kreutz 1995, Schneeweiss *et al*. 2009). Consequently, our knowledge on taxonomy and distribution of many broomrape species is still insufficient, even in botanically well-explored regions, such as the Iberian Peninsula or Central Europe. New species of *Orobanche* s. str. and *Phelipanche* Pomel (syn. *O.* sect. *Trionychon* Wallr.) have been described (Foley 1998, 2004, Carlón *et al*. 2005, 2008, Pujadas-Salvà & Crespo 2004, Pujadas-

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