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New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 22

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ABSTRACT:
This paper presents new records and noteworthy data on the following taxa in SE Europe and adjacent regions: saprotrophic fungi *Coronophora gregaria* and *Teunomyces cretensis,* stoneworts *Nitella flexilis* and *Nitellopsis obtusa,* mosses *Brachytheciastrum olympicum, Buxbaumia viridis* and *Taxiphyllum densiflium,* monocots *Dactylorhiza fuchsii, Hydrocharis morsus-ranae, Poa infirma* and *Poa jubata* and dicots *Knautia pancicii* and *Tozzia alpina* subsp. *carpathica*

Keywords: new report, *Brachytheciastrum olympicum, Buxbaumia viridis, Coronophora gregaria, Dactylorhiza fuchsii, Hydrocharis morsus-ranae, Knautia pancicii, Nitella flexilis, Nitellopsis obtusa, Poa infirma, Poa jubata, Taxiphyllum densiflium, Teunomyces cretensis, Tozzia alpina* subsp. *carpathica,* SE Europe

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Brachytheciastrum olympicum (Jur.) Vanderp., Ignatov, Huttunen & Goffinet, fam. Brachytheciaceae (moss, bryophyte)
Contributors: Djordje P. Božović and Marko S. Sabovljević
Geographical focus: Serbia
New record and noteworthy data: New data on a data deficient moss species (DD) in Serbia (Sabovljević *et al.* 2024a), and a European vulnerable (VU) species (Sabovljević *et al.* 2019a).

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Specimen data: Banat, Deliblatska Peščara, Čardak area, N 44.893718°, E 21.101806°, on a sandy depression at the edge of forest-steppic vegetation, by the road; 6 December 2024; leg./det. Božović DP, Sabovljević MS.
Voucher: Herbarium of the Institute of Botany and the Jevremovac Botanical Garden, University of Belgrade, Bryophyte Collection (BEOU-Bryo) s/n.

Brachytheciastrum olympicum is a rare pleurocarp moss species which closely resembles the widespread *B. velutinum* (Hedw.) Ignatov & Huttunen However, in fertile plants with sporophytes, it is rather easy to distinguish between the two species, and the seta in *B. olympicum* is not papillose. In contrast, records of sterile material can be easily confused.

It is distributed across the peri-Mediterranean area, and in some areas such as Portugal, Sardinia, and Slovenia it seems to be rather rarely reported (Hodgetts & Lockhart 2020; Sabovljević *et al*. 2024a). Martinčič (2024) assessed it as least concern (LC) in Slovenia although some previous reports of its occurrence were considered doubtful, due to sterile specimens in the herbarium. However, in Italy, Puglisi *et al.* (2024) raised its threat status to vulnerable (VU). This species is considered vulnerable (VU) in Europe (Hodgetts *et al*. 2019a), and the European population seems to be fragmented and in decline (Sabovljević *et al.* 2019a).

This species inhabits soils in Mediterranean vegetation, mainly sclerophyllous and conifer forests, and it was found with sporophytes at the edge of a pine plantation. Previously, it was recorded only once in Serbia near the town of Leskovac (Matouschek 1899), but no specimen was kept.

This species is rather unknown in Serbia and further revision of *B. velutinum* samples as well as field investigations are needed to fill the gaps on the national distribution of this species.

***Buxbaumia viridis* (Moug. ex Lam. et DC.) Brid. ex Moug. & Nestl., fam. Buxbaumiaceae (moss, bryophyte)**
Contributors: Pavel Širka and Salza Palpurina
Geographical focus: Bulgaria
New records and noteworthy data: A species listed in Annex II of the EU Habitats Directive, locally rare in Europe and assessed as threatened on numerous national Red Lists.
Specimen data: 1) Blagoevgrad Province, Slavyanka Mt., Paril, Parilski dol, Ali Botush Reserve, on shaded decaying conifer wood in a *Fagus sylvatica-Ostrya carpinifolia* forest, five sporophytes (including gametophyte), accompanied by *Herzogiella seligeri* (Brid.) Z. Iwats., *Lophocolea heterophylla* (Schrad.) Dumort. and *Nowellia curvifolia* (Dicks.) Mitt.; N 41.4107825°, E 23.6591300°, 1131 m a.s.l.; 29 June 2024; leg./det.: Širka P.; **2)** Blagoevgrad Province, Slavyanka Mt., Goleshevo, along the road to Shabran Peak, in a *Pinus nigra-Fagus sylvatica* forest, on a rotten log of *Pinus nigra*, N 41.409699°, E 23.602203°, 1301 m a.s.l., 21 October 2021, leg./det.: Natcheva R, Ganeva A.
Vouchers: BG-NMNHS-BRY-00000000001: The bryological collection at the Herbarium of the National Museum of Natural History, Bulgarian Academy of Sciences (NMNHS); SOM 11883-B.

In the Slavyanka Mt. region, *Buxbaumia viridis* has previously been recorded only once, more than 60 years ago, by Slavcho Petrov from a single location in Parilski dol (SOM 2497-B: Slavjanka: ad lignum putridum, l.d. Parilski dol, 1300 m a.s.l., 27 April 1958). The species has unsuccessfully been sought at this location several times during later years. Here we confirm its existence at the site.

In Bulgaria, *B. viridis* is assessed as near threatened (NT) (Natcheva *et al*. 2006). The most recent studies show that it is widespread within the spruce

belt in all Bulgarian mountains with well-developed spruce forests (Vitosha, Rila, Pirin, Western and Central Rhodopes, the Western and Central Balkan Range Mts.). There have been no recorded instances of population extinction and the species is equally well established in both unmanaged and managed forests (Natcheva *et al*. 2024).

Listed under Annex II of the EU Habitats Directive, *B. viridis* has been found to be more widespread in Europe than previously thought due to increased field surveys, monitoring and conservation efforts. Despite this, it remains a key flagship species, globally threatened by forest management practices like logging and clear-felling, which destroy its habitat and remove dead timber (Hodgetts *et al*. 2019b). Increasing long-term drought caused by global climate change are also expected to have a pronounced effect on the survival of this moss species (Kropik *et al*. 2021), especially in the continental Mediterranean climate zone. The population survival projections for neighboring Serbia and Romania are not promising in the considered climatic scenarios, thus regular monitoring is suggested (Pantović *et al*. 2023; Ștefănuț *et al*. 2023)

***Coronophora gregaria* Fuckel, fam. Coronophoraceae (fungus, saprotrophic)**
Contributor: Dimitar Stoykov
Geographic focus: Bulgaria
New records and noteworthy data: The first report of *Coronophora gregaria* in Bulgaria according to Fakirova (1996).
Specimen data: Sofia region, Sofia city, Iztok quarter, N 42.672011°, E 23.363094°, on a fallen, dead branch of *Tilia* sp., *ca*. 560 m, a.s.l.; 14 December 2016; leg./det. Stoykov D.
Voucher: Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 28682.

The black ascomata of *C. gregaria* were found on dead branches of *Tilia* sp. They are broadly ellipsoid, with polysporous asci containing straight, non-septate ascospores sized (5.7–) 6.6 ± 0.5 (–7.6) × (1.3–) 1.6 ± 0.2 (–2.1) µm, n = 20, observed under LM in water. Huang *et al*. (2021) identifies *C. gregaria* as a species usually inhabiting decayed branches of *Betula* L., *Prunus* L., *Sorbus* L., and *Tilia* L. in Europe (Belgium, France, Germany, and Italy).

***Dactylorhiza fuchsii* (Druce) Soó, fam. Orchidaceae (monocot, vascular plant)**
Contributors: Vladan Djordjević and Svetlana Krdžić
Geographical focus: Serbia
New records and noteworthy data: This is the sixth record of this species in Serbia, and the first 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. Željin, Jezero, N 43.474018°, E 20.797792°, MGRS 34T DP81, ass. *Eriophoro-Caricetum paniculatae* R. Jov. 1983, granodiorites, exp. S, incl. 20°, 1574 m a.s.l.; 22 June 2024; leg. Djordjević V, Krdžić S.; det. Djordjević V.
Vouchers: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, vascular plant collection (BEOU) 72207; photo documentation of Djordjević V.

Dactylorhiza fuchsii is a Euro-Siberian species distributed in Scandinavia, western, central and eastern Europe and Asia (eastern and western Siberia and Mongolia) (Delforge 2006). The species was recorded for the first time for Serbia on Mt. Javor in Western Serbia (Djordjević *et al*. 2014). Later, this

taxon was found in four new localities in Western Serbia, including Mts. Golija, Radočelo and Javor (Djordjević 2021). The new finding of this species on Mt. Željin is the first record of this species in the region of Central Serbia. This is the easternmost limit of the species' distribution in Serbia. Moreover, this is the first record of this species in the MGRS 34T DP81 10 × 10 km grid cell.

Dactylorhiza fuchsii was found at the locality Jezero on Mt. Željin, in a community of *Eriophoro-Caricetum paniculatae* R. Jov. 1983. In addition to *D. fuchsii*, the following taxa were also found at this locality: *Carex paniculata* L., *C. pallescens* L., *C. flava* L., *Eriophorum latifolium* Hoppe, *Gentiana asclepiadea* L., *Veratrum album* L. and *Briza media* L. The species was found on granodiorite, at an altitude of 1574 m, on a south-facing slope with an inclination of 20°. The newly recorded population of this species on Mt. Željin consists of more than 100 individuals within an area of 400 m². The species has the status of vulnerable species (IUCN: VU) in the Netherlands, the Czech Republic, Slovakia, Luxembourg and Hungary, whereas in Lithuania and Finland it has the status of near threatened (IUCN: NT) (Kull *et al*. 2016).

***Hydrocharis morsus-ranae* L. fam. Hydrocharitaceae (monocot, vascular plant)**

Contributors: Dragana Jenačković Gocić and Danijela Nikolić

Geographical focus: Serbia

New records and noteworthy data: This is the second record of *Hydrocharis morsus-ranae* in the Pomoravlje district after 60 years.

Specimen data: Pomoravlje District, Paraćin municipality, Buljanka Lake, N 43.864589°, E 21.352339°, 147 m a.s.l.; 12 September 2022; leg./det. Jenačković Gocić D, Raca I, Nikolić D.

Voucher: Herbarium Moesiacum Niš (HMN), 18775.

Hydrocharis morsus-ranae is distributed across Europe, Siberia, the Caucasus, Asia Minor, Central Asia, North Africa (Morocco and Algeria), Madagascar, and North America. According to Catling *et al*. (2003), it is considered a native species in Europe, Asia, and Africa, while it is recognised as an introduced species in North America.

In Serbia, *H. morsus-ranae* is a frequent component of aquatic and semi-aquatic plant communities in the Vojvodina province (Jenačković *et al*. 2015 and the references therein). However, based on available literature data and the field experience of the authors, it is considered a rare species outside the Vojvodina province. Its populations have only been documented at a few locations: near the city of Belgrade (Jovanović 2011), and also in gravel pits in Lipnički Šor near the city of Loznica, Mala Krsna (Podunavlje district), and a swamp near the village of Vrtište (Nišavski District) (Jenačković *et al*. 2015).

The newly recorded population comprised fewer than 50 individuals, forming part of a phytocoenosis dominated by *Ceratophyllum demersum* L. Hence, this is the second confirmation of its existence in the Velika Morava River catchment in the past decade.

***Knautia pancicii* Szabó Caprifoliaceae (Dipsacaceae) (dicot, vascular plants)**

Contributors: Marjan Niketić and Gordana Tomović

Geographical focus: Serbia

New records and noteworthy data: This is confirmation of the presence of this species for Zlatibor plateau, more than 150 years after the first collection by Josif Pančić in 1875; the first findings of the species in Northwestern Serbia.

Specimen data: 1) Western Serbia, Zlatibor plateau, Tusto Brdo, Crni Rzav (the headwaters of a stream, 0.5 km before the confluence of the Kotarine stream with Prdavac), N 43.734416°, E 19.660269°, MGRS CP94; *ca*. 900 m

a.s.l., serpentinite; 21 August 2010; leg. Niketić M, Tomović, G.; det. Niketić M.; **2)** Western Serbia, Zlatibor plateau, the turning for Smiljanića Zakosi, N 43.6744884°, E 19.7039041°, MGRS CP93; 12 June 2014; leg. Niketić M, Buzurović U.; det. Niketić M.; **3)** Northwestern Serbia, Mt. Maljen, Divčibare plateau, MGRS DP18; serpentinite; 21 August 2010; leg./det. Stevanović V.; rev. Niketić M.
Vouchers: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 31422; Herbarium of the Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), 2086, 869.

This locally endemic peat-bog plant was described by Szabó (1911) from the Zlatibor plateau in western Serbia, based on the material of Josif Pančić in the herbariums of A. Kerner and R. Uechtritz, without specifying a more precise locality. The type material, as well as any herbarium material of this species has not been verified to date, so the three mentioned herbarium specimens from BEO and BEOU are the only ones known for now: two from the *locus classicus* in the wider sense and one from a new locality (Mt. Maljen) *ca*. 50 km northeast of Zlatibor. A revision of the herbarium material showed that other data on the presence of the species in Serbia (Pavlović 1955; Diklić 1973; Gajić 1989) and Herzegovina (Bjelčić 1974) actually correspond to some other species such as *K. dinarica* (Murb.) Borbás, *K. csikii* Jáv. & Szabó, *K. sarajevensis* (Beck) Szabó, *K. magnifica* Boiss. & Orph. ex Orph. or *K. travnicensis* (Beck) Szabó.

***Nitella flexilis* (L.) C. Agardh. / *Nitellopsis obtusa* (Desvaux) J.Groves, fam. Characeae (charophyte algae)**
Contributors: Aleksandra Marković and Ivana Trbojević
Geographical focus: Serbia
New records and noteworthy data: Here we report novelties based on a revision of the samples found in Sava Lake, Belgrade. The samples were reported as *Nitella flexilis*, which was the first finding of this species in Serbia. However, later revision showed that the samples belong to young specimens of the species *Nitellopsis obtusa*. Consequently, the species *Nitella flexilis* is no longer listed in Serbian charophyte flora.
Specimen data: 1) Šumadija, Belgrade, Savsko Lake, near the beach on the side opposite the Ada Ciganlija Island, N 44.780968°, E 20.384325°; in a freshwater lake, at a depth greater than 4m; only oogonia present; 14 July 2017; leg./det. Vesić A, Talevska M, Schneider CS. det: 15 July 2017; rev.: Marković A, Trbojević I, 18 December 2024; **2)** Šumadija, Belgrade, Savsko Lake, between the dam and the nudist beach, at the side of Ada Ciganlija Island, N 44.777921°, E 20.373465°; in a freshwater lake, at a depth between 2 and 4 m; sterile specimen; 14 July 2017; leg./det. Vesić A, Talevska M, Schneider CS.; det: 15 July 2017; rev.: Marković A, Trbojević I, 18 December 2024.
Vouchers: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), Department of Algology and Micology – charophyte collection (BEOU), 2569, 2570

The specimens found in the Sava Lake on July 14th 2017 within the STARWALK project (Schneider *et al*. 2020) were initially identified as *Nitella flexilis*. According to the identifier's notes, the collected plants shared taxonomic features with the genus *Nitella* and both male and female reproductive organs could be observed, i.e. the plants were monoecious, which is an important character for discrimination between the species *Nitella opaca* (C. Agardh ex Bruzelius) C. Agardh and *Nitella flexilis*. However, male gametangia were not noticed again during the revision process. Furthermore, the taxonomic fea-

tures of the revised plants match young plants of *N. obtusa*. Prior to the investigations on July 14th 2017, *N. obtusa* was never found in the Sava Lake so this revised specimen can now be considered the first finding. During subsequent investigations, this species was recorded for the first time in 2018 (Sabovljević *et al.* 2024b) and later confirmed in all seasons during 2023 BIOLAWEB investigations. According to their ecological preferences, both species, *N. flexilis* and *N. obtusa*, have the potential to inhabit the lake (Pall *et al.* 2024a, b).

Despite its current critically endangered (CR) status in Serbia and vulnerable (VU) in the Balkans, *Nitellopsis obtusa* is invasive outside its native range (Sabovljević *et al.* 2024b). Moreover, Pelechaty *et al.* (2022) suggested that *N. obtusa* has the characteristics of a superior competitor. Even in its native habitats, in less productive lakes, its mass development can have negative consequences on the macrophyte biodiversity in the ecosystem it inhabits, since it can outcompete other aquatic plants for space, light and nutrients. During recent investigations in the BIOLAWEB project, it was found inhabiting numerous sites in the lake. Hence, we recommend continued monitoring of this species, particularly considering the charophyte richness of the Sava Lake and potential threat to other species.

***Poa infirma* Kunth, fam. Poaceae (monocot, vascular plant)**
Contributor: Georgi Kunev
Geographical focus: Bulgaria
New records and noteworthy data: The first records for Bulgaria.
Specimen data: SW Bulgaria, Struma valley (*South*): **1)** Petrich Municipality, Ograzhden Mts., Parvomay village, on the roadside, abundant, N 41.409184°, E 23.128141°, MGRS 34T FL78, 200 m a.s.l.; with flowers, 14 March 2024; leg./det. Kunev G., **2)** Petrich Municipality, 2 km S of Ribnik village, occupying the muddy bottom of a temporary wet ditch, N 41.471658°, E 23.253088°, MGRS 34T FL89, 120 m a.s.l.; with flowers, 14 March 2024; leg./det. Kunev G., **3)** Sandanski Municipality, Levunovo village, on the side of a dirt road, abundant, N 41.490573°, E 23.284268°, MGRS 34T FL89, 115 m a.s.l.; with flowers, 10 February 2024; leg./det. Kunev G.
Vouchers: Herbarium at the University of Sofia (SO) 108299; Herbarium at the Institute of Biodiversity and Ecosystem Research (SOM) 179189; vascular plant collection (BG-NMNHS-BOT) at the Herbarium at National Museum of Natural History at the Bulgarian Academy of Sciences (BNHM): 3141, 3142, 3178, 3179, 3211, 3212 (https://www.gbif.org/occurrence/4608348430).

The species is new to the Bulgarian vascular flora (Kitanov & Penev 1963; Stoyanov *et al.* 2022). The features of the plants noted from the material collected in Bulgaria align with the characters of *Poa infirma* according to Edmondson (1980), Kavousi *et al.* (2015), and Brullo *et al.* (2019). Compared to the morphologically similar *P. annua* L., *P. infirma* is exhibits a more compressed, slender habit, somewhat yellow-greenish in appearance, with lower panicle branches erect to spreading, but rarely reflexed as in *P. annua*, the number of florets per spikelet is usually 2–3(–4) vs. 4–5, often loosely arranged, with the length of the anthers ranging from 0.2–0.5 mm vs. 0.6–1.1 mm in *P. annua*. In all of the above-mentioned localities, *P. infirma* is well established and represented by numerous individuals.

In Bulgaria, *P. infirma* is recorded in a region influenced by a Mediterranean climate, with mostly sandy substrates. It occupies trampled, overgrazed, and strongly anthropogenically modified habitats.

***Poa jubata* A.Kern., fam. Poaceae (monocot, vascular plant)**
Contributor: Georgi Kunev
Geographical focus: Bulgaria
New records and noteworthy data: New records of a rare species and a new report for an additional floristic region in Bulgaria.
Specimen data: S Bulgaria, The Rhodopes (*East*): **1)** Ivaylovgrad Municipality, 2 km E of Meden Buk village, in a moist roadside depression, N 41.370757°, E 26.056159°, MGRS 35T MF28, 120 m a.s.l.; with flowers, 04 May 2021; leg./det. Kunev G.; **2)** Kirkovo Municipality, Chorbadzhiysko village, on right shore of the Kazalach River, in a moist depression on sand deposition, N 41.381093°, E 25.399576°, MGRS 35T LF68, 300 m a.s.l.; with flowers, 28 April 2024; leg./det. Kunev G.; **3)** Kirkovo Municipality, Fotinovo village, a temporary streamlet, N 41.387956°, E 25.350674°, MGRS 35T LF68, 320 m a.s.l.; with flowers, 28 April 2024; leg./det. Kunev G.; **4)** Kirkovo Municipality, Starovo village, in a temporary wet ditch in the periphery of a pasture, N 41.419244°, E 25.325638°, MGRS 35T LF68, 330 m a.s.l.; with flowers, 28 April 2024; leg./det. Kunev G.; **5)** Kirkovo Municipality, Hadziysko village, a temporary streamlet, N 41.395538°, E 25.345781°, MGRS 35T LF58, 320 m a.s.l.; with flowers, 28 April 2024; pers. obs. Kunev G.; **6)** Kirkovo Municipality, Dobromirtsi village, a temporary streamlet, N 41.386605°, E 25.213450°, 440 a.s.l.; with flowers, 28 April 2024; pers. obs. Kunev G.
Vouchers: Herbarium at the University of Sofia (SO) 108397, 108398; Herbarium at the Institute of Biodiversity and Ecosystem Research (SOM) 179340, 179341; vascular plant collection (BG-NMNHS-BOT) at the Herbarium at National Museum of Natural History at the Bulgarian Academy of Sciences (BNHM): 3200, 4116 (https://www.gbif.org/occurrence/4920293406).

The species has been observed in several micro sites in two, relatively distant locations of the East Rhodopes floristic sub-region, SC Bulgaria, not far from the Greek-Bulgarian border. There are only two previously known sites of the species in Bulgaria, both reported from the Tundzha Hilly Country floristic region (SE Bulgaria). The first was documented near Orlov Dol village, Topolovgrad Municipality (approx. coord.: N 42.118136°, E 26.184199°) on 11 April 1972 (SOM 129042, leg./det. Denchev S, Yotsova N.), and the second is known only from literature sources, and it is not supported by a herbarium voucher in any of the national collections (Denchev & Yotsova-Baurenska 1975; Atanassova & Marinova 2005).

In all the new sites in Bulgaria, the species exhibits a preference for temporary wet habitats, regardless of their anthropogenic or natural origin. The substrate is mostly sandy and well drained. The phytocoenotic characteristics and the species composition of the associated vegetation indicates an affiliation with the class *Isoëto-Nanojuncetea* Br.-Bl. et Tx. in Br.-Bl. et al. 1952, albeit influenced to a low degree by some ruderal species due to extensive grazing at almost all the documented sites. The known populations of the species in Turkey and Italy occur in environmentally similar conditions and the species has been evaluated as critically endangered (CR) or endangered (EN) in both countries (Cabi *et al.* 2017; Brullo *et al.* 2019). Despite the several newly recorded sites in Bulgaria, the species has not been observed in abundance in any of them. Moreover, at all of the sites the populations of the species were particularly vulnerable due to desiccation, trampling and overgrazing.

Therefore, the IUCN status of *Poa jubata* in Bulgaria should be urgently accessed in order to implement the mechanisms of biodiversity legislation on a national scale, thus minimising the high extinction risk for the species in the near future.

***Taxiphyllum densiflium* (Lindb. ex Broth.) Reimers, fam. Hypnaceae (moss, bryophyte)**
Contributors: Milorad M. Vujičić and Marko S. Sabovljević
Geographical focus: Serbia
New record and noteworthy data: New data on a red-listed moss species (EN) in Serbia (Sabovljević *et al.* 2024a) and a species endangered (EN) in Europe (Sabovljević *et al.* 2019b)
Specimen data: 1) Northeastern Serbia, Djerdap National Park, in a dolina near Ploče, N 44.610161°, E 22.284908°, on shaded rock, in beach forests, 30 October 2024; leg./det. Vujičić MM., Sabovljević MS; **2)** Northeastern Serbia, Djerdap National Park, in a dolina near Ploče, N 44.616541°, E 22.284144°, on rock crevices, in beach forests, 30 October 2024; leg./det. Vujičić MM., Sabovljević; **3)** Northeastern Serbia, National Park Djerdap, in a dolina between Ploče and Mali Štrbac peak, N 44.616441°, E 22.282107°, on rock and gaps with soil, in beach forests, 30 October 2024; leg./det. Vujičić MM., Sabovljević MS
Vouchers: Herbarium of the Institute of Botany and the Jevremovac Botanical Garden, University of Belgrade, Bryophyte Collection (BEOU-Bryo) s.n.

This pleurocarpous moss species is a rare montane taxon. Its distribution can be considered of an East European – Pontic (Caucasian) type (Nemeth 2011). It is sporadically present in Slovakia (High Tatra and Muranske Mountains), Poland (Bieszczady Mountains), Hungary (Bukk and Pilis Mountains), Romania (Ghetari), Serbia (Suva Planina Mt., Djerdap gorge and the Vlasina region) and Croatia (Plitvice and Rijeka surroundings) (Sabovljević *et al.* 2019b). In the Caucasus region, however, it is locally abundant (Frey *et al.* 2006).

This species is assessed as endangered (EN) in Europe (Hodgetts *et al.* 2019a; Sabovljević *et al.* 2019b), and it is nationally protected in Poland (Hodgetts & Lockhart 2020), and red-listed as vulnerable (VU), both in Slovakia (Mišikova *et al.* 2020) and Hungary (Papp *et al.* 2010), and endangered (EN) both in Romania (Stefanut & Goia 2012) and Serbia (Sabovljević *et al.* 2024a).

In Serbia, the species is known from three areas in Djerdap National Park at two sites Mali Štrbac and Ploče (Papp *et al.* 2006), Suva Planina Mt. in the vicinity of Bojanine vode (Papp & Erzberger 2009); and the Vlasina region in Klisura (Vučja Reka) (Papp *et al.* 2012).

This species has been recorded in limestone rocks and fissures in temperate beech forests (Ignatova *et al.* 2005; Frey *et al.* 2006). Habitat protection and monitoring programmes for this species are needed. Adequate forest management can affect the survival of this species by changing light and humidity conditions. An increased risk of drought due to climate change poses a significant potential threat.

The population in Europe and also in Serbia is severely fragmented. Sexual reproduction is not documented in Serbia. The spread and natural recolonisation is rather slow and translocation programmes and *ex situ* propagation could be of high conservation importance.

***Teunomyces cretensis* (Middelhoven & Kurtzman) Kurtzman & M. Blackw., fam. Debaryomycetaceae (fungus, saprotrophic)**
Contributors: Dimitar Stoykov and Boris Assyov
Geographic focus: Bulgaria
New records and noteworthy data: This is the first finding of *Teunomyces cretensis* in Bulgaria according to the distribution as hitherto outlined by Middelhoven & Kurtzman (2007), Fedorova & Kurakov (2023) and the public sequences presented below.
Specimen data: Pernik Province, Vitosha region, W of Bosnek village, near the A3 motorway, N 42.49800°, E 23.14024°, on a decaying basidioma of *Suil-*

lus collinitus, ca. 898 m a.s.l.; 24 October 2024, leg./det. Stoykov D, Assyov B.
Voucher: Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 31734.

Teunomyces cretensis was described from the island of Crete (Greece), where it was isolated from a decaying basidiomata of *Inocutis tamaricis* (Pat.) Fiasson & Niemelä (Middelhoven & Kurtzman 2007; as *Candida cretensis* Middelhoven & Kurtzman). In addition to its *locus classicus,* it was also subsequently reported from sediments from the Russian Federation – Lake Baikal (Fedorova & Kurakov 2023). A few other unpublished sequences, which are available on GenBank, document its occurrence in Germany, Iceland, South Korea, South Africa, and the USA, outlining a broad distribution. The presence of *T. cretensis* in Bulgaria was revealed by an nrITS sequence (GenBank PV030231), obtained by sequencing scrapings from the surface of a decomposing basidioma of *Suillus collinitus* s. l. The Bulgarian sequence showed 99.3% similarity (72% cover) when compared to the reference sequence from the holotype of *C. cretensis* (NR136969) using the BLASTn algorithm (Altschul *et al.* 1990), and 99.48% similarity (97% cover) with another from the same culture (KY102036).

Although known from environmental samples (Fedorova & Kurakov 2023), *Teunomyces cretensis* as well as the other species of the genus, are believed to be associated with fruitbodies of basidiomycetes or insects feeding on agarics (Chang *et al.* 2020), to which habit the Bulgarian finding obviously also adheres.

***Tozzia alpina* L. subsp. *carpathica* (Woł.) Pawł. & Jasiewicz, fam. Orobanchaceae (dicot, vascular plants)**
Contributors: Roxana Nicoară and Marilena Onete
Geographical focus: Romania
Novel and noteworthy data: New records in the Făgăraș Mountains of the rare and strictly protected *Tozzia alpina* subsp. *carpathica* in Romania. A Habitat Directive (Annexes II and IV) and Bern Convention (Annex I) listed species.
Specimen data: 1) Southern Carpathians, Făgăraș Mountains, Vâlcea County, Boia Mare Valley, N 45.514917° E 24.432472°, 875 m a.s.l.; 10 July 2022; leg./det. Nicoară R, Onete M.; **2**) Southern Carpathians, Făgăraș Mountains, Brașov County, Sâmbăta Valley, N 45.664920°, E 24.790970°, 861 m a.s.l.; 8 July 2024; leg./det. Nicoară R, Onete M.
Voucher: photo documentation by Roxana Nicoară and Marilena Onete.

The Făgăraș Mountains form part of the ROSCI0122 Făgăraș Natura 2000 site, which covers an area of approximately 1986 km² and stands out within the Carpathian range as an extensive east-west-oriented ridge stretching approximately 70 km. Historically, this ridge served as the border between Wallachia and the Austro-Hungarian Empire, with the northern slopes benefiting from extensive exploration by botanists over time. In contrast, within the present-day Vâlcea and Argeș counties, the southern slopes have seen limited attention, with only a few records of this species reported. However, habitats which can support *T. alpina* subsp. *carpathica* populations have been confirmed in this region.

Therefore, the new finding in the southern part of Făgăraș, in the Boia Mare Valley, is important, shedding light on the floristic composition of this underexplored region. In this area, the species was found near the riverbank alongside several plants, including *Petasites hybridus* (L.) G. Gaertn. & al. (host plant), *Cirsium oleraceum* (L.) Scop., *Cherophyllum hirsutum* L., *Stachys sylvatica* L., *Cardamine amara* L., *Impatiens noli-tangere* L., *Stellaria nemorum* L., *Chrysosplenium alternifolium* L. and *Urtica dioica* L. This population comprised over 25 flowering shoots.

In the northern part of the Făgăraș Mountains, *T. alpina* subsp. *carpathica* was identified in Sâmbăta Valley, on a dense *Petasites hybridus* (L.) G. Gaertn. & al. (host plant) cluster along the riverbank. As accompanying species, we noted *Cherophyllum hirsutum* L., *Telekia speciosa* (Schreb.) Baumg., *Stellaria nemorum* L., *Myosotis scorpioides* L. *Chrysosplenium alternifolium* L., *Equisetum sp., Geranium robertianum* L., *Dactylorhiza fuchsii* (Druce) Soó, *Carex remota* L., and *Orobanche flava* F. W. Schultz. The population consists of over 30 flowering shoots. These discoveries underscore the need for further botanical investigations in the entire area of the Făgăraș Mountains.

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COMPREHENSIVE PLANT BIOLOGY

REZIME

Novi i značajni podaci o biljkama, algama i gljivama iz JI Evrope i susednih regiona, 22

Gordana Tomović, Marko S. Sabovljević, Djordje P. Božović, Pavel Širka, Salza Palpurina, Dimitar Stoykov, Vladan Djordjević, Svetlana Krdžić, Dragana Jenačković Gocić, Danijela Nikolić, Marjan Niketić, Aleksandra Marković, Ivana Trbojević, Georgi Kunev, Milorad M. Vujičić, Boris Assyov, Roxana Nicoară i Marilena Onete

U radu su prikazani novi i značajni podaci sa područja JI Evrope i susednih regiona o sledećim taksonima: saprofitskim gljivama *Coronophora gregaria* i *Teunomyces cretensis,* pršljenčicama *Nitella flexilis* i *Nitellopsis obtusa,* mahovinama *Brachytheciastrum olympicum, Buxbaumia viridis* i *Taxiphyllum densiflium,* monokotilama *Dactylorhiza fuchsii, Hydrocharis morsus-ranae, Poa infirma* i *Poa jubata* i dikotilama *Knautia pancicii* i *Tozzia alpina* subsp. *carpathica.*

Ključne reči: novi nalaz, *Brachytheciastrum olympicum, Buxbaumia viridis, Coronophora gregaria, Dactylorhiza fuchsii, Hydrocharis morsus-ranae, Knautia pancicii*, *Nitella flexilis, Nitellopsis obtusa, Poa infirma, Poa jubata, Taxiphyllum densiflium, Teunomyces cretensis, Tozzia alpina* subsp. *carpathica,* JI Evropa