



Original Scientific Paper

## New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 18

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### ABSTRACT:

This paper presents new records and noteworthy data on the following taxa in SE Europe and adjacent regions: cyanobacteria *Pseudanabaena thermalis*, lichenised fungi *Acrocordia gemmata*, parasitic fungi *Peniophora tamaricicola*, saprotrophic fungi *Hyphonectria buxi*, diatom alga *Diatoma elongata*, mosses *Sphagnum medium*, *Rhizomnium magnifolium*, and *Weissia squarrosa*, monocots *Gymnadenia frivaldii*, *Hemerocallis lilioasphodelus*, *Orchis* × *angusticuris* and *Pistia stratiotes*, and dicots *Astragalus angustifolius* subsp. *balcanicus*, *Broussonetia papyrifera*, *Datura innoxia* and *Montia arvensis*.

### Keywords:

new report, *Acrocordia gemmata*, *Astragalus angustifolius* subsp. *balcanicus*, *Broussonetia papyrifera*, *Datura innoxia*, *Diatoma elongata*, *Gymnadenia frivaldii*, *Hemerocallis lilioasphodelus*, *Hyphonectria buxi*, *Montia arvensis*, *Orchis* × *angusticuris*, *Peniophora tamaricicola*, *Pistia stratiotes*, *Pseudanabaena thermalis*, *Rhizomnium magnifolium*, *Sphagnum medium*, *Weissia squarrosa*, SE Europe.

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***Acrocordia gemmata* (Ach.) A. Massal., fam. Monoblastiaceae (lichenised fungus)****Contributor:** Dimitar STOJKOV**Geographic focus:** Bulgaria**New records and noteworthy data:** The first reports of *Acrocordia gemmata* from the Forebalkan and Balgarka Nature Park, and the western-most findings in Bulgaria (according to MAYRHOFER *et al.* 2005; OTTE 2005).**Specimens data:** **1)** Forebalkans, Lovech district, Troyan municipality, Golyama Zhelyazna village, the Peshtera Toplya natural landmark, near the river Toplya, N 42.954278°, E 24.489086°, on the bark of old living *Carpinus orientalis* Mill., ca. 450 m a.s.l.; 30 August 2015; leg./det. D. Stoykov D.; **2)** idem., along the trail to the Peshtera Toplya natural landmark, in the vicinity of the river Toplya, on the bark of living old-growth *Fagus sylvatica* L.; 21 August 2015; leg./det. Stoykov D.; **3)** Balkan Range, Gabrovo district, the Balgarka Nature Park, Todorchetata village, near the river Panicharka, N 42.82575°, E 25.215553°, on the bark of a dead, fallen tree, ca. 575 m a.s.l.; 24 July 2012; leg./det. Stoykov D.; **4)** idem., Gabrovo town, above Yabalka Quarter, N 42°46.694, E 25°23.744, on the bark of living *Juglans regia* L., ca. 745 m a.s.l.; 24 September 2012; leg./det. Stoykov D.**Vouchers:** Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 31441, 30601, 31446, 31568.

The examined Bulgarian collections generally consist of more or less scattered, black, slightly papillate, almost superficial perithecia developed on bark, with cylindrical, 8-spored (rarely 4-spored) asci, ca. 155–190 × 11.5–12.5 µm in water, with an apical annulus which does not turn blue in iodine; the pseudoparaphyses are hyaline, filiform (observed in the collections from the Balgarka Nature Park); the ascospores are hyaline, 1-septate, thick-walled, straight, sometimes slightly asymmetric, ellipsoidal, generally 15–20 × (7–) 8–10.5 µm in water, uniseriate in the ascus. Prior to the present finds, *A. gemmata* was known in Bulgaria only from the Black Sea coast (Burgas district, on *Carpinus betulus* L.), the Balkan Range (Troyanski Balkan, ca. 750 m a.s.l., on *Fagus sylvatica* L., as *Acrocordia alba* (Schrad.) B. de Lesd., BNHM 2697 – from the lichen collection of the National Museum of Natural History, Sofia), the Pirin Mts. (near Orelek peak, 1700 m a.s.l., on beech) and Strandzha Mt. (the Strandzha Nature Park, between 300 m a.s.l. and 435 m a.s.l., on oak) according to MAYRHOFER *et al.* (2005) and OTTE (2005). This suggests that this is an under-recorded lichenised fungus in Bulgaria.

*Acrocordia gemmata* is known from the other adjacent Balkan countries, with single localities in Greece (ARCADIA 2023), North Macedonia (MALÍČEK & MAYRHOFER 2017), Romania (CIURCHEA 2007), Serbia (SAVIĆ & TIBELL 2006) and Turkey (VOLKER 1996). It has

also been reported among the lichenised and lichenicolous fungi in Montenegro (KNEZEVIĆ & MAYRHOFER 2009), in for Albania at 1680 m a.s.l., on beech (SVOBODA *et al.* 2012).

***Astragalus angustifolius* Lam. subsp. *balcanicus* Brullo, Giusso & Musarella, fam. Fabaceae (dicot, vascular plants)****Contributors:** Marjan NIKETIĆ and Gordana TOMOVIĆ  
**Geographical focus:** Serbia**New records and noteworthy data:** A new site is presented for the subspecies previously recorded from only five localities in Serbia. It also represents a natural connection with the nearest populations of this plant in western Bulgaria.**Specimen data:** **1)** Eastern Serbia, the Jelašnica river gorge, MGRS 34T EN89, rocks and rocky grounds, limestone; 17 September 2009; Niketić M. (field. obs.); **2)** Eastern Serbia, Mt. Ruj Planina, Štrbi Kamik peak, Zdravči Kamik – Elevation 1380, MGRS 34T FN24, rocks and rocky grounds, limestone, 1270–1380 m a.s.l.; 30 June 2016; leg./det. Niketić M, Tomović G.**Vouchers:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 48197; Herbarium of the Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), 2982.

*Astragalus angustifolius* subsp. *balcanicus* is a Balkan endemic subspecies, recently described from Voras (Nidže) Mountain on the border between Greece and North Macedonia; it is also present in Serbia and Bulgaria (BRULLO *et al.* 2012). Up to now, it has been recorded only in the Sićevo gorge (Kusača peak), the Jerma river gorge (near Sukovo), Knjaževac (Radujev Kamen), Mt. Svrlijske Planine (Pleš peak) in eastern Serbia (DIKLIĆ 1972; NIKOLIĆ *et al.* 1986), as well as in Mt. Rudina in southeastern Serbia (MILOSAVLJEVIĆ & RANĐELOVIĆ 2007).

The population in the Jelašnica river gorge is very small, consisting of ca. 30 individuals, situated in a small ridge. In Mt. Ruj Planina (Štrbi Kamik peak) the population is spatially restricted and represented with up to 100 individuals. In both localities this species inhabits rocks and rocky grounds on limestone.

***Broussonetia papyrifera* (L.) L'Hér. ex Vent., fam. Moraceae (dicot, vascular plant)****Contributors:** Petya BOYCHEVA and Mariya KASCHIEVA  
**Geographical focus:** Bulgaria**New records and noteworthy data:** The spread of an invasive species. This is the first report on the distribution of the species in Southern Bulgaria.**Specimen data:** Southern Bulgaria, Plovdiv region, Sadovo municipality, Bolyartsi village, N 42.063429°, E 24.950166°; 21 August 2023; leg./det. Boycheva P, Kaschieva M.

**Voucher:** Herbarium of Sofia University St. Kliment Ohridski (SO) 108276.

The newly registered locality is along a street alley near a private yard. The population is represented by dozens of adult specimens and numerous shoots. *Broussonetia papyrifera* is grown as an ornamental species in parks and gardens in Bulgaria (STOYANOV *et al.* 2022). It is a fast-growing species which thrives in the warm regions of the country (PETROVA *et al.* 2013). *Broussonetia papyrifera* is distributed in Bulgaria in the floristic region of the Black Sea coast (VLADIMIROV *et al.* 2011) and the Struma valley (ASSYOV *et al.* 2012). Possible trends indicating an increase in its range within the country have been reported (PETROVA *et al.* 2013). The species is native to China and Japan (STOYANOV *et al.* 2022). This invasive species in Bulgaria (PETROVA *et al.* 2013) has been listed on the EPPO Alert List since 2016 (FOLLAK *et al.* 2024). This is the first report for the area of Southern Bulgaria.

***Datura innoxia* Mill., fam. Solanaceae (dicot, vascular plant)**

**Contributors:** Petya BOYCHEVA and Mariya KASCHIEVA  
**Geographical focus:** Bulgaria

**New records and noteworthy data:** The spread of an invasive species. This is the first report of its distribution in the region of the Northern Black Sea coast.

**Specimen data:** 1) Northern Black Sea Coast, the Varna region, uncultivable land in the area of a villa, southwest of the city of Varna, N 43.181834°, E 27.788544°; four specimens in the flowering phase were registered; 01 August 2023; leg./det. Boycheva P; 2) Northern Black Sea Coast, Varna city; N 43.214556°, E 27.911867°; it was recorded in an inter-block space in the city of Varna. The plants thrive on poor and damaged soil in a field between an asphalt pavement and a block of flats. The population is represented by six specimens, well adapted, flowering and fruiting annually; 01 August 2023; leg./det. Boycheva P.

**Voucher:** Herbarium of Sofia University St. Kliment Ohridski (SO) 108272; 108273.

*Datura innoxia* is native to America. It is grown as an ornamental species because of its large flowers (STOYANOV *et al.* 2022). In Bulgaria, the species has been established in the Danubian plain, Sofia region, Znepole Region, the valley of the river Struma (Southern), the Thracian lowlands (PETROVA & VLADIMIROV 2018), and the Southern Black Sea coast (VLADIMIROV *et al.* 2022). *Datura innoxia* is an invasive species in Bulgaria (PETROVA *et al.* 2013). This is the first report for the Northern Black Sea coast floristic subregion.

***Diatoma elongata* (Lyngbye) C. Agardh 1824, fam. Tabellariaceae (diatom, algae)**

**Contributor:** Danijela VIDAKOVIĆ and Jelena KRIZMANIĆ

**Geographical focus:** Serbia

**New record and noteworthy data:** The first record for Serbia.

**Specimen data:** 1) Peskara artificial sandpit lake, N 45.5185568°, E 20.2987111°; 31 March 2021; leg./det. Vidaković D, Ćirić M.; 2) Pečena Slatina, saline pond, N 45.0801482°, E 20.4842345°; 20 April 2023; leg./det. Vidaković D.

**Voucher:** Diatom Collection of Serbia (DCSR), University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia. Accession No.: Sava River, Slide DCSR 000270/A, 000271/A, 000492/A.

The valve of *Diatoma elongata* is isopolar, linear, and sometimes slightly inflated with rounded ends. The valve length range is 47.1–23 µm, and the width is 3.4–4.4 µm. The striae are very fine, and not visible in LM. The transapical ribs are relatively thin, 6–7/10 µm. *Diatoma elongata* is very similar to *Diatoma tenuis* C. Agardh, which has linear valves with subcapitate, capitate or spatulate ends.

The species was observed for the first time in Serbia in the epipelagic community in the Pečena Slatina saline pond and the epipelagic and epiphytic communities in the Peskara artificial sandpit lake. Pečena Slatina and Peskara are characterised by high pH levels (above 8) and conductivity, 6880 µS/cm and 1889 µS/cm, respectively. So far, this species has been recorded all over the world in fresh (e.g. KOCIOLEK *et al.* 2005) and brackish waters (e.g. MATHER *et al.* 2010, as well as in soil (e.g. STENINA & PATOVA 2007). A detailed distribution is given on AlgaeBase (GUIRY & GUIRY 2023).

***Gymnadenia frivaldii* Hampe ex Griseb., fam. Orchidaceae (monocot, vascular plant)**

**Contributors:** Vladan DJORDJEVIĆ and Svetlana KRĐIĆ  
**Geographical focus:** Serbia

**New records and noteworthy data:** This is the first record of this rare and protected species for Mt. Željina and the second record for the region of Central Serbia. The species is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

**Specimen data:** Central Serbia, Mt. Željina, Jezero, N 43.473375°, E 20.798013°, MGRS 34T DP81, ass. *Eriophoro-Caricetum paniculatae* R. Jov. 1983, granodiorites, exp. S, incl. 25°, 1566 m a.s.l.; 22 June 2024; leg. DJORDJEVIĆ V, KRĐIĆ S.; det. DJORDJEVIĆ V.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, vascular plant collection (BEOU) 72203; photo documentation of Djordjević V.

*Gymnadenia frivaldii* is a subendemic species of the Carpathians and the Balkans, occurring in northern Greece, North Macedonia, Albania, Romania, south-

western Bulgaria, Montenegro, Bosnia and Herzegovina and Serbia (DJORDJEVIĆ *et al.* 2017 and the references therein; MILANOVIĆ *et al.* 2022). The new finding of this species on Mt. Željina is the second record of this species for the region of Central Serbia and also the first record of this species in the MGRS 34T DP81 10 × 10 km and also in DP 100 × 100 km UTM grid cells. Previously, it was recorded in the Central Serbia region only on Mt. Kopaonik (DN89 10 × 10 km UTM grid cell) (DJORDJEVIĆ *et al.* 2017 and the references therein). In addition to the Central Serbia region, this species has also been recorded in the following regions and localities in Serbia: W Serbia (Mt. Golija), E Serbia (Mt. Stara planina), SE Serbia (Vlasina, Mts. Besna Kobilica and Dukat) and Kosovo and Metohija (Mts. Prokletije and Šar planina) (DJORDJEVIĆ *et al.* 2017 and the references therein; TOMOVIĆ *et al.* 2023, 2024).

*Gymnadenia frivaldii* was found in the vicinity of Jezero, in a community of *Eriophoro-Caricetum paniculatae*. The following accompanying taxa were recorded alongside *G. frivaldii* at the site: *Eriophorum latifolium* Hoppe, *Carex paniculata* L., *C. pallescens* L., *C. flava* L., *Veratrum album* L., *Briza media* L. and *Gentiana asclepiadea* L. The species was found on granodiorites, at an altitude of 1566 m, on a south-facing slope with an inclination of 25°. The newly recorded population of this species on Mt. Željina consists of eight individuals within an area of 100 m<sup>2</sup>. The species has the status of vulnerable in Bulgaria, whereas in Greece it has the status of least concern (KULL *et al.* 2016). The estimated IUCN conservation status of this species in Serbia is vulnerable (VU) (DJORDJEVIĆ *et al.* 2017). According to Serbian legislation, the species is classified as strictly protected.

***Hemerocallis lilioasphodelus* L., fam. Asphodelaceae, (monocot, vascular plants)**

**Contributors:** Siniša ŠKONDRIĆ and Jelena KNEŽEVIĆ

**Geographical focus:** Bosnia and Herzegovina

**New records and noteworthy data:** A new alien species for Bosnia and Herzegovina.

**Specimen data:** Banja Luka, Prijakovci, N 44.87817°, E 17.14844°, in a wet meadow, 182 m a.s.l.; 27 May 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.

**Vouchers:** Herbarium of the Institute for Nature Conservation of Vojvodina Province (PZZP) s/n.

*Hemerocallis lilioasphodelus* was found during field investigations in the vicinity of Banja Luka (Prijakovci). About 50 individuals of this species were found on a neglected, wet meadow alongside the Banja Luka-Dobrljin railway which passes through the village of Prijakovci. So far, this species has not been recorded in Bosnia and Herzegovina. This alien species appears to be in the initial phase of naturalisation in Bosnia and Herzegovina.

In Europe, *H. lilioasphodelus* is regarded as native in the foothills of the SE Alps and adjoining lowlands (WEBB

1980), as well as in the northeastern Albanian serpentines (BARINA & PIFKÓ 2011). The closest sites of *H. lilioasphodelus* are located in the Pannonian part of Croatia (RAUŠ & ŠEGULJA 1983; TOMAŠEVIĆ 1998; ZIMA *et al.* 2005).

***Hyphonectria buxi* (Alb. & Schwein.) Sacc., fam. Hyphonectriaceae (fungus, saprotrophic)**

**Contributor:** Dimitar STOYKOV

**Geographic focus:** Bulgaria

**New records and noteworthy data:** The second report of *Hyphonectria buxi* in Bulgaria and the first find on dry leaves still attached to the tree (according to STOYKOV & DENCHEV 2009).

**Specimen data:** Sofia region, Sofia city, Vrana Park, on the dry leaves of *Buxus sempervirens* L. attached to the tree, ca. 560 m a.s.l.; 04 April 2018; leg./det. D. Stoykov.

**Voucher:** Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 31571.

The identification was justified based on the studies of ROSSMAN *et al.* (1999) and WANG & HYDE (1999). To date, in Bulgaria, *H. buxi* was known only from one locality in the Forebalkans (STOYKOV & DENCHEV 2009), where it was collected on dry leaves, which had fallen on the ground. The orange-light brownish ascomata of the current finding are characteristically immersed in the tissues of the dried leaves. In Europe, this species has also been documented in France, Germany and the UK (ROSSMAN *et al.* 1999; WANG & HYDE 1999). Given the comparatively wide distributional areal of its host-plant *Buxus sempervirens* L., which is commonly planted as an ornamental shrub or small tree in private home gardens or urban parks, we assume that *H. buxi* might be sought in the other countries of the Balkan Peninsula.

***Montia arvensis* Wallr., fam. Montiaceae (dicot, vascular plants)**

**Contributors:** Siniša ŠKONDRIĆ and Ranko PERIĆ

**Geographical focus:** Bosnia and Herzegovina

**New records and noteworthy data:** A new record of a rarely reported species in Bosnia and Herzegovina, reported after almost six decades.

**Specimen data:** 1) Republic of Srpska, Kozarska Dubica, Međeđa, Staro Selo, N 45.19440°, E 16.95982°, on a forest road, near Gogin Potok stream, 131 m a.s.l.; 27 April 2024; leg. Škondrić S.; det. Škondrić S, Perić R.; 2) Kozarska Dubica, Međeđa, Staro Selo, N 45.19446°, E 16.96002°, on a forest road, near Gogin Potok stream, 130 m a.s.l.; 5 May 2024; leg. Škondrić S.; det. Škondrić S, Perić R.; 3) Kozarska Dubica, Međeđa, Staro Selo, N 45.19439°, E 16.95995°, on a forest road, near Gogin Potok stream, 131 m a.s.l.; 12 May 2024; leg. Škondrić S.; det. Škondrić S, Perić R.

**Voucher:** Herbarium of the Institute for Nature Conservation of Vojvodina Province (PZZP) s/n.

*Montia arvensis* belongs to the *M. fontana* agg. and is characterised by dull ripe seeds entirely covered with broad, obtuse tubercles (WALTERS 1993). Otto Sendtner recorded *M. fontana* L. in 1847 in Bosnia and Herzegovina, in the valley of the Bosna River, between Žepče and Golubinja, next to a spring (SENDTNER 1848). This finding was later treated by BECK VON MANNAGETTA (1906) as *M. minor* Gmel. Later on, *M. arvensis* was recorded in Travnik (BRANDIS 1890 sub *M. minor* Gmel.), Trebević (MALY 1904 sub *M. minor* Gmel.), Puračić (RITER-STUDNIČKA 1952 sub *M. verna* Neck.) and Jahorina mountain (BJELČIĆ 1964–1965 sub *M. verna* Necker). According to the available literature data, these are the only findings of *M. arvensis* in Bosnia and Herzegovina.

During our field research in the Peripannonian part of Bosnia and Herzegovina, *M. arvensis* was recorded on the northern slopes of Prosara mountain (Kozarska Dubica, Međeđa, Staro Selo). At the end of April and in the first half of May, ca. 30 individuals were found in the woodland openings on the wet bare ground of the forest road near the Gogin Potok stream. Our finding of this rarely reported species represents the first report after almost six decades in Bosnia and Herzegovina. *Montia arvensis* is probably more widespread in Bosnia and Herzegovina, but due to its short life cycle and small dimensions, it is less noticeable and therefore an under-recorded species.

***Orchis* × *angusticruris* Franch. nothosubsp. *angusticruris*, fam. Orchidaceae (monocot, vascular plant)**

**Contributors:** Vladan DJORDJEVIĆ and Svetlana KRĐŽIĆ  
**Geographical focus:** Serbia

**New records and noteworthy data:** This is the second record for Serbia and the first record for Serbia proper.

**Specimen data:** Northeastern Serbia, Mt. Kučaj, Krivi Vir (Cerje), N 43.831901°, E 21.744691°, MGRS 34T EP55, ass. *Carpino orientalis-Quercetum cerris* B. Jovanović, 1960, limestones, sandstones and dolomites, exp. SE, incl. 5°, 516 m a.s.l.; 01 May 2024; leg. Djordjević V., Krdžić S.; det. Djordjević V.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, vascular plant collection (BEOU) 72201; photo documentation of Djordjević V.

*Orchis* × *angusticruris* Franch. nothosubsp. *angusticruris*, a natural hybrid between two closely related anthropomorphic orchid species (*Orchis purpurea* Huds. subsp. *purpurea* and *O. simia* Lam.), is distributed in the temperate climate zone and in the Mediterranean and sub-Mediterranean regions of Europe, as well as in North Africa (BATEMAN *et al.* 2008; POWO 2024).

The new finding of this hybrid on Mt. Kučaj is the first record of this hybrid for Serbia proper and also for the region of Northeastern Serbia. This is the first record of this hybrid in the MGRS 34T EP55 10 × 10 km and

also in EP 100 × 100 km UTM grid cells. Previously, it was recorded in the vicinity of Bukovac village, on the northeast slopes of Mt. Fruška Gora (Vojvodina) (RADAK *et al.* 2015). Moreover, the new finding of this hybrid on Mt. Kučaj is the only known record of this hybrid in the Central Balkans.

Four individuals of *Orchis* × *angusticruris* nothosubsp. *angusticruris* were found at the locality of Krivi Vir (Mt. Kučaj), at the site where the two parental species grow in sympatry and the population size of *O. purpurea* subsp. *purpurea* (26 individuals) was larger than that of *O. simia* (6 individuals). *Orchis* × *angusticruris* nothosubsp. *angusticruris* and its two parental species are protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). According to Serbian legislation, *O. purpurea* subsp. *purpurea* and *O. simia* are classified as protected species in Serbia.

***Peniophora tamaricicola* Boidin & Malençon, fam. Peniophoraceae (fungus, parasitic)**

**Contributor:** Boris ASSYOV

**Geographical focus:** Bulgaria

**New records and noteworthy data:** These are the first records of *P. tamaricicola* in Bulgaria (DENCHEV & ASSYOV 2010).

**Specimen data:** 1) Kyustendil Province, Kocherinovo municipality, north of Mursalevo village, on the roadside verges of route E79, N 42.134139°, E 23.039611°, ca. 400 m a.s.l.; 24 October 2021; leg./det. Assyov B.; 2) Blagoevgrad Province, Blagoevgrad municipality, in the vicinity of Logodazh village, N 41.995194°, E 22.955750°, ca. 625 m a.s.l.; 17 November 2021; leg./det. Assyov B.; both on branches of *Tamarix* sp.

**Voucher:** Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF), 30913, 30914.

*Peniophora tamaricicola* was previously documented from some adjacent Balkan states, namely Greece and North Macedonia (ZERVAKIS *et al.* 2004; KARADELEV *et al.* 2018), and its occurrence in Bulgaria was thus expected. The fungus is otherwise considered to be rare and has been recorded from a few other European countries, namely France, Italy, Portugal and Spain (BERNICCIA & GORJÓN 2010). Although reported by BERNICCIA & GORJÓN (2010) to grow exclusively on *Tamarix* spp., ZERVAKIS *et al.* (2004) mentioned that it was also found on *Pistacia lentiscus* L. in Greece. Both Bulgarian collections come from old, artificially planted individuals of *Tamarix* on roadside embankments and the fungus seemed very common in the locality close to Mursalevo village. The occurrence in areas close to natural stands of *Tamarix* spp. suggests that *P. tamaricicola* may be common along the valley of the Struma river, wherever the host plant is present.

***Pistia stratiotes* L., fam. Araceae (monocot, vascular plant)****Contributors:** Dragana JENAČKOVIĆ GOCIĆ and Irena RACA**Geographical focus:** Serbia**New record and noteworthy data:** The second record in non-thermal water bodies, and the southernmost point of its distribution in Serbia.**Specimen data:** Southeastern Serbia, Vladičin Han, Mazarać village, on the left bank of the South Morava river, N 42.586450°, E 21.998425°, 398 m a.s.l.; 19 October 2022; leg./det. Jenačković Gocić D, Raca I.**Vouchers:** Herbarium Moesiacum Niš, University of Niš, Faculty of Sciences and Mathematics, Department of Biology and Ecology, Niš, Serbia – Wet Collection (HMN) 18510.

*Pistia stratiotes*, recognised as a highly invasive alien plant species, can be found across the globe in tropical and subtropical climates (DE WALD & LOUNIBOS 1990). It thrives in stagnant or slowly flowing freshwater environments across the Americas, Africa, India, and Southeast Asia extending up to northeastern Australia (RENNER & ZHANG 2004). According to the recent records from the European Plant Protection Organization (EPPO), the presence of *P. stratiotes* has been confirmed in numerous European countries, including Spain, France, Italy, Germany, Poland, Slovakia, Slovenia, Croatia, Serbia, Russia and Ukraine (EPPO 2024). Additionally, its presence in the thermal springs of southeastern and eastern Serbia has been confirmed by different authors (RANDJELOVIĆ *et al.* 1995; BOGOSAVLJEVIĆ *et al.* 2007; LANSDOWN *et al.* 2016). The first evidence of its presence in the non-thermal waters of Serbia refers to the Vojvodina Province (Begej river) (ŽIVKOVIĆ *et al.* 2019). Therefore, our finding represents the second record of *P. stratiotes* in non-thermal waters in Serbia and, more broadly, the southernmost record of its distribution in the country. Considering the potential risk of its spread through surface running waters via the South Morava river, the area in the proximity of this finding is particularly important for future monitoring.

***Pseudanabaena thermalis* Anagnostidis (Cyanobacteria)****Contributors:** Sanja ŠOVRAK and Slađana POPOVIĆ**Geographical focus:** Serbia**New record and noteworthy data:** New localities in Serbia for *Pseudanabaena thermalis*, which is considered to be endangered in Serbia.**Specimen data:** 1) Banat, Kanjiža Spa, Barátok Kútja near Vojvoda Zimonić, N 46.041667°, E 19.98750°, 77 m a.s.l.; 13 July 2023; leg. Šovran S. det. Popović S.; 2) Central Serbia, Jošanička Spa, N 43.38889°, E 20.74806°, 553 m a.s.l.; 17 July 2023; leg. Šovran S., det. Popović, S.**Voucher:** Herbarium of the University of Belgrade, Department of Algology and Micology – algae wet collection (BEOU), 6816, 6817.

To date Cyanobacterium *P. thermalis* in Serbia was recorded at Bogatić Spa, Radaljska Spa, Lukovska Spa and Vranjska Spa (ŠARABA *et al.* 2017). New findings of *P. thermalis* in Serbia are presented here. Thick blue-green mats rich in cyanobacteria were sampled at the point of emergence of thermo-mineral springs in the summer of 2023. A detailed examination of the collected material revealed that *P. thermalis* dominates the samples, frequently occurring as densely packed trichomes in mats. Cyanobacterium *P. thermalis* has been recorded in thermal alkaline waters (28–54°C, pH 7–9.5) in some European countries: Greece, Germany, Hungary, and Switzerland (KOMÁREK & ANAGNOSTIDIS 2005). The trichomes are straight to variously curved, usually 50–150 celled, 80–500 µm long, 0.8–2.4 µm wide, and constricted at the cross-walls. The cells are bright blue-green, cylindrical with rounded ends, connected with hyaline bridges, usually 2–4 × longer than wide (2.5–8 µm). The apical cells are flat and rounded.

This simple trichal cyanobacterium associated with thermal springs will be included in the Red Book of Flora of Serbia I – Algae as an endangered species, where the need for its conservation will be emphasised and solutions which could improve the situation or at least slow down negative processes will be proposed.

***Rhizomnium magnifolium* (Horik.) T. J. Kop., fam. Mniaceae (moss, bryophyte)****Contributors:** József Pál FRINK and Andrea SASS-GYARMATI**Geographical focus:** Romania**New record and noteworthy data:** This is a new record of the rare species from the Făgăraş Mountains (Southern Carpathians, Romania).**Specimen data:** Southern Carpathians, Făgăraş Mountains, Doamnei valley, above Doamnei lake, N 45.60345°, E 24.60278°, 1986 m a.s.l. northern slope, 1–2 degree inclination; 05 August 2014; leg. Frink JP, Kovrig Z., det. Sass-Gyarmati A. The specimens were found and collected without sporophytes.**Voucher:** Herbarium of Eszterházy Károly Catholic University, Eger (EGR) and Babeş-Bolyai University, Cluj-Napoca (CL) 667965.

*Rhizomnium magnifolium* (Large-leaf Thyme-moss) is typical of wet, base-poor, montane habitats, especially occurring around high mountain springs, streams and near areas with prolonged snow cover. This species has high moisture requirements and an ecological optimum in crenic habitats, being considered a crenophile (ROTHERO 2014; SMIEJA 2014). However, it is also known

from mildly base-rich flushes down to about 400 m altitude in hilly regions (ORANGE 2010). It is worth noting that it can be confused with the more common *R. pseudopunctatum* (Bruch & Schimp.) T.J.Kop. or *R. punctatum* (Hedw.) T.J.Kop. (ORANGE 2010).

The European distribution of *R. magnifolium* covers Northern Europe (Russia, Finland, Norway, Sweden, Iceland, and Great Britain), Central Europe (Poland, Estonia, Ukraine, Slovakia, the Czech Republic, Austria, Switzerland, and Germany), the Balkans (Romania, Bulgaria, Serbia, North Macedonia, Montenegro, Albania, Kosovo, and Slovenia), as well as some other Southern European countries such as Italy, France, Spain and Portugal (SABOVLJEVIĆ *et al.* 2008; ROTHERO 2014; HODGETTS & LOCKHART 2020).

In Romania, which is among the richest European countries in bryophytes (SABOVLJEVIĆ *et al.* 2008), this species has a sporadic occurrence, having been reported from the following mountain units: Apuseni, Rodnei, Călimani, Tarcău, Ceahlău, Hășmaș, Harghita, Nemira, Bucegi, Piatra Craiului, and Retezat, as well as and from the surroundings of the Bârnova locality (Northeastern Romania, Iași county) (MOHAN 1998; DIHORU & POP 2006). However, according to ȘTEFĂNUȚ & GOIA (2012), the Romanian Red List status for this species is least concern (LC). Its European Red List assessment is the same (HODGETTS & LOCKHART 2020), but in some European countries such as Estonia, Slovenia, Serbia and Montenegro it is classified as vulnerable (VU), while in Portugal it is endangered (EN).

During field surveys carried out on the spring flora and vegetation of the Southeastern Carpathians, specimens of *R. magnifolium* were found in the Doamnei valley, above the Doamnei lake (1986 m altitude). The identification was verified and confirmed by Peter Erzberger. This is the first certain occurrence of this species in the spontaneous bryophyte flora of the Făgăraș Mts.

This small population of *R. magnifolium* is located along a rivulet, originating from a high mountain spring, in a crenic habitat of only 10 m<sup>2</sup> surface. The soil is peaty gley with excess moisture (T = 7.3°C according to our field measurements) and a basic chemical reaction (pH=9.5, also our own field measurements), formed on crystallised bedrock with 15–20% outcrops. The habitat is characterised by a constant water supply and a stable hydrological regime due to the nearby existing water spring, snowmelt and the abundant precipitation typical of this high mountain area. A total bryophyte cover of 80% was observed at the site, with the following species being present (Abundance-Dominance – AD – is according to the Braun-Blanquet scale): *Polytrichastrum pallidisetum* (Funck) G.L.Sm. (AD = 2), *Rhizomnium magnifolium* (Horik.) T.J.Kop. (AD = +), *Scapania undulata* (L.) Dumort. (AD = 2), and *Thuidium abietinum* (Hedw.) Schimp. (AD = 2). The floristic composition of

the habitat is completed by the following vascular plant species: *Doronicum carpaticum* (Griseb. et Schenk) Nyman (AD = 1), *Plantago gentianoides* Sibth. et Sm. (AD = +), *Saxifraga stellaris* L. (AD = 2), *Saxifraga rotundifolia* L. subsp. *rotundifolia* (AD = 2), *Silene pusilla* Waldst. et Kit. (AD = 1), *Aconitum toxicum* Reichenb. (AD = +), *Alchemilla xanthochlora* Rothm. (AD = 1), *Caltha palustris* L. subsp. *laeta* (Schott, Nyman et Kotschy) Hegi (AD = 1), *Cardamine pratensis* L. subsp. *rivularis* (Schur) Nyman (AD = 1), *Juncus triglumis* L. (AD = 1), *Nardus stricta* L. (AD = 1), *Poa alpina* subsp. *vivipara* (L.) Arçang. (AD = +), *Poa laxa* Haenke (AD = +), *Polygonum viviparum* L. (AD = +), *Carex nigra* (L.) Reichard subsp. *dacica* (Heuff.) Soó (AD = 1), and *Chrysosplenium alpinum* Schur (AD = 1). This plant community belongs to the *Chrysosplenio alpini-Saxifragetum stellaris* Pawłowski et Walas 1949 association (COLDEA *et al.* 1997).

Occasionally, due to their trampling effects, non-intensive grazing and hiking activities can be a threat to the habitat, affecting its phytocoenotic structure and the long-term survival of the species.

### ***Sphagnum medium* Limpr., fam Sphagnaceae (moss, bryophyte)**

**Contributor:** Miruna-Maria ȘTEFĂNUȚ

**Geographical focus:** Romania

**New record and noteworthy data:** A new record for Romania.

**Specimen data:** 1) Central Romania, Avrig, Sibiu County, Avrig peatbog, N 45.716755°, E 24.399248°; 405 m.a.s.l.; 12 March 2024; leg./det. Ștefănuț M-M.; 2) North-East Romania Tinovul de lângă drum peatbog, Suceava County, N 47.654233°, E 25.183876°; 1160 m.a.s.l.; 19 October 2023; leg./det. Ștefănuț M-M.; 3) North-West Romania, Gutâi Mountains, Tăul la Gutâi, N 47.709791°, E 23.835553°; 1057 m.a.s.l.; 9 November 2023; leg./det. Ștefănuț M-M.

**Vouchers:** Bryophyte collection of the Herbarium of the Institute of Biology – Bucharest, Romanian Academy (BUCA), B12280, B12283, B12293.

*Sphagnum magellanicum* Brid. was once believed to be largely distributed in the northern and southern hemispheres. However, as a result of molecular experiments in *S. magellanicum* compl., it was reclassified into several species, namely *S. divinum* Flatberg & K. Hassel and *S. medium* Limpr. (HASSEL *et al.* 2018). Following this revision, *Sphagnum magellanicum* Brid. is now recognised as not being present in Europe, but only in South America.

Morphological similarities occur between the species *S. divinum* Flatberg & K. Hassel. and *S. medium* Limpr. but there is insufficient data about their distribution in Europe. The species have been reported so far from Denmark, Finland, Norway, Sweden, Great Britain,



Ireland, France, Austria, Germany, Estonia and Latvia (HODGETTS & LOCKHART 2020), Turkey (ELLIS *et al.* 2019), Russia (ELLIS *et al.* 2020), Spain (RUIZ *et al.* 2022), Slovenia (CIMERMAN *et al.* 2023) and Italy (ALEFFI *et al.* 2024).

In Romania, *S. medium* Limpr. is found in peatbogs, cohabitating with other bryophytes such as *S. divinum* Flatberg & K. Hassel, *S. russowii* Warnst., *S. girgensohnii* Russow and *S. angustifolium* (Russow) C.E.O Jensen. The Tinovul de lângă drum and Tău de la Gutâi peatbogs are protected under the Natura 2000 sites. The Avrig peatbog has now been proposed as a new Natura 2000 site within the framework of PeatRO3 EEA Grants.

***Weissia squarrosa* (Nees & Hornschuch) Müll. Hal., fam. Pottiaceae (moss, bryophyte)**

**Contributors:** Marko S. SABOVLJEVIĆ and Aneta D. SABOVLJEVIĆ

**Geographical focus:** Serbia

**New record and noteworthy data:** Confirmation of the presence of this moss species in Serbia, previously reported only once with uncertainty. The second record in Serbia and the first record for the Vojvodina province. Redlisted as vulnerable (VU) both in Europe and in EU27+UK (HODGETTS *et al.* 2019).

**Specimen data:** Srem, Obedska Bara Special Nature Reserve, Kupinske grede, N 44.697356°, E 20.014355°, on bare soil, in a forest opening; 09 March 2024; leg./det. Sabovljević AD, Sabovljević MS.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, Bryophyte Collection (BEOU-Bryo) s.n.

*Weissia squarrosa* is a very rare moss species, endemic to Europe, reported from suboceanic and temperate areas. Its range is considered severely fragmented despite the species often producing sporophytes, and it seems to have undergone a significant decline (HALLINGBÄCK 2019). The species benefits from the practice of allowing land to lie fallow, while early ploughing of arable probably contributes to a decrease in population (BLOCKEEL *et al.* 2014). The probability of recolonisation from small and isolated subpopulations is also low (HALLINGBÄCK 2019).

The species prefers bare, clayey substrates, around ponds and ditches in deciduous forests. The newly reported site corresponds to such a habitat type and this record (the second for the country) is confirmation of the presence of this species in Serbia. Previously, *Weissia squarrosa* has been reported from Serbia from the surroundings of Dračić village in Western Serbia, but those records remained unconfirmed by subsequent research (PAPP & SABOVLJEVIĆ 2001).

The species is red-listed regionally and nationally over its range, classified as critically endangered (CR) in Austria and Romania, endangered (EN) in Germany, Norway, Luxembourg and Slovakia, vulnerable (VU) in Lithuania,

the Czech Republic and Switzerland, near threatened (NT) in Sweden, Great Britain and Estonia, rare (R) in Poland and regionally extinct (RE) in Finland and the Netherlands (HALLINGBÄCK 2019). It remains data deficient (DD) in Spain, and according to MARTINČIČ (2024), its extinction risk has increased to the status of an endangered species (EN) in Slovenia. According to the new moss red list of Serbia, the species is considered as vulnerable (VU) in the latest assessment and is expected to retain this status (SABOVLJEVIĆ *et al.* 2024 in press). According to ROS *et al.* (2013) and HODGETTS & LOCKHART (2020), it has not been reported in other countries from the Balkans and Southeastern Europe.

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## REZIME

## Novi i značajni podaci o biljkama, algama i gljivama iz JI Evrope i susjednih regiona, 18

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U radu su prikazani novi i značajni podaci sa područja JI Evrope i susjednih regiona o sledećim taksonima: cijanobakteriji *Pseudanabaena thermalis*, liheniziranoj gljivi *Acrocordia gemmata*, parazitskoj gljivi *Peniophora tamaricicola*, saprofitnoj gljivi *Hyphonectria buxi*, dijatomeji *Diatoma elongata*, mahovinama *Sphagnum medium*, *Rhizomnium magnifolium* i *Weissia squarrosa*, monokotilama *Gymnadenia frivaldii*, *Hemerocallis lilioasphodelus*, *Orchis* × *angusticuris* i *Pistia stratiotes*, i dikotilama *Astragalus angustifolius* subsp. *balcanicus*, *Broussonetia papyrifera*, *Datura innoxia* i *Montia arvensis*.

**Ključne reči:** novi nalaz, *Acrocordia gemmata*, *Astragalus angustifolius* subsp. *balcanicus*, *Broussonetia papyrifera*, *Datura innoxia*, *Diatoma elongata*, *Gymnadenia frivaldii*, *Hemerocallis lilioasphodelus*, *Hyphonectria buxi*, *Montia arvensis*, *Orchis* × *angusticuris*, *Peniophora tamaricicola*, *Pistia stratiotes*, *Pseudanabaena thermalis*, *Rhizomnium magnifolium*, *Sphagnum medium*, *Weissia squarrosa*, JI Evropa

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