

Contribution to the liverwort flora of the Russian Arctic. 2: Uedineniya Island (Kara Sea)

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Abstract. Uedineniya Island is an isolated location (27°28–31' N 82°09–42' E) in the northern Kara Sea, two degrees south of Vize Island. It has an area of 20 km² and represents an erosion accumulative lowland divided by a network of beams and ravines. There were no data on liverworts of this island until the present. This study identifies a small bryophyte collection obtained by I. N. Safronova in 1985 during a few hours on the island. In total, 18 species were recorded. The report fills a gap in the knowledge of liverworts of the isolated remote territories of the Russian Arctic, an area almost inaccessible to botanists. The revealed species composition is common for High Arctic; it has almost no particular features. The second record of *Orthocaulis quadrilobus* (Lindb.) A. Evans f. *cephalozielloides* (R. M. Schust.) Potemkin, comb. nov. for the Russian Arctic is noteworthy.

Keywords: liverworts, *Marchantiophyta*, flora, phytogeography, Arctic, Russia, Uedineniya Island, Kara Sea.

К флоре печеночников Российской Арктики. 2: остров Уединения (Карское море)

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Резюме. Остров Уединения (27°28–31' с. ш., 82°09–42' в. д.) занимает изолированное положение в северной части Карского моря и расположен на два градуса южнее острова Визе. Остров Уединения имеет площадь 20 км² и представляет собой низменную эрозионно-аккумулятивную равнину, расчлененную овражно-балочной сетью. До настоящего времени данные о печеночниках острова полностью отсутствовали. В статье приводится список печеночников, основанный на определении небольшой коллекции мохообразных, собранной И. Н. Сафроновой во время кратковременной высадки на остров 2 августа 1985 г. Впервые выявленный видовой состав печеночников (18 видов) острова свойствен высокоарктическим территориям и характеризуется низкой специфичностью. Особого внимания заслуживает находка *Orthocaulis quadrilobus* (Lindb.) A. Evans f. *cephalozielloides* (R. M. Schust.) Potemkin, comb. nov., ранее указывавшейся для Российской Арктики только с п-ова Ямал.

Ключевые слова: печеночники, *Marchantiophyta*, Арктика, флора, фитогеография, остров Уединения, Карское море.

This paper represents the second brief contribution on as yet unexplored or barely investigated liverwort flora of the isolated remote territories of the Russian Arctic. The first paper of this series was published by Potemkin (2014). The present article is devoted to previously unexplored hepatics of Uedineniya Island (27°28–31' N 82°09–42' E). The island is located in the northern Kara Sea and represents an erosion accumulative lowland divided by a network of beams and ravines. Its area is 20 km². Rivers and brooks are fed mostly by melting snow. There are small lakes of lagoonal origin. The north-eastern part of the island is a plain, 1–2 m in altitude, whereas the south-western part is somewhat higher (15–25 m in altitude) and has a steep seacoast. The island consists of Mesozoic and Tertiary sandstones (coarse-grained, pebbly and float stone ground). Glacial cover is absent. The climate is rigorous Arctic. The average temperature of the warmest month (August) is +0.7 °C and of the coldest month (March) is –25 °C. Wind speed in the autumn-winter period attains 40 m/s. Foggy weather prevails on the island (22–25 days per month with fog). During summer most days are cloudy. Annual precipitation is about 100 mm (Averina, 1970).

During a few hours spent on the island on 2 August 1985, I. N. Safronova and E. A. Khodachek made geobotanic descriptions of vegetation in the southern part of the island and recorded 28 species of vascular plants. In the study area, small polygon hillock herb-lichen tundras, herb moss-lichen and grass (*Phippsia algida*)-forb moss-lichen tundras prevail. Total vegetation cover is about 30–40 %, for vascular plants — 10–20 %. *Saxifraga cespitosa* often dominates. Species such as *Papaver polare*, *Draba* spp., *Cerastium regelii*, *Oxyria digyna*, *Saxifraga hyperborea* are rather common. Among frequent species of grasses, the following are noteworthy: *Deschampsia borealis*, *D. brevifolia*, and *Poa alpigena*, and *Phippsia algida* is locally abundant. On broken stone soils, forb-willow (*Salix polaris*, *Papaver polare*, *Saxifraga cespitosa*) polygonal tundras occur. Communities with *Dupontia fischeri* and mosses are characteristic of river valleys (Safronova, Khodachek, 1989). Bryophytes were obtained by I. N. Safronova in 25 collecting bags in most of these communities. The study of these collections resulted in findings of 18 liverwort species in 15 collecting bags.

The species in the list below are annotated by specimen numbers only because no detailed descriptions of their habitats are available. Some specimens were separated. In these cases, we use numbers such as 1-1, 1-2, etc. where the first figure corresponds to the number of the description. Every taxon in the list is succinctly annotated with data on its distribution in the the High Arctic and described on the basis

of the authors' generalizations of published and partly unpublished personal observations to avoid excessive references (Potemkin, 2015). The nomenclature follows Potemkin and E. V. Sofronova (2009) and Váňa *et al.* (2012). The subdivision of the Arctic corresponds to V. D. Aleksandrova (1977). All the specimens are kept in the Herbarium of the Komarov Botanical Institute (LE).

Anthelia juratzkana (Limpr.) Trevis — 1-1, 1-3, 2. Widespread and common in the High Arctic.

Arnellia fennica (Gottsche) Lindb. — 23-1. Widespread in the High Arctic but only locally common.

Blepharostoma trichophyllum (L.) Dumort. — 1-3, 2, 7-1, 9-2, 10. Widespread and common in the High Arctic.

Cephaloziella divaricata (Sm.) Schiffn. — 9-1. First record for the Barents Province of the Arctic, sporadic in Siberian and Canadian provinces of the Arctic.

C. grimsulana (J. B. Jack ex Gottsche et Rabenh.) Lacout. s. str. — 1-2, 1-3, 16. Sporadic in the High Arctic.

C. uncinata R. M. Schust. — 2, 7-3, 9-1, 13, 15, 22, 23-2. Sporadic in the High Arctic.

C. varians (Gottsche) Steph. — 1-1, 1-2, 1-3, 4-1, 6 [incl. impoverished plants resembling *C. rubella* (Nees) Warnst.], 14, 15. Common, widespread and frequent in the High Arctic.

Gymnomitrium concinatum (Lightf.) Corda — 1-1 [var. *intermedium* Limpr. phenotype, similar plants were illustrated by Zhukova (1973) from Frantz Josef Land. Taxonomic status of such plants needs further research]. Common in the High Arctic.

Jungermannia polaris Lindb. — 1-3, 2, 3, 7-4 (cf.), 13. Common in the High Arctic.

Mesoptychia collaris (Nees) L. Söderstr. et Váňa [≡ *Leiocolea collaris* (Nees) Schljakov] — 2 (?), 7-2 (mod. *parviretis-meso-* vel *subleptoderma*, a form with smooth cuticle). Sporadic in the High Arctic.

Lophozia excisa (Dicks.) Dumort. — 7-1 gem., 9-2 (plants untypical, without gemmae, with some leaves 3-lobed). Sporadic in the High Arctic.

L. jurensis Meyl. ex Müll. Frib. — 2. Sporadic in the High Arctic.

L. polaris R. M. Schust. — 1-2, 1-3, 3, 4-2 (mod. *egemmipara*), 7-4, 10 (mod. *succulenta-egemmipara*), 16, 20, 22, 23-3. Sporadic in the High Arctic.

Orthocaulis quadrilobus (Lindb.) H. Buch f. *glareosa* (Jørg.) Schljakov — 1-3, 2, 7-1, 9-2, 15. The species is represented by mod. *parvifolia* that corresponds to f. *glareosa* (Jørg.) Schljakov. Sporadic in the High Arctic.

O. quadrilobus* f. *cephalozielloides (R. M. Schust.) Potemkin, comb. nov. Basionym: *Lophozia quadriloba* (Lindb.) A. Evans f. *cephalozielloides* R. M. Schust. 1969, Hep. Anth. N. Am.: 2: 278. — 23-2. Separate shoots among *Kiaeria glacialis* (Berggr.) I. Hagen and *Isopterigiopsis pulchella* (Hedw.) Z. Iwats. together with *Cephaloziella uncinata*. *Lophozia polaris* and *Arnellia fennica* were recorded in the other patches of the same collecting bag. Collected plants have suberect to erect-spreading leaves providing a habit of a robust *Cephaloziella* species. They are dis-

tinct from plants described from West Greenland (Schuster, 1969) by rather frequent 3-lobed leaves and only a sporadically distinct papillose cuticle. Underleaves usually subulate or bilobed with two lobes 2–3 cells wide at the base. Branching frequent, mostly lateral and ventral intercalary. This form has been previously recorded in the Russian Arctic from the Yamal Peninsula as *Barbilophozia quadriloba* (Lindb.) Loeske var. *glareosa* (Jørg.) Jørg. f. *cephalozielloides* (R. M. Schust.) Potemkin (Potemkin, 1993).

Scapania ligulifolia R. M. Schust. — 1-3 (*S. zemliae* S. W. Arnell phenotype, gemm.), 1-3, 13. Sporadic in the High Arctic.

S. obcordata (Berggr.) S. W. Arnell — 2. Sporadic in the High Arctic.

Tritomaria quinqueidentata (Huds.) H. Buch — 2. Common in the High Arctic.

Uedineniya Island is located 2 degrees south of the isolated Vize Island in the Kara Sea whose liverworts were similarly briefly explored by the author Safronova (see: Potemkin, 2014). A comparison of data on liverworts of these two isolated islands shows much similarity and comparative poverty in liverworts of collections from northern Vize Island. It is noteworthy that four most frequently recorded species that were found in 5–9 collecting bags from Uedineniya Island, i. e. *Blepharostoma trichophyllum*, *Cephaloziella uncinata*, *Lophozia polaris*, and *Orthocaulis quadrilobus*, have never been recorded in collections from Vize Island.

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