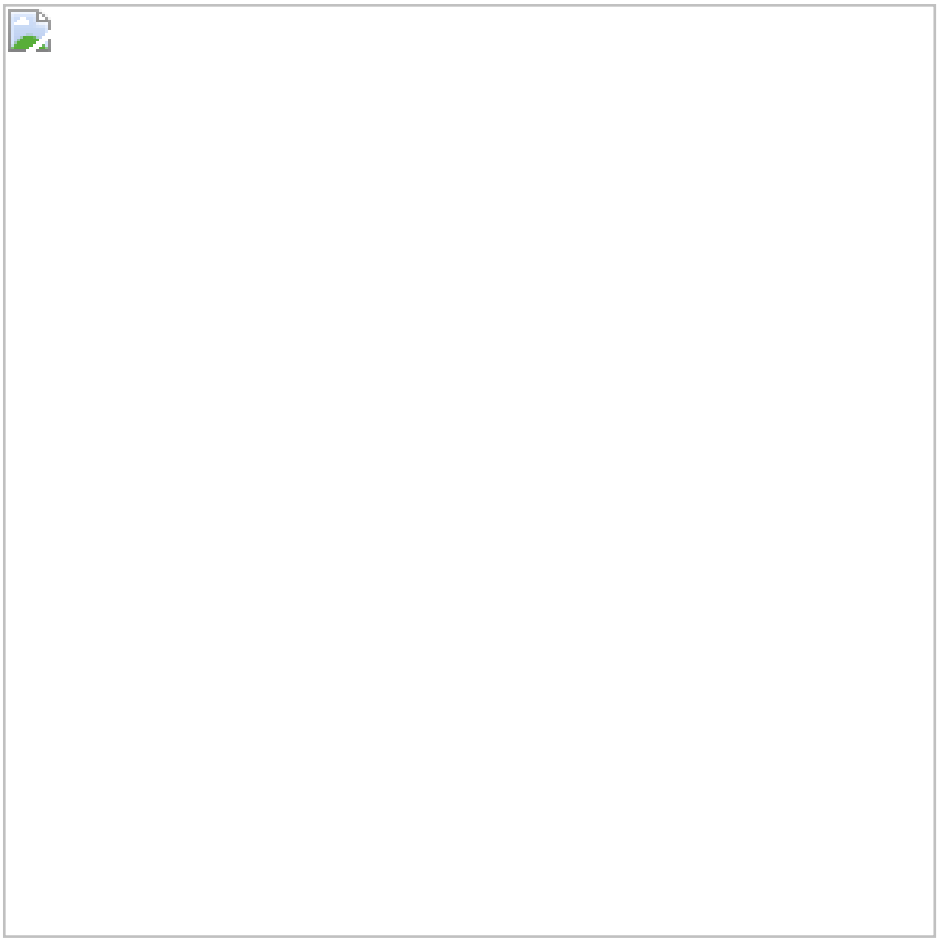

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Author: Damsholt, Kell

Source: Lindbergia, 37(2) : 22-41

Published By: Dutch Bryological and Lichenological Society and Nordic Bryological Society

URL: https://doi.org/10.25227/linbg.01048

Lindbergia 37: 22–41, 2014
ISSN 0105-0761
Accepted 5 June 2014

The late Eva Clausen's collections from west and southwest Greenland 1955

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Eva Clausen was a Danish botanist, known for her experimental work with the tolerance of liverworts; many of her collections that contribute to the knowledge of liverwort flora of Denmark, the Faeroes and Greenland, were donated to herbarium C after her death. One of those are collections from her trip to the west coast of Greenland in summer 1955. Only an minor part of them were worked up by Eva Clausen herself, and she never published the results of her expedition. The author of 'The liverworts of Greenland' (2013), Kell Damsholt has identified ca 700 specimens and examined three note books written by Eva Clausen on the trip. He found about 80 taxa of hepatics in the collections. Most of the species collected by Eva Clausen are found within their known distribution range in Greenland. Though her collections of *Lophozia rubescens* R. M. Schust. & Damsh. from Frederikshåb, Egedesminde and Disko Island fill in the gab in the known species distribution (the species was known only from two localities in the southernmost Greenland and one on Disko Island). The collection of *Apomarsupella revoluta* (Nees) R. M. Schust. at Holsteinsborg is the southernmost on the west coast of Greenland and seems promising for future records from south Greenland, from where collections are missing, probably because of too few collections from areas close to the inland ice. The record of *Cephaloziella grimsulana* (J. B. Jack ex Gottsche et Rabenh.)Lacout. at Disko, Godhavn adds to the distribution of this rather rare, northern species in Greenland and so does the record of *Cephaloziella massalongi* (Spruce) Müll. Frib. at Disko, Godhavn, Blæsedalen. A female plant of *Odontoschisma elongatum* (Lindb.) A. Evans was found at Disko, Godhavn, for the first time from Greenland.

In 1955 Eva Clausen travelled from 12 June to 23 August along the west coast of Greenland, collecting liverworts. In total ca 700 specimens were collected, comprising about 80 taxa. A minor part of the collection, about 1/3, was identified by the collector and after her death stored directly in C, whereas the bulk was not examined until recently by the author, forming the basis of this report. Eva Clausen had the opportunity to stay longer in two areas of Greenland and accordingly she collected heavily around Frederikshåb in southwestern Greenland and on Disko Island in western Greenland, where the surroundings of Arctic station at Godhavn were thoroughly investigated. *Nardia breidleri* was mentioned from Frederikshåb by Eva Clausen in one of her note books, but a specimen has not been located. Apparently several of the collections, mentioned in the note books, are missing today.

Reconstructed travel route and collecting areas.
1: Ivigtut (Ivittuut 61°12'N, 48°10'W**),** arrival ca 12 June, few collections (55-0001 – 55-0012),
continuing northwards by boat to:
2: Frederikshåb (Paamiut 62°00'N, 49°40'W), collecting 15 June – 10 July, including a high mountain Arfiorfik/Akuliaq, with an isthmus ca 10 km east of the settlement, 28 June, (55-0018 – 55-0065, 55-0102 – 55-0113, 55-0115, 55-0249), interrupted of a short trip southwards, collecting at:
2a: Neria fj. (61°35'N, 45°05'W), 21 June, (55-0062 – 55-0084, 55-0098 – 55-0100),
2b: Narssalik (Narsalik 61°40'N, 49°20'W) 22 June, (55-0085 – 55-0097, 55-0101, 55-0114),
continuing northwards by boat to:
3: Holsteinsborg (Sisimiut 66°56'N, 53°40'W) 18–22 July, mainly collecting below Kællingehætten (first Holsteinsborg collections 55-1000 – 55-1322) and further on northwards by boat to:
4: Egedesminde (Aasiaat 68°42'N, 52°52'W) 23 July, (first Egedesminde collections near the settlement 55-1453 – 55-1463) and across Disko Bay to:
5: Disko (Qeqertarssuaq), Godhavn (Qeqertarssuaq 69°15'N, 53°33'W); collecting heavily 23 July – 9 August, (55-0250 – 55-0276, 55-0302 – 55-0600), below

Skarvefjeld (69°17'N, 53°27'W) 3 August, (55-0726 – 66-0744), followed of a short trip by boat to
5a: Disko fjord (Kangerluk), Eqigtoq (69°29'N, 53°55'W) 11 August, (55-0601– 55-0614)
5b: Disko fjord (Kangerluk), Eqalúnguit (69°32'N, 53°40'W) 12 August, (55-0615 – 55-0653)
The return travel southwards was started by taking the boat from Disko to:
6: Egedesminde (Aasiaat 68°42'N, 52°52'W**)** 17 August, (second Egedesminde collections 55-0279 – 55-0300, 55-0654 – 55-0666) and into Disko Bay:
7: Christianshåb (Qasigannguit 68°49'N, 51°11'W) 18–19 August, (55-0668 – 55-0724)
then further on southwards to:
8: Holsteinsborg (Sisimiut 66°56'N, 53°40'W) 21 August, along a waterfall at the head of the fjord (second Holsteinsborg collections 55-0746 – 55-0780), and
9: Sukkertoppen (Maniitsoq 65°24'N, 52°54'W**)** 22–23 August, (55-0781 – 55-0860)
returning to Denmark by ship.

Jungermanniales H. Klinggr.

Fam. *Blepharostomataceae* Müll. Frib. emend. R. M. Schust.

Blepharostoma trichophyllum (L.) Dumort. ssp. ***brevirete*** (Bryhn & Kaal.) R. M. Schust.
The distinction between the to two subspecies of *Blepharostoma trichophyllum* was thoroughly considered in Schuster and Damsholt (1974), resulting in only a few characters separating the one from the other and not a diagnostic difference, always being present. According to the distribution maps of Greenland (Damsholt 2013 Fig. 2, 3) the two subspecies overlap in Greenland, with ssp. *brevirete* as the mainly northern high Arctic subspecies, weedy in the basaltic regions of eastern, western and in northern Greenland, though also known from high elevation near the Inland ice in southern Greenland, whereas ssp. *trichophyllum* is a mainly southern taxon, in distribution limited to the southern half of the island. *Blepharostoma trichophyllum* ssp. *brevirete* is usually found with perianths and sporophytes, whereas gemmae are frequently present in ssp. *trichophyllum*, especially when growing in rock crevices.

Collections:
5: Disko (EC 55-0251, 55-0260, 55-0265, 22-0270, 22-0275 Blæsedalen, EC 55-0341 in a scree, Godhavn, southern slopes of Disko I., EC 55-0304, 55-0305, 55-0325 Godhavn, EC 55-0367, 55-0368, 55-0381 small ravine behind Arctic station, EC 55-0504, 55-0505, 55-0422, 55-0435, 55-0451 along a rivulet, western slopes of Røde elv, EC 55-0304, EC 55-0305, 55-0509, 55-0511, 55-0550 western slopes of Røde elv, EC 55-0389, 55-0405, 55-0406, 55-0412 fen with hummocks east of Røde elv, EC 55-0571 below Lyngmarksfjeld, EC 55-0600 at a small pond below Lyngmarksfjeld, EC 55-0579 *Cassiope*-heath below Lyngmarksfjeld, EC 55-0474, 55-0483 fen with hummocks below Skarvefjeld, EC 55-0731, 55-0743, 55-0744 below Skarvefjeld, EC 55-0359 in a fen close to Godhavn), **5b**: Disko fjord, Eqalúnguit (EC 55-0629, 55-0632 northwest-facing !granitic rock), **6**: Egedesminde (EC 55-0285, 55-0293).

Blepharostoma trichophyllum (L.) Dumort. ssp. ***trichophyllum***

Collections:
2: Frederikshåb (EC 55-0103 along a rivulet in the mountains northeast of the settlement, EC 55-0194 northwest–southeast-running ravine southeast of the town, with gemmae, EC 55-0197 northwest–southeast-running ravine southeast of the town, EC 55-0204 valley southeast of the settlement, **2b**: Narssalik **(**EC 55-0101**), 3**: Holsteinsborg (EC 55-1013, 55-1201, 55-1208, EC 55-1216, EC 55-1307, 55-1310 below Kællingehætten, north-exposed rock), **5a**: Eqigtoq (EC 55-0607, EC 55-0608 fen with hummocks along a pond), **5b**: Disko fjord, Eqalúnguit (EC 55-0615, 55-0628, 55-0648 northwest-facing granitic rock), **6**: Egedesminde (EC 55-0289, 55-0663), **7**: Christianshåb (EC 55-0716), **8**: Holsteinsborg (EC 55-0751, EC 55-0769(2) along a river).

Fam. *Antheliaceae* R. M. Schust.

Anthelia julacea (L.) Dumort.
An Arctic–alpine species, widely distributed in the world, but restricted to areas with relatively high precipitation, in Greenland only known from the southern and southwestern coastal part of the island (Damsholt 2013 Fig. 4). Eva Clausen collected *Anthelia* several times, but only the three collections from the coastal locality south of Frederikshåb, represented *Anthelia julacea* and here she collected both male plants and plants with sporophytes.

Collections:
2a: Neria fj. (EC 55-0099 (male, sporophyte), EC 55-0100 in ravine, EC 55-0102 along a brook in ravine below a high mountain, sexorgans not seen).

Anthelia juratzkana (Limpr.) Trevis.
This bipolar, Arctic–alpine species was collected several times and the paroicy was proved in all collections. The species occurred at almost all the localities investi-

gated along the Greenland southwest- and west-coast; the records fit well the published distribution map (Damsholt 2013 Fig. 5).

Collections:
2: Frederikshåb (EC 55-0121, EC 55-0135 north-facing rock wall, EC 55-0170 high mountain, EC 55-0182 northwest–southeast-running cleft southeast of the settlement), **2b**: Narssalik (EC 55-0090 along a brook), **4**: Egedesminde (EC 55-1455), **5:** Disko (EC 55-0374, EC 55-0381 in a small ravine behind Arctic station, EC 55-0388 Godhavn, fen with hummocks east of Røde elv, EC 55-0396, EC 55-0400 fen with hummocks east of Røde elv, EC 55-0416 springy area eastern slopes of Røde elv, EC 55-0519 western slopes of Røde elv, EC 55-0564, EC 55-0565 below Lyngmarksfjeld, EC 55-0729 below Skarvefjeld), **5b**: Disko fjord, Eqalúnguit (EC 55-0615, EC 55-0616 northwest-facing granitic rock, EC 55-0632), **6**: Egedesminde (EC 55-0286 humid, north-facing rocks, EC 55-0304, EC 55-0366 in a fen close to the settlement), **8**: Holsteinsborg (EC 55-0750), **9**: Sukkertoppen (EC 55-0828).

Fam. *Jungermanniaceae* Rchb.

Tetralophozia setiformis (Ehrh.) Schljakov (incl. fo. *nemoides* (Kaal.) Damsh. & fo. *alpina* (Hook.) Schljakov).
The imperfectly circumpolar *Tetralophozia setiformis* is common along the west coast of Greenland, whereas it is rare in southeastern Greenland and not recorded from northeastern Greenland (Damsholt 2013 Fig. 6). *Tetralophozia setiformis* was once found with sporophytes in southwestern Greenland and is considered to reproduce in Greenland with both spores and by fragmentation. At the southernmost locality investigated, Eva Clausen found fo. *nemoides*, a xeromorphic modification, known to occur along the west coast of Norway, whereas fo. *alpina* (mod. *parvifolia-integrifolia*) in Greenland is known from granitic rock faces and was found behind the Arctic station, Godhavn, Disko I.

Collections:
1: Ivigtut (EC 55-0002, 55-0012 fo. *nemoides*), **2**: Frederikshåb (EC 55-0033 among lichens on vertical rocks, northeast of the settlement, EC 55-0041 valley northeast of the settlement, EC 55-0116 rock crevices northeast of the settlement, EC 55-0220 rock crevices north of the settlement, fo. *nemoides*, EC 55-0224 at the base of a high north-facing rock wall, north of the settlement), **3**: Holsteinsborg (EC 55-1103 in scree, among fallen rocks and boulders, EC 55-1203), **5:** Disko (EC 55-0339 Godhavn, Disko I. south coast, EC 55-0467 Godhavn, granitic rocks behind Arctic station fo. *alpina*, 55-0468, 55-0469 below Skarvefjeld, EC 55-0743 Skarvefjeld), **5b**: Disko fjord, Eqalúnguit (EC 55-0626 among *Cassiope tetragona*, northwest-facing granitic rock), **7**: Christianshåb (EC 55-0678 on rocks near shrimp packing factory, EC 55-0697 along margin of a lake), **8**: Holsteinsborg (EC 55-0701 old, north-facing scree along a lake, EC 55-0757, 55-0758 along waterfall at the head of the fjord), **9**: Sukkertoppen (EC 55-0781 low rocks, close to the settlement, EC 55-0802, in a ravine).

Lophozia quadriloba (Lindb.) A. Evans (incl. var. *glareosa* (Jørg.) Jørg.).
This imperfectly circumpolar species was frequently collected in the northern basaltic part of Greenland, investigated by the collector. *Lophozia quadriloba* is to some degree limited to the northern half of Greenland being very common in both eastern and western Greenland, but rare in southern Greenland only known from higher elevation or at the head of fjords, in newly ice-free areas near the inland ice (Damsholt 2013 Fig. 7). On rock walls below Skarvefjeld, at a higher elevation of ca 500 m, was found var. *glareosa*, a variety distinguished by its predominantly 2–3-lobed leaves.

Collections:
5: Disko (EC 55-0261, 55-0262 Blæsedalen, western slopes, EC 55-0306, 55-0307 low, basaltic north-facing rocks, EC 55-0411 eastern slopes of Røde elv, EC 55-0433, 55-0434, 55-0435 along a brook, western slopes of Røde elv, EC 55-0493 north-facing rocks, west banks of Røde elv, EC 55-0494 humid north-facing rocks, west banks of Røde elv, EC 55-0498 west of Røde elv, EC 55-0505, 55-0511 western slopes of Røde elv, along a rivulet, EC 55-0599 along a pond in the granitic area west of Arctic station, EC 55-0574, 55-0577 *Cassiope*-heath below Lyngmarksfjeld, EC 55-0726, 55-0729, 55-0734, 55-0736, 55-0739, 55-0742 all below Skarvefjeld, EC 55-0738, 55-0740, 55-0741 alt. ca 500 m below Skarvefjeld var. *glareosa* shoot with 2–3-lobed leaves), **5b**: Disko fjord, Eqalúnguit (EC 55-0632, 55-0640), **6**: Egedesminde (EC 55-0658 east–west-stretching valley south of water lake, north-facing rocks).

Lophozia kunzeana (Huebener) A. Evans (incl. fo. *rotundiloba* (R. M. Schust.) R. M. Schust. & fo. *plicata* (C. Hartm.) Damsh.).
Lophozia kunzeana, being basically circumboreal–montane in distribution, penetrates northwards in Greenland into the high Arctic (Damsholt 2013 Fig. 8). Earlier records of *Orthocaulis kunzeanus* from northern Greenland, Peary land, were rejected, being *L. quadriloba*. Several collections with gemmiparous plants were found as well as female plants, but no sporophytes were located. Dispersal in Greenland is thought mainly to take place with gemmae. An Arctic modification, var. *rotundiloba*, distinguished by its rounded leaf lobes, was noted by the collector from a single collection.

Collections:
2: Frederikshåb (EC 55-0048(1) along a brook in a valley with a lake north of the settlement, EC 55-0129, gemmae, north-facing rock-wall, 55-0242 at base of north-facing rock-wall), **3**: Holsteinsborg (EC 55-0751, 55-1001, 55-1305 springy area below Kællingehætten, EC 55-1114, 55-1306, 55-1320, *gynoecial*), **5:** Disko Godhavn (EC 55-0357, 55-0469 fen with hummocks below Skarvefjeld, gemmae, EC 55-0471, 55-0473 fen with hummocks below Skarvefjeld, EC 55-0731 below Skarvefjeld var. *rotundiloba*, EC 55-0743 below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0608, 55-0610), **6**: Egedesminde (EC 55-0289 flat valley, east of the settlement), **7**: Christianshåb (EC 55-0682 humid valley at the shrimp packing factory, EC 55-0697 along a lake, EC 55-0708), **8**: Holsteinsborg (EC 55-0751 along a river, gemmae, fo. *plicata,* EC 55-0768 along a river, gemmae).

Lophozia floerkei (F. Weber et D. Mohr) Schiffn.
This, boreal–montane species, penetrates into the the low Arctic of southern and southwestern Greenland (Damsholt 2013 Fig. 9). It has been found with sporophytes in southern Greenland and probably disperses by spores, but these were not found in the single Eva Clausen-collection, listed below.

Collection:
2: Frederikshåb (EC 55-0165, below a high mountain near an isthmus, connecting to the main land).

Lophozia atlantica (Kaal.) Müll. Frib.
This amphiatlantic species, in Europe northern suboceanic–alpine, has penetrated into the low-Arctic part of southern and southwestern Greenland (Damsholt 2013 Fig. 12) and is probably dispersed by the frequently occurring gemmae. Female plants are known from southern Greenland, but a sporophyte seems unreported from all areas, where the species occurs. Gemmiparous plants were found among these collections.

Collections:
2: Frederikshåb (EC 55-0134, north-facing rock wall, EC 55-0145 small ravine at lake, *gemmae*, EC 55-0212, 55-0213, 55-0216, 55-0219 all four from a valley with a lake north of the settlement), **9**: Sukkertoppen (EC 55-0843 valley stretching east–west).

Lophozia binsteadii (Kaal.) A. Evans
Lophozia binsteadii is considered to have an imperfect circumpolar distribution, thus in Europe subarctic–alpine. It has been found in almost all parts of Greenland except for southeastern Greenland (Damsholt 2013 Fig. 13). The present collections contained both female plants with perianths and gemmiparous plants. Dispersal in Greenland is considered to be by gemmae, as sporophytes have not been found.

Collections:
1: Ivigtut **(**EC 55-0003 on humid rock in willow shrub), **2**: Frederikshåb (EC 55-0153 blackish plants over stones in a small ravine northeast of the settlement), **3**: Holsteinsborg (EC 55-1009, 55-1012 18 July, EC 55-1206 20 July), **5:** Disko (EC 55-0357 Godhavn, south coast of Disko I., EC 55-0471 below Skarvefjeld, fen with hummocks, EC 55-0545, 55-0548 at small pond near Arctic station, perianths), **5a**: Disko fjord, Eqigtoq (EC 55-0603, 55-0614 wetland with hummocks near a small lake), **7**: Christianshåb (EC 55-0672, gemmae, EC 55-0699 old north-facing scree at a lake).

Lophozia lycopodioides (Wallr.) Cogn.
This circumpolar species, boreal montane in Europe, occurs in the southern half of Greenland (Damsholt 2013 Fig. 15), but sporophytes are only known from southern Greenland. Gemmae have not been found, so dispersal seems to take place only with spores; the frequent occurrence of the species along the southwestern coast of Greenland probably reflects dispersal with spores from the boreal zone into the Arctic during a warm (hypsithermal) postglacial period. By Eva Clausen collected at its northernmost known occurrence, behind the Arctic station, Godhavn, Disko.

Collections:
2: Frederikshåb (EC 55-0026 northeast-facing rocks, young perianths, EC 55-0185 northwest–southeast stretching ravine, young perianths, EC 55-0249 north of the settlement), **2b:** Narssalik (EC 55-0097, 55-0114), **5:** Disko (EC 55-0485 one shoot and 55-0488 both specimens from behind Arctic station), **9**: Sukkertoppen (EC 55-0840 east–west-stretching valley, north-facing rocks).

Lophozia rubescens R. M. Schust. & Damsh.
This species was a puzzle to the collector; on the packets in pencil indicated as "a small *Lophozia hatcheri* " and again found by Eva Clausen at the Faeroes (1970 unpubl.). It was later described from southern Greenland (Schuster and Damsholt 1987) whereas it in the western Greenland paper (Schuster and Damsholt 1974) was considered a fo. *parvifolia-colorata* of *L. hatcheri*. It is distinguished by 1) having rather small underleaves of which some, close to gemmiparous apices, are vinaceous red, 2) having rather large leaf cells and 3) by having more numerous oil-bodies per cell.

Lophozia rubescens is probably holarctic and known from southern and western Greenland (Damsholt 2013 Fig. 16); the collections enumerated below fill in a gap in the distribution in Greenland. In the collections from western Greenland, it was found in rather dry places, often mixed with other bryophytes, as 1) on boulders in scree and 2) on top of hummocks in tufted vegetation.

Collections:
2: Frederikshåb (EC 55-0193 in northwest–southeast stretching valley, southeast of the settlement), **4**: Egedesminde (EC 55-1453, 55-1456), **5:** Disko (EC 55-0330, 55-0360 in a fen near Godhavn, 55-0375 small ravine behind Arctic station, EC 55-0386, 55-0392, 55-0393, 55-0394, 55-0395 fen with hummocks east of Røde elv, 55-0431 along a brook at western side of Røde elv, EC 55-0460, 55-0462 granitic rock behind Arctic station, EC 55-0469 in a fen with hummocks below Skarvefjeld, 55-0552 in scree, western slopes of Røde elv, EC 55-0573, 55-0587, 55-0590, 55-0591, 55-0593, 55-0595, 55-0597 *Cassiope*-heath below Lyngmarksfjeld), **5b**: Disko fjord, Eqalúnguit (EC 55-0616 northwest-facing granitic rock), **7**: Christianshåb (EC 55-0697 at lake shore).

Lophozia hatcheri (A. Evans) Steph.
This bipolar species is widely distributed in Greenland, only unknown from the northernmost part (Damsholt 2013 Fig. 17). The collections were frequently gemmiparous and both male and female plants occurred, although sporophytes were found only twice. It is probably mainly dispersed by gemmae in Greenland.

Collections:
2: Frederikshåb (EC 55-0024 northeast-facing rocks, gynoecial, EC 55-0048 valley with a lake, EC 55-0132 north-facing rock wall, EC 55-0139 north-facing rock wall, gemmae, EC 55-0174 high mountain near an isthmus, EC 55-0189, 55-0192 northwest–southeast running small ravine southeast of the settlement), **2a**: Neria fj. (EC 55-0071, 55-0172, 55-0179 in a small ravine), **3**: Holsteinsborg (EC 55-1008, gemmae, 55-1215, 55-1322 gemmae), **4**: Egedesminde (EC 55-1460), **5:** Disko (EC 55-0252 western side of Blæsedalen, gynoecial, gemmae, EC 55-0274, 55-0275 trans. ad *L. rubescens*, EC 55-0327 western side of Blæsedalen, basalt, trans. ad *L. rubescens*, EC 55-0328 Godhavn, gemmae, EC 55-0331 Godhavn, trans. ad *L. rubescens*, EC 55-0334, 55-0335, EC 55-0337 trans. ad *L. rubescens*, EC 55-0338 Godhavn, EC 55-0342 male, perianths, gemmae, EC 55-0371 small ravine behind Arctic station, gemmae, EC 55-0485, 55-0488, 55-0489, 55-0490, 55-0491 small ravine behind Arctic station, gemmae, gynoecial, sporophyte, EC 55-0390 fen with hummocks east of Røde elv, gemmae and large underleaves, EC 55-0449 western banks of Røde elv, along a brook, male, perianths and sporophyte, EC 55-0451, 55-0501 western banks of Røde elv, along a brook, EC 55-0553 western slopes of Røde elv, trans. ad *L. rubescens*, EC 55-0456 granitic rock in small ravine behind Arctic station, gemmae, EC 55-0457 granitic rock in small ravine behind Arctic station trans. ad *L. rubescens*, EC 55-0459, 55-0466 granitic rock in small ravine behind Arctic station, EC 55-0473 fen with hummocks below Skarvefjeld, EC 55-0474, 55-0589, 55-0590, 55-0593, 55-0594 *Cassiope*-heath below Lyngmarksfjeld, gemmae, gynoecial, EC 55-0597 *Cassiope*-heath below Lyngmarksfjeld, trans. ad *L. rubescens*), **5b**: Disko fjord, Eqalúnguit (EC 55-0630 northwest-facing granitic rock, EC 55-0631 northwest-facing granitic rock, trans. ad *L. rubescens*), **6**: Egedesminde (EC 55-0656), **7**: Christianshåb (EC 55-0694 on top soil of a boulder at lake shore, EC 55-0697 at lake shore), **8**: Holsteinsborg (EC 55-0746 along a waterfall at the head of the fjord, gemmae), **9**: Sukkertoppen (EC 55-0800 north-facing low rocks, EC 55-0841 south-facing rocks in east–west-stretching valley, EC 55-0847, 55-0860 east-facing high rocks in east–west stretching valley, EC 55-0851 along a stream in east–west-stretching valley below east-facing high rocks (gemmae)).

Lophozia longidens (Lindb.) Macoun ssp. ***arctica*** R. M. Schust.
This taxon was described by Schuster (1966–1992) from northwestern Greenland, fourteen years after Eva Clausen collected along the western coast of Greenland, highlighting one of the taxonomic difficulties she was faced with, when she tried to identify her collections after returning to Denmark and often found no oil-bodies persisting in the cells. This taxon was simultaneously described as *Lophozia rubrigemma* R.M.Schust., a species mainly characterized by the tear-drop shaped cells of the teeth of the perianth mouth, whereas *Lophozia longidens* ssp. *arctica* was stated by its author to be vegetatively inseparable from fo. *fissifolia–angustifolia–parvifolia–squarrosa* of *L. rubrigemma*. The two taxa were considered conspecific in (Damsholt 2013). Both ssp. *longidens* and ssp. *arctica* are known from Greenland (Damsholt 2013 Fig. 19), ssp. *arctica* being limited to western and northwestern Greenland (l.c. Fig. 20). This probably circumpolar subspecies is mainly dispersed by gemmae.

Collections:
5: Disko (EC 55-0330 Godhavn, EC 55-0375, 55-0457, 55-0460 small ravine with granite behind Arctic station, EC 55-0394 fen with hummocks, east of Røde elv), **7**: Christianshåb (EC 55-0697 at lake shore).

Lophozia excisa (Dicks.) Dumort. (incl. fo. *cylindracea* (Dumort.) Müll. Frib.).
This bisexual, bipolar, holarctic species was found with both sporophytes and gemmae, indicating its high dispersal potential. *Lophozia excisa* is known from all parts of Greenland (Damsholt 2013 Fig. 21) and was in a single collection found as fo. *cylindracea*, a modification *laxifolia–latifolia* occurring among other upright growing plants in wetlands.

Collections:
5: Disko (EC 55-0273, 55-0275 western slopes of Røde elv, Blæsedalen, on granite, EC 55-0334 fo. *cylindracea*, perianth, among *Sphagnum,* probably from a fen in willow shrub near Godhavn, EC 55-0342 Godhavn, on soil

at the margin of a scree, EC 55-0386 in fen with hummocks, east of Røde elv, EC 55-0459 behind Arctic station, granitic rocks, sporophyte, EC 55-0475 fen with hummocks below Skarvefjeld, EC 55-0580, 55-0582 *Cassiope*-heath below Lyngmarksfjeld*, gemmae,* EC 55-0727 below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0608), **5b**: Disko fjord, Eqalúnguit (EC 55-0615, 55-0645 northwest-facing granitic rock, gemmae), **9**: Sukkertoppen (EC 55-0800 north-facing low rocks, EC 55-0844 along a brook, gemmae).

Lophozia ventricosa (Dicks.) Dumort. (incl. var. *rigida* R. M. Schust. var. *silvicola* (H. Buch) E. W.J ones & var. *uliginosa* Breidl.).
A subcosmopolitan, probably temperate–Arctic, circumboreal, montane species. *Lophozia ventricosa* was collected several times and usually distinguished by the yellowish green gemmae; perianths were also sometimes present. *Lophozia ventricosa* is known from almost all parts of Greenland (Damsholt 2013 Fig. 24), with exception of northern Greenland.

A single collection was, because of the general narrow leaves, referred to var. *silvicola*, although oil-bodies were not seen and two collections from a fen with hummocks below Skarvefjeld, Disko, with large, strongly pigmented plants, blackish stems and often with some reddish pigmentation of the perianths, were referred to var. *uliginosa*. Finally, some plants from the northern part of the investigated area, were found with large gemmae and large leaf cells, accordingly referred to var. *rigida*.

Collections:
2: Frederikshåb (EC 55-0018 north-facing rock wall, EC 55-0019 northeast-facing rock wall, perianth, EC 55-0026 northeast-facing rocks, EC 55-0046 on soil along a brook in a valley northeast of the settlement, EC 55-0055, 55-0061 along a brook below a high point, EC 55-0134 below north-facing rock wall, EC 55-0142, 55-0144, 55-0145, 55-0147, 55-0151 small ravine at a lake, EC 55-0174 below a high mountain, EC 55-0185(1), 55-0188(1), 55-0191, 55-0193 northwest–southeast-stretching valley southeast of the settlement, EC 55-0211 at lake north of the settlement, var. *silvicola*, EC 55-0216, 55-0219, 55-0244 valley with a lake north of the settlement), **2a**: Neria fj. (EC 55-0079 in a ravine), **3**: Holsteinsborg (EC 55-1109 scree at base of northwestern-facing rock wall, EC 55-1115), **5**: Disko (EC 55-0272 Blæsedalen, western basaltic part, var. *rigida*, 55-0275, EC 55-0335, 55-0338 Godhavn, EC 55-0367, 55-0369, 55-0370, 55-0373 small ravine behind Arctic station, EC 55-0378 small ravine behind Arctic station, trans. ad *L. wenzelii*, EC 55-0487 behind Arctic station, EC 55-0597 *Cassiope*-heath below Lyngmarksfjeld, EC 55-0386, 55-0388, 55-0405, 55-0419 fen with hummocks, east of Røde elv, EC 55-0479 fen with hummocks below Skarvefjeld var. *uliginosa*, EC 55-0480 fen with hummocks below Skarvefjeld ? var. *uliginosa*), **5a**: Disko fjord, Eqigtoq (EC 55-0608), **6**: Egedesminde (EC 55-0292, 55-0293 humid north-facing rocks, east of the settlement, EC 55-0300 humid north-facing rocks, east of the settlement, var. *uliginosa*), **7**: Christianshåb (EC 55-0694 on top soil of boulder at lake shore), **8**: Holsteinsborg (EC 55-0747 along waterfall at the head of the fjord, EC 55-0778 along river), **9**: Sukkertoppen (EC 55-0843, EC 55-0852 along a brook below east-facing high rocks in an east–west-stretching valley).

Lophozia wenzelii (Nees) Steph. var. *wenzelii*
This boreal–montane species was only found a few times, but often correctly identified by the collector. *Lophozia wenzelii* is known from the southern 2/3 of Greenland (Damsholt 2013 Fig. 25) and in both eastern and western Greenland it is often replaced of var. *lapponica*, a taxon not found among the EC-collections. Dispersal via gemmae.

Collections:
2: Frederikshåb (EC 55-0043 valley with a lake northeast of the settlement), **2a**: Neria fj. (EC 55-0069 in a small ravine), **2b**: Narssalik (EC 55-0085), **5**: Disko (EC 55-0360 Godhavn, in a fen, EC 55-0370 behind Arctic station).

Lophozia sudetica (Nees ex Huebener) Grolle
This circumpolar, holarctic species is generally distributed in Greenland, with exception of the northernmost part (Damsholt 2013, Fig. 27). In these collections it was found with both gemmae and perianths, but only rarely with sporophytes.

Collections:
2: Frederikshåb (EC 55-0031, 55-0032 northeast-facing rocks, EC 55-0045, 55-0050, 55-0052, 55-0063, 55-0065 the valley with a lake northeast of the settlement, EC 55-0102 brook in small ravine below a high point, EC 55-0134, 55-0135 north-facing rock wall, EC 55-0147, 55-0151 small ravine at a lake, EC 55-0157, EC 55-0178 below high point (perianth, gemmae), EC 55-0181, 55-0200, 55-0201 northwest–southeast-stretching valley southeast of the settlement, EC 55-0230 snow bed, below a high north-facing rock, trans. ad *L. debiliformis*, EC 55-0231), **2a**: Neria fj. (EC 55-0081, 55-0100 in a ravine), **2b**: Narssalik (EC 55-0085 male, sporophyte, EC 55-0101), **5**: Disko (EC 55-0564, 55-0567 below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0281 flat valley east of the settlement, humid north-facing rocks), **9**: Sukkertoppen (EC 55-0783, EC 55-0820, 55-0823 moist soil in shade, east–west-running valley, EC 55-0827, EC 55-0829 at base of rocks in east–west-running valley, EC 55-0830, 55-0835 south-facing rocks in east–west-running valley, EC 55-0859 east-facing high rocks).

Lophozia polaris (R. M. Schust.)R. M. Schust. et Damsh. (incl. var. *sphagnorum* R. M. Schust.).

A high Arctic species, essentially known from the northern half of Greenland (Damsholt 2013, Fig. 28), distinguished by only having 6–15 oil-bodies per median leaf cell, whereas they are (9–) 11–24 in *L. excisa* and *L. latifolia*. *L. polaris* in the field is difficult to separate from *L. excisa* and *L. latifolia*, all three species sharing reddish- or red-brown gemmae. Eva Clausen has unfortunately not noted the number of oil-bodies per cell in her collections and in most cases she referred her own collections and some other collections from midwest Greenland (leg. T. W. Böcher) to *L. alpestris* var. *major*, a taxon described by C. Jensen (1906) from eastern Greenland. These simultaneously determinated plants from midwest Greenland of *L. alpestris* var. *major* were mapped as *L. latifolia* (Damsholt 2013 Fig. 22), but are missing in C; they could also be *L. polaris*. The Greenland type-material of *L. alpestris* var. *major* was from two localities and from the first of these shown to represent *L. excisa*, whereas from the second *L. latifolia*. The part of the type, referred to *L. excisa*, was selected as the type of *L. alpestris* var. *major* C. E. O. Jensen. The present collections are referred to *L. polaris* mainly because of the abundant bright red gemmae; in both *L. excisa* and *L. latifolia* gemmae are vinaceous to brownish purple and they occur in smaller quantity.

Collections:
5: Disko (EC 55-0323, 55-0334 Godhavn var. *sphagnorum*, EC 55-0337 Godhavn, perianth mouth with teeth 1–3 cells long, EC 55-0414 springy area at the eastern banks of Røde elv, EC 55-0497 west of Røde elv, humid basaltic rocks, EC 55-0574 *Cassiope*-heath below Lyngmarksfjeld, male), **9**: Sukkertoppen (EC 55-0845 east–west-running valley, east-facing high rocks; male).

Lophozia debiliformis R. M. Schust. & Damsh.
This, probably Arctic–alpine species, was described from south Greenland more than thirty years after Eva Clausen collected in Greenland. *L. debiliformis* is recorded from the southern half of the island (Damsholt 2013, Fig. 33). Early collections of *L. debiliformis*, from before it was described, were probably mostly referred to *L. sudetica*. *L. debiliformis* differs from *L. sudetica* in the more deeply divided, 2–3-lobed leaves and in the at least sporadically occurring underleaves; usually reproducing with gemmae.

Collections:
2: Frederikshåb (EC 55-0061 brook in small ravine below a high point, gemmae, EC 55-0138 north-facing rock wall, EC 55-0208, EC 55-0209, EC 55-0217, EC 55-0219 at lake north of the settlement), **2a**: Neria fj. (EC 55-0069 in small ravine), **9**: Sukkertoppen (EC 55-0797 north-facing low rocks, trace only, 55-0846 along a brook below east-facing high rocks in east–west-stretching valley, gemmae).

Lophozia gillmanii (Austin) R. M. Schust.
This, probably imperfectly circumpolar species, was collected once and already identified by the collector as *L. kaurinii* (Limpr.)Steph., a synonym of *L. gillmanii*. It is a bisexual species and known from most parts of Greenland, except for the northwestern region (Damsholt 2013 Fig. 36).

Collection:
5: Disko (EC 55-0513 in rock cave along a brook, western bank of Røde elv; bisexual, paroicous, perianth).

Lophozia heterocolpos (Thed. ex C. Hartm.) M. Howe (incl. var. *harpanthoides* (Bryhn & Kaal.) R. M. Schust. & var. *arctica* (S. W. Arnell) R. M. Schust. et Damsh.).
A holarctic–alpine species, very common in Greenland (Damsholt 2013 Fig. 37). It was almost always found with gemmae and one occasion with reddish pigmented shoot apices (var. *arctica*). The var. *harpanthoides*, the modification from dry habitats, was also found once.

Collections:
5: Disko (EC 55-0251, EC 55-0256, 55-0273, 55-0276 Blæsedalen, western part, basalt, EC 55-0304, EC 55-0325 fen in willow shrub, EC 55-0370 behind Arctic station, var. *arctica*, EC 55-0405, 55-0417 eastern banks of Røde elv, Blæsedalen, EC 55-0459 behind Arctic station, on granitic rocks, EC 55-0433, 55-0435, 55-0442, 55-0444, 55-0451, 55-0501, 55-0508, 55-0511, EC 55-0509 along a brook, western bank of Røde elv var. *harpanthoides*, EC 55-0549 below large stones, western bank of Røde elv, EC 55-0574, 55-0575, 55-0583 *Cassiope*-heath below Lyngmarksfjeld, EC 55-0733, 55-0737, 55-0743 below Skarvefjeld, alt. ca 500 m), **5b**: Disko fjord, Eqalúnguit (EC 55-0616, 55-0617, 55-0619 northwest-facing granitic rocks, 55-0627, 55-0644, 55-0653).

Lophozia incisa (Schrad.) Dumort. ssp. ***incisa***
This holarctic, boreal–montane subspecies was rather frequent in the collections from the southern part of Greenland and merged smoothly into the northern ssp. *opacifolia* (Damsholt 2013 Fig. 40, 41). A limit between the two subspecies is often difficult to draw, although ssp. *incisa* usually is distinguished by the more deeply divided, dentate leaves, with spinose lobes, only bistratose at the very base, whereas ssp. *opacifolia* has a very broad stem, 2–3-lobed leaves, often only with an apical tooth of the leaves and being 2–3 stratose towards base. Gemmae are often abundantly present; although perianths are sometimes present, sporophytes were not noted among these collections.

Collections:
1: Ivigtut (EC 55-0004 on humid rocks along a brook in willow shrub), **2**: Frederikshåb (EC 55-0047(1) at the

edge of a pool, valley with a lake northeast of the settlement, EC 55-0048 valley with a lake northeast of the settlement, perianth, EC 55-0051 on soil at base of an east-facing rock wall in valley with a lake northeast of the settlement, EC 55-0119 on humid soil along a rivulet in a small ravine, EC 55-0157 on soil near to the snow), **2a**: Neria fj. (EC 55-0068 on humid soil along a rivulet in a small ravine), **5**: Disko (EC 55-0339, 55-0340 south coast of Disko I. under a large stone in a scree, EC 55-0369, 55-0370 in a small ravine behind Arctic station, EC 55-0386 fen with hummocks, eastern slopes of Røde elv, trans. ad ssp. *opacifolia*, EC 55-0409 springy area, eastern slopes of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0646), **9**: Sukkertoppen (EC 55-0843 east–west-stretching valley at the settlement).

Lophozia incisa (Schrad.) Dumort. ssp. ***opacifolia*** (Culm.) R. M. Schust. & Damsh.
This Arctic–alpine, probably circumpolar subspecies is very common in the northern basaltic part of Greenland investigated by Eva Clausen. According to Damsholt (2013 Fig. 41) also rather common in the basaltic areas of Scoresby Sund, eastern Greenland, but not restricted to basaltic areas, as also recorded from both northwest, south and southeastern Greenland. Probably mainly reproducing with gemmae.

Collections:
5: Disko (EC 55-0337 Godhavn, EC 55-0508 western slopes of Røde elv, along a rivulet, EC 55-0574, 55-0586 *Cassiope*-heath below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0300 humid north-facing rocks, flat valley east of the settlement), **7**: Christianshåb (EC 55-0694 on top soil of a boulder laying at a lake shore).

Lophozia grandiretis (Lindb. ex. Kaal.) Schiffn. ssp. ***grandiretis***
These plants were found to be identical to the Norwegian type of *Jungermannia grandiretis*, collected by S. O. Lindberg 1882 (Damsholt 2010). Similar plants from northwestern Greenland were described as *Lophozia grandiretis* var. *parviretis* R. M. Schust., because they deviated from the lowland ssp. *proteidea*, an even larger-celled subspecies, the latter for a long time considered to represent the type of the species. The plants were found with a sporophyte.

Collections:
5: Disko (EC 55-0304 Godhavn, EC 55-0471, 55-0480 fen with hummocks below Skarvefjeld, sporophyte).

Gymnocolea inflata (Huds.) Dumort. ssp. ***inflata***
This subcosmopolitan species was found to be rather frequent on humid soil, on hummocks in wetlands, acidic fens and similar habitats. It reproduces with caducous inflated perianths, each trapping a bubble of air within and usually carried away by floating water. Very common in Greenland (Damsholt 2013 Fig. 45) and although known with both sexes, not known from Greenland with sporophytes or gemmae.

Collections:
2: Frederikshåb (EC 55-0105, 55-0106, 55-0107, 55-0109 on humid soil along a brook, valley close to and east of the settlement, EC 55-0125, EC 55-0136 north-facing rock-wall northeast of the settlement, EC 55-0179 blackish plants, EC 55-0203 humid soil along a brook, southeast of the settlement, EC 55-0210 vertical rock-wall at lake, north of the settlement), **2b**: Narssalik (EC 55-0090 along a brook), **3**: Holsteinsborg (EC 55-1011 on humid rocks), **5**: Disko (EC 55-0559, 55-0560 Godhavn, along a lake below Lyngmarksfjeld), **7**: Christianshåb (EC 55-0669, 55-0671, 55-0685 humid valley at the shrimp packing factory, EC 55-0717 tufted vegetation with *Sphagnum*, at the southwestern end of a lake), **8**: Holsteinsborg (EC 55-0752 along a river probably at the head of the fjord), **9**: Sukkertoppen (EC 55-0797 north-facing low rocks).

Gymnocolea inflata (Huds.) Dumort. ssp. ***acutiloba*** (Schiffn.) R. M. Schust. et Damsh.
This Arctic–alpine subspecies is probably frequently present in harsh places, pioneering low depressions of rocks, exposed to changes from submersion to desiccation. It is known from widely spaced localities in Greenland (Damsholt 2013 Fig. 46) but is probably more common than the map indicates. Perianths found containing archegonia, which are usually lacking in the inflated caducous perianths of ssp. *inflata*.

Collections:
2: Frederikshåb (EC 55-0148 small ravine at a lake, perianths with archegonia, EC 55-0244 north of the settlement), **2b**: Narssalik (EC 55-0091, 55-0092), **5**: Disko (EC 55-0567 Godhavn, along a small lake below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0289 flat valley east of the settlement), **8**: Holsteinsborg (EC 55-0747 along water fall at the head of the fjord), **9**: Sukkertoppen (EC 55-0857 east–west-stretching valley, along a brook below east-facing high rocks).

Anastrophyllum minutum (Schreb.) R. M. Schust. var. ***minutum***
This circumpolar, Arctic–alpine variety is stated to have a Greenland type, perhaps from near Nûk (Godthåb). *Anastrophyllum minutum* is generally known from most parts of Greenland (Damsholt 2013 Fig. 51). *Anastrophyllum minutum* var. *minutum* is distinguished by the more or less imbricate, concave, often almost cupped leaves, with long marginal lobe cells and by the usual lack of gemmae. In Greenland it is probably dispersed by spores and rarely by gemmae.

Collections:
3: Holsteinsborg (EC 55-1101 scree, at base of a northwest-facing rock wall), **5**: Disko (EC 55-0357 Godhavn, perianth, EC 55-0360, 55-0361 at tuft margin in a fen close to the settlement, EC 55-0431, 55-0432 Godhavn, along a brook, western slopes of Røde elv, EC 55-0470 below Skarvefjeld above the tufted vegetation, EC 55-0471, 55-0477 fen with hummocks below Skarvefjeld, EC 55-0743 below Skarvefjeld, EC 55-0571 at small lake below Lyngmarksfjeld), **5a**: Disko fjord, Eqigtoq (55-0612 tufted vegetation at the edge of a small lake, gemmae!), **5b**: Disko fjord, Eqalúnguit (EC 55-0624, EC 55-0627 in *Cassiope tetragona* vegetation).

Anastrophyllum minutum (Schreb.) R. M. Schust. var. ***weberi*** (Mart.) Kartt.
Anastrophyllum minutum var. *weberi*, the temperate–boreal–Arctic variety, is rather common in the southern part of Greenland and along the westcoast, known at least to northwestern Greenland. It is distinguished by the distant to contiguous, easily flattened leaves and it is frequently provided with gemmae.

Collections:
1: Ivigtut (EC 55-0010 scree, above the cryolite escarpment), **2**: Frederikshåb (EC 55-0022 NE-facing rock wall near the settlement, perianth, EC 55-0034 northeast-facing rock wall near the settlement, EC 55-0054 valley with a lake northeast of the settlement, EC 55-0173 Arfiorfik, ca 10 km east of the settlement, EC 55-0197 northwest–southeast-stretching valley southeast of the settlement, EC 55-0214 at small lake north of the settlement), **2a**: Neria fj. (EC 55-0083 small ravine close to the settlement), **2b**: Narssalik (EC 55-0087), **3**: Holsteinsborg (EC 55-1014, 55-1101, 55-1114(2) on stones in a scree), **5**: Disko, Godhavn (EC 55-0367 in small ravine behind Arctic station), **5a**: Disko fjord, Eqigtoq (EC 55-0603, 55-0611 tufted vegetation at the edge of a small lake, det. EC), **5b**: Disko fjord, Eqalúnguit (EC 55-0629, 55-0630, 55-0631 northwest-facing granitic rocks), **6**: Egedesminde (EC 55-1457, 55-1459 (1), EC 55-0289 flat valley northeast of the settlement), **7**: Christianshåb (EC 55-0677 humid valley at the shrimp packing factory, EC 55-0697 along lake shores, EC 55-0700 in old north-facing scree along a lake, EC 55-0711 tufted vegetation at the southern end of a lake), **8**: Holsteinsborg (EC 55-0757 along a waterfall at the head of the fjord), **9**: Sukkertoppen (EC 55-0781 at low rocks near the settlement).

Tritomaria exsectiformis (Breidl.) Loeske ssp. ***arctica*** R. M. Schust.
Tritomaria exsectiformis ssp. *arctica* was described from northwestern Greenland (Schuster 1966–1992), long after Eva Clausen collected it in the Disko Bay area (Damsholt 2013 Fig. 53). Her collection had the diagnostic ovate leaves, with a hardly bidentate ventral lobe and abundant, small, reddish-brown, polygonal, 2-celled gemmae, 19 × 20 μm.

Collection:
7: Christianshåb (EC 55-0677 from a humid valley at the shrimp packing factory).

Tritomaria scitula (Taylor) Jørg.
Tritomaria scitula, a circumpolar, Arctic–alpine species, but with a scattered distribution because of its demand for calcareous substrates. Rather frequent in eastern and western Greenland (Damsholt 2013 Fig. 54), increasingly rare to the south and not known from northern Greenland. *Tritomaria scitula* is frequently found with gemmae, whereas sexual reproduction seems rare and sporophytes have not yet been recorded from Greenland or elsewhere.

Collections:
5: Disko, Godhavn (EC 55-0257 the basaltic western slopes of Blæsedalen, EC 55-0425, 55-0451 along a brook, western slopes of Røde elv, EC 55-0549 under a stone, western slopes of Blæsedalen).

Tritomaria quinquedentata (Huds.) H. Buch ssp. ***quinquedentata*** (incl. fo. *gracilis* (C. E. O. Jensen) R. M. Schust.)
Tritomaria quinquedentata has a circumpolar distribution and is a common species in the temperate, boreal zone, here reproducing with spores. It is known from all parts of Greenland (Damsholt 2013 Fig. 56), but has not been found reproducing with gemmae, except for a single collection from northeastern Greenland, where fo. *gracilis* was once found with gemmae (Jackson Ø, Damsholt 2010). The general distribution could reflect a dispersal to Greenland by spores, during the postglacial hypsithermal or even in recent times.

Collections:
2a: Neria fj. (EC 55-0077), **3**: Holsteinsborg (EC 55-1216 north-facing rocks below Kællingehætten), **4**: Egedesminde (EC 55-1454 fo. *gracilis*), **5**: Disko (EC 55-0251 Godhavn, Blæsedalen, western slopes, fo. *gracilis*, EC 55-0261, EC 55-0431 along a brook, western slope of Blæsedalen, young perianth, EC 55-0495, 55-0497, 55-0498 humid, north-facing basaltic rocks, west of Røde elv, EC 55-0508, 55-0511 along a brook, western slope of Blæsedalen, EC 55-0552 along a brook, western slope of Blæsedalen fo. *gracilis*, EC 55-0303, 55-0305 low basaltic rocks at Godhavn, EC 55-0304 Godhavn, EC 55-0332 Godhavn, fen in low *Salix* shrub p.p. fo. *gracilis*, EC 55-0336 Godhavn, fen in low *Salix* shrub fo. *gracilis*, EC 55-0340 Godhavn, southern part of Disko I., EC 55-0358 in a fen close to the settlement, EC 55-0367, 55-0368 in a small ravine behind Arctic station, EC 55-0732, 55-0743 Godhavn, below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0612), **5b**: Disko fjord, Eqalúnguit (EC 55-0627,

55-0629 fo. *gracilis*, EC 55-0630 northwest-facing granitic rocks, fo. *gracilis*), **6:** Egedesminde (EC 55-0285 flat valley, east of the settlement fo. *gracilis*), **7**: Christianshåb (EC 55-0694 on top soil of a boulder lying at a lake shore, EC 55-0697 at lake shore, trans. ad ssp. *turgida*), **8**: Holsteinsborg (EC 55-0665 flat valley, east of the settlement).

Tritomaria quinquedentata (Huds.) H. Buch ssp. ***turgida*** (Lindb.) Damsh.
Tritomaria quinquedentata ssp. *turgida* has a circumpolar distribution and in Greenland is most frequent in the northern part (Damsholt 2013 Fig. 57). It is supposed to reproduce with spores and was reported with twinned sporophytes from Spitsbergen (Thingsgaard and Damsholt 2007).

Collections:
3: Holsteinsborg (EC 55-1006), **5:** Disko, Godhavn (EC 55-0398 tufted fen, eastern slopes of Røde elv, EC 55-0517 along a rivulet, western slopes of Røde elv, EC 55-0730 below Skarvefjeld), **5b**: Disko fjord, Eqalúnguit (EC 55-0631 northwest-facing granitic rocks, perianth).

Tritomaria polita (Nees) Jørg. ssp. ***polita***
An Arctic–alpine species; ssp. *polita* is the dominating subspecies in the southern part of Greenland (Damsholt 2013 Fig. 58).

Collections:
1: Ivigtut (EC 55-0005, 55-0009(2) along a brook in the north-facing rocks, above the cryolite escarpment), **3**: Holsteinsborg (EC 55-0780, 55-1105, 55-1211 along a brook below Kællingehætten; gemmae).

Tritomaria polita (Nees) Jørg. ssp. ***polymorpha*** R. M. Schust.
Tritomaria polita ssp. *polymorpha* is the dominant subspecies of western and eastern Greenland (Damsholt 2013 Fig. 59), frequently found with perianths and even with sporophytes, in the latter case distinguished from ssp. *polita* in having subreniform female bracts, wider than long. Furthermore, *Tritomaria polita* ssp. *polymorpha* differs by being reddish brown and by having yellowish-brown gemmae. *Tritomaria polita* ssp. *polymorpha* is probably a holarctic taxon, although most luxuriantly developed in the basaltic region of western Greenland, obviously favouring calcareous substrates.

Collections:
5: Disko (EC 55-0403, 55-0404, 55-0412 near springs, eastern slopes of Røde elv, EC 55-0415 springs, eastern slopes of Røde elv, perianth, EC 55-0448, 55-0507, 55-0509 along a brook, western slopes of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0632 sporophyte, EC 55-0636, 55-0637, 55-0638 perianth, EC 55-0639 perianth, EC 55-0644).

Jungermannia pumila With. ssp. ***pumila*** (incl. var. *alpestris* Lindb.).
This, widely distributed temperate–montane species, occurs far into the low Arctic part of Greenland. The bisexuality of *Jungermannia pumila* was demonstrated in almost all the collections; in only a few cases were additional pure male branches seen. The elliptical- to lanceolate-elliptical leaves of this species is often corellated with a fusiform perianth. Only a single time was the var. *alpestris*-modification of cascading streams found, distinguished by its perianths similar to ssp. *polaris*.

Collections:
2a: Neria fj. (EC 55-0084 in a small ravine), **3**: Holsteinsborg (EC 55-1216), **5**: Disko (EC 55-0269 Godhavn, western slope of Blæsedalen, sporophyte, EC 55-0424 along a brook, western slope of Blæsedalen, EC 55-0427 along a brook, western slope of Blæsedalen, fusiform perianth, but with leaves as ssp. *polaris*, trans. ad ssp. *polaris*, EC 55-0438 along a brook, western slope of Blæsedalen, EC 55-0440 western slope of Blæsedalen, perianth, sporophyte, EC 55-0441 western slope of Blæsedalen, along a brook, EC 55-0494 western slope of Blæsedalen, on humid north-facing rocks), **5b**: Disko fjord, Eqalúnguit (EC 55-0632, 55-0633), **8**: Holsteinsborg (EC 55-0760 along a waterfall at the head of the fjord, EC 55-0770 along waterfall, partly male, thus heteroicous), **9**: Sukkertoppen (EC 55-0837 on stones in a rivulet, east–west-stretching valley at the settlement, var. *alpestris*, EC 55-0839 south-facing rocks in east–west-stretching valley at the settlement).

Jungermannia pumila With. ssp. ***polaris*** (Lindb.) Damsh.
Jungermannia pumila ssp. *polaris* is the high Arctic equivalent to ssp. *pumila*, though a border line between the two subspecies is difficult to draw. The broadly ovate to suborbicular leaf form is considered to be correlated with the obovoid to oblong–obovoid form of the perianth, but plants with short, rounded leaves have in Greenland been found with fusiform perianths, not revealing a diagnostic character on these morphological criteria. In spite of that, plants with broadly ovate leaves and ovoid to oblong ovoid perianths have been referred to ssp. *polaris.*

Collections:
5: Disko (EC 55-0503 Godhavn, western slopes of Røde elv, sporophyte, EC 55-0505 Godhavn, western slopes of Røde elv, along a rivulet, EC 55-0729 below Skarvefjeld, EC 55-0734 below Skarvefjeld, only trace), **5b**: Disko fjord, Eqalúnguit (EC 55-0634 sporophyte), **6**: Egedesminde (EC 55-0658 east–west-stretching valley just south of water lake), **7**: Christianshåb (EC 55-0719).

Jungermannia sphaerocarpa Hook.
Jungermannia sphaerocarpa is probably a holarctic species, in Greenland rather common in the southern 2/3 of the

island (Damsholt 2013 Fig. 66), in northeastern Greenland mainly as var. *nana*.

Collections:
2: Frederikshåb (EC 55-0055 the valley with a lake near the settlement), **3**: Holsteinsborg (EC 55-1109, 55-1115), **5**: Disko (EC 55-0734, 55-0736 below Skarvefjeld).

Jungermannia obovata Nees ssp. ***obovata***
This boreal–montane species penetrates into the Arctic in the southern third of Greenland, but occurs as ssp. *minor* much further north (Damsholt 2013 Fig. 71, 72). *Jungermannia obovata* ssp. *obovata* was only collected once by Eva Clausen at the southern locality, she investigated for a longer time.

Collection:
2: Frederikshåb (EC 55-0152 in a small ravine near a lake).

Jungermannia obovata Nees ssp. ***minor*** (Carrington) Damsh.
Jungermannia obovata ssp. *minor* penetrates into the high Arctic part of Greenland (Damsholt 2013 Fig. 72), although generally considered subarctic–subalpine, in Greenland it occurs further north than ssp. *obovata*, perhaps because ssp. *minor* often is pioneering open, moist, clayey soil or slate above a stream, whereas ssp. *obovata* is mostly associated with stones in streams or brooks.

Collections:
2: Frederikshåb (EC 55-0032 northeast-facing humid rocks), **5b**: Disko fjord, Eqalúnguit (EC 55-0634), **8**: Holsteinsborg (EC 55-0779 along a river).

Nardia scalaris Gray
A circumpolar–subarctic species, penetrating into the low Arctic of Greenland (Damsholt 2013 Fig. 74). By Eva Clausen only collected at the southern, most oceanic localities. The species is often easily identified by the remnants of the glistening oil-bodies in the cells.

Collections:
2: Frederikshåb (EC 55-0020 at a lake near the settlement, EC 55-0063 in water in a rivulet, the valley with a lake northeast of the settlement, EC 55-0113 valley near the settlement, EC 55-0118, EC 55-0122, 55-0186, 55-0188, 55-0193, 55-0195 southeast–northwest-stretching valley near the settlement, EC 55-0167 high mountain, Arfiorfik, with an isthmus, EC 55-0215, EC 55-0244, 55-0246 at a lake north of the settlement), **2a**: Neria fj. (EC 55-0066, 55-0078 both from a small ravine), **2b**: Narssalik (EC 55-0092).

Nardia geoscyphus (De Not.) Lindb. (incl. var. *suberecta* (Lindb.) C. Massal. & Carestia).
This Arctic–boreal species is almost known as far north as there is land in Greenland (Damsholt 2013 Fig. 76). The bisexuality of the species is almost always easily demonstrated in these collections and a single time the erect modification, var. *suberecta*, was found in a collection from one of the southern localities.

Collections:
2: Frederikshåb (EC 55-0031, 55-0032 on northeast-facing rocks, EC 55-0055 valley with a lake near the settlement, EC 55-0062 along a rivulet in a small ravine below a high point, var. *suberecta*, EC 55-0180 valley southeast of the settlement, stretching northwest–southeast, EC 55-0191, 55-0192 sporophyte, valley southeast of the settlement stretching northwest–southeast, on stones in a brook), **2b**: Narssalik (EC 55-0090, 55-0091 plants reddish, EC 55-0093 along a brook), **5**: Disko (EC 55-0325 Godhavn, fen in willow shrub, EC 55-0352, EC 55-0363, 55-0364, 55-0366 Godhavn, fen in willow shrub near the settlement, EC 55-0400 fen with hummocks, east of Røde elv, EC 55-0412 in springy area, eastern bank of Røde elv, EC 55-0508, 55-0509, 55-0519 along a rivulet, western bank of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0615, 55-0616, 55-0622 northwest-facing granitic rock, 55-0632, 55-0633, 55-0634 tufted vegetation, at the bottom btw. hummocks), **6**: Egedesminde (EC 55-0292, 55-0293, 55-0297 flat valley east of the settlement, north-facing humid rocks), **7**: Christianshåb (EC 55-0673, 55-0679 humid valley near the shrimp packing factory, EC 55-0718 on top soil of a boulder at a lake shore), **8**: Holsteinsborg (EC 55-0750 along waterfall at the head of the fjord, EC 55-0751, 55-0753, 55-0761, 55-0763, 55-0764, 55-0767, 55-0771, 55-0778, 55-0779 along river at the head of the fjord), **9**: Sukkertoppen (EC 55-0837 east–west-stretching valley, on stones in a brook).

Mylia anomala (Hook.) Gray
This, probably circumboreal species was only found twice during Eva Clausen's collecting travel in Greenland. *Mylia anomala* is known from the southern third of Greenland (Damsholt 2013 Fig. 79) and is mainly dispersed by gemmae.

Collections:
2: Frederikshåb (EC 55-0112), **3**: Holsteinsborg (EC 55-1008(1)).

Fam.: *Gymnomitriaceae* H. Klinggr.

Eremonotus myriocarpus (Carrington) Lindb. et Kaal.
An Arctic–alpine species distributed along the southern, southwestern and western coast of Greenland (Damsholt 2013 Fig. 81). It prefers slate, but is also found on granitic rocks in and along waterfalls. Not found to be able to reproduce sexually in Greenland; the distribution is

consequently considered relictual, of a species lacking gemmae.

Collection:
8: Holsteinsborg (EC 55-0770 along a waterfall at the head of the fjord).

Marsupella emarginata (Ehrh.) Dumort. var. *emarginata*
A widely distributed Arctic species, in Europe temperate–montane; var. *emarginata* in Greenland (Damsholt 2013 Fig. 82 with the general distribution) has a limited, southern distribution, compared to var. *aquatica*, the records below are probably the very northernmost ones.

Collection:
9: Sukkertoppen (EC 55-0849, 55-0853, 55-0854 east-facing high rocks along a rivulet in east–west-stretching valley close to the settlement).

Marsupella emarginata (Ehrh.) Dumort. var. ***aquatica*** (Lindenb.) Dumort.
Only collected at two of Eva Clausen's southern localities, but known to occur in and along small streams far into the high Arctic part of Greenland (note: the northwestern Greenland record in the map, Damsholt 2013 Fig. 82).

Collections:
2: Frederikshåb (EC 55-0065 from a small pond in the mountains, valley northeast of the settlement, EC 55-0102 in a rivulet in a small ravine below a high point, EC 55-0104 valley close to the settlement, EC 55-0198, 55-0199 northwest–southeast-stretching valley southeast of the settlement), **2a**: Neria fj. (EC 55-0081, 55-0082, 55-0098, 55-0099 in a small ravine).

Marsupella arctica ((Berggr.) Bryhn & Kaal.
An Arctic species known from all parts of Greenland (Damsholt 2013 Fig. 83). The species probably reproduces with spores, but these are rather rare; in these collections found gynoecial.

Collections
3: Holsteinsborg (EC 55-1308, below Kællingehætten), **5**: Disko, Godhavn (EC 55-0567 at a small lake below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0279, 55-0287, 55-0665 valley east of the settlement, gynoecial), **7**: Christianshåb (EC 55-0675, 55-0675(2) humid valley at shrimp packery).

Marsupella sphacelata (Giesecke ex Lindenb.) Dumort.
This widely distributed species of boreal and subarctic regions was originally described from two collections, one of these from southern Greenland. It is known from the southern third of Greenland (Damsholt 2013 Fig. 84) and the following records fall within its known distribution.

Collections:
2: Frederikshåb (EC 55-0065 at a pond in the mountains, valley northeast of the settlement, trace, EC 55-0208, 55-0209, 55-0217 at a pond north of the settlement).

Marsupella sprucei (Limpr.) Bern.
This bipolar, Arctic–alpine species was only found once, and the following record falls within its known distribution (Damsholt 2013 Fig. 86).

Collection:
5: Disko (EC 55-0564 Godhavn, along a small lake below Lyngmarksfjeld).

Marsupella sparsifolia (Lindb.) Dumort.
This bipolar, subarctic–alpine species, known from the southern third of Greenland (Damsholt 2013 Fig. 87), was collected at two localities within its known distribution in Greenland.

Collections:
2: Frederikshåb (EC 55-0061(1) in rivulet of a small ravine, below a high point, in a valley with a lake, northeast of the settlement), **9**: Sukkertoppen (EC 55-0858 along a rivulet, below high east-facing rocks in a east–west-stretching valley close to the settlement).

Marsupella boeckii (Austin) Lindb. ex Kaal.
This Arctic–alpine, oceanic species is known from the westcoast of Greenland, occurring far into the high Arctic (Damsholt 2013 Fig. 88). Most of the collections represent a modification with distant leaves, but in one collection were found plants with denser and more deeply divided leaves, reddish–purplish pigmentation and longer and more acute leaf lobes, fo. *stableri*.

Collections:
2: Frederikshåb (EC 55-0200 southeast of the settlement, EC 55-0202 northwest–southeast-stretching valley southeast of the settlement, EC 55-0231 at the base of high north-facing rocks, EC 55-0234), **5**: Disko, Godhavn (EC 55-0565 at a lake below Lyngmarksfjeld, female, in the "stableri" phase, EC 55-0567 at a lake below Lyngmarksfjeld), **9**: Sukkertoppen (EC 55-0823 on south-facing rocks, in east–west-stretching valley close to the settlement, EC 55-0854, 55-0856, 55-0857 female, along a rivulet below high south-facing rocks, in a east–west-stretching valley close to the settlement).

Apomarsupella revoluta (Nees) R. M. Schust.
This Arctic, boreal–alpine, relictual species was only found once. Because of its ability to survive on moist, exposed rock walls in areas with extensive, but not total glaciation during the Pleistocene, considered as one of few candidates to be a survivors in Greenland. The cited occurrence is the southernmost on the westcoast of Greenland

(Damsholt 2013 Fig. 92) and seems promising for future records from south Greenland, from where collections are lacking, probably because of too few collections from areas close to the Inland ice.

Collection:
3: Holsteinsborg (EC 55-1314 north-facing rocks below Kællingehætten),

Gymnomitrion concinnatum (Lightf.) Corda
An Arctic–alpine, holarctic, species, subarctic, known from all parts of Greenland (Damsholt 2013 Fig. 93). In the southern localities of southwestern Greenland found with sporophytes.

Collections:
2: Frederikshåb (EC 55-0122 in a valley close to the settlement, EC 55-0151 in small ravine at a lake, EC 55-0181, 55-0200 sporophyte, 55-0202 in northwest–southeast-stretching ravine southeast of the settlement, EC 55-0220 in a crevice, north of the settlement, EC 55-0221 at lake north of the settlement, EC 55-0231 at the base of a high north-facing rock), **2a**: Neria fj. (EC 55-0073, EC 55-0100 in a small ravine), **2b**: Narssalik (EC 55-0088 sporophyte), **3**: Holsteinsborg (EC 55-1011), **5**: Disko, Godhavn (EC 55-0267, 55-0554, 55-0558 western slopes of Blæsedalen), **5b**: Disko fjord, Eqalúnguit (EC 55-0629, 55-0630 northwest-facing granitic rocks), **6**: Egedesminde (EC 55-0281, 55-0282 at humid north-facing rock in flat valley east of the settlement, EC 55-0286 humid, north-facing rocks, EC 55-1459), **8**: Holsteinsborg (EC 55-0757 along waterfall at the head of the fjord), **9**: Sukkertoppen (EC 55-0828, 55-0835 south-facing rocks in east–west-stretching valley).

Gymnomitrion mucrophorum R. M. Schust.
Gymnomitrion mucrophorum is known from both western and eastern Greenland (Damsholt 2013 Fig. 94). In one of the enumerated collections it occurred together with *Apomarsupella revoluta*, apparently sharing the ability of that species to survive on intermittently moist, exposed rock walls.

Collections:
3: Holsteinsborg (EC 55-1314 north-facing rocks below Kællingehætten), **5**: Disko, Godhavn (EC 55-0449(1) along a brook, western banks of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0616 at northwest-facing granitic rocks).

Gymnomitrion corallioides Nees
This Arctic–alpine species is known from all parts of Greenland (Damsholt 2013 Fig. 96). It is suggested to be one of the most likely candidates of species to have survived the Pleistocene in Greenland, because it tolerates cold, windswept, arid habitats.

Collections:
2: Frederikshåb (EC 55-0181, 55-0183 in northwest–southeast-stretching ravine southeast of the settlement), **3**: Holsteinsborg (55-1314(1) below Kællingehætten), **5**: Disko, Godhavn (EC 55-0426 west of Røde elv, EC 55-0461 granitic rocks behind Arctic station).

Gymnomitrion apiculatum (Schiffn.) Müll. Frib.
Arctic–alpine species, known from most parts of Greenland, although not recorded from north and northeastern Greenland (Damsholt 2013 Fig. 91).

Collections:
2: Frederikshåb (EC 55-0050 valley with a lake close to the settlement, EC 55-0135 north-facing rock wall), **9**: Sukkertoppen (EC 55-0808 north-facing low rocks, EC 55-0820 shaded moist soil at rocks, east–west-stretching valley, EC 55-0827 south-facing rocks, east–west-stretching valley).

Fam. *Scapaniaceae* Mig.

Diplophyllum albicans (L.) Dumort.
A probably holarctic species, in Greenland frequent in the southern and southwestern parts, declining northwards and lacking in the northern and eastern part of the island (Damsholt 2013 Fig. 100).

Collections:
2: Frederikshåb (EC 55-0023, 55-0024 crevices in north-east-facing rock-wall near the settlement, EC 55-0197, 55-0200, 55-0202 northwest–southeast-stretching ravine, southeast of the settlement, EC 55-0231 at base of a high north-facing rock, EC 55-0234), **2a**: Neria fj. (EC 55-0100 in a small ravine), **2b**: Narssalik (EC 55-0085, 55-0088), **9**: Sukkertoppen (EC 55-0794 north-facing low rocks, EC 55-0805, 55-0807 north-facing low rocks near the settlement, EC 55-0820 shaded, moist soil near rocks).

Diplophyllum taxifolium (Wahlenb.) Dumort.
This holarctic, probably circumboreal species is known to occur from south to north in the area investigated in 1955 by Eva Clausen (Damsholt 2013 Fig. 101).

Collections:
1: Ivigtut (EC 55-0006, 55-0006(2) at rock shelf), **2**: Frederikshåb (EC 55-0064 in crevice of rocks, north of the settlement, EC 55-0141 from the high mountain near an isthmus, ?Arfiorfik, EC 55-0160 crevice of rock in a small ravine, northeast of the settlement, EC 55-0237 high, north-facing rocks north of the settlement), **2b**: Narssalik (EC 55-0089), **5**: Disko, Godhavn (EC 55-0372, 55-0373, 55-0376 small ravine behind Arctic station, EC 55-0419 springy area, eastern banks of Røde elv).

Scapania gymnostomophila Kaal.
This Artic–alpine, probably holarctic calciphyte is known from all parts of Greenland (Damsholt 2013 Fig. 103). It is usually found with gemmae, but perianths are rare and sporophytes unknown.

Collections:
5: Disko, Godhavn (EC 55-0251, 55-0268 western slope of Blæsedalen, basalt; gemmae).

Scapania calcicola (Arnell et J. Perss.) Ingham ssp. ***ligulifolia*** (R. M. Schust.) Damsh. et D. G. Long
Suggested to be the Arctic equivalent of the boreal–montane ssp. *calcicola*, the latter distinguished by having the ventral lobes at least remotely dentate towards apex. In Greenland mostly found in eastern, western and northern Greenland, although also with some few records from southern Greenland, picturing the occurrence of calcareous substrates (Damsholt 2013 Fig. 104). Not known with sporophytes.

Collection:
5: Disko, Godhavn (EC 55-0421 along a brook, western slope of Røde elv).

Scapania obcordata (Berggr.) S. W. Arnell
This Arctic–alpine species is probably circumpolar and known from all parts of Greenland (Damsholt 2013 Fig. 108), although the distinctions of it has been characterized as by easily modified morphological features. An almost totally lacking keel of the leaves and abundant 1–2-celled ellipsoidal gemmae are characters usually present, when identified as *S. obcordata*.

Collections:
2: Frederikshåb (EC 55-0052 the valley with a lake, northeast of the settlement), **5**: Disko, Godhavn (EC 55-0321 fen in willow shrub, EC 55-0326, 55-0350, 55-0352, 55-0353, 55-0354 along a rivulet in willow shrub, EC 55-0363 fen close to the settlement, EC 55-0424 & 55-0447, 55-0451 along a brook, western slope of Røde elv, EC 55-0369, 55-0459, 55-0463 granitic rocks in small ravine behind Arctic station, EC 55-0424, 55-0447, 55-0451, 55-0506, 55-0508, 55-0515 along a brook, western slope of Røde elv, EC 55-0382, 55-0397, 55-0408, 55-0412, 55-0413 all from springy area with hummocks east of Røde elv, EC 55-0727, 55-0734, ? 55-0739 below Skarvefjeld), **5a**: Disko fjord**,** Eqigtoq (EC 55-0604), **5b**: Disko fjord**,** Eqalúnguit (EC 55-0635, 55-0639, male), **7**: Christianshåb (EC 55-0691 on top soil of a boulder lying close to the shores of a lake), **8**: Holsteinsborg (EC 55-0771, 55-0776 along a river).

Scapania curta (Mart.) Dumort.
Scapania curta is a species of the temperate zone with dubious occurrences in the Arctic. When *S. mucronata, S. lingulata* and *S. scandica* were removed from the original stock, *S. curta* became what was left. The small oil-bodies of the median leaf cells, missing in most of the smaller marginal cells, forming a border, distinguish *S. curta* from the above-mentioned species of sect. *Curtae*. Oil-bodies had unfortunately disappered from the two collections enumerated below.

Collections:
5: Disko, Godhavn (EC 55-0325 fen in willow shrub, trans. ad var. *isoloba* R. M. Schust., EC 55-0450 along a brook, western slopes of Røde elv).

Scapania scandica (Arnell et H. Buch) Macvicar. (incl. fo. *argutedentata* (H. Buch) R. M. Schust.).
Scapania scandica is probably holarctic, in Europe temperate-montane; known from almost all parts of Greenland, except northern Greenland (Damsholt 2013 Fig. 110). Among these collections is the mod. *densifolia–dentate–colorata* rather commonly from rock crevices (= fo. *argutedentata*).

Collections:
2: Frederikshåb (EC 55-0032 northeast-facing rocks, EC 55-0046 on soil along a rivulet in a valley with a lake, northeast of the settlement, fo. *argutedentata*, EC 55-0055 valley with a lake, northeast of the settlement, EC 55-0142 small ravine at a lake, (male), EC 55-0191, 55-0193, 55-0194, 55-0195 p.p. fo. *argutedentata* northwest–southeast-stretching ravine southeast of the settlement, EC 55-0206, 55-0218, 55-0219 all at a lake north of the settlement), **2a**: Neria fj. (EC 55-0077 in small ravine), **2b**: Narssalik (EC 55-0101 fo. *argutedentata*), **3**: Holsteinsborg (EC 55-1101 in the lower part of a scree below northwest-facing rocks, EC 55-1115), **5**: Disko, Godhavn (EC 55-0272 western slope of Blæsedalen, EC 55-0322 fen in willow shrub near the settlement, note: perianth mouth unusually denticulate, EC 55-0333 fen in willow shrub, EC 55-0373 small ravine behind Arctic station, fo. *argutedentata*, EC 55-0441 along a brook, western slope of Røde elv, EC 55-0458 small ravine behind Arctic station, granitic rocks, EC 55-0486 on soil and stones in willow shrub behind Arctic station, fo. *argutedentata*), **5b**: Disko fjord, Eqalúnguit (EC 55-0633, 55-0634), **7**: Christianshåb (EC 55-0693 on top soil of a boulder lying close to the shore of a lake, p.p. fo. *argutedentata*), **8**: Holsteinsborg (EC 55-0750 ?, EC 55-0764, 55-0778 along a river), **9**: Sukkertoppen (EC 55-0789 north-facing low rocks, EC 55-0838 east–west-stretching valley, perianth mouth entire, EC 55-0845 east-facing high rocks in east–west-stretching valley, EC 55-0852 along a rivulet below east-facing high rocks in east–west-stretching valley, fo. *argutedentata*).

Scapania mucronata H. Buch ssp. ***praetervisa*** (Meyl.) R. M. Schust.

An Arctic–alpine, probably holarctic subspecies, known from all parts of Greenland (Damsholt 2013 Fig. 112).

Collections:
5: Disko, Godhavn (EC 55-0433 along a brook, western slopes of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0623 northwest-facing granitic rock; gemmae), **7**: Christianshåb (EC 55-0684 humid valley close to the shrimp packing factory; gemmae).

Scapania irrigua (Nees) Nees in Gottsche et al. ssp. ***rufescens*** (Loeske) R. M. Schust.
Scapania irrigua ssp. *rufescens* is probably holarctic and known from the southern half of Greenland (Damsholt 2013 Fig. 117), until recently considered to be the only subspecies occurring in Greenland, but lately the mainly temperate / boreal ssp. *irrigua* var. *rubescens* was recorded from southern Greenland (Damsholt l.c. p. 342 and Fig. 116).

Collections:
2: Frederikshåb (EC 55-0058 in water of a brook in valley with a lake, northeast of the settlement, EC 55-0152 in small ravine close to a lake, EC 55-0180, 55-0184 northwest–southeast-stretching ravine southeast of the settlement, EC 55-0232, 55-0233, 55-0242 all, at base of high north-facing rocks, north of the settlement), **5**: Disko, Godhavn (EC 55-0356 fen in willow shrub near the settlement, EC 55-0385 tufted fen, eastern slopes of Røde elv, EC 55-0483 fen with hummocks, below Skarvefjeld), **6**: Egedesminde (EC 55-0299, humid, north-facing rocks, flat valley east of the settlement), **8:** Holsteinsborg (EC 55-0761,55-0762, 55-0767, 55-0779 along a river, at the head of the fjord), **9**: Sukkertoppen (EC 55-0825, 55-0831, 55-0848 valley stretching east–west).

Scapania hyperborea Jørg.
A species, probably with circumpolar distribution, in Greenland known from the whole island, except for the northernmost part (Damsholt 2013 Fig. 118). In Eva Clausen's collections frequently found with gemmae, from Disko also in the "Kaurinii"-phase with laterally compressed leaves.

Collections:
2b: Narssalik (EC 55-0090 along a brook; gemmae), **5**: Disko, Godhavn (EC 55-0364 in a fen close to the settlement, EC 55-0374 in small ravine behind Arctic station, Kaurinii-phase, EC 55-0379 in small ravine behind Arctic station, probably Kaurinii-phase; gemmae not seen, EC 55-0384, 55-0387 fen with hummocks, eastern slopes of Røde elv, EC 55-0454 along a brook, western slopes of Røde elv; perianth, EC 55-0472 fen with hummocks, below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0606, 55-0608; gemmae), **5b**: Disko fjord, Eqalúnguit (EC 55-0622 northwest-facing rocks), **6**: Egedesminde (EC 55-0287, 55-0289, 55-0297, 55-0299 humid, north-facing rocks in flat valley east of the settlement; gemmae), **7**: Christianshåb (EC 55-0685, humid valley at the shrimp packing factory, EC 55-0723(2) on top soil of a boulder lying close to the shores of a lake), **8**: Holsteinsborg (EC 55-0753, 55-0761, 55-0768 along a river; gemmae), **9**: Sukkertoppen (EC 55-0797 north-facing low rocks; gemmae, EC 55-0822, 55-0824, 55-0839 all from east–west-stretching valley; gemmae).

Scapania paludicola Loeske et Müll. Frib.
A circumpolar, circumboreal species, in Greenland rather rare, known from the southern half of the island (Damsholt 2013 Fig. 120).

Collection:
5: Disko, Godhavn (EC 55-0447 along a brook, western slopes of Røde elv; ventral lobes rounded at apex, trans. ad. var. *rotundiloba* R. M. Schust.).

Scapania uliginosa (Sw. ex Lindenb.) Dumort.
This Arctic–alpine species occurs along the westcoast of Greenland; it is very common towards the south, becoming rare northwards and is not known from the eastcoast, north of southeastern Greenland (Damsholt 2013 Fig. 121). Plants with gemmae or sporophytes were not found, although both are known from Greenland.

Collections:
1: Ivigtut (EC 55-0009 in a rivulet), **2**: Frederikshåb (EC 55-0029, below northeast-facing rock wall, EC 55-0042 valley with a lake northeast of the settlement, EC 55-0245 north of the settlement), **2a**: Neria fj. (EC 55-0078 in a small ravine).

Scapania undulata (L.) Dumort.
This circumpolar, circumboreal species is only known from the southern third of Greenland (Damsholt 2013 Fig. 124), here found reproducing with both gemmae and sporophytes.

Collections:
2: Frederikshåb (EC 55-0199 northwest–southeast-stretching ravine southeast of the settlement, EC 55-0205 at lake north of the settlement), **2a**: Neria fj. (EC 55-0082 in a small ravine, sporophytes, EC 55-0084 in a small ravine).

Scapania subalpina (Ness ex Lindenb.) Dumort.
This circumpolar, circumboreal species is known from the southern half of Greenland (Damsholt 2013 Fig. 125); it frequently reproduces with spores, but such were not found in the Eva Clausen-collections; gemmae were found in one collection.

Collections:
2: Frederikshåb (EC 55-0060 in water in a rivulet in the valley with a lake, northeast of the settlement, EC 55-

0230 snow bed, below a high north-facing rock, gemmae), **8**: Holsteinsborg (EC 55-0770 along a water fall, juvenile), **9**: Sukkertoppen (EC 55-0842 from east–west-stretching valley).

Scapania brevicaulis Taylor (incl. var. *dubia* (R. M. Schust.) Damsh.).
An Arctic–alpine species, with scattered temperate/boreal occurrences, probably because of its demands for calcareous substrates. In Greenland mainly occurring in the basaltic part of the Disko-bay area, but is also known from southwestern and southern Greenland (Damsholt 2013 Fig. 126). One of the collections had partly 2-celled gemmae and was accordingly referred to var. *dubia*.

Collections:
5: Disko, Godhavn (EC 55-0435 along a brook, western slopes of Røde elv, gemmae p.p. 2-celled var. *dubia*, EC 55-0517 along a brook, western slopes of Røde elv).

Fam. *Plagiochilaceae* (Jørg.) Müll. Frib.

Plagiochila asplenioides (L. emend Taylor) Dumort. ssp. ***porelloides*** (Torrey ex Nees) Kaal.
A widely distributed species; Arctic–alpine, temperate/boreal, in Greenland rather common in the southern half of the island (Damsholt 2013 Fig. 133).

Collections:
5: Disko, Godhavn (EC 55-0259, 55-0420, 55-0428, 55-0508 western slopes of Blæsedalen, EC 55-0510 western slopes of Røde elv, along a rivulet, EC 55-0407 springy area, eastern slopes of Røde elv, EC 55-0598 along a pond in the granitic area west of Arctic station, Godhavn).

Fam. *Calypogeiaceae* (Müll. Frib.) Arnell in Holmberg

Calypogeia sphagnicola (Arnell et J. Perss. in Arnell) Warnst. et Loeske
Bipolar, in Europe northern suboceanic. In Greenland frequent along the westcoast and into the high Arctic (Damsholt 2013 Fig. 137).

Collections:
3: Holsteinsborg (EC 55-1012), **5**: Disko, Godhavn (EC 55-0304 , EC 55-0405, EC 55-0419 springy area, eastern slopes of Røde elv, EC 55-0471, 55-0479, 55-0480 fen with hummocks, below Skarvefjeld, EC 55-0509, 55-0516 along a rivulet, western slopes of Røde elv), **5b**: Disko fjord, Eqalúnguit (EC 55-0643), **7**: Christianshåb (EC 55-0676, 55-0683 humid valley at the shrimp packing factory, 55-0708, 55-0721).

Calypogeia muelleriana (Schiffn.) Müll. Frib.
A temperate, probably circumboreal species, in Greenland merging into the low Arctic (Damsholt 2013 Fig. 138).

Collection:
6: Egedesminde (EC 55-0293 humid north-facing rocks in a flat valley east of the settlement).

Calypogeia integristipula Steph.
This, probably circumpolar species, occurs in southern and western Greenland (Damsholt 2013 Fig. 140), but was only collected at two, southern localities.

Collections:
2: Frederikshåb (EC 55-0211 along a lake north of the settlement), **2a**: Neria fj. (EC 55-0077 in a small ravine).

Fam.: *Cephaloziaceae* Mig.

Pleurocladula albescens (Hook.) Grolle (incl. fo. *islandica* (Nees) R. M. Schust.).
Arctic–alpine, circumpolar species, common in Greenland and known from the southern 2/3 of the island (Damsholt 2013 Fig. 142).

Collections:
1: Ivigtut (EC 55-0008 rock crevice near the snow), **2**: Frederikshåb (EC 55-0032 northeast-facing rocks, EC 55-0040 valley, northeast of the settlement, EC 55-0045, 55-0047 valley with a lake northeast of the settlement, at the marging of a pool, 55-0046, 55-0059 on soil along a brook, EC 55-0056 in small ravine, valley northeast of the settlement, EC 55-0103 along a rivulet in the mountains, EC 55-0112 with *Mylia anomala*, EC 55-0115 along small pool in a ravine northeast of the settlement, EC 55-0127, 55-0131 both from north-facing rock wall northeast of the settlement, EC 55-0146, 55-0147, 55-0149, all from ravine northeast of a small lake, EC 55-0157, EC 55-0166 mountain with an isthmus,? Arfiorfik, 10 km east of the settlement, EC 55-0211, 55-0219, 55-0222 at a lake north of the settlement, snow bed, EC 55-0244 north of the settlement), **2a**: Neria fj. (EC 55-0067 on soil along a rivulet in a ravine, EC 55-0076 humid rock in a small ravine), **2b**: Narssalik (EC 55-0090 along a brook, EC 55-0091, EC 55-0094 along a brook, fo. *islandica*), **3**: Holsteinsborg (EC 55-1107, 55-1114(1), 55-1309 springy area below Kællingehætten), **5**: Disko, Godhavn (EC 55-0349 southern side of Disko I., EC 55-0365, 55-0366 on soil at a fen close to the settlement, EC 55-0380, 55-0381 in small ravine behind Arctic station, EC 55-0386 fen with hummocks,

eastern slopes of Røde elv, EC 55-0439, 55-0514 along a brook, western slopes of Røde elv, EC 55-0561, 55-0564, 55-0565, 55-0567 on banks of a small lake below Lyngmarksfjeld, fo. *islandica*), **6**: Egedesminde (EC 55-0288, 55-0292 humid, north-facing rock, in flat valley east of the settlement, EC 55-0657 north-facing rock in east–west-running valley south of water lake), **7**: Christianshåb (EC 55-0681, EC 55-0703 old, north-facing scree at lake shore, EC 55-0717 tufted vegetation with *Sphagnum* at the southwestern end of a lake), **8**: Holsteinsborg (EC 55-0747 along a waterfall at the head of the fjord, EC 55-0753, 55-0766 along a river), **9**: Sukkertoppen (EC 55-0783 north-facing low rocks, EC 55-0809 ravine near the settlement, EC 55-0815 on soil along a rivulet, EC 55-0822, 55-0824, 55-0843 all from east–west-stretching valley near the settlement, EC 55-0826 below north-facing rocks in east–west-stretching valley near the settlement).

Cephalozia bicuspidata (L.) Dumort. ssp. ***bicuspidata***
This species is bipolar, when broadly delimited, temperate–holarctic and probably the most common member of the genus in Greenland, only not (yet ?) recorded from the northernmost part (Damsholt 2013 Fig. 143).

Collections:
2: Frederikshåb (EC 55-0052 valley with a lake, northeast of the settlement, EC 55-0122, 55-0188, 55-0193 northwest–southeast-running valley close to the settlement, EC 55-0134 north-facing rock wall, EC 55-0147 small ravine at a lake, EC 55-0219 at a lake north of the settlement, EC 55-0048(1) along a brook in valley with a lake, northeast of the settlement), **2a**: Neria fj. (EC 55-0078 in a small ravine), **2b**: Narssalik (EC 55-0090, 55-0091, 55-0092, 55-0101), **3**: Holsteinsborg (EC 55-0750 scree, at base of northwestern-facing rock wall, EC 55-1101), **5**: Disko, Godhavn (EC 55-0273 western slopes of Blæsedalen, EC 55-0366 fen close to the settlement, EC 55-0382 fen with hummocks east of Røde elv, trans. ad ssp. *ambigua*, EC 55-0386, 55-0405 fen with hummocks east of Røde elv, EC 55-0471, 55-0479, 55-0480 all from fen with hummocks below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0608), **5b**: Disko fjord, Eqalúnguit (EC 55-0616 northwest-facing granitic rocks), 7: Christianshåb (EC 55-0677, 55-0682, 55-0683, 55-0685 all from humid valley near the shrimp packing factory, EC 55-0691 on top soil of a boulder lying close to a lake, EC 55-0708), **9**: Sukkertoppen (EC 55-0824, 55-0852 along a brook, east–west-stretching valley near the settlement).

Cephalozia bicuspidata (L.) Dumort. ssp. ***ambigua*** (C. Massal.) R. M. Schust.
Based on morphology the following collections have been referred to this subarctic–alpine subspecies of the species-complex, distinguished by having n = 9, although chromosomes have not been counted on material from Greenland. The subspecies is recorded from all parts of the island (Damsholt 2013 Fig. 114).

Collections:
5: Disko, Godhavn (EC 55-0325 fen in willow shrub, EC 55-0374, 55-0381 in small ravine behind Arctic station, EC 55-0564 along a lake below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0292 humid, north-facing rocks in flat valley east of the settlement), **8**: Holsteinsborg (EC 55-0771 along river at the head of the fjord).

Cephalozia pleniceps (Austin) Lindb. (incl. var. *sphagnorum* (C. Massal.) Jørg.).
This bipolar, imperfectly circumpolar species is almost as common in Greenland as *C. bicuspidata* (Damsholt 2013 Fig. 146).

Collections:
2: Frederikshåb (EC 55-0189, 55-0191, 55-0194 northwest–southeast-stretching valley southeast of the settlement), **3**: Holsteinsborg (EC 55-1115), **5**: Disko, Godhavn (EC 55-0250, EC 55-0275 basalt, western slopes of Blæsedalen, EC 55-0433, 55-0515, 55-0520 along a brook, western slopes of Røde elv, EC 55-0304 , EC 55-0329, EC 55-0347, EC 55-0363 in a fen close to the settlement, EC 55-0370, 55-0381, 55-0487 in small ravine behind Arctic station, EC 55-0392, 55-0405, 55-0419, fen with hummocks east of Røde elv, EC 55-0471, 55-0480 tufted fen below Skarvefjeld, EC 55-0566, 55-0571 along a small lake below Lyngmarksfjeld, EC 55-0574, 55-0580 *Cassiope*-heath below Lyngmarksfjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0604, 55-0608), **5b**: Disko fjord, Eqalúnguit (EC 55-0616 northwest-facing granitic rocks, EC 55-0643 var. *sphagnorum*, EC 55-0651), **6**: Egedesminde (EC 55-0289, 55-0293 latter two from humid, north-facing rocks in a flat valley, east of the settlement), **7**: Christianshåb (EC 55-0679, 55-0682 humid valley at the shrimp packing factory, EC 55-0692 on top soil of boulder lying close to lake shore, EC 55-0721).

Cladopodiella francisci (Hook.) Jørg.
This amphiatlantic, basically oceanic, species is known from southernmost Greenland (Damsholt 2013 Fig. 150) and is here reported from further north on the westcoast, than earlier known, occurring with both sporophytes and gemmae. An old J. Vahl collection of this species (JV 112 Ameralik, Sept. 1–8, 1830, head of Amergdla, along lakes in the valley towards Kapisigdlit) was from even further north, but *Cladpodiella francisci* was not found in that envelope in C.

Collection:
2: Frederikshåb (EC 55-0244 N of the settlement; sporophyte + gemmae).

Odontoschisma elongatum (Lindb.) A. Evans
An arctic–alpine, subarctic–subalpine, possibly circumpolar and circumboreal species in Greenland known from the southern half of the island (Damsholt 2013 Fig. 151). A female plants is recorded below, for the first time from Greenland, but sporophytes have still not been found in Greenland.

Collections:
2: Frederikshåb (EC 55-0196 on moist soil along a brook, in a valley close to the settlement, EC 55-0244 north of the settlement), **3**: Holsteinsborg (EC 55-1303, 55-1304, 55-1311, 55-1312 springy area below Kællingehætten), **5**: Disko, Godhavn (EC 55-0362, 55-0364, 55-0366 on humid soil in a fen close to the settlement, female, EC 55-0478 at the base of tufts, in a tufted vegetation below Skarvefjeld, EC 55-0563, 55-0564, 55-0565, 55-0567 all, along the shores of a small lake below Lyngmarksfjeld), **6**: Egedesminde (EC 55-0297 humid, north-facing rocks in a flat valley, east of the settlement), **8**: Holsteinsborg (EC 55-0753 along a river, EC 55-0755 on moist soil along a river).

Odontoschisma macounii (Austin) Underw.
Arctic–alpine, imperfectly circumpolar species, in Greenland predominantly northern (Damsholt 2013 Fig. 152).

Collections:
3: Holsteinsborg (EC 55-1209, 55-1210 on humid rocks), **5**: Disko, Godhavn (EC 55-0266, 55-0429, 55-0430 along a brook, western side of Røde elv), **5a**: Disko fjord, Eqigtoq (EC 55-0609 tufted vegetation by a small lake), **5b**: Disko fjord, Eqalúnguit (EC 55-0616 norhwest-facing !granitic rocks, EC 55-0620), **6**: Egedesminde (EC 55-0285 humid, north-facing rocks), **7**: Christianshåb (EC 55-0720).

Cephaloziellaceae Douin

Cephaloziella spinigera (Lindb.) Warnst. (incl. fo. *striatula* (C. E. O. Jensen) Damsh.).
This probably holarctic species, originally described from northern Finland, is known from the southern 2/3 of Greenland (Damsholt 2013 Fig. 153). Collections were referred to both fo. *striatula* and fo. *spinigera*.

Collections:
2: Frederikshåb (EC 55-0048(1) at a brook in a small ravine, valley with a lake northeast of the settlement, fo. ***striatula***), **5**: Disko, Godhavn (EC 55-0516 western slope of Røde elv, fo. ***spinigera***), **7**: Christianshåb (EC 55-0708 only a trace).

Cephaloziella divaricata (Sm.) Schiffn. var. ***asperifolia*** (Taylor) Damsh.
This Arctic–temperate, probably holarctic, taxon was collected once. *Cephaloziella divaricata* var. *asperifolia* is in Greenland known from all parts, except for northern Greenland, and recorded with perianths from eastern Greenland, Danmark ø (Jensen 1897/1898, Fig. 2).

Collection:
2: Frederikshåb (EC 55-0172 at a high mountain, var. *asperifolia*).

Cephaloziella aspericaulis Jørg.
This is a species with a supposed oceanic distribution and known from rock-walls from southern Norway north to Trøndelag, from Alaska and from rock-walls along the south and southwestern coast of Greenland north to the Disko Bay area (Damsholt 2013 Fig. 155).

Collections:
2: Frederikshåb (EC 55-0135 north-facing rock wall), **2a**: Neria fj. (EC 55-0100 in small ravine), **9**: Sukkertoppen (EC 55-0828 south-facing rocks in east–west-stretching valley).

Cephaloziella massalongi (Spruce) Müll. Frib.
A suboceanic species with relictual distribution. In Greenland only with one earlier record (Damsholt 2013 Fig. 157), the Eva Clausen collection is the second of the species in western Greenland.

Collection:
5: Disko, Godhavn (EC 55-0273) Blæsedalen, western side of the valley, on basalt with *Lophozia excisa, L. heterocolpos* and *Cephalozia bicuspidata*.

Cephaloziella varians (Gottsche) Steph.
Bipolar, in the northern hemisphere subarctic–Arctic–alpine, with re-occurrences in open lowlands as Ölands alvar, Sweden. In Greenland common, known from all parts (Damsholt 2013 Fig. 161).

Collections:
3: Holsteinsborg (EC 55-1011), **5**: Disko, Godhavn (EC 55-0306 low north-facing basaltic rocks, sexorgans not seen, EC 55-0726 below Skarvefjeld, sexorgans not seen), **6**: Egedesminde (EC 55-0279, 55-0287 moist north-facing rocks, sexorgans not seen), **7**: Christianshåb (EC 55-0677, 55-0724 sexorgans not seen), **8:** Holsteinsborg (EC 55-0747 along waterfall at the head of the fjord, autoicous).

Cephaloziella uncinata R. M. Schust in R. M. Schust. et Damsh.
An arctic–alpine, probably circumpolar species, recorded from Spitsbergen, northern Sweden, northern Russia, Siberia, Alaska etc. In Greenland known from all parts (Damsholt 2013 Fig. 163). The following collections have

unfortunately not all been proved autoicous; the identification is therefore based in morphology alone.

Collections:
5: Disko, Godhavn (EC 55-0520 along a rivulet, western slope of Røde elv, EC 55-0574 *Cassiope*-heath below Lyngmarksfjeld, EC 55-0743 below Skarvefjeld, sex organs not seen), **7**: Christianshåb (EC 55-0676 humid valley close to the shrimp packing factory, sex organs not seen, EC 55-0682, 55-0721 humid valley close to the shrimp packing factory).

Cephaloziella grimsulana (J. B. Jack ex Gottsche et Rabenh.) Lacout.
This Arctic–alpine, probably holarctic species was only found once among the collections. The record adds to the distribution of this rather rare, northern species in Greenland (Damsholt 2013 Fig. 164).

Collection:
5: Disko, Godhavn (EC 55-0382 fen with hummocks east of Røde elv, autoicous, cells at base of leaf lobe base 12–17 µm wide. Perianth mouth with long narrow cells).

Fam. *Ptilidiaceae* H. Klinggr.

Ptilidium ciliare (L.) Hampe
Bipolar, holarctic species, probably with fragmental dispersal and known from all parts of Greenland, except for northern Greenland (Damsholt 2013 Fig. 166).

Collections:
1: Ivigtut (EC 55-0001 a and b among *Betula glandulosa, Empetrum herm.* and *Vaccinium uliginosum*), **2**: Frederikshåb (EC 55-0025a, b and c shelf of northeast-facing rock wall, EC 55-0130 north-facing rock wall in valley northeast of the settlement, EC 55-0153 over stone in a small ravine, northeast of the settlement, blackish, EC 55-0155 on stones among *Empetrum herm.* in small ravine northeast of the settlement, EC 55-0163 at a high mountain, ?Arfiorfik, at the isthmus, ca 10 km east of the settlement, EC 55-0216 valley with a lake north of the settlement, EC 55-0242 at base of high north-facing rock), **2a**: Neria fj. (EC 55-0080 a and b on rocks with *Empetrum herm.* and *Vaccinum uliginosum*), **2b**: Narssalik (EC 55-0095, 55-0097 on rocks), **3**: Holsteinsborg (EC 55-1112), **4**: Egedesminde (EC 55-1463), **5**: Godhavn (EC 55-0308 Disko I., south coast, among *Vaccinium uliginosum*, 55-0340(1) Disko I., south coast, 55-0455 Disko I., behind Arctic station, granitic rocks, 55-0555 western slopes of Blæsedalen), **5a**: Disko fjord, Eqigtoq (EC 55-0610, 55-0612 tufted vegetation along a lake), **5b**: Disko fjord, Eqalúnguit (EC 55-0625 among *Cassiope tetragona*, north-facing rocks), **6**: Egedesminde (EC 55-0660 a and b north-facing rock at a small lake, east–west-stretching valley east of the settlement), **7**: Christianshåb (EC 55-0676, 55-0680 humid valley close to the shrimp packing factory, EC 55-0697 along a lake, EC 55-0702 a and b old, north-facing scree at a lake), **8**: Holsteinsborg (EC 55-0754 along a river, at the head of the fjord).

Metzgeriales Chalaud

Fam. *Aneuraceae* H. Klinggr.

Aneura pinguis (L.) Dumort.
Cosmopolitan, in Europe northern temperate. Known from all parts of Greenland (Damsholt 2013 Fig. 169).

Collections:
5: Disko, Godhavn (EC 55-0410 springy area at the eastern slope of Røde elv, EC 55-0476 tufted fen below Skarvefjeld), **5a**: Disko fjord, Eqigtoq (EC 55-0607 tufted vegetation along a lake), **7**: Christianshåb (EC 55-0682 humid valley near the shrimp packing factory, EC 55-0706 tufted vegetation at the southwestern end of a lake).

Marchantiales Limpr.

Fam. *Cleveaceae* Cavers

Peltolepis quadrata (Sauter) Müll. Frib.
Arctic–alpine, known from central and eastern Europe, northern Scandinavia, Spitsbergen, Siberia, Japan, in North America: Alaska, British Columbia, Ellesmere Isl. - Iceland. In Greenland known from the southern half of the island (Damsholt 2013 Fig. 186).

Collection:
5b: Disko fjord, Eqalúnguit (EC 55-0615 northwest-facing granitic rock).

Fam. *Marchantiaceae* (Bisch.) Lindl.

Marchantia alpestris (Nees) Burgeff.
Probably circumpolar; in Europe northern suboceanic–dealpine. In Greenland common in the southern part, rare to the north and not recorded from northern Greenland (Damsholt 2013 Fig. 189).

Collection:
5: Disko, Godhavn (EC 55-0271 western slope of Blæsedalen).

Preissia quadrata (Scop.) Nees ssp. ***hyperborea*** R. M. Schust.
Subcosmopolitan; the bisexual ssp. *hyperborea* is the only subspecies recorded from Greenland (Damsholt 2013 fig. 190), occurring to northern Greenland, but it is not yet recorded from northwestern Greenland.

Collection:
5: Disko, Godhavn (EC 55-0501 along a rivulet, western slope of Blæsedalen; close to where the type of ssp. *hyperborea* was collected).

Habitats of liverworts in the surroundings of Arctic station

The heavy collecting around the Arctic station, Disko I., allow the following general comments on habitats. Interesting is the *Cassiope tetragona*-heath below Lyngmarksfjeld, because similar heaths are known from both north and east Greenland, although rare in west Greenland. Recorded were *Blepharostoma trichophyllum, Cephalozia pleniceps, Cephaloziella uncinata, Lophozia excisa, L. hatcheri, L. heterocolpos, L. incisa* ssp. *opacifolia, L. polaris, L. quadriloba, L. rubescens, L. ventricosa* and *Tritomaria quinquedentata*. A scree below Lyngmarksfjeld was found to be dominated by common species, these mostly known from all parts of Greenland, as: *Anastrophyllum minutum, Blepharostoma trichophyllum, Cephalozia pleniceps, Lophozia excisa, L. hatcheri, L. incisa, L. longidens* ssp. *arctica, L. rubescens, L. sudetica, L. ventricosa*, *Tetralophozia setiformis, Tritomaria quinquedentata* var. *gracilis*. From a snow-bed were recorded: *Anthelia juratzkana, Lophozia heterocolpos, L. sudetica, L. ventricosa, Nardia geoscyphus, Pleurocladula albescens* and *Scapania obcordata*. In a willow shrubbery, close to the settlement and in the shrub along a brook were found: *Anastrophyllum minutum* var. *minutum, Anthelia juratzkana, Blepharostoma trichophyllum, Cephalozia bicuspidata* ssp. *ambigua, Lophozia binsteadii, L. excisa, L. kunzeana, L. polaris, L. rubescens, L. wenzelii, Nardia geoscyphus*, *Odontoschisma elongatum, Scapania curta, S. obcordata* and *S. scandica.* At the basaltic western slopes of Blæsedalen the following species were found: *Blepharostoma trichophyllum* ssp. *brevirete*, *Calypogeia muelleriana, Cephalozia pleniceps, Jungermannia pumila, Lophozia hatcheri, L. heterocolpos, L. incisa, L. quadriloba, Marchantia alpestris, Odontoschisma macounii, Plagiochila aslepenioides* ssp. *porelloides, Scapania gymnostomophila, Tritomaria quinquedentata* fo. *gracilis* and *T. scitula*; whereas the granitic part was distinguished by: *Cephalozia bicuspidata, Cephaloziella massalongii* and *Lophozia excisa*. In a small ravine behind the Arctic station were found: *Blepharostoma trichophyllum* ssp. *brevirete*, *Cephalozia bicuspidata* ssp. *ambigua, C. pleniceps, Diplophyllum taxifolium, Lophozia hatcheri, L. heterocolpos* var. *arctica, L. incisa, L. longidens* ssp. *arctica, L. lycopodioides, L. ventricosa, L. wenzelii, Pleurocladula albescens, Scapania hyperborea, S. obcordata, S. scandica* and *Tritomaria quinquedentata* fo. *gracilis*. Finally, a fen with hummocks at the eastern banks of Røde elv, below Skarvefjeld, was distinguished by: *Aneura pinguis, Blepharostoma trichophyllum, Calypogeia sphagnicola, Cephalozia bicuspidata* ssp. *ambigua, Cephalozia pleniceps, Cephaloziella grimsulana, Jungermannia pumila, Lophozia excisa, L. longidens* ssp. *arctica, L. hatcheri, L. heterocolpos, L. incisa, L. kunzeana, L. polaris, L. quadriloba, L. rubescens, L. ventricosa, Nardia geoscyphus, Odontoschisma macounii, Plagiochila asplenioides, Pleurocladula albescens, Scapania brevicaulis, S. calcicola* ssp. *ligulifolia, S. mucronata* ssp. *praetervisa, S. obcordata, Tritomaria polita* ssp. *polymorpha, T. quinquedentata* ssp. *turgida* and *T. scitula.*

Acknowledgements – I am indebted to Peer Corfixen (KU) for having re-intercalated the Eva Clausen collections in the bryophyte herbarium of Greenland (C) and for having introduced a more complete number system for the collections and re-labelled them.

References

Damsholt, K. 2010. Liverworts collected during the Norwegian east Greenland expeditions 1929–1933. – Lindbergia 33: 92–113.

Damsholt, K. 2013. The liverworts of Greenland. – Nord. Bryol. Soc. Lund.

Jensen C. E. O. 1897. Mosser fra øst-Grønland. – Meddelel. om Grønl. 15.

Jensen C. E. O. 1906. List of *Hepaticae* and *Sphagnales* found in east Greenland between 75° and 65°35'Lat. N. in the years 1898–1902. – Meddelel. om Grønl. 30: 295–312.

Schuster, R. M. 1966–1992. The *Hepaticae* and *Anthocerotae* of North America east of the Hundredth Meridian. Vol. 1–4 – Columbia Univ. Press. Vol. 5–6 – Field Museum of Natural History Chicago.

Schuster, R. M. 1988. The *Hepaticae* of south Greenland. – Nova Hedwigia. Beih. 92: 1–225.

Schuster, R. M. and Damsholt, K. 1974. The *Hepaticae* of west Greenland from ca 66°N to 72°N. – Meddelel. om Grønl. 199: 1–370.

Schuster, R. M. and Damsholt, K. 1987. Some new taxa of *Jungermanniales*. – Phytologia 63: 325–328.

Thingsgaard, K. and Damsholt, K. 2007. Bryological notes from Svalbard. – Lindbergia 31: 126–130.