



Original Scientific Paper

## New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 16

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### ABSTRACT:

This paper presents new records and noteworthy data on the following taxa in SE Europe and adjacent regions: diatoms *Discostella asterocostata* and *Stephanodiscus hantzschii* f. *tenuis*, red alga *Bangia atropurpurea*, green alga *Ulva pilifera*, saprotrophic fungi *Didymella vitalbina* and *Phragmotrichum rivoclarinum*, mosses *Buxbaumia aphylla*, *Sphagnum divinum*, and *Tortella fasciculata*, monocots *Anacamptis × nicodemi*, *Epipactis palustris*, *Epipogium aphyllum*, and *Gymnadenia frivaldii* and dicots *Androsace lactea*, *Drosera rotundifolia*, *Potentilla montenegrina*, and *Tozzia alpina* subsp. *carpathica* are given within SE Europe and adjacent regions.

### Keywords:

new report, *Anacamptis × nicodemi*, *Androsace lactea*, *Bangia atropurpurea*, *Buxbaumia aphylla*, *Didymella vitalbina*, *Discostella asterocostata*, *Drosera rotundifolia*, *Epipogium aphyllum*, *Epipactis palustris*, *Gymnadenia frivaldii*, *Phragmotrichum rivoclarinum*, *Potentilla montenegrina*, *Sphagnum divinum*, *Stephanodiscus hantzschii* f. *tenuis*, *Tortella fasciculata*, *Tozzia alpina* subsp. *carpathica*, *Ulva pilifera*, SE Europe

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***Anacamptis* × *nicodemi* (Cirillo ex Ten.) B. Bock nothosubsp. *nicodemi*, fam. Orchidaceae (monocot, vascular plant)**

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

**New records and noteworthy data:** The first report for Serbia.

**Specimen data:** 1) Šumadija, Kotlenik, Oplanići (Šuplji Kamen), N 43.76596°, E 20.70394°, MGRS 34T DP74, ass. *Danthonietum calycinae*, andesite pyroclasts, exp. SE, incl. 25°, 332 m a.s.l.; 15 May 2023; leg. Djordjević V, Krdžić S.; det. Djordjević V.; conf. Tsiftsis S.; 2) Šumadija, Gledić Mountains, Lekine Livade (Slatina), N 43.88820°, E 20.87456°, MGRS 34T DP85, ass. *Festucetum valesiaca*, sandy-clay sediments, exp. W, incl. 25°, 639 m a.s.l.; 16 May 2023; leg. Djordjević V, Krdžić S.; det. Djordjević V.; conf. Tsiftsis S.; 3) Šumadija, Gledić Mountains, Bajčetina (Vranja), N 43.87451°, E 20.87672°, MGRS 34T DP95, ass. *Festucetum valesiaca*, sandy-clay sediments, exp. W, incl. 25°, 623 m a.s.l.; 16 May 2023; leg. Djordjević V, Krdžić S.; det. Djordjević V.; conf. Tsiftsis S.

**Vouchers:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 71207, 71208, 71209; photo documentation of Djordjević V.

*Anacamptis* × *nicodemi* nothosubsp. *nicodemi*, a natural hybrid between *Anacamptis morio* (L.) R. M. Bateman, Pridgeon & M.W. Chase subsp. *morio* and *Anacamptis papilionacea* (L.) R. M. Bateman, Pridgeon & M. W. Chase subsp. *papilionacea*, is distributed in the Mediterranean and sub-Mediterranean area of SE Europe, as well as in North Africa (POWO 2024). The morphological characteristics of the hybrid are intermediate between those of the two parental species for almost all traits (KRETZSCHMAR *et al.* 2007). The most important distinguishing feature of the hybrid is the shape of the spur. The hybrid *A.* × *nicodemi* nothosubsp. *nicodemi* has an almost horizontal and straight spur, in contrast to *A. papilionacea*, where the spur is curved and bent downwards (KRETZSCHMAR *et al.* 2007). In addition, the spur is thicker than in *A. papilionacea*. The influence of *A. morio* can be recognised by the lip, which is wider than it is long. There is only a hint of a short central lobe, whereas the centre of the lip is covered with spots. In addition, the overall colour of the flower is darker than that of *A. papilionacea*, with darker coloured lip veins. A molecular study from Italy indicated that *A. morio* more frequently provides the maternal lineage in one population, while *A. papilionacea* is more often represented in the maternal lineages in another population (ACETO *et al.* 1999).

The findings of *A.* × *nicodemi* nothosubsp. *nicodemi* in Šumadija (Kotlenik and Gledić Mountains) are the first records of this hybrid on the territory of Serbia. At

the same time, these are the first records of this hybrid in the MGRS 34T DP74, DP85 and DP95 10 × 10 km grid cells. The hybrid plants were recorded at altitudes between 332 m and 639 m, in the two xero-mesophilous grassland communities: *Danthonietum calycinae* Cinc. et Kojić, 1958 (*Chrysopogoni-Danthonion calycinae* Kojić, 1957) and *Festucetum valesiaca* Klika, 1931 (*Festucion valesiaca* Klika, 1931). All the specimens were recorded on semi-dry soils, under a full-light regime. The bedrock type of the first stand was siliceous (andesite pyroclasts), whereas the bedrock types for the second and third stands were carbonate sediments.

Hybrid plants were found at sites where the two parental species grow in sympatry and where the population size of *A. morio* was larger than that of *A. papilionacea*. A total of three hybrid individuals were recorded at the first locality (Kotlenik), 12 hybrid individuals were recorded at the second locality (Gledić Mountains, Lekine Livade), while six hybrid individuals were recorded at the third locality (Gledić Mountains, Bajčetina). *Anacamptis* × *nicodemi* nothosubsp. *nicodemi* and both parental species (*A. morio* and *A. papilionacea*) are protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). *Anacamptis morio* subsp. *morio* is one of the most widespread orchid taxa in Serbia, whereas the estimated IUCN conservation status of *A. papilionacea* in Serbia is Near Threatened (NT) (DJORDJEVIĆ *et al.* 2017).

***Androsace lactea* L., fam. Primulaceae (dicot, vascular plants)**

**Contributor:** Marjan NIKETIĆ

**Geographical focus:** Serbia

**New records and noteworthy data:** This is the second record for Serbia and the northernmost locality of the species distribution area in the country.

**Specimen data:** Eastern Serbia, Mt. Rtanj, Šiljak Peak, MGRS 34T EP74, rocks, limestone, 1565 m a.s.l.; 09 June 1994; leg./det. Niketić M.

**Vouchers:** Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), s.n.

*Androsace lactea* is a European high-mountain chasmo-phytic plant which was first recorded by PANČIĆ (1884) who found it on Mt. Suva Planina in the year 1883. Bearing in mind that the newly registered site on Mt. Rtanj represents the second as well as the northernmost locality of the species in Serbia it is of great conservation importance. A small and restricted group of *A. lactea* individuals was found on the northern slopes of Šiljak Peak on limestone rocks at an altitude of ca. 1560 m. and within the zone of a subalpine beech and fir forest.

***Bangia atropurpurea* (Mertens ex Roth) C. Agardh, fam. Bangiaceae (red algae)**

**Contributors:** Sanja ŠOVRAK and Ana KNEŽEVIĆ

**Geographical focus:** Serbia

**New record and noteworthy data:** New localities in Serbia for *B. atropurpurea*, which is considered to be threatened in Serbia

**Specimen data:** 1) Southeast Serbia, Milevska Mts., Božička River, N 43.517592°, E 22.448659°; 847 m.a.s.l.; 27 July 2022; leg. Šovran S.; det. Knežević A.; 2) Southeast Serbia, Mt. Dukat, Bresnička River, N 43.435245°, E 22.488358°, 798 m a.s.l.; 28 July 2022; leg. Šovran S.; det. Knežević, A.; 3) Southeast Serbia, Mt. Dukat, Popovska River, N 42.342845°, E 22.5363937°; 1054 m.a.s.l.; 28 July 2022; leg./det. Šovran S.; 4) Central Serbia, Mt. Kopaonik, Kazanovski Brook, N43.312775°, E 20.785673°; 1562 m.a.s.l.; 16 July 2023; leg./det. Šovran S.

**Vouchers:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), Department of Algology and Micology – algae wet collection 6662, 6697.

The first record of freshwater red algae *B. atropurpurea* in Serbia was recorded in the Trgoviški Timok River (SIMIĆ & RANKOVIĆ 1998). Subsequently, this species was found in the Gvozdačka River (OBUŠKOVIĆ & OBUŠKOVIĆ 1998), the Raška River (SIMIĆ 2008), the Nišava River (ANDREJIĆ *et al.* 2010), the Brusnička River, the Golijaska Moravica River, the Panjica River and the Resava River (MITROVIĆ & SIMIĆ 2021).

The new records were collected from stones or rocks in clean, cold, well-oxygenated and slightly alkaline water during the summers of 2022 and 2023. The thalli were dark red, dark olive or brownish, with simple, unbranched filaments up to 10 cm long and up to 90 µm in diameter, attached to the rock by downward-growing rhizoids produced from basal and adjacent cells.

*Bangia atropurpurea* has been recorded in hard-water lakes and rivers, often near coastal areas all over Europe: Albania, Bulgaria, Croatia, Cyprus, France, Germany, Great Britain, Hungary, Italy, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and Turkey (VIS & NECCHI 2021).

According to the national legislation (OFFICIAL GAZETTE RS 2010–2016), *B. atropurpurea* is a strictly protected species in Serbia. A strong anthropogenic impact on the habitats of this species can lead to a decrease in their presence and distribution. Continuing further research on freshwater red algae is of the utmost importance, as they serve as excellent indicators for assessing the condition and stability of aquatic ecosystems.

***Buxbaumia aphylla* Hedw., fam. Buxbaumiaceae (moss, bryophyte)**

**Contributor:** Péter SZÜCS

**Geographical focus:** Slovenia

**New records and noteworthy data:** A newly recorded population of a NT (near threatened) species in Slovenia, from North East Slovenia after more than 50 years.

**Specimen data:** Northeastern part of Slovenia, the sub-pannonian region, on the boundary of Hodoš village, 500 meters from the boundary stone park, N 46.852911°, E 16.318223°, an old *Pinus sylvestris* forest, near the forest road, on a bare acidic soil surface, 295 m a.s.l.; 30 May 2014; leg./det. Szűcs P.

**Voucher:** Bryophyte Herbarium of the Department of Botany and Plant Physiology (EGR), Eszterházy Károly Catholic University, Eger, Hungary, s.n.

*Buxbaumia aphylla* is a circumpolar boreal-montane distributed ephemeral pioneer moss. It mainly favours disturbed humus-rich acidic sandy or clayey soil surfaces in woodland habitats (DIERSSEN 2001). This moss is widespread in West and North Europe, but is rarely reported in South Europe (CHARISSOU & HAPPE 2016). According to HODGETTS & LOCKHART (2020), in Southeastern Europe its presence is unevenly distributed. DOBOŠ & ŠEGOTA (2023) published five new localities of *B. aphylla* in nearby Croatia, on bare acidic soil within a forest and along the forest edge. In Slovenia, it is not frequently reported, and the only records from the Slovenian sub-pannonian region (NE Slovenia) originate from more than 50 years ago (BAVDAŽ 1958). The newly reported moss population was small (2 cm<sup>2</sup>) and represented by 11 mature sporophytes. The species was classified as least concern (LC) in Europe (HODGETTS *et al.* 2019), and it is assessed as a near threatened (NT) species in Slovenia (MARTINČIČ 2024).

***Didymella vitalbina* Petr., fam. Didymellaceae (fungus, saprotrophic)**

**Contributor:** Dimitar STOYKOV

**Geographic focus:** Bulgaria

**New records and noteworthy data:** The first report of *Didymella vitalbina* Petr. in Bulgaria (according to FAKIROVA 1982, 1985, 2004).

**Specimen data:** Sofia region, Sofia city, Geo Milev Residential Quarter, N 42.672367°, 23.364461°, on the dead overwintered stems of *Clematis vitalba* L., ca. 561 m a.s.l.; 23 June 2023; leg./det. Stoykov D.

**Voucher:** Bulgarian Academy of Sciences, Mycological Collection of the Institute of Biodiversity and Ecosystem Research (SOMF), 29598.

The identification of *Didymella vitalbina* was made after SIVANESAN (1984). This collection represents a mixed specimen containing ascomata of *Ophiobolus vitalbae* (Sacc.) Sacc., known so far in Bulgaria only from the Rila Mts., near the Rila Monastery (KLIKA 1926), and ascomata of *Pleospora vitalbae* (De Not.) Berl., known in Bulgaria from the reports of PICBAUER (1937) and FAKIROVA (1993).

***Discostella asterocostata* (M.H. Hohn & Hellerman) (B.Q. Lin, S.Q. Xie & S.X. Cai) Houk & Klee 2004, fam. Stephanodiscaceae (diatom, algae)**

**Contributor:** Danijela VIDA KOVIĆ and Jelena KRIZMANIĆ

**Geographical focus:** Serbia

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

**Specimen data:** **1)** Sava River, N 44.973420°, E 19.594758°; N 44.924982°, E 19.710296°; N 44.9139655°, E 19.7487992°; N 44.912976°, E 19.754044°; N 44.890559°, E 19.752025°; N 44.852265°, E 19.724054°; N 44.775716°, E 19.697706°; N 44.744878°, E 19.754912°, 13 September 2021; leg. Vidaković D, Ćirić M.; N 44.6898034°, E 19.9108836°, 19 September 2021, leg. Vidaković D, Jelić M.; N 44.824368°, E 20.445191°, 27 September 2021, leg. Vidaković D, Božanić M. **2)** Tisa River, N 45.9351410°, E 20.0912476°; N 45.8494282°, E 20.0845578°; N 45.577812°, E 20.124015°, 21 September 2021, leg. Vidaković D, Marković A.; N 45.457291588586955°, E 20.193361846608823°; N 45.441059°, E 20.222218°; N 45.390638°, E 20.205545°, 26 September 2021, leg. Vidaković D.; N 45.285849°, E 20.238548°; N 45.206523°, E 20.312210°; N 45.1914076°, E 20.3129948°; N 45.1425225°, E 20.2807540°, 28 September 2021, leg. Vidaković D, Gavrilović B.

**Vouchers:** Diatom Collection of Serbia (DCSR), Institute of Chemistry, Technology and Metallurgy, University of Belgrade. Accession No.: Sava River, Slide DCSR 000344/A, 000346/A, 000349/A, 000351/A, 000353/A, 000355/A, 000359/A, 000361/A, 000362/A, 000391/A, Tisa River Slide DCSR 000375/A, 000377/A, 000383/A, 000384/A, 000385/A, 000387/A, 000392/A, 000393/A, 000394/A, 000395/A.

The valve of *D. asterocostata* is circular, with an undulate valve face, 8.9–17.8 µm in diameter. The striae on the marginal area of the valve face are radial and separated from the central striae area by a hyaline area. Under LM observation, the marginal striae are divided by a distinct short line. This line represents the internal chambers.

*Discostella asterocostata* is found predominantly in reservoirs and large rivers (HOUK *et al.* 2010; ALVERSON *et al.* 2021). In Serbia, it was observed for the first time in the two large lowland rivers, the Sava and Tisa, on approx. 0.50 m deep mud, gravel/sand substrate, as well as in submerged macrophytes. The water of the Sava and Tisa rivers was slightly alkaline, with a moderate concentration of electrolytes.

***Drosera rotundifolia* L., fam. Droseraceae (dicot, vascular plants)**

**Contributors:** Milana RANIMIROVIĆ and Uroš BUZUROVIĆ

**Geographical focus:** Serbia

**New record and noteworthy data:** New sites on Mt. Dukat, and the sixth confirmed area of the rare carnivorous plant *D. rotundifolia* in Southeastern Serbia.

**Specimen data:** **1)** Southeastern Serbia, Mt. Dukat, in the foothills of Crnook Peak, N 42.4312°, E 22.390392°, MGRS 34T FM19, ass. *Caricetum echinatae* Soo,

1944, 1685 m a.s.l.; 15 August 2023; leg. Ranimirović M, Buzurović U, Milivojević L.; det. Ranimirović M.; **2)** Southeastern Serbia, Mt. Dukat, Soborište, N 42.423319°, E 22.366616°, MGRS 34T FM19, ass. *Caricetum nigrae* Braun, 1915, 1532 m a.s.l.; 15 August 2023; leg. Buzurović U, Ranimirović M, Milivojević L.; det. Buzurović U.; **3)** Southeastern Serbia, Mt. Dukat, Mala river, N 42.425899°, E 22.378575°, MGRS 34T FM19, ass. *Caricetum nigrae*, 1599 m a.s.l.; 15 August 2023; leg. Buzurović U, Ranimirović M, Milivojević L.; det. Buzurović U.

**Voucher:** Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), s.n. and photo documentation by M. Ranimirović and U. Buzurović.

*Drosera rotundifolia* has a circumboreal distribution. It is present in mountainous areas in southeastern and eastern Europe as well, where it can be found in wetland habitats. This species is found sporadically in Eastern (Mt. Stara Planina), Southeastern (Mt. Besna Kobila, Vlasina plateau, Mt. Milevska Planina, Mt. Ostrozub and Mt. Ćemernik) and presumably Southern (Mt. Kukavica) Serbia and the Kosovo region (Mt. Šar Planina), in streams and spring wetlands (STEVANOVIĆ & RANDJELOVIĆ 2022). According to the national legislation, *D. rotundifolia* is a strictly protected species in Serbia (OFFICIAL GAZETTE RS 2010–2016).

This marks the seventh confirmed record of the rare and boreal relic carnivorous plant *D. rotundifolia* in Serbia. Three newly reported subpopulations found on Mt. Dukat are all within the 34T FM19 10 × 10 km UTM grid cell, as well as the first records in the FM 100 × 100 km and FM1 50 × 50 km UTM grid cells respectively.

***Epipactis palustris* (L.) Crantz, fam. Orchidaceae (monocot, vascular plants)**

**Contributors:** Milana RANIMIROVIĆ and Lazar MILIVOJEVIĆ

**Geographical focus:** Serbia

**New record and noteworthy data:** A new site on Mt. Dukat, and the second record of the rare orchid plant *E. palustris* in Southeastern Serbia. A near threatened (NT) and CITES listed species in Serbia.

**Specimen data:** **1)** Southeastern Serbia, Mt. Dukat, in the foothills of Crnook Peak, N 42.42598°, E 22.378748°, MGRS 34T FM19, ass. *Caricetum nigrae*, 1644 m a.s.l.; 19 August 2023; leg. Buzurović U, Milivojević L, Ranimirović M.; det. Buzurović U.; **2)** Southeastern Serbia, Mt. Dukat, Juručki Grob, N 42.426709°, E 22.401631°, MGRS 34T FM19, ass. *Deschampsietum caespitosae* Hayek & Horvatič, 1930, 1671 m a.s.l.; 19 August 2023; leg. Buzurović U, Milivojević L, Ranimirović M.; det. Buzurović U.

**Voucher:** Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), s.n.

*Epipactis palustris* is widely distributed in Europe. However, it is almost absent from the Mediterranean region (JACQUEMYN *et al.* 2014). Although it has a relatively wide but scattered distribution in Serbia and occurs on both calcareous and non-calcareous geological substrates (DJORDJEVIĆ *et al.* 2016), it is estimated that its conservation status should be Near Threatened (NT) due to the fact that the number of individuals in each known locality is rather low (DJORDJEVIĆ *et al.* 2017). This species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2020). According to the national legislation, *E. palustris* is a strictly protected species in Serbia (OFFICIAL GAZETTE RS 2010–2016). The Mt. Dukat new records are located in the 34T FM19 10 × 10 km UTM grid cell, and these two small subpopulations of *E. palustris* also represent the first records in the FM 100 × 100 km and FM1 50 × 50 km UTM grid cells.

***Epipogium aphyllum* Swartz, fam. Orchidaceae (monocot, vascular plant)**

**Contributors:** SNEŽANA VUKOJIČIĆ and NEVENA KUZMANOVIĆ

**Geographical focus:** Serbia

**New records and noteworthy data:** This is the first record of this rare orchid for the region of West Serbia.

**Specimen data:** West Serbia, Mt. Mokra Gora, Podstolac, N 43.7977333°, E 19.4281830°, MGRS 34T CP75, beech forest, 1020 m a.s.l.; 17 August 2023; leg./det. Vukojičić S, Kuzmanović N.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 71246.

*Epipogium aphyllum* is a rare orchid species recorded in numerous European countries, and as such appears in various threatened categories nationally, ranging from extinct to vulnerable species (KULL *et al.* 2016). According to DJORDJEVIĆ *et al.* (2017), this species has the status of an endangered species in Serbia and it is protected by national legislation as a strictly protected species (OFFICIAL GAZETTE RS 2010–2016).

The first data on the occurrence of this rare orchid in Serbia (Mt. Belica and Mt. Rtanj) come from Josif Pančić (PANČIĆ 1856, 1874). Later, other researchers found it in the mountain areas of Beljanica, Zlatar, Željina, Mokra Planina and Prokletije (TOMOVIĆ *et al.* 2007; DJORDJEVIĆ *et al.* 2017 and the references therein; DJORDJEVIĆ 2021 and the references therein, SABOVLJEVIĆ *et al.* 2023).

The newly found population on Podstolac in Mokra Gora is small, with only six individuals on 2 m<sup>2</sup>. It is located in a beech forest, where a population of peony (*Paeonia officinalis* L. subsp. *banatica* (Rochel) Soó) grows together with typical beech forest species (*Dryopteris filix-mas* (L.) Schott., *Moehringia trinervia* (L.) Clairv., *Poa nemoralis* L. and *Salvia glutinosa* L.).

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

**Contributors:** UROŠ BUZUROVIĆ and LAZAR MILIVOJEVIĆ  
**Geographical focus:** Serbia

**New record and noteworthy data:** A new site on Mt. Dukat and the third record of the rare and protected orchid *G. frivaldii* in Southeastern Serbia. A CITES listed species.

**Specimen data:** 1) Southeastern Serbia, Mt. Dukat, Soborište, N 42.423319°, E 22.366616°, MGRS 34T FM19, ass. *Caricetum nigrae*, 1530 m a.s.l.; 15 August 2023; leg. Buzurović U, Milivojević L, Ranimirović M.; det. Buzurović U.; 2) Southeastern Serbia, Mt. Dukat, Kameana Struga, N 42.432029°, E 22.381061°, MGRS 34T FM19, ass. *Festuco-Nardetum strictae*, 1606 m a.s.l.; 17 August 2023; leg. Buzurović U, Milivojević L, Ranimirović M.; det. Buzurović U.

**Vouchers:** Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), s.n.

*Gymnadenia frivaldii* occurs on siliceous substrates in the Balkans and the southern Carpathians (DELFORGE 2006). In Serbia, it is present in Central (Mt. Kopaonik), Eastern (Mt. Stara Planina), Southeastern (Vlasina plateau and Mt. Besna Kobila) and Western parts of the country (Mt. Golija), as well as the Kosovo region (Mts. Šar Planina and Mts. Prokletije), where it inhabits mountainous and subalpine fen communities (DJORDJEVIĆ *et al.* 2017; DJORDJEVIĆ 2021; TOMOVIĆ *et al.* 2023). This species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2020). According to the national legislation, *G. frivaldii* is a strictly protected species in Serbia (OFFICIAL GAZETTE RS 2010–2016).

The two newly reported populations of *G. frivaldii* are small and represent the first records in the 34T FM19 10 × 10 km UTM grid cell, as well as new ones for the FM 100 × 100 km and FM1 50 × 50 km UTM grid cells.

***Phragmotrichum rivoclarinum* (Peyronel) B. Sutton & Piroz., fam. Melanommataceae (fungus, saprotrophic)**

**Contributor:** Dimitar STOYKOV

**Geographic focus:** Bulgaria

**New records and noteworthy data:** The first report of *Phragmotrichum rivoclarinum* in Bulgaria (according to SUTTON & PIROZYNSKI 1965; SCHEUER 2003; MAŃKA *et al.* 2012).

**Specimen data:** Balkan Range, Balgarka Nature Park, near Bedek Peak, below the wind turbine park, N 42.743639°, E 25.434500°, on the fallen dead branch of a deciduous tree, ca. 1420 m a.s.l.; 15 September 2012; leg./det. Stoykov D.

**Voucher:** Mycological Collection of the Institute of Biodiversity and Ecosystem Research of the Bulgarian Academy of Sciences (SOMF), 29189.

This species was originally described from Italy by PEYRONEL (1922) under the name *Alysisporium rivoclarinum* Peyronel, collected on the wood and bark of the semi-decorticated branches of *Salix caprea* L. in Piedmont, Valle Perrero, Rioclarretto, l. d. Li Turé, alt. ca. 1200 m. For a long time the fungus was considered regionally distributed in Europe (SUTTON & PIROZYNSKI 1965). Later, SUTTON & PIROZYNSKI (1966) cited one specimen from Canada, on the twigs of *Alnus rubra* Bong. subsp. *americana*, thus extending its distributional area to North America. In Europe, SCHEUER (2003) included Melnik's collection from Finland (Helsinki) from *Alnus crispa* (Aiton) Pursh. subsp. *sinuata* (Regel) Hulten. More recently, MAŃKA *et al.* (2012) cultured *P. rivoclarinum* in Poland with three isolates obtained inside beech seeds.

The above collection represents an asexual morph classified after WIJAYAWARDENE *et al.* (2021). All the pycnidia are developed on a dead twig, black, superficial, subglobose, up to 800 µm in diameter. The conidia are ellipsoidal, arranged in chains, septate; the immature cells are aseptate, while the mature ones are mostly 3-septate, and sometimes contain oil drops; conidia with more than 3 septa are also observed. The conidia are generally sized 16–36 × 6.5–9.4 µm, n=40; 0–3-septate conidia (16.0–) 21.3 ± 2 (–25) × (7.1–) 7.8 ± 0.4 (–9.0) µm, Q ratio (2.1–) 2.7 ± 0.3 (–3.5), n = 31; 5–7-septate conidia (25–) 29.1 ± 3.1 (–36) × (6.5–) 7.9 ± 0.7 (–9.4) µm, Q ratio (2.8–) 3.7 ± 0.5 (–4.6), n = 15, all measured in water. The novel find from the Balkan Range aligns well with the ecological requirements and the illustrations of Peyronel's collection (PEYRONEL 1922).

***Potentilla montenegrina* Pant., fam. Rosaceae (dicot, vascular plants)**

**Contributors:** Marjan NIKETIĆ and Gordana TOMOVIĆ

**Geographical focus:** Serbia

**New records and noteworthy data:** A new site is presented for the plant previously recorded from only one locality in Serbia. This is the first record for the region of southwestern Serbia.

**Specimen data:** Southwestern Serbia, Mts. Prokletije, Mokra Gora, Ponor Peak, N 42.8850591°, E 20.4968119°, MGRS 34T DN54, rocks and rocky ground, limestone, ca. 1500 m a.s.l.; 27 July 2017; leg./det. Niketić M, Tomović G.

**Voucher:** Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO), s.n.

*Potentilla montenegrina* was first collected on Mt. Zvezda (Dugi Do near Karaula Štula) by Josif Pančić in the year 1866 (PANČIĆ 1874 sub *P. buccoana* Clem.). Up to now, this was the only locality in Serbia proper, since the literature record from Mts. Kopaonik – Suvo Rudište Peak (SIGUNOV 1977) is questionable, while those from Mts. Rogozna (RATKNIĆ *et al.* 2011) and Mt. Vidlič and the surrounding area of Knjaževac – Pričevac village

(MANIĆ 1975) are erroneous. In Kosovo and Metohija, it is present on Mts. Prokletije and Mts. Šar Planina (DIKLIĆ & NIKOLIĆ 1974).

In Mokra Gora (Ponor Peak) this species inhabits rocks and rocky ground on limestone. The population is represented by a small number of individuals (ca. 50–100), spatially restricted and requires certain conservation measures.

***Sphagnum divinum* Flatberg & K. Hassel, fam. Sphagnaceae (moss, bryophyte)**

**Contributor:** Miruna-Maria ŞTEFĂNUŢ

**Geographical focus:** Romania

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

**Specimen data:** Tinovul de lângă drum, Suceava County, N 47.654160°, E 25.184272°, 1159 m a.s.l.; 19 October 2023; leg./det. Ştefănuţ M-M.

**Vouchers:** Bryophyte collection of the Herbarium of the Institute of Biology - Bucharest, Romanian Academy (BUCA), B12274, B12275.

In 2018, the taxon *Sphagnum magellanicum* Brid., from the northern hemisphere was separated into two taxa occurring in Europe, namely *Sphagnum divinum* Flatberg & K. Hassel and *Sphagnum medium* Limpr. (HASSEL *et al.* 2018). According to the same authors, *Sphanum magellanicum* s. str. does not occur in Europe. Numerous previous records of *S. magellanicum* have been reported for Romania (ŞTEFĂNUŢ & GOIA 2012; HODGETTS & LOCKHART 2020), but remained obscured in terms of the new species segregation within this complex.

Here, the new records of *S. divinum* are reported in the peat bog *Tinovul de lângă drum*, part of ROSCI0086 – Găina Lucina, a NATURA 2000 site. The samples of *S. divinum* were found alongside other *Sphagnum* species such as *S. angustifolium* (Russow) C.E.O. Jensen, *S. girgensohnii* Russow and *S. russowii* Warnst.

According to HODGETTS *et al.* (2019), the overall European population of this species is not under threat, but the genus *Sphagnum* is listed under the European Habitat Directive. However, *S. divinum* distribution in Europe remains obscure (IGNATOV *et al.* 2019) due to overlapping and confusion with *S. medium*, or unchecked previous reports of *S. magellanicum* compl.

***Stephanodiscus hantzschii* Grunow. f. *tenuis* (Hustedt) Håkansson & Stoermer 1984. fam. Stephanodiscaceae (diatom, algae)**

**Contributors:** Danijela VIDAKOVIĆ and Jelena KRIZMANIĆ

**Geographical focus:** Serbia

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

**Specimen data:** 1) Sava River, N 44.9206113°, E 19.346891°; N 44.924982°, E 19.710296°; N 44.924982°, E

19.710296°; N 44.9139655°, E 19.7487992°; N 44.912976°, E 19.754044°; N 44.890559°, E 19.752025°; N 44.852265°, E 19.724054°, 13 September 2021; leg. Vidaković D, Ćirić M.; N 44.6898034°, E 19.9108836°; N 44.706523°, E 20.308066°; N 44.744265°, E 20.325140°, 19 September 2021; leg. Vidaković, Jelić M.; N 44.7661455°, E 20.3512210°; N 44.796870°, E 20.405334°; N 44.805115°, E 20.442123°, 27 September 2021; leg. Vidaković D, Božanić M. **2)** Tisa River, coordinates N 46.0826196°, E 20.0386270°; N 46.0528663°, E 20.0906414°; N 45.9351410°, E 20.0912476°; N 45.8494282°, E 20.0845578°; N 45.7886205°, E 20.1456498°; N 45.7550090°, E 20.1506414°, 21 September 2021; leg. Vidaković D, Marković A.; N 45.390638°, E 20.205545°, 26 September 2021; leg. Vidaković D.; N 45.1425225°, E 20.2807540°, 28 September 2021, leg. Vidaković D, Gavrilović B.

**Vouchers:** Diatom Collection of Serbia (DCSR), Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Accession No.: Sava River, Slide DCSR 000341/A, 000344/A, 000348/A, 000349/A, 000351/A, 000352/A, 000354/A, 000362/A, 000366/A, 000367/A, 000388/A, 000389/A, 000390/A; Tisa River Slide DCSR 000370/A, 000372/A, 000375/A, 000377/A, 000378/A, 000379/A, 000387/A, 000395/A.

*Stephanodiscus hantzschii* f. *tenuis* has cylindrical lightly silicified cells. The valve face is flat, 8–11.8 µm in diameter. The spines are situated in a ring on the valve face/valve mantle junction. An annulus is present at the valve centre. The interfascicles are radiate, often not straight, forming a slight wavy pattern. In the valve centre, a large rosette of areolae is often present.

*Stephanodiscus hantzschii* f. *tenuis* is considered an environmental forma which co-occurs with *Stephanodiscus hantzschii* (ANDERSON 1990; REAVIE & KIRETA 2015). It is a cosmopolitan taxon, observed in rivers and lakes with different trophic levels and halobity (KISS *et al.* 2012; HOUK *et al.* 2014; REAVIE & KIRETA 2015). In Serbia, it was observed for the first time in the Sava and Tisa rivers on approx. 0.50 m deep mud, gravel/sand, and submerged macrophytes. The physicochemical conditions were slightly alkaline, with a moderate concentration of electrolytes.

***Tortella fasciculata* (Clum.) Clum., fam. Pottiaceae (moss, bryophyte)**

**Contributors:** Marko SABOVljević and Lado KUTNAR

**Geographical focus:** Slovenia

**New record and noteworthy data:** This is confirmation of the presence of this species in Slovenia.

**Specimen data:** **1)** Podstene, Kočevski rog (the Dinaric region of Slovenia), in an old-growth mountain fir-beech forest, four samples on the rock outcrops in the forest and along the forest road, N 45.648125°, E 15.030369°, 950 m a.s.l., 7 July 2023; leg./det. Sabovljević M.; **2)** Near Cerklje Peak in the Krokar reserve (the Dinaric region

of Slovenia), a Dinaric fir-beech forest, on the rocks in the forest, N 45.5438°, E 14.7653°, 1140 m a.s.l., 6 July 2022; leg. Kutnar L, Sabovljević M.; det. Sabovljević M.; **3)** Bukov vrh forest reserve, Trnovski gozd, (the Dinaric region of Slovenia), two samples on the rocky ground in the beech forest, N 45.9884°, E 13.8330°, 1140 m a.s.l., 7 July 2022; leg. Kutnar L, Sabovljević M.; det. Sabovljević M.; **4)** Soteska pri Bohinju near Nomenj (the Alpine region of Slovenia), on wet and shaded rock in a beech community, N 46.301042°, E 14.044490°, 525 m a.s.l., 8 July 2022; leg./det. Sabovljević M.; **5)** Za Akom, near Zgornji Martuljkov slap, Gozd Martuljek near Jesenice (the Alpine region of Slovenia – Julian Alps), in an Alpine beech forest on a steep, NE exposed slope, on the rocks, N 46.4614° E 13.8369°, 1110 m a.s.l., 6 August 2007; leg. Kutnar L.; det. Sabovljević S.; **6)** Smrekova draga on Trnovski gozd plateau (the Dinaric region of Slovenia), in a spruce-beech stand in a cold doline (sink-hole depression), on rock, N 45.987313°; E 13.867144°, 1150 m a.s.l., 7 July 2022; leg. Kutnar L, Sabovljević M.; det. Sabovljević M.

**Vouchers:** BEOU Bryophyte collection: s/n, 08801, 08858, 08859, 09100, 09651; Fungi and Lichens Collection and Herbarium of Slovenian Forestry Institute, Ljubljana s/n.

*Tortella fasciculata* is a thermophytic, suboceanic to sub-Mediterranean species which has long been considered under the name *T. bambergeri* auct. However, a recent molecular study (KÖCKINGER & HEDENÄS 2017) showed that *T. bambergeri* comprises two species, namely *T. fasciculata* and *T. pseudofragilis* (Thér.) Köckinger & Hedenäs. The stem with a central stand and the papillose abaxial epidermis in the distal part of the costa in the phylloids are the features which easily distinguish this species from all the other European ones. MARTINČIČ (2024) was unable to confirm its occurrence in Slovenia since there was no herbarium material for verification and the only previous dubious report dates back to the beginning of the 20<sup>th</sup> century (GLOWACKI 1910) from the Soča river valley in the Alpine phytogeographic region of Slovenia. MARTINČIČ (2024) therefore doubts the existence of *T. fasciculata* in Slovenia but does not entirely exclude it from the Slovenian bryophyte flora.

After being reinstated as a distinct species, *T. fasciculata* is considered endemic to Europe (SCHRÖCK 2019), confirmed for many European countries, but also found in Morocco (ELLIS *et al.* 2022), making it a European sub-endemic moss. It is confirmed in all countries neighbouring Slovenia (Austria: KÖCKINGER & HEDENÄS 2017, Hungary: ERZBERGER & PAPP 2018, and Croatia: ALEGRO *et al.* 2019), with the exception of Italy, and in south-eastern Europe its confirmation is yet to be documented for Bulgaria, Greece and Romania (ELLIS *et al.* 2022). In the western Balkans, there are recent confirmations for Albania (PAPP *et al.* 2018), Bosnia-Herze-

govina (PANTOVIĆ *et al.* 2022), Croatia (ALEGRO *et al.* 2019), Montenegro (PAPP *et al.* 2019a), North Macedonia (TOMOVIĆ *et al.* 2023) and Serbia (PAPP *et al.* 2019b).

Here, we confirm the presence of this species in Slovenia and report six new sites in various parts of Slovenia, as predicted by ELLIS *et al.* (2022). The species is likely to be more widespread in Slovenia, but has been overlooked.

***Tozzia alpina* L. subsp. *carpathica* (Woll.) Pawł., fam. Orobanchaceae (Scrophulariaceae) (dicot, vascular plant)**

**Contributors:** Ivana STEVANOSKI and Nevena KUZMANOVIĆ

**Geographical focus:** Serbia

**New records and noteworthy data:** A recent record of a strictly protected species – *Tozzia alpina* subsp. *carpathica*, for the region of Mt. Stara Planina in Serbia. This data confirms the presence of this rare and strictly protected species for Stara Planina in eastern Serbia after more than two decades.

**Specimen data:** Eastern Serbia, Mt. Stara planina, Dojkinci, Beličin Dol, N 43.3219552°, E 22.8073301°, 1450.8 m a.s.l., 10 July 2020.; leg./det. Kuzmanović N, Stevanoski I.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), vascular plant collection 63362.

*Tozzia alpina* subsp. *carpathica* is a critically endangered taxon (JOVANOVIĆ & JOVANOVIĆ 1999; STOJANOVIĆ *et al.* 2018) and strictly protected in Serbia (OFFICIAL GAZETTE RS 2010–2016). The taxon is listed in Annexes II and IV of the Directive on the conservation of natural habitats and wild fauna and flora (Habitat Directive). It is also listed in the Red Data Book of Flora of Serbia 1 as a critically endangered taxon (JOVANOVIĆ & JOVANOVIĆ 1999).

It was recorded for the first time in Serbia by Josif Pančić for Mts. Kopaonik on the northern slopes of Suvo Rudište Peak above Krčmar (PANČIĆ 1867). Later, this taxon was also registered in another site on Mts. Kopaonik (Jankove Bare), and at a few sites in Mt. Stara Planina, Mts. Šar-Planina and Mts. Prokletije (JOVANOVIĆ & JOVANOVIĆ 1999 and the references therein).

According to data from the Red Data Book of Flora of Serbia, the entire population on Mt. Stara Planina covers an area of only a few meters with fewer than 100 recorded individuals (JOVANOVIĆ & JOVANOVIĆ 1999). However, field surveys conducted in the last two decades have not confirmed the presence of this species on Mt. Stara Planina (STOJANOVIĆ *et al.* 2018, pers. comm. Randelović). In 2020, targeted field research was carried out at the few known locations of this taxon in Serbia (Mts. Kopaonik: Krčmar and Jankove Bare) and on Mt. Stara Planina (along the first part of the Dojkinačka river watercourse) to assess the status and estimate the population size. The taxon was newly recorded on wet

debris next to the mountain road up to Krvave bare, and counts only seven flowering specimens.

***Ulva pilifera* (Kützting) Škaloud & Leliaert, fam. Ulvaceae (green algae)**

**Contributors:** Ivana TRBOJEVIĆ and Jasmina ŠINŽAR SEKULIĆ

**Geographical focus:** Serbia

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

**Specimen data:** Serbia, Banat, Banatska Palanka, Jaruga, N 44.8358468°, E 21.3471016°, 18 August 2022; leg./det. Trbojević I, Šinžar Sekulić J.

**Voucher:** Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), Department of Algology, Micology and Lichenology – algae wet collection 6815.

Representatives of the *Ulva* genus are common macroscopic green algae, cosmopolites, distributed throughout a diverse climate range and inhabiting a wide spectrum of water habitats – predominantly marine and brackish, rarely freshwater taxa. Six species are recognised in Europe (RYBAK 2018 and the references therein; ŠKALOUD *et al.* 2018). *Ulva pilifera* (Kützting) Škaloud & Leliaert (syn: *Ulva flexuosa* Wulfen subsp. *pilifera* (Kützting) M.J. Wynne) is considered the only representative of its genus in Europe’s freshwater algal flora with a salinity of < 0.5 PSU (RYBAK 2021). This is a euryhaline, albeit primarily freshwater species, which can inhabit both stagnant and flowing waters, with a particular preference for eutrophic, well oxygenated, alkaline waters which contain high levels of sulphate (RYBAK & GABKA 2018). The occurrence of so-called “green tides” – algal blooms of *Ulva* spp. associated with eutrophication and the consequent substantial economic costs for mitigation, have been observed in marine habitats worldwide, but recently these have also been detected in the inland waters of Central Europe – formed by *U. pilifera* (RYBAK & GABKA 2018; RYBAK 2021 and the references therein). *Ulva pilifera* has proved to be an effective bioindicator of eutrophic conditions in both the riverine ecosystems and ponds in Europe (RYBAK 2021).

The *Ulva* species are distinctive and easily recognised macroscopic green algae. They can occur as tubular (*Enteromorpha* morphotype), gas filled – bloated structures formed by a single cell layer attached to the bottom with rhizoidal structures (later free floating), or as two strongly adhering cell layers forming leaf-like structures (*Ulva* morphotype) (ŠKALOUD *et al.* 2018). *Ulva pilifera* is distinctive in terms of its large size and specific tubular shape and can easily be recognised in the field by macroscopic examination alone, even by non-experts (RYBAK 2021).

Currently, no representatives of the *Ulva* genus are known from Serbia. *Ulva pilifera* is known to be present in many freshwater habitats throughout Europe (Hun-



gary, the Czech Republic, France, Germany, Great Britain, the Netherlands, Poland, Slovakia and Sweden), and in the Balkans only from Croatia, (RYBAK 2015, 2018; ŠKALOUD *et al.* 2018).

Here, the first record of *Ulva pilifera* (Kützing) Škaloud & Leliaert for Serbia is given. One single macroscopic thallus was collected from the sandy/muddy bottom in the littoral zone of the Jaruga waterbody (the abandoned meander of the former river connected to the irrigation channels in the River Nera floodplain). The macroscopical and microscopical examination of the collected specimen matched the *Ulva pilifera* description (RYBAK 2018; ŠKALOUD *et al.* 2018). The thallus was approximately 10 cm long, formed by a single cell layer, tubular shaped, bloated and numerous branches (both uniseriate and polyseriate) were represented. The measurements of the water quality parameters at the site where the *U. pilifera* specimen was collected were as follows: temperature 19°C, oxygen concentration 8.9 mg/l (97%), pH 8.38, conductivity 500 µS/cm, TDS 355 ppm, salinity 239 ppm.

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## REZIME

## Novi i značajni podaci o biljkama, algama i gljivama iz JI Evrope i susednih regiona, 16

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U radu su prikazani novi i značajni podaci sa područja JI Evrope i susednih regiona o sledećim taksonima: dijatomejskim algama *Discostella asterocostata* i *Stephanodiscus hantzschii* f. *tenuis*, crvenoj algi *Bangia atropurpurea*, zelenoj algi *Ulva pilifera*, saprofitskim gljivama *Didymella vitalbina* i *Phragmotrichum rivoclarinum*, mahovinama *Buxbaumia aphylla*, *Sphagnum divinum* i *Tortella fasciculata*, monokotilama *Anacamptis × nicodemi*, *Epipactis palustris*, *Epipogium aphyllum* i *Gymnadenia frivaldii* i dikotilama *Androsace lactea*, *Drosera rotundifolia*, *Potentilla montenegrina* i *Tozzia alpina* subsp. *carpathica*.

**Ključne reči:** novi nalaz, *Anacamptis × nicodemi*, *Androsace lactea*, *Bangia atropurpurea*, *Buxbaumia aphylla*, *Didymella vitalbina*, *Discostella asterocostata*, *Drosera rotundifolia*, *Epipogium aphyllum*, *Epipactis palustris*, *Gymnadenia frivaldii*, *Phragmotrichum rivoclarinum*, *Potentilla montenegrina*, *Sphagnum divinum*, *Stephanodiscus hantzschii* f. *tenuis*, *Tortella fasciculata*, *Tozzia alpina* subsp. *carpathica*, *Ulva pilifera*, JI Evropa