

## Contribution to the liverwort flora of the Russian Arctic: Champ, Heiss, Vize, Troynoy and Vaygach islands

A. D. Potemkin

Komarov Botanical Institute, Prof. Popov Str., 2, St. Petersburg, 197376, Russia;  
Potemkin\_alexey@binran.ru

**Abstract.** Identification of a small collection of liverworts made by Irina Yu. Kirtsideli in June — August 2011 in previously not accessible for botanists Champ Island (Franz Josef Land Archipelago), Troynoy Island (Islands of Izvestiy TsIK) and poorly bryologically explored Heiss (Franz Josef Land Archipelago), Vize and Vaygach islands and by Irina N. Safronova from Vize Island resulted in a list of 19 liverwort species and 4 infraspecific taxa. Most of them are new records for these islands. Remarkable records are *Mesoptychia badensis* var. *apiculata*, *Leiocolea heterocolpos* var. *arctica* from Troynoy Island, *Gymnocola inflata* from Heiss Island, *Scapania cuspiduligera* from Vaygach Island and *S. zemliae* from Champ Island. A new combination is published for *Mesoptychia badensis* var. *apiculata* (R. M. Schust.) Potemkin.

**Keywords:** liverworts, *Marchantiophyta*, flora, Arctic, Russia, Franz Josef Land, Ostrova Izvestiy TsIK.

К флоре печеночников Российской Арктики:  
острова Чамп, Хейса, Визе, Тройной и Вайгач

А. Д. Потемкин

Ботанический институт им. В. Л. Комарова РАН, ул. Профессора Попова, д. 2,  
Санкт-Петербург, 197376, Россия; potemkin\_alexey@binran.ru

**Резюме.** В результате определения небольшой коллекции печеночников, собранных И. Ю. Кирцидели в июне–августе 2011 г. на ранее недоступных для ботаников островах Чамп (Земля Франца-Иосифа), Тройной (острова Известий ЦИК) и очень слабо бриологически обследованных островах Хейса (Земля Франца-Иосифа), Визе и Вайгач, а также коллекции И. Н. Сафроновой с острова Визе выявлено 19 видов и 4 внутривидовых таксона печеночников. Большинство из них приводятся впервые для изученных остров. Наибольшего внимания заслуживают находки *Mesoptychia badensis* var. *apiculata* на о. Визе, *Gymnocola inflata* на о. Хейса, *Leiocolea heterocolpos* var. *arctica* на о. Тройном, *Scapania cuspiduligera* на о. Вайгач и *S. zemliae* на о. Чамп. Приводится новая комбинация для *Mesoptychia badensis* var. *apiculata* (R. M. Schust.) Potemkin.

**Ключевые слова:** печеночники, *Marchantiophyta*, флора, Арктика, Россия, Земля Франца-Иосифа, острова Известий ЦИК.

Until the present, data on liverworts of some remote islands of the Russian High Arctic have remained scant or absent. Botanical exploration of these islands is hampered by the impossibility of staying and collecting there for several days because of unfavorable weather conditions and

the presence of active polar bears. Moreover, ice-free areas of the islands vary from year to year. These facts lead us to use every possibility for obtaining new data on the flora of the islands.

This article is devoted to the results of the study of collections from Champ, Heiss, Vize, Troynoy and Vaygach islands that were visited briefly in June — August 2011 by Irina Yu. Kirtsideli (Komarov Botanical Institute, St. Petersburg), who collected microfungi and cryptogamic plants during her trip to the High Arctic Archipelago Franz Josef Land on the icebreaker «Mikhail Somov». This study was significantly enhanced by the identification of the specimens collected on Vize Island by Irina N. Safronova (Komarov Botanical Institute, St. Petersburg). In total thirty collecting bags with bryophytes, lichens and algae were investigated. Liverworts were found in 17 collecting bags.

Most records represent the first data on the liverwort flora of these islands of the High Russian Arctic that are almost inaccessible for botanists. Until the present, only data on liverworts of the southwestern part of Vaygach Island were published by S. Arnell (1947), on Vize Island by L. I. Savicz (1936) and on Heiss Island by A. L. Zhukova (1972). The hepatic flora of the other visited islands had not been explored at all.

### **Description of collecting sites**

**Champ** — Champ Island, Franz Josef Land, 80°26' N 57°56' E, polar desert, small glacier free area, 09.08.2011, Kirtsideli.

**Heiss** — Heiss Island, Franz Josef Land, 80°37' N 58°03' E, polar desert, near polar station, anthropogenically disturbed area, 05.08.2011, Kirtsideli.

**Vize** — Vize Island, 79°29' N 76°58' E, polar desert, dry monotonous herb-lichen tundra over sandstone plain and moss communities near streams [for description of flora and vegetation of Vize Island see Safronova and E. A. Khodachek (1989)], 02.08.1985, Safronova; 11.08.2011, Kirtsideli.

**Troynoy** — Troynoy Island (Izvestiy TsIK Islands), 75°57' N, 82°57' E, arctic moss and herb moss tundra, 30.07.2011, Kirtsideli.

**Vaygach** — Northern Vaygach Island (near Bolvanskiy Nos Cape), 70°26' N 59°05' E, Arctic tundra, 26.07.2011, Kirtsideli.

Taking into account that all the specimens were annotated with the collection date and the name of the island, the list given below is briefly annotated with the names of the islands (every island was visited only for one day), the abbreviated collector's name (IK — Irina Yu. Kirtsideli and IS — Irina N. Safronova) and the collection number. Every taxon is suc-

cinctly annotated with data on its distribution in the polar deserts and/or Arctic tundras that are described on the basis of author's generalization of published and partly unpublished personal observations on liverworts of mainly polar deserts to avoid excessive references. The following qualitative scale of frequency was used for the description of distribution patterns: rare — known from only one geobotanic province of the Arctic (European, Siberian or Canadian) and usually from a few locations; sporadic — known from 2–3 provinces from several locations; common — from all mentioned provinces and numerous locations. The subdivision of the Arctic corresponds to V. D. Aleksandrova (1977). The nomenclature follows Potemkin and E. V. Sofronova (2009, 2013) and Váňa *et al.* (2012). All the specimens are kept in the Herbarium of the Komarov Botanical Institute (LE).

***Anthelia juratzkana*** (Limpr.) Trevis — **Vize:** IK 110811-1, IS 27, IS 28, IS 29. Earlier recorded for the island by Saviz (1936). Common and widespread in the polar deserts.

***A. juratzkana* f. *elongata*** Jørg. — **Vize:** IS 32, IS 36, IS 42. Common and widespread in the polar deserts.

***Blepharostoma trichophyllum*** (L.) Dumort. — **Troynoy:** IK 300711-1, IK 300711-3; **Vaygach:** IK 260711-1, IK 260711-2. Earlier recorded for Vaygach Island by Arnell (1947). Common and widespread in High Arctic.

***Cephalozia albescens*** (Hook.) Dumort. [= *Pleurocladula albescens* (Hook.) Grolle] — **Troynoy:** IK 300711-2, mod. *parvifolia*. Sporadic in Arctic tundras, unknown for the polar deserts.

***C. ambigua*** C. Massal. — **Vize:** IS 32. Sporadic in Arctic tundras and the polar deserts, mentioned as widespread and often abundant in Svalbard (Konstantinova, Savchenko, 2012). High Arctic records of *C. ambigua* need to be carefully investigated because of possible confusion with mod. *parvifolia-parviretis* of *C. bicuspidata* (L.) Dumort.

***Cephaloziella grimsulana*** (J. B. Jack ex Gottsche et Rabenh.) Lacout. s. str. — **Vize:** IS 27, IS 38. Sporadic in the polar deserts.

***C. varians*** (Gottsche) Steph. — **Troynoy:** IK 300711-2; **Heiss:** IK 050811-1; **Champ:** IK 090811-1, IK 090811-2; **Vaygach:** IK 260711-1, IK 260711-2; **Vize:** IS 28, IS 29, IS 33, IS 35. Earlier it was recorded for Vaygach Island by Arnell (1947) and for Heiss Island by Zhukova (1972, 1974). Common and widespread in High Arctic.

***Gymnocolea inflata*** (Huds.) Dumort. [= *G. acutiloba* (Schiffn.) Müll. Frib.] — **Champ:** IK 090811-1; **Heiss:** IK 050811-1. The species is represented by var. *acutiloba* (Schiffn.) S. W. Arnell phenotype. These records confirm the occurrence of *G. inflata* in Franz Josef Land. It was earlier reported by Zhukova (1973) from Rudolf Island of the archipelago. Very rare in the polar deserts and known only from Franz Josef Land.

***Gymnomitron concinnatum*** (Lightf.) Corda — **Heiss:** IK 050811-1. Common in polar deserts.

**Jungermannia polaris** Lindb. — **Champ:** IK 090811-1, IK 090811-2; **Heiss:** IK 050811-1; **Troynoy:** IK 300711-3; **Vaygach:** IK 260711-1; **Vize:** IS 27, IS 29, IS 38. Common in High Arctic.

**Lophozia jurensis** Meyl. ex Müll. Frib. — **Vize:** IS 29. Sporadic in the polar deserts.

**L. wenzelii** (Nees) Steph. var. **groenlandica** (Nees) Bakalin — **Vaygach:** IK 260711-2, with gemmae. Sporadic in Arctic tundras.

**Mesoptychia badensis** (Gottsche ex Rabenh.) L. Söderstr. et Váňa var. **badensis** — **Vaygach:** IK 260711-2. Sporadic in Arctic tundras.

**Mesoptychia badensis** var. **apiculata** (R. M. Schust.) Potemkin, comb. nov. [Basionym: *Lophozia badensis* var. *apiculata* R. M. Schust., 1969, Hep. Anth. N. Amer. 2: 415] — **Vize:** IS 38. Second record for the polar deserts. Earlier it was reported for Nordaustlandet (Svalbard) by Konstantinova and Savchenko (2012).

**M. collaris** (Nees) L. Söderstr. et Váňa — **Vize:** IS 29. Sporadic in the polar deserts.

**M. heterocolpos** (Thed. ex Hartm.) L. Söderstr. et Váňa var. **heterocolpos** — **Troynoy:** IK 300711-2. Sporadic in Arctic tundras.

**M. heterocolpos** var. **arctica** (S. W. Arnell) L. Söderstr. et Váňa — **Troynoy:** IK 300711-3. Sporadic in Arctic tundras.

**Orthocaulis quadrilobus** (Lindb.) H. Buch — **Champ:** IK 090811-2; **Troynoy:** IK 300711-3. The species is represented by mod. *parvifolia* that corresponds to *f. glareosa* (Jørg.) Schljakov. Sporadic in High Arctic.

**Scapania cuspiduligera** (Nees) Müll. Frib. — **Vaygach:** IK 260711-2. Earlier it was recorded for Vaygach Island by Arnell (1947). Sporadic in Arctic tundras.

**S. ligulifolia** R. M. Schust. — **Vize:** IS 27, IS 28. Sporadic in Arctic tundras.

**S. zemliae** S.W. Arnell — **Champ:** IK 090811-1, IK 090811-2, with gemmae, plants with distinctly bleached postical leaf base. Sporadic in the polar deserts.

**Tritomaria quinquentata** (Huds.) H. Buch — **Troynoy:** IK 300711-2. Common in High Arctic.

**T. quinquentata** f. **gracilis** R. M. Schust. — **Vize:** IS 38, mod. *mesoderma*. Rather common form of the species in the Arctic.

Recorded species are mostly rather common or sporadic in the Arctic. *Mesoptychia badensis* var. *apiculata* is reported for the first time for the Russian polar deserts. Recently it was reported from polar deserts of Svalbard by Konstantinova and Savchenko (2012). Records of *Scapania cuspiduligera* and *S. zemliae* being infrequent in the Arctic confirm the earlier findings of Arnell (1947) and Konstantinova and Potemkin (1996) respectively.

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