

Original Research

Significant records of plants, algae, fungi, and animals in SE Europe and adjacent regions, 4

Aljaž Curk¹, Maj Kastelic¹, Aljaž Jakob², Alenka Mihorič³,
Predrag Jakšić⁴, Tina Klenovšek⁵

Editors: Simona Strgulc Krajšek¹ and Tina Klenovšek⁵

Abstract

In this article, we present the first records of the bryophyte *Schistostega pennata* in Central Slovenia. In addition to its typical occurrence on rocky surfaces, *Schistostega pennata* was observed on bare loose soil. We also report a rare natural aberration of the male meadow brown butterfly, *Maniola jurtina* subsp. *subtus-albida*. This represents the first record of this aberration for the Balkan Peninsula.

Keywords

Schistostega pennata; bryophytes; mosses; *Maniola jurtina* ab. *subtus-albida*; Nymphalidae; Slovenia; Montenegro

¹ University of Ljubljana, Biotechnical Faculty, Jamnikarjeva ulica 101, 1000 Ljubljana, Slovenia

² ZRC SAZU, Jovan Hadži Institute of Biology, Novi trg 2, 1000 Ljubljana, Slovenia

³ Linhartova ul. 3, 1233 Dob, Slovenia

⁴ Čingrijina 14/25, 11000 Beograd, Serbia

⁵ University of Maribor, Faculty of Natural Sciences and Mathematics, Koroška c. 160, 2000 Maribor, Slovenia

All authors contributed equally to this work.
For correspondence, see the individual chapters.

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Pomembne zabeležke rastlin, alg, gliv in živali za JV Evropo in sosednje regije, 4

Izvleček

V tem članku predstavljamo prve zapise o mahovcu *Schistostega pennata* v osrednji Sloveniji. Poleg tipičnega pojavljanja na skalnatih površinah je bil *Schistostega pennata* opažen tudi na goli, rahli prsti. Poročamo tudi o redki naravni aberaciji samca metulja *Maniola jurtina* subsp. *subtus-albida*. To je prvi zapis te aberacije na Balkanskem polotoku.

Ključne besede

Schistostega pennata; briofiti; mahovi; *Maniola jurtina* ab. *subtus-albida*; Nymphalidae; Slovenija; Črna gora

Schistostega pennata, (Hedw.) F. Weber & D. Mohr fam.

Schistostegaceae

Author(s)	Aljaž Curk, Maj Kastelic, Aljaž Jakob, Alenka Mihorič
Corresponding author	Aljaž Jakob (aljaz.jakob@zrc-sazu.si)
Leg.	Aljaž Curk, Maj Kastelic, Aljaž Jakob, Alenka Mihorič
Country	Slovenia
Statement of significance	First finds of the species in Central Slovenia
Locality description	<p>Slovenia, Ljubljana, Golovec, along a forestry road between the observatory and the new Codelli bridge, 200 m NW of the observatory, 370 m a. s. l.</p> <p>Slovenia, Ljubljana, Tivoli, Rožnik and Šiška Hill Landscape Park, near a trail in the forest, 200 m SW of the Petra Držaja hospital, 305 m a. s. l.</p> <p>Slovenia, Ljubljana, Rožnik, along a walking path from the parking lot of ZOO Ljubljana to Cankarjev vrh, 140 m NE of the main entrance to the ZOO, 316 m. a. s. l.</p> <p>Slovenia, Gorenjska, Lukovica, Mali Jelnik, shale hollow next to a forest path, 490 m a. s. l.</p>
Habitat	<p>A small depression in the clay on the bank of the forestry road</p> <p>A crevice cut horizontally into the slope of the hill, comprised of loose soil and plant roots</p> <p>Loose soil in a horizontal crevice under an overhang of clay, caused by erosion</p> <p>On shale between roots in the road cut bank in a mixed forest, SE exposition</p>
Date of observation	<p>2024-04-26</p> <p>2024-03-16</p> <p>2024-10-24</p> <p>2024-11-01</p>
Geographical coordinates	<p>N 46.0454291°, E 14.53018952°</p> <p>N 46.066693°, E 14.485182°</p> <p>N 46.0536539°, E 14.4733961°</p> <p>N 46.17844°, E 14.80125°</p>
Voucher	Photo documented

On site no. 1 *Schistostega pennata* grew in small depressions in a steep bank above a forestry road. Only protonema was present. On site no. 2, it was located in a crevice cut horizontally into the slope, where it grew on unconsolidated soil sediment intertwined with roots. The habitat was

shaded, protonema inhabited the bottom of this crevice. On site no. 3 the plant grew above a walking path in a few metres-long horizontal crevice under a soil overhang. The habitat was shaded; other moss species grew in lighter parts of the crevice. Protonema and gametophores were

present (Figure 1). On site no. 4 the plant was growing on shale in the roadcut directly on the rock, exposed to the morning sun. Protonema and gametophytes were present (Figure 2).

The moss is recognisable by its reflective protonema. This is caused by enlarged vacuoles of protonemal cells, acting like lenses (Atherton et al., 2010; Robla et al., 2023). Shoots are 1.5cm tall, with short, nerveless and decurrent green leaves arranged in 2 ranks. It is found in Europe from Spain to Russia (Ignatov & Ignatova, 2001; Hodgetts & Lockhart, 2020). It is considered vulnerable in Finland and Spain and near-threatened in Portugal, but least-concern on the Slovenian and European Red Lists (Hodgetts & Lockhart, 2020; Martinčič 2023). In Slovenia, the recent finds are in the Alpine parts of the country in the Julian Alps, Karawanks, Pohorje, Kozjak-mountain and Meža-Mislinja valley, and additionally before 1959 in the Kamnik-Savinja Alps. The observations published in this paper are the first from Central Slovenia, in the pre-Alpine part of the country.

Schistostega pennata grows on rocky surfaces such as siliceous and other non-calcareous rocks, overhangs

and walls of excavations (Ochyra et. al., 1988). An example of such a site is depicted in Figure 2. Similar habitats are described from Poland (Ochyra et. al., 1988), Norway (Lye, 1972), Japan (Kanda, 1971), North America (Crum & Anderson, 1981) and Russia (Ignatov & Ignatova, 2001). It does not tolerate competition from other plants (Atherton et al., 2010). Habitats that we found in Central Slovenia on localities 1-3 differ from the habitats described above; here, it is found on bare loose soil (Figure 1). Similar habitats are reported from central Russia (Ignatov & Ignatova 2001) and Poland (Ochyra et. al., 1988), where the plant is found on bare soil on the upturnings of fallen trees. In our cases, the soil is exposed by roadcuts and erosion. The synanthropic nature of all our new localities suggests that this species may benefit from human activity in an area where natural processes providing appropriate habitat are largely absent.

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Figure 1. Gametophytes of *Schistostega pennata* growing on soil on site no. 3. (photo: M. Kastelic).

Slika 1. Gametofiti *Schistostega pennata*, ki rastejo na tleh na lokaciji št. 3. (foto: M. Kastelic).

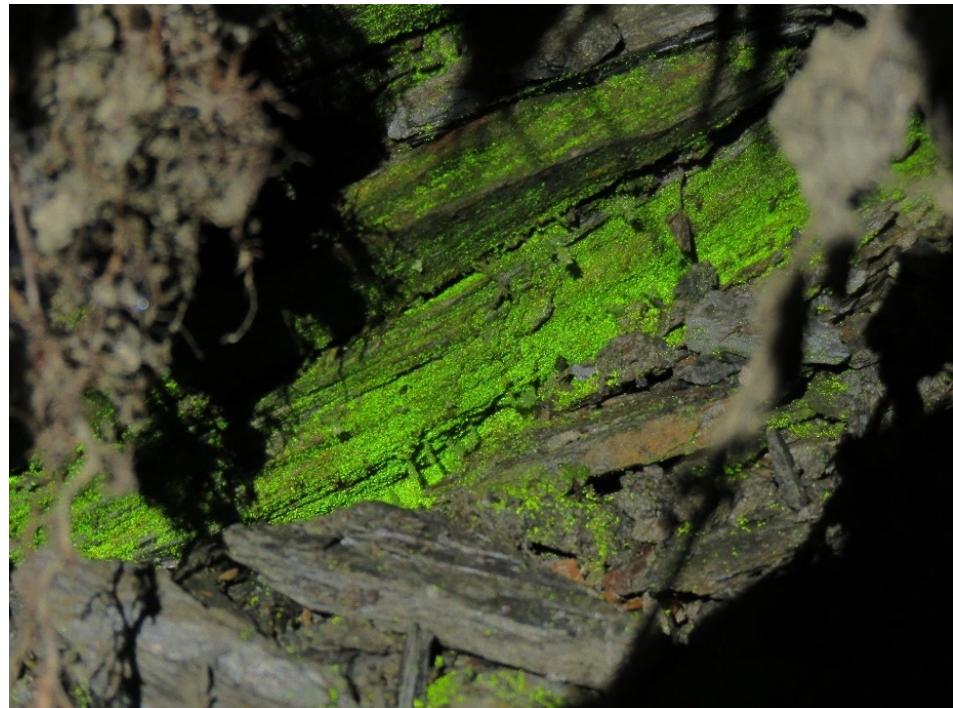


Figure 2. Reflection of green light from the protonema of *Schistostega pennata* on site no. 4. (photo: A. Mihorič).

Slika 2. Odboj zelene svetlobe od protoneme *Schistostega pennata* na lokaciji št. 4. (foto: A. Mihorič).

Maniola jurtina (Linnaeus, 1758) ab. *subtus-albida* Silbernagel, 1943, fam. Nymphalidae (animal)

Author(s)	Predrag Jakšić, Tina Klenovšek
Corresponding author	Predrag Jakšić (jaksicpredrag@gmail.com)
Leg.	Predrag Jakšić
Country	Montenegro
Statement of significance	Rare natural aberration of the meadow brown, <i>Maniola jurtina</i> . First record for the Balkan Peninsula.
Locality description	Montenegro, Čakor, Karamanov krš, 1134 m a. s. l.
Habitat	Rocky, limestone-dominated grassland with shallow soil and xerophytic grassland species.
Date of observation	2022-07-05
Geographical coordinates	N 42.68056°, E 19.92417°
Voucher	Author's (P.J.) personal collection

The meadow brown, *Maniola jurtina* (Linnaeus, 1758), is a butterfly from the family Nymphalidae distributed across the Palearctic region. Its habitats include grasslands, forest edges, shrublands, and woodland clearings. Its altitudinal range spans from sea level up to approximately 2000 m, and it is active from May to September (Scott, 1990). The wings of *Maniola jurtina* are dark brown, with a distinctive large eyespot located in the upper third of the forewings. The underside of the hindwings displays a pattern of small eyespots. The number of the small eyespots is variable, typically numbering two, though the total can range from zero to six (Scott, 1990).

An aberration is an unusual variation in the wing pattern, shape or colouration, or other body structures, within a particular species. Variations of the usual form of a species can result from genetic (Rivera-Colón et al., 2020) or environmental factors (Mowbray et al., 2024) or a combination of both. Some aberrant forms, although rare, can occur on a relatively regular basis and were, in the past,

documented as new forms of a butterfly species. Many forms, aberrations, and varieties were also described in *M. jurtina* (Spuler, 1908; Rebel & Zerny, 1931; Russwurm, 1978). Nowadays, they no longer hold taxonomic significance.

The aberration of male *M. jurtina* *subtus-albida* was first described by Silbernagel (1943). The underside of the forewings of which, in typical individuals, is rich ochre yellow with a wide dark border, in this form is whitish with a faint yellowish tinge. The dark border is preserved. The upper-side of both wings is normal. Only the dusting of the forewings is slightly translucent due to the light background. This aberration has only been documented in specimens collected in the Czech Republic (Silbernagel, 1943) and Great Britain (Russwurm, 1978; Barrington, 1987, 1991). Now it is also reported for Montenegro (Figure 3), where it was collected by the first author (P.J.). Compared to the specimen presented in Russwurm (1978), the black eyespots on the underside of the forewings of the specimen collected in Montenegro are not centred with a white spot (pupilled).



Figure 3. *Maniola jurtina* ab. *subtus-albida*. Left: Rare natural aberration of a male meadow brown, *Maniola jurtina* ab. *subtus-albida* collected on Karamanov krš in Montenegro (underside view) (photo: Predrag Jakšić). Right: Eyespot on the underside of the right forewing (photo: Miloš Jović).

Slika 3. *Maniola jurtina* ab. *subtus-albida*. Levo: Redka naravna aberacija samca navadnega lešnikarja, *Maniola jurtina* ab. *subtus-albida*, najdena na Karamanovem kršu v Črni gori (pogled od spodaj) (foto: Predrag Jakšić). Desno: Očesna lisa na spodnji strani desnega sprednjega krila (foto: Miloš Jović).

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