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Original Scientific Paper

New records and noteworthy data of plants, algae and fungi in SE Europe and adjacent regions, 15

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ABSTRACT:
This paper presents new records and noteworthy data on the following taxa in SE Europe and adjacent regions: saprotrophic fungus *Geastrum morganii, Guignardia istriaca* and *Hypoxylon howeanum*, mycorrhizal fungus *Amanita friabilis* and *Suillus americanus*, xanthophyte *Vaucheria frigida,* stonewort *Chara hispida,* liverwort *Calypogeia integristipula* and *Ricciocarpus natans,* moss *Campylopus introflexus*, *Dicranum transsylvanicum, Tortella pseudofragilis* and *Trematodon ambiguus,* fern *Ophioglossum vulgatum* subsp. *vulgatum,* monocots *Epipactis exilis, Epipactis purpurata* and *Epipogium aphyllum* and dicots *Callitriche cophocarpa, Cornus sanguinea* subsp. *hungarica* and *Viscum album* subsp. *austriacum* are given within SE Europe and adjacent regions.

Keywords:
new report, *Amanita friabilis, Callitriche cophocarpa, Calypogeia integristipula, Campylopus introflexus*, *Chara hispida, Cornus sanguinea* subsp. *hungarica, Dicranum transsylvanicum, Epipactis exilis, Epipactis purpurata, Epipogium aphyllum, Geastrum morganii, Guignardia istriaca, Hypoxylon howeanum, Ophioglossum vulgatum* subsp. *vulgatum, Ricciocarpus natans Suillus americanus, Tortella pseudofragilis, Trematodon ambiguous, Vaucheria frigida, Viscum album* subsp. *austriacum,* SE Europe

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***Amanita friabilis* (P. Karst.) Bas, fam. Amanitaceae (fungus, mycorrhizal)**
Contributors: Hatıra Taşkın and Boris Assyov
Geographical focus: Bulgaria
New records and noteworthy data: This is the first record of *A. friabilis* from Bulgaria (Denchev & Assyov 2010) and the first finding of this species on the Balkan Peninsula, supported by nrITS-barcoded specimen (https://www.ncbi.nlm.nih.gov/nuccore/?term=amanita+friabilis).
Specimen data: Blagoevgrad province, between Satovcha village and Dospat town, N 41.643825°, E 24.049211°, under *Alnus viridis* (Chaix.) DC., ca. 1210 m a.s.l., 8 August 2020; leg. Nedelev P.; det. Nedelev P, Assyov B., Taşkın H.
Voucher: Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF), 30418 (GenBank OR578400).

The barcode sequence of the nrITS-region was obtained from the studied Bulgarian sample, following the protocol proposed by Bozok *et al.* (2020). The BLASTn search (Altschul *et al.* 1990) of the sequences in GenBank returned several publicly available sequences labelled as *A. friabilis* (MW057246, KU248102, KU248103, KU248104, MH248266, MH734619, MH734618, KX219632) from Europe and North America as close matches. Of these, three accessions of French origin (KU248102, KU248103, KU248104) showed 100% identity and 96% cover with our sequence.

Amanita friabilis is a rare, but widespread in Europe member of the section *Vaginatae* Quél., which is known for its close association with trees of the genus *Alnus* Mill. (Bas 1974; Ainsworth & Suz 2018). On the Balkan Peninsula to date it has been reported with a single record from Croatia (Mešić & Tkalčec 2002), while the Bulgarian finding appears to be the first in the Eastern Balkans. The species seems extremely rare since despite the numerous collecting trips in Bulgarian stands of different alders in the last decade, the specimen reported here remains the sole finding in this country.

Unlike many other greyish-pileate species of the section *Vaginatae, A. friabilis* is easily recognisable by its macromorphological characteristics due to its friable universal veil, which breaks off leaving numerous remnants on the pileal surface, along with a slightly bulbous stipe base retaining a belt of velar tissues. This species also lacks the typical saccate volva found in most members of the section and its presence is associated with alders (Bas 1974).

***Callitriche cophocarpa* Sendtn., fam. Plantaginaceae (dicot, vascular plants)**
Contributors: Siniša Škondrić and Ranko Perić
Geographical focus: Bosnia and Herzegovina
New records and noteworthy data: Record of a rare species in Bosnia and Herzegovina and strictly protected in the Republic of Srpska (Anonymous 2020). This is also the first record for the Ramsar site Bardača Wetland.
Specimen data: Ramsar site Bardača Wetland, Brzaja River, N 45.08278°, E 17.45333°, in gently flowing water, 90 m a.s.l.; 12 June 2023; leg. Škondrić S.; det. Škondrić S, Perić R.
Voucher: Herbarium of the Institute for Nature Conservation of the Vojvodina Province (PZZP) s/n.

According to the available literature data, *Callitriche cophocarpa* occurs in Bosnia and Herzegovina on Mt. Jahorina, in puddles and ponds at the localities of Među Planina, Mandra and Rajski Do (Bjelčić 1964–1965). It was also inventoried in the flora of Mt. Jahorina (Petronić & Pavlović 2011). Nonetheless, we found one specimen in the ZA herbarium which was collected by K. Malý in 1905 in Sarajevsko Polje in the Slatina locality and later revised by H. D. Schotsman (Rešetnik *et al.* 2020; Nikolić 2023).

The Ramsar site Bardača Wetland is situated in the Peripannonian part of Bosnia and Herzegovina. It has been one of the wetlands of international importance since 2007 (Ramsar 2023), as well as an internationally Important Bird Area (BirdLife International 2023). *Callitriche cophocarpa* was found in June 2023 in the canalised part of the Brzaja River, in the area of the Ramsar site Bardača Wetland. Here we found species in gently flowing water in the vegetation of *Potamogetonetalia* Koch 1926. Floating rosettes occupied an area of ca. 5 m^2.

Callitriche cophocarpa is a strictly protected species in the territory of the Republic of Srpska (Anonymous 2020). In neighbouring Croatia, this species is also strictly protected (Anonymous 2016) and listed in the Red Book as Data Deficient (Nikolić & Topić 2005).

***Calypogeia integristipula* Stephani, fam. Calypogeiaceae (leafy liverwort, bryophyte)**
Contributors: Marko S. Sabovljević and Aneta D. Sabovljević
Geographical focus: Serbia
New records and noteworthy data: Species redlisted as Endangered in Serbia (Sabovljević *et al.* 2004).
Specimen data: Crveni Potok Reserve, National Park Tara, on wet soil and decaying wood, N 43.914736°, E 19.417522°, 1080 m a.s.l., 28. May 2023; leg./det. Sabovljević MS, Sabovljević AD.
Voucher: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, bryophyte collection Bryo (BEOU), s/n

Calypogeia integristipula is a leafy liverwort distributed in boreo-temperate zones and spread in the Northern Hemisphere with a circumpolar distribution. It is widespread in northern and in central Europe. However, its records in southern Europe are rather rare. This species is red-listed in Great Britain, Ireland, Italy and Spain (Hodgetts & Lockhart 2020). In Southeastern Europe it is reported from Bulgaria where it is considered a Data Deficient (DD) species, and in Serbia (EN-endangered), Romania and Slovenia. Overall European population size and

trends are unknown, but the core of the population in the west and north of Europe seems to be stable (Hodgetts *et al.* 2019a). However, Balkan reports are of the edge subpopulation and their sites are reported to suffer drought (Hodgetts *et al.* 2019b)

This species has been previously recorded in Serbia only twice, namely on Mt. Tara (Papp & Sabovljevic 2002) and Mt. Golija (Papp & Erzberger 2005). Here, we confirm the presence of this rare and threatened species in the Tara National Park, more than 20 years after its record at the same site and within the Crveni Potok Reserve. The Tara subpopulation seems to be stable and the species reproduce mainly asexually by numerous leaf gemmae.

Accompanying species were *Lepidozia reptans* (L.) Dumort., *Blepharostoma trichophyllum* (L.) Dumort. and *Dicranella heteromalla* (Hedw.) Schimp.

***Campylopus introflexus* (Hedw.) Brid., fam. Leucobryaceae (moss, bryophyte)**

Contributors: Snežana Dragićević and Gordana Tomović

Geographical focus: Serbia

New records and noteworthy data: The first record of this invasive moss species and a new record for the bryophyte flora of Serbia.

Specimen data: Southwestern Serbia, Pešter plateau, N 43.082764°, E 20.112236°, 1157 m a.s.l., 8 June 2019; leg./det. Dragićević S.; conf. Papp B.

Vouchers: Natural History Museum of Montenegro (NHMM), s/n.

Although *Campylopus introflexus* (Hedw.) Brid. is an invasive moss species in Europe, this is only the second finding in southeastern Europe; so far this species is known only from Croatia. The first observation of the moss *C. introflexus* in Europe was in southern England in 1941. Since then it has spread and is now considered an invasive moss species in northern Europe and on the west coast of North America. It is native to South America, southern Africa, southern Australia and numerous South Atlantic and Pacific islands (Klinck 2009; Alegro *et al.* 2018). *Campylopus introflexus* has been recorded in many countries of southern (e.g. Portugal, Spain, Italy), central (e.g. Germany, the Czech Republic, Hungary) and eastern Europe (e.g. Poland, Latvia, Russia) and has recently been reported in southeastern Europe (Alegro *et al.* 2018). According to Hodgetts & Lockhart (2020), *C. introflexus* is recorded in 39 countries in Europe.

The current Serbian bryophyte flora counts 833 native species (one hornwort, 142 liverworts and 690 mosses) (Papp *et al.* 2019). During a short visit to the Pešter plateau in Southwestern Serbia, *C. introflexus* was found in only one place (on the peatland). This species grows in a wide range of habitats, but is mainly a successful early invader in open places and gaps where there is little competition from vascular plants (Żarnowiec *et al.* 2019). The moss flora of the microsite is also very poor with the several species we recorded (*Ceratodon purpureus* (Hedw.) Brid., *Atrichum undulatum* (Hedw.) P.Beauv., *Bryum argenteum* Hedw., *Bryum* sp.). The fact that we found some clusters of *C. introflexus* is encouraging, but perhaps not realistic, considering that the area of this peatland is much larger than the studied part. On a less positive note, *C. introflexus* has spread because the peat is extracted from this location and transported to other areas in Serbia and beyond.

***Chara hispida* (L.) Hartm. 1820, fam. Characeae (charophyte algae)**

Contributors: Aleksandra Marković

Geographical focus: Serbia

New records and noteworthy data: Six new sites are reported for Serbia. So far, only four records are known for *C. hispida*, a rare and strictly protected species in Serbia.

Specimen data: 1) Bačka, the Selevenjske Pustare Special Nature Reserve, south of the Selevenj forest, N 46.138250°, E 19.891217°; a saline watering hole near the highway with a muddy substrate; only oogonia present; 24 May 2021; leg. Marković A, Vidaković D.; det. Marković, A.; **2)** Bačka, the Selevenjske Pustare Special Nature Reserve, south of the Selevenj forest, N 46.138250°, E 19.891217°; a saline watering hole near the highway with a muddy substrate; oogonia and antheridia present on the same plant; 14 June 2022; leg./det. Marković, A.; **3)** Bačka, the Selevenjske Pustare Special Nature Reserve, East Degelica, N 46.160926° E 19.918062°; a saline watering hole with a muddy substrate; oogonia and antheridia present on the same plant; 25 May 2021; leg. Marković A, Vidaković D.; det. Marković A.; **4)** Bačka, Selevenjske Pustare Special Nature Reserve, East Degelica, N 46.160926° E 19.918062°; a saline watering hole with a muddy substrate; only oogonia present; 14 June 2022; leg./det. Marković A.; **5)** Bačka, near the Selevenjske Pustare Special Nature Reserve, west of the Selevenj forest, N 46.138458°, E 19.878082°; a saline watering hole with a muddy substrate; sterile specimen; 25 May 2021; leg. Marković A, Vidaković, D.; det. Marković A.; **6)** Bačka, near the Selevenjske Pustare Special Nature Reserve, east of Volujski Pašnjaci, N 46.166851°, E 19.931164°; an old sandpit with a sandy substrate; only oogonia present; 30 November 2021; leg./det. Marković, A.; **7)** Bačka, near the Selevenjske Pustare Special Nature Reserve, east of Volujski Pašnjaci, N 46.166851°, E 19.931164°; an old sandpit with a sandy substrate; only oogonia present; 14 June 2022; leg./det. Marković A.; **8)** Bačka, the Selevenjske Pustare Special Nature Reserve, northeast of Volujski Pašnjaci, N 46.167005°, E 19.927803°; an artificial irrigation pond with a muddy substrate; sterile specimen; 30 November 2021; leg./det. Marković A.; **9)** Bačka, near the Selevenjske Pustare Special Nature Reserve, a huge sandpit near the highway with a sandy substrate, N 46.147681° E 19.921177°; sterile specimen; 1 December 2021; leg./det. Marković A.; **10)** Bačka, near the Selevenjske Pustare Special Nature Reserve, a huge sandpit near the highway with

a sandy substrate, N 46.147681° E 19.921177°; sterile specimen; oogonia and antheridia present on the same plant; 14 June 2022; leg./det. Marković A.
Vouchers: Institute of Chemistry, Technology and Metallurgy, University of Belgrade, charophyte collection (BIOLACHC), 72, 76, 78, 93, 94, 95, 106, 108, 111, 112.

The new findings of *Chara hispida* reported here represent six new records of this species for Serbia, that is, ten specimens collected at six new sites. All the new records are from Vojvodina, the Bačka region, from the Selevenjske Pustare Special Nature Reserve, or its surroundings.

Previously, *C. hispida* has been reported five times in Serbia. However, one very old record, from 1898/99 (Blaženčić 2014) is unreliable, since *C. hispida* is reported in a stream which is not in accordance with its ecology. There is no herbarium record supporting this finding. All four consecutive records, supported by herbarium samples, were from north Bačka, from the surroundings of the city of Subotica: the Makova sedmica pond, Selevenj sandpit near Bački Vinogradi, the Majdan sandpit and a sandpit near Lofej (Blaženčić 2014; Vesić *et al.* 2016; Marković *et al.* 2023). In three out of the four sites, *C. hispida* was not confirmed in the newest investigations. Only the record from the Majdan sandpit (the Subotička peščara region of exceptional distinction) was confirmed anew (leg. Pantović J, Stevanoski I, Bogosavljević J, Stevanoski N.; 21 October 2019; BIOLACHC No. 68).

Chara hispida is widespread and relatively common in Europe and found in almost all countries in Europe (Barinova *et al.* 2014; Schubert *et al.* 2016). However, it is Red Listed in Serbia as endangered (Blaženčić 2014) and a strictly protected species in Serbia according to the national legislation (Anonymous 2010–2016).

This species is characterised by broad ecological tolerances and plasticity. However, it prefers more permanent and deeper habitats, with clear water with sandy and salty substrates. It can be found in fresh but also in slightly saline waters. It can develop throughout the year (Auderset-Joye & Schwarcer 2012; Barinova *et al.* 2014; Urbaniak & Gąbka 2014; Schubert *et al.* 2016). The habitats from Vojvodina are in accordance with its known ecology.

***Cornus sanguinea* subsp. *hungarica* (Kárpáti) Soó, fam. Cornaceae (dicot, vascular plants)**
Contributors: Siniša Škondrić and Jelena Knežević
Geographical focus: Bosnia and Herzegovina
New records and noteworthy data: New findings are presented for this insufficiently known taxon, previously recorded from only one locality in Bosnia and Herzegovina (Holub 1981). These are also the first records for the Ramsar site Bardača Wetland.
Specimen data: 1) Ramsar site Bardača Wetland, Bajinci, near the Sava River, N 45.10897°, E 17.47874°, roadsides, 88 m a.s.l.; 9 May 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.; **2)** Ramsar site Bardača Wetland, Bajinci, near the Sava River, N 45.10864°, E 17.4775°, roadsides, 87 m a.s.l.; 5 May 2023; leg. Škondrić S.; det. Škondrić S, Knežević J.; **3)** Ramsar site Bardača Wetland, Bajinci, near the Brzaja River, N 45.10131°, E 17.45485°, roadsides, 88 m a.s.l.; 5 May 2023; leg. Škondrić S.; det. Škondrić S, Knežević J.; **4)** Ramsar site Bardača Wetland, Bajinci, near the sports stadium, N 45.09835°, E 17.46409°, roadsides, 88 m a.s.l.; 26 May 2023; leg. Škondrić S.; det. Škondrić S, Knežević J.; **5)** Ramsar site Bardača Wetland, Gaj, N 45.12274°, E 17.45126°, roadsides, 91 m a.s.l.; 9 May 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.; **6)** Ramsar site Bardača Wetland, Gaj, N 45.11759°, E 17.46986°, meadow-margins, 88 m a.s.l., 9 May 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.; **7)** Ramsar site Bardača Wetland, Gaj, N 45.12262°, E 17.4515°, roadsides, 90 m a.s.l.; 27 May 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.; **8)** Ramsar site Bardača Wetland, Gaj, Matura River at the confluence into the Sava River, N 45.12636°, E 17.45023°, field-margins, 91 m a.s.l.; 29 September 2022; leg. Škondrić S.; det. Škondrić S, Knežević J.; **9)** Ramsar site Bardača Wetland, Gaj, N 45.12308°, E 17.45327°, roadsides, 90 m a.s.l.; 24 July 2023; leg. Škondrić S.; det. Škondrić S, Knežević J.; **10)** Kozarska Dubica, Međeđa, Krivaja, N 45.21903°, E 16.94891°, field-margins, 91 m a.s.l., 16 July 2023; leg. Škondrić S.; det. Škondrić S, Knežević J.
Vouchers: Herbarium of the Institute for Nature Conservation of the Vojvodina Province (PZZP) s/n.

Cornus sanguinea subsp. *hungarica* was reported by Holub (1981) for the vicinity of Sarajevo (as *Swida hungarica* (Kárp.) Soják). This was the first and up to now the only known record for Bosnia and Herzegovina.

Cornus sanguinea subsp. *hungarica* was found during field research in the Peripannonian part of Bosnia and Herzegovina. Several localities were recorded in the area of the Ramsar site Bardača Wetland, as well as in Međeđa (Kozarska Dubica). These findings are located along the Sava River. In these localities *Cornus sanguinea* subsp. *hungarica* is found along roadsides, and on the edges of fields and meadows.

The nearest findings of this taxon are in the Pannonian region of Croatia (Franjić 1991, 1995; Franjić *et al.* 2001), where it was first recorded for the Croatian flora in the area of Lonjsko Polje – Krapje Đol (Trinajstić 1990). It is necessary to continue research, and new findings are expected in the Peripannonian part of Bosnia and Herzegovina.

***Dicranum transsylvanicum* Lüth, fam. Dicranaceae (moss, bryophyte)**
Contributors: Žan Lobnik Cimerman and Simona Strgulc Krajšek
Geographical focus: Slovenia
New record and noteworthy data: New data on a rare and endangered species.

Specimen data: Ljubljana, Šentviški hrib hill, N 46.094148°, E 14.459957°, along a forest path, among other bryophytes on the forest floor on acidic bedrock, 410 m a. s. l.; December 2022; leg./det. Cimerman Lobnik Ž, Šabeder N, Strgulc Krajšek S.
Voucher: Herbarium of the University of Ljubljana (LJU), s/n.

In 2000 an unfamiliar species of *Dicranum* was found in the Apuseni Mountains in West Romania (Lüth 2002). It was later confirmed to be a new species, namely *Dicranum transsylvanicum* Lüth. It is one of the bigger *Dicranum* species, resembling the common *D. scoparium* Hedw. and *D. polysetum* Sw. ex anon. in habitus and *D. crassfolium* Sérgio, Ochyra & Séneca in microscopic traits. It shares many characteristics with the species mentioned. Nevertheless, the combination of a lamellose costa, partially bistratose leaf lamina in the upper half, and a strongly spinose-dentate leaf margin differentiate this species. Spines are also present on the dorsal side of the lamina and the dorsal lamellae of the costa. The stem cross-section is triangular and has a distinct central strand (Lüth 2002; Hedenäs & Bisang 2004).

The European Red List (Hodgetts *et al.* 2019) considers it critically endangered (CR). It has been recorded only from three European countries, Switzerland (DD*), Romania (CR) and Slovenia, where it has no conservation status (Martinčič 2016; Hodgetts & Lochhart 2020). The only recent report for Slovenia of this species comes from A. Martinčič, who found the species in 2000 (pers. Comm. In Hodgetts & Lockhart 2020).

The specimen was collected randomly in an acidic forest, growing on the forest floor among other bryophytes. We assume the species could be overlooked because of its similarity with common *D. scoparium*, which bryologists usually do not take to the laboratory and examine under the microscope but identify at the site.

***Epipactis exilis* P. Delforge, fam. Orchidaceae (monocot, vascular plant)**
Contributors: Vladan Djordjević and Svetlana Krdžić
Geographical focus: Serbia
New records and noteworthy data: These are the second and third records of this species in Serbia.
Specimen data: 1) Central Serbia, Mt. Željin, Prokleta Čuka (Provaljeno Guvno), N 43.488122°, E 20.859543°, MGRS 34T DP81, ass. *Fagetum montanum serbicum*, flysch (sandstones, alevrolites and marls), exp. N, incl. 25°, 1087 m a.s.l.; 8 July 2023; leg. Djordjević V., Krdžić S.; det. Djordjević V.; **2)** Central Serbia, Mt. Kopaonik, Ravnište (Petrova Ravan), N 43.267942°, E 20.857377°, MGRS 34T DN89, ass. *Fagetum montanum serbicum*, sericite-chlorite schists, exp. S, incl. 25°, 1145 m a.s.l.; 5 July 2023; leg./det. Djordjević V.
Vouchers: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, vascular plant collection (BEOU) 71201, 71202; photo documentation of Djordjević V.

Epipactis exilis is distributed mainly in the mountainous areas of northern Greece, central Greece and the Peloponnese, Bulgaria, the Apennines and central Sardinia in Italy, but also in some localities in Croatia, Slovakia, Hungary, Romania and France (Djordjević *et al.* 2023 and references therein). The species was recently recorded for the first time for Serbia on Mt. Kopaonik (Panićki Jelak) (Djordjević *et al.* 2023). The new finding of this species on Mt. Željin is the second record of this species in Serbia and the first record of this species in the MGRS 34T DP81 10 × 10 km and also in DP 100 × 100 km UTM grid cells. This is the northernmost limit of the species' distribution in Serbia and the Central Balkans. In addition, the new finding of this species on Mt. Kopaonik (Ravnište) represents its second record on Mt. Kopaonik and the first record of this species in the MGRS 34T DN8890 1 × 1 km UTM grid cell.

The newly recorded population of this species on Mt. Željin consisted of 19 individuals within an area of 100 m², whereas the population from Mt. Kopaonik (Ravnište) numbered 12 individuals within an area of 100 m². The species has the status of a critically endangered species in Hungary and an endangered species in Bulgaria, whereas in France it is considered near threatened species (Kull *et al.* 2016). The estimated IUCN status of this species in Serbia is Critically Endangered (CR) (Djordjević *et al.* 2023).

***Epipactis purpurata* Sm., fam. Orchidaceae (monocot, vascular plant)**
Contributors: Vladan Djordjević and Svetlana Krdžić
Geographical focus: Serbia
New records and noteworthy data: These are the third and fourth records of this species in the region of Central Serbia and its first records for Mts. Kopaonik and Željin.
Specimen data: 1) Central Serbia, Mt. Kopaonik, Čelići (Duboka River), N 43.272383°, E 20.876239°, MGRS 34T DN89, ass. *Fagetum montanum serbicum*, flysch (sandstones, alevrolites and marls), exp. NE, incl. 35°, 1045 m a.s.l.; 5 July 2023; leg./det. Djordjević V.; **2)** Central Serbia, Mt. Željin, Raviljići (Rasje), N 43.501280°, E 20.875622°, MGRS 34T DP81, ass. *Fagetum montanum serbicum*, harzburgites, exp. E, incl. 25°, 735 m a.s.l.; 8 July 2023; 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) 71203, 71204; photo documentation of Djordjević V.

Epipactis purpurata is distributed in Europe and occurs to the north as far as Denmark, Great Britain and the Baltic States, to the west as far as France and the south as far as the Alps, the Balkans and Transylvania in Romania

(Delforge 2006). The species was recorded for the first time for Serbia on Mt. Maljen (Djordjević *et al.* 2010) and later in other areas in western parts of Serbia, i.e. on Mts. Jablanik, Tara, Zvijezda, Jadovnik, Kamena Gora, Pobijenik, and Zlatibor and in the vicinity of Ivanjica (Lisa) (Djordjević *et al.* 2017; Tomović *et al.* 2020), but also on Mt. Radan in the region of Central Serbia (Sabovljević *et al.* 2021). The new findings of this species on Mts. Kopaonik and Željin are the third and fourth records of this species in the region of Central Serbia and the first records of this species in the MGRS 34T DN89 and DP81 10 × 10 km grid cells. Previously, the species was recorded in the region of Central Serbia in two 10 × 10 km grid cells on Mt. Radan (EN36 and EN37; Sabovljević *et al.* 2021).

The newly recorded population of this species on Mt. Kopaonik consisted of three individuals within an area of 100 m², whereas the population from Mt. Željin numbered two individuals within an area of 100 m². The estimated IUCN status of this species in Serbia is Vulnerable (VU) (Djordjević *et al.* 2017). The species is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

***Epipogium aphyllum* Swartz, fam. Orchidaceae (monocot, vascular plant)**
Contributors: Vladan Djordjević and Svetlana Krdžić
Geographical focus: Serbia
New records and noteworthy data: This is the first record for the region of Central Serbia.
Specimen data: Central Serbia, Mt. Željin, Prokleta Čuka (Provaljeno Guvno), N 43.488122°, E 20.859543°, MGRS 34T DP81, ass. *Fagetum montanum serbicum*, flysch (sandstones, alevrolites and marls), exp. N, incl. 25°, 1087 m a.s.l.; 8 July 2023; 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) 71200; photo documentation of Djordjević V.

Epipogium aphyllum is a holomycotrophic rhizomatous species occurring mainly in the temperate zone throughout northern and central Europe, with hotspots of records in the boreal and subboreal parts of Scandinavia as far south as the Pyrenees, the Vercors, the Alps, central Italy, northern Greece and the Crimea (Taylor & Roberts 2011). The new finding of this species on Mt. Željin is the first 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 the DP4 50 × 50 km UTM grid cells. Previously, it was recorded in six 10 × 10 km UTM grid cells throughout Serbia in the following regions and localities: Pomoravlje (Mt. Belica), NE Serbia (Mt. Beljanica), E Serbia (Mt. Rtanj), SW Serbia (Mt. Zlatar, Mt. Mokra Gora) and Metohija (Mt. Prokletije) (Tomović *et al.* 2007; Djordjević *et al.* 2017 and the references therein; Djordjević 2021).

The newly recorded population of this species on Mt. Željin consisted of three individuals within an area of 100 m². The species has the status of a regionally extinct species in the United Kingdom, and a critically endangered species in Ukraine, Spain, Estonia, Denmark, the Czech Republic and Hungary, whereas it has the status of an endangered species in Lithuania, Slovakia and Slovenia, and a vulnerable species in Georgia, Finland, Bulgaria and Austria (Kull *et al.* 2016). The estimated IUCN conservation status of this species in Serbia is Endangered (EN) (Djordjević *et al.* 2017). According to Serbian legislation, the species is classified as strictly protected.

***Geastrum morganii* s. l., fam. Geastraceae (fungus, saprotrophic)**
Contributors: Boris Assyov and Ivilin Ilchev
Geographical focus: Bulgaria
New records and noteworthy data: This is the first record of *Geastrum morganii* s. l. in Eastern Europe (Zervakis *et al.* 1998; Ivančević 2002; Tkalčec *et al.* 2005; Rebriev 2007; Denchev & Assyov 2010; Sesli & Denchev 2014; Karadelev *et al.* 2018).
Specimen data: Strandzha Mts., SW of Velika village, in the vicinity of the Tisovitsa Nature Reserve, approx. 42.159526°, 27.734484°, in a forest of *Fagus orientalis*, ca. 85 m a.s.l.; 14 October 2014; leg. Assyov B.; det. Assyov B, Ilchev I.
Voucher: Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF), 30906.

The genus *Geastrum* Pers. encompasses over 30 species in Europe (Sunhede 1989; Jeppson *et al.* 2013; Zamora *et al.* 2015). In the Balkans and the adjacent countries the genus is unevenly and likely incompletely studied so far, as evident from relevant publications (Zervakis *et al.* 1998, 2002; Dimou *et al.* 2002, 2008; Tkalčec *et al.* 2005; Denchev & Assyov 2010; Sesli & Denchev 2014; Assyov 2018; Karadelev *et al.* 2018). During a field trip to Strandzha Mountain, an unusual earthstar was collected. After thorough examination, it turned out to represent the first collection of *G. morganii* from Eastern Europe.

Records of *G. morganii* in Europe are truly scarce. To date, fewer than ten records of its presence exist, all located in Southwestern Europe, in proximity to the Atlantic or the Mediterranean coasts. In France, where the fungus was first detected, collections are known from a handful of localities in the departments of Vendée and Charente-Maritime (Boiffard 1976; Sandras 1976). In Spain *G. morganii* has so far been found on the Catalonian coast and Asturias (Vidal 1987; Zamora *et al.* 2010). The Bulgarian specimen also came from an area close to the coast (Black Sea), occurring in old-grown forests of the relict tree *Fagus orientalis* Lipsky.

In Europe *G. morganii* is deemed to be a non-native species (Desprez-Loustau 2009) or likely so (Kreisel

2010). This is, however, not supported by the findings of Zamora *et al.* (2014), who revealed well-supported lineages in the subsect. *Plicostomata* Staněk with the Spanish sequences of *G. morganii* appearing in a clade diverging from the American samples with this name. The taxonomy of this complex remains unresolved and the European findings, including the one reported here, are thus better referred to as *G. morganii* s. l. for the time being.

***Guignardia istriaca* Bubák, fam. Phyllostictaceae (fungus, saprotrophic)**
Contributor: Dimitar Stoykov
Geographic focus: Bulgaria
New records and noteworthy data: This is the first record in Bulgaria and the easternmost collection known so far from the Balkans (Jaap 1916; Arx & Müller 1954).
Specimen data: Black Sea coast (northern), Varna District, Balchik town, Botanical Garden, on dry cladodia from *Ruscus aculeatus* L.; 7 June 2006; leg./det. Stoykov D.
Voucher: Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF), 31152.

The microscopic characteristics from the examined material, collected in Balcik, although the asci were slightly immature, conform well with the diagnoses provided by Jaap (1916) and Arx & Müller (1954). Our specimen contains small pseudothecia, about 100 × 85 µm, single, very dark brown, subglobose, immersed in the epidermal tissues of the dead cladodia. The ascomatal wall was of textura angularis type, and the peridium cells of the outer layer up to (5.5–) 6–8 (–10) µm wide. The asci (45–)55–80 × (15–)16–18 µm, were bitunicate, clavate to broadly cylindrical, short stalked, thickened near the rounded apex, 8-spored, with biseriately, sometimes to triseriately arranged spores. The ascospores (11–) 13.3±1.8 (–17.5) × (5–) 6.3±0.8 (–8) µm, n = 30, were mostly of size 14–17.5 × 5–7 µm, one celled, hyaline, ellipsoidal to irregulary ellipsoidal, with rounded ends, straight or slightly curved, often with a large oil drop observed in water. In this mixed collection we have also confirmed the presence of numerous ripe pseudothecia and asci from *Paraphaeopshaeriopsis glaucopunctata* (Grev.) M.P.S. Câmara et al., reported in Stoykov & Assyov (2009). *Giugnardia istriaca* was originally described from the Istria Peninsula, on dry cladodia of *Ruscus aculeatus* (Jaap 1916). To our knowledge, in Bulgaria *Guignardia aesculi* (Peck) V.B. Steward was known on leaves from *Aesculus hippocastanum* L. (Fakirova 1993).

***Hypoxylon howeanum* Peck, fam. Hypoxylaceae (fungus, saprotrophic)**
Contributors: Dimitar Stoykov and Pablo Alvarado
Geographic focus: Bulgaria
New records and noteworthy data: Here are presented the westernmost, northernmost and southernmost collections of *Hypoxylon howeanum* from Bulgaria and reports of new substrata for this fungus from the Balkans (Vanev & Reid 1986; Kuthan & Kotlaba 1989; Karaman *et al.* 2012; Sesli & Denchev 2014; Karadelev *et al.* 2019).
Specimens data: 1) Eastern Forebalkan, Lovech District, Golyama Zhelyazna village, N 42.984444°, E 24.480278°, on the dead branches of *Prunus cerasifera* Ehrh., 405 m a.s.l., 14 August 2014; leg./det. Stoykov D. [ALV39338; GenBank OR121051]; ibid., **2)** Lakite locality, near the road to the Toplya Cave natural landmark, on the dead branches of *Corylus avellana* L., with asexual morph, ca 405 m a.s.l., 12 April 2017; leg./det. Stoykov D [ALV39354; GenBank OR121053]; ibid., **3)** Lakite locality, N 42.977142°, E 24.488806°, on the dead branches of *C. avellana* L., old stromata with asexual morph, ca 390 m a.s.l., 12 June 2022; leg./det. Stoykov D.; **4)** Sofia region, Sofia city, Northern Park, N 42.742985°, E 23.299833°, on the decorticated dead twigs of *Quercus rubra* L., ca 585 m a.s.l., 11 April 2017, leg./det. Stoykov D.; **5)** Rila Mts., Rilomanastirska Gora Reserve, on the slopes above the Ilijna Reka River, N 42.109333°, E 23.341778°, on the dead branches of *Quercus dalechampii* Ten., 1445 m a.s.l., 2 June 2015; leg./det. Stoykov D. [ALV39347; GenBank OR121052].
Vouchers: Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF), 31136, 31153, 31154, 31155, 31156.

The protocol of Stoykov & Alvarado (2019) was followed for the DNA isolation, amplification and sequencing of the nrITS-region from the Bulgarian collections. The sequences produced in the present work (OR121051, OR121052, OR121053) agree with most others identified as *H. howeanum* in public databases. The only exceptions are sequences of *H. fragiforme* misidentified as *H. howeanum* (OQ066836, OQ066900), and also a deviant lineage represented by only two sequences from Panama (MN056427, MN056430).

The first record of *H. howeanum* in Bulgaria was discovered by Vanev & Reid (1986), found on the Balkan Range, growing on the branches of a deciduous tree. After that it was reported only once on *Carpinus betulus* L. near the Black Sea coast by Kuthan & Kotlaba (1989). In Serbia, Karaman *et al.* (2012) reported *H. howeanum* on Mt. Fruška Gora. It seems that *H. howeanum* is not too frequent (or may be overlooked) in Turkey, where only two records are known (Sesli & Denchev 2014), and is also rare in North Macedonia (Karadelev *et al.* 2019). The colouration of the stroma and the KOH-extractable orange pigments of *H. howeanum* are similar to those in *H. fragiforme*, but the two species can be separated by their host preferences. *Hypoxylon fragiforme* is usually restricted to the bark of *Fagus*, although there are some reports of *H. howeanum* growing on *Fagus sylvatica* L. and *F. orientalis* Lipsky (Akulov *et al.* 2003; Karadelev *et al.* 2019). The stromata of *H. howeanum* on *Prunus cerasifera* in Bulgaria were usually slightly larger than those measured on other plant substrata. In our collection on *P. cerasifera* they were (2.5–) 5–12.5 mm in diameter [(2.5–) 3.65 ± 1.1 (–6.5)

mm, n_1 = 10; (3.5–) 6.0 ± 1.4 (–8.5) mm, n_2 = 10; (5.0–) 8.5 ± 2.1 (–12.5) mm, n_3 = 20], with perithecia mostly of size 250–400 µm; the old stromata of *H. howeanum* on the dead twigs of *Quercus rubra* were (3.65–) 6.6 ± 2.1 (–10.0) mm in diameter, n = 10. However, both species can easily be distinguished if the perithecial contents are observed under LM in squash mounts. The ascospores of the Bulgarian collections of *H. howeanum* are about (5–)6–8(–8.5) × (3–)3.5–4.5 µm in water, while the ascospores of *H. fragiforme* are much larger, (10–)11–14 × 4.5–7 µm; in addition, the asci of *H. fragiforme* are usually 7.5–9(–10) µm wide compared to (4.5–)5–7 µm in *H. howeanum*.

***Ophioglossum vulgatum* L. subsp. *vulgatum*, fam. Ophioglossaceae (fern, vascular plants)**
Contributors: Sanja Z. Djurović and Uroš Buzurović
Geographical focus: Serbia
New records and noteworthy data: New sites in Central and North East Serbia are given for *O. vulgatum* subsp. *vulgatum*.
Specimen data: 1) Central Serbia, Mt. Radan, Kršanjak, N 43.058659°, E 21.383265°, MGRS 34T EN36, 912 m a.s.l., 18 June 2021; leg./det. Djurović S, Buzurović U, Veljić M.; **2)** Eastern Serbia, Mt. Stol, N 44.17965°, E 22.098356°, MGRS 34T EP89, 702 m a.s.l., 6 June 2022; leg./det. Djurović S, Buzurović U.; **3)** Eastern Serbia, Mt. Stol, N 44.167527°, E 22.128621°, MGRS 34T EP89, 849 m a.s.l., 8 June 2022; leg./det. Djurović S, Buzurović U.; **4)** Eastern Serbia, Mt. Stol, N 44.174116°, E 22.124949°, MGRS 34T EP89, 931 m a.s.l., 9 June 2022; leg./det. Buzurović U, Djurović S.; **5)** Eastern Serbia, Mt. Stol, N 44.177338°, E 22.123142°, MGRS 34T EP89, 894 m a.s.l., 9 June 2022; leg./det. Djurović S, Buzurović U.
Vouchers: Natural History Museum in Belgrade, General Herbarium of the Balkan Peninsula (BEO) s/n. and photo documentation S. Djurović, U. Buzurović.

Adder's tongue, *Ophioglossum vulgatum* L. subsp. *vulgatum*, is a widely distributed taxon. However, the species is listed in the *The IUCN Red List of Threatened Species* in 2016 as Least Concern in Europe (Christenhusz *et al.* 2017) and the subspecies is listed as protected in the Republic of Serbia. In Serbia, it is sporadically distributed in almost all regions. The known range of this taxon in Serbia includes 18 10 × 10 km UTM grid cells covering the surroundings of Subotica in the Bačka region, Mt. Avala, Mt. Kosmaj, the surroundings of Kragujevac and Smederevska Palanka in the Šumadija region, the surroundings of Valjevo, Mts. Maljen, Rajac, Golija and Javor in Western Serbia, the surroundings of Svrljig, Jelašnica and Crni Vrh in Eastern Serbia, the surroundings of Žagubica and Mt. Malinik in Northeastern Serbia, and Mt. Rogozna and Mt. Suva planina in the Metohija region (Vukićević 1992; Krivošej *et al.* 2013).

In June 2021 and 2022, new sites on Mt. Radan and Mt. Stol were discovered as the first records in the EN36 and EP89 10 × 10 km UTM grid cells. The site on Mt. Radan is also the first record for the Central Serbia region, as well as the EN 100 × 100 km and EN1 50 × 50 km UTM grid cells.

***Ricciocarpos natans* Hedw., fam. Ricciaceae (liverwort, bryophyte)**
Contributors: Mihajlo Stanković and Marko S. Sabovljević
Geographical focus: Serbia
New records and noteworthy data: New data for a rare species of high conservation interest.
Specimen data: Northwestern Serbia, between Glušci and Noćaj, Češljuška Bara - Bitva, 44.913734°, 19.537549, a few ponds in a riparian forest deeply overgrown by thick vegetation with *Typha angustifolia* L., *Glyceria fluitans* (L.) R. Br. and *Sparganium erectum* L., 81 m a.s.l.; 5 July 2023; leg. Stanković M.; det. Sabovljević MS.
Voucher: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade, bryophyte collection Bryo (BEOU), s/n.

The rare floating thalloid liverwort has been previously reported in Serbia six times (Pantović *et al.* 2020; Sabovljević *et al.* 2023). Here, we report the new population of up to 33 individuals per pond. The species is a candidate for the new red list of Serbian bryophytes and thus any new distributional data and population trends are valuable.

Apart from the reports from Belgrade, this is a rare record of this species documented south of the Sava and Danube rivers in Serbia, although its presence significantly further south from known records is expected.

***Suillus americanus* (Peck) Snell, fam. Suillaceae (fungus, mycorrhizal)**
Contributor: Gordana Kasom
Geographical focus: Montenegro
New records and noteworthy data: This species is a candidate for the list of Appendix II of the Bern Convention (Dahlberg & Croneborg 2003); in Montenegro, it is protected by national law (Kasom & Miličković 2010), and it is assessed as critically endangered (CR) (Kasom & Ćetković 2011). This is the fifth record of this taxon for Montenegro, and the third one within the National Park Prokletije.
Specimen data: Prokletije National Park, on the way from Bajrovića katun to Lijepa luka katun, approx. N 42.59321°, E 20.028359°, in a coniferous forest associated with *Pinus peuce*, ca. 1696 m a.s.l., 11 July 2018; leg./det. Kasom G.
Voucher: Photo documentation of G. Kasom.

This species is the most naturally widespread *Suillus* species in the Northern Hemisphere; it is the only species found in North America, Eastern Europe through Pakistan, India, Russia, and Japan (Nguyen *et al.* 2017). Previously it was known under two names, *S. americanus* and *S. sibiricus* (Nguyen *et al.* 2017). Klofac (2013) subsumed

these species under *S. americanus*. Nguyen *et al.* (2017) considered that the lack of discernible phylogenetic structure for the americanus clade agrees with this taxonomic change; the species currently has two varieties (var. *americanus,* var. *reticulipes*) and three formae (f. *americanus*, f. *helveticus*, and f. *sibiricus*). These morphological variants within species are to be expected for such a widespread distribution. These forms are not easily distinguishable by ITS molecular markers, but the inclusion of data from other genes may allow for their separation (Nguyen *et al.* 2017). Also, Nguyen *et al.* (2017) consider that *S. himalayensis* is a synonym of *S. americanus*.

Suillus americanus mainly occurs in the mountainous and subalpine zone, forming an ectomycorrhizal symbiosis with five-needle pines. In Europe, it is associated with *Pinus cembra* and *P. peuce* (Singer 1965; Tortić 1968; Breitenbach & Kränzlin 1991; Šutara *et al*. 2009; Tofilovska *et al.* 2020); in North America with *P. monticola* and *P. strobus* (Liao *et al.* 2016*)*; in Siberia with *P. pumila* and *P. sibirica* (Palamarchuk *et al.* 2021), and in Asia with *P. wallichiana* (Sarwar & Khalid 2014). Even though in most of the literature it is exclusively allied with five-needle pines, in Pakistan a mycorrhiza with the roots of *Abies pindrow*, *Salix alba* and *Populus* spp. has been described (Sarwar *et al.* 2011; Sarwar & Khalid 2014), and in India *Cedrus deodara* and *Picea smithiana* are also mentioned (Verma & Reddy 2016).

On the Balkan Peninsula it is mostly found in old-growth *Pinus peuce* forests, at an altitude ranging between 1400-1900 m a.s.l. from early summer until late autumn (Tofilovska *et al.* 2020). *Pinus peuce* is tertiary relict and endemic to the Balkans, where it is rare and has limited distribution between the latitudes 41° and 43° N, i.e. in the areas which include parts of Montenegro, Serbia, Albania, North Macedonia, Greece and Bulgaria (Lazarević *et al.* 2022). To date *S. americanus* has been found in three Balkan countries; Bulgaria, Montenegro and North Macedonia (Kasom & Karadelev 2012; Peev *et al.* 2015; Karadelev *et al.* 2018).

In Montenegro it is known from **1)** Prokletije National Park, in the *Pinus peuce* forest, around Hrid Lake, 7 September 2006 (Kasom & Ćetković 2011); **2)** Rožaje, Mt. Bandžov, 20 September 2018 (Hadžić 2018); **3)** Lazarević *et al.* (2022), using ITS2 rDNA as a marker of fungal communities associated with the soil, rootlets and living needles of *P. peuce* at three high-altitude forest sites in Montenegro,identified *S. americanus* as the most common fungal taxa associated with the rootlets of *Pinus peuce* in two localities: National Park Prokletije, Bogićevica (N 42.5650422°, E 20.0332079°, alt. 1970–2100 m) and Mt. Visitor (N 42.6146217°, E 19.8821091°, alt. 1880–2000 m). Also, the results of this study provided evidence that *S. americanus* is a common and important symbiont of *P. peuce* as it was detected in both the rootlets and soil (Lazarević *et al.* 2022).

In North Macedonia it also has only one locality in the forest stand of planted *Pinus strobus* at 900 m a.s.l. on Mt. Kitka (Tofilovska *et al.* 2020). The species *S. americanus* should be expected in other Balkan countries where forests with *Pinus peuce* are present. Also, the species can be expected in other localities in Montenegro where its mycorrhizal partner *Pinus peuce* is present.

In North Macedonia, the species is threatened and assessed as Vulnerable (VU) (Tofilovska *et al.* 2020); while, in Bulgaria it is assessed as Endangered (EN) (Peev *et al.* 2015).

***Tortella pseudofragilis* (Thér.) Köckinger & Hedenäs, fam. Pottiaceae (moss, bryophyte)**

Contributors: Beata Papp and Jovana Pantović

Geographical focus: North Macedonia

New records and noteworthy data: Newly recorded for N. Macedonia.

Specimen data: South-western part of North Macedonia, Mt. Jablanica, from Gorna Belica towards Čumin Vrv, N 41.2216944°, E 20.5398889°, an alpine zone with limestone rocks, 1723 m a.s.l., 24 June 2018; leg. Papp, P, Pantović J, Sabovljević MS: det. Papp B.

Vouchers: Department of Botany, Hungarian Natural History Museum, s/n.

This is a new moss species for Northern Macedonia. It was recently segregated from the species *Tortella bambergeri* (Schimp.) Broth. *(*Köckinger & Hedenäs 2017), along with *T. fasciculata* (Culm.) Culm.. Thus, its overall distribution remains unclear, although Köckinger & Hedenäs (2017) consider this species to be of a boreo-montane distribution type. So far, it is regarded as a European endemic. It is known from neighbouring Albania (Hodgetts & Lockhart 2020).

***Trematodon ambiguus* (Hedw.) Hornsch., fam. Bruchiaceae (moss, bryophyte)**

Contributors: Sorin Ștefănuț and Miruna-Maria Ștefănuț

Geographical focus: Romania

New record and noteworthy data: This is the first record for Romania after almost 200 years.

Specimen data: Poiana Stampei Peatbog, Suceava County, N 47.295500°, E 25.118722°, 923 m a.s.l.; 18 October 2022; leg. Ștefănuț S, Ștefănuț M-M.; det. Ștefănuț S.

Voucher: Herbarium of the Institute of Biology - Bucharest, Romanian Academy (BUCA), bryophyte collection, B12271.

Trematodon ambiguus was reported from Romania in the 19th century, from the Hunedoara Mountains, probably the Parâng Mountains, as *T. vulgaris* Brid. (Baumgarten 1846; Ștefănuț & Goia 2012).

Trematodon ambiguus was found in the Poiana Stampei Reserve, a NATURA 2000 site, ROSCI0247 - Tinovul Mare Poiana Stampei. The fertile samples with sporofites of *T. ambiguus* were found on peat, along with other moss-

es such as *Dicranella heteromalla* (Hedw.) Schimp. and *Meesia longiseta* Hedw.

The nearest localities where this species is confirmed are in Montenegro, Bulgaria and Poland (Hodgetts & Lockhart 2020).

***Vaucheria frigida* (Roth) C.Agardh 1824, fam. Vaucheriaceae (xanthophytes)**

Contributors: Ivana Trbojević and Roman Romanov

Geographical focus: Serbia

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

Specimen data: Belgrade, the Krnjača settlement, on the left bank of the Danube River, near Pančevački bridge, on alluvium near the dam, N 44.835488°, E 20.495623°; 9 March 2023; leg./det. Romanov R.

Voucher: Herbarium of the Institute of Botany and Botanical Garden Jevremovac, University of Belgrade (BEOU), Department of Algology, Micology and Lichenology – algae wet collection 6748.

Vaucheria A.P.de Candolle, consisting of 100 currently accepted species (Guiry 2013) is the main genus of the Vaucheriaceae family and its representatives are ubiquitous xanthophycean algae, inhabiting marine, freshwater, and moist terrestrial habitats worldwide. The thalli of *Vaucheria*, sparsely-branched siphons with indeterminate apical growth and lateral branching, are easily recognisable with the naked eye as grass- to dark green decumbent or cushion-like mats or turfs, but their species-specific reproductive structures are microscopic features (Rieth 1980; Vishnyakov 2021). Thus, only fertile specimens thoroughly inspected by a microscope can be correctly and precisely identified.

Currently, in Serbia the known records of the *Vaucheria* species are: *V. repens* Hassall [this name is currently regarded as a synonym of *V. bursata* (O.F.Müller) C.Agardh], *V. ornithocephala* C.Agardh and *V. ornithocephala* f. *genuina* Heering, nom. inval. [both names are currently regarded as synonyms of *V. fontinalis* (Linnaeus) T.A.Christensen], *V. bilateralis* C.-C.Jao, *V. sessilis* (Vaucher) De Candolle [this name is currently regarded as a synonym of *V. bursata* (O.F.Müller) C.Agardh] and *Vaucheria* sp. (Katić 1904; Simić 1996; Simić & Ranković 1998; Guiry 2013) With the exception of *V. repens*, which is described as inhabiting agricultural land near Kragujevac (Katić 1904), all the other records were made in streams and rivers in hilly and mountainous areas of central and eastern Serbia (Simić & Ranković 1998).

Here we report the first record of *Vaucheria frigida* (Roth) C.Agardh for Serbia. The record was made in Belgrade's settlement of Krnjača, on the left bank of the Danube River near Pančevački bridge, on the alluvium near the dam. The habitat can be described as moist soil, and the finding was made in late winter time – at the beginning of March. According to Christensen (1969), this species is amphibious, and though it can be found growing under water it most often thrives on soils along water courses where the surrounding vegetation provides suitable ecological conditions – moisture, light and temperature, especially in spring time.

***Viscum album* L. subsp. *austriacum* (Wiesb.), fam. Loranthaceae (dicot, vascular plants)**

Contributors: Dávid Schmidt and Márton Korda

Geographical focus: Croatia

New records and noteworthy data: This is the first record from the northern part of the country, overall the third known locality from the country.

Specimen data: 1) Northwestern Croatia, Međimurje County, the municipality of Nedelišće, north of Macinec village, Macincka forest, N 46.406323°, E 16.328213°, in a mixed forest dominated by *Quercus petraea*, 3 March 2023; leg./det. Schmidt D, Korda M.; **2)** Northwestern Croatia, Međimurje County, the municipality of Gornji Mihaljevec, west of Križopotje village, N 46.417321°, E 16.340677°, near a small lake, on a soliter Scots pine and on the edge of a mixed forest north of the lake, 3 March 2023; leg./det. Schmidt D, Korda M; **3)** Northwestern Croatia, Međimurje County, the municipality of Gornji Mihaljevec, between Križopotje and Dragoslavec Selo villages, N 46.417980°, E 16.352418°, on the edge of a mixed forest dominated by *Carpinus betulus* and *Pinus sylvestris*, 3 March 2023; leg./det. Schmidt D, Korda M.

Voucher: Herbarium Croaticum in Zagreb (ZA): 77201, 77202, 77203, 77204.

Viscum album subsp. *austriacum* covers a disjunct area in Europe, with its major distribution centre in some districts of Central and Eastern Europe, but it is absent from large areas (Zuber & Widmer 2009). At the same time, European climate trends (warming, drying) promote the expansion of the area to the north, as well as its shift towards higher regions in the mountains of Central Europe (Walas *et al.* 2022). There are only a few occurrences known in Croatia on Mt. Medvednica and Mt. Papuk (Nikolić 2023), which are both outside the native range of *Pinus sylvestris* (see the map provided by Walas *et al.* 2022).

On the hills northwest of Čakovec, the typical forest type is *Carpino-Quercetum petaeae*, with a mix of *Pinus sylvestris* in several places, mainly in the surroundings of Macinec and Dragoslavec Selo villages. Although the occurrence of pine mistletoe in this region is rare, we found it in every case on the branches of *P. sylvestris*.

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REZIME

Botanica SERBICA

Novi i značajni podaci o biljkama, algama i gljivama iz JI Evrope i susednih regiona, 15

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U radu su prikazani novi i značajni podaci sa područja JI Evrope i susednih regiona o sledećim taksonima: saprofitskim gljivama *Geastrum morganii, Guignardia istriaca* i *Hypoxylon howeanum*, mikorizalnim gljivama *Amanita friabilis* i *Suillus americanus*, ksantofiti *Vaucheria frigida,* pršljenčici *Chara hispida,* jetrenjačama *Calypogeia integristipula* i *Ricciocarpus natans,* mahovinama *Campylopus introflexus*, *Dicranum transsylvanicum, Tortella pseudofragilis* i *Trematodon ambiguus,* paprati *Ophioglossum vulgatum* subsp. *vulgatum,* monotilama *Epipactis exilis, Epipactis purpurata* i *Epipogium aphyllum* i dikotilama *Callitriche cophocarpa, Cornus sanguinea* subsp. *hungarica* i *Viscum album* subsp. *austriacum*.

Ključne reči: novi nalaz, *Amanita friabilis, Callitriche cophocarpa, Calypogeia integristipula, Campylopus introflexus*, *Chara hispida, Cornus sanguinea* subsp. *hungarica, Dicranum transsylvanicum, Epipactis exilis, Epipactis purpurata, Epipogium aphyllum, Geastrum morganii, Guignardia istriaca, Hypoxylon howeanum, Ophioglossum vulgatum* subsp. *vulgatum, Ricciocarpus natans Suillus americanus, Tortella pseudofragilis, Trematodon ambiguous, Vaucheria frigida, Viscum album* subsp. *austriacum,* JI Evropa