

***Orobanche alsatica* Kirschl. (*Orobanchaceae*) - another new species of the genus *Orobanche* in the flora of Republic of North Macedonia**

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Abstract

Orobanche alsatica, a new species in the flora of North Macedonia, is presented in this paper. A small population whose specimens parasitize on those of *Peucedanum longifolium* was discovered in the vicinity of Tri Češmi village, west of town Štip. *O. alsatica* is a European-West Asian species with a wide distribution range. In the latest distribution map of *O. alsatica* in the Euro+Med PlantBase, the Balkan countries North Macedonia, Serbia, Montenegro, Albania and Greece are not included. *Peucedanum cervaria* is the most frequent host plant, while *P. alsaticum* and *Seseli* spp. appear rarely. Photos of the plant, the habitat, the connection between the parasite and the host plant, and a flower drawing are presented. According to the literature and research data, the total number of *Orobanche* species (including *O. alsatica*) in the flora of North Macedonia is 25.

Key words: *Orobanche alsatica*, new species, host plant, North Macedonia.

Introduction

In 2019 and 2020, *Orobanche centaurina* Bertol. and *Orobanche flava* F. W. Schultz were reported as two new species of the genus *Orobanche* in the flora of North Macedonia (Nikolov, 2019; Nikolov, 2020). The current paper describes the discovery of *Orobanche alsatica* Kirschl., another new species of the genus *Orobanche* in the flora of North Macedonia. A small population of *O. alsatica* growing at the hills in the vicinity of Tri Češmi village (nearby the town Štip) was discovered and photographed by the botanist A. Teofilovski (Fig. 1. a). The excursion was part of the project "The Nature Conservation Programme in the Republic of North Macedonia – Phase II" (Swiss Agency for Development and Cooperation; implemented by Pharmachem – Skopje and HELVETAS Swiss Intercooperation; contractor Macedonian Ecological Society).

The host of *O. alsatica* is a well-developed population of *Peucedanum longifolium* Waldst. & Kit., wide-

spread species in those hills (Fig. 4). This actually represents the first data for the presence of any species from the series Alsaticae Teryokhin (Teryokhin et al., 1993) in the territory of North Macedonia that parasitizes a representative of the family Apiaceae.

Orobanche alsatica is a European-West Asian species. The distributional area is from Eastern France, through Central Europe (North Switzerland, Austria, Northeast Germany and Poland), the Baltic States, former Yugoslavia states and Romania, to Eastern Europe, then Asia Minor, the Caucasus, Siberia and China (Kreutz 1995; Pusch & Günther, 2009). The latest distribution map of *O. alsatica* on Euro+Med PlantBase data portal (Domina & Raab-Straube 2010+) does not include the following Balkan countries: Serbia, Montenegro, Albania, North Macedonia and Greece.

Peucedanum cervaria (L.) Lapeyr. is reported as the most frequent host plant for *O. alsatica*, while *Peucedanum alsaticum* L. and *Seseli* spp. appear sporadically

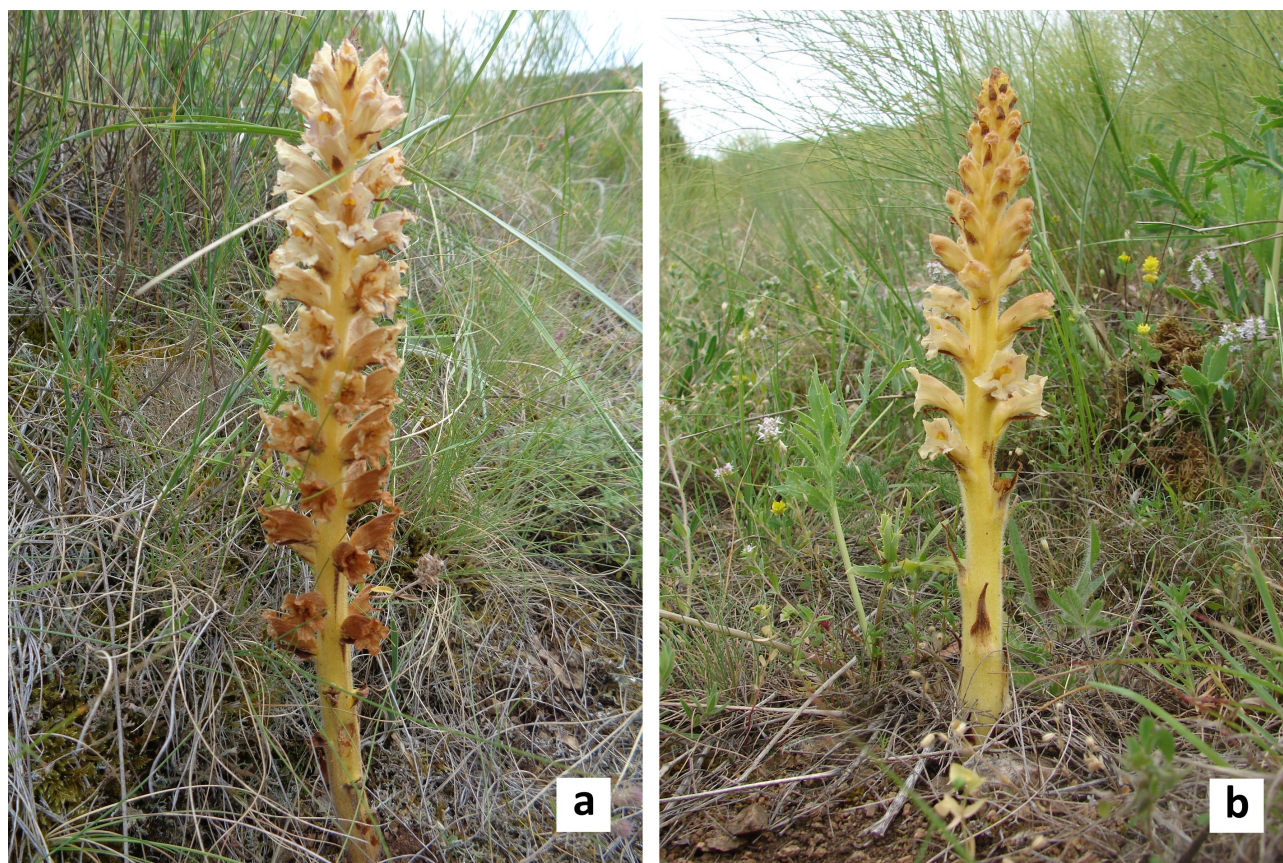


Fig. 1. The habitus of *Orobanche alsatica* Kirschl.
a) Photo: A. Teofilovski (13.06.2021) b) Photo: Z. Nikolov (23.05.2022)

(Kreutz, 1995; Pujadas-Salva & Gomez Garsija, 2000; Pusch, 2009; Piwowarczyk, 2012). The flowering time of *O. alsatica* is from mid-June to the end of July (Kreutz, 1995).

Materials and methods

The material, collected in the hills near the Tri Češmi village (Štip), was herbarised and labeled, following the standard procedures. Relevant literature sources were used for its determination: Hayek (1929), Beck von Mannagetta (1930), Delipavlov (1995), Kreuz (1995), Uhlich, Pusch & Barthel (1995), Senghas & Seybold (2003), Pusch & Günther (2009), Piwowarczyk (2012b), Stojanov (2020). Photos of the habitus of *O. alsatica* (Fig. 1. a, b), then *O. alsatica* with the host *Peucedanum longifolium* (Fig. 4) and the habitat with the population of the host species *P. longifolium* (Fig. 2) were also taken. A drawing of the flower (Fig. 3) and the distribution map (Fig. 5) were made. The dried material of *O. alsatica* is deposited in the herbarium of the Natural History Museum of the Republic of North Macedonia.

Results and discussion

Orobanche alsatica Kirschl., 1836. Prodr. Fl. Alsace: 109.

Štip: Tri Češmi village, 16.06.2021; elevation: 517 m.a.s.l.; N: 41°46.250' E: 022°07.131'. Leg./Det. Z. Nikolov

Locality

The locality of *O. alsatica* is in the hills in the vicinity of Tri Češmi village, near town Štip (Fig. 5). The habitat is a rocky scrubby grassland with species *Paliurus spinachristi* Mill., *Morina persica* L., *Achillea coarctata* Poir., *Eryngium campestre* L. The population of *Peucedanum longifolium* dominates at some parts of the hills (Fig. 2). The average elevation is 500 m a.s.l.

Description of the plants

Stem (20) 24–29 cm, almost lemon-yellowish, glandular-pubescent, in the lower part densely, in the middle and upper part sparsely covered with scale leaves. Scale leaves longer than 20 mm, lanceolate in the middle and upper part, triangular below, brownish, richly glandular-pubescent. Inflorescence (6)10–12 cm, glan-



Fig. 2. The habitat of *Orobanchе alsatica* Kirschl. with the population of *Peucedanum longifolium* Waldst. & Kit. (Photo: Z. Nikolov)

dular-pubescent, dense and many-flowered or elongated, lax and with fewer flowers in its lower part. Bracts usually brownish, mostly almost even with the corolla, glandular-pubescent. Calyx segments free or adnate at the base, unevenly or almost evenly bidentate, with glandular hairs. Corolla (18) 20–23 mm, yellowish with yellowish-brown to yellowish-violet nuance on the mid-veins, covered with glandular hairs. The dorsal line of the corolla almost regularly curved, with a flat part on the upper lip. The stamens inserted (3) 4–5 mm from the bottom of the corolla, the filaments pubescent at the broad base, the rest of the filaments (to the anthers) with rare glandular hairs or glabrous. The anthers with rare hairs at the stitches. The style with dense or sparse short and long glandular hairs. The two-lobed stigma is almost wax-yellow.

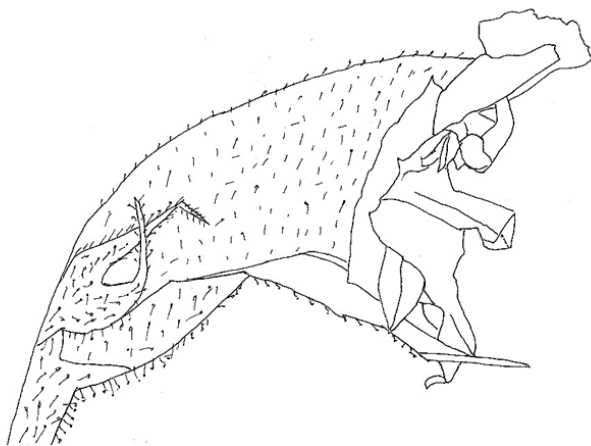


Fig. 3. The flower of *Orobanchе alsatica* Kirschl.

The plants from the locality Tri Češmi village (Štip) entirely match the characteristics of *O. alsatica* from the literature (Kreutz, 1995; Uhlich, Pusch. & Barthel, 1995; Pusch & Günther, 2009). The population of *O. alsatica* in this locality is small. Usually, single or rarely small groups of plants of *O. alsatica* grow here and there, scattered in the large population of the host plant *Peucedanum longifolium*. The flowering time of this population of *O. alsatica* is from mid-May to the second half of June.

Host plant and distribution of *Orobanchе alsatica* in North Macedonia

O. alsatica parasitizes *Peucedanum longifolium*. So far, the locality near Tri Češmi village (Štip) is the only known for *O. alsatica*.



Fig. 4. *Orobanchе alsatica* Kirschl. with the host plant *Peucedanum longifolium* Waldst. & Kit. (Photo: Z. Nikolov)



Fig. 5. The distribution map of *Orobanchе alsatica* Kirschl.

There is another large population of *P. longifolium* on the hill Bogoslovec (Sveti Nikole), also near Tri Češmi village (Teofilovski, 2020). This population of *P. longifolium* shall be inspected for possible specimens of *O. alsatica*.

Conclusion

Orobancha alsatica is a new species in the flora of North Macedonia. The locality is in the vicinity of Tri Češmi village (Štip), eastern part of North Macedonia. The host plant is *Peucedanum longifolium*.

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