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***Pilosella lactucella* (Asteraceae), first record for the Bulgarian flora**

Abstract

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Pilosella lactucella has been recorded for the first time for the Bulgarian flora. It grows in damp to wet subalpine meadows in the Rila Mts, at ca. 2250 m. A single population of about a thousand specimens has been observed, occupying an area of less than 0.5 ha. The recorded site is the south-easternmost locality of the species in Europe and is rather isolated. The ploidy level was estimated by flow cytometry and the species is a diploid. If the IUCN categories and criteria are applied at national level, the species would qualify for a Critically Endangered taxon under criterion B.

Key words: C-value, *Hieracium* s.l., new records, ploidy level, *Pilosella*, Rila Mts.

Introduction

During field work to study the alpine plant diversity in the Rila Mts, SW Bulgaria, a species of the taxonomically intricate vascular plant genus *Pilosella* Hill. (Asteraceae) was recorded for the first time in the Bulgarian flora – *P. lactucella*. The aim of the present paper is to report the species as a new record for the Bulgarian flora and to provide some data about the population size, ploidy level and its conservation significance.

Material and methods

Field work was carried out in summer of 2020 in the Rila Mts. Herbarium material and live plants were collected for further studies. The morphological description of the species is based on the Bulgarian material and compared with relevant literature, e.g. Zahn (1923) and Sell & West (1976). Data about the population size and habitats were noted in the field. Genome size and ploidy level of the species were estimated by a flow cytometer CyFlow SL Green (PARTEC, Germany), following the methodology described in Szeląg & Vladimirov (2019). *Pisum sativum* ‘Kleine Rheinländerin’ (1C = 4.38 pg, Greilhuber & al. 2007) was used as an internal standard. The conservation significance of the species was

evaluated using the IUCN categories, criteria and guidelines (IUCN 2012a, b; IUCN Standards and Petitions Subcommittee 2019).

Results and discussion

Pilosella lactucella (Wallr.) P. D. Sell & C. West (1967: 314) [syn.: *Hieracium lactucella* Wallr. (1822: 408)].

Herbaceous perennial. Stolons usually 1–3(4), long, slender. Stems ca. 15–25(30) cm, erect, with sparse, 5–7 mm, simple eglandular hairs and 0.2–1.2 mm glandular hairs, and very sparse stellate hairs. Rosette leaves 4–6, 20–90 × 3–10 mm, lanceolate to linear-lanceolate, ±acute, with a few, 4–5 mm, simple eglandular hairs usually on the margins and midrib below, glaucous; cauline leaves 0–1. Flowering stems with a few scales below the capitula and with moderately dense stellate and glandular hairs, and occasional, 1.0–3.5 mm, simple eglandular hairs. Capitula usually solitary, rarely 2(3). Involucral bracts 7–9 mm, linear-lanceolate, obtuse to subacute at apex, with pale margin, with scattered stellate hairs, dense, 2.0–2.5 mm, simple eglandular hairs and moderate, 1.0–1.5 mm, glandular hairs. Ligules lemon-yellow. Achenes ca. 2 mm, dark brown to blackish, with ca. 5 mm, dirty-white pappus. Flowering July, fruiting August.

The species belongs to *Pilosella* sect. *Auriculinae* (Fr.) F.W.Schultz & Sch. Bip. and is the first taxon of this section to be recorded in the Bulgarian flora. It has a distinctive morphology and clearly differs by the other *Pilosella* species in the area by the slender, long and glabrous to subglabrous stolons, the glabrous or nearly so and glaucous leaves, and the presence of mostly one, rarely 2–3 capitula.

Distribution. – Bulgaria, Rila Mts, small river valley SW of Kalin reservoir above Pastra village, Rila Municipality, 42.171133°N, 23.242451°E, damp to wet meadows, ca. 2250 m, 22.07.2020, coll. V. Vladimirov, S. Bancheva & M. Delcheva (SOM).

The native distribution area of the species comprises larger parts of Europe, ranging from Spain to the west to European Russia to the east and to Scandinavia to the north. So far the species has not been recorded in most of South-East Europe (Bräutigam & Greuter 2007-2009). In the Balkan Peninsula, *P. lactucella* has been reported from Croatia, Montenegro, Serbia and Slovenia (Bräutigam & Greuter 2007-2009). In fact, *P. lactucella* was reported for Bulgaria by Zahn (1925: 1235, sub *Hieracium auricula* Lam.) for damp places without mentioning of exact localities. In the next editions of Flora of Bulgaria, the species was reported as a possibly occurring in the country species, which, however, has never been confirmed (Georgiev 1933, 1948; Stojanov & al. 1967: 1183).

Habitat and population. – In the Rila Mts, *P. lactucella* grows in damp to wet meadows at slopes with small inclination (1–5°) facing to the east (Fig. 1). The projective vegetation cover is ca. 90%. Some 50 accompanying vascular plant species were noted of which most common were: *Agrostis canina* L., *Alchemilla glabra* Neygenf., *Bistorta vivipara* (L.) Delarbre, *Carex canescens* L., *C. echinata* Murray, *C. fuliginosa* Schkuhr, *C. nigra* (L.) Reichard, *Cerastium cerastoides* (L.) Britton, *C. fontanum* Baumg., *Crocus veluchensis* Herb., *Dactylorhiza cordigera* (Fr.) Soó, *Deschampsia caespitosa* (L.) P. Beauv., *Eleocharis palustris* (L.) R. Br., *Epilobium nutans* F. W. Schmidt, *Eriophorum latifolium* Hoppe, *E. vaginatum* L., *Festuca nigrescens* Lam., *Gentiana*

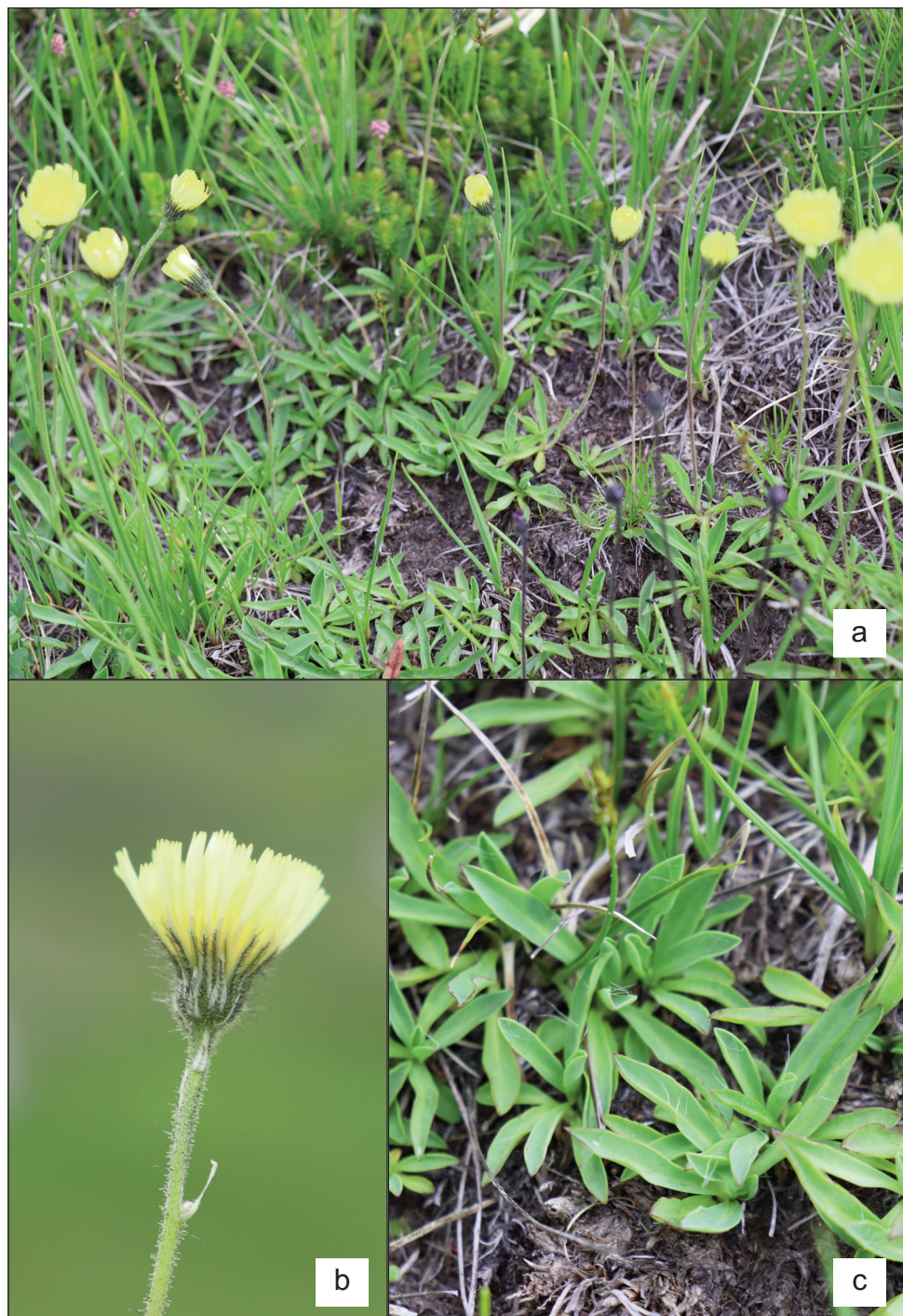


Fig. 1. *Pilosella lactucella* in the Rila Mts, Bulgaria: a) habit; b) capitulum; c) rosette leaves.

pyrenaica L., *Gymnadenia frivaldii* Griseb., *Juncus filiformis* L., *Luzula multiflora* (Ehrh.) Lej., *Myosotis sicula* Guss., *Nardus stricta* L., *Phleum alpinum* L., *Pilosella hoppeana* subsp. *testimonialis* (Peter) P. D. Sell & C. West, *P. pseudopilosella* (Ten.) Soják, *Pinguicula balcanica* Casper, *Plantago gentianoides* Sibth. & Sm., *Primula deorum* Velen., *P. farinosa* L., *Scorzoneroides autumnalis* (L.) Moench, *S. rilaensis* (Hayek) Holub, *Saxiraga stellaris* L., *Sesleria comosa* Velen., *Trifolium badium* Schreb., *T. repens* L., *Veronica serpyllifolia* L., etc. The population comprised about a thousand of flowering specimens and occupied a very small area of ca. 0.45 ha. Often the specimens grow on small elevations of the substrate which are somewhat dryer. Considering the chorotypes of the vascular plants in the habitat, some 60% of the species belong to the European, Boreal, Arctic-Alpine, European-SW Asian and Euro-Siberian chorotypes which is typical for the high-mountain wet meadows in Rila Mts.

Genome size and ploidy level. – The genome size of three specimens has been measured by flow cytometry: $1C = 1.94$ pg. This agrees with previous reports (e.g. Bräutigam & Bräutigam 1996) and corresponds to a diploid level.

Conservation significance. – The population in the Rila Mts represents the south-eastern-most locality of the species in Europe and is strongly isolated. The closest localities are in Serbia, e.g. in Kopaonik Mts (Mráz & Šingliarová 2009). Considering the small population size and area of the Bulgarian locality, as well as the vulnerability of the habitat (wet meadow), the species is of conservation concern in Bulgaria. If the IUCN categories and criteria are applied at national level, the species should be assigned the following national IUCN category: Critically Endangered [CR B1ab(ii,iii)+2ab(ii,iii)]. The evaluation is based on the presence of a single very isolated population and the projected decline of the area of occupancy and quality of the habitat due to climate change and anthropogenic pressure.

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