



## *Pedicularis hoermanniana* and *Petasites kablikianus*, new species in the flora of the Republic of Macedonia

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**ABSTRACT:** This paper reports the first finding of two native species in the flora of the Republic of Macedonia, namely *Pedicularis hoermanniana* (Orobanchaceae) and *Petasites kablikianus* (Asteraceae). Both species were found on Mt. Jablanica in the upper part of the Belička River valley (SW Macedonia), while *P. kablikianus* was also found in the upper part of the Pena River valley in the Šar Mountains (NW Macedonia).

**KEYWORDS:** *Pedicularis hoermanniana*, *Petasites kablikianus*, first records, Mt. Jablanica, Šar Mountains, Macedonia

Received: 29 August 2017

Revision accepted: 05 February 2018

UDC: [582.916.26+582.998.1]:581.95(497.7)

DOI:

The Republic of Macedonia is a floristically rich region that has been studied by numerous botanists since the middle of the 19<sup>th</sup> century. Although the Macedonian flora is already relatively well known, a significant number of species new for the country or even new to science are still being continuously discovered (STEVANOVIĆ *et al.* 2009; TEOFILOVSKI 2017; etc.). During the author's recent floristic field work in the Šar Mountains (NW Macedonia) and on Mt. Jablanica (SW Macedonia), attention was focused on various taxonomic groups and species, among which were representatives of *Pedicularis* L. (Orobanchaceae) and *Petasites* Mill. (Asteraceae). Analysis of the collected herbarium material and relevant floristic literature revealed two species previously not reported from the territory of Macedonia.

Relevant specimens collected during the field work are now stored in the herbarium of the author. Data regarding locations and habitats were documented and are recorded on the labels. The plants were identified according to literature relevant for the genera *Pedicularis* and *Petasites* on the Balkan Peninsula and in Europe (HAYEK 1931; MAYER 1972; JOVANOVIĆ - DUNJIĆ 1974; DINGWALL 1976; PEEW 1995; KUZMANOV 2012; etc.), following the nomenclature proposed in Euro + Med Plantbase (GREUTER 2006; MAR-

HOLD 2011). The morphological description of each species is in accordance with Flora Europaea (MAYER 1972; DINGWALL 1976). The distribution of both species in Macedonia is indicated on a relief map.

***Pedicularis hoermanniana*** K. Malý (Figs. 1 & 2)

Mt. Jablanica - Čuma, stony place, carbonate substrate, 1700 m, 41°13'34.28" N, 20°32'6.54" E, 15.6.2017, leg. et det. A. Teofilovski; Mt. Jablanica - Čuma, subalpine meadows, carbonate substrate, 1890 - 1950 m, 41°13'34.00" N, 20°31'47.76" E, 19.7.2017, leg. et det. A. Teofilovski.

*Pedicularis* L. is a genus with a circumboreal distribution, comprising c. 500 hemi-parasitic species (SORIANO 2009). From the territory of Macedonia, the following 11 species were known up to now: *P. brachyodonta* Schloss. & Vuk., *P. comosa* L., *P. ferдинандii* Bornm., *P. friderici-augusti* Tomam., *P. heterodonta* Pančić, *P. leucodon* Grisebach, *P. limnogenia* A. Kern., *P. oederi* Vahl, *P. orthantha* Griseb., *P. petiolaris* Ten., and *P. verticillata* L. (ČERNJAVSKI 1943; MAYER 1969; etc.).

*Pedicularis hoermanniana* has a range of distribution in parts of C & NE Italy, Slovenia, and much of the Balkan Peninsula (east to the central Stara Planina Mountains in Bulgaria and south to Mts. Pieria and Tymfi in



Fig. 1. *Pedicularis hoermanniana* (Photo: A. Teofilovski).

NW Greece), usually inhabiting montane and subalpine mesophyllous or somewhat wet meadows and shrubby places (WRABER 1969; JOVANOVIĆ - DUNJIĆ 1974; PEEV 1995; AUTHIER 2000; CONTI 2005).

During extensive field work in the subalpine belt of Mt. Jablanica, *P. hoermanniana* was found only at the Čuma locality, in the Belička River basin. At this locality, several tens of individuals were observed growing on mesophyllous subalpine meadows with northern exposure and very steep inclination on a carbonate substrate at elevations between 1890 and 1950 m, while one small subpopulation was recorded in a carbonate stony place at an elevation of 1700 m. In the first type of habitat, *P. hoermanniana* is accompanied by the following species: *Alchemilla hoppeana* (Rchb.) Dalla Torre, *Alchemilla* sp., *Astrantia major* L., *Bupleurum falcatum* L., *Campanula rotundifolia* L., *Carex laevis* Willd., *Cerastium decalvans* Schloss. & Vuk., *Crepis viscidula* Froel., *Daphne mesereum* L., *Festuca* sp., *Gentiana lutea* L., *Geranium sylvaticum* L., *Knautia drymeia* Heuff., *Minuartia verna* (L.) Hiern, *Pancicia serbica* Vis., *Sesleria* cf. *wettsteinii* Dörfel. & Hayek, *Soldanella pindicola* Hausskn., *Stachys alopecuroides* (L.) Benth., *Trifolium badium* Schreb., *Vicia incana* Gouan, *Viola orphanidis* Boiss., etc.

The nearest known sites of this species are located on Mt. Moruva in SW Albania, c. 80 km to the southeast

(ČERNJAVSKI 1943); and in the Kosovo part of the Šar Mountains, c. 100 km to the northeast (STEVANOVIĆ & JANKOVIĆ 1984).

**Description:** Stem 50-100 cm, erect, pubescent, leafy mainly in upper half. Leaves broadly lanceolate, 2- to 3-pinnatisect, dull-green, glabrous above and pubescent below. Flowers in dense spike; bracts exceeding the flowers, the lower ones leaf-like, the upper ones less divided. Calyx coriaceous, hairy on the veins and margin; teeth unequal, broadly triangular, entire. Corolla up to 25 mm, pale-yellow, tube exceeding the calyx; upper lip shortly pubescent, nearly straight, obtuse. Capsule ovoid, obtuse, almost twice as long as calyx [according to MAYER (1972)].

*Pedicularis hoermanniana* belongs to *Pedicularis* sect. *Anodontae* (Bunge) Maxim., which includes perennial species with an obtuse upper lip of the corolla. Within the section, its closest relative is the S & SC European species *P. foliosa* L., differing in its less robust habitus, membranous calyx, villous upper lip of the corolla, and shortly apiculate capsule, which somewhat exceeds the calyx.

***Petasites kablikianus* Bercht. (Figs. 2 & 3)**

Šar Mountains – Lešnica, near the Pena River, 1490 m, 42°1'13.54" N, 20°46'55.10" E, 29.8.2012, leg. et det. A. Teofilovski; Šar Mountains – between Lešnica and Džinibeg, 1860-1890 m, subalpine meadows, stony and rocky places, 42° 0'48.28" N, 20°46'19.80" E, 6.9.2017, leg. et det. A. Teofilovski; Mt. Jablanica – Belička River valley, near the road to Čuma, 1500 - 1550 m, 41°13'26.02" N, 20°32'36.40" E, 8.6.2017, leg. et det. A. Teofilovski; Mt. Jablanica – Čuma, near the Belička River, 41°13'34.55" N, 20°32'6.59" E, 1650 - 1700 m, 14.6.2017, leg. et det. A. Teofilovski; Mt. Jablanica – near the Belička River, 1310 m, 41°13'7.97" N, 20°33'20.25" E, 17.8.2017, leg. et det. A. Teofilovski.

The genus *Petasites* L. comprises 19 species distributed in the northern hemisphere (TOMAN 1972; TAN *et al.* 2010). Eight of the 12 native species in Europe occur on the Balkan Peninsula: *P. albus* (L.) Gaertn., *P. anapetrovianus* Kit Tan *et al.*, *P. doerfleri* Hayek, *P. hybridus* (L.) G. Gaertn. *et al.*, *P. kablikianus* Bercht., *P. paradoxus* (Retz.) Baumg., *P. pyrenaicus* (L.) G. López, and *Petasites spurius* (Retz.) Rchb., two of which are Balkan endemics (*P. anapetrovianus* and *P. doerfleri*) (MARHOLD 2011).

*Petasites kablikianus* is a European species occurring in the Sudetes Mts., in the E & S Carpathians, and on the Balkan Peninsula [N Montenegro (Mt. Durmitor), Serbia, Croatia, Bosnia and Hercegovina, Albania, Bulgaria (Mt. Pirin and the Central Rhodopi) and NE Greece (Rhodopi Mts.) (TAN *et al.* 2010)]. On Mt. Jablanica in the Belička River valley, as a pioneer species it inhabits semi-stabilised ground and stony places near the forest road leading to the locality of Čuma (1500 - 1550 m); and wet or dry stony places and screes near the Belička River



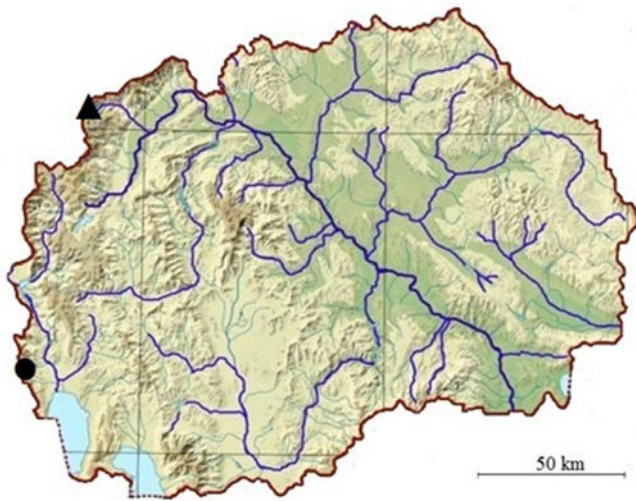


Fig. 2. Distribution of *Pedicularis hoermanniana* (●) and *Petasites kablikianus* (●,▲) in Macedonia.

(1650 - 1700 m), mostly on a carbonate substrate. Several patches of this species were also observed in a typical riparian habitat near the Belička River, at a somewhat lower altitude (1310 m) alongside *Aegopodium podagraria* L., *Angelica pancicii* Vandas, *Epilobium hirsutum* L., *Heracleum sphondylium* subsp. *pyrenaicum* (Lam.) Bonnier & Layens, *Petasites hybridus* (L.) G. Gaertn. & al., *Salix eleagnos* Scop., etc. At the locality of Lešnica in the Šar Mountains, this species was found near the Pena River, in a typical mountain riparian habitat similar to the one near the Belička River on Mt. Jablanica, while at a second locality in the Šar Mountains, between Lešnica and Džinibeg, it grows abundantly on a steep north-exposed subalpine meadow and adjacent rocks. Unlike the case of specimens observed on Mt. Jablanica, which were mostly in the fructification stage, specimens with inflorescences were not observed in the Šar Mountains. The specimens without inflorescences were satisfactorily identified on the basis of leaf morphology using the “key for vegetative plants” proposed by DINGWALL (1976) in the Flora Europaea.

The closest neighbouring locality of this species could be in Albania, but exact data regarding the chorology of this species in that country are not available. The closest confirmed localities of this species are the Sopotnica River valley in SW Serbia to the north and Mt. Pirin in SE Bulgaria to the east (NIKETIĆ & ZLATKOVIĆ 2006; KUZMANOV 2012).

**Description.** Leaves orbicular to triangular-cordate, somewhat angular in outline, glabrous underneath, except on the veins; basal lobes usually convergent, with 3-5 lateral veins bordering the sinus; margin regularly to irregularly toothed; apices of teeth 2-6(-10) mm apart. Scapes with 4-16 scale-leaves, the lower ones almost



Fig. 3. *Petasites kablikianus* (Mt. Jablanica - Čuma) (Photo: A. Teofilovski).

sheathing at the base, the middle ones 2.2-5.5 cm, fewer than half with a rudimentary lamina. Capitula 5-22 in the male, 18-33 in the female. Involucre of male 6-10 mm long, of female 6-7.5 mm long; bracts pale-green, with a usually entire apex, minutely hairy, with glandular hairs having heads 3 times as wide as their stalks. Florets white or pale-yellow, all tubular; length of corolla-lobes 1-2 mm. Stigma of male florets 1-7-3 mm, divided for more than half its length [according to DINGWALL (1976)].

Another two species of this genus are known from the territory of Macedonia: *P. hybridus* and *P. albus*. The first one is a frequent species near rivers and streams throughout the whole territory of Macedonia, from the lowest altitude to the montane belt. It differs from *P. kablikianus* in having larger leaves that are tomentose underneath, a winged petiole-furrow, glabrous or almost glabrous involucre bracts, etc. Unlike *P. hybridus*, *P. albus* is a rare species in Macedonia, reported only from several localities: Mt. Nidže, Prilep (VELENOVSKI 1922); Mt. Dobra Voda (MATEVSKI 1995); Mt. Žeden (MATEVEJEVA 1965); and Strumica – Sv. Ilija (RUDSKI 1943). It differs from *P. kablikianus* in having leaves that are regularly lobed and lanate underneath, heads of glandular hairs on the involucre bracts not more than twice as wide as their stalks, etc.

During our survey of the flora in the Šar Mountains (NW Macedonia) and on Mt. Jablanica (SW Macedonia), two species new for the flora of the Republic of Macedo-

nia were discovered, viz., *Pedicularis hoermanniana* and *Petasites kablikianus*.

The new records of *P. hoermanniana* confirmed previous expectations of the presence of this species in the Macedonian part of the Scaro-Pindic mountain chain and represent a connection with the southernmost populations of this species on Mt. Moruva in SW Albania and Mt. Tymfi in NE Greece.

The phytogeographical significance of the new records of *P. kablikianus* on Mt. Jablanica and in the Šar Mountains in W Macedonia cannot be satisfactorily discussed, since no data regarding the exact chorology of this species in Albania are available. The newly discovered localities represent a small northward shift in the range of the species from its southernmost point in the Greek Rhodopi Mountains to Mt. Jablanica in SW Macedonia.

**Acknowledgements** — The author is grateful to two anonymous reviewers for their useful suggestions.

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Botanica SERBICA



## REZIME

***Pedicularis hoermanniana* i *Petasites kablikianus*,  
nove vrste u flori Republike Makedonije**

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U ovom radu su predstavljeni prvi nalazi dve autohtone vrste u flori Republike Makedonije, *Pedicularis hoermanniana* (Orobanchaceae) and *Petasites kablikianus* (Asteraceae). Obe vrste su nađene na planini Jablanici (JZ Makedonija), u gornjem delu doline Beličke reke, dok je *P. kablikianus* nađen i na Šar planini, u gornjem delu doline reke Pene.

**KLJUČNE REČI:** *Pedicularis hoermanniana*, *Petasites kablikianus*, prvi nalaz, planina Jablanica, Šar planina, Makedonija

