

Short Communications

Rhizocarpon anaperum new to Svalbard

While studying the taxonomy of the non-yellow species of *Rhizocarpon* DC., with hyaline and muriform ascospores, in the Nordic countries (Ihlen 2004), some specimens of *Rhizocarpon* from the Svalbard archipelago were also examined. Among this material, we discovered six specimens of *Rhizocarpon anaperum* (Vain.) Vain. that had been labelled "*R. obscuratum*". As *R. anaperum* is not listed in the recent checklist from Svalbard (Elvebakk & Hertel 1996) or, to our knowledge, in any other paper dealing with the lichen flora of Svalbard, it is here reported new to this archipelago.

Rhizocarpon anaperum (Vain.) Vain.

Acta Soc. Fauna Fl. Fenn. 53: 304 (1922).—*Lecidea anapera* Vain. *Meddel. Soc. Fauna Fl. Fenn.* 10: 141 (1883); type: Finland. Kuusamo, Iivaara. Ad lapillos graniticos, 1877, E. Vainio (TUR-V 21907!—holotype).

Characterization. *Rhizocarpon anaperum* is mainly characterized by its brown thallus, lacking lichen substances, with flat to convex areoles, 0.02–0.1 mm in diameter. The apothecia are black, 0.2–0.4 mm in diameter, with a flat disc, and a distinct proper margin. In section, the exciple and the hypothecium are brown in water and react negative in K. Furthermore, the hymenium is colourless, I+ blue, 150–250 µm high, and the epihymenium contains a mixture of brown (K–, HCl± intensifying) and dark green pigments (K–, HCl+ bright blue, N+ red) in small amounts. Typical also are the ellipsoid to broadly ellipsoid, distinctly eumuriform ascospores (Fig. 1), (30–) 32–38 × 15–19 µm ($n=6$).

Rhizocarpon anaperum is separated from other non-yellow taxa of *Rhizocarpon* with

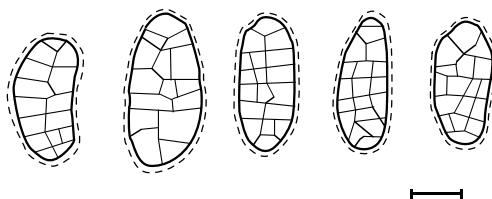


FIG. 1. *Rhizocarpon anaperum* (holotype). Sketch of ascospores in optical view. Scale: 16.0 µm.

hyaline and muriform ascospores (e.g. *R. lavatum* (Fr.) Hazsl., *R. petraeum* (Wulfen) A. Massal., and *R. reductum* Th.Fr.) by a combination of small apothecia, granular thallus, and ascospore size and septation. It most closely resembles *R. sublavatum* Fryday, but it can be separated from that species by having a predominantly brown epihymenium (dark green present in only small amounts), and by its brownish, more granular thallus. Fryday (2000) and Ihlen (2004) should be consulted for further morphological details and illustrations of *R. anaperum*, *R. sublavatum*, and other non-yellow taxa of *Rhizocarpon* with hyaline and muriform ascospores.

Ecology and distribution. All specimens of *R. anaperum* from Svalbard, as elsewhere, were collected from siliceous rocks, but unfortunately there is little additional ecological information concerning the Svalbard, Scandinavian or North American collections. The collections from Svalbard, Finland (holotype) and Iceland are without habitat information, whereas the Swedish specimen was collected on moist siliceous rock in an open situation in a deep valley close to a river ("bäckravin"). The labels of the Colorado collections also lack any

habitat information, but, from the locality and elevation given, they appear to be from high-altitude coniferous forest. At least one is also from a stream-side locality. In the British Isles, *R. anaperum* occurs in two distinct habitats; damp coires and snowbeds, and disused metal mine spoil in the damp, oceanic west (Fryday 2000). These habitats are united in being both damp and nutrient deficient. It would appear, therefore, that *R. anaperum* is primarily a species of damp siliceous rocks and pebbles.

Rhizocarpon anaperum has been recorded from North West Europe [Iceland, Sweden, Finland, Scotland, Wales (Fryday 2000, Ihlen 2004)] and North America [Colorado, Arctic Canada, and Alaska (Anderson 1965, Thomson 1997, Talbot 1998)], and is here reported new to the Svalbard archipelago. We studied the collections upon which North American records are based and found that the Colorado collections were correctly identified, but that the others were mis-identifications of *R. cf. petraeum* and *R. rubescens* Th. Fr. On Svalbard, the species is distributed from Sveagrava in the north to Mt. Ullafjell, by Van Keylen Bay, in the south. Consequently, these are the northernmost known localities of *R. anaperum*. Unfortunately, the elevations from which the Svalbard collections were made are not known.

The world distribution of *R. anaperum* is somewhat puzzling. It is most frequent in NW Europe, where it has an apparently bi-centric distribution; the British Isles [12 collections (Fryday 2000)] and Svalbard (6 collections), with only three other, widely separated collections [one each from Finland, Iceland, and Sweden (Ihlen 2004)]. The only other collections are from North America, where it has been correctly recorded from only two localities, less than 15 km apart, in Rocky Mountain National Park, Colorado. This disjunct distribution can most probably be explained by under collecting, because *R. anaperum* is a small inconspicuous species and easily overlooked. Consequently, we have not mapped its distribution. However, from the few records available *R. anaperum* appears to have a

weakly bi-oceanic distribution (NW Europe–NW North America), and it should be searched for elsewhere in Scandinavia and the western USA and Canada.

Specimens examined (in addition to those cited in Fryday 2000 & Ihlen 2004). **USA:** Colorado: Grand Co., Rocky Mt. N.P., near base of south slope of Jackstraw Mt., 1.5 miles W of Timber Lake, [40°22'21"N, 105°49'13"W], 10 560–10 800 ft, 1962, *R. A. Anderson* 2280A (COLO); *ibid.*, c. 7.2 miles from trail start, NW of junction of Hallet Creek and North Inlet, along North Inlet [40°16'45"N, 105°43'10"W], 9550 ft, streamside boulders and rock outcrops, 1963, *R. A. Anderson* 4368 (COLO). **Svalbard:** Spitsbergen: Van Mijen Bay, Sveagrava, 1926, *B. Lynge* (O); Kolffjellet, 1926, *B. Lynge* (O); Bergmanfjellet, stranden, 1926, *B. Lynge* (O); Litledalen, 1926, *B. Lynge* (O). Van Keylen Bay, Ullafjell, 1926, *B. Lynge* (O). Svalbardhytta, ved bekken, 1924, *O. A. Hoeg* (O).

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REFERENCES

- Anderson, R. A. (1965) Additions to the lichen flora of North America—I. *Bryologist* **68**: 54–63.
- Elvebakk, A. & Hertel, H. (1996) A catalogue of Svalbard plants, fungi, algae, and cyanobacteria. Part 6. *Lichens. Norsk Polarinstittutt Skrifter* **198**: 271–359.
- Fryday, A. (2000) On *Rhizocarpon obscuratum* (Ach.) Massal., with notes on some related species in the British Isles. *Lichenologist* **32**: 207–224.
- Ihlen, P. G. (2004) Taxonomy of the non-yellow species of *Rhizocarpon* (*Rhizocarpaceae*, lichenized *Ascomycota*), in the Nordic countries, with hyaline and muriform ascospores. *Mycological Research* **108**: 533–570.
- Talbot, S. S. (1998) Lichens of the Spiridon peninsula, western Kodiak Island, Alaska, with observations on lichen communities. In *Lichenographia Thomsoniana: North American Lichenology in Honor of John W. Thomson* (M. G. Glenn, R. C. Harris, R. Dirig & M. S. Cole, eds): 245–260. Ithaca, New York: Mycotaxon Ltd.
- Thomson, J. W. (1997) *American Arctic Lichens 2. The Microlichens*. Madison: University of Wisconsin Press.

Per G. Ihlen and Alan M. Fryday

Per G. Ihlen: Department of Ecology and Environmental Science, Umeå University, SE-901 87 Umeå, Sweden

Alan M. Fryday: Herbarium, Department of Plant Biology, Michigan State University, East Lansing, MI 48824-1312, USA.