

***Traunsteinera globosa* (L.) Rchb. (*Orchidaceae*), a new species for the flora of the Republic of North Macedonia**

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Abstract

Traunsteinera globosa (L.) Rchb. (Globe orchid) of the family *Orchidaceae* was recorded on Korab mountain in an alpine pasture in July 2022. Both the genus *Traunsteinera* and the species *Traunsteinera globosa* are new to the flora of the Republic of North Macedonia. This record represents the southernmost limit of its distribution in Europe. Data on the key morphological characteristics, distribution, habitat preferences and population size are also presented in this article.

Key words: Globe orchid, new record, Korab mountain, Balkan Peninsula

Introduction

The flora of orchids (*Orchidaceae*) of the Republic of North Macedonia has not been reviewed in any of the modern botanical works. There are about 60 species (cca 70 taxa) so far published in different literature sources (Hristovski et al., in litt.). However, there is a need for a critical overview of some of the published taxa.

The genus *Traunsteinera* contains two species: *T. globosa* (L.) Rchb. and *T. sphaerica* (M. Bieb.) Schltr. (Delforge 2016). *T. globosa* has distribution in both Europe (from Vosges and S. Poland southwards to N. Spain, N.C. Italy and S. Bulgaria.) and on the Caucasus (Moore 1980; Kuropatkin 2013). European distribution covers the Atlantic part (north-east of Spain), Central (Germany, Poland, Switzerland, Austria, Czech Republic, Slovakia, Hungary, Romania and Italy), Southern (south-east of France, Balkan Peninsula), and Eastern Europe (Ukraine and Russia) (Pridgeon et al. 2001; Delforge 2016; Kuropatkin 2013). *T. sphaerica* is distributed on the Caucasus and Turkey (north-eastern parts and Anatolia) (Kuropatkin 2013). These two species overlap in their distribution on the Caucasus without any documented hybridization between them or with species from other genera (Kuropatkin 2013; Delforge

2016). The morphological variation of *T. globosa* is also very small (Delforge 2016).

Traunsteinera globosa on the Balkans is distributed in Croatia, Serbia, Bosnia and Herzegovina, Bulgaria, Montenegro and Albania, with the exception of Greece (Kuropatkin 2013). In Bulgaria it is distributed in Predbalkan (western), Balkan mountain (western, central), Vitosha, Rila and Lyulin mountains at altitudes above (900)1000 m (Peev et al. 2015; Petrova et al. 2018). *T. globosa* in Albania is very rare - there is only one confirmed locality in the northernmost parts of the country, on limestone at altitudes of 1600–1700 m (Barina et al. 2016). Further north in Montenegro there are several known localities: Viruša dol, Komovi, Crna planina and Bjelasica mountains (Rohlena 1942). It is also reported for Serbia and Kosovo (Josifović 1976; Rexhepi 1997; Djordjević et al. 2021). In Serbia, Croatia and Bosnia and Herzegovina it is more common species (Beck-Mannagetta 1903; Nikolić 2020; Djordjević 2021; Djordjević et al. 2021; Stupar et al. 2021).

Traunsteinera globosa prefers slightly acidic to alkaline soils in a range of habitats including poor grassland, alpine meadows, highland marshes, and open coniferous woodlands, but always in full sunlight and usually tall vegetation (Pridgeon et al. 2001). It is inter-

esting that *T. globosa* grows in syntopy with other plant species of similar appearance of the genera *Knautia*, *Scabiosa*, *Trifolium*, and *Valeriana* that mimics to attract insect pollinators like flies, bees and beetles i.e. employs Batesian food-source mimicry (Jersáková et al. 2016). It is found at altitudes between 600 and 2700 m a.s.l., flowering from mid-June to the end of July (Delforge 2016).

Materials and Methods

Plant material was collected during the field trip on 24.07.2022 with the aim to obtain relevés from mountain fens. Specimens of orchid and other plant species were collected. The herbarium specimens are deposited in the Macedonian National Herbarium, Institute of Biology, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Republic of North Macedonia (MKNH). Some basic measurements were made on the dried specimen using a ruler.

Results and Discussion

Traunsteinera globosa was found in North Macedonia on Korab mountain: Kobilino Pole, 41.778805°N, 20.5754967°E, 2140 m a.s.l., alpine pasture, 24.07.2022 (leg. S. Hristovski, coll. MKNH, aboveground parts).

Morphology

The morphometric analyses showed little variations of *T. globosa* across its distribution (Kuropatkin 2013; Delforge 2016). Nevertheless, we present the morphological characteristics of the recorded specimen. The specimen of *T. globosa* (Fig. 1) was collected at the end of its flowering period. *Traunsteinera globosa* is a perennial plant, with two ovate tubers. The height of the plant was 45 cm (including inflorescence). The stem was slightly curved with yellowish-green color. There were 4 leaves of different sizes on the stem, upright, green-greyish on the upper side and green on the lower side, without any pattern; the lower one largest (7.7x1.2cm) and oblong lanceolate, upper ones smaller, linear lanceolate and becoming bract like. The inflorescence (spike) globose-ovoide (3.2x2.0cm of dried specimen), dense, compact, consisted of about 40 flowers. Bracts (7-11.5mm in length) slightly longer than the ovary, lanceolate, bright green with narrow purple margins and purple terminal parts. Flowers pinkish, perianth segments forming a helmet (galea) during the early anthesis and becoming patent during the late anthesis; inner perianth-segments and labellum with

purple spots; spur cylindrical-conical, $\frac{1}{3}$ of the length of the ovary, directed downwards; outer perianth segments ovoid-lanceolate with a long spatulate spire; labellum 3-lobed, middle lobe longer than the lateral ones.

Habitat

The specimen was collected on a mountain pasture with presence of other orchid species. *Armeria canescens* (Host) Boiss. on pastures and *Allium schoenoprasum* L. in both pastures and fens were common on the site which made the detection of *T. globosa* difficult. Other orchid species recorded in the same locality were *Gymnadenia rhellicani* (Teppner & E. Klein) Teppner & E. Klein (pasture), *Dactylorhiza cordigera* subsp. *bosniaca* (Beck) Soó (small fen) and *Gymnadenia frivaldii* Hampe ex Griseb. (small fen). *Narthecium scardicum* Košanin is another Balkan endemic that was present at the site, mostly in the small fen, but also on the pasture.

The geologic substrate on Korab mountain is consisted of Quaternary moraines (Petkovski & Popovski 1980). The soil type of the site is marked as leptosol in the Macedonian pedological map (MASIS 2015). In western Serbia, *T. globosa* was observed on limestones, ophiolitic mélanges, quartz latites, andesites etc. (Djordjević 2021; Djordjević & Tsiftsis 2022), on slightly acidic to alkaline soils (Pridgeon et al. 2001).

Traunsteinera globosa is recorded in different high-altitude mesophilous meadows (*Molinio-Arrhenatheretea* Tx. 1937), pastures in the mountain ranges of Europe (*Nardetea* Rivas Goday et Borja Carbonell in Rivas Goday et Mayor Lopez 1966 nom. conserv. propos.) as well as other habitats (Djordjević 2021; Djordjević & Tsiftsis 2022). The stand where we recorded the species belongs to the vegetation class *Juncetea trifidi* Hadač in Klika et Hadač 1944 and alliance *Poion violaceae* Horvat et al. 1937.

Distribution and threat status

Traunsteinera globosa is distributed in Europe and on the Caucasus including most of the Balkan countries with the exception of Greece (Moore 1980; Kuropatkin 2013). The record from Korab mountain (Fig. 2) is the southern-most one in Europe. The records from north Albania (Barina et al. 2016) and Rila mountain in Bulgaria (Petrova et al. 2018) are the closest known localities but further north compared to Korab mountain.



Figure 1. *Traunsteinera globosa* (L.) Rchb. on Korab mountain, 24.07.2022 (photo: S. Hristovski). a) habitus, b) leaves, c) inflorescence

We have to stress that only one specimen was found. The locality of Kobilino Pole has attracted many botanists in the past, but also in the recent years. Obviously, the species is very rare on Korab mountain as it represents the southern limit of its distribution. It is also rare in other southern Balkan countries (Bulgaria

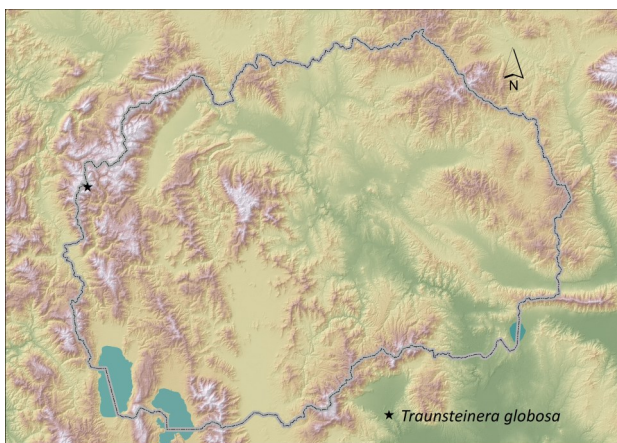


Figure 2. Distribution of *Traunsteinera globosa* (L.) Rchb. in North Macedonia

and Albania). In Bulgaria it has received status of Critically Endangered [CR B2ab(iv); C2a(i)] species (Peev et al. 2015). Similarly, in North Macedonia it should be considered as Critically Endangered [CR B1a2a; C2a(i, ii); D]. In other Balkan countries it is assessed in lower threat categories: Near Threatened in Bosnia and Herzegovina (FMET 2014) and least concern in western Serbia (Djordjević 2021).

Acknowledgements

We would like to thank our colleagues from the Czech Republic (Michal Hájek, Zuzička Plesková, Petra Hájková), Slovakia (Daniel Dite), Serbia (Predrag Lazarević) and Bulgaria (Iva Apostolova, Desislava Sopotlieva) who were part of the joint field work on Korab mountain. The field research was supported by the project "Shar Planina Mr: a refuge of the Balkan mires" financed by Macedonian Ecological Society within Young Ecologists Support Program „d-r Ljupčo Melovski“.

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