

Report on the annual excursion of BLAM to Slovenia from September 13th to 17th, 2023

Bericht zur Jahresexkursion der BLAM in Slowenien vom 13. bis 17. September 2023

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In the summer of 2022, Christian Berg and Martina Pörtl proposed the annual BLAM excursion for 2023 in Slovenia and asked the bryology group (consisting of 2 people) from the Biotechnical Faculty of the University of Ljubljana to help with the organisation. One annual excursion had already been conducted in Slovenia, specifically to the southern part of the Julian Alps in the Bavščica valley in 2003. It was organised by Helmut Mayrhofer from the University of Graz, Austria and Franc Batič from the University of Ljubljana. Therefore, the 2023 excursion would be a second BLAM excursion in Slovenia.

The Austrian colleagues expressed a wish to revisit the Julian Alps. We decided to stay in a mountain village, Gozd Martuljek (yellow dot in Fig. 1), in upper Sava Dolinka Valley and organised day excursions in different parts of the Triglav National Park (red dots in Fig. 1). Additionally, a decision was made to include a day excursion to the submediterranean region, specifically to the Škočjan caves and their surrounding areas.

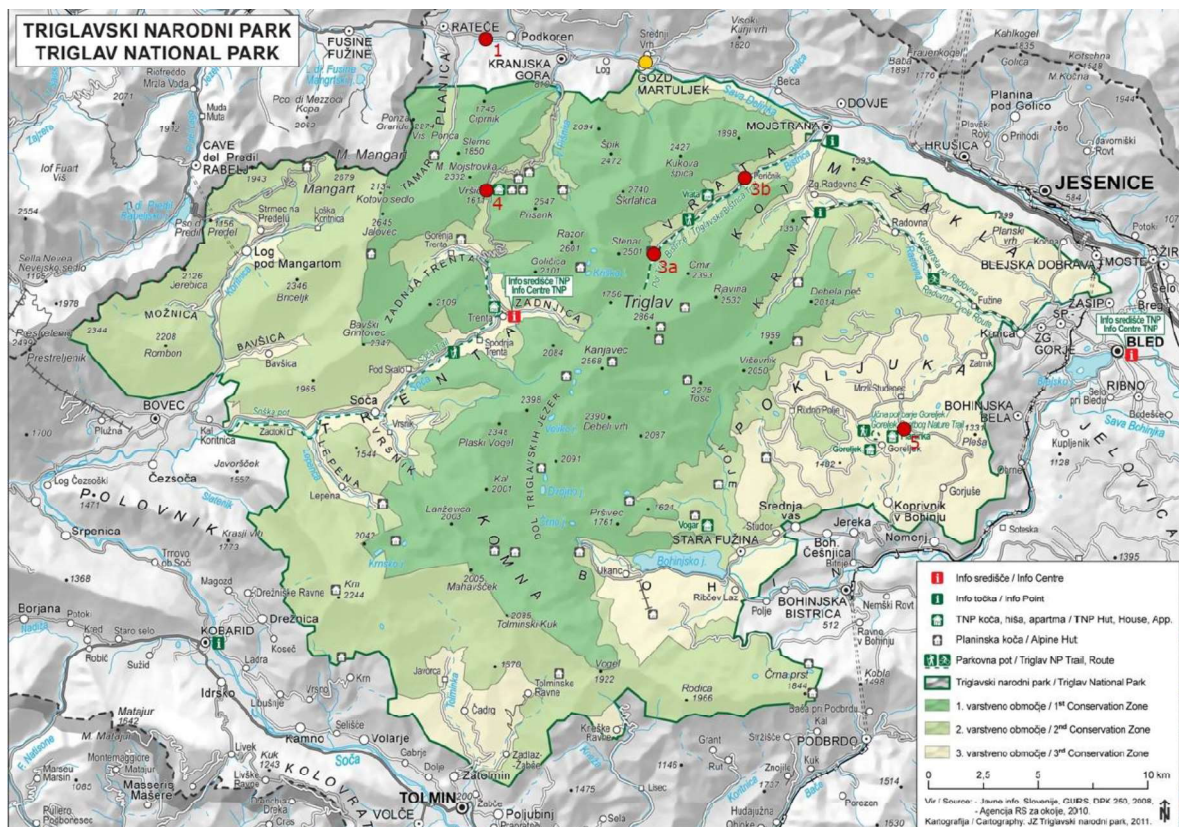


Fig. 1: The visited localities in Triglav National Park and its vicinity during the annual excursion of BLAM in 2023. (Source of the map: The website of the Triglav National Park)

Thirty-nine bryologists and lichenologists came to the event, mainly from Germany and Austria, but some also came from Croatia, Montenegro, Finland and Slovenia. All the attendees are in the group photo (Fig. 2).



Fig. 2: The participants of the annual excursion of BLAM in 2023 (Photo: Michael Lüth).

Results

During the excursions, we recorded almost 350 species of bryophytes. According to the latest checklists, there are 669 species of mosses (MARTINČIČ 2024), 173 species of liverworts and 2 species of hornworts in Slovene flora (MARTINČIČ 2011, 2016). The lists of liverworts and hornworts are already a bit longer, as some new species have been found in the last few years. During the excursion, some new bryophyte species for Slovene bryoflora were found. However, we don't include them in this report as they will be published separately as scientific papers. The complete list of bryophyte species will soon be available for download on the BLAM website.

There is no current checklist of lichens for Slovenia. An old list from 2000 (SUPPAN & al. 2000) and additions by Helmut Mayrhofer from 2006 (MAYRHOFER 2006) are available. In the meantime, further publications on lichens in Slovenia have appeared. The results of the BLAM excursion in 2003 have not yet been published. According to H. Mayrhofer, a new checklist is in progress.

Wednesday, 13th of September 2023

The short walk to Srednji Vrh was planned for those participants of the BLAM excursion who arrived soon enough on Wednesday. Because of the expected rain, we changed the plan and decided to visit the wetland Zelenci, the spring of the Sava Dolinka River, a few kilometres west of Gozd Martuljek. Zelenci is a Natura 2000 wetland site where headwaters, small lakes with bubbling underwater sources, a meandering stream, a transition mire and a bog are all located in a small area. There is a short walking trail from the parking to the spring and we couldn't avoid collecting samples and writing the first lists of bryophytes and lichens. Almost 55 species of bryophytes were recorded. Among them is the Natura 2000 species *Orthotrichum rogeri*. The first record of this species for Slovenia is from 2022 by Jan Eckstein, who found it at two localities in Soča Valley in 2022 (ELLIS & al. 2023). So, Zelenci became the third known locality of *Orthotrichum rogeri* in Slovenia. However, a few specimens of this tiny epiphytic moss were later found at the parking area in front of the Špik Hotel in Gozd Martuljek and on the trees of the nearby Camp Špik.

Several rare lichen species were found on south-exposed limestone rocks on the road from Gozd Martuljek to Srednji Vrh, such as *Lempholemma botryosum* s. lat., *L. isidiodes*, *Metamelanea caesiella*, or *Placynthium caesium*. Another interesting finding was *Cetraria oakesiana*.

Thursday, 14th of September 2023

For the first whole-day excursion, we rented a bus to take us to the southern, submediterranean part of Slovenia, where we visited the UNESCO site Škocjanske caves. Borut Kokalj and Renata Rozman, biologists from Škocjanske Caves Park, met us in the park, gave us a brief introduction to the park, presented the daily program and then joined us on our excursion.

During the presentation and while waiting to get the tickets for those who visited the cave, some people started investigating lichens and bryophytes on trees at the park's info centre. Then, we slowly walked towards the cave entrance in the carst dolina Globočak and explored the bryophytes and lichens of the thermophilous forest and calcareous rocks along the way. The primary vegetation of this region is from the association *Ostryo-Quercetum pubescentis*, which is degraded due to use and replaced by secondary vegetation *Seslerio autumnalis-Ostryetum* (MARTINČIČ 2001).



Fig. 3: Zelenci from the observation tower (Photo: Stefan Gey).



Fig. 4: *Orthotrichum rogeri* (Photo: Stefan Gey).

Approximately half of the group decided to visit the cave, so we needed to be at the entrance in time for the guided tour, where some bryophytes (*Amblystegium serpens*, *Fissidens taxifolius*, *F. bryoides*, *Rhynchostegiella tenella* and *Taxiphyllum wissgrillii*) could be seen around the cave lights (MARTINČIČ & al. 1981). The others walked aboveground towards the cave exit, where both parts of the group joined again. The exit from the cave is in the Velika dolina, collapse carst dolina with specific flora, which includes several glacial (*Primula auricula*, *Kernera saxatilis*, *Saxifraga crustata*, *Viola biflora*) and thermophilic relicts (*Adiantum capillis-veneris*, *Asparagus acutifolius*, *Juiperus oxycedrus*) (MARTINČIČ 2001).

We found over 115 bryophyte species in the area of Škocjanske Caves. Among them: *Didymodon ferrugineus*, which was found for the first time in the submediterranean region of Slovenia, *Cololejeuna rossettiana*, *Orthotrichum schimperi*, *Pohlia lutescens* and *Syntrichia virescens*, that are listed as data deficient with only old data in Slovene Red list (MARTINČIČ 2016), the vulnerable species *Frullania riparia* and *Habrodon perpusillus* which is so far only recorded from the town Bovec in the Alps in Slovenia. *Leptodon smithii* and *Cryphaea heteromalla* were already known from Škocjanske caves but are rare elsewhere in Slovenia. As a highlight, *Myurella sibirica* was discovered on a rock wall in the gorge.



Fig. 5: Part of the bryology group in the dolina Globočak (Photo: Simona Strgulc Krajšek).

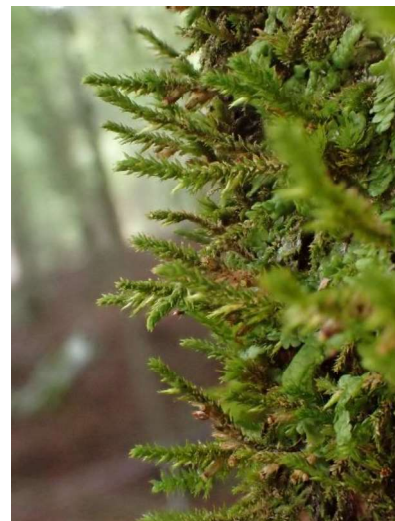


Fig. 6: *Cryphaea heteromalla* (Photo: Stefan Gey).



Fig. 7: *Frullania riparia*, the species from Slovene Red List (VU) was found in Škocjan Caves Park (Photo: Christian Berg).

So far, 124 lichens have been found in the visited areas of the Škocjan Caves Park. The trees, calcareous rocks and the thermophilous forest along the way to the cave entrance pointed out many epiphytic lichen species of subatlantic-mediterranean distribution, among them *Agonimia opuntiella*, *Collema furfuraceum*, *Flavoparmelia soledians*, *Hypotrachyna afrorevoluta*, *H. revoluta*, *Parmotrema perlatum*, *Physcia clementei* or *Physciella chloantha*. The shaded vertical limestone rocks were covered with a vegetation of characteristic lichens of humid locations sheltered from rain: *Dirina stenhammarii*, *Gyalecta hypoleuca*, *G. nidarosiensis*, *Lecanora pruinosa*, *Lepraria nivalis*, *Leproplaca cirrochroa*, *Sclerococcum griseisporodochium* and *Diplotomma scheideggerianum*, which grows on the host lichens *Leproplaca chrysodeta* and *L. xantholyta*. *Diplotomma scheideggerianum* is a rarely collected lichen known from only a few localities in the Mediterranean region of Europe, known among others from Slovenia (BRICAUD & ROUX 1991).



Fig. 8: *Lecanora pruinosa*, Škocjan Caves Park (Photo: Rainer Cezanne).

Friday, 15th of September 2023

Cloudy Friday was reserved for an excursion to alpine valley Vrata. This is the longest glacial valley on the northern side of the Julian Alps, stretching from the village Mojstrana to the foot of the North Wall of Slovene's highest mountain, Triglav. We left our cars near mountain hut Aljažev Dom, at approximately 1000 m elevation. We explored bryophytes and lichens in the forest, the dry riverbed of Bistrica and carbonate slopes at the gable of the valley. We found around 170 taxa of bryophytes and more than 150 lichens.

The forest is humid, with a lot of wet, decaying wood on the ground. That is a perfect habitat for several liverworts and Natura 2000 moss species *Buxbaumia viridis*, which we found in several populations rich with well-developed sporophytes. New for this part of Julian Alps were the liverwort *Radula lindenbergiana*, found on several trees near the parking place, as well as the mosses *Saelania glaucescens* and *Ulota coarctata*. The liverwort *Lophozia ascendens* was found for the second time in Slovenia. The only other record is from Olševa mountain in the Karavanke Mountains (MARTINČIČ 2003, specimen in Herbarium LJU). *Orthotrichum cupulatum* var. *riparium* and *Ptychostomum arcticum* have not been recorded in Slovenia since 1910 (MARTINČIČ 2024).



Fig. 9: Bryology group in the forest of Vrata Valley (Photo: Simona Strgulc Krajšek).



Fig. 10: Male plant of *Radula lindenbergiana* (Photo: Stefan Gey).



Fig. 11: *Saelania glaucescens*, a new species for the eastern Julian Alps (Photo: Martina Pörtl).

On the list of interesting finds, we should also add *Cyrtomnium hymenophylloides*, *Distichium inclinatum*, *Lescuraea mutabilis*, *Microhypnum sauteri*, *Meesia uliginosa*, *Myurella julacea*, *Paraleucobryum sauteri*, *Ptychostomum zieri*, *Scapania cuspiduligera*, *Seligeria trifaria*, *Timmia norvegica* and *Tortella fragilis*.

Interesting finds of lichens have been made in the forest. To be noted are *Agonimia repleta*, *Biatora mendax*, *B. ocelliformis*, *Blastenia herbidella*, *Cetrelia monachorum*, *C. olivetorum*, *Cheiromycina flabelliformis*, *Dictyocatenulata alba*, *Parmeliella triptophylla*, *Pertusaria alpina* and *Verrucaria ulmi*. In the dry riverbed of Bistrica and carbonate slopes at the gable of the valley, we found, among others, *Hymenelia epulotica*, *H. melanocarpa*, *H. rhodopis*, *Polyblastia albida* and *Polyblastia dermatodes*. At the edge of the river Bistrica, we discovered the rare *Fuscopannaria nebulosa* and the recently described species *Normandina chlorococca*, separated from *N. acroglypta* by ORANGE (2022). At the same site, there was a large population of the lichenicolous fungi, *Scutula epiblastemata*, parasitising on *Peltigera praetextata*.



Fig. 12: *Normandina chlorococca*, found at the edge of the river Bistrica (Photo: Norbert Stapper).

On the way back, we stopped at Peričnik waterfall. The steep path leads from the road to the lower and upper waterfalls. The bedrock in the carbonate conglomerate, especially the wet habitats near and behind the waterfalls, are interesting habitats for some rare bryophyte species, like *Moerckia hibernica*, that has not been found in Slovenia for more than 100 years and tiny species from the genus *Seligeria*, including the rare *Seligeria irrigata*, which has been just recently found in Slovenia for the first time (ELLIS & al. 2023). *Conardia compacta* and *Platydictya jungermannioides* were hiding in damp rock crevices. *Moerckia hibernica* could be found a second time during this wonderful excursion on the banks of a dried-out riverbed.



Fig. 13: The upper Peričnik waterfall (Photo: Simona Strgulc Krajšek).



Fig. 14: The liverwort *Moerckia hibernica* was found behind the lower Peričnik waterfall and in a dried-out riverbed near Aljažev Dom (Photo: Martina Pörtl).

The humid conditions in the forest stands around the waterfall provide good growing conditions for epiphytic lichens such as *Biatora chrysantha*, *Collema nigrescens*, *Nephroma parile*, *Parmeliella triptophylla*, *Usnea barbata*, *U. dasopoga*, *U. intermedia*, *U. subfloridana*, or the epixylic lichen *Lecidea leprarioides*. Large populations of *Protopannaria pezizoides* and *Solorina saccata* were seen on the calcareous soil.

Saturday, 16th of September 2023

On a lovely sunny Saturday, the popular Vršič pass was crowded with tourists already in the morning. Finding a parking place for all our group's cars was difficult, but we managed and started our hike towards Slemenova Špica Peak. The most exciting part of the trail was the area between Vratca Saddle and Slemenova špica. This is an area with subalpine meadows and several carbonate rocks that are the habitats of various bryophyte and lichen species. The area is in the central part of Triglav National Park.

Several people did not reach Slemenova Špica, from where there is a great view of the Julian Alps, Valley Planica, but also Austria and Italy, as the borders with these two countries are only a few kilometres away.

The most exciting find from this day was the lichen *Polyblastia cruciseptata*, a new species discovered and described by Othmar Breuss (BREUSS 2024). *Polyblastia cruciseptata* belongs to *Polyblastia* subgen. *Coccospora* and is closely related to *P. singularis*, but differs in having an endolithic thallus and the larger, fully immersed perithecia lack an involucrellum.

Over 130 bryophyte species were recorded on this tour. Several other rare and interesting liverworts were found here: *Asterella lindenbergiana* and *Saccobasis polita*, which were found for the first time after more than 100 years (MARTINČIČ 2016), *Clevea hyalina*, *Moerckia hibernica*, *Odonotoschisma macounii*, *Peltolepis quadrata*, *Sauteria alpina* and *Scapania cuspiduligera*.



Fig. 15: One of the views from the trail to Slemenova Špica (Photo: Michael Lüth).



Fig. 16: Othmar Breuss collecting the type specimen of *Polyblastia cruciseptata* (Photo: Marion Eichler).



Fig. 17: The tiny *Cyrtomnium hymenophylloides* is often neglected (Photo: Stefan Gey).



Fig. 18: *Sauteria alpina*, a species from Slovene Red List of bryophytes (Photo: Stefan Gey).

The finding of *Ptychostomum arcticum* was the first after more than 100 years. The old locality was the mountain Mangart (MARTINČIČ 2016). The other significant moss species were: *Brachythecium japygium*, *Cyrtomnium hymenophylloides*, *Dicranum majus*, *Didymodon giganteus*, *Distichium inclinatum*, *Encalypta alpina*, *Heterocladiella dimorpha*, *Hylocomiastrum pyrenaicum*, *Meesia uliginosa*, *Microhypnum sauteri*, *Oncophorus virens* agg., *Ptychostomum elegans*, *Saelania glaucescens*, *Tayloria froelichiana* and *T. serrata*.

One of the most interesting sites for lichens was the vicinity of pass Vratca with well-lit exposed limestone outcrops and boulders covered mainly with crustose lichen species. Othmar Breuss, who focused on pyrenocarps, found a lot of mostly rare lichen species: Besides the newly described *Polyblastia cruciseptata* he noted *Hymenelia heteromorpha*, *Polyblastia cupularis*, *P. microcarpa*, *Thelidium auruntii*, *Verrucaria caerulea*, *V. fischeri*, *V. pinguicula*, *V. subcincta*, *V. transiliens*, *Callome multipartita*. In addition, *Bilimbia lobulata*, *Bryobilimbia hypnorum*, *Catapyrenium cinereum*, *Psoroglaena biatorella*, *Scytinium imbricatum*, *S. intermedium* and *Thalloidima rosulatum* could be found in earth-filled cracks and on decaying mosses.

On damp, bare soil grew the rare species *Ainoa geochroa* and *Thelocarpon impressellum*, whilst we found *Caloplaca isidiigera*, *Gyalolechia aurea*, *Hymenelia carnosula* and *Scytinium parvum* on bare limestone rocks. Also noteworthy is the lichenicolous fungi *Scutula tuberculosa* growing on *Solorina saccata*, whereas *Dacampia hookeri* is an autonomous lichen, partly beginning parasitic on *Solorina bispora*.

Sunday, 17th of September 2023

Several people had to leave Gozd Martuljek in the morning, but some of us visited the Pokljuka plateau to see the peat bog Šijec and the humid spruce forest around it. Šijec is the best preserved *Sphagnum* bog in Slovenia. It is already well-explored but lacks newer research, especially on bryophyte flora.



Fig. 19: *Caloplaca isidiigera*; Vršič pass, mountain trail to Slemenova špica (Photo: Rainer Cezanne).



Fig. 20: *Gyalolechia aurea*; Vršič pass, mountain trail to Slemenova špica (Photo: Rainer Cezanne).



Fig. 21: *Scutula tuberculosa* on *Solorina bispora* was found along the mountain trail from Vršič pass to Slemenova špica (Photo: Rainer Cezanne).



Fig. 22: Peat bog Šijec with several *Sphagnum* species (Photo: Stefan Gey).



Fig. 23: *Meesia triquetra* and *Hamatocaulis vernicosus* are two of the rare species from Šijec (Photo: Simona Strgulc Krajšek).

In the spruce forest by Šijec, a new species of *Dicranum* for Slovenia was found. We recorded 15 species of *Sphagnum*: *S. angustifolium*, *S. capillifolium*, *S. contortum*, *S. cuspidatum*, *S. divinum*, *S. fallax*, *S. fuscum*, *S. girgensohnii*, *S. medium*, *S. palustre*, *S. papillosum*, *S. quinquefarium*, *S. russowii*, *S. tenellum* and *S. warnstorffii*. On the Šijec peat bog, several other rare species were found: Natura 2000 species *Hamatocaulis vernicosus* as well as *Calliergon giganteum*, *Calypogeia sphagnicola*, *Kurzia pauciflora*, *Lophozia guttulata*, *Meesia triquetra*, *Mylia anomala*, *Neoorthocaulis attenuatus*, *Odontoschisma fluitans*, *Scapania umbrosa* and *Tomtentypnum nitens*. From *Rhytidadelphus subpinnatus*, a few recent records exist in Slovenia, but they have not been published yet, so this is the first published record after 1910 (MARTINČIČ 2024).

In the spruce forests in the surrounding area of the peat bog Šijec, we noticed characteristic lichens of near-natural coniferous forests with high precipitation and humidity at higher altitudes: *Alectoria sarmentosa*, *Evernia divaricata*, *Ochrolechia szatalaënsis*, *Ramalina thrausta* and *Usnea* species such as *U. barbata*, *U. cavernosa*, *U. dasopoga*, or *U. subfloridana*. Additionally, we found the rarely collected lichens *Arthonia ligniaria*, *Athallia alnetorum* and *Candelariella boleana*. There were also lichens that are typical for natural spruce occurrences, such as *Biatora chrysantha* or *B. helvola*; the first named species was parasited by the lichenicolous fungi *Bryostigma biatoricola*, a species not yet known from Slovenia.

Conclusions

The BLAM meeting in Slovenia was a nice event with exciting excursions and enough time to discuss, chat and have fun. From the Slovene point of view, the excursion was also significant because of an enormous amount of valuable new data on bryophytes and lichens and gaining more experience in recognising bryophytes on the field. Several interesting and rare species were found, some of which haven't been found for several decades and some in Slovenia for the first time. One lichen species found in the Julian Alps, *Polyblastia cruciseptata*, is new to science. With new acquaintances of expert lichenologists, it was a good starting point to revive the lichenology group in Slovenia, which unfortunately does not exist and invite students to join this exciting field. Thank you all for coming!



Fig. 24: *Ochrolechia szatalaënsis*, on a dead spruce branch near the peak bog Šijec (Photo: Rainer Cezanne).



Fig. 25: *Peltigera aptosa*, surroundings of the peak bog Šijec (Photo: Rainer Cezanne).

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Literature

- BREUSS, O. 2024: A new *Polyblastia* species (lichenised Ascomycota, Verrucariaceae) from Slovenia. – *Österr. Z. Pilzk.* **31**: 99–104.
- BRICAUD, O. & ROUX, C. 1991: *Buellia scheideggeriana* Bricaud et Roux sp. nov., espece nouvelle de lichen. – *Nova Hedwigia* **52(1-2)**: 161–172.
- ELLIS, L. T., ACEÑOLAZA, P. G., ALVAREZ, D., BEDNAREK-OCHYRA, H., BRZĘCZEK, D., CABEZUDO, B., CEDRÉS-PERDOMO, R. D., CUBAS, B. S., DE FARIA LOPES, S., ECKSTEIN, J., EIROA, D., ESCOLÀ-LAMORA, N., FEDOSOV, V. E., GUERRA, J., JIMÉNEZ-ALFARO, B., JUKONIENÉ, I., KIEBACHER, T., KOPONEN, T., STRGULC KRAJŠEK, S., KUTNAR, L., LAVRINENKO, K. V., LOSADA-LIMA, A., MAMONTOV, YU. S., MUÑOZ, J., NEJFELD, P., NORHAZRINA, N., O'LEARY, S. V., PAPP, B., PÉREZ-HAASE, A., PLÁŠEK, V., PORLEY, R. D., SABOVLJEVIĆ, M., SCHNYDER, N., SHKURKO, A. V., SILVA, J. B., ŠIRKA, P., STEBEL, A., SUÁREZ, G. M., SYAZWANA, N., UOTILA, P. & VIRCHENKO V. M. 2023. New national and regional bryophyte records, 74. – *Journal of Bryology* **45(3)**: 249–262. 10.1080/03736687.2023.2276605
- MARTINČIČ, A., VRHOVŠEK, D. & BATIČ, F. 1981. Flora v jamah Slovenije z umetno osvetlitvijo. – *Biološki vestnik* **29(2)**: 27–56.
- MARTINČIČ, A. 2001. Škocjanske jame pri Divači. Flora, vegetacija, ekologija. Vegetacija Slovenije in sosednjih območij. – *Zbornik Simpozija Vegetacija Slovenije in sosednjih območij*: 110–126.

- MARTINČIČ, A. 2011. Seznam jetrenjakov (Marchantiophyta) in rogovnjakov (Anthocerotophyta) Slovenije. – *Scopolia* **71**: 1–38.
- MARTINČIČ A. 2016. Updated Red List of bryophytes of Slovenia. – *Hacquetia* **15(1)**: 107–126.
- MARTINČIČ, A. 2024. New Checklist and the Red list of the mosses (Bryophyta) of Slovenia. – *Hacquetia* **23(1)**: 69–118.
- MAYRHOFER, H. 2006. Additions and correction to the catalogue of the lichenised and lichenicolous fungi of Slovenia I. – *Razprave IV. Razreda Sazu* **47(1)**: 201–229.
- ORANGE, A. 2022. The crustose species of *Normandina* (Verrucariaceae). – *Lichenologist* **54(6)**: 371–378.
- SUPPAN, U., PRÜGGER, J. & MAYRHOFER, H. 2000. Catalogue of the lichenised and lichenicolous fungi of Slovenia. – *Bibliotheca Lichenologica* **76**: 1–215.

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