

A new *Polyblastia* species (lichenized *Ascomycota*, *Verrucariaceae*) from Slovenia

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Abstract: The lichen *Polyblastia cruciseptata* is formally described from calcareous rocks in the Julian Alps in Slovenia. It belongs to a group of species with (sub)spherical, small, few-celled ascospores with cruciform septation. From the other species of this group, it is readily distinguished by the lack of an involucrellum. A table summarizes the features of the five members of this species group.

Zusammenfassung: Die Flechte *Polyblastia cruciseptata* wird von Kalkfelsen in den Julischen Alpen Sloweniens beschrieben. Sie gehört zu einer Gruppe von Arten mit kleinen, fast kugeligen, wenigzelligen, kreuzweise septierten Ascosporen. Im Gegensatz zu den anderen Arten dieser Gruppe weist sie kein Involucrellum auf. Die Merkmale dieser fünf Arten werden tabellarisch einander gegenübergestellt.

The 2023 excursion with the BLAM (Bryologisch-lichenologische Arbeitsgemeinschaft für Mitteleuropa) visited the Julian Alps in northwestern Slovenia close to the Austrian and Italian borders. On the 16th of September we visited Vršič pass, the highest point at the road from Kranjska Gora (Sava valley) to Soča valley and within the central area of Triglav National Park. From here the participants took a steep hiking path towards Slemenova špica. The richest finds were made in the vicinity of pass Vratca (1807 m), a site with well-lit exposed limestone outcrops and boulders with a diverse lichen cover mainly by crustose species (Fig. 1). The present author focused on pyrenocarps. A boulder at this site yielded the species described below. Accompanying saxicolous lichens were *Acarospora macrospora* (HEPP) BAGL., *Callome multipartita* (SM.) OTÁLORA & al., *Hymenelia heteromorpha* (KREMP.) LUTZONI, *Polyblastia cupularis* A. MASSAL. and *P. microcarpa* (ARNOLD) LETTAU, *Thelidium auruntii* (A. MASSAL.) KREMP., *T. incavatum* MUDD and *T. papulare* (FR.) ARNOLD, *Verrucaria caerulea* DC., *V. dolomitica* (A. MASSAL.) KREMP., *V. fischeri* MÜLL.ARG., *V. pinguicula* A. MASSAL., *V. subcincta* NYL. and *V. transiliens* (ARNOLD) LETTAU. In earth-filled cracks and on decaying mosses *Bilimbia lobulata* (SOMMERF.) HAFELLNER & COPPINS, *Bryobilimbia hypnorum* (LIB.) FRYDAY & al., *Bryoplaca sinapisperma* (LAM.) SØCHTING & al., *Catapyrenium cinereum* (PERS.) KÖRB., *Psoroglaena biato-*

rella (ARNOLD) LÜCKING & SÉRUS., *Scytinium imbricatum* (P. M. JØRG.) OTÁLORA & al., *S. intermedium* (ARNOLD) OTÁLORA & al. and *Thalloidima rosulatum* ANZI were found.



Fig. 1. (left). Collecting site. Phot. O. BREUSS. – Fig. 2. (right). *Polyblastia cruciseptata*. Type, habitus. Perithecia in pits of the rock with only their apices showing. Width of photograph: 4 mm. Phot. O. BREUSS.

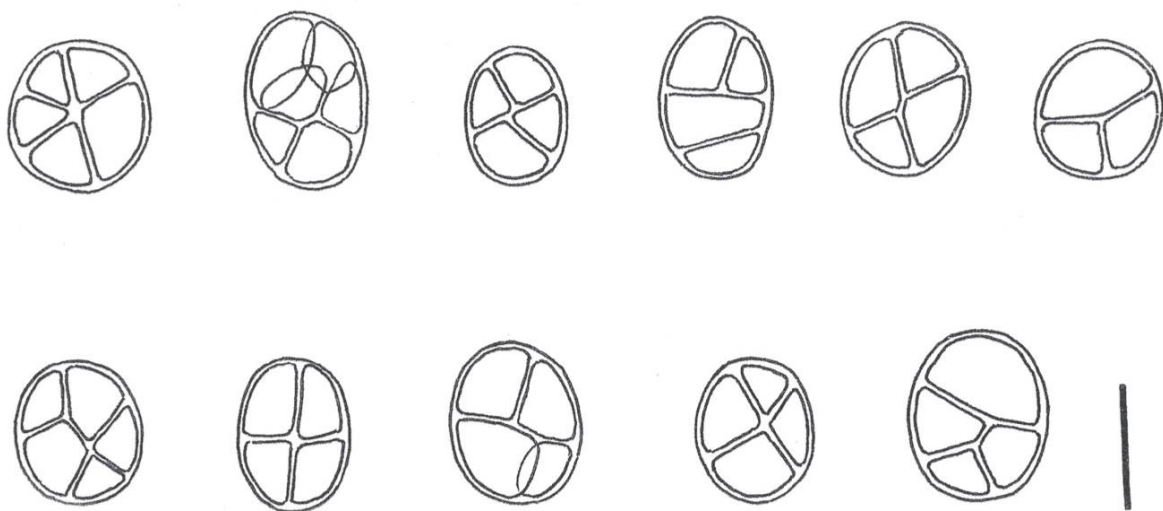


Fig. 3. *Polyblastia cruciseptata*. Holotype, ascospores. Bar: 10 μ m. Delineatus O. BREUSS.

The Julian Alps are part of the Southern Limestone Alps and are mainly built of Dachstein limestone. Most of the Slovenian part belongs to the Triglav National Park. A short overview on phytogeography and climate as well as a list of lichens is provided by BATIC & al. (2003). A compilation of the records made during the recent field trip is currently being prepared.

Material and methods

The type specimen was recently collected from a calcareous rock in the alpine belt of the Julian Alps in Slovenia and deposited in LI. External morphological features were observed with a WILD-M7A stereomicroscope. Microscopical characters were observed with a ZEISS Axiolab transmission microscope on thin hand-cut sections mounted in water and lactophenol-cotton blue.

The new species

Polyblastia cruciseptata BREUSS, spec. nov. – Figs. 2, 3

Mycobank No.: MB 852085

Diagnosis: Ascospores as in *Polyblastia singularis* (KREMP.) ARNOLD: small and few-celled with mainly cruciform septation. Differing from this species in having an endolithic thallus and larger, fully immersed perithecia lacking an involucrellum.

Holotype: Slovenia, Gorenjska region, Julian Alps, Kranjska Gora, the mountain trail from Vršič pass to Slemenova špica, around pass Vratca, 1730–1807 m s. m., 9549/3 (coordinates pass Vratca 1807 m: 46.441218, 13.742270), 16. September 2023, leg. O. BREUSS no. 35.688 (LI).

Etymology: The epithet refers to the cross-wise septation of many of the ascospores, from Latin *crux* = cross.

Description:

Thallus: endolithic, not marked off the surrounding rock surface. Photobiont an unidentified green alga.

Perithecia: fully immersed in pits of the rock, spherical.

Exciple: 0.15–0.25 mm diam., brown, c. 25 µm thick, apically black.

Involucrellum: lacking.

Interascal filaments: lacking. Periphysoids 20–25 µm long, simple or sparingly branched.

Asci: clavate, 45–55 × 17–22 µm, 8-spored.

Ascospores: hyaline, broadly ellipsoidal to spherical, pauciseptate submuriform, with mostly oblique, often cruciform septation, thin-walled, (9–)10–14(–15) × (8–)9–12 µm (n = 70), 3–6-celled in median optical section, perispor lacking or very thin.

Notes: On account of its pauciseptate subspherical ascospores, the new species belongs to *Polyblastia* subgen. *Coccospora* KÖRB. ex ZSCHACKE, lectotypified with *P. plicata* (A. MASSAL.) LÖNNR. (HAFELLNER 2011). Four species have been recognized: *Polyblastia plicata*, *P. quartzina* LYNGE, *P. singularis* (KREMP.) ARNOLD and *P. suzae* SERVÍT.

ROUX & al. (2014) and NIMIS (2016) consider *P. singularis* to be a synonym of *P. plicata*. According to TIBELL & TIBELL (2017), *P. singularis* is a separate species with smaller, subglobose ascospores often with cruciate septation, whereas *P. plicata* has ellipsoidal rather than globose ascospores without cruciate septation. According to the observations by the present author the spore sizes have wider magnitudinal ranges than given by TIBELL & TIBELL (2017) and their septation pattern varies considerably; thus spore characteristics are hardly differential (see Tab. 1). The main difference between these two species seems to be the thallus development: in *P. plicata* the thallus is thick, with perithecia largely immersed within the thallus (with only their apices slightly elevated) whereas the perithecia in *P. singularis* are usually half to largely immersed in pits of the rock. The smallest ascospores are to be found in *P. suzae*.

All species are (rather) rare. *Polyblastia suzae* is known only from the type locality in the Czech Republic (SERVÍT 1936), *P. quartzina* was described from Novaya Zemlya (LYNGE 1928) and has since been reported from a few localities in the British Isles and southern France (SWINSCOW 1971, ORANGE & al. 2023, ROUX & al. 2014), *P. plicata* is known from Austria, Germany, Italy, Switzerland, and Scandinavia (ZSCHACKE 1914, SAVIĆ & TIBELL 2012, HAFELLNER & TÜRK 2016, TIBELL & TIBELL 2017, DIETRICH & BRÜCKER 2022), and *P. singularis*, originally described from the Bavarian Alps, has been reported also from the Austrian and the Swiss Alps, the Slovak Tatry Mountains, the Pyrenées, Scandinavia and Svalbard (ZSCHACKE 1914, SERVÍT 1954, ØVSTEDAL & al. 2009, SAVIĆ & TIBELL 2012, ROUX & al. 2014 sub *P. plicata* morpho *singularis*, HAFELLNER & TÜRK 2016, TIBELL & TIBELL 2017, DIETRICH & BRÜCKER 2022).

Within this subgenus, *Polyblastia cruciseptata* is readily distinguished by its endolithic thallus and the lack of an involucrellum. Table 1 summarizes the characteristics of the five species involved. For *Polyblastia singularis* and *P. quartzina*, there are reports of spore sizes differing considerably from those in the original descriptions: 12–20 × 6–10 µm for *P. quartzina* (SWINSCOW 1971, ORANGE & al. 2023), and 18–21 × 12–13 µm for *P. singularis* (ØVSTEDAL & al. 2009). Future analyses will show if spore sizes are of wider magnitudinal ranges or if additional species are involved.

In lacking an involucrellum and having pauciseptate subspherical spores of similar size *Polyblastia cruciseptata* resembles *Halospora discrepans* (J. LAHM ex ARNOLD) HAFELLNER, but in the genus *Halospora* the ascospores are medium to dark brown, thick-walled and thickly halonate, and the species are lichenicolous (HAFELLNER 2011, TRIEBEL 1989 sub *Merismatium*) – the latter feature may be overlooked when their perithecia are developed in pits of the rock after the fruiting bodies of an endolithic host lichen have fallen out.

There are several *Polyblastia* species with rather small submuriform ascospores, but they have longer, ellipsoidal, not cruciately septate spores with more locules visible in optical section (for example *Polyblastia intermedia* TH. FR.: spores 16–20 × 8–10 µm, with mainly 7–12 locules).

Tab. 1. Comparison of morphological characters of the species of *Polyblastia* subgen. *Coccospora*.

	<i>P. singularis</i>	<i>P. plicata</i>	<i>P. quartzina</i>	<i>P. suzae</i>	<i>P. cruciseptata</i>
Thallus morphology	thinly superficial, ± rimose	superficial, thick, ± rimose-subareolate	superficial, continuous	superficial, rimose	endolithic
Thallus colour	whitish to brownish	whitish to grey or brownish	grey to brown	brownish	like the rock surface
Substratum	calcareous rock	calcareous rock	siliceous rock	serpentine	calcareous rock
Perithecia	half to largely immersed in the rock	largely immersed in thallus	$\frac{1}{4}$ – $\frac{1}{2}$ -immersed	$\frac{1}{2}$ to $\frac{3}{4}$ -immersed	fully immersed
Exciple diam. (mm)	0.13–0.18	0.18–0.25	0.25–0.35	0.15–0.20	0.15–0.25
Involucrellum	upper $\frac{1}{4}$ – $\frac{1}{2}$	upper $\frac{1}{4}$ – $\frac{1}{2}$	upper $\frac{1}{2}$	upper $\frac{1}{2}$	lacking
Spores (µm)	(9–)10–15(–16) × 7.5–10	11–15(–17) × 7–9(–10)	11–16 × 6–9	9–12 × 6–8	(9–)10–14(–15) × (8–)9–12
Spore locules in optical section	4–6(–8)	4–8	3–5	4–5	3–6
Septation pattern	often cross-wise	partly cross-wise	rarely cross-wise	often cross-wise	often cross-wise

Additional material investigated (all in W):

Polyblastia plicata: Deutschland: Bayern, ad rupes dolomiticas prope Muggendorf in Franconia superiore, leg. F. ARNOLD (ANZI: Lichenes rariores Veneti no. 141). – Auf Dolomit bei Muggendorf in Bayern, 1860 leg. F. ARNOLD. – An beschatteten Dolomithfelsen zwischen Pottenstein und Tüchersfeld in Oberfranken, 25. September 1878 leg. F. ARNOLD (ARNOLD, Lich. Exs. 773). – Dolomit bei Pottenstein in Oberfranken [without further data].

Polyblastia singularis: Deutschland: Bayern, an Kalkblöcken auf karg begrastem Boden auf dem Hochgern ober Wessen in den bayerischen Alpen, 5000', 19. September 1868, leg. F. ARNOLD (ARNOLD, Lich. Exs. 393). Italien: Dolomiten: Tschamin, 1883 leg. E. KERNSTOCK. – Schweiz: [Kanton Uri] auf Kalk, Hüfialpe, leg. A. GISLER.

Polyblastia suzae: Czech Republic: Sudeti orient. (Jeseníky). Distr. Šumperk, supra pagum Raškov, alt. 550 m s. m., ad saxa serpentina locis umbrosis, 8. May 1970 leg. J. VICHÉREK & A. VĚZDA (VĚZDA: Lichenes selecti exciccati 902).

Polyblastia intermedia: Italy: Jenesien, calc., leg. 1890 E. KERNSTOCK sub *P. singularis*?

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