

## REVISION OF BRYOPHYTE SPECIMENS FROM MONTENEGRO

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**Abstract:** More than hundred specimens of problematic or taxonomically re-evaluated taxa were revised in the Bryophyte Herbarium of the Hungarian Natural History Museum, Budapest (BP) and in the herbarium of P. Erzberger, Botanic Garden and Botanical Museum Berlin Dahlem (B). As result two species (*Lophozia silvicola*, *Ulota intermedia*) can be added to the Montenegrin bryophyte flora and one species (*Brachythecium tenuicale*) should be deleted. The recent distribution of several taxa of conservation interest was clarified, e. g. rarities like *Neckera pumila*, *Ulota bruchii* or genera potentially threatened due to climate change like *Philonotis* and *Timmia*. The results are important contributions to the preparation of an updated checklist and red list of the Montenegrin bryoflora.

**Keywords:** bryological collections, regionally new species, rare species, threatened species

### INTRODUCTION

Natural science collections are important sources of biodiversity information. Digital developments and molecular data have increased the quantity of information that can be derived from physical specimens. However, for the extraction of correct information, checking and revision of specimens are also indispensable.

The new project of an updated checklist and red list of Montenegrin bryophytes made necessary to revisit the Bryophyte Herbarium of the Hungarian Natural History Museum, Budapest (BP) and the herbarium of P. Erzberger, Botanic Garden and Botanical Museum Berlin Dahlem (B). These collections contain a high amount (3363 specimens in Herbarium BP and 1428 specimens in the herbarium of P. Erzberger, B) of bryophyte material collected in the last decades in Montenegro and hold

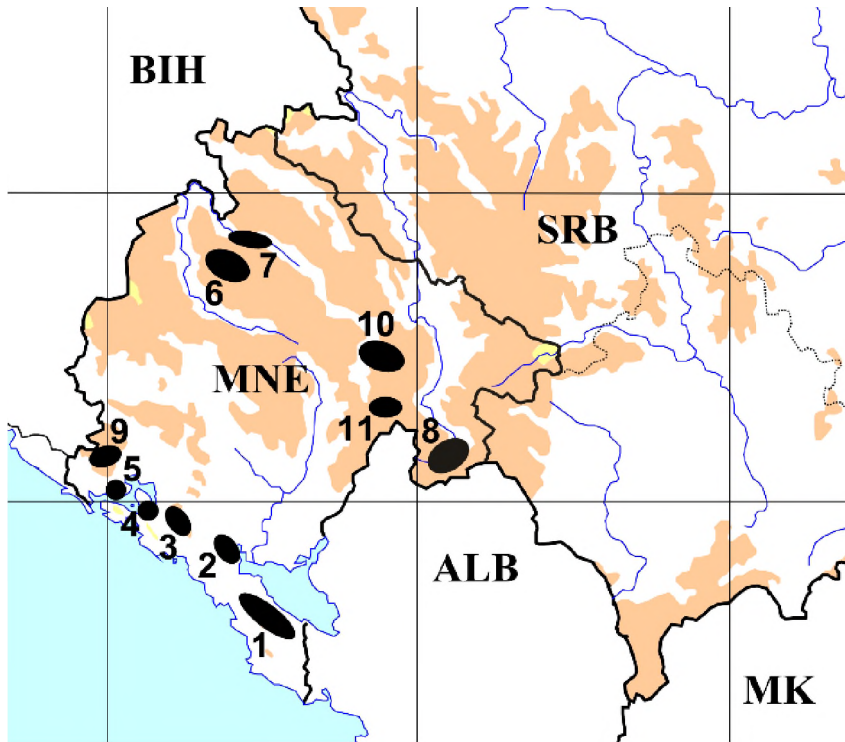


vouchers of 121 species (47 liverworts and 74 mosses) reported for the first time from the country (Papp *et al.* 2016). Between 2003 and 2016 eleven large areas were visited during the expeditions organised by the Hungarian Natural History Museum (*Table 1, Figure 1*). Herbarium BP also contains some sporadic collections e.g. at Nikšić, in Sutomore, in Stari Bar. The results were published in nine papers (Erzberger and Papp 2007; Erzberger *et al.* 2008; Papp and Erzberger 2007, 2010, 2011; Papp *et al.* 2008, 2013, 2014, 2019).

In this paper we publish the results of our revisional work obtained up to now. It contains data on sporadic erroneous identifications and more complex revised sets based on new taxonomical approaches in some genera like *Lophozia* s.l., *Tortella* or *Ulota*.

**Table 1.** List of the main investigated areas and the years of expeditions.

Area	Year
Rumija Mts	2003
Skadar Lake	2003, 2016
Lovćen Mts	2003
Kotor Bay around Kotor	2003
Kotor Bay around Herceg Novi	2003
Durmitor Mts	2004
Tara canyon	2004
Prokletije Mts	2006
Orjen Mts	2007
Bjelasica Mts	2007, 2008
Komovi Mts	2008



**Figure 1.** Location of the main investigated areas.

Abbreviations: MNE: Montenegro, BIH: Bosnia–Herzegovina, SRB: Serbia, ALB: Albania, MK: Northern Macedonia; 1: Rumija Mts, 2: Skadar Lake, 3 Lovćen Mts, 4: Kotor Bay around Kotor, 5: Kotor Bay around Herceg Novi, 6: Durmitor Mts, 7: Tara canyon, 8: Prokletije Mts, 9: Orjen Mts, 10: Bjelasica Mts, 11: Komovi Mts.

## METHODS

Problematic or taxonomically re-evaluated taxa were checked and revised in the Bryophyte Herbarium of the Hungarian Natural History Museum, Budapest (BP) and in the herbarium of P. Erzberger, Botanic Garden and Botanical Museum Berlin Dahlem (B). Taxonomy and nomenclature follow Hodgetts *et al.* (2020). Localities are given according to original label of specimens, only misspellings were corrected.

## RESULTS

### *Brachythecium tommasinii* (Sendtn. ex Boulay) Ignatov & Huttunen

Komovi Mts, from Štavna to Vasojevički Kom peak, soil among limestone rocks, 42°42'03,3" N, 19°40'59,9" E, 1810–2460 m a.s.l., 05.07.1998, leg. Dragičević, S., det. Papp, B., rev. Papp, B. 07.2022, BP 187434 published as new to the Montenegrin bryophyte flora in Papp *et al.* (2014) under the name *Rhynchostegiella tenuicaulis* (Spruce) Kartt.

Comments: A small, undeveloped patch of *B. tommasinii* living in unfavourable conditions (e.g. in dry, very shaded rocks, rock crevices) was misidentified. It seems that *Brachythecium tenuicale* (Spruce) Kindb. (synonym *Rhynchostegiella tenuicaulis* (Spruce) Kartt.) can be deleted from the bryophyte checklist of Montenegro.

### *Didymodon spadiceus* (Mitt.) Limpr.

at the border Bosnia–Herzegovina and Montenegro, at Hum, at river Tara, 43°20'53,9" N, 18°50'40,7" E, 450 m a.s.l., 07.10.2003, leg. and det. Papp, B., rev. Papp, B. 2009, BP 174001, published in Papp and Erzberger (2007) under the name *Didymodon fallax* (Hedw.) Zander.

Comment: The species has only few recent records from Montenegro; three from Durmitor Mts (Papp and Erzberger 2010, 2011) and two from Prokletije Mts (Papp *et al.* 2019).

### *Gymnostomum calcareum* Nees & Hornsch.

between Nikšić and Podgorica, 1–2 km before the road to Zagorak, 42°37'50,9" N, 19°00'34,1" E, 275 m a.s.l., 07.10.2003, leg. and det. Erzberger, P., rev. Papp, B. 02.2023, B–Erzberger 9710, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Kotor, town walls and fortress, 42°25'33,3" N, 18°46'23,6" E, 0–100 m a.s.l., 13.10.2003, leg. and det. Erzberger, P., rev. Papp, B. 02.2023, B–Erzberger 9871, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Orjen Mts, around Kruševica, 42°32'04,8" N, 18°29'40,0" E, 665 m a.s.l., 15.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 176737, published in Papp *et al.* (2008) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Rijeka Crnojevica, towards Obod cave, on soil among limestone rocks, 42°21'16,80" N, 19°00'41,63" E, 20 m a.s.l., 28.04.2016, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 194751, unpublished, deposited in the herbarium under the name *Gyroweisia tenuis* (Hedw.) Schimp.

***Gymnostomum viridulum* Brid.**

on the peninsula west of Kotor, near Trojica fortress, maquis at a southwest facing slope, 42°24'23,5" N, 18°45'22,8" E, 290 m a.s.l., 12.10.2003, leg. and det. Papp, B., rev. Papp, B. 02.2023, BP 174326, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Kotor Bay, along the road from Kotor to Perast, at the pansion Stari Mlini before Perast, stream, 42°29'02,1" N, 18°46'00,9" E, 10 m a.s.l., 14.10.2003, leg. and det. Erzberger, P., rev. Papp, B. 02.2023, B-Erzberger 9884, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

between Nikšić and Podgorica, 1–2 km before the road to Zagorak, 42°37'50,9" N, 19°00'34,1" E, 275 m a.s.l., 07.10.2003, leg. and det. Papp, B., rev. Papp, B. 02.2023, BP 174031, and leg. and det. Erzberger, P., rev. Papp, B. 02.2023, B-Erzberger 9708 and 9711, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Rumija Mts, at Skadarsko jezero, at the border of Albania near Ostros village, 42°03'21,7" N, 19°20'28,4" E, 450–480 m a.s.l., 08.10.2003, leg. and det. Papp, B., rev. Papp, B. 02.2023, BP 174068, published in Papp and Erzberger (2007) under the name *Gyroweisia tenuis* (Hedw.) Schimp.

Comment: *Gymnostomum viridulum* and small forms of *Gymnostomum calcareum* were misidentified. All recent *Gyroweisia tenuis* specimens were revised. There are some historical records (Velenovsky 1901; Pavletić and Pulević 1980), which also should be checked, otherwise the occurrence of the species in Montenegro is doubtful. Guerra *et al.* (2006) also mention that it is also rarer in the Iberian Peninsula than it seems on the base of literature data, because it is frequently mistaken for *Gymnostomum* species.

***Lescuraea saviana* (De Not.) E. Lawton**

Bjelasica Mts, at Svinjača stream at Jezerine at Kolašin town, on siliceous rocks, 42°49'49,5" N, 19°37'06,7" E, 1360 m a.s.l., 18.07.2007, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 185214, published in Papp *et al.* (2013) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, on shaded siliceous rocks, 42°54'02,6" N, 19°35'45,6" E, 1100 m a.s.l., 23.07.2008, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 185503, published in Papp *et al.* (2013) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Bjelasica Mts, Katun Rupe at Kolašin town, on siliceous rock, 42°49'09,9" N, 19°36'59,7" E, 1660 m a.s.l., 19.07.2007, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 185259, published in Papp *et al.* (2013) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana, *Piceo-Abietetum*, on limestone rock, 43°08'52,0" N, 19°05'48,0" E, 1421 m a.s.l., 05.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178669, published in Papp and Erzberger (2010) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Durmitor Mts, Durmitor NP, Žabljak, between Momčilov grad restaurant and Jablan bara, on the bark of *Abies*, 43°10'00,0" N, 19°03'51,3" E, 1808–1867 m a.s.l.,

08.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178919, published in Papp and Erzberger (2010) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Durmitor Mts, Durmitor NP, Žabljak, Otoka potok stream and wetlands, 43°09'13,9" N, 19°06'04,0" E, 1428 m a.s.l., 06.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178832, published in Papp and Erzberger (2010) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Durmitor Mts, Durmitor NP, Žabljak, south of Jablan jezero, *Fagetum*, 43°09'47,2" N, 19°03'45,5" E, 1839 m a.s.l., 08.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178938, published in Papp and Erzberger (2010) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Lovćen Mts, near Dolovi village, limestone rocks, 42°22'17,5" N, 18°49'24,1" E, 1255 m a.s.l., 11.10.2003, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 174266, published in Papp and Erzberger (2007) under the name *Lescuraea incurvata* (Hedw.) Lawt.

Comments: *L. saviana* is a rare species in the western parts of Europe, becoming frequent towards the south-east. In the Balkans *L. incurvata* and *L. saviana* occur mainly at the elevation above 1000 m a.s.l. and they share the same habitat on shaded rocks, but *L. saviana* also frequently appears on the bark of trees. Small, undeveloped *L. saviana* specimens are frequently misidentified. Characteristic details of the two species with photographic illustrations can be found in Nagy and Németh (2017).

### ***Lophozia silvicola* H. Buch**

Bjelasica Mts, at Svinjača stream at Jezerine at Kolašin town, on decaying wood, 42°49'49,5" N, 19°37'06,7" E, 1360 m a.s.l., 18.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 51540/H, published in Papp *et al.* (2013) under the name *L. ventricosa* (Dicks.) Dum.

Bjelasica Mts, Jaževi at Kolašin town, western source of Biogradska reka stream, on schistose rock, 42°51'03,9" N, 19°39'37,9" E, 1870 m a.s.l., 25.07.2008, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 51677/H, published in Papp *et al.* (2013) under the name *L. ventricosa* (Dicks.) Dum.

Bjelasica Mts, Zekova glava peak at Kolašin town, on siliceous rock, 42°51'04,2" N, 19°40'54,6" E, 2080 m a.s.l., 20.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 51594/H, published in Papp *et al.* (2013) under the name *L. ventricosa* (Dicks.) Dum.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana *Piceo-Abietetum*, on the decaying wood, 43°08'52,0" N, 19°05'48,0" E, 1421 m a.s.l., 05.10.2004, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 50148/H, published in Papp and Erzberger (2010) under the name *L. ventricosa* (Dicks.) Dum.

Comments: The specimens of *L. silvicola* were found among *Lophozia ventricosa* specimens. They have less than 15(–20) persistent oil bodies per cell and more than 50 % of them are biconcentric (Bakalin 2016). *Lophozia silvicola* was not known from

Montenegro previously (Hodgetts and Lockhart 2020). It can be added as new species to the Montenegrin bryophyte flora.

***Exsertotheca crispa* (Hedw.) S.Olsson, Enroth & D.Quandt**

Durmitor Mts, Durmitor NP, Žabljak, Otoka potok stream and wetlands, 43°09'13,9" N, 19°06'04,0" E, 1428 m a.s.l., 06.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178838, published in Papp and Erzberger (2010) under the name *Neckera pumila* Hedw.

Orjen Mts, around Vrbanje, limestone rocks in *Fagetum*, 42°33'29,6" N, 18°30'30,7" E, 1005 m a.s.l., 14.07.2007, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 176649, published in Papp *et al.* (2008) under the name *Neckera pumila* Hedw.

Orjen Mts, between Vrbanje and Kruševica, limestone rocks, 42°33'00,0" N, 18°30'21,9" E, 1015 m a.s.l., 15.07.2007 and 16.07.2007, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 176789, published in Papp *et al.* (2008) under the name *Neckera pumila* Hedw.

Comment: Some small forms of *E. crispa* were misidentified. The only verified recent specimen of *N. pumila* is from Bjelasica Mts, Biogradsko jezero (Papp *et al.* 2013).

## Revision of *Philonotis* specimens

***Philonotis calcarea* (Bruch & Schimp.) Schimp.**

Bjelasica Mts, around Ursulovac lake at Kolasin town, 42°52'21,0" N, 19°41'39,7" E, 1920–2040 m a.s.l., 26.07.2008, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 185686, published in Papp *et al.* (2013) under the name *P. seriata* Mitt.

Bjelasica Mts, Jaževi at Kolašin town, western source of Biogradska reka stream, 42°51'03,9" N, 19°39'37,92" E, 1870 m a.s.l., 25.07.2008, leg. and det. Erzberger, P., conf. Erzberger, P. 06.12.2022, B-Erzberger 13009E, published in Papp *et al.* (2013).

Bjelasica Mts, round trip Kolašin–Svinjaca–Katun Rupe–Kljuc–Kapella–Kolašin, *Eriophoretum* 42°49'13,6" N, 19°34'24,0" E, 1360 m a.s.l., 19.07.2007, leg. and det. Erzberger, P., conf. Erzberger, P. 06.12.2022, B-Erzberger 12513a, published in Papp *et al.* (2013).

Bjelasica Mts, source area of Biogradska reka stream (Izvor Biogradske reke) at Kolašin town, 42°51'20,9" N, 19°40'29,8" E, 1880 m a.s.l., 25.07.2008, leg. and det. Erzberger, P., conf. Erzberger, P. 06.12.2022, B-Erzberger 13009M, published in Papp *et al.* (2013).

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana, *Piceo-Abietetum*, 43°08'52,0" N, 19°05'48,0" E, 1420 m a.s.l., 05.10.2004, leg. and det. Erzberger, P., conf. Erzberger, P. 07.12.2022, B-Erzberger 10410, published in Papp and Erzberger (2010).

Durmitor Mts, Durmitor NP, Žabljak, Mlinski potok, 43°08'58,2" N, 19°05'23,8" E, 1434 m a.s.l., 07.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178874, published in Papp and Erzberger (2010) under the name *P. seriata* Mitt.

Durmitor Mts, Durmitor NP, Žabljak, Mlinski potok, between Crno jezero and Zminje jezero, 43°09'19,0" N, 19°05'01,5" E, 1480 m a.s.l., 07.10.2004, leg. and det. Erzberger, P., conf. Erzberger, P. 07.12.2022, B-Erzberger 10505, 10508, published in Papp and Erzberger (2010).

Durmitor Mts, Durmitor NP, Žabljak, rivulet at Jablan jezero, 43°10'01,4" N, 19°04'00,3" E, 1813 m a.s.l., 08.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 178931 and BP 179119 published in Papp and Erzberger (2010) under the name *P. seriata* Mitt.

Prokletije Mts, Gusinje, Alipašini izvori spring, 42°33'00,4" N, 19°49'34,2" E, 935 m a.s.l., 07.10.2006, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 194252, published in Papp *et al.* (2019) under the name *P. seriata* Mitt.

Prokletije Mts, Plav, from Bajrovića katun (Hridski Stanovi) to Hridsko jezero lake, on wetland, 42°34'18,6" N, 20°02'02,7" E, 1925 m a.s.l., 08.10.2006, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 194376, published in Papp *et al.* (2019) under the name *P. seriata* Mitt.

Prokletije Mts, Plav, from Bajrovića katun (Hridski Stanovi) to Hridsko jezero lake, 42,58222° N, 20,02725° E and 42,57183° N, 20,03408° E, 1700–1928 m a.s.l., 08.10.2006, leg. and det. Erzberger, P., rev. Erzberger, P. 05.12.2022, B-Erzberger 11948, published in Papp *et al.* (2019) under the name *P. seriata* Mitt.

### ***Philonotis fontana* (Hedw.) Brid.**

Bjelasica Mts, above Kolašin town, wet grassland, 42°49'13,7" N, 19°34'20,6" E, 1360 m a.s.l., 19.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185419, published in Papp *et al.* (2013) under the name *P. tomentella* Molendo.

### ***Philonotis seriata* Mitt.**

Bjelasica Mts, above Mali Ursulovac lake, in a wet meadow, 42°52'27,6" N, 19°41'16,6" E, 1830 m a.s.l., 26.07.2008, leg. and det. Papp, B., conf. Papp, B. 12.2020, BP 185702, published in Papp *et al.* (2013).

Bjelasica Mts, Jaževi at Kolašin town, western source of Biogradska reka stream, 42°51'03,9" N, 19°39'37,9" E, 1870 m a.s.l., 25.07.2008, leg. and det. Papp, B., conf. Papp, B. 12.2020, BP 185589, and leg. and det. Erzberger, P., conf. Erzberger, P. 05.12.2022, B-Erzberger 13001B, published in Papp *et al.* (2013).

Bjelasica Mts, source area of Biogradska reka stream (Izvor Biogradske reke) at Kolašin town, 42°51'20,9" N, 19°40'29,8" E, 1880 m a.s.l., 25.07.2008, leg. and det. Papp, B., conf. Papp, B. 12.2020, BP 185618, and leg. and det. Erzberger, P., conf. Erzberger, P. 05.12.2022, B-Erzberger 13009E, 13009M, published in Papp *et al.* (2013).

Komovi Mts, spring under Kuća Kojića, 42°41'46,8" N, 19°36'55,5" E, 1876 m a.s.l., 13.08.2008, leg. Dragičević, S., det. Papp, B., rev. Papp, B. 07.2022, BP 187448, published in Papp *et al.* (2014) under the name *P. tomentella* Mol.

Komovi Mts, under Roganskog Koma peak, Valova stream, acidic rock, 42°41'30,7" N, 19°37'37,5" E, 1817 m a.s.l., 13.08.2008, leg. Dragičević, S., det. Papp, B., rev. Papp, B. 07.2022, BP 187455, published in Papp *et al.* (2014) under the name *P. tomentella* Mol.

Prokletije Mts, Plav, from Bajrovića katun (Hridski Stanovi) to Hridsko jezero lake, 42,58222° N, 20,02725° E and 42,57183° N, 20,03408° E, 1700–1928 m a.s.l.,



08.10.2006, leg. and det. Erzberger, P., conf. Erzberger, P. 05.12.2022, B-Erzberger 11943a, published in Papp *et al.* (2019).

***Philonotis tomentella*** Molendo

Durmitor Mts, Durmitor NP, Žabljak, spring mire near Jablan jezero, on peat, 43°09'52,8" N, 19°04'20,6" E, ca 1821 m a.s.l., 08.10.2004, leg. and det. Erzberger, P., conf. Papp, B. 21.01.2023, B-Erzberger 10554, published in Papp and Erzberger (2010).

Comments: *Philonotis fontana* specimens were well-identified, however many revisions were made in the case of other species belonging to *Philonotis* section of the genus. *P. calcarea* occurs in Bjelasica, Durmitor and Prokletije Mts., while *P. seriata* has records from Bjelasica, Komovi and Prokletije Mts. The only verified specimen of *P. tomentella* was collected in Durmitor Mts.

***Plagiomnium rostratum*** (Schrad.) T.J. Kop.

Lovćen Mts, near Dolovi village, limestone rocks, 42°22'17,5" N, 18°49'24,1" E, 1255 m a.s.l., 11.10.2003, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 174274, published in Papp and Erzberger (2007) under the name *P. ellipticum* (Brid.) T.J. Kop.

Orjen Mts, between Vrbanje and Kruševice, limestone rocks, 42°33'00,0" N, 18°30'21,9" E, 1015 m a.s.l., 15.07.2007 and 16.07.2007, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 176794, published in Papp *et al.* (2008) under the name *P. ellipticum* (Brid.) T.J. Kop.

Comments: *P. ellipticum* has two recent records from Montenegro: Durmitor Mts (Barno jezero bog) in Papp and Erzberger (2010) and Prokletije Mts in Papp *et al.* (2019).

***Scorpiurium circinatum*** (Brid.) M. Fleisch. & Loeske

Kotor Bay, along the road from Kotor to Perast, at the pansion Stari Mlini before Perast, stream, 10 m a.s.l., 14.10.2003, leg. and det. Papp, B., rev. Papp, B. 2013, BP 174360, published in Papp and Erzberger (2007) under the name *S. sendtneri* (Schimp.) M.Fleisch.

Kotor Bay, along the road from Perast to Herceg-Novi, at Kostanjica village after Morinj, *Quercetum* and *Castanetum* on a north facing slope, on *Laurus nobilis* stem, 42°29'08,8" N, 18°39'07,9" E, 70–170 m a.s.l. 14.10.2003, leg. and det. Erzberger, P., rev. Erzberger, P. 10.2022, B-Erzberger 9899, published in Papp and Erzberger (2007) under the name *S. sendtneri* (Schimp.) M. Fleisch.

Comment: Small forms of *S. circinatum* were misidentified. *S. sendtneri* is a rarely illustrated taxon in the European identification manuals. Photo is presented here to help proper identification (Figure 2). *S. sendtneri* is a minute plant, its size is similar to *Pseudoamblystegium subtile* Vanderp. & Hedenäs. Stem leaves end in long, piliferous apices, leaf margin is not or only slightly recurved

at base. The branches are up to 0,5 cm long, not curved in dry conditions, which is a characteristic feature of *S. circinatum* (Pedrotti 2006). There is one more specimen from Montenegro collected by Szepesfalvy at Herceg Novi (Szepesfalvy 1931). However, it was not found in Herbarium BP. Therefore the occurrence of this species in Montenegro is doubtful.



**Figure 2.** Stem leaf of *Scorpiurium sendtneri* [Albanian specimen BP 185817 published in Marka *et al.* (2013) and Papp *et al.* (2018)].

## Revision of *Timmia* specimens

### *Timmia austriaca* Hedw.

Durmitor Mts, Durmitor NP, Žabljak, on the bank of Malo jezero of Crno jezero and Titova pećina, 43°08'31,7" N, 19°05'07,7" E, 1449 m a.s.l., 10.10.2004 and 12.10.2004, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 179022, published in Papp and Erzberger (2010) under the name *T. bavarica* Hessel.

Komovi Mts, Eko katun Štavna at Andrijevića, towards Vasojevički Kom peak, on limestone rocks, 42°41'51,8" N, 19°40'26,9" E, 1850–2050 m a.s.l., 29.07.2008, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 187424, published in Papp *et al.* (2014) under the name *T. bavarica* Hessel.

Komovi Mts, katun Ljuban, *Fagus–Picea* forest, 42°42'04,9" N, 19°39'20,1" E, 1812 m a.s.l., 25.07.2006, leg. Dragičević, S., det. Papp, B., rev. Papp, B. 12.2020, BP 187458, published in Papp *et al.* (2014) under the name *T. bavarica* Hessel.

Prokletije Mts, Vusanje, from Zastan koliba towards Maja Rosit pick under Valjbones in dolina Korita, on limestone rock, 42°29'21,1" N, 19°48'56,7" E, 1342

m a.s.l., 10.10.2006, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 194484, published in Papp *et al.* (2019) under the name *T. bavarica* Hessel.

Prokletije Mts, Vusanje, from Zastan koliba towards Maja Rosit pick under Valjbones in dolina Korita, on limestone rock, 42°29'10,0" N, 19°49'38,5" E, 1717 m a.s.l., 10.10.2006, leg. and det. Papp, B., rev. Papp, B. 12.2020, BP 194513, published in Papp *et al.* (2019) under the name *T. bavarica* Hessel.

### ***Timmia bavarica* Hessel.**

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana *Piceo-Abietetum*, on limestone rock, 43°08'52,0" N, 19°05'48,0" E, 1421 m a.s.l., 05.10.2004, leg. and det. Papp, B., conf. Papp, B. 12.2020, BP 178686, published in Papp and Erzberger (2010).

Durmitor Mts, Durmitor NP, Žabljak, on the bank of Malo jezero of Crno jezero and Titova pećina, 43°08'31,7" N, 19°05'07,7" E, 1449 m a.s.l., 10.10.2004 and 12.10.2004, leg. and det. Papp, B., conf. Papp, B. 12.2020, BP 179102, and leg. and det. Erzberger, P., conf. Erzberger, P. 07.12.2022, B-Erzberger 10725 and 10731, published in Papp and Erzberger (2010).

Prokletije Mts, Vusanje, from Zastan koliba towards Maja Rosit peak under Valjbones in dolina Korita, 42°29'35,7" N, 19°50'16,0" E, 2019 m a.s.l., 10.10.2006, leg. and det. Erzberger, P., conf. Erzberger, P. 07.12.2022, B-Erzberger 12005 and 12013, published in Papp *et al.* (2019).

Comments: *T. bavarica* specimens from Komovi Mts were revised to *T. austriaca*. Based on the revisions, it seems that *T. bavarica* is known only from Durmitor and Prokletije Mts and probably not as frequent as *T. austriaca*, which is present in almost all investigated mountain areas.

## **Revision of *Tortella* specimens**

### ***Tortella fasciculata* (Culm.) Culm.**

Bjelasica Mts, around Ursulovac lake at Kolasin town, 42°52'21,0" N, 19°41'39,7" E, 1920–2040 m a.s.l., 26.07.2008, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185694, published in Papp *et al.* (2013) under the name *T. tortuosa* (Hedw.) Limpr. var. *fragilifolia* (Jur.) Limpr.

Bjelasica Mts, Katun Rupe at Kolašin town, on siliceous rock, 42°49'09,9" N, 19°36'59,7" E, 1660 m a.s.l., 19.07.2007, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197787. Separated from 185276 *T. tortuosa* specimen, published in Papp *et al.* (2013) under the name *T. tortuosa* (Hedw.) Limpr.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana after the path to Međed, limestone grasslands, 43°07'59,0" N, 19°06'00,8" E, 1534–1580 m a.s.l., 05.10.2004, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 178732, published in Papp and Erzberger (2010) under the name *T. tortuosa* (Hedw.) Limpr.

Durmitor Mts, Durmitor NP, Žabljak, Otoka potok stream and wetlands, 43°09'13,9" N, 19°06'04,0" E, 1428 m a.s.l., 06.10.2004, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197786. Separated from BP 179120 *T. tortuosa* specimen,

published in Papp and Erzberger (2010) under the name *T. tortuosa* (Hedw.) Limpr.

Komovi Mts, Eko katun Štavna at Andrijevica, in a limestone rock, 42°41'44,3" N, 19°33'43,5" E, 1770 m a.s.l., 27.07.2008 and 28.07.2008, leg. and det. Papp, B., rev. Papp, B. 2018, BP 187353, published in Papp *et al.* (2014) under the name *T. tortuosa* (Hedw.) Limpr. var. *bambergeri* (Schimp.) Duell

Orjen Mts, around Vrbanje, limestone rocks in Fagetum, N 42°33'29,6", E 18°30'30,7", 1005 m a.s.l., 13.07.2007, leg. and det. Erzberger, P., rev. Erzberger, P. 20.08.2022, B-Erzberger 12245 under the name *T. tortuosa* (Hedw.) Limpr. var. *bambergeri* (Schimp.) Duell

Orjen Mts, between Vrbanje and Kruševica, limestone rocks, 42°33'00,0" N, 18°30'21,9" E, 1015 m a.s.l., 15. and 16.07.2007, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 176799, published in Papp *et al.* (2008) under the name *T. tortuosa* (Hedw.) Limpr.

Prokletije Mts, Gusinje, Dolina Grbaje, from Treća livada towards Kotlovi peak through Skrožnje crevice, on limestone rock, 42°30'41,6" N, 19°46'40,9" E, 1223–1370 m a.s.l., 12.10.2006, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197796. Separated from 194578 *T. tortuosa* specimen, published in Papp *et al.* (2019), under the name *T. tortuosa* (Hedw.) Limpr.

Prokletije Mts, Gusinje, Dolina Grbaje, from Treća livada to Kotlovi, on limestone rock, 42°30'41,6" N, 19°46'40,9" E, 1223 m a.s.l., 05.10.2006, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197792. Separated from 194180 *T. tortuosa* specimen, published in Papp *et al.* (2019), under the name *T. tortuosa* (Hedw.) Limpr.

Prokletije Mts, Vusanje, Ropojana valley, around Grlja waterfall and along Grlja stream, 42°31'22,5" N, 19°50'30,1" E, 976 m a.s.l., 07.10.2006, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 194287, published in Papp *et al.* (2019), under the name *T. tortuosa* (Hedw.) Limpr.

Rumija Mts, near Limljani village, at a stream, 42°10'14,4" N, 19°06'17,7" E, 557 m a.s.l., 09.10.2003, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 17455, and leg. and det. Erzberger, P., rev. Erzberger, P. 20.08.2022, B-Erzberger 9737, published in Papp and Erzberger (2007) under the name *T. tortuosa* (Hedw.) Limpr.

### ***Tortella inclinata* (R. Hedw.) Limpr.**

Bjelasica Mts, Crna glava peak at Kolasin town, 42°51'59,6" N, 19°41'53,1" E, 2070–2140 m a.s.l., 26.07.2008, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197784. Separated from BP 185662 *T. tortuosa* specimen, published in Papp *et al.* (2013) under the name *T. tortuosa* (Hedw.) Limpr.

### ***Tortella mediterranea* Köckinger, Lüth, O. Werner & Ros**

between Nikšić and Podgorica, 1–2 km before the road to Zagorak, 42°37'50,9" N, 19°00'34,1" E, 275 m a.s.l., 07.10.2003, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 174034, published in Papp and Erzberger (2007) under the name *T. tortuosa* (Hedw.) Limpr.

along the road from Perast to Herceg–Novi, at Kostanjica village after Morinj, *Quercetum* and *Castanetum* on a north facing slope, 42°29'08,8" N, 18°39'07,9" E, 70–170 m a.s.l., 14.10.2003, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP

174395, published in Papp and Erzberger (2007) under the name *T. tortuosa* (Hedw.) Limpr.

Orjen Mts, between Orjen sedlo and Crkvice, Reovci, grassland with dolinas, 42°34'09,2" N, 18°35'14,9" E, 1215 m a.s.l., 16.07.2007, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197794. Separated from 176861 *T. tortuosa* specimen, published in Papp *et al.* (2008) under the name *T. tortuosa* (Hedw.) Limpr.

Orjen Mts, between Vrbanje and Kruševice, limestone rocks, 42°33'00,0" N, 18°30'21,9" E, 1015 m a.s.l., leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197795. Separated from 176799 *T. tortuosa* specimen, published in Papp *et al.* (2008) under the name *T. tortuosa* (Hedw.) Limpr.

Rumija Mts, at Skadarsko jezero Lake, at Vučedabići village near Virpazar, 42°07'40,1" N, 19°13'28,7" E, 458 m a.s.l., 08.10.2003, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 174050, published in Papp and Erzberger (2007) under the name *T. tortuosa* (Hedw.) Limpr.

Rumija Mts, at the mountain pass along the road from Virpazar to Bar, around the ruins of a castle, on limestone rocks, 42°09'27,8" N, 19°06'37,3" E, 930 m a.s.l., 09.10.2003, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 174131, published in Papp and Erzberger (2007) under the name *T. tortuosa* (Hedw.) Limpr.

### ***Tortella pseudofragilis* (Thér.) Köckinger & Hedenäs**

Bjelasica Mts, Katun Rupe at Kolašin town, on siliceous rock, 42°49'09,9" N, 19°36'59,7" E, 1660 m a.s.l., 19.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185279, published in Papp *et al.* (2013) under the name *T. tortuosa* (Hedw.) Limpr. var. *fragilifolia* (Jur.) Limpr.

Durmitor Mts, Durmitor NP, Žabljak, between Poljana and Savin kuk, limestone, subalpine and alpine zone, 43°07'15,8" N, 19°05'44,1" E, 1630–2000 m a.s.l., 06.10.2004, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 178789, published in Papp and Erzberger (2010) under the name *T. fragilis* (Drumm.) Limpr.

Durmitor Mts, Durmitor NP, Žabljak, on the bank of Malo jezero of Crno jezero and Titova pećina, 43°08'31,7" N, 19°05'07,7" E, 1449 m a.s.l., 10. and 12.10.2004, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 179023, published in Papp and Erzberger (2010) under the name *T. tortuosa* (Hedw.) Limpr.

Komovi Mts, Eko katun Štavna at Andrijevića, in a limestone rock, 42°41'44,3" N, 19°33'43,5" E, 1770 m a.s.l., 27.07.2008, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197788. Separated from 187354 *T. tortuosa* specimen, published in Papp *et al.* (2014) under the name *T. tortuosa* (Hedw.) Limpr.

Komovi Mts, from plateau Štavna to pasture Ljuban, N 42°42'04,0", E 19°40'24,6", 1748 m a.s.l., 28.07.2008, leg. and det. Erzberger, P., rev. Erzberger, P. 20.08.2022, B-Erzberger 13072 and 13075, published in Papp *et al.* (2014) under the name *T. bambergerei* (Schimp.) Broth.

Orjen Mts, around Vrbanje, limestone rocks in *Fagetum*, 42°33'29,6" N, 18°30'30,7" E, 1005 m a.s.l., 14.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 176657, published in Papp *et al.* (2008) under the name *T. fragilis* (Drumm.) Limpr.

Orjen Mts, between Orjen sedlo and Crkvice, Reovci, grassland with dolinas, 42°34'09,2" N, 18°35'14,9" E, 1215 m a.s.l., 16.07.2007, leg. and det. Papp, B., rev.

Papp, B. 07.2022, BP 176859, published in Papp *et al.* (2008) under the name *T. fragilis* (Drumm.) Limpr.

Prokletije Mts, Gusinje, Dolina Grbaje, Treća livada to Kotlovi, on limestone rock, 42°30'41,6" N, 19°46'40,9" E, 1223 m a.s.l., 05.10.2006, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 197793. Separated from 194180 *T. tortuosa* specimen, published in Papp *et al.* (2019), under the name *T. tortuosa* (Hedw.) Limpr.

Prokletije Mts, Vusanje, Ropojana valley towards Zastan koliba, 42°29'47,5" N, 19°48'54,9" E, 1157 m a.s.l., 07.10.2006, leg. and det. Papp, B., rev. Papp, B. 11.2022, BP 194321, published in Papp *et al.* (2019), under the name *T. tortuosa* (Hedw.) Limpr.

Prokletije Mts, Vusanje, Ropojana valley, at waterfall Grlja, 42,52292° N, 19,84169° E, 976 m a.s.l., 06.10.2006, leg. and det. Erzberger, P., rev. Erzberger, P. 20.08.2022, B-Erzberger 11915, published in Papp *et al.* (2019), under the name *T. fasciculata*.

### ***Tortella tortuosa* (Hedw.) Limpr.**

Bjelasica Mts, Katun Rupe at Kolašin town, on limestone rock, 42°49'09,9" N, 19°36'59,7" E, 1660 m a.s.l., 19.07.2007, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185297, published in Papp *et al.* (2013) under the name *T. fragilis* (Drumm.) Limpr.

Comments: All recent *Tortella fragilis* and *T. tortuosa* var. *fragilifolia* specimens were revised. *T. fragilis* has two historical records from Komovi Mts (Velenovsky 1901) and from Kanjon Komarnice (Grgić 1989). These records should be checked, otherwise the presence of this species in Montenegro is doubtful. Köckinger and Hedenäs (2017) showed that *Tortella bambergeri* auct. as understood by European bryologists during the last decades includes two distinct species, *Tortella fasciculata* (Culm.) Culm. and *T. pseudofragilis* (Thér.) Köckinger & Hedenäs. In our collections we also found several specimens of these two species inserted under the name of *Tortella tortuosa*. Both of them occur in almost all investigated mountain areas. *Tortella mediterranea* was recently described by Köckinger *et al.* (2018) and later on reported from Montenegro by Erzberger and Köckinger from Rumija and Orjen Mts (Ellis *et al.* 2020). Further specimens were found among *Tortella tortuosa* specimens of Herbarium BP.

### ***Tortula subulata* Hedw.**

Durmitor Mts, Durmitor NP, Žabljak, between Poljana and Savin kuk, limestone grassland in subalpine and alpine zone, N 43°07'15,8", E 19°05'44,1", 1630–2000 m a.s.l., 06.10.2004, leg. and det. Erzberger, P., rev. Erzberger, P. 20.08.2022, B-Erzberger 10445, published in Papp and Erzberger (2010) under the name *T. subulata* Hedw. var. *angustata* (Schimp.) Limpr.

Comment: *Tortula schimperi* M.J.Cano, O.Werner & J.Guerra (*T. subulata* Hedw. var. *angustata* (Schimp.) Limpr.) has one confirmed recent record from Bjelasica Mts (Papp *et al.* 2013).

### Revision of *Ulota* specimens

#### *Ulota bruchii* Hornsch. ex Brid.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, 1120 m 42°53'44,3" N, 19°36'14,7" E, 1200 m a.s.l., 23.07.2008, leg. and det. Erzberger, P., conf. Erzberger, P. 27.10.2022, B-Erzberger 12976, published in Papp *et al.* (2013).

#### *Ulota crispa* (Hedw.) Brid.

Durmitor National Park, Tara canyon, Crna pada forest, *Pineto-Fagetum*, 895 m, 43°00'29,5" N, 19°25'31,2" E, 11.10.2004, leg. and det. Erzberger, P., conf. Erzberger, P. 20.08.2022, B-Erzberger 10657, published in Papp and Erzberger (2010).

#### *Ulota crispula* Bruch

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, on the bark of *Sorbus*, 42°54'02,6" N, 19°35'45,6" E, 1100 m a.s.l., 23.07.2008, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185521, published in Papp *et al.* (2013) under the name *U. bruchii* Hornsch. ex Brid.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, 42°54'02,6" N, 19°35'45,6" E, 1100 m a.s.l., 23.07.2008, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 12952, published in Papp *et al.* (2013) under the name *U. crispa* (Hedw.) Brid.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana *Piceo-Abietetum*, on the bark of *Fagus*, 43°08'52,0" N, 19°05'48,0" E, 1421 m a.s.l., 05.10.2004, leg. and det. Papp, B., rev. Caparrós, R. 03.2011, BP 178715, published in Papp and Erzberger (2010) under the name *U. bruchii* Hornsch. ex Brid.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana *Piceo-Abietetum*, on the bark of *Picea*, 43°08'52,0" N, 19°05'48,0" E, 1421 m a.s.l., 05.10.2004, leg. and det. Papp, B., rev. Caparrós, R. 03.2011, BP 178707, published in Papp and Erzberger (2010) under the name *U. bruchii* Hornsch. ex Brid.

Durmitor National Park, Tara canyon, Crna pada forest, *Pineto-Fagetum*, 43°00'29,5" N, 19°25'31,2" E, 895 m a.s.l., 11.10.2004, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 10658, 10653 and 10663, published in Papp and Erzberger (2010) under the name *U. crispa* (Hedw.) Brid.

Durmitor Mts, Durmitor NP, Žabljak, between Crno jezero and Poljana, *Fagetum*, 43°07'29,5" N, 19°05'58,3" E, 1535–1580 m a.s.l., 05.10.2004, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 10370, 10371 and 10377, published in Papp and Erzberger (2010) under the name *U. crispa* (Hedw.) Brid.

***Ulota intermedia* Schimp.**

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, on the bark of *Sorbus*, 42°54'02,6" N, 19°35'45,6" E, 1100 m a.s.l., 23.07.2008, leg. and det. Papp, B., separated from BP 185521 by Papp, B. 07.2022, BP 197603, published in Papp *et al.* (2013) under the name *U. bruchii* Hornsch. ex Brid.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, *Alnetum* at the inflow of Biogradska reka stream, on the bark of *Alnus*, 42°53'44,3" N, 19°36'14,7" E, 1120 m a.s.l., 23.07.2008, leg. and det. Papp, B., rev. Papp, B. 07.2022, BP 185550, published in Papp *et al.* (2013) under the name *U. crispa* (Hedw.) Brid.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, *Alnetum* at the inflow of Biogradska reka stream, on the bark of *Alnus*, 42°53'44,3" N, 19°36'14,7" E, 1120 m a.s.l., 23.07.2008, leg. and det. Papp, B., rev. Dragičević, S. 07.2022, BP 185549, published in Papp *et al.* (2013) under the name *U. bruchii* Hornsch. ex Brid.

Bjelasica Mts, Biogradsko jezero lake at Mojkovac town, 1100 m, 42°54'02,6" N, 19°35'45,6" E, 23.07.2008, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 12969, published in Papp *et al.* (2013) under the name *U. crispa* (Hedw.) Brid.

Durmitor Mts, Durmitor NP, Žabljak, Sušičko jezero, 1170 m, 43°11'01,2" N, 18°59'59,0" E, 13.10.2004, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 10740a, published in Papp and Erzberger (2010) under the name *U. crispa* (Hedw.) Brid.

Durmitor Mts, Durmitor NP, Žabljak, on the bank of Malo jezero of Crno jezero, 1450 m, 43°08'31,7" N, 19°05'07,7" E, 10.10.2004, leg. and det. Erzberger, P., rev. Erzberger, P. 08.2022, B-Erzberger 10638, published in Papp and Erzberger (2010) under the name *U. crispa* (Hedw.) Brid.

Comments: The study of Caparrós *et al.* (2016) segregates the *Ulota crispa* complex into three species; *U. crispa* s.str., *U. crispula* Bruch, *U. intermedia* Schimp. The work of Blockeel (2017) also helps the correct identification of *Ulota* species. Based on revisions, *U. intermedia* is a new species in the Montenegrin bryophyte flora (Hodgetts and Lockhart 2020).

## CONCLUSIONS

More than hundred specimens held in the Bryophyte Herbarium of the Hungarian Natural History Museum, Budapest (BP) and in the the herbarium of P. Erzberger, Botanic Garden and Botanical Museum Berlin Dahlem (B) were revised. As result, two species (*Lophozia silvicola*, *Ulota intermedia*) can be added to the Montenegrin bryophyte flora. *Brachythecium tenuicale* (Spruce) Kindb. (syn. *Rhynchostegiella tenuicaulis* (Spruce) Kartt.) can be deleted from the bryophyte checklist of Montenegro. The recent records of *Gyrowesia tenuis* and *Scorpiurium sendtneri* were



revised, therefore the occurrence of these species in Montenegro is doubtful. Recent distribution of several taxa of conservation interest were clarified, e.g. rarities like *Neckera pumila* or *Ulota bruchii*. *Philonotis* and *Timmia* species are candidates for the new red list of Montenegro. Wetland species like *Philonotis* taxa are threatened, because due to climate change the extent and quality of their habitats are continuously decreasing. *Timmia* species living in the alpine zone, being subalpine, subarctic, dealpine elements (Düll 1985) are also threatened by climate warming.

Specimens preserved in the investigated herbariums give a sound base to the preparation of the new check- and redlist of Montenegro. These results could not be achieved without well-organised collecting trips and accessible, well-maintained collections, where the material is deposited.

We are glad to publish this paper in honour of the 90<sup>th</sup> birthday of professor Tamás Pócs, who loves expeditions, to make collections and work on herbarium materials.

**Acknowledgements** – Many thanks to László Lőkös for the preparation of the map.

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(submitted: 25.01.2023, accepted: 05.03.2023)