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THE BRYOPHYTE FLORA OF GOLIJA-STUDENICA BIOSPHERE RESERVE AND SOME ADJACENT SITES (SW SERBIA, SERBIA-MONTENEGRO)

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During fieldwork carried out in July 2003 in the Golija-Studenica Biosphere Reserve and its surroundings (SW Serbia, Serbia-Montenegro) 277 bryophyte taxa (59 liverworts and 218 mosses) were collected. Among them, 26 taxa are reported for the first time in Serbia-Montenegro, and further 10 species are new records for Serbia. Six species are red-listed in Europe; one of them, *Buxbaumia viridis*, is vulnerable (V); four species are in the rare (R) category: *Brachythecium geheebii*, *Grimmia caespiticia*, *Lophozia ascendens*, *Rhynchostegium rotundifolium*; and one, *Pseudoleskea saviana*, is a regionally threatened species (RT).

Key words: bryophyte flora, Golija-Studenica Biosphere Reserve, red-listed species, Serbia

INTRODUCTION

This paper is the fourth in a series to communicate the results of investigations on the bryophyte flora of various protected areas of Serbia-Montenegro, organised by the Hungarian Natural History Museum, Budapest. Our earlier publications focused on the bryophytes of Petnica region (PAPP and SABOVLJEVIĆ 2001), Tara National Park (PAPP and SABOVLJEVIĆ 2002) and Kopaonik Mts (PAPP *et al.* 2004). In these papers several species new to Serbia and Serbia-Montenegro and numerous new regional records were reported. A number of new localities of rare bryophytes in Europe – included in the EU Habitat Directives and the Red Data Book of European Bryophytes (ECCB 1995) – were discovered. Being a relatively neglected area of bryological investigation it is hoped that these publications will contribute important data for the knowledge of the flora and vegetation of Serbia-Montenegro, help nature conservation efforts at both national and international level, and encourage further research.

MATERIALS AND METHODS

The area investigated

Established in 2001, the Golija-Studenica Biosphere Reserve (Fig. 1) is situated in southwestern Serbia between the Kopaonik and the Javor Mts and belongs to the inner zone of the Dinaric

Fig. 1. The location of Golija-Studenica Biosphere Reserve (black patch). (H = Hungary, RO = Romania, HR = Croatia, BiH = Bosnia-Herzegovina, SE-MO = Serbia-Montenegro, BG = Bulgaria, MK = FYR Macedonia, Al = Albania).

mountain system (www2.unesco.org/mab). It covers a mountainous region and includes a mosaic of different ecosystems such as forests, meadows and lakes. Over the centuries parts of the once-existing forest cover have been cleared. Human activity has gradually created species-rich pastures and meadows, which are still maintained today. The total area of the biosphere reserve is 53,804 hectares (core area 497, buffer zone 3,661, transition area 49,646 hectares). The transition area has 6,600 inhabitants in 42 dispersed rural communities which are characteristic of these mountainous regions. Their main economic activities are livestock rearing and extensive farming, and the gathering of secondary forest products such as mushrooms and medicinal herbs. The biosphere reserve includes the Studenica Monastery, which is a cultural World Heritage site and a popular tourist attraction. The altitude ranges from 416 m to 1,833 m. The lowest-lying area includes the valleys of the Moravica and the Studenica rivers and their tributaries. The highest peak is Jankov kamen (GAJIĆ 1989).

For the description of climate, data of meteorological stations at Ivanjica (465 m a.s.l.) and Bele Vode (1,390 m a.s.l.) have been used (GAJIĆ 1989) based of the period 1950–1979. The average air temperature for the Golija region is 9.5 °C at Ivanjica and 5.1 °C at Bele Vode. January is the month with the lowest average air temperature, with –2 °C in Ivanjica and –3.7 °C in Bele Vode. The highest average monthly air temperature is in July, with 18.8 °C and 14.2 °C, respectively. The average annual precipitation is 915 mm in Ivanjica and 1,092 mm in Bele Vode. The highest average monthly amount of precipitation is registered in May: 146 mm in Ivanjica and 152 mm in Bele Vode.

Geologically the mountain massif of Golija is largely composed of different Palaeozoic rocks in various metamorphic grades and crystallinity. Various types of phyllits and schists dominate. The massif of Čemerno around Studenica river is mainly composed of sedimentary rocks such as limestones and dolomites, but greenschist, serpentinites, diabases and gabbros also occur (GAJIĆ 1989).

The main vegetation types are oak forests dominated by *Quercus cerris*, *Q. petraea* and *Carpinus betulus*; beech forests with *Fagus moesiaca*; mixed deciduous-coniferous stands dominated by *Abies alba*, *Picea abies* and *Fagus moesiaca*; wet habitats dominated by *Carex* spp.; mountain peat bogs characterised by *Sphagnum* spp.; mountain meadows with *Festuca pratensis*, *F. rubra*, *F. valesiaca* and *Anthoxanthum odoratum*. The most frequent meadow type in Golija is *Trifolio-Nardetum* (GAJIĆ 1989).

The environmental conditions of the whole region of Golija are favourable for the mixed forest zone where beech and spruce forests occupy large areas along with mixed stands of beech, fir and spruce. The grass communities are of secondary character and if human activity discontinued all meadows of Golija would be reoccupied by forest cover.

GAJIĆ (1989) treats the flora and vegetation of Golija and Javor Mts in one natural unit. He records 724 plant species, of which 22 species belong to Pteridophyta, 5 to Gymnospermatophyta and 697 species to Angiospermatophyta. According to the analysis of flora elements, 5.4% boreal, 27.3% Central European, 2.9% subatlantic, 13.0% sub-Mediterranean, 8.5% Pontic-central Asian, 24.9% Eurasian, 8.2% circumpolar, 4.8% cosmopolitan and 0.7% endemic elements can be found in the area. The ratio of the Central European elements places the regions of Golija and Javor into the easternmost part of the Illyric Flora Province.

Methods

The field excursion was carried out in July 2003. All main habitat types such as fens, stream valleys, forests, and grasslands developed on various types of bedrock were visited, and bryophytes collected from all possible substrates (peat, soil, calcareous and non-calcareous, exposed and shaded rock, tree bark and decaying wood).

The specimens are preserved in the Herbarium of the Hungarian Natural History Museum, Budapest (BP), and in the private herbarium of Peter Erzberger, Berlin.

Nomenclature follows ERZBERGER and PAPP (2004) and KOPERSKI *et al.* (2000). New floristical results for the country are analysed according to the checklists of Serbia-Montenegro (SABOVLJEVIĆ 2000, SABOVLJEVIĆ and STEVANOVIĆ 1999) and our earlier publications (PAPP and SABOVLJEVIĆ 2001, 2002, PAPP *et al.* 2004); our results are also compared with the regional data in GAJIĆ (1989).

Abbreviations: det. = identified by; rev. = revised by; t. = identification was confirmed by

Site details

1) Golija-Studenica Biosphere Reserve, Šaronje village, surroundings of Odvraćenica (N of Mt Kula), volcanic bedrock, *Piceo-Abieti-Fagetum*, lat.: 43° 16' 52.3" N, long.: 20° 19' 56.9" E, alt.: 1,680 m, 07.07.2003.

2) Golija-Studenica Biosphere Reserve, Šaronje village, Jankov kamen, volcanic rock, lat.: 43° 20' 00.0" N, long.: 20° 16' 28.7" E, alt.: 1,755 m, 08.07.2003.

3) Golija-Studenica Biosphere Reserve, at Golijska reka village, along a branch of Golijska reka (stream), lat.: 43° 20' 31.2" N, long.: 20° 15' 08.2" E, alt.: 1,484 m, 08.07.2003.

4) Golija-Studenica Biosphere Reserve, between Golijska reka and Bele Vode villages, Vodica reserve area, source area, *Piceo-Abieti-Fagetum*, lat.: 43° 23' 07.5" N, long.: 20° 15' 38.4" E, alt.: 1,485 m, 08.07.2003.

5) Golija-Studenica Biosphere Reserve, Studenica monastery and along a stream towards Godović village, limestone area, lat.: 43° 29' 16.2" N, long.: 20° 31' 48.9" E, alt.: 453 m, 09.07.2003.

6) Golija-Studenica Biosphere Reserve, bank of Studenica river at Studenica monastery, alt.: *ca* 450 m, 09.07.2003.

7) Golija-Studenica Biosphere Reserve, opposite bank of Studenica river, siliceous bedrock, lat.: 43° 30' 00.1" N, long.: 20° 31' 17.0" E, alt.: 594 m, 09.07.2003.

8) Golija-Studenica Biosphere Reserve, valley of Studenica river, meadows of hilly slopes, alt.: *ca* 650 m, 09.07.2003.

9) Golija-Studenica Biosphere Reserve, siliceous rock outcrops above the valley of Studenica river, alt.: *ca* 700 m, 09.07.2003.

10) 5 km N of Raška town, silicate rock wall, lat.: 43° 20' 31.2" N, long.: 20° 38' 20.9" E, alt.: 404 m, 09.07.2003.

11) Golija-Studenica Biosphere Reserve, at Bele Vode village, Dajičko jezero, *Sphagnum* bog, lat.: 43° 25' 23.3" N, long.: 20° 15' 48.5" E, alt.: 1,450 m, 10.07.2003.

12) Golija-Studenica Biosphere Reserve, at Orlov kamen, between Bele Vode and Kumanica villages, volcanic rocks, streamside, *Fagetum*, lat.: 43° 27' 38.0" N, long.: 20° 15' 42.8" E, alt.: 950 m, 10.07.2003.

13) Golija-Studenica Biosphere Reserve, between Golijska reka and Lijeva reka villages, meadows SE of Mt Bajevo brdo, lat.: 43° 29' 46.6" N, long.: 20° 14' 24.7" E, alt.: 1,560 m, 10.07.2003.

14) Golija-Studenica Biosphere Reserve, between Lijeva reka and Duga Poljana villages, dolina SW of Mt Krstovo brdo at Lazine village, limestone bedrock, lat.: 43° 16' 46.3" N, long.: 20° 13' 24.3" E, alt.: 1,278 m, 10.07.2003.

15) Golija-Studenica Biosphere Reserve, N of Odvraćenica, branch of Crna reka (stream) downwards from Radulovac, in the source area and along the stream, lat.: 43° 17' 33.0" N, long.: 20° 20' 41.0" E, alt.: 1,735–1,690 m, 11.07.2003.

16) Golija-Studenica Biosphere Reserve, N of Odvraćenica at Radaljica village, limestone rocks, lat.: 43° 14' 56.2" N, long.: 20° 19' 45.4" E, alt.: 1,260 m, 11.07.2003.

17) Golija-Studenica Biosphere Reserve, Brusnička stream valley at Kolesnica, lat.: 43° 18' 28.9" N, long.: 20° 19' 22.5" E, alt.: 1,480 m, 12.07.2003.

18) along the road from Novi Pazar to Tutin town, at D. Sebećevo, Sebećevska reka (stream), between Šavci and Sebećevo villages, limestone rocks along the stream, lat.: 43° 07' 12.8" N, long.: 20° 24' 59.3" E, alt.: 620 m, 12.07.2003.

19) near Novi Pazar, between Šavci village and Sopočani monastery, siliceous rocks, lat.: 43° 07' 13.9" N, long.: 20° 23' 23.1" E, alt.: 670 m, 12.07.2003.

RESULTS AND DISCUSSION

Altogether 277 bryophytes (59 liverworts and 218 mosses) were recorded in the Golija-Studenica Biosphere Reserve and adjacent sites. The following 26 taxa are new to Serbia-Montenegro: *Cephalozia lunulifolia*, *Cephaloziella divaricata*, *Diplophyllum albicans*, *Jamesoniella autumnalis*, *Jungermannia hyalina*, *Lophozia longidens*, *L. longiflora*, *L. sudetica*, *Aulacomnium androgynum*, *Cynodontium tenellum*, *Dicranella staphylina*, *Dicranum muehlenbeckii*, *Fissidens pusillus*, *Grimmia longirostris*, *G. muehlenbeckii*, *Heterocladium heteropterum* var. *heteropterum*, *Hookeria lucens*, *Plagiothecium undulatum*, *Pohlia lescuriana*, *P. lutescens*, *Polytrichum commune* var. *perigoniale*, *Pseudoleskea patens*, *Pseudotaxiphyllum elegans*, *Racomitrium aquaticum*, *Rhynchostegium rotundifolium*, and *Zygodon rupestris*. Further 10 species (*Leiocolea collaris*, *L. turbinata*, *Scapania irrigua*, *Brachythecium geheebii*, *Cinclidotus riparius*, *Dicranodontium denudatum*, *Fissidens limbatus*, *Fissidens rufulus*, *Grimmia caespiticia*, and *Pohlia drummondii*) are reported for the first time in Serbia.

GAJIĆ (1989) provides a list of 41 bryophytes (12 hepatics and 29 mosses) of the Golija and Javor Mts, as follows:

Hepatics: *Aneura pinguis* (L.) Dumort., *Calypogeia azurea* Stotler et Crotz, *Chiloscyphus polyanthos* (L.) Corda, *Lepidozia reptans* (L.) Dumort., *Marchantia polymorpha* L., *Metzgeria furcata* (L.) Dumort., *Pellia epiphylla* (L.) Corda, *Pellia neesiana* (Gottsche) Limpr., *Plagiochila asplenioides* (L. emend. Taylor) Dumort., *Porella platyphylla* (L.) Pfeiff., *Radula complanata* (L.) Dumort., *Scapania undulata* (L.) Dumort.

Mosses: *Bartramia halleriana* Hedw., *Calliergonella cuspidata* (Hedw.) Loeske, *Dicranum scoparium* Hedw., *Fontinalis antipyretica* Hedw., *Hylocomium splendens* (Hedw.) Schimp., *Mnium marginatum* (Dicks.) P. Beauv., *Neckera complanata* (Hedw.) Huebener, *Palustriella commutata* (Hedw.) Ochyra, *Palustriella decipiens* (De Not.) Ochyra, *Philonotis calcarea* (Bruch et Schimp.) Schimp., *Philonotis fontana* (Hedw.) Brid., *Philonotis seriata* Mitt., *Plagiomnium*

medium (Bruch et Schimp.) T. J. Kop., *Plagiomnium undulatum* (Hedw.) T. J. Kop., *Plagiothecium ruthei* Limpr., *Platyhypnidium riparioides* (Hedw.) Dixon, *Polytrichum alpinum* Hedw., *Polytrichum commune* Hedw., *Polytrichum formosum* Hedw., *Rhizomnium punctatum* (Hedw.) T. J. Kop., *Rhytidiadelphus squarrosus* (Hedw.) Warnst., *Rhytidiadelphus triquetrus* (Hedw.) Warnst., *Rhytidium rugosum* (Hedw.) Kindb., *Sphagnum girgensohnii* Russow, *Sphagnum magellanicum* Brid., *Sphagnum squarrosum* Crome, *Sphagnum subsecundum* Nees, *Thuidium delicatulum* (Hedw.) Schimp., *Warnstorfia exannulata* (Schimp.) Loeske.

Almost all the species mentioned in GAJIĆ (1989) were also collected during our field trip, except for *Aneura pinguis*, *Calypogeia azurica*, *Philonotis calcarea*, *Plagiothecium ruthei* and *Sphagnum magellanicum*. Hence, 241 taxa are new to the area investigated.

List of the species

Following the species name, our record gives the location numbers and the substrates.

HEPATICAE

Barbilophozia barbata (Schreb.) Loeske – 16: on limestone rock (t. Váňa); 19: on siliceous rock
Bazzania trilobata (L.) Gray – 4: on soil; 19: on siliceous rock
Blepharostoma trichophyllum (L.) Dumort. var. *trichophyllum* – 4, 15: on decaying wood; 15: on soil
Calypogeia integristipula Steph. – 15: on soil
Calypogeia muelleriana (Schiffn.) Müll. Frib. – 3, 15: on soil (t. Váňa); 4: on decaying wood
Cephalozia bicuspidata (L.) Dumort. – 3, 4, 15: on decaying wood (t. Váňa)
Cephalozia catenulata (Huebener) Lindb. – 4: on decaying wood (t. Váňa)
Cephalozia lunulifolia (Dumort.) Dumort. – 15: on decaying wood (rev. Váňa)
Cephaloziella divaricata (Sm.) Schiffn. – 1: on soil; 2: on exposed volcanic rock; 12: on shaded volcanic rock
Chiloscyphus pallescens (Hoffm.) Dumort. – 1: at a spring on soil (t. Váňa); 3: on soil
Chiloscyphus polyanthos (L.) Corda – 5: on limestone rocks in the stream; 6: on limestone rocks at the river bank (det. Váňa); 12: on volcanic rock near the stream (t. Váňa)
Conocephalum conicum (L.) Dumort. – 3, 4, 15: on soil; 5: on shaded limestone rocks; 6: on rocks; 12: on volcanic rock in the stream
Diplophyllum albicans (L.) Dumort. – 2: on shaded volcanic rock
Frullania dilatata (L.) Dumort. – 1: on bark of *Fagus*; 4: on bark of tree; 5: on bark of *Malus*; 6: on bark of *Alnus*; 12, 18: on bark of deciduous trees; 19: on siliceous rock
Frullania tamarisci (L.) Dumort. – 19: on shaded siliceous rock
Jamesoniella autumnalis (DC.) Steph. – 3: on soil (t. Söderström)
Jungermannia gracillima Sm. – 1, 3: on soil
Jungermannia hyalina Lyell – 1: at a spring on soil (det. Váňa)

Jungermannia leiantha Grolle – 3: on decaying wood and on soil (rev. Váňa); 12: on volcanic rock (t. Váňa); 15: on soil
Leiocolea bantriensis (Hook.) Jörg. – 5: shaded limestone rock; 14: on limestone rock (t. Váňa)
Leiocolea collaris (Nees) Schljakov – 18: on limestone rock
Leiocolea turbinata (Raddi) H. Buch – 18: on limestone rock (det. Váňa)
Lejeunea cavifolia (Ehrh.) Lindb. – 6: on *Alnus* bark near river; 18: on limestone rock
Lepidozia reptans (L.) Dumort. – 3, 4: on decaying wood; 15: on soil
Lophocolea bidentata (L.) Dumort. – 4, 15: on soil
Lophocolea heterophylla (Schrad.) Dumort. – 1, 3, 4, 15: on decaying wood; 4: on soil; 6: on rocks
Lophocolea minor Nees – 1: on soil (t. Váňa); 5: on shaded limestone rock
Lophozia ascendens (Warnst.) R. M. Schust. – 15: on decaying wood (t. Váňa)
Lophozia bicrenata (Hoffm.) Dumort. – 1, 2, 12: on soil (t. Váňa)
Lophozia longidens (Lindb.) Macoun – 2: on soil (det. Váňa)
Lophozia longiflora (Nees) Schiffn. – 1, 15: on soil (det. Váňa)
Lophozia obtusa (Lindb.) A. Evans – 2: on shaded volcanic rock (t. Váňa)
Lophozia sudetica (Huebener) Grolle – 2: on shaded volcanic rock (t. Váňa)
Lophozia ventricosa (Dicks.) Dumort. – 1: on spruce root; 15: on soil; 2: on soil overlying shaded volcanic rock (t. Váňa)
Mannia fragrans (Balb.) Frye et L. Clark – 9: on soil overlying siliceous rock
Marchantia polymorpha L. subsp. *montivagans* Bischl. et Boisselier – 4, 15: on soil
Marchantia polymorpha L. subsp. *polymorpha* – 1: at a spring; 3, 6, 18: on soil at banks of streams
Marsupella funckii (F. Weber et D. Mohr) Dumort. – 12: on soil overlying volcanic rock (t. Váňa)
Metzgeria conjugata Lindb. – 6: on rocks; 12: on volcanic rock (t. Váňa); 18: on limestone rock
Metzgeria furcata (L.) Dumort. – 1: on volcanic rock; 4: on decaying wood; 5, 18: on shaded limestone rock
Nardia scalaris Gray – 3: on soil (t. Váňa)
Nowellia curvifolia (Dicks.) Mitt. – 4: on decaying wood
Pellia endiviifolia (Dicks.) Dumort. – 5, 6: on limestone rock in and along the stream; 18: on shaded limestone rock
Pellia epiphylla (L.) Corda – 1: on soil at a spring (t. Váňa); 3, 15: on soil at the bank of streams
Pellia neesiana (Gottsche) Limpr. – 3, 15, 17: on soil
Plagiochila asplenioides (L. emend. Taylor) Dumort. – 4, 15, 17: on soil
Plagiochila porelloides (Torrey ex Nees) Lindenb. – 5, 16, 18: on shaded limestone rock; 15: on soil; 19: on siliceous rock
Porella cordaeana (Huebener) Moore – 3: on roots of *Alnus* (t. Váňa); 4: on soil; 15: on siliceous stones in the stream; 16: on limestone rock
Porella platyphylla (L.) Pfeiff. – 6, 16: on shaded limestone rock (t. Váňa); 12: on shaded siliceous rock
Radula complanata (L.) Dumort. – 1: on bark of *Fagus*; 5, 16, 18: on shaded limestone rock; 6: on bark of *Alnus glutinosa* and *Acer campestre*
Riccardia latifrons (Lindb.) Lindb. – 4, 15: on decaying wood (t. Váňa)
Riccardia multifida (L.) Gray – 4: on soil and on decaying wood (t. Váňa)
Riccardia palmata (Hedw.) Carruth. – 3, 4, 15: on decaying wood (t. Váňa)
Scapania curta (Mart.) Dumort. – 1: on soil (rev. Váňa)
Scapania irrigua (Nees) Nees – 1: on soil; 15: on decaying wood (t. Váňa)
Scapania nemorea (L.) Grolle – 12: on volcanic rock; 15: on soil
Scapania umbrosa (Schrad.) Dumort. –3, 15: on decaying wood

Scapania undulata (L.) Dumort. – 3, 4: on soil (t. Váňa); 12: on volcanic rock (rev. Váňa); 15: on volcanic rock in the stream
Trichocolea tomentella (Ehrh.) Dumort. – 4: on soil

MUSCI

Amblystegium serpens (Hedw.) Schimp. var. *serpens* – 1: on volcanic rock; 5: on the wall of the monastery and on shaded limestone rocks; 6: on bark of *Acer campestre*; 18: on shaded limestone rocks near stream
Amblystegium tenax (Hedw.) C. E. O. Jensen – 6: on rocks in a flush; 15: on volcanic rock in the stream
Andreaea rupestris Hedw. – 1: on volcanic rock
Anomodon attenuatus (Hedw.) Huebener – 5, 18: on shaded limestone rock; 7, 12: on volcanic rock; 6 on bark of *Acer campestre*
Anomodon viticulosus (Hedw.) Hook. et Taylor – 5, 14, 16, 18: on shaded limestone rock; 6: on bark at the basis of *Alnus glutinosa*
Antitrichia curtipendula (Hedw.) Brid. – 12: on volcanic rock
Atrichum undulatum (Hedw.) P. Beauv. – 1, 15: on soil
Aulacomnium androgynum (Hedw.) Schwägr. – 19: on siliceous rock
Aulacomnium palustre (Hedw.) Schwägr. – 11: on peat; 15: on soil
Barbula convoluta Hedw. – 5: on the wall of the monastery
Barbula unguiculata Hedw. – 1, 5, 12: on soil
Bartramia halleriana Hedw. – 2: on shaded volcanic rock
Bartramia ithyphylla Brid. – 2: on shaded volcanic rock
Bartramia pomiformis Hedw. – 19: on siliceous rock
Brachythecium albicans (Hedw.) Schimp. – 1: in a mountain meadow
Brachythecium geheebii Milde – 1: on volcanic rock (t. Philippi)
Brachythecium populeum (Hedw.) Schimp. – 12: on volcanic rock; 6, 18: on limestone rock
Brachythecium rivulare Schimp. – 3, 15: on soil; 5: on limestone rocks in the stream; 6: on siliceous rocks; 12: on volcanic rock in the stream
Brachythecium rutabulum (Hedw.) Schimp. – 1: at a spring; 5, 18: on shaded limestone rock; 15: on soil
Brachythecium salebrosum (F. Weber et D. Mohr) Schimp. – 1: on volcanic rock; 5: on shaded limestone rock
Brachythecium velutinum (Hedw.) Schimp. – 1, 3: on soil; 1, 4: on decaying wood; 2: on shaded volcanic rock; 4: on bark of tree
Bryoerythrophyllum recurvirostrum (Hedw.) P. C. Chen – 6, 16, 18: on limestone rock
Bryum argenteum Hedw. – 2: on exposed volcanic rock; 7, 19: on siliceous rock
Bryum caespiticium Hedw. – 14: on limestone rock
Bryum capillare Hedw. – 1, 7: on volcanic rock; 16: on limestone rock; 19: on siliceous rock
Bryum elegans Nees ex Brid. – 16: on limestone rock
Bryum pallens Sw. – 1, 15: on soil
Bryum pseudotriquetrum (Hedw.) P. Gaertn., B. Mey. et Scherb. – 1: at a spring on soil; 3, 13, 15: on soil; 6: on rocks
Bryum schleicheri DC. – 1: at a spring
Buxbaumia viridis (Lam. et DC.) Brid. ex Moug. et Nestl. – 1, 15: on decaying wood

Calliergon cordifolium (Hedw.) Kindb. – 3, 15: on soil
Calliergonella cuspidata (Hedw.) Loeske – 1: at a spring; 3, 5, 13, 15: on soil
Campylium calcareum Crundw. et Nyholm –5: on calcareous soil; 18: on limestone rock
Ceratodon purpureus (Hedw.) Brid. – 1: on soil, in a mountain meadow; 2: on exposed volcanic rock; 14: on limestone rock; 19: on siliceous rock
Cinclidotus fontinaloides (Hedw.) P. Beauv. – 6: on limestone rock in the stream; 7: on siliceous rock near the stream
Cinclidotus riparius (Brid.) Arn. – 6: on limestone rock in the stream
Cirriphyllum piliferum (Hedw.) Grout – 16: on limestone rock
Climacium dendroides (Hedw.) F. Weber et D. Mohr – 1: at a spring; 15: on soil; 3: on soil; 8: on soil in a mountain meadow
Cratoneuron filicinum (Hedw.) Spruce – 5: on limestone rock in the stream; 6: on soil near stream; 18: on calcareous soil
Ctenidium molluscum (Hedw.) Mitt. – 2: on shaded volcanic rock; 5, 18: on shaded limestone rock; 14, 16: on limestone rock
Cynodontium polycarpum (Hedw.) Schimp. – 12: on volcanic rock
Cynodontium tenellum Limpr. – 19: on siliceous rock
Dicranella heteromalla (Hedw.) Schimp. – 1, 3, 15: on soil; 12: on soil overlying shaded volcanic rock
Dicranella staphylina H. Whitehouse – 19: on siliceous rock
Dicranodontium denudatum (Brid.) E. Britton – 3: on soil
Dicranoweisia crispula (Hedw.) Milde – 1: on volcanic rock; 2: on shaded volcanic rock
Dicranum muehlenbeckii Bruch et Schimp. – 1, 8: on soil in mountain meadows
Dicranum polysetum Sw. – 8: in a mountain meadow
Dicranum scoparium Hedw. – 1, 3, 15, 17: on soil; 1: on rock; 2: on shaded volcanic rock; 4: on decaying wood; 19: on siliceous rock; 8: on soil in oak forest
Dicranum tauricum Sapjegin – 1: on soil, on bark of *Fagus*; 1,3, 4, 15: on decaying wood
Didymodon insulanus (De Not.) M. O. Hill – 6, 18: on limestone rock; 19: on siliceous rock
Didymodon rigidulus Hedw. – 5: on the wall of the monastery; 14, 18: on limestone rock
Didymodon vinealis (Brid.) R. H. Zander – 14, 18: on limestone rock; 19: on volcanic rock
Diphyscium foliosum (Hedw.) D. Mohr – 12: on soil overlying volcanic rock
Ditrichum crispatissimum (Müll. Hal.) Paris – 16: on limestone rock
Ditrichum flexicaule (Schwägr.) Hampe – 14, 16: on limestone rock
Ditrichum heteromallum (Hedw.) E. Britton – 1: on soil
Drepanocladus aduncus (Hedw.) Warnst. – 11: on peat; 15: on soil
Encalypta streptocarpa Hedw. – 5: on shaded limestone rock; 14, 16, 18: on limestone rock
Eucladium verticillatum (Brid.) Bruch et Schimp. – 5: on limestone rock in the stream
Eurhynchium angustirete (Broth.) T. J. Kop. – 1, 3, 4, 15: on soil; 2: on shaded volcanic rock
Eurhynchium crassinervium (Wilson) Schimp. – 6: on rocks; 18: on limestone rock
Eurhynchium hians (Hedw.) Sande Lac. – 5: on the wall of the monastery; 16, 18: on limestone rock; 6: on soil near stream
Eurhynchium striatulum (Spruce) Schimp. – 16: on limestone rock
Eurhynchium striatum (Hedw.) Schimp. – 3: on soil
Fissidens dubius P. Beauv. – 16, 18: on limestone rock
Fissidens gracilifolius Brugg.-Nann. et Nyholm – 5: on shaded limestone rock
Fissidens limbatus Sull. – 5: on shaded limestone rock (t. Homm)
Fissidens pusillus (Wilson) Milde – 18: on calcareous rock in stream

Fissidens rufulus Bruch et Schimp. – 6: in crevices of limestone rock; 12: on volcanic rock in the stream; 18: on limestone rock
Fissidens taxifolius Hedw. – 5: on limestone rocks in the stream; 16: on limestone rock; 18: on soil between calcareous rocks near stream
Fontinalis antipyretica Hedw. – 3, 15: on soil
Fontinalis antipyretica Hedw. var. *gigantea* (Sull.) Sull. – 15: on volcanic rock in the stream
Funaria hygrometrica Hedw. – 1: on soil; 5: on the wall of the monastery
Grimmia caespiticia (Brid.) Jur. – 2: on exposed volcanic rock (t. Maier)
Grimmia hartmanii Schimp. – 2, 12, 15: on shaded volcanic rock
Grimmia laevigata (Brid.) Brid. – 7, 9, 10, 19: on exposed siliceous rock
Grimmia longirostris Hook. – 19: on siliceous rock (t. Maier)
Grimmia muehlenbeckii Schimp. – 1: on sun-lit and on shaded volcanic rock (t. Maier); 2, 12: on shaded volcanic rock
Grimmia ovalis (Hedw.) Lindb. – 7, 9, 10, 19: on exposed siliceous rock
Grimmia pulvinata (Hedw.) Sm. – 5: on the wall of the monastery; 14: on limestone rock; 7, 19: on siliceous rock
Grimmia tergestina Tomm. ex Bruch et Schimp. – 16: on calcareous rock
Gymnostomum aeruginosum Sm. – 18: on calcareous rock
Gymnostomum calcareum Nees et Hornsch. – 5, 14: on shaded limestone rock
Hedwigia ciliata (Hedw.) Ehrh. ex P. Beauv. var. *ciliata* – 1, 12: on volcanic rock; 12: on bark of *Fagus*; 19: on siliceous rock
Hedwigia ciliata (Hedw.) Ehrh. ex P. Beauv. var. *leucophaea* Bruch et Schimp. – 7, 9, 19: on exposed siliceous rock
Herzogiella seligeri (Brid.) Z. Iwats. – 1, 3, 4, 15: on decaying wood
Heterocladium heteropterum Schimp. var. *heteropterum* – 2, 12: on shaded volcanic rock
Homalia besseri Lobarz. – 5, 7, 16, 18: shaded limestone rock
Homalothecium lutescens (Hedw.) H. Rob. – 19: on siliceous rock; 5: on calcareous soil overlying rocks; 7: on shaded volcanic rock; 14, 16: on limestone rock
Homalothecium philippeanum (Spruce) Schimp. – 16, 18: on shaded limestone rock
Homalothecium sericeum (Hedw.) Schimp. – 1: on volcanic rock; 5: on the wall of the monastery; 6, 14, 16, 18: on limestone rock; 12, 19: on shaded siliceous rock
Homomallium incurvatum (Brid.) Loeske – 5, 18: on shaded limestone rock
Hookeria lucens (Hedw.) Sm. – 4: on soil
Hygrohypnum duriusculum (De Not.) D. W. Jamieson – 3: on soil
Hygrohypnum luridum (Hedw.) Jenn. – 18: on limestone rock
Hylocomium splendens (Hedw.) Schimp. – 1, 5, 15: on soil; 19: on siliceous rock
Hypnum cupressiforme Hedw. var. *cupressiforme* – 1, 12: on volcanic rock; 4: on decaying wood; 16, 18: on soil overlying calcareous rock; 19: on soil overlying siliceous rock
Hypnum cupressiforme Hedw. var. *lacunosum* Brid. – 5: on soil; 19: on siliceous rock
Hypnum vaucheri Lesq. – 16: on limestone rock
Isothecium alopecuroides (Dubois) Isov. – 1: on volcanic rock and on bark of *Fagus*; 1, 4: on decaying wood; 2, 12, 15: on shaded volcanic rock; 18: on limestone rock
Leptobryum pyriforme (Hedw.) Wilson – 5: on the wall of the monastery
Leskea polycarpa Ehrh. ex Hedw. – 6: on bark of *Acer campestre*
Leucobryum glaucum (Hedw.) Ångstr. – 12: on volcanic rock
Leucodon sciuroides (Hedw.) Schwägr. – 1, 12: on bark of *Fagus*; 5: on bark of *Malus* and of *Juglans regia*; 18: on limestone rock; 19: on siliceous rock
Metaneckera menziesii (Drumm.) Steere – 19: on shaded siliceous rock

Mnium lycopodioides Schwägr. – 6: on rocks; 18: on shaded limestone rock
Mnium marginatum (Dicks.) P. Beauv. – 5, 18: on shaded limestone rock; 6: on soil
Mnium spinulosum Bruch et Schimp. – 1: on decaying wood, on root of *Fagus*; 4: on soil
Mnium stellare Hedw. – 5, 18: on shaded limestone rock; 12: on volcanic rock
Neckera complanata (Hedw.) Huebener – 6, 19: on siliceous rock; 16, 18: on shaded limestone rock
Orthotrichum affine Schrad. ex Brid. – 5: on bark of *Juglans regia*
Orthotrichum anomalum Hedw. – 5: on the wall of the monastery; 14, 16: on limestone rock
Orthotrichum cupulatum Hoffm. ex Brid. – 5: on the wall of the monastery; 14: on limestone rock
Orthotrichum lyellii Hook. et Taylor – 1: on bark of *Fagus*; 4: on bark of tree
Orthotrichum obtusifolium Brid. – 5: on bark of *Malus* and of *Juglans regia*
Orthotrichum pallens Bruch ex Brid. – 1: on bark of *Fagus* and *Sorbus aucuparia*; 5: on bark of *Juglans regia*; 16 on tree bark; 18: on bark of *Fraxinus*
Orthotrichum pumilum Sw. – 1: on bark of *Fagus*; 3: on bark of *Salix*
Orthotrichum rupestre Schleich. ex Schwägr. – 12: on root of *Fagus*; 19: on siliceous rock
Orthotrichum speciosum Nees – 1: on bark of *Fagus*; 5: on bark of *Juglans regia*
Orthotrichum stramineum Hornsch. ex Brid. – 1, 12: on bark of *Fagus*; 3: on bark of *Salix*
Orthotrichum striatum Hedw. – 12: on bark of *Fagus*
Oxystegus tenuirostris (Hook. et Taylor) A. J. E. Sm. – 6: on rocks
Palustriella commutata (Hedw.) Ochyra – 5, 6: on limestone rocks in the stream
Palustriella decipiens (De Not.) Ochyra – 1: on soil
Paraleucobryum longifolium (Hedw.) Loeske – 1, 12, 15: on volcanic rock
Philonotis caespitosa Jur. – 1: on soil at a spring
Philonotis fontana (Hedw.) Brid. – 1, 13, 15: on soil; 1: at a spring
Philonotis fontana (Hedw.) Brid. var. *pumila* (Turner) Brid. – 1: at a spring
Philonotis marchica (Hedw.) Brid. – 15: on soil
Philonotis seriata Mitt. – 15: on soil
Plagiomnium affine (Blandow) T. J. Kop. – 1: on soil; 8: on soil in oak forest
Plagiomnium cuspidatum (Hedw.) T. J. Kop. – 5: on shaded limestone rock
Plagiomnium elatum (Bruch et Schimp.) T. J. Kop. – 3, 15: on soil
Plagiomnium ellipticum (Brid.) T. J. Kop. – 18: on shaded calcareous rock at stream
Plagiomnium medium (Bruch et Schimp.) T. J. Kop. – 15: on soil
Plagiomnium rostratum (anon.) T. J. Kop. – 5, 6, 18: on shaded limestone rock; 12: on volcanic rock
Plagiomnium undulatum (Hedw.) T. J. Kop. – 1, 2, 4, 15: on soil; 1: at a spring; 5, 18: on limestone rocks in the stream; 12: on volcanic rock
Plagiothecium denticulatum (Hedw.) Schimp. – 3: on soil
Plagiothecium laetum Schimp. var. *curvifolium* (Limpr.) Mastracci et M. Sauer – 1, 2: on soil
Plagiothecium succulentum (Wilson) Lindb. – 12: on volcanic rock; 19: on siliceous rock
Plagiothecium undulatum (Hedw.) Schimp. – 3, 15, 17: on soil
Platyhypnidium riparioides (Hedw.) Dixon – 5, 18: on limestone rocks in the stream; 6: on soil overlying limestone rocks at river bank; 12, 15, 18: on soil
Pleurochaete squarrosa (Brid.) Lindb. – 19: on siliceous rock; 9: on soil overlying siliceous rock
Pleurozium schreberi (Brid.) Mitt. – 1: on soil, at a spring; 19: on siliceous rock; 5, 15, 19: on soil
Pogonatum aloides (Hedw.) P. Beauv. – 2: on exposed volcanic rock; 12: on volcanic rock
Pogonatum urnigerum (Hedw.) P. Beauv. – 1: on soil
Pohlia andalusica (Höhn.) Broth. – 1: on soil
Pohlia camptotrachela (Renauld et Cardot) Broth. – 3: on soil
Pohlia drummondii (Müll. Hal.) A. L. Andrews – 1: on soil
Pohlia lescuriana (Sull.) Ochi – 1: on soil

Pohlia ludwigii (Spreng. ex Schwägr.) Broth. – 1: on soil
Pohlia lutescens (Limpr.) H. Lindb. – 19: on siliceous rock
Pohlia nutans (Hedw.) Lindb. – 1, 15: on soil; 2: on shaded volcanic rock
Pohlia wahlenbergii (F. Weber et D. Mohr) A. L. Andrews – 1: on soil
Polytrichum alpinum Hedw. – 1: on volcanic rock; 2: on soil
Polytrichum commune Hedw. – 3, 11, 17: on peat; 15: on soil
Polytrichum commune Hedw. var. *perigoniale* (Michx.) Hampe – 1: on soil
Polytrichum formosum Hedw. – 1, 3, 15: on soil; 12: on volcanic rock
Polytrichum juniperinum Hedw. – 1, 15: on soil; 2: on exposed volcanic rock; 19: on siliceous rock
Polytrichum piliferum Schreb. ex Hedw. – 1, 5: on soil; 2: on exposed volcanic rock; 14: on limestone rock; 12, 19: on siliceous rock
Pottia lanceolata (Hedw.) Müll. Hal. – 2: on exposed volcanic rock
Pseudoleskea incurvata (Hedw.) Loeske – 2: on shaded volcanic rock
Pseudoleskea patens (Linb.) Kindb. – 2: on shaded volcanic rock
Pseudoleskea saviana (De Not.) Latzel – 1: on volcanic rock, on bark of *Fagus*
Pseudoleskeella catenulata (Brid. ex Schrad.) Kindb. – 5: on the wall of the monastery; 14, 16, 18: on limestone rock
Pseudoleskeella nervosa (Brid.) Nyholm – 1: on bark of *Fagus* and *Sorbus aucuparia*; 4: on soil; 5: on bark of *Juglans regia*; 6: on bark of *Alnus glutinosa*; 18: on tree bark
Pseudotaxiphyllum elegans (Brid.) Z. Iwats. – 2, 12: on soil overlying shaded volcanic rock
Pterigynandrum filiforme Hedw. – 1, 3, 12: on volcanic rock; 1: on bark of *Fagus*; 4: on decaying wood
Pylaisia polyantha (Hedw.) Schimp. – 6, 18: on bark of *Alnus glutinosa*
Racomitrium affine (Schleich. ex F. Weber et D. Mohr) Lindb. – 1: on volcanic rock; 2, 12: on shaded volcanic rock
Racomitrium aquaticum (Schrad.) Brid. – 12: on shaded volcanic rock
Racomitrium canescens (Timm ex Hedw.) Brid. s. l. – 1: on soil, on volcanic rock; 14: on limestone rock; 19: on siliceous rock; 9: on soil overlying volcanic rock
Rhabdoweisia fugax (Hedw.) Bruch et Schimp. – 2, 12: on shaded volcanic rock
Rhizomnium magnifolium (Horik.) T. J. Kop. – 3, 15, 17: on soil
Rhizomnium punctatum (Hedw.) T. J. Kop. – 1, 3, 12, 15: on soil; 4: on decaying wood; 6, 12: on volcanic rock
Rhynchostegium megapolitanum (F. Weber et D. Mohr) Schimp. – 18: on bark of *Alnus glutinosa*
Rhynchostegium murale (Hedw.) Schimp. – 5, 18: on shaded limestone rock
Rhynchostegium rotundifolium (Brid.) Schimp. – 5: on shaded limestone rock
Rhytidiadelphus loreus (Hedw.) Warnst. – 15: on soil
Rhytidiadelphus squarrosus (Hedw.) Warnst. – 1, 3: on soil
Rhytidiadelphus triquetrus (Hedw.) Warnst. – 1, 3, 5, 15: on soil
Rhytidium rugosum (Hedw.) Kindb. – 5, 19: on siliceous rock
Sanionia uncinata (Hedw.) Loeske – 1, 3, 15: on soil
Schistidium apocarpum (Hedw.) Bruch et Schimp. s. l. – 18: on calcareous rock
Schistidium cf. *crassipilum* H. H. Blom – 5: on basic rock
Scleropodium purum (Hedw.) Limpr. – 15: on soil
Seligeria donniana (Sm.) Müll. Hal. – 5: on shaded limestone rock
Sphagnum fallax (H. Klinggr.) H. Klinggr. – 11, 15, 17: on peat
Sphagnum girgensohnii Russow – 3, 15, 17: on peat
Sphagnum inundatum Russow – 15: on peat
Sphagnum palustre L. – 3, 15: on peat
Sphagnum russowii Warnst. – 15: on soil

Sphagnum squarrosum Crome – 3, 4, 15, 17: on soil
Sphagnum subsecundum Nees – 11: on peat
Taxiphyllum wissgrillii (Garov.) Wijk et Margad. – 5, 18: on shaded limestone rock
Tetraphis pellucida Hedw. – 3, 4: on decaying wood; 15: on soil
Thamnobryum alopecurum (Hedw.) Nieuwl. ex Gangulee – 12: on volcanic rock; 19: on shaded siliceous rock
Thuidium abietinum (Hedw.) Schimp. – 1: on soil in a mountain meadow, on siliceous rock; 5, 14, 16, 18: on limestone rock; 19: on siliceous rock; 8: on soil in oak forest
Thuidium delicatulum (Hedw.) Schimp. – 3: on soil; 12: on volcanic rock
Thuidium philibertii Limpr. – 14: on limestone rock; 6: on soil; 8: on soil in a mountain meadow
Thuidium recognitum (Hedw.) Lindb. – 8: on soil in oak forest; 18: on shaded limestone rock
Thuidium tamariscinum (Hedw.) Schimp. – 4: on soil; 12: on volcanic rock
Tortella inclinata (R. Hedw.) Limpr. – 16: on limestone rock
Tortella tortuosa (Hedw.) Limpr. – 5, 7, 18: on shaded limestone rock; 14, 16: on limestone rock
Tortula crinita (De Not.) De Not. – 10: on siliceous rock; 16: on limestone rock; 19: on siliceous rock
Tortula muralis L. ex Hedw. – 5: on the wall of the monastery; 10: on siliceous rock
Tortula muralis L. ex Hedw. var. *aestiva* Brid. ex Hedw. – 5: on the wall of the monastery
Tortula ruralis (Hedw.) P. Gaertn., B. Mey. et Scherb. – 1: on volcanic rock, on bark at the base of *Fagus*, in a mountain meadow; 5: on the wall of the monastery; 14, 16: on limestone rock; 19: on soil between volcanic rocks
Tortula subulata Hedw. var. *angustata* (Schimp.) Limpr. – 5: on calcareous soil; 12: on soil between roots of *Fagus*
Tortula subulata Hedw. var. *subulata* – 1: on volcanic rock; 19 on soil between volcanic rocks
Trichostomum crispulum Bruch – 14, 16: on limestone rock
Ulota bruchii Hornsch. ex Brid.– 3: on bark of *Alnus incana*
Ulota crispa (Hedw.) Brid. s. str. – 12: on bark of *Fagus*; 3: on bark of *Salix*
Ulota hutchinsiae (Sm.) Hammar – 19: on siliceous rock
Warnstorfia exannulata (Schimp.) Loeske – 15: on soil
Weissia controversa Hedw. – 9: on soil overlying volcanic rock
Zygodon rupestris Schimp. ex Lorentz – 19: on siliceous rock

CONSERVATION VALUE OF THE BRYOFLORA

Six species are included in the Red Data Book of European Bryophytes (ECCB 1995). Among them, one species, *Buxbaumia viridis*, is vulnerable (V); four species are in the rare (R) category: *Brachythecium geheebii*, *Grimmia caespiticia*, *Lophozia ascendens*, *Rhynchostegium rotundifolium*; and one of them, *Pseudoleskea saviana*, is a regionally threatened species (RT).

Buxbaumia viridis and *Lophozia ascendens* are boreal, montane species (DÜLL 1983, 1984) living on large, well-decayed wood in constantly humid forests. These are indicator species of old-growth forests. *Buxbaumia viridis* was reported earlier from two localities in Serbia and one in Montenegro (SABOVLJEVIĆ *et al.* 1999), later on it was collected in Tara National Park (PAPP and SABOVLJEVIĆ 2002). *Lophozia ascendens* was found in Tara for the first time in Serbia-

Montenegro (PAPP and SABOVLJEVIĆ 2002); later we collected it also in Kopaonik National Park (PAPP *et al.* 2004) and here we report on its third locality in Serbia-Montenegro.

Brachythecium geheebii is a subcontinental-montane element (DÜLL 1985) and a European endemism (ECCB 1995). It occurs on shaded, slightly basic rocks in the high mountains of Central Europe and Norway (FREY *et al.* 1995, DÜLL 1985). It is recorded for the first time in Serbia. It was reported earlier from Montenegro (SABOVLJEVIĆ and STEVANOVIĆ 1999).

Pseudoleskea saviana is a species of shaded volcanic rocks, but sometimes it is found on tree bark mainly at the base of trunks. It is a rare, continental-subalpine species (DÜLL 1985). It was also collected in Kopaonik Mts (PAPP *et al.* 2004).

Rhynchostegium rotundifolium is a sub-Mediterranean-subatlantic species (DÜLL 1985) living on shaded, humid rocks, rock walls, rock crevices, sometimes on decaying logs. In the Golija-Studenica Biosphere Reserve it was collected from shaded limestone rock crevices near the Studenica monastery. This is its first record in Serbia-Montenegro.

Grimmia caespiticia is a subarctic-subalpine element (DÜLL 1984) and known as a rare species. It can be found on acidic rocks in alpine mountains of Europe,

Table 1. Species included in the bryophyte red list of Serbia-Montenegro (SABOVLJEVIĆ *et al.* 2004) and their threat status. Abbreviations: CR = critically endangered; EN = endangered; VU = vulnerable; LR = lower risk, near threatened; DD = data deficient.

HEPATICAE		*Cynodontium polycarpum*	LR
Bazzania trilobata	EN	*Diphyscium foliosum*	LR
Calypogeia fissa	EN	*Fontinalis antipyretica*	LR
Calypogeia integristipula	EN	*Grimmia caespiticia*	VU
Calypogeia muelleriana	CR	*Leptobryum pyriforme*	LR
Cephalozia catenulata	VU	*Orthotrichum obtusifolium*	VU
Jungermannia gracillima	EN	*Paraleucobryum longifolium*	VU
Leiocolea bantriensis	VU	*Philonotis caespitosa*	DD
Leiocolea turbinata	VU	*Pohlia camptotrachela*	DD
Lophozia ascendens	VU	*Pseudoleskea saviana*	VU
Lophozia collaris	VU	*Racomitrium elongatum*	DD
Mannia fragrans	EN	*Rhizomnium magnifolium*	VU
Marsupella funckii	VU	*Sphagnum fallax*	VU
Nowellia curvifolia	VU	*Sphagnum girgensohnii*	VU
Trichocolea tomentella	EN	*Sphagnum palustre*	VU
MUSCI		*Sphagnum russowii*	VU
Amblystegium tenax	LR	*Sphagnum squarrosum*	VU
Andreaea rupestris	LR	*Sphagnum subsecundum*	VU
Brachythecium geheebii	LR	*Tetraphis pellucida*	VU
Buxbaumia viridis	CR	*Ulota bruchii*	VU

Asia and Greenland (NYHOLM 1998). This is its first record in Serbia; it was reported earlier from Montenegro (SABOVLJEVIĆ and STEVANOVIĆ 1999).

Ulota bruchii is a European endemism (ECCB 1995). It was reported earlier from Tara and Kopaonik Mts (PAPP and SABOVLJEVIĆ 2002, PAPP *et al.* 2004); this is its third record in Serbia-Montenegro.

A number of species collected in the Golija-Studenica Biosphere Reserve and adjacent sites are included in the bryophyte red list of Serbia and Montenegro (SABOVLJEVIĆ *et al.* 2004) (see Table 1). However, in view of the present state of knowledge of the country's bryophyte flora it appears premature to assign the IUCN threat status (HALLINGBÄCK *et al.* 1998) to most bryophyte species of Serbia-Montenegro. The fact that species records new to the country or its federal states are still being published (see Introduction) indicates that the bryophyte flora is still poorly known. In our opinion, at least the following red-listed species should be assigned to a lower threat status: *Bazzania trilobata*, *Calypogeia muelleriana*, *Mannia fragrans*, *Amblystegium tenax*, *Fontinalis antipyretica*, *Leptobryum pyriforme*, *Paraleucobryum longifolium*, *Sphagnum fallax*, *S. palustre*, *S. squarrosum*, *Tetraphis pellucida*.

* * *

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