



Original Scientific Report

New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 4

Gordana TOMOVIĆ^{1*}, Marko S. SABOVLJEVIĆ^{1*}, Teodor T. DENCHEV², Cvetomir M. DENCHEV², Marjan NIKETIĆ³, Petya BOYCHEVA⁴, Dobri IVANOV⁴, Elvedin ŠABANOVIĆ⁵, Vladan DJORDJEVIĆ¹, Lado KUTNAR⁶, Sorin ȘTEFĂNUȚ⁷, Jovana PANTOVIĆ¹, Svetlana GRDOVIĆ⁸, Nevena KUZMANOVIĆ¹, Ermin MAŠIĆ⁹ and Predrag LAZAREVIĆ¹

1 Institute of Botany and Botanical Garden, Faculty of Biology, University of Belgrade, Takovska 43, 11 000 Belgrade, Serbia

2 Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 2 Gagarin St., 1113 Sofia, Bulgaria

3 Natural History Museum, Njegoševa 51, 11000 Belgrade, Serbia

4 Department of Biology, Medical University Varna, 84 Tsar Osvoboditel Blvd., 9000 Varna, Bulgaria

5 University of Tuzla, Faculty of Sciences and Mathematics, Department of Biology, Urfeta Vejzagića 4, 75000 Tuzla, Bosnia and Herzegovina

6 Slovenian Forestry Institute, Večna pot, 1000 Ljubljana, Slovenia

7 Institute of Biology – Bucharest, Romanian Academy, 296 Splaiul Independentei, 060031 Bucharest, P.O. Box 56-53, Romania

8 Faculty of Veterinary Medicine, University of Belgrade, Bulevar oslobođenja 18, 11000 Belgrade, Serbia

9 Faculty of Science, University of Sarajevo, Zmaja od Bosne 33-35, 71000 Sarajevo, Bosnia and Herzegovina

* column editors, to whom contribution should be sent (botanicaserbica@bio.bg.ac.rs)

ABSTRACT:

This paper presents new records and noteworthy data on the following taxa in SE Europe and adjacent regions: diatom alga *Stauroneis neofossilis*, parasitic fungus *Anthracoidea arenariae*, horsetail *Equisetum hyemale*, liverwort *Harpanthus flotovianus*, mosses *Fissidens exilis* and *Rhizomnium punctatum*, monocots *Epipactis helleborine* subsp. *orbicularis*, *Himantoglossum calcaratum* subsp. *rumelicum* and *Schoenus nigricans* and dicots *Calluna vulgaris*, *Mahonia aquifolium* and *Willemetia stipitata* subsp. *albanica*.

Keywords:

new report, *Anthracoidea arenariae*, *Calluna vulgaris*, *Epipactis helleborine* subsp. *orbicularis*, *Equisetum hyemale*, *Fissidens exilis*, *Harpanthus flotovianus*, *Himantoglossum calcaratum* subsp. *rumelicum*, *Mahonia aquifolium*, *Rhizomnium punctatum*, *Schoenus nigricans*, *Stauroneis neofossilis*, *Willemetia stipitata* subsp. *albanica*, SE Europe

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Anthracoidea arenariae* (Syd.) Nannf., fam. Anthracoideaceae (fungus, parasitic)*Contributors:** Teodor T. DENCHEV and Cvetomir M. DENCHEV**Geographical focus:** North Macedonia**New record and noteworthy data:** A first record for North Macedonia.**Specimen data:** on *Carex brizoides* L. (det. Koopman J.), North Macedonia, Mt. Pelister, N 41.02920°, E 21.22410°, 1401 m a.s.l.; 5 October 2017; leg./det. Denchev TT, Denchev CM. 17137 (SOMF 30383).**Voucher:** Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 30383.

Anthracoidea is a large genus of smut fungi comprising 111 species, mainly hosted by the plants from the family Cyperaceae. Their sori are formed in some female flowers, around aborted nuts as ovoid, ellipsoidal or broadly ellipsoidal hard bodies (DENCHEV *et al.* 2020).

Anthracoidea arenariae is distributed in Europe, Asia, and North America, recorded on *Carex accrescens* Ohwi (syn. *C. pallida* C. A. Mey.), *C. arenaria* L., *C. brizoides*, *C. colchica* J. Gay (syn. *C. ligerica* J. Gay) and *C. praecox* Schreb. (VÁNKY 2011). In the Balkan Peninsula, it is known from Slovenia (reported on *C. brizoides*; LUTZ & VÁNKY 2009), Romanian Dobrogea (reported on *C. colchica* and *C. praecox*; NEGREAN 1993), and Bulgaria (on *C. praecox*; DENCHEV 2001). This smut fungus is recorded here for the first time from North Macedonia.

Calluna vulgaris* (L.) Hull, fam. Ericaceae (dicot, vascular plants)*Contributors:** Marjan NIKETIĆ and Gordana TOMOVIĆ**Geographical focus:** Serbia**New records and noteworthy data:** Three new localities and the second report for the region of Western Serbia.**Specimen data:** 1) Northwestern Serbia, Rađevina area, Dvorska village, Obradovići hamlet, N 44.4410823°, E 19.3913249°, MGRS 34T CQ72, clearings in the zone of the *Quercus petraea* forest, argilloschist, 420 m a.s.l.; 14 July 2020; leg./det. Niketić M *s/n* (BEO); 2) Northwestern Serbia, Rađevina area, Cerova village, Despići hamlet, Kičer hill, N 44.4238817°, E 19.3717394°, MGRS 34T CQ72, heathland in the zone of the *Quercus petraea* forest, argilloschist, 430 m a.s.l.; 13 July 2020; leg./det. Niketić M *s/n* (BEO); 3) Western Serbia, Mt. Užička, Crna Gora, Duškovci village, Mala Zajčica hill, N 44.0040006°, E 20.053798°, MGRS 34T DP27, within the planted forest of *Pinus nigra*, Neogene sediments, 750 m a.s.l.; 2 August 2020; leg./det. Niketić M, Tomović G. 68411 (BEOU), *s/n* (BEO).**Vouchers:** Department of Plant Ecology and Geography, Herbarium of the Institute of Botany and Bo-

tanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 68411; Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), *s/n*.

Detailed species distribution data in Serbia were presented in SABOVLJEVIĆ *et al.* (2020), with several new localities in Mt. Golija in SW Serbia. Two species localities in the Rađevina area are relatively close to previously recorded sites in Mts. Gučevo and Boranja (SABOVLJEVIĆ *et al.* 2020 and the literature therein) in which *C. vulgaris* grows on steep terrain and eroded acidophilous soil, together with *Castanea sativa* L. The newly registered locality in Mt. Užička, Crna Gora (Mala Zajčica hill) represents the second locality of this rare and strictly protected species in the region of W Serbia (besides Mt. Golija). A small and restricted group of *C. vulgaris* individuals were found within the planted *Pinus nigra* forest on Mala Zajčica hill on slightly eroded roadside land.

Equisetum hyemale* L., fam. Equisetaceae (horsetail, vascular plant)*Contributors:** Petya BOYCHEVA and Dobri IVANOV**Geographical focus:** Bulgaria**New record and noteworthy data:** The first record for the Northeastern Bulgaria floristic region.**Specimen data:** Northeastern Bulgaria, Varna region, the Santa Marina area, the land around Botevo village; N 43.4131040°, E 27.7580170°; 5 April 2020; leg./det. Boycheva P, Ivanov D.**Voucher:** Herbarium of Sofia University St. Kliment Ohridski (SO), 108046.

The newly recorded subpopulation is located within a deciduous forest of *Carpinus betulus* L., alongside a stream, and numbers over 50 specimens on an area of 10 m². At a distance of about 500 m another smaller sublocality with 27 specimens was also registered.

The species is distributed in central, southwestern and parts of southern Bulgaria (ASSYOV *et al.* 2012). There is also a report in the literature about the presence of *E. hyemale* in Northeast Bulgaria, namely near Razgrad (ASSYOV *et al.* 2012). VLADIMIROV *et al.* (2013) stated that considering the remote date of the previous report and the absence of herbarium material, it is necessary to study the area and clarify the occurrence of this species in Northeast Bulgaria, which is now confirmed by this report.

Epipactis helleborine* subsp. *orbicularis* (K.Richt.) E.Klein, fam. Orchidaceae (monocot, vascular plant)*Contributors:** Elvedin ŠABANOVIĆ and Vladan DJORDJEVIĆ**Geographical focus:** Bosnia and Herzegovina**New record and noteworthy data:** The first record of this subspecies in Bosnia and Herzegovina.

Specimen data: Bosnia and Herzegovina, Mt. Perun, below Sridice, N 44.13528°, E 18.29056°, MGRS 34T BP89, open habitat in the spruce forest zone, limestones and cherts, c. 1360 m a.s.l.; 07 August 2020; leg. Šabanović E.; det. Djordjević V.

Voucher: Herbarium of the National Museum of Bosnia and Herzegovina (SARA), scientific collection, 52359; photo documentation: E. Šabanović.

Seven taxa of the genus *Epipactis* were known in Bosnia and Herzegovina until recently: *E. atrorubens* (Hoffm.) Besser, *E. helleborine* (L.) Crantz subsp. *helleborine*, *E. leptochila* (Godfery) Godfery, *E. microphylla* (Ehrh.) Sw., *E. muelleri* Godfery, *E. palustris* (L.) Crantz and *E. purpurata* Sm. (ASCHERSON & KANITZ 1877; BECK 1887, 1903; TAKÁCS *et al.* 2014; ŠABANOVIĆ *et al.* 2020). During the botanical survey conducted in the area of Mt. Perun in July and August 2020, data concerning the distribution, habitat preferences and population size of *Epipactis helleborine* subsp. *orbicularis* (syn. *E. distans* Arv.-Touv.) were recorded. The taxon differs from *E. helleborine* subsp. *helleborine* by its smaller rounded leaves, which are pale green or yellow-green and often shorter than their respective internodes, and more elongated inflorescence (DJORDJEVIĆ *et al.* 2016).

The main distribution range of this taxon spreads from S France and NE Spain across Switzerland, Austria, N Italy and Slovenia to the Czech Republic and Slovakia, whereas disjunct parts of the range are situated in N Europe in Sweden and the Baltic region, and the southern disjunct part of the range includes N Greece (DJORDJEVIĆ *et al.* 2016 and the references therein). In the Balkans, the taxon is distributed in Istria and W Croatia, Serbia and Greece (DJORDJEVIĆ *et al.* 2016 and the references therein).

The finding of this taxon in Mt. Perun is the first record of this species on the territory of Bosnia and Herzegovina. This is a new 10 × 10 km UTM grid cell in the central Balkan region, in addition to previous findings only in Serbia: Jabuka and Mt. Kamena Gora (DJORDJEVIĆ *et al.* 2016). Although two individuals were recorded within an area of 100 m², it is assumed that this taxon has a wider distribution and greater population size in Bosnia and Herzegovina, bearing in mind suitable habitats.

***Fissidens exilis* Hedw., fam. Fissidentaceae (moss, bryophyte)**

Contributors: Marko S. SABOVLJEVIĆ and Lado KUTNAR
Geographical focus: Slovenia

New record and noteworthy data: A new report of a threatened species in Slovenia.

Specimen data: 23 km south-east of Ljubljana, in a beech forest between the villages of Čušperk and Vodice, N 45.89103114°, E 14.67782739°, 580 m a.s.l.; 06 July 2006; leg. Kutnar L.; det. Sabovljević MS.

Voucher: Herbarium of the Slovenian Forestry Institute, s/n

Fissidens exilis belongs to the very small species of the subgenus *Fissidens* which is easy to overlook. During the systematic collection of bryophytes in 2006 in the forest stands of Slovenia, a sample belonging to this species was recorded. It was growing among the tree roots on shallow *Chromic Cambisols* and *Rendzic Leptsols* in the beech dominated community of *Hacquetio-Fagetum*, with moss belonging to *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen.

The species is red-listed in Austria as Endangered (EN) (ERZBERGER 2016) and in Slovenia as Vulnerable (VU) (MARTINČIČ 2016a).

On the European level where it has a large but scattered distribution, its conservation status is considered of least concern (LC) (HODGETTS *et al.* 2019), since the overall European population is estimated as stable (CAMPISI & COGONI 2019). CAMPISI & COGONI (2019) also stated that it can be locally rare and thus considered threatened.

In Slovenia, data on population trends are lacking. PAVLETIĆ (1955) reported two localities in Slovenia and both records were made in the late 19th century near the town of Ptuj. All previous records include five localities: Bohor and Mestni Hrib near Ptuj (BREIDLER 1891), Rasulje near Vranoviči (MARTINČIČ 1977), the forest Krakovski Gozd (HOČEVAR *et al.* 1980) and Simon's bay near Izola (MARTINČIČ 2016b).

The species is rare, nationally significant, of conservation interest, and also makes an important contribution to the knowledge of bryophyte diversity and distribution in Slovenia.

***Harpanthus flotovianus* (Nees) Nees, fam. Harpanthaceae (liverwort, bryophyte)**

Contributor: Sorin ȘTEFĂNUȚ

Geographical focus: Romania

New record and noteworthy data: The first record of this red-listed and threatened liverwort for the Țarcu Mts. and the western locality of the Southern Carpathians.

Specimen data: Southern Carpathians, Hunedoara County, Țarcu Mts., Mătania Peak, N 45.312833°, E 22.629028°, 1812 m a.s.l.; 15 September 2020; leg./det. Ștefanuț S.

Voucher: Romanian Academy, Herbarium of the Institute of Biology – Bucharest (BUCA), bryophyte collection, B12102.

Harpanthus flotovianus was collected from the eastern side of Mătania Peak, along with other bryophytes such as *Bazzania flaccida* (Dumort.) Grolle, *Cephalozia bicuspudata* (L.) Dumort., *Pellia neesiana* (Gottsche) Limpr., *Plagiochila asplenioides* (L.) Dumort., *Porella cordaeana* (Huebener) Moore, *Scapania undulata* (L.) Dumort., *Solenostoma sphaerocarpum* (Hook.) Steph., *Sphenobolus minutus* (Schreb. ex Cranz) Berggr., *Philonotis seriata*

Mitt. and *Ptychostomum schleicheri* (DC.) J.R. Spence ex D. Bell & Holyoak.

This is the third locality of *H. flotovianus* in Romania (ȘTEFĂNUȚ 2008). The first report was from the Parâng Mts., in a peatbog near Călcescu Lake (ȘTEFUREAC 1967), confirmed in 30 June 2012, 1910 m a.s.l. leg./det. Ștefănuț S. [BUCA B4388, B4389]. The second report was from the Cindrel Mts., Jujbea, 2000 m a.s.l. (GÜNDSCH 1977). The nearest locality of *H. flotovianus* is in Slovenia (HODGETTS & LOCKHART 2020). The conservation status of *H. flotovianus* in Romania has changed from Critically Endangered – CR B2ab(ii,iii,iv) (ȘTEFĂNUȚ & GOIA 2012) to Endangered – EN B2ab(ii,iii,iv).

***Himantoglossum calcaratum* subsp. *rumelicum* (H. Baumann & R. Lorenz) Niketić & Djordjević, fam. Orchidaceae (monocot, vascular plant)**

= *H. jankae* Somlyay, Kreutz & Óvári, Phytotaxa 73: 9 (2012)

Contributors: Petya BOYCHEVA and Dobri IVANOV

Geographical focus: Bulgaria

New records and noteworthy data: This is a species with conservation status. For the first time we report a habitat in the European NATURA 2000 network of Batova River Valley (BG0000102) and for the second time in the EU zone of Suha reka (BG0000107). We present a total of five new habitats.

Specimen data: 1) Northeastern Bulgaria, Varna region, close to underbrush, Botevo village, N 43.4692480°, E 27.7084140°; 06 June 2020; leg./det. Boycheva P, Ivanov D.; 2) Northeastern Bulgaria, Dobrich region, the land around Novo Botevo village, N 43.4692480°, E 27.7084140°; 28 June 2020; leg./det. Boycheva P, Ivanov D.; 3) Northeastern Bulgaria, Varna region, the land around Krumovo village, N 43.4176640°, E 27.7639230°; 21 June 2020; leg./det. Boycheva P, Ivanov D. 4) Northeastern Bulgaria, Dobrich region, the land around Sokolnik village, N 43.4228290°, E 27.8958810°; 04 July 2020, leg./det. Boycheva P.; 5) Northeastern Bulgaria, Varna region, the land around Oborishte village, N 43.43499010°, E 27.6626780°; 06 June 2020; leg./det. Boycheva P, Ivanov D.

Voucher: Herbarium of Sofia University St. Kliment Ohridski (SO), 108045, 108042, 108043, 108041, 108053.

Habitats of *H. calcaratum* subsp. *rumelicum* (syn. *H. jankae*) in the Suha reka protected zone were reported for the first time in VLADIMIROV *et al.* (2019). Data on the distribution of the species in Bulgaria have been reported by BANCHEVA & VASSILEV (2006) and VLADIMIROV *et al.* (2017, 2020). *H. calcaratum* subsp. *rumelicum* is native to SE Europe and is included in Annex II of the Council Directive 92/43EEC (the Habitats Directive). The species is of conservation importance, included in Annex III of the Biodiversity Act and categorized as Vulnerable in the Red Book of Bul-

garia (PEEV *et al.* 2011). It is also included in the lists of species protected by CITES. The species was not discovered in this site during the national mapping campaign for NATURA 2000 in Bulgaria (MOEW).

***Mahonia aquifolium* (Pursh) Nutt., fam. Berberidaceae (dicot, vascular plant)**

Contributors: Petya BOYCHEVA and Galina YANEVA

Geographical focus: Bulgaria

New records and noteworthy data: The second record for the Northeastern Bulgaria floristic region. The species is potentially invasive for Europe. We present two new records.

Specimen data: 1) Northeastern Bulgaria, Varna region, the land around Dolishte village, N 43.3401540°, E 27.8527900°; 22 March 2020; leg./det. Boycheva P, Yaneva G.; 2) Northeastern Bulgaria, Varna region, the land around Krumovo village, N 43.4131040°, E 27.7580170°; 05 April 2020; leg./det. Boycheva P.

Voucher: Herbarium of Sofia University St. Kliment Ohridski (SO) 108038, 108037.

Territory of the Suha reka protected zone. Two exemplars are registered in a deciduous forest near arable land.

In the land around Dolishte village, on the territory of the protected area of Batova River Valley, 16 specimens of *M. aquifolium* (in the flowering phase) were registered in the shrubs on an open meadow near a deciduous forest. Two more specimens were also found about 500 meters within the forest.

This species was recorded for the first time in the Northeast Bulgaria floristic area by ZAHARIEV (2014) on the territory of Shumen Plateau. In Bulgaria, it was also reported by VLADIMIROV *et al.* (2013, 2018, 2019). *M. aquifolium* originates from the western parts of North America and is included in the lists of invasive plants for Europe. Locally, it is naturalized throughout Europe. It is often cultivated in gardens and graveyards (VEENVLIET *et al.* 2019).

***Rhizomnium punctatum* (Hedw.) T.J. Kop., fam. Mniaceae (bryophyte, acrocarpous moss)**

Contributors: Jovana PANTOVIĆ and Svetlana GRDOVIĆ

Geographical focus: Serbia

New record and noteworthy data: The first record for the North Bačka county and the Bačka region.

Specimen data: Vojvodina province, Bačka, Tavan-kut, Čikerija, N 46.082299°, E 19.477902°, on the shady sandy soil at the edge of the forest road, 132 m a.s.l.; 20 October 2019; leg. Pantović J, Stevanoski I, Bogosavljević J.; det. Grdović S.

Voucher: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade Herbarium (BEOU), Bryophyte collection, Bryo 08710.

Rhizomnium punctatum is a circumpolar boreo-temperate species widespread throughout Europe, but less common in the Mediterranean region. In the region of Eastern Europe it is known from all countries except Crete (HODGETTS 2017). This species is characteristic of wet and shaded soils and rocks, often growing alongside streams or flushes, but can also be found in somewhat drier habitats (SMITH 2004; CASAS 2006; BLOCKEEL *et al.* 2014).

Although it is not rare throughout Serbia, especially in mountainous regions, its occurrence in the Vojvodina province is rather limited. So far, two localities have been known from Vojvodina. One is an old record from Deliblato Sands in the Banat region given by POPOVIĆ (1966), and the other is from Mt. Fruška Gora in the Srem region (POPOVIĆ 1966; CVETIĆ & SABOVLJEVIĆ 2005). The present finding from Tavankut sands is the first record for the North Bačka county and the Bačka region itself. This record represents an important contribution to the knowledge of the regional distribution and ecology of bryophyte species in Serbia.

***Schoenus nigricans* L., fam. Cyperaceae (monocot, vascular plant)**

Contributor: Nevena KUZMANOVIĆ

Geographical focus: Serbia

New records and noteworthy data: This is the confirmation of its presence for Serbia proper, and the first record for the municipality of Raška.

Specimen data: Central Serbia, Kraljevo, Bogutovačka Spa, at the entrance to the Lopatnica river gorge, mire; 3 May 2004; leg./det. Stevanović V, Niketić M, Vukojičić S, Tomović G.; conf. Kuzmanović N., 5 September 2020.

Voucher: Department of Plant Ecology and Phytogeography, Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 18864.

The occurrence of *Schoenus nigricans* L. in Serbia was published for the first time by PRODÁN (1915), for the surroundings of Novi Sad: the marshes of Kovilj and Kać. Afterwards, JÁVORKA *et al.* (1926) published the record from the Kosovo & Metohija province: in the wetlands below the Čafa Morina pass (Qafa e Morinës). However, in the taxonomic treatment of the genus *Schoenus* L. in the Flora of Serbia (ČANAK 1976), no exact localities for the occurrence of the species were given. The only recent record of this species for Serbia proper in the literature was published by JANKOVIĆ & KARADŽIĆ (1991), for the peatland on the territory of Divčibare.

In the latest checklist of vascular plants of Serbia, NIKETIĆ & TOMOVIĆ (2018) classified its occurrence as doubtful for Central Serbia. This record, based on the herbarium specimen deposited at BEOU, is the confirmation of its presence in the area.

***Stauroneis neofossilis* Lange-Bertalot & Metzeltin 1996, fam. Stauroneidaceae (diatom, algae)**

Contributor: Ermin MAŠIĆ

Geographical focus: Bosnia and Herzegovina

New record and noteworthy data: The first record for Bosnia and Herzegovina.

Specimen data: Kakanj, mine pit lake Bistrik, N 44.10178°, E 18.1627°, 454 m a.s.l.; July and August 2013–2014, leg./det. Mašić E.

Voucher: Diatom collection (Mašić, E.) s/n, Laboratory for the study of the systematics of algae and fungi, Department of Biology, Faculty of Science, University of Sarajevo (Bosnia and Herzegovina).

The analysis of phytobenthos samples collected in the mine pit lake Bistrik (Kakanj) revealed a rare diatom identified as *Stauroneis neofossilis* Lange-Bertalot & Metzeltin 1996. The analysis of available data related to phycological research in Bosnia and Herzegovina led to 20 taxa of the genus *Stauroneis* present in Bosnia and Herzegovina, while species *S. neofossilis* has not been identified within the country so far (MAŠIĆ 2020). This taxon has been identified from only a few localities in Europe (LANGE-BERTALOT & METZELTIN 1996; DENYS 2009; BUCZKO 2016; KARLASON *et al.* 2018), mainly in natural habitats, while in Bosnia and Herzegovina it has been identified in a mine pit lake. The species was found in epipelagic assemblages in the mine pit lake Bistrik. During the investigated period, the pH value ranged from 7.27–7.63. Electrical conductivity varied from 258–285 µS/cm. In the mine pit lake Bistrik selected heavy metals were measured as follows: Al (41 mg/l), Cr (0.33 mg/l), Zn (2.51 mg/l), Ni (3.79 mg/l), Mn (370 mg/l), Pb (37.50 mg/l). The concentration of silicate (Si) was also indicative at 1.48 mg/l.

***Willemetia stipitata* subsp. *albanica* (Kümmerle & Jáv.) Kirschnerová, fam. Compositae (dicot, vascular plant)**

Contributors: Predrag LAZAREVIĆ and Nevena KUZMANOVIĆ

Geographical focus: Serbia

New records and noteworthy data: There are no published records for this taxon outside the Kosovo region. These are the first records for Serbia outside Kosovo. This is a taxon of great conservation interest.

Specimen data: 1) Central Serbia, Mt. Kopaonik, Crvene Bare, N 43.2983181°, E 20.809015°, *Carici-Sphagno-Eriophoretum latifoliae* comm., 1664.7 m a.s.l.; 31 July 2020; leg./det. Kuzmanović N, Stevanoski I; conf. Lazarević P., 5 August 2020; 2) Central Serbia, Mt. Kopaonik, Jankove Bare, N 43.320727°, E 20.773962°, *Potentilletum palustris* comm., 1465.9 m a.s.l.; 31 July 2020; leg./det. Kuzmanović N, Stevanoski I; conf. Lazarević P., 5 August 2020; 3) Central Serbia, Mt. Kopaonik, Gobelja peak, N 43.3228785°, E 20.812643°, *Willemetietum stipitatae* comm., 1766 m a.s.l.; 12 August 2020; leg./

det. Kuzmanović N, Stevanoski I.; conf. Lazarević P., 15 August 2020; 4) Central Serbia, Mt. Kopaonik, Gobelja peak, N 43.315865°, E 20.814028°, *Carici-Sphagno-Eriophoretum latifoliae* comm., 1775 m a.s.l.; 21 July 2020; leg./det. Kuzmanović N, Stevanoski I.; conf. Lazarević P., 5 August 2020; 5) Central Serbia (central), Mt. Kopaonik, Pajino Preslo pass N 43.280696°, E 20.814687°, *Carici-Sphagno-Eriophoretum latifoliae*, 1759 m a.s.l.; 22 July 2020; leg./det. Kuzmanović N, Stevanoski I.; conf. Lazarević P., 5 August 2020; 6) Central Serbia, Mt. Kopaonik, Nebeske Stolice peak, N 43.264945°, E 20.834254°, *Willemetio-Caricetum ferrugineae* comm., 1762 m a.s.l.; 22 July 2020; leg./det. Lazarević P, Kuzmanović N, Stevanoski I.; conf. Lazarević P., 5 August 2020; 7) Central Serbia, Mt. Kopaonik, Pajino Preslo pass, N 43.279384°, E 20.822467°, *Eriophoretum angustifoliae* comm., 1772 m a.s.l.; 22 July 2020; leg./det. Kuzmanović N, Stevanoski I.; conf. Lazarević P., 5 August 2020; 8) Central Serbia, Mt. Kopaonik, 1886; leg./det. Pančić J. (sub *Crepis hieracioides*); rev. Niketić M., 1998 sub. *Calycocorsus stipitatus*; 9) Southwestern Serbia, Mt. Mojstirsko-Draške Planine, Kaboja-Crvene Vode, near the springs, 1800 m a.s.l.; 29 July 2010; leg./det. Lazarević P. 54972.

Voucher: Department of Plant Ecology and Phytogeography, Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 54643, 54645, 63370, 63447, 63477, 63480, 63487, 54972; Herbarium Pancinianum 11253.

Willemetia stipitata f. *albanica* was introduced by Kümmerle & Jávorka in JÁVORKA (1921) to distinguish between the plants collected on Mount Korab in Albania. The new combination *W. stipitata* subsp. *albanica* was proposed by Kirschnerová in KIRSCHNEROVÁ & KIRSCHNER (1996), where the name was also lectotypified. This subspecies is distributed in Montenegro, Albania, North Macedonia, Greece and Serbia (KIRSCHNEROVÁ & KIRSCHNER 1996; GREUTER 2006). In Serbia, it has been recorded only in the province of Kosovo & Metohija (LAKUŠIĆ 1968; GAJIĆ 1975; RANĐELOVIĆ *et al.* 1998; AMIDŽIĆ & PANJKOVIĆ 2003). During the extensive surveys of the wetlands on Mt. Kopaonik, it was found in mires, in the *Carici-Sphagno-Eriophoretum*, *Eriophoretum angustifoliae* and *Potentilletum palustris* communities. It was also recorded in a small fragment of the spring vegetation in the *Carici-ferrugineae-Willemetietum stipitatae* community type. In the Mojstirsko-Draške Mts. (SW Serbia), small populations of *W. stipitata* subsp. *albanica* were found sporadically near the springs around the ridge. This taxon is strictly protected under national legislation (on the specific level), so these new records are of great conservation importance.

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REFERENCES

- AMIDŽIĆ L & PANJKOVIĆ B. 2003. Vaskularna flora. In: AMIDŽIĆ L, JANKOVIĆ MM & JAKŠIĆ P (eds.), *Metohijske Prokletije – prirodna i kulturna baština*, pp. 149–177, Zavod za zaštitu prirode Srbije, Beograd.
- ASCHERSON P & KANITZ Á. 1877. Catalogus cormophytorum et anthophytorum Serbiae, Bosniae, Hercegovinae, Montis Scodri, Albaniae hucusque cognitorum. *Magyar Növénytani Lapok* 1(Appendix): 1–108.
- ASSYOV B, PETROVA A, DIMITROV D & VASILEV R. 2012. *Conspectus of the Bulgarian vascular flora. Distribution maps and floristic elements. Ed. 4.* Bulgarian Biodiversity Foundation, Sofia.
- BANCHEVA S & VASSILEV K. 2006. Vascular flora of the Beli Lom Nature Reserve in Northeast Bulgaria *Phytologia Balcanica* 12: 377–386.
- BECK G. 1887. Flora von Südbosnien und der angrenzenden Hercegovina. II Theil. *Annalen des Naturhistorischen Museums in Wien* 2(1): 35–76.
- BECK G. 1903. Flora Bosne, Hercegovine i Novopazarskog Sandžaka. Gymnospermae i Monocotyledones. *Glasnik Zemaljskog Muzeja Bosne i Hercegovine* 15: 220–230.
- BLOCKEEL TL, BOSANQUET SD, HILL MO & PRESTON CD. 2014. *Atlas of British & Irish Bryophytes 2.* Pisces Publications.
- BREIDLER J. 1891. Die Laubmoose Steiermarks und ihre Verbreitung. *Mitteilungen des Naturwissenschaftlichen Vereines für Steiermark.* Jahrgang 1891: 1–234.
- BUCZKO K. 2016. Iconographia diatomologica Carpathica Volume 1. Guide to diatoms in mountain lakes in the Retezat Mountains, South Carpathians, Romania. *Studia Botanica Hungarica* 47(Suppl.): 9–214.
- CAMPISI P & COGONI A. 2019. *Fissidens exilis.* *The IUCN Red List of threatened species 2019:* e.T84768181A87769858.
- CASAS C. 2006. *Handbook of mosses of the Iberian Peninsula and the Balearic Islands: illustrated keys to genera and species.* Institut d'Estudis Catalans.
- CVETIĆ T & SABOVLJEVIĆ M. 2005. A contribution to the bryophyte flora of Fruška Gora (Vojvodina, Serbia). *Phytologia Balcanica* 11: 35–43.
- ČANAK M. 1976. Rod *Schoenus* L. In: JOSIFOVIĆ M (ed.), *Flora SR Srbije* 8, pp. 180–181, Srpska Akademija nauka i umetnosti, Beograd.
- DENCHEV CM. 2001. Classis Ustomycetes (Ordines Tilletiales, Ustilaginales et Graphioidales). In: FAKIROVA V (ed.), *Fungi Bulgariae* 4, pp. 1–286, Editio Academica “Prof. Marin Drinov” & Editio Pensoft, Sofia.
- DENCHEV TT, KNUDSEN H & DENCHEV CM. 2020. The smut fungi of Greenland. *MycKeys* 64: 1–164.
- DENYS L. 2009. Palaeolimnology without a core: 153 years of diatoms and cultural environmental change in a shallow lowland lake (Belgium). *Fottea* 9: 317–332.

- DJORDJEVIĆ V, JAKOVLJEVIĆ K & STEVANOVIĆ V. 2016. Three taxa of *Epipactis* (Orchidaceae – Epidendroideae) new for the flora of Serbia. *Phyton-annales Rei Botanicae* **56**: 77–89.
- ERZBERGER P. 2016. The genus *Fissidens* (Fissidentaceae, Bryophyta) in Hungary. *Studia Botanica Hungarica* **47**: 41–139.
- GAJIĆ M. 1975. Rod *Willemetia* Necker. In: JOSIFOVIĆ M (ed.), *Flora SR Srbije* **7**, pp. 295–296, Srpska akademija nauka i umetnosti, Beograd.
- GREUTER W. 2006+. *Willemetia stipitata* subsp. *albanica*. In: GREUTER W & RAAB-STRAUBE E. VON (eds.), *Compositae. Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity*. Available at: <http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameId=130775&PTRefFk=7000000> [Accessed 15 February 2021]
- GÜNDISCH F. 1977. Beitrag zu einer Moosflora des Zibin-Gebirges. *Studii și Comunicări. Științe Naturale* **21**: 43–77.
- HOČEVAR S, BATIČ F, MARTINČIČ A & PISKERNIK M. 1980. Drugotni nižinski pragozd Krakovo v Krakovskem gozdu. *Zbornik Gozdarstva in Lesarstva* **18**: 5–144.
- HODGETTS N. 2017. *Checklist and country status of european bryophytes: towards a new Red List for Europe*. National Parks and Wildlife Service.
- HODGETTS N, CÁLIX M, ENGLEFIELD E, FETTES N, GARCÍA CRIADO M, PATIN L, NIETO A, BERGAMINI A, BISANG I, BAISHEVA E, CAMPISI P, COGONI A, HALLINGBÄCK T, KONSTANTINOVA N, LOCKHART N, SABOVLJEVIĆ M, SCHNYDER N, SCHRÖCK C, SÉRGIO C, SIM SIM M, VRBA J, FERREIRA CC, AFONINA O, BLOCHEEL T, BLUM H, CASPARI S, GABRIEL R, GARCIA C, GARILLETI R, GONZÁLEZ MANCEBO J, GOLDBERG I, HEDENÄS L, HOLYOAK D, HUGONNOT V, HUTTUNEN S, IGNATOV M, IGNATOVA E, INFANTE M, JUUTINEN R, KIEBACHER T, KÖCKINGER H, KUČERA J, LÖNNELL N, LÜTH M, MARTINS A, MASLOVSKY O, PAPP B, PORLEY R, ROTHERO G, SÖDERSTRÖM L, ȘTEFĂNUȚ S, SYRJÄNEN K, UNTEREINER A, VÁŇA J, VANDERPOORTEN A, VELLAK K, ALEFFI M, BATES J, BELL N, BRUGUÉS M, CRONBERG N, DENYER J, DUCKETT J, DURING HJ, ENROTH J, FEDOSOV V, FLATBERG KI, GANEVA A, GORSKI P, GUNNARSSON U, HASSEL K, HESPANHOL H, HILL M, HODD R, HYLANDER K, INGERPUU N, LAAKA-LINDBERG S, LARA F, MAZIMPAKA V, MEŽAKA A, MÜLLER F, ORGAZ JD, PATIÑO J, PILKINGTON S, PUCHE F, ROS RM, RUMSEY F, SEGARRA-MORAGUES JG, SENECA A, STEBEL A, VIRTANEN R, WEIBULL H, WILBRAHAM J & ŽARNOWIEC J. 2019. *A miniature world in decline: European Red List of Mosses, Liverworts and Hornworts*. IUCN, Brussels.
- HODGETTS N & LOCKHART N. 2020. *Checklist and country status of European bryophytes – update 2020*. Irish Wildlife Manuals, No. 123. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
- JANKOVIĆ MM & KARADŽIĆ B. 1991. Predlog za stavljanje pod zaštitu velike divčibarske tresave na Maljenu. *Zaštita Prirode* **43–44**: 116–120.
- JÁVORKA S. 1921. Uj adatok Albánia flórájához. *Novitates Florae Albanicae. Botanikai Közlemények* **19**: 17–29.
- JÁVORKA S, DEGEN A, GÁYER GY, SOÓ R, TRAUTMANN R & ZAHN KH. 1926. Anthophyta. In: TELEKI P & CSIKI E (eds.), *A Magyar tudományos akadémia Balkán-Kutatásainak Tudományos Eredményei* **3**, pp. 219–346, A Magyar Tudományos Akadémia Kiadása, Budapest.
- KARLASON B, ANDREASSON A, JOHANSEN M, KARLBERG M, LOO A & SKJEVIK AT. 2018. *Nordic Microalgae*. World-wide electronic publication, <http://nordicmicroalgae.org/> Norrköping: Swedish Meteorological and Hydrological Institute.
- KIRSCHNEROVÁ L & KIRSCHNER J. 1996. A nomenclatural and taxonomic account of *Willemetia* (Compositae, Lactuceae, Crepidinae). *Taxon* **45**: 627–630.
- LAKUŠIĆ R. 1968. Planinska vegetacija jugoistočnih Dinarida. *Glasnik Republičkog Zavoda za Zaštitu Prirode i Prirodnjačke Zbirke, Titograd* **1**: 9–75.
- LANGE-BARTALOT H & METZELTIN D. 1996. Indicators of oligotrophy. 800 taxa representative of three ecologically distinct lake types, carbonate buffered-Oligodystrophic-weakly buffered soft water with 2428 figures on 125 plates. Oligotrophie-Indikatoren. 800 Taxa repräsentativ für drei diverse Seen-Typen: Kalkreich - Oligodystroph - Schwach gepuffertes Weichwasser mit 2428 Figuren auf 125 Tafeln. *Iconographia Diatomologica* **2**: 1–390.
- LUTZ M & VÁNKY K. 2009. An annotated checklist of smut fungi (Basidiomycota: Ustilaginomycotina and Microbotryales) in Slovenia. *Lidia* **7**: 33–72.
- MARTINČIČ A. 2016a. Updated Red list of bryophytes of Slovenia. *Hacquetia* **15**: 107–126.
- MARTINČIČ A. 2016b. Novelties in the bryophyte flora of Slovenia 2. *Hladnikia* **38**: 60–71.
- MARTINČIČ A. 1977. Prispevek k floristiki mahov (Bryophyta) v Sloveniji II. *Biološki Vestnik* **25**: 5–14.
- MAŠIĆ E. 2020. Bibliography of phycological research in Bosnia and Herzegovina (1849–2019). *Phytologia Balcanica* **26**: 437–443.
- NEGREAN G. 1993. New or rare host-plants for Romanian Ustilaginales. *Revue Roumaine de Biologie, Sér. Biologie Végétale* **38**: 139–148.
- NIKETIĆ M & TOMOVIĆ G. 2018. *Kritička lista vrsta vaskularne flore Srbije 1. Lycopodiopsida, Polypodiopsida, Gnetopsida, Pinopsida i Liliopsida*. Srpska akademija nauka i umetnosti, Beograd.
- PAVLETIĆ Z. 1955. *Prodromus flore briofita Jugoslavije*. JAZU, Zagreb.
- PEEV D, PETROVA AS, NACHEV M, TEMNISOVA D, DENCHEV CM, GANEVA A, GUSSEV C & VLADIMIROV

- V (eds). 2011. *Red Data Book of the Republic of Bulgaria, Vol. 1 Plants & Fungi*. BAS & MOEW Sofia.
- POPOVIĆ M. 1966. Prilog poznavanju mahovina u rezervatima i zaštićenim područjima u Srbiji. *Zaštita Prirode* **33**: 219–228.
- PRODÁN G. 1915. Bács-Bodrog vármegye flórája. *Magyar Botanikai Lapok* **14**: 120–269.
- RANĐELOVIĆ V, ZLATKOVIĆ B & AMIĐIĆ L. 1998. Flora and vegetation of high-mountain peat-bogs of Mt. Šar–planina. *The University Thought* **4**: 23–27.
- SABOVLJEVIĆ MS, TOMOVIĆ G, NIKETIĆ M, LAZAREVIĆ P, LAZAREVIĆ M, LATINOVIĆ J, LATINOVIĆ N, KABAŠ E, ĐUROVIĆ SZ, KUTNAR L, SKUDNIK M, PANTOVIĆ J, STEVANOSKI I, VUKOJIĆIĆ S & VELJIĆ M. 2020. New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 1. *Botonica Serbica* **44**(1): 81–87.
- SMITH AJE. 2004. *The moss flora of Britain and Ireland*. Cambridge University Press.
- ȘTEFĂNUȚ S & GOIA I. 2012. Checklist and Red List of bryophytes of Romania. *Nova Hedwigia* **95**: 59–104.
- ȘTEFĂNUȚ S. 2008. *The hornwort and liverwort atlas of Romania*. Ars Docendi, Universitatea din București, București.
- ȘTEFUREAC T. 1967. Relicte arctice și subarctice în brioflora Carpaților sud-estici. *Lucrările Grădinii Botanice din București. Acta Botanica Horti Bucurestiensis* **1966**: 305–324.
- ŠABANOVIĆ E, BOŠKAILO A, RANDJELOVIĆ V, ĐUG S, ŠARIĆ Š, BOŠKAILO S & BEKTIĆ S. 2020. *Orhideje Zeničko-dobojskog kantona*. Zavičajni muzej, Visoko.
- TAKÁCS A, NAGY T & MOLNÁR A. 2014. *Epipactis muelleri* Godfery. In: RAAB-STRAUBE E VON & RAUS TH (ed.), Euro+Med-Checklist Notulae, 3 [Notulae ad floram euro-mediterraneam pertinentes 32]. *Willdenowia* **44**: 296.
- VÁNKY K. 2011. *Smut fungi of the world*. APS Press, St. Paul, Minnesota.
- VEENVLIET J, VEENVLIET P, GROOT M & KUTNAR L. 2019. A field guide to invasive alien species in european forests. Available at: <https://www.tujerodnevrste.info/wp-content/uploads/2019/12/Field-Guide-Alien-species-in-European-Forests.pdf> [Accessed 15 December 2020].
- VLADIMIROV V, AYBEKE M & TAN K. 2017. New floristic records in the Balkans: 32. *Phytologia Balcanica* **23**: 119–146.
- VLADIMIROV V, AYBEKE M & TAN K. 2018. New floristic records in the Balkans: 37. *Phytologia Balcanica* **26**: 397–461.
- VLADIMIROV V, AYBEKE M & TAN K. 2019. New floristic records in the Balkans: 40. *Phytologia Balcanica* **25**: 295–335.
- VLADIMIROV V, AYBEKE M & TAN K. 2020. New floristic records in the Balkans: 41. *Phytologia Balcanica* **26**: 163–179.
- VLADIMIROV V, DANE F, MATEVSKI V & TAN K. 2013. New floristic records in the Balkans: 29. *Phytologia Balcanica* **19**: 93–123.
- ZAHARIEV D. 2014. An investigation into the flora of the Shumen Heights. *Phytologia Balcanica* **20**(1): 79–88.

REZIME



Botonica
SERBICA

Novi i značajni podaci o biljkama, algama i gljivama iz JI Evrope i susednih regiona, 4

Gordana TOMOVIĆ, Marko S. SABOVLJEVIĆ, Teodor T. DENCHEV, Cvetomir M. DENCHEV, Marjan NIKETIĆ, Petya BOYCHEVA, Dobri IVANOV, Elvedin ŠABANOVIĆ, Vladan DJORDJEVIĆ, Lado KUTNAR, Sorin ȘTEFĂNUȚ, Jovana PANTOVIĆ, Svetlana GRDOVIĆ, Nevena KUZMANOVIĆ, Ermin MAŠIĆ i Predrag LAZAREVIĆ

Prikazani su novi i značajni podaci sa područja JI Evrope i susednih regiona o sledećim taksonima: dijatomeji *Stauroneis neofossilis*, parazitskoj gljivi *Anthracoidea arenariae*, rastaviću *Equisetum hyemale*, jetrenjači *Harpanthus flotovianus*, mahovinama *Fissidens exilis* i *Rhizomnium punctatum*, monokotilama *Epipactis helleborine* subsp. *orbicularis*, *Himantoglossum calcaratum* subsp. *rumelicum* i *Schoenus nigricans* i dikotilama *Calluna vulgaris*, *Mahonia aquifolium* i *Willemetia stipitata* subsp. *albanica*.

Ključne reči: novi nalaz, *Anthracoidea arenariae*, *Calluna vulgaris*, *Epipactis helleborine* subsp. *orbicularis*, *Equisetum hyemale*, *Fissidens exilis*, *Harpanthus flotovianus*, *Himantoglossum calcaratum* subsp. *rumelicum*, *Mahonia aquifolium*, *Rhizomnium punctatum*, *Schoenus nigricans*, *Stauroneis neofossilis*, *Willemetia stipitata* subsp. *albanica*, JI Evropa