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A bryophyte species list for Denali National Park and Preserve, Alaska, with comments on several new and noteworthy records

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Abstract. We present a substantially revised and updated bryophyte flora for the 2.4 million ha Denali National Park and Preserve (DNPP) based on wide-ranging field investigations conducted over the period 2001-2011. We visited 39 inventory sites and 45 vegetation monitoring study areas within DNPP, increasing the number of bryophyte taxa previously known by 147. 499 taxa are reported in this updated flora (380 moss taxa in 134 genera and 119 liverwort taxa in 43 genera). We provide geographic and ecological summaries through annotations and distribution maps for 24 of the most noteworthy finds, as well as comments on patterns of bryophyte community composition and dominance in this large and previously poorly-studied region.

Keywords. Bryo-geography, Alaska, subarctic, mosses, hepatics

INTRODUCTION

Bryophytes (mosses and liverworts) are a major component of Alaska's ecosystems, comprising a considerable fraction of ecosystem ground-cover and annual productivity (Oechel and Van Cleve 1986), playing important roles in nutrient cycling (Longton 1997), and strongly affecting soil drainage and the depth of the active layer (Vitt and Pakarinen 1977) which dramatically influences vegetation patterns. The bryoflora of Denali National Park and Preserve (DNPP), a 2.4 million ha subarctic wilderness park in south-central Alaska (Fig.1) has attracted the attention of naturalists since the mid twentieth century, beginning with a single moss collection in 1928 (reported in Persson 1946) from the Park's first concerted botanical collection effort completed by the botanist Ynes Mexía. Additional small bryophyte reports were made in conjunction with other vascular plant inventories (see Harvill 1947, Hanson 1951, Persson 1963, Persson and Weber 1958, Persson and Gjárevoll 1961, Hermann 1973a, Hermann 1973b), but it wasn't until 1951 the Park saw its first large scale nonvascular collection effort, when Hannah Croasdale and Elizabeth Sherrard spent 18 days collecting freshwater algae, bryophytes, and lichens at several locations along the 90-mile Park Road corridor and Parks Highway (Sherrard 1957). Soon after, William A. Weber and Leslie A. Viereck collected nonvascular plants in conjunction with Viereck's study of the Muldrow Glacier moraine (collections reported in Persson and Weber 1958).

These studies contributed to an increased understanding of bryophyte distribution in the Park, and more broadly in North America. However, they provided an incomplete representation of the bryophyte

flora of DNPP because they were spatially restricted in two ways: (1) they were limited to the immediate vicinity of the 90-mile park road corridor and Parks Highway, and (2) they were confined within the 860,000 ha original boundary of Mt. McKinley National Park, which was expanded to its current size of 2.4 million ha, and renamed Denali National Park and Preserve in 1980 (Figure 1). Recent work across the park landscape beyond these spatial restrictions has yielded important new information concerning the composition and distribution of the flora of DNPP. These discoveries contribute not only to an increased understanding of species distributions within various groups, including vascular plants (Roland 2004; Roland et al. 2005; Carlson et al. In press.), fungi (Zhurbenko and Laursen 2003) and lichens (Nelson et al. 2009, Nelson et al. 2011), but also to the understanding of the biogeography of South-Central Alaska as a whole (Carlson et al. In press).

To address the imbalance in the spatial distribution of bryophyte collecting, we completed additional investigations into the bryophyte flora of DNPP through two projects, the long-term vegetation monitoring program (2001–2011; Roland et al. 2005) and a targeted reconnaissance nonvascular plant inventory described in this paper. We report on additions to the bryophyte flora of DNPP resulting from these two projects, including an annotated list of bryophyte taxa for DNPP and detailed discussion of a subset of taxa of special interest.

METHODS

Study area

DNPP is bisected by the Alaska Range, which separates the Cook Inlet basin south of the mountains from the interior lowlands to the north (Figure 1). This is an ecologically and floristically diverse area encompassing two major climatic zones as well as diverse topography, variable lithology and landscape surfaces ranging in age from very recently deglaciated to unglaciated refugial areas (Briner and Kaufman 2008). The 1980 land additions in the transition from Mt. McKinley National Park to DNPP included vast areas north of the Alaska Range, including the Kantishna Hills and large lowland basins of the Toklat and Yukon-Kuskokwim Rivers drainages, as well as fragmentary areas of the Cook Inlet basin south of the Alaska Range.

Field work

New data presented here was collected during fieldwork for two projects: the long term vegetation monitoring program, and the Denali nonvascular plant inventory. Methods used for these two data collection efforts are described below.

We began a landscape-scale vegetation monitoring program to establish a quantitative baseline of vegetation conditions at multiple scales and across multiple species groups, including terricolous bryophytes and macrolichens, in 2001 (Roland et al. 2005). For this project, we established permanent vegetation plots throughout the study area encompassing the northeastern region of DNPP (Figure 1) according to a multi-stage systematic grid sampling design (Roland et al. 2005). First, we generated a “macro-grid” at 10 km intervals throughout the study area using a random starting point. At each macro-grid point, we established a secondary “mini-grid” consisting of five rows of five plots spaced 500 m apart. We sampled a systematic subset of these 10 km mini-grids, such that a regular 20 km systematic grid sample was obtained across the study area, with one exception. We augmented this sample with additional mini-grids located within a 6 km buffer along both sides of the DNPP road and in a small region N of the road, based on logistical considerations (Roland et al. 2005). At each of the 25 points within a mini-grid, we established a circular plot 16m in diameter (200m² area). We recorded occurrence of each terricolous nonvascular species present in four 1m² quadrats located along transects bisecting each 200m² circular plot in the magnetic cardinal directions, making ocular estimates of cover by species. Mosses were collected from forty-five mini-grids, and liverworts were collected from a subset of fourteen mini-grids according to this protocol.

Beginning in 2007, we conducted a reconnaissance nonvascular species inventory with the objective of compiling a voucher-based list of bryophytes and lichens occurring within the boundaries of DNPP through the examination of existing data and targeted field inventory work. We first consolidated park-based floristic data into a current species list, and then used regional data to generate an expected species list. In this process, we also identified collecting gaps and potential hotspots of diversity based on habitat variables such as climate and substrate (i.e. siliceous or calcareous lithology). Over thirteen days in

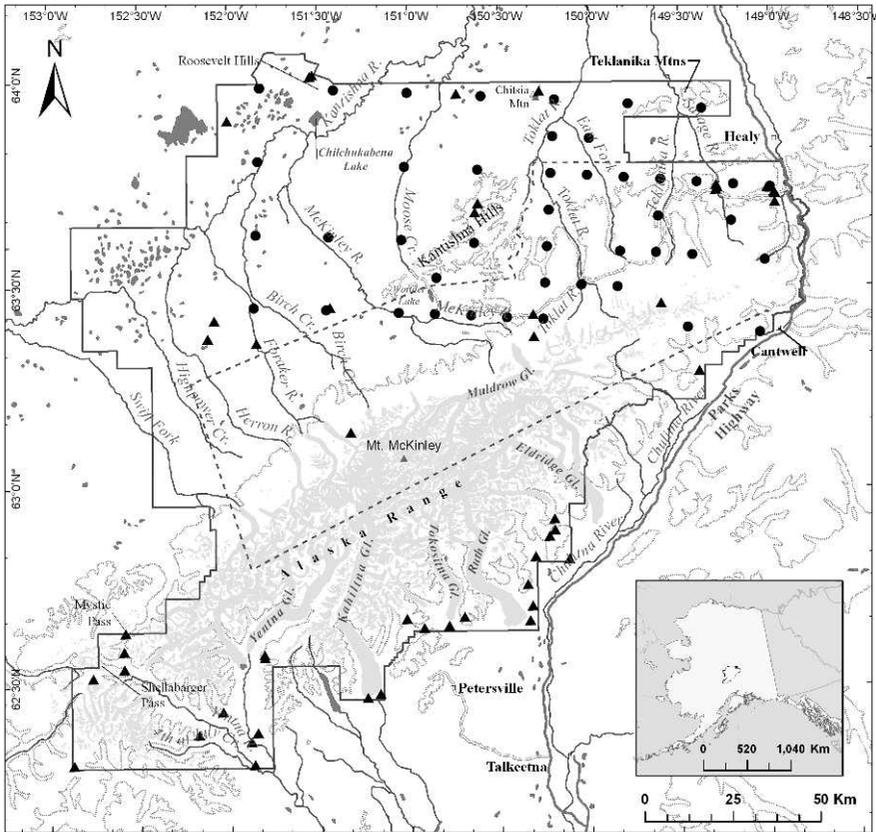


Figure 1. Map of study area showing major geographical features, the Denali National Park and Preserve boundary, and the Park road. The boundary of Mt. McKinley National Park as it was known from 1917–1980 is shown as a dashed line. Vegetation monitoring mini-grid study areas are indicated with a circle. Nonvascular inventory sites are indicated with a triangle. Dotted lines represent the 914 meter (3000 feet) elevation contour.

August 2007 and August 2008, we visited thirty-nine sites selected for their potential to yield new species for the DNPP list, considering high diversity, lack of collecting history, and accessibility (Figure 1). We conducted a reconnaissance inventory using intuitively controlled methods, such as targeted searches of rare and/or diverse microhabitats. We made additional casual collections at seven sites in 2001, as part of the vascular plant inventory (Roland 2004).

We collected and determined more than 6,700 bryophyte specimens since 2001 in the course of these two projects. We identified collections in the laboratory using compound and dissecting microscopes. We sent specimens to taxonomic group experts when necessary, including John Spence for difficult members of the genus *Ptychostomum*, Diana Horton for *Encalypta* sp., and Rod Seppelt for difficult members of the genera *Dicranum*, *Ditrichum*, and *Campylopus*. We placed collections of common species and duplicate collections at the DNPP herbarium (NPS Accession # 527), while important and rare specimens were placed on permanent loan and deposited at the University of Alaska, Museum of the North Herbarium (ALA) in Fairbanks, Alaska. Nomenclature follows the Flora of North America, either published (Vol. 27, acrocarpous mosses) or provisional (Vol. 28, acrocarpous and pleurocarpous mosses, and Vol. 29, liverworts) (Flora of North America Editorial Committee eds. (2007)). Liverworts not yet in the Flora of North America follow publications by W. S. Hong (e. g. *Cephalozia*, *Cephaloziella*, *Leiocolea*). Nomenclature for mosses not yet covered by the Flora of North America and liverworts not covered by W. S. Hong publications, follow Crosby and Zander 2000.

Commonness ratings

We recorded over 22,000 individual occurrences of bryophyte species across > 1000 vegetation monitoring plots and 45 inventory sites. In order to make estimates of commonness for each taxon encountered, we categorized each inventory site and monitoring plot by coarse geography: north or south of the Alaska Range, and high (≥ 900 m) or low (< 900 m) elevation. We then grouped monitoring plots within mini-grid study areas together, so that an occurrence of a particular species would be counted only once per mini-grid study area, except in the case where the study areas straddled both high and low elevations. In this case, occurrence of a species at both low and high elevation would be counted separately. Sampling distribution between the coarse geographic regions (Table 2) and sampling effort at each site or plot varied. Sampling effort at inventory sites was judgment-based and was generally focused on rare and habitat specific taxa, whereas sampling effort was strictly randomized for the vegetation monitoring plots and thus species were included in proportion to their occurrence on the landscape, favoring more common taxa. We used the number of occurrences of each taxon in each geographic category to estimate commonness based on the likelihood of encountering a taxon in an appropriate habitat (Duncan and Meacham 1986).

Range map preparation

To compare our specimen locations with the range of selected species we consulted published floras for general range statements and the published literature for existing maps and voucher records. We also checked for additional species occurrences in herbaria selected for their holding of relevant exsiccatae of important regional collectors. To gather a more complete picture of species distribution in the region, we included locations for herbarium specimens collected in Washington and Oregon, the Canadian provinces of British Columbia and Alberta, the Canadian Yukon and Northwest Territories, and eastern Russia.

Table 1. Geographic distribution of sampling effort.

Code	Description	Inventory Sites	Monitoring Study Areas	Total
NH	North of the Alaska Range, high elevation (≥ 900 m)	7	19	26
NL	North of the Alaska Range, low elevation (< 900 m)	15	35	50
SH	South of the Alaska Range, high elevation	11	2	13
SL	South of the Alaska Range, low elevation	15	5	20

RESULTS

This project has contributed substantial new information regarding the geographic ranges of individual bryophyte species as well as our understanding of the floristics of this group of organisms as a whole in DNPP and Alaska. This information will assist managers of DNPP charged with safeguarding this important botanical resource, so characteristic of the subarctic.

General patterns in bryophyte community composition and dominance

The composition and structure of bryophyte communities in DNPP varied according to both micro- and macro-scale landscape gradients in elevation, topography, disturbance and climate variables as well as with vascular vegetation community structure. Formal analyses of these patterns in bryophyte community composition in DNPP will be presented in future articles, but we provide a general summary of broad patterns observed during 10 years of fieldwork here.

Moderately well-drained forested sites on slopes and along stream courses were dominated by the feather mosses *Hylocomium splendens*, *Pleurozium schreberi*, and *Ptilium crista-castrensis* with frequent occurrence of the less dominant acrocarpous species *Dicranum scoparium*, *Sanionia uncinata* and *Polytrichum commune*. Forested sites underlain by permafrost or those grading into wetlands were characterized by deep mats of *Sphagnum* spp. including *S. girgensohnii*, *S. fuscum*, and *S. warnstorffii* among others. Wet lowland sites also supported an additional complement of hydrophilic species, including *Aulacomnium palustre*, *Polytrichum strictum*, *Straminergon stramineum* and *Tomentypnum nitens*, and species commonly associated with disturbance, *Ceratodon purpureus*, *Polytrichum juniperinum* and *Pohlia nutans*.

Table 2. Collection localities referenced in species annotations.

Locality Name	Latitude	Longitude	Elevation (m)
Cascade Creek	62.437°N	152.047°W	339
Castle Rocks	63.419°N	152.080°W	580
east fork of the Bull River	63.396°N	149.433°W	1073
East Fork Yentna River	62.384°N	151.855°W	146
East Toklat River	63.767°N	150.209°W	605
Gorge Creek	63.410°N	150.275°W	1149
Kankone Peak	63.598°N	150.645°W	1224
Lower east fork of the Toklat River	63.851°N	149.995°W	503
Midway Lakes	62.360°N	151.891°W	95
Mt. Eielson	63.376°N	150.309°W	1480
Mt. Healy	63.757°N	149.215°W	1734
Mystic Pass	63.638°N	152.585°W	1248
near peak above Cantwell	63.379°N	149.217°W	1116
near the base of Mt. Healy	63.739°N	149.217°W	1233
Polychrome Pass	63.493°N	149.832°W	1235
Primrose Ridge	63.757°N	149.418°W	1379
Rock Creek	63.740°N	148.993°W	992
Roosevelt Hills	64.017°N	151.529°W	443
Savage River	63.741°N	149.287°W	914
Shellabarger Pass	63.592°N	152.592°W	929
Straightaway Glacier	63.140°N	151.327°W	1760
Tokosha Mountains	62.675°N	150.703°W	1147
Upper Bearpaw River	63.786°N	150.625°W	856
Upper North Fork Canyon Creek	63.704°N	150.616°W	1109
Upper Stony Creek	63.513°N	150.263°W	1154
Upper Wigand Creek	63.775°N	149.985°W	596
vicinity of the Ruth Glacier terminus	62.703°N	150.326°W	205
vicinity of the Tokositna Glacier terminus	62.652°N	150.790°W	255
West Fork Yentna River	62.378°N	152.180°W	836
Wigand Creek	63.856°N	150.188°W	463

Forests south of the Alaska Range supported a somewhat different bryoflora, likely due to increased moisture in this maritime-influence area, and the greater proportion of deciduous trees and dominant shrub component, and thus the copious amounts of leaf litter. Species commonly found here, but not elsewhere include *Plagiomnium medium* and *Rhytidiadelphus squarrosus*. Noteworthy taxa from low elevation forests in DNPP include *Frullania tamarisci* subsp. *nisquallensis*, *Rhodobryum roseum* and *Dicranum flagellare*, all of which grew on substrates that allowed them to escape the leaf litter – tree bases, boulders and rotting wood respectively.

The bryoflora of non-forested sites in DNPP was greatly influenced by factors associated with the coarse-scale environmental gradients of elevation, slope, aspect, and substrate availability. In mid-elevation (~650–900 m) sites the composition of the bryophyte community is largely dependent on its position in the gradation between more alpine-like and more forest-like bryofloras. Forest and open scrub birch (*Betula nana*) areas were dominated by the same set of feathermosses common in the lowlands, whereas closed *Alnus* spp. and *Salix* spp. thickets supported a different moss flora including *Climacium dendroides*, *Brachythecium nelsonii* and *Plagiothecium denticulatum*. Open tundra and meadow plant communities in the subalpine were characterized by *Rhytidium rugosum*, *Abietinella abietina*, *Racomitrium lanuginosum* and members of the genus *Hypnum*.

Alpine sites were generally characterized by a fine-scale mosaic of small patches of acrocarpous moss taxa that colonize mineral substrates after the frequent cryoturbation and slope disturbances in these geomorphically active environments. Common species of this zone included *Distichium capillaceum*, *Ecalypta rhaptoearpa*, *Timmia austriaca*, *Schistidium apocarpum* and *Bartramia ithyphylla*. Many of

the more noteworthy collections from our work were made in the alpine areas of DNPP, including *Andreaea blyttii*, *Arctoa fulvella*, *Campylopus schimperi*, *Tetradontium repandum* and *Tortula leucostoma*. Alpine seeps and stream rivulets in particular provided new and interesting taxa such as *Scouleria aquatica*, *Apomarsupella revoluta* and *Asterella lindenbergiana*.

Updated species list

Prior to the work described herein, 352 bryophyte taxa (including 331 species, 17 varieties and 4 subspecies) were known to occur in DNPP (278 mosses in 121 genera and 74 liverworts in 33 genera). Of the 352 bryophyte taxa previously documented from DNPP, 274 taxa were encountered again during the course of this project. The updated species list for DNPP that we present here synthesizes collection records of bryophytes that were found in published sources, a few unpublished but verified herbarium specimens, and new records based on specimens collected during the two projects described here. It was beyond the scope of this project to verify records in the published literature or review herbarium specimens other than our own. Therefore it is possible that some species may be listed in error.

We report an updated bryophyte flora for DNPP containing 499 taxa (including 454 species, 39 varieties and 6 subspecies), which is composed of 380 moss taxa in 134 genera and 119 liverwort taxa in 43 genera. This includes 147 new taxa additions (including 131 species, 15 varieties and 1 subspecies) to the DNPP flora from our work.

Considerable taxonomic revision of certain families has occurred since the last species list for the Denali area was published (Herman 1973b), including descriptions of new genera and species, as well as adjustments in the delineations of families, genera, and species. For example, the DNPP flora in the family Grimmiaceae has increased from 10 to 23 species, with 5 of the new species belonging to two new genera, *Codriophorus* P. Beauvois and *Bucklandiella* Roivainen (Hastings and Ochrya 2007).

In our updated species list available as supplementary information from the BioOne website (www.bioone.org), taxa not previously reported from DNPP (formerly Mt. McKinley National Park) are indicated with an asterisk (*) and general commonness ratings are assigned based on number of occurrences. These ratings are defined as follows: abundant = very likely to be encountered and nearly always found in appropriate habitats; common = likely to be encountered in appropriate habitats; uncommon = unlikely to be encountered and sometimes not present in appropriate habitats; rare = extremely unlikely to be encountered, often not present in appropriate habitats, and often restricted to a small number of sites; unknown = no rating because taxa was not found during our surveys. Commonness ratings are assigned for each coarse geographical region (see Table 1 for distribution of sampling effort in these regions), abbreviated as follows: NH = high elevation (≥ 900 m) sites north of the Alaska Range, NL = low elevation sites north of the Alaska Range, SH = high elevation sites south of the Alaska Range, SL = low elevation sites south of the Alaska Range. Voucher collection numbers for taxa newly reported are listed if total number of collections was five or less. Taxa not previously reported, but for which unpublished sources were found are annotated with their source in parentheses following the commonness rating.

Annotations follow for those taxa whose discovery in DNPP is especially noteworthy, that are documented for the first time in the Alaska Range and/or represents a range extension into interior Alaska. The number that corresponds to the species annotation and distribution map is listed in brackets after the commonness rating. If collections were more than five, and thus were not listed in the species list, then they are listed in the annotation. Collection locality coordinates listed in the annotations are shown in Table 2.

ANNOTATIONS

- 1) *Andreaea blyttii* – ALASKA RANGE: on limestone rubble, east fork of the Bull River. A moss known in Alaska mainly near the coast, this species usually occupies rocks at edges of snowmelt areas (Zander 2007). Our site is approximately 180 km west of the only other known Alaska Range locality (*Smith 2137*, B68519).
- 2) *Anoetangium aestivum* – KUSKOKWIM MOUNTAINS: on rock outcrop in pure birch forest, Roosevelt Hills. This species is reported previously from coastal localities in southern Alaska, two Brooks Range locations in northern Alaska (*Schofield 77950*, B39719), and near the Yukon border (*Sharp 58227*, B75980). This locality connects the species range from disjunct stations approximately 390 km to the north and 410 km to the south.
- 3) *Arctoa fulvella* – ALASKA RANGE: Gorge Creek, *Nelson 07-474*; Mt. Healy, *Stehn 06-264*; Polychrome Pass, *Scelza 07-609*; Rock Creek, *Walton 5312*; SOUTH CENTRAL MOUNTAINS: West Fork Yentna River, *Walton 14520*;

Tokosha Mountains, *Walton 15087*. This is an arctic-alpine species with a bipolar distribution (Ochyra and Buck 2003). *A. fulvella* is found on rocks and is usually associated with late snow beds (Flora of North America Editorial Committee 2007). In DNPP, it occurred both north and south of the Alaska Range primarily in the high alpine (>1100 m), 220 km northwest of the nearest locality in Prince William Sound (*Viereck 2282*, NY91427).

4) *Atrichum selwynii* – ALASKA RANGE: on mineral soil, vicinity of the Ruth Glacier terminus; vicinity of the Tokositna Glacier terminus. This species is a western North American endemic, and is the most common member of its genus (Flora of North America Editorial Committee 2007). However, *Atrichum* spp. are considered rare in the interior (Schofield personal communication 2007) and the two DNPP collections are the only known from Alaska outside of the south east, the nearest being 1000 km away on Chichagof Island (*Wagner 4299*, DUKE130871).

5) *Buxbaumia aphylla* – ALASKA RANGE: on soil bank, Rock Creek. Although this species is considered widespread, it is rarely collected. Our collection is the 5th report in Alaska, and is approximately 165 km SW of the nearest known locality at Wickersham Dome (*Murray 6155*, NY173347).

6) *Campylopus schimperi* –ALASKA RANGE: in dry, rocky, *Dryas* sp. tundra on steep slopes, Gorge Creek; Kankone Peak. This species is considered rare, with a widespread distribution in arctic-alpine habitats, and was known previously in Alaska only from arctic and coastal regions (Frahm and Vitt 1978). Most of the occurrences of *C. schimperi* worldwide are located in or near unglaciated areas or glacial refugia (Frahm and Vitt 1978). One DNPP locality was Kankone Peak in the Kantishna Hills, a region whose vascular plant flora hosts a set of coastal disjuncts and is the southern range limit of a few arctic species (Roland 2004). The other DNPP locality was Gorge Creek, a nearby alpine area in the Alaska Range proper, <30 km southeast of Kankone Peak.

7) *Dicranum flagellare* – COOK INLET LOWLANDS: on rotting wood in mixed birch-spruce forest, vicinity of the Ruth Glacier terminus. This collection, composed predominately of flagelliform branchlets, is the second locality reported for Alaska, and the westernmost occurrence for the species in North America. The other Alaska locality for *D. flagellare* is 70 km west of the Yukon border near the Tetlin National Wildlife Refuge, 400 km SW of the DNPP locality (*Schofield and Talbot 118087*, DUKE78491).

8) *Grimmia torquata* – ALASKA RANGE: Kankone Peak; KUSKOKWIM MOUNTAINS: on rock outcrop, Castle Rocks. This species is intolerant of high temperatures, and generally restricted to cool and dry microsites (Hedderson and Brassard 1990) within its arctic-montane and coastal distribution. The nearest locality is near Girdwood, Alaska 280 km to the southeast (*Schofield 109955*, B168940).

9) *Hypnum procerrimum* – ALASKA RANGE: Primrose Ridge. This species has an arctic-alpine distribution in North America (Schofield 1972), and is found on moist alkaline mineral soil (Bird 1962). The nearest locality for the species is 230 km to the north, near Wickersham Dome in the White Mountains (collected by Sherrard, as cited in Persson and Gjørevoll 1957). Our high elevation collection (1379 m) represents a significant southward range extension. This species has also been reported at high elevation stations in the Rocky Mountains of Canada.

10) *Iwatsukiella leucotricha* – COOK INLET LOWLANDS: on tree bases in mixed birch-spruce forest, vicinity of the Ruth Glacier terminus, *Walton 11657*, *Walton 11667*; KUSKOKWIM MOUNTAINS: on partially shaded rock outcrop in birch forest, Roosevelt Hills, *Walton 11658*; all listed collections have sporophytes. This species occurs in northwestern North America including coastal, interior, and arctic Alaska, coastal British Columbia, Washington, and Oregon. *I. leucotricha*'s habitat in Alaska is on conifer and deciduous tree bases and alder, usually as individual strands or small mats (Schofield et al. 2002). The only previous North American specimen of this species with sporophytes was collected on Chisik Island near the mouth of Prince William Sound in southwestern Alaska (*Talbot and Talbot 88-1375L*, B127140; reported in Schofield et al. 2002). Collections reported here include the first with sporophytes from mainland Alaska. The locality at the Ruth Glacier terminus is 300 km NW of the Chisik Island locality.

11) *Neckera pennata* – ALASKA RANGE: rock outcrop at the Savage River, *Walton 8177*; COOK INLET LOWLANDS: on *Populus* sp., Midway Lakes, *Nelson 08-436*, *Walton 11335*, *Walton 11338*; base of Mt. Kliskon, East Fork Yentna River, *Nelson 07-1025*. A temperate disjunct (Steere 1976), this species occurs in rock crevices or on shaded rock walls. The nearest collection localities are 170 km to the north and south, and there is one other Alaska Range locality (280 km to the east in the Tetlin National Wildlife Refuge; *Schofield and Talbot 118323*, DUKE96533).

12) *Oligotrichum falcatum* – ALASKA RANGE: Kantishna Hills in the Upper Bearpaw River. A rare species known in our region only from arctic Alaska and a few localities in the Yukon Territory, this species was originally described from the Brooks Range (Steere 1958). The nearest locality to DNPP is located 580 km to the east in the Oglivie Mountains of the Yukon Territory (*Vitt 16702*, B18847).

13) *Rhodobryum roseum* – SOUTH CENTRAL MOUNTAINS: among leaf litter and on large boulders (>1 m across) in riparian fern meadows, Cascade Creek. Our collection represents a significant range extension inland, 200 km

northwest of the nearest locality, on the Kenai Peninsula (collected by Iwatsuki and Sharp as cited in Iwatsuki and Koponen 1972).

14) *Scouleria aquatica* – SOUTH CENTRAL MOUNTAINS: on rocks in alpine rivulets, West Fork Yentna River. A large moss that grows on rocks along stream banks, *S. aquatica* occurs in northwestern North America from coastal Alaska south to California and inland to the Rocky Mountains with interior stations in the Yukon Territory and British Columbia (Churchill 1985). These collections are the first reported from interior Alaska and represent a significant range extension inland, approximately 200 km north of the nearest known locality proximate to Girdwood (as mapped in Churchill 1985).

15) *Tetrodontium repandum* – ALASKA RANGE: on tundra, Kantishna Hills in the Upper North Fork Canyon Creek. This species has been found only a few times in Alaska, and is considered a rare temperate disjunct (Steere 1976) known to have survived in Quaternary glacial refugia in the arctic and sub-arctic (Hedderson and Brassard 1992) and may be overlooked elsewhere (Schofield et al. 2002). The nearest locality is 420 km south on Chisik Island (Schofield and Talbot 98763, DUKE97138).

16) *Tortula leucostoma* – ALASKA RANGE: east fork of the Bull River; near the base of Mt. Healy; near peak above Cantwell; Upper Stony Creek. This species is often associated with late-lying snow beds in alpine areas (Schofield 1976), which describes its' habitat in DNPP, where it occurred on rocky slopes above 1000 m. *T. leucostoma* is considered part of the high arctic element which probably survived quaternary glaciation at high latitudes in unglaciated areas (Steere 1965), however, the nearest collection locality to ours is 380 km south on the Kenai Peninsula (Talbot 144, NY130004).

17) *Apomarsupella revoluta* – ALASKA RANGE: on seepy mineral soil among large rocks, Mt. Eielson; Primrose Ridge; Straightaway Glacier. This species occurs in acidic seeps and moist depressions in tundra, and is thought to be restricted to siliceous substrates, in interior or continental areas (Vitt et al. 1987). Considered rare in North America, *M. revoluta* was known from a single site in Alaska prior to this study. The other Alaskan locality for the species is 340 km to the south at Tustumena Lake (Talbot 134, NY75894).

18) *Asterella lindenberghiana* – ALASKA RANGE: on partially shaded, moist, mineral soil near a small rivulet, Mystic Pass. This is a rare liverwort that occurs above latitudinal or elevational treeline in arctic and subarctic regions (Schofield 1988). This species has been found once before in the Alaska Range, 350 km east near the Maclaren Glacier (collected by Shacklette as cited in Persson 1963). *Asterella* is a new genus to Denali NPP.

19) *Fruillania tamarisci* subsp. *nisquallensis* – COOK INLET LOWLANDS: on boles of *Betula* sp., vicinity of Ruth Glacier terminus. This species occurs in steep, north-facing slopes moistened with fog and considered a temperate disjunct (Steere 1976). Ruth Glacier locality is 200 km northeast of nearest locality at Girdwood (Schofield 108885, B166299).

20) *Herbertus dicranus* – ALASKA RANGE: on mineral soil, Straightaway Glacier, Walton 11562; Shellabarger Pass, Walton 15081; Primrose Ridge, Walton 6284. This species is known from hyperoceanic climates (Schofield 2007) and has a western North American-European distribution, often occurring on moist tundra hillsides, and sometimes associated with *Radula prolifera* (Hong et al. 1993). *R. prolifera* was collected at two of the four *H. dicranus* localities in DNPP. The nearest locality to DNPP is 500 km north in the Brooks Range (Steere 74-624, NY74746). The DNPP localities, both north and south of the Alaska Range represent significant inland range extensions for Alaska.

21) *Lophozia propagulifera* – ALASKA RANGE: tundra slope above the East Toklat River. Predominately an Arctic species of peaty, acid sites (Schuster 1969), *L. propagulifera* is thought to have survived various glacial advances in refugia in the Arctic, Greenland and the Midwestern United States (Schuster 1958), though its current known distribution includes alpine areas in Washington state (Hong 2002). The nearest known locality to Denali NPP is in the White Mountains, 200 km to the north (as cited in Persson and Gjørevoll 1957).

22) *Radula complanata* – KUSKOKWIM MOUNTAINS: on rock, Roosevelt Hills. This is a widespread species in the northern hemisphere (Schuster 1980), and is most commonly found in temperate or oceanic climates on vertical rock faces, deep rock crevices and the bark of trees. Most of the *R. complanata* collections from the northern half of Alaska are from the Arctic slope of the Brooks Range (Steere 1965) and the species is considered a temperate disjunct (Steere 1976). Our collection, 280 km south of the nearest known locality (Schofield 77915, B39686), was also found in an area thought to have supported vegetation through the last glacial maximum, the Roosevelt Hills (Roland 2004).

23) *Radula prolifera* – ALASKA RANGE: on humic soil, Kantishna Hills in the Upper North Fork Canyon Creek; Primrose Ridge. This species is frequent in the high arctic, where it likely survived quaternary glaciation (Steere 1965). *Radula prolifera* is known from north facing steep slopes moistened by fog and seepage channels in sloping

calcareous fens in (Steere 1976). The nearest locality to our collection is from the White Mountains, 250 km to the northeast (as cited in Persson and Gjørevoll 1957).

24) *Riccardia chamedryfolia* – ALASKA RANGE: Lower east fork of the Toklat River; Upper Wigand Creek; Wigand Creek. *R. chamedryfolia* is found on various substrates usually near slowly moving or dripping water including *Sphagnum* mires, and low lying dwarf birch (*Betula nana*) communities (Damsholt 2007). The three DNPP locations of *R. chamedryfolia* represent, the 4–7th collections reported in Alaska, and are 650 km south and inland from the nearest known locality on the North Slope of the Brooks Range (Steere 18616, NY108516).

DISCUSSION

The majority of the 140 new species documented within the boundaries of DNPP were collected from north of the Alaska Range at sites difficult to access from the park road (82 new taxa), both at rugged, high elevation sites in the range proper (27 new taxa) and low elevation sites in the vast expanse of boreal forest north of the mountains (33 new taxa). Additional taxa were collected from sites south of the Alaska Range, where little collection effort had occurred in the past (19 new taxa).

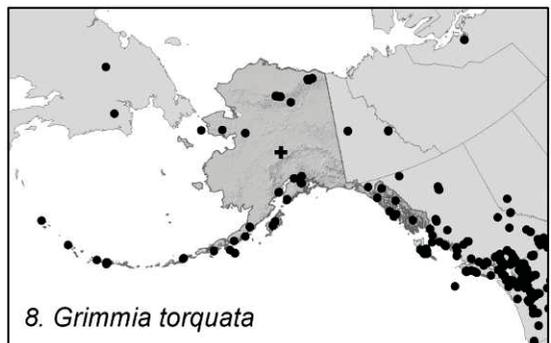
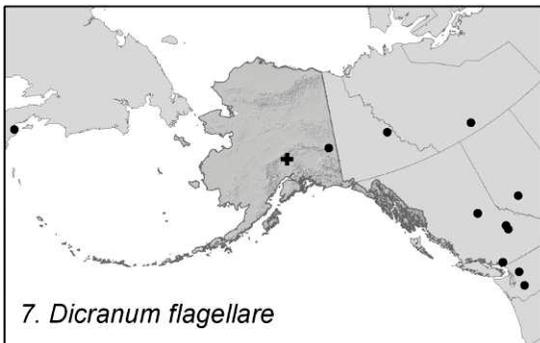
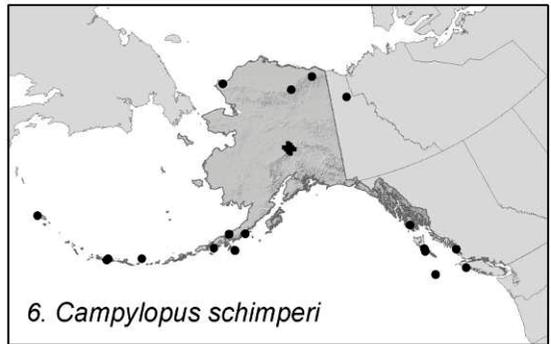
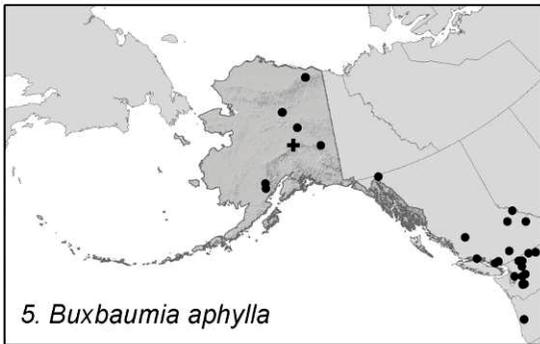
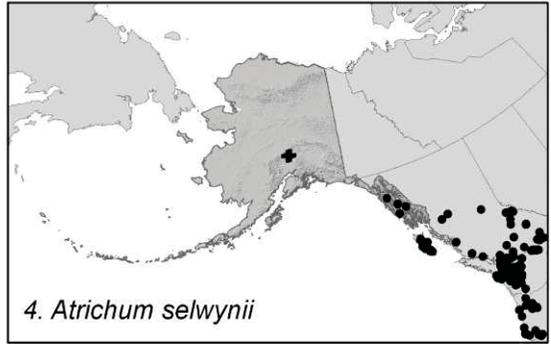
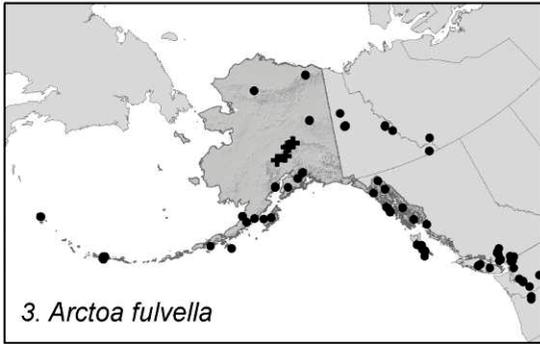
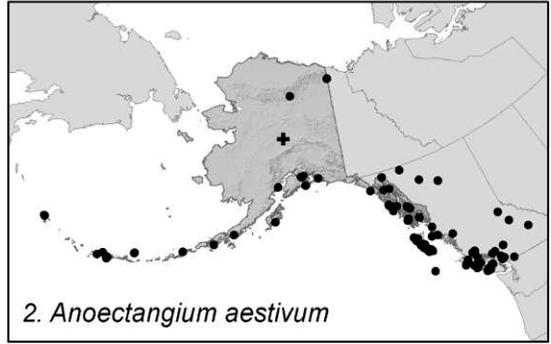
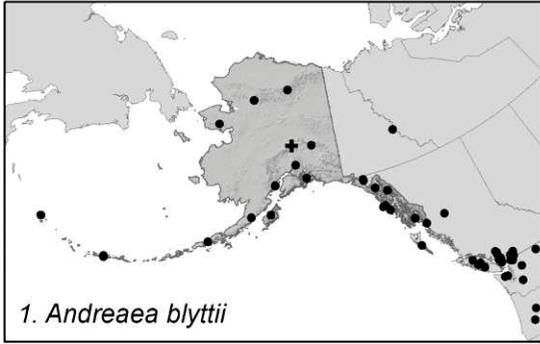
We collected a number of species with primarily arctic distributions at high elevations in our study area. *Hypnum procerrimum*, *Tetradontium repandum*, *Tortula leucostoma*, and *Radula prolifera*, for example, all occurred in sites mostly above 1000 m in elevation. An additional species with a primarily arctic distribution, *Oligotrichum falcatum*, was found at a lower elevation (856 m) in the Kantishna Hills, an area that supports numerous disjunctions of vascular plants (Roland 2004) and some moss species (e.g. *Gollania turgens* (Ando et al 1957) and *Seligeria polaris* (Persson and Weber 1958)). *Tortula leucostoma*, which (along with *Oligotrichum falcatum*) is thought to have weathered Pleistocene glaciation in the arctic and other unglaciated areas (Schofield 1980), was found in DNPP at four high elevation (>1000 m) rocky alpine sites, perhaps as evidence of recolonization of preferred habitats following deglaciation.

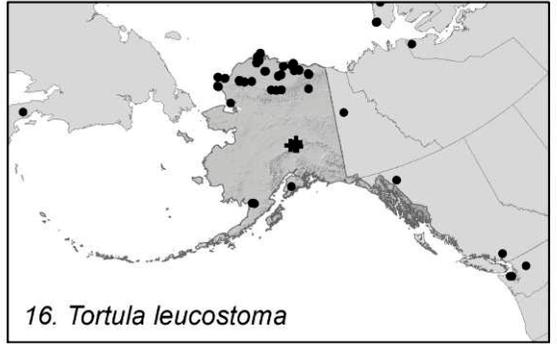
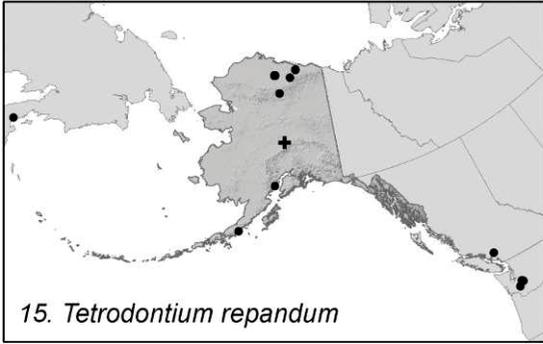
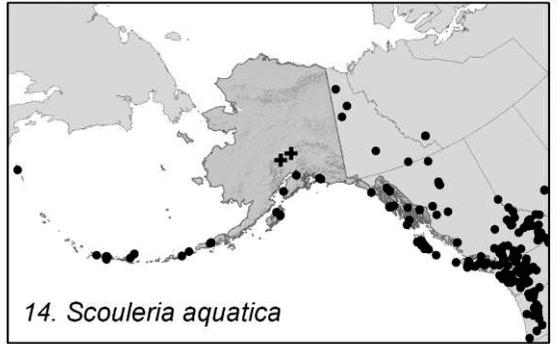
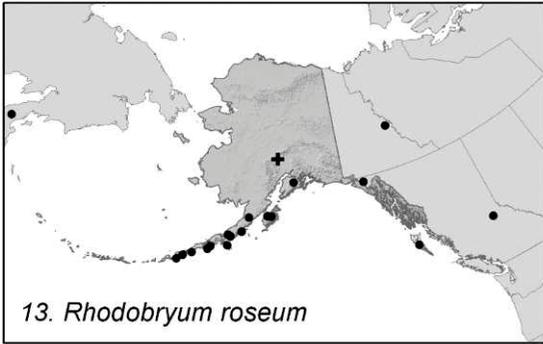
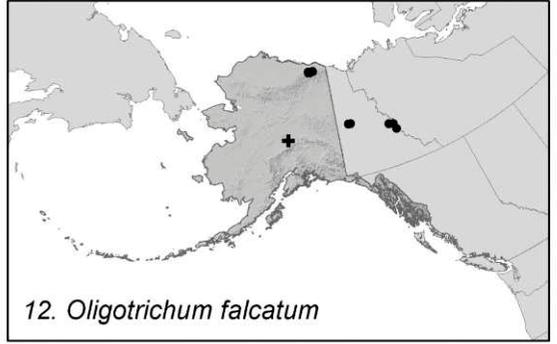
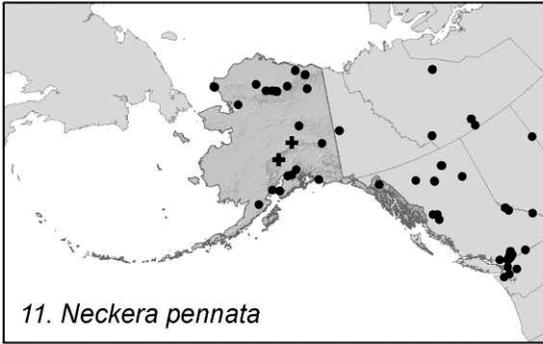
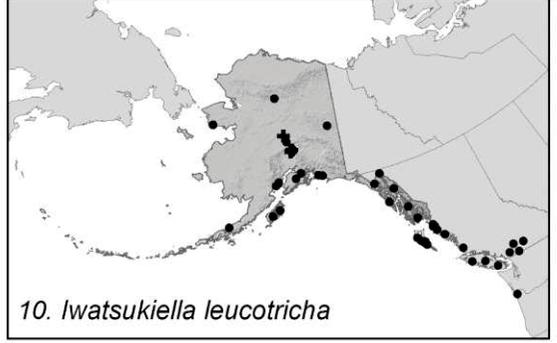
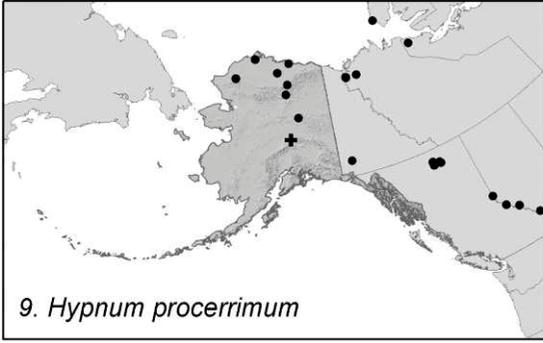
We collected a number of species with generally northern coastal distributions, including the mosses *Rhodobryum roseum* and *Scouleria aquatica*, and the liverworts *Asterella lindenbergiana* and *Frullania tamarisci* subsp. *nisquallensis*, at sites south of the Alaska Range in DNPP. The climate of DNPP south of the Alaska Range is transitional between maritime and continental, with nearly twice the mean annual precipitation and about 3°C warmer mean annual temperature than areas north of the Alaska Range (Shulski and Wendler 2007). Additional moss species previously known to have coastal distributions were collected north of the Alaska Range at sites of biogeographical significance. *Anoetangium aestivum* was found in the Roosevelt Hills, an area that was likely unglaciated during the last glacial maximum (Briner and Kaufman 2008), and *Campylopus schimperi* was found at high alpine sites (1149 and 1224 m) in the Kantishna Hills and alpine outer range.

Our current contribution to the knowledge of bryophyte species presence in DNPP is significant, but it remains likely that additional taxa will be discovered in this large and diverse region in the future. Particularly south of the Alaska Range, where our sampling was both limited (see Table 1) and targeted on specific habitats, it is likely that additional taxa will be discovered. Forty-five taxa on our expected species list remain undiscovered, 13 with a high or medium expectancy and 32 with a low expectancy. More thorough investigation of particular sites of biogeographical significance north of the Alaska Range in particular, such as the Kantishna Hills and Roosevelt Hills, may yield further new discoveries with additional inventory work.

Considerable bryological work has now been performed in many regions of Alaska, including the Aleutian Island chain (Schofield et al. 2002, 2004), the Kodiak archipelago (Peterson et al. 1980), the southeastern panhandle (Worley 1972), the arctic (e.g. Sherrard 1955, Schofield 1972, Steere and Inoue 1978, Murray and Murray 1975) and the interior. Much of this work has occurred after the publication of the most recent state checklists (Worley and Iwatsuki 1970, Worley 1970), in some cases adding additional species, and in all cases broadening our knowledge of bryophyte species distributions within Alaska. Additional work in surrounding regions (e.g. the Yukon, Vitt et al. 1987, and the Northwest Territories, Vitt and Horton 1979) has also increased our understanding of bryogeographical patterns by examining the distribution of particular species across regions. An updated checklist of Alaskan bryophytes may now be in order given the significant accumulation of recent work in this field cited above. Indeed, such a summation of current knowledge regarding bryological patterns in the North

American arctic and sub-arctic may offer valuable new insights and important information for conservation of this important natural heritage.





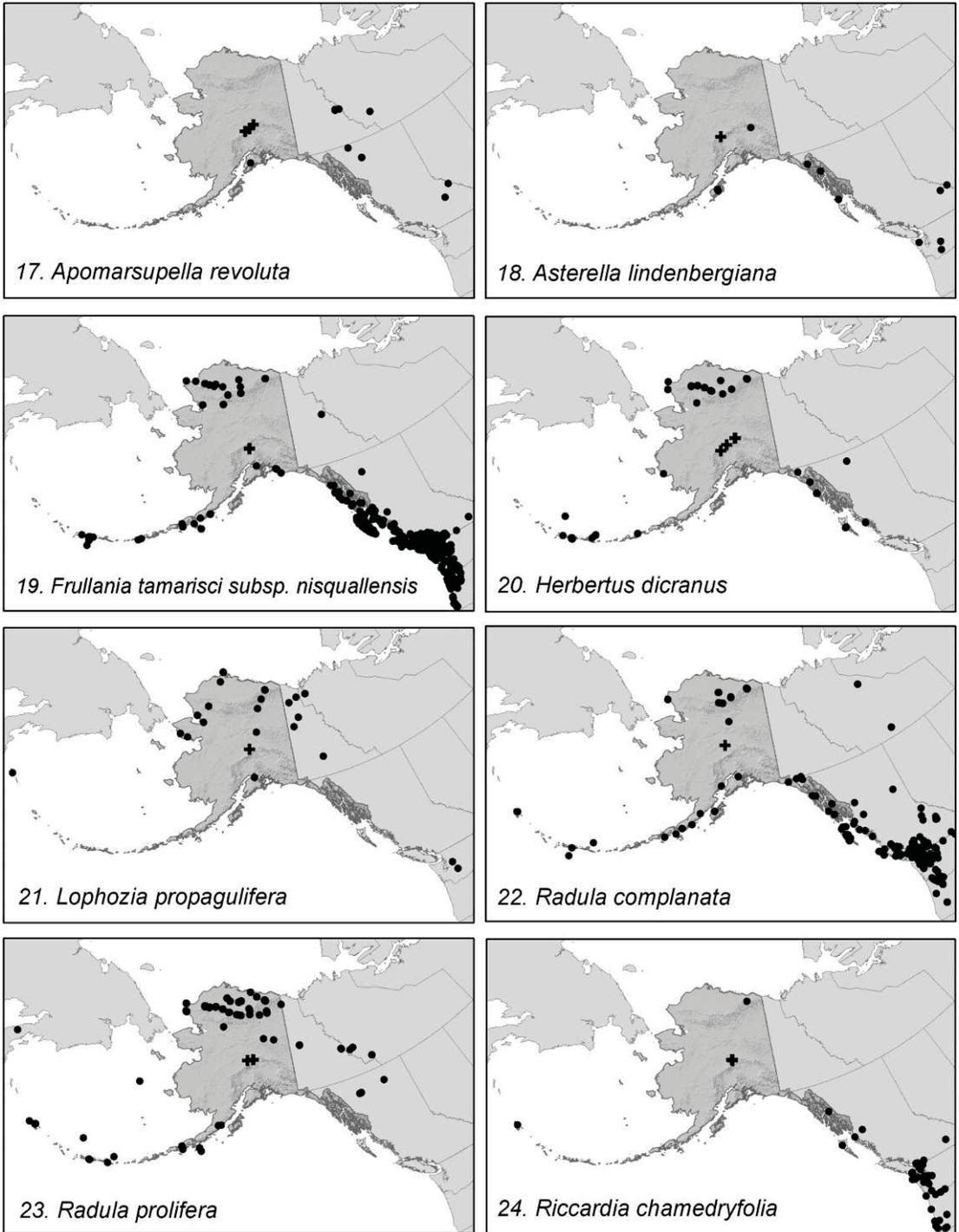


Figure 2. Species occurrences from vouchered collections in Alaska, Yukon Territory, Northwest Territories, British Columbia, Alberta, Washington, Oregon, and eastern Russia. Plus signs indicate collections recorded as part of Denali National Park and Preserve vegetation monitoring or nonvascular inventory (2001–2011).

ACKNOWLEDGEMENTS

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Supplementary information for Stehn, S. E., Walton, J. K., and Roland, C. A. 2013. A bryophyte species list for Denali National Park and Preserve, Alaska, with comments on several new and noteworthy records. *Evansia* 30(1):

BRYOPSIDA

- Abietinella abietina* (Hedwig) M. Fleischer – abundant in NH, common in NL, uncommon in SH, rare in SL.
- Aloina brevirostris* (Hooker & Greville) Kindberg – unknown
- Amblystegium serpens* (Hedwig) Schimper – uncommon in NH, NL, unknown in SH, SL.
- Amphidium lapponicum* (Hedwig) Schimper – rare in NH, NL, SH, SL.
- **Andreaea blyttii* Schimper in Bruch and Schimper – unknown in NH, NL, rare in SH, unknown in SL. *Nelson 07-560*. [Ann. 1]
- Andreaea rupestris* Hedwig – uncommon in NH, rare in NL, abundant in SH, rare in SL.
- **Anoetangium aestivum* (Hedwig) Mitten – unknown in NH, rare in NL, unknown in SH, SL. *Walton 14647*. [Ann. 2]
- **Anomobryum julaceum* (P. Gaertner, B. Meyer & Scherbius) Schimper – rare in NH, unknown in NL, SH, SL. *Kofranek 09-4460*
- Aongstroemia longipes* (Sommerfelt) Bruch & Schimper in Bruch, Schimper & W. Gumbel – unknown
- Aplodon wormskjoldii* (Hornemann in Oeder) R. Brown – unknown
- **Arctoa fulvella* (Dickson) Bruch & Schimper in Bruch, Schimper & W. Gumbel – uncommon in NH, unknown in NL, rare in SH, SL. [Ann. 3]
- **Atrichum selwynii* Austin – unknown in NH, NL, SH, uncommon in SL. *Walton 14548; Walton 14537*. [Ann. 4]
- Atrichum tenellum* (Röhling) Bruch & Schimper – unknown
- Aulacomnium acuminatum* (Lindberg & H. Arnell) Kindberg – uncommon in NH, NL, unknown in SH, rare in SL.
- Aulacomnium palustre* (Hedwig) Schwägrichen – abundant in NH, NL, uncommon in SH, common in SL.
- Aulacomnium turgidum* (Wahlenberg) Schwägrichen – abundant in NH, NL, uncommon in SH, unknown in SL.
- Barbula convoluta* Hedwig – unknown in NH, rare in NL, unknown in SH, SL.
- Barbula unguiculata* Hedwig – rare in NH, unknown in NL, SH, SL.
- Bartramia ithyphylla* Bridel – common in NH, rare in NL, abundant in SH, uncommon in SL.
- **Bartramia pomiformis* Hedwig – rare in NH, unknown in NL, SH, SL. *Walton 4624*
- Brachythecium albicans* (Hedwig) Schimper in Bruch, Schimper & W. Gumbel – common in NH, uncommon in NL, SH, unknown in SL.
- Brachythecium calcareum* Kindberg – uncommon in NH, NL, rare in SH, unknown in SL.
- Brachythecium cirrosum* (Schwägrichen) Schimper – common in NH, rare in NL, SH, unknown in SL.
- **Brachythecium collinum* (Schleicher ex C. Müller) Schimper in Bruch, Schimper & W. Gumbel – rare in NH, NL, SH, unknown in SL.
- Brachythecium erythrorrhizon* Schimper in Bruch, Schimper & W. Gumbel – uncommon in NH, NL, unknown in SH, SL.
- **Brachythecium frigidum* (C. Müller) Bescherelle – rare in NH, unknown in NL, SH, rare in SL. *Walton 14936a, Stehn 06-288, Stehn 06-182*
- Brachythecium glareosum* (Bruch ex Spruce) Schimper in Bruch, Schimper & W. Gumbel – unknown
- Brachythecium nelsonii* Grout – uncommon in NH, NL, abundant in SH, uncommon in SL.

- **Brachythecium oedipodium* (Mitten) Jaeger – uncommon in NH, NL, unknown in SH, SL.
- **Brachythecium plumosum* (Hedwig) Schimper in Bruch, Schimper & W. Gümbel – rare in NH, NL, unknown in SH, SL. *Walton 5959; Walton 4978; Bartlett 02-1145*
- Brachythecium reflexum* (Starke in Weber & D. Mohr) Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, rare in NL, SH, common in SL.
- * var. *pacificum* Renauld & Cardot in Röhl – uncommon in NH, rare in NL, SH, unknown in SL.
- **Brachythecium rivulare* Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, unknown in NL, common in SH, SL.
- Brachythecium salebrosum* (G. F. Hoffmann ex Weber & D. Mohr) Schimper in Bruch, Schimper & W. Gümbel – common in NH, NL, abundant in SH, SL.
- **Brachythecium starkei* (Bridel) Schimper in Bruch, Schimper & W. Gümbel – unknown in NH, NL, SH, uncommon in SL.
- Brachythecium turgidum* (C. J. Hartman) Kindberg – uncommon in NH, unknown in NL, rare in SH, unknown in SL.
- Bryum argenteum* Hedwig – unknown
var. *argenteum* Hedwig – uncommon in NH, rare in NL, unknown in SH, SL.
- Bryobrittonia longipes* (Mitten) D. G. Horton – rare in NH, unknown in NL, SH, SL.
- Bryoerythrophyllum recurvirostrum* (Hedwig) P. C. Chen – rare in NH, NL, uncommon in SH, unknown in SL.
- **Bucklandiella heterosticha* (Hedwig) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – rare in NH, unknown in NL, uncommon in SH, SL.
- **Bucklandiella sudetica* (Funck) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – rare in NH, unknown in NL, uncommon in SH, SL.
- **Buxbaumia aphylla* Hedwig – rare in NH, unknown in NL, SH, SL. *Walton 3226*. [Ann. 5]
- Calliargon cordifolium* (Hedwig) Kindberg – unknown in NH, uncommon in NL, unknown in SH, rare in SL. *Steere s.n.* (NY), 1951
- Calliargon giganteum* (Schimper) Kindberg – unknown in NH, rare in NL, unknown in SH, SL.
- Calliargon richardsonii* (Mitten) Kindberg – rare in NH, NL, unknown in SH, SL.
- **Campyliadelphus chrysophyllus* (Bridel) Kanda – rare in NH, NL, unknown in SH, SL. *Walton 7957; Stehn 09-384; Nelson 09-130; Nelson 09-396*
- Campylium protensum* (Bridel) Kindberg – uncommon in NH, rare in NL, unknown in SH, rare in SL.
- Campylium stellatum* (Hedwig) C. E. O. Jensen – uncommon in NH, NL, SH, rare in SL.
- Campylophyllum halleri* (Hedwig) Fleischer – unknown in NH, NL, uncommon in SH, unknown in SL.
- **Campylophyllum hispidulum* (Bridel) Hedenäs – uncommon in NH, rare in NL, unknown in SH, rare in SL.
- Campylophyllum sommerfeltii* (Myrin) Hedenäs – rare in NH, NL, unknown in SH, SL.
- **Campylopus fragilis* (Bridel) Bruch & Schimper – rare in NH, unknown in NL, SH, SL. *Bartlett 02-0543; Walton 6163*
- **Campylopus schimperi* Milde – rare in NH, unknown in NL, SH, SL. *Nelson 07-470; Stehn 06-111*. [Ann. 6]
- Catoscopium nigratum* (Hedwig) Bridel – rare in NH, NL, unknown in SH, SL.
- Ceratodon purpureus* (Hedwig) Bridel – abundant in NH, NL, SH, common in SL.
var. *purpureus* – unknown
- Cinclidium arcticum* (Bruch & Schimper) Schimper – rare in NH, unknown in NL, SH, SL.
- Cinclidium stygium* Swartz – rare in NH, NL, unknown in SH, SL.
- Cinclidium subrotundum* Lindberg – rare in NH, NL, unknown in SH, SL.

- Climacium dendroides* (Hedwig) Weber & D. Mohr – common in NH, NL, uncommon in SH, common in SL.
- **Codriophorus acicularis* (Hedwig) P. Beauvois – unknown in NH, NL, SH, rare in SL. *Walton 12637b*
- **Codriophorus corrugatus* Bednarek-Ochyra – unknown in NH, NL, SH, rare in SL. *Walton 14660*
- **Codriophorus fascicularis* (Hedwig) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – rare in NH, unknown in NL, uncommon in SH, SL.
- Conostomum tetragonum* (Hedwig) Lindberg – uncommon in NH, unknown in NL, common in SH, rare in SL.
- Cratoneuron filicinum* (Hedwig) Spruce – rare in NH, NL, unknown in SH, rare in SL.
- Cynodontium alpestre* (Wahlenberg) Milde – unknown
- Cynodontium polycarpon* (Hedwig) Schimper – unknown in NH, rare in NL, unknown in SH, SL.
- Cynodontium schisti* (F. Weber & D. Mohr) Lindberg – rare in NH, unknown in NL, SH, SL.
- Cynodontium strumiferum* (Hedwig) Lindberg – rare in NH, NL, unknown in SH, SL.
- Cynodontium tenellum* (Schimper) Limpricht in F. J. Cohn – rare in NH, unknown in NL, SH, SL.
- Cyrtomnium hymenophyllum* (Bruch & Schimper in Bruch, Schimper & W. Gümbel) Holmen – rare in NH, NL, unknown in SH, SL.
- Dichelyma uncinatum* Mitten – unknown in NH, uncommon in NL, unknown in SH, SL.
- **Dichodontium pellucidum* (Hedwig) Schimper – rare in NH, NL, SH, uncommon in SL.
- Dicranella cerviculata* (Hedwig) Schimper – unknown in NH, rare in NL, unknown in SH, SL.
- Dicranella crispa* (Hedwig) Schimper – rare in NH, NL, unknown in SH, SL.
- Dicranella heteromalla* (Hedwig) Schimper – rare in NH, NL, unknown in SH, SL.
- Dicranella palustris* (Dickson) E. F. Warburg – rare in NH, unknown in NL, SH, rare in SL.
- Dicranella schreberiana* (Hedwig) H. A. Crum & L. E. Anderson – unknown
- Dicranella subulata* (Hedwig) Schimper – rare in NH, unknown in NL, common in SH, rare in SL.
- Dicranella varia* (Hedwig) Schimper – rare in NH, unknown in NL, rare in SH, unknown in SL.
- Dicranoweisia crispula* (Hedwig) Milde – common in NH, uncommon in NL, abundant in SH, uncommon in SL.
- Dicranum acutifolium* (Lindberg & Arnell) C. E. O. Jensen in A. H. Weimarck – abundant in NH, common in NL, SH, uncommon in SL.
- **Dicranum bonjeanii* De Notaris in Lisa – rare in NH, NL, unknown in SH, SL. *Bartlett 02-0710; Bartlett 02-0942*
- **Dicranum brevifolium* (Lindberg) Lindberg – uncommon in NH, NL, SH, unknown in SL.
- Dicranum elongatum* Schwäggrichen – common in NH, NL, rare in SH, unknown in SL.
- **Dicranum flagellare* Hedwig – unknown in NH, NL, SH, rare in SL. *Walton 14847. [Ann. 7]*
- Dicranum fragilifolium* Lindberg – rare in NH, uncommon in NL, unknown in SH, SL.
- Dicranum fuscescens* Turner – abundant in NH, common in NL, abundant in SH, SL.
- Dicranum groenlandicum* Bridel – uncommon in NH, common in NL, SH, unknown in SL.
- **Dicranum howellii* Renaud & Cardot – unknown in NH, rare in NL, unknown in SH, SL. *Bartlett 02-0278*
- Dicranum majus* Turner – rare in NH, NL, unknown in SH, SL.
var. *majus* – unknown
- **Dicranum montanum* Hedwig – rare in NH, uncommon in NL, unknown in SH, common in SL.
- Dicranum muehlenbeckii* Bruch, Schimper & W. Gümbel – uncommon in NH, rare in NL, unknown in SH, SL.

- **Dicranum pallidisetum* (J. W. Bailey) Ireland – rare in NH, NL, unknown in SH, SL.
- **Dicranum polysetum* Swartz – uncommon in NH, common in NL, uncommon in SH, rare in SL.
- Dicranum scoparium* Hedwig – abundant in NH, NL, SH, common in SL.
- Dicranum spadiceum* J. E. Zetterstedt – common in NH, NL, uncommon in SH, unknown in SL. *Weber 10256* (DUKE)
- **Dicranum tauricum* Sapjegin – rare in NH, uncommon in NL, unknown in SH, rare in SL.
- Dicranum undulatum* Bridel – uncommon in NH, abundant in NL, rare in SH, unknown in SL.
- **Didymodon brachyphyllus* (Sullivant) R. H. Zander – rare in NH, unknown in NL, SH, SL. *Walton 14681a; Walton 14684*
- **Didymodon rigidulus* Hedwig – unknown
- var. *gracilis* (Schleicher ex Hooker & Greville) R. H. Zander – rare in NH, unknown in NL, SH, SL. *Weber 10361* (NY)
- var. *icmadophilus* (Schimper ex C. Müller) R. H. Zander – unknown
- Distichium capillaceum* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gümbel – abundant in NH, common in NL, uncommon in SH, rare in SL.
- Distichium inclinatum* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, unknown in NL, SH, SL.
- Ditrichum flexicaule* (Schwägrichen) Hampe – common in NH, uncommon in NL, abundant in SH, unknown in SL.
- **Ditrichum gracile* (Mitten) O. Kuntze – rare in NH, unknown in NL, rare in SH, unknown in SL. *Walton 14534; Walton 14522; Walton 14513*
- Ditrichum heteromallum* (Hedwig) E. Britton – uncommon in NH, rare in NL, unknown in SH, SL.
- Drepanocladus aduncus* (Hedwig) Warnstorf – rare in NH, uncommon in NL, unknown in SH, SL.
- Drepanocladus longifolius* (Mitten) Brotherus ex Paris – unknown
- Drepanocladus polygamus* (Bruch, Schimper & W. T. Gümbel) Hedenäs – unknown
- **Drepanocladus sordidus* (Müller Hal.) Hedenäs in W. R. Buck – unknown in NH, rare in NL, SH, unknown in SL. *Walton 14571; Walton 4123; Nelson 10-269*
- Encalypta affinis* R. Hedwig – unknown in NH, NL, uncommon in SH, unknown in SL.
- Encalypta alpina* Smith – rare in NH, unknown in NL, SH, SL.
- Encalypta brevicollis* (Bruch & Schimper) Åongstöm – rare in NH, unknown in NL, SH, SL.
- **Encalypta ciliata* Hedwig – uncommon in NH, unknown in NL, rare in SH, unknown in SL.
- **Encalypta longicollis* Bruch – rare in NH, unknown in NL, SH, SL. *Walton 6914d*
- Encalypta procera* Bruch – unknown in NH, NL, rare in SH, unknown in SL.
- Encalypta rhapsocarpa* (Schwägrichen) E. Lawton – common in NH, rare in NL, SH, unknown in SL.
- Encalypta vulgaris* Hedwig – rare in NH, unknown in NL, SH, SL.
- Entodon concinnus* (De Notaris) Paris – unknown in NH, rare in NL, unknown in SH, SL.
- Eurhynchiastrum pulchellum* (Hedwig) Ignatov & Huttunen – uncommon in NH, NL, rare in SH, unknown in SL.
- var. *pulchellum* – rare in NH, NL, unknown in SH, rare in SL.
- Fissidens adianthoides* Hedwig – unknown in NH, rare in NL, unknown in SH, SL.
- Fissidens bryoides* Hedwig – rare in NH, unknown in NL, SH, SL.
- Fissidens osmundioides* Hedwig – rare in NH, NL, SH, unknown in SL.
- Funaria hygrometrica* Hedwig – rare in NH, unknown in NL, SH, SL.
- Gemmabryum caespiticium* (Hedwig) J. R. Spence – uncommon in NH, rare in NL, SH, unknown in SL.
- Gollania turgens* (J. K. A. Müller) Ando – unknown

- **Grimmia lisae* De Notaris – unknown in NH, rare in NL, unknown in SH, SL. *Walton 15092*
- Grimmia longirostris* Hooker – uncommon in NH, rare in NL, unknown in SH, SL.
- Grimmia mollis* Bruch & Schimper – unknown
- Grimmia ovalis* (Hedwig) Lindberg – unknown
- **Grimmia sessitana* De Notaris – rare in NH, NL, abundant in SH, unknown in SL.
- **Grimmia torquata* Drummond – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-123; Walton 14638*. [Ann. 8]
- Hamatocaulis vernicosus* (Mitten) Hedenäs – unknown in NH, rare in NL, unknown in SH, SL.
- Hedwigia ciliata* (Hedwig) Palisot de Beauvois – unknown in NH, rare in NL, unknown in SH, SL.
- Helodium blandowii* (Weber & D. Mohr) Warnstorf – unknown in NH, rare in NL, unknown in SH, rare in SL.
- Homalothecium fulgescens* (Mitten ex C. Müller) Jaeger – unknown
- Hygrohypnum cochlearifolium* (Venturi in De Notaris) Brotherus – rare in NH, unknown in NL, SH, rare in SL.
- Hygrohypnum luridum* (Hedwig) Jennings – rare in NH, unknown in NL, uncommon in SH, rare in SL.
- Hygrohypnum norvegicum* (Schimper) Amann – unknown
- Hygrohypnum ochraceum* (Turner ex Wilson) Loeske – rare in NH, unknown in NL, SH, uncommon in SL.
- Hylocomiastrum pyrenaicum* (Spruce) Brotherus in H. G. A. Engler and K. Prantl – uncommon in NH, rare in NL, common in SH, SL.
- Hylocomium splendens* (Hedwig) Schimper in Bruch, Schimper & W. Gümbel – abundant in NH, NL, common in SH, SL.
- Hymenostylium recurvirostre* (Hedwig) Dixon – unknown
var. *recurvirostrum* – unknown
- Hypnum bambergeri* Schimper – uncommon in NH, rare in NL, SH, unknown in SL.
- Hypnum callichroum* Bridel – uncommon in NH, rare in NL, SH, SL.
- Hypnum cupressiforme* Hedwig – rare in NH, NL, uncommon in SH, rare in SL.
var. *subjulaceum* Molendo – unknown in NH, rare in NL, unknown in SH, SL.
- **Hypnum dieckii* Renauld & Cardot – unknown in NH, rare in NL, unknown in SH, SL.
Bartlett 02-0924
- Hypnum hamulosum* Schimper in Bruch, Schimper & W. Gümbel – rare in NH, NL, unknown in SH, SL.
- **Hypnum holmenii* Ando – rare in NH, NL, unknown in SH, rare in SL. *Walton 3206; Bartlett 02-0822; Walton 14587; Walton 08782*
- Hypnum lindbergii* Mitten – uncommon in NH, NL, rare in SH, uncommon in SL.
- Hypnum plicatulum* (Lindberg) A. Jaeger – common in NH, abundant in NL, common in SH, SL.
- Hypnum pratense* Spruce – rare in NH, NL, SH, unknown in SL.
- **Hypnum procerrimum* Molendo – rare in NH, NL, unknown in SH, SL. *Walton 5755*. [Ann. 9]
- Hypnum revolutum* (Mitten) Lindberg – common in NH, uncommon in NL, rare in SH, unknown in SL.
- * var. *revolutum* – unknown
- * var. *ravaudii* (Boulay) Ando – unknown
- Hypnum subimponens* Lesquereux – rare in NH, unknown in NL, SH, SL. *Steere s.n.* (NY), 1951
- Hypnum vaucheri* Lesquereux – rare in NH, NL, unknown in SH, SL.
- Isopterygiopsis muelleriana* (Schimper) Z. Iwatsuki – rare in NH, NL, unknown in SH, SL.

- Isopterygiopsis pulchella* (Hedwig) Z. Iwatsuki – common in NH, NL, SH, uncommon in SL.
- Iwatsukiella leucotricha* (Mitten) W. R. Buck & H. A. Crum – unknown in NH, rare in NL, unknown in SH, uncommon in SL. [Ann. 10]
- Kiaeria falcata* (Hedwig) I. Hagen – unknown in NH, NL, uncommon in SH, unknown in SL.
- Kiaeria glacialis* (Berggrren) I. Hagen – unknown
- **Kiaeria starkei* (Weber & D. Mohr) I. Hagen – unknown in NH, NL, uncommon in SH, unknown in SL. *Walton 10327; Walton 10263*
- Leptobryum pyriforme* (Hedwig) Wilson – rare in NH, uncommon in NL, rare in SH, unknown in SL.
- Leptopterigynandrum austroalpinum* Müller Hal. – unknown
- Lescuraea saxicola* (Schimper in Bruch, Schimper & W. Gümbel.) Molendo – rare in NH, unknown in NL, rare in SH, unknown in SL.
- Leskeella nervosa* (Bridel) Loeske – uncommon in NH, rare in NL, unknown in SH, SL.
- Loeskypnum badium* (Hartman) H.K.G. Paul – unknown in NH, rare in NL, unknown in SH, SL.
- **Meesia longiseta* Hedwig – unknown in NH, rare in NL, unknown in SH, SL.
- Meesia triquetra* (Jolyclerc) Ångström – unknown
- Meesia uliginosa* Hedwig – uncommon in NH, NL, unknown in SH, SL.
- **Meiотrichum lyallii* (Mitten) G.L. Smith – rare in NH, unknown in NL, rare in SH, unknown in SL. *Nelson 07-641; Nelson 08-196*
- Mielichhoferia mielichhoferiana* (Funck) Loeske – unknown
var. *elongata* (Hoppe & Hornsch. ex Hook.) Wijk & Margad. – unknown. *Dean s.n.(NY)*, 1989.
- Mnium ambiguum* H. L. H. Müller – rare in NH, NL, unknown in SH, SL.
- Mnium blyttii* Bruch & Schimper in Bruch, Schimper & W. Gümbel – common in NH, rare in NL, common in SH, rare in SL.
- Mnium hornum* Hedwig – unknown. *Weber 10002 (NY)*
- Mnium marginatum* (Dickson ex Withering) Palisot de Beauvois – uncommon in NH, rare in NL, uncommon in SH, rare in SL.
- Mnium spinosum* (Voit in J. W. Sturm) Schwägrichen – rare in NH, unknown in NL, SH, SL.
- **Mnium spinulosum* Bruch & Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, rare in NL, SH, unknown in SL.
- Mnium thomsonii* Schimper – common in NH, uncommon in NL, common in SH, rare in SL.
- Myurella julacea* (Schwägrichen) Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, rare in NL, unknown in SH, SL.
- Myurella sibirica* (J. K. A. Müller) Reimers – unknown in NH, rare in NL, unknown in SH, SL.
- Myurella tenerrima* (Bridel) – uncommon in NH, rare in NL, unknown in SH, SL.
- **Neckera pennata* Hedwig – rare in NH, unknown in NL, rare in SH, SL. [Ann. 11]
- Niphotrichum canescens* (Hedwig) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – rare in NH, NL, uncommon in SH, rare in SL.
- **Niphotrichum elongatum* (Frisvoll) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – rare in NH, unknown in NL, SH, SL. *Bartlett 02-0843*
- Niphotrichum ericoides* (Bridel) Bednarek-Ochyra & Ochyra in R. Ochyra et al. – common in NH, uncommon in NL, abundant in SH, common in SL.
- Oligotrichum aligerum* Mitten – unknown
- **Oligotrichum falcatum* Steere – unknown in NH, rare in NL, unknown in SH, SL. *Walton 08257*. [Ann. 12]
- Oligotrichum hercynicum* (Hedwig) Lamarek & A. P. DeCandolle – rare in NH, NL, SH, SL.
- **Oligotrichum parallelum* (Mitten) Kindberg – unknown in NH, NL, SH, rare in SL. *Walton 14623*

- Oncophorus virens* (Hedwig) Bridel – uncommon in NH, rare in NL, unknown in SH, SL.
- Oncophorus wahlenbergii* Bridel – uncommon in NH, common in NL, unknown in SH, uncommon in SL.
- **Orthothecium chryseum* (Schwägrichen) Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, unknown in NL, uncommon in SH, unknown in SL.
- Orthothecium intricatum* (Hartman) Schimper in Bruch, Schimper & W. Gümbel – unknown
- Orthotrichum consimile* Mitten – unknown in NH, NL, SH, rare in SL.
- **Orthotrichum elegans* Hooker & Greville – rare in NH, unknown in NL, SH, SL. *Nelson 09-073*
- Orthotrichum obtusifolium* Bridel – unknown in NH, rare in NL, unknown in SH, rare in SL.
- **Orthotrichum pellucidum* Lindberg – rare in NH, unknown in NL, SH, SL. *Kofranek 09-4469*
- **Orthotrichum pylaisii* Bridel – unknown in NH, rare in NL, unknown in SH, SL. *Walton 14636*
- Orthotrichum rupestre* Schwägrichen – unknown in NH, NL, SH, rare in SL. *Hermann 21554 (NY)*
- Orthotrichum speciosum* Nees in J. W. Sturm – uncommon in NH, rare in NL, unknown in SH, common in SL.
- Paludella squarrosa* (Hedwig) Bridel – rare in NH, uncommon in NL, unknown in SH, rare in SL.
- Palustriella commutata* (Hedwig) Ochyra – unknown in NH, NL, rare in SH, unknown in SL.
- Paraleucobryum enerve* (Thedenius) Loeske – uncommon in NH, rare in NL, abundant in SH, rare in SL.
- Paraleucobryum longifolium* (Hedwig) Loeske – unknown in NH, NL, SH, uncommon in SL. *Hermann 21435 (NY)*
- Philonotis capillaris* C. Hartman – unknown
- Philonotis fontana* (Hedwig) Bridel – uncommon in NH, rare in NL, SH, SL.
 var. *americana* (Dismier) H. A. Crum – rare in NH, NL, SH, unknown in SL.
 var. *fontana* – rare in NH, NL, SH, unknown in SL.
 var. *pumila* (Turner) Bridel – rare in NH, NL, unknown in SH, rare in SL.
- Plagiobryum demissum* (Hooker) Lindberg – rare in NH, unknown in NL, SH, SL.
- Plagiomnium cuspidatum* (Hedwig) T. Koponen – rare in NH, NL, SH, uncommon in SL.
- Plagiomnium ellipticum* (Bridel) T. Koponen – common in NH, NL, uncommon in SH, common in SL.
- Plagiomnium medium* (Bruch & Schimper in Bruch, Schimper & W. Gümbel) T. Koponen – rare in NH, NL, unknown in SH, common in SL.
- Plagiopus oederianus* (Swartz) H. Crum & L.E. Anderson – uncommon in NH, unknown in NL, uncommon in SH, unknown in SL.
- Plagiothecium cavifolium* (Bridel) Iwatsuki – rare in NH, NL, unknown in SH, rare in SL.
- **Plagiothecium denticulatum* (Hedwig) Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, NL, SH, common in SL.
- Plagiothecium laetum* Schimper in Bruch, Schimper & W. Gümbel – uncommon in NH, common in NL, unknown in SH, abundant in SL.
- Plagiothecium piliferum* (Hartman) Schimper in Bruch, Schimper & W. Gümbel – unknown in NH, uncommon in NL, unknown in SH, SL.
- Platydictya jungermannioides* (Bridel) H. A. Crum – uncommon in NH, NL, SH, unknown in SL.
- Pleurozium schreberi* (Bridel) Mitten – abundant in NH, NL, common in SH, SL.
- Pogonatum dentatum* (Bridel) Bridel – uncommon in NH, rare in NL, unknown in SH, rare in SL.

- Pogonatum urnigerum* (Hedwig) Palisot de Beauvois – common in NH, uncommon in NL, common in SH, uncommon in SL.
- **Pohlia andrewsii* A. J. Shaw – rare in NH, NL, unknown in SH, SL.
- Pohlia annotina* (Hedwig) Lindberg – unknown
- **Pohlia beringiensis* Shaw – rare in NH, unknown in NL, SH, SL. *Bartlett 02-0384*
- **Pohlia bulbifera* (Warnstorf) Warnstorf – unknown in NH, rare in NL, unknown in SH, rare in SL. *Walton 07778; Walton 07049; Walton 14619*
- Pohlia columbica* (Kindberg) Andrews in A. J. Grout – unknown
- Pohlia cruda* (Hedwig) H. Lindberg – common in NH, NL, rare in SH, SL.
- Pohlia crudoides* (Sullivant & Lesqereux) Brotherus in A. Engler & K. Prantl – rare in NH, NL, unknown in SH, SL.
- Pohlia drummondii* (Müller Hal.) Andrews in Grout – uncommon in NH, rare in NL, unknown in SH, SL.
- Pohlia filum* (Schimper) Mårtenssen – rare in NH, unknown in NL, SH, SL.
- **Pohlia longicollis* (Hedwig) H. Lindberg – rare in NH, NL, unknown in SH, SL. *Walton 3896; Walton 6096*
- Pohlia nutans* (Hedwig) H. Lindberg – common in NH, abundant in NL, rare in SH, uncommon in SL.
- **Pohlia obtusifolia* (Villars ex Bridel) L. Koch – unknown in NH, rare in NL, unknown in SH, SL. *Walton 07098*
- Pohlia prolifera* (Kindberg) Brotherus – uncommon in NH, rare in NL, unknown in SH, rare in SL.
- Pohlia vexans* (Limpricht) H. Lindberg – rare in NH, unknown in NL, rare in SH, unknown in SL.
- Pohlia wahlenbergii* (F. Weber & D. Mohr) Andrews in A. J. Grout – rare in NH, NL, unknown in SH, SL.
- Polytrichastrum alpinum* (Hedwig) G. L. Smith – uncommon in NH, NL, SH, SL.
var. *alpinum* – uncommon in NH, rare in NL, common in SH, uncommon in SL.
- Polytrichastrum formosum* (Hedwig) G.L. Smith – uncommon in NH, rare in NL, unknown in SH, rare in SL.
- **Polytrichastrum sexangulare* (Bridel) G.L. Smith – rare in NH, unknown in NL, rare in SH, unknown in SL. *Walton 14621; Nelson 09-119; Walton 6274; Nelson 09-115*
- * var. *sexangulare* – unknown in NH, NL, rare in SH, unknown in SL. *Walton 11413*
- Polytrichum commune* Hedwig – abundant in NH, NL, uncommon in SH, common in SL.
var. *commune* – uncommon in NH, common in NL, rare in SH, common in SL.
- Polytrichum hyperboreum* R. Brown – uncommon in NH, NL, SH, unknown in SL.
- Polytrichum jensenii* I. Hagen – unknown in NH, rare in NL, unknown in SH, SL.
- Polytrichum juniperinum* Hedwig – abundant in NH, NL, SH, uncommon in SL.
- **Polytrichastrum longisetum* (Bridel) G.L. Smith – rare in NH, NL, unknown in SH, uncommon in SL.
- Polytrichum piliferum* Hedwig – abundant in NH, uncommon in NL, common in SH, unknown in SL.
- Polytrichum strictum* Bridel – common in NH, abundant in NL, rare in SH, uncommon in SL.
- Polytrichum swartzii* C. J. Hartman – rare in NH, NL, unknown in SH, SL. *Weber 10152* (WTU)
- Pseudobryum cinclidioides* (Hübener) T. Koponen – unknown
- **Pseudocalliergon brevifolium* (Lindberg) Hedenäs – rare in NH, NL, SH, unknown in SL. *Walton 11650; Walton 11651; Walton 3989*
- Pseudocalliergon turgescens* (T. Jensen) Loeske – unknown in NH, rare in NL, unknown in SH, SL.

- **Pseudoleskea incurvata* (Hedwig) Loeske – unknown
 * var. *incurvata* – rare in NH, unknown in NL, SH, SL. *Brady 11-091; Walton 4025*
- **Pseudoleskea patens* (Lindberg) Kindberg – rare in NH, NL, unknown in SH, SL. *Stehn 06-190; Stehn 09-406*
- **Pseudoleskea radicata* (Mitten) Macoun & Kindberg – unknown
 * var. *radicata* – rare in NH, unknown in NL, common in SH, unknown in SL.
- Pseudoleskeella rupestris* (Berggren) Hedenäs & Soderström – unknown. *Hermann 21556* (NY)
- Pseudoleskea stenophylla* Renaud & Cardot in Röhl – unknown in NH, NL, SH, rare in SL.
- Pseudoleskeella tectorum* (Funck ex Bridel) Kindberg in Brotherus – rare in NH, NL, SH, unknown in SL.
- Psilopilum cavifolium* (Wilson) I. Hagen – unknown
- **Pterygoneurum lamellatum* (Lindberg) Juratzka – unknown in NH, rare in NL, unknown in SH, SL. *Walton 7050*
- Ptilium crista-castrensis* (Hedwig) De Not. – abundant in NH, NL, rare in SH, common in SL.
- **Ptychostomum acutiforme* (Limpricht) J. R. Spence – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-352*
- Ptychostomum archangelicum* (Bruch, Schimper & W. Gümbel) J. R. Spence – unknown
- Ptychostomum arcticum* (R. Brown) J. R. Spence – rare in NH, NL, unknown in SH, SL.
- Ptychostomum calophyllum* (R. Brown) J. R. Spence – unknown
- Ptychostomum creberrimum* (Taylor) J. R. Spence & H.P. Ramsay – uncommon in NH, rare in NL, unknown in SH, SL.
- Ptychostomum cyclophyllum* (Schwägriichen) J. R. Spence – rare in NH, NL, unknown in SH, SL.
- Ptychostomum inclinatum* (Swartz ex Bridel) J. R. Spence – rare in NH, NL, unknown in SH, SL.
- Ptychostomum lonchocaulon* (Müller Hal.) J. R. Spence – unknown
- Ptychostomum pallens* (Swartz) J. R. Spence – unknown
- Ptychostomum pallescens* (Schleicher ex Schwägriichen) J. R. Spence – rare in NH, NL, unknown in SH, SL.
- **Ptychostomum pendulum* Hornschuch – rare in NH, unknown in NL, rare in SH, unknown in SL. *Nelson 09-038; Walton 10040*
- Ptychostomum pseudotriquetrum* (Hedwig) J. R. Spence & H. P. Ramsay ex D. T. Holyoak & N. Pedersen – uncommon in NH, NL, unknown in SH, SL.
- Ptychostomum turbinatum* (Hedwig) J. R. Spence – unknown
- **Ptychostomum weigelii* (Sprengel) J. R. Spence – rare in NH, unknown in NL, rare in SH, unknown in SL. *Nelson 08-975; Walton 09103; Brady 11-008; Walton 3416*
- Pylaisia polyantha* (Hedwig) Bruch, Schimper & W. Gümbel – rare in NH, NL, SH, uncommon in SL.
- **Pylaisia selwynii* Kindberg – unknown in NH, NL, rare in SH, unknown in SL. *Walton 14595*
- Racomitrium lanuginosum* (Hedwig) Bridel – abundant in NH, uncommon in NL, abundant in SH, unknown in SL.
- Rhabdoweisia crispata* (Withering) Lindberg – unknown
- **Rhizomnium andrewsianum* (Steere) T. Koponen – rare in NH, uncommon in NL, unknown in SH, SL.
- **Rhizomnium gracile* T. Koponen – rare in NH, unknown in NL, SH, SL. *Walton 10641*
- Rhizomnium magnifolium* (Horikawa) T. Koponen – rare in NH, NL, uncommon in SH, common in SL.
- **Rhizomnium nudum* (Britton & R. S. Williams) T. Koponen – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 09-424*

- Rhizomnium pseudopunctatum*** (Bruch & Schimper) T. Koponen – uncommon in NH, NL, rare in SH, common in SL.
- Rhizomnium punctatum*** (Hedwig) T. Koponen – rare in NH, unknown in NL, SH, SL.
- ****Rhodobryum roseum*** (Hedwig) Limpricht – unknown in NH, NL, SH, rare in SL. *Stehn 10-338*. [Ann. 13]
- ****Rhytiadelphus squarrosus*** (Hedwig) Warnstorff – rare in NH, NL, common in SH, SL.
- Rhytiadelphus triquetrus*** (Hedwig) Warnstorff – common in NH, uncommon in NL, abundant in SH, unknown in SL.
- Rhytidium rugosum*** (Hedwig) Kindberg – abundant in NH, common in NL, uncommon in SH, unknown in SL.
- Rosulabryum capillare*** (Hedwig) J.R. Spence – unknown in NH, rare in NL, unknown in SH, SL.
- ****Rosulabryum elegans*** (Nees) Ochyra – rare in NH, unknown in NL, SH, SL. *Stehn 06-077*
- Saelania glaucescens*** (Hedwig) Brotherus – unknown in NH, NL, rare in SH, unknown in SL.
- ****Sanionia orthothecioides*** (S. O. Lindberg) L. Loeske – unknown in NH, rare in NL, unknown in SH, SL. *Walton 3137*
- Sanionia uncinata*** (J. Hedwig) L. Loeske – abundant in NH, NL, SH, SL.
- Sarmentypnum sarmentosum*** (Wahlenberg) Tuomikoski & T.J. Koponen – rare in NH, NL, SH, SL.
- Schistidium agassizii*** Sullivant & Lesquereux in Sullivant – rare in NH, unknown in NL, rare in SH, unknown in SL. *Welch 19564* (NY)
- Schistidium apocarpum*** (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gumbel – common in NH, rare in NL, uncommon in SH, unknown in SL.
- Schistidium cryptocarpum*** Mogensen & H. Blom – unknown. *Weber 10260* (NY)
- Schistidium frigidum*** H. H. Blom – rare in NH, unknown in NL, uncommon in SH, rare in SL. *Viereck 1293* (NY)
- ****Schistidium papillosum*** Culmann in J. Amann et al. – unknown in NH, NL, rare in SH, unknown in SL. *Walton 4796; Nelson 07-670; Nelson 07-664*
- Schistidium pulchrum*** H. H. Blom – unknown. *Hermann 148400* (NY)
- Schistidium rivulare*** (Bridel) Podpěra – rare in NH, unknown in NL, SH, SL.
- ****Schistidium strictum*** (Turner) Loeske ex Mårtensson – unknown in NH, NL, rare in SH, unknown in SL. *Walton 12650*
- Schistidium tenerum*** (J. E. Zetterstedt) Nyholm – rare in NH, NL, unknown in SH, SL.
- ****Scleropodium cespitans*** (Wilson ex Müller Hal.) L. F. Koch – rare in NH, unknown in NL, SH, SL. *Walton 3259*
- ****Scouleria aquatica*** Hooker in T. Drummond – unknown in NH, NL, SH, rare in SL. *Walton 11300*. [Ann. 14]
- ****Scorpidium cossonii*** (Schimper) L. Hedenäs – uncommon in NH, NL, unknown in SH, SL.
- Scorpidium revolvens*** (Swartz ex Anonymo) Rubers in A. Touw & W. V. Rubers – rare in NH, uncommon in NL, SH, rare in SL.
- Scorpidium scorpioides*** (Hedwig) Limpricht – rare in NH, NL, unknown in SH, SL.
- Seligeria polaris*** Berggren – unknown
- ****Sphagnum andersonianum*** R. E. Andrus – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-402; Stehn 06-431; Walton 6547*
- Sphagnum angustifolium*** (Russow) C. E. O. Jensen – rare in NH, common in NL, unknown in SH, SL.
- Sphagnum aongstroemii*** C. Hartman – unknown in NH, uncommon in NL, unknown in SH, SL.
- Sphagnum balticum*** (Russow) C.E.O. Jensen – unknown in NH, rare in NL, unknown in SH, SL.

- **Sphagnum brevifolium* – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-436; Walton 7324*
- Sphagnum capillifolium* (Ehrhart) R. Hedwig – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum compactum* Lamarck & de Candolle – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum fallax* (H. Klinggräff) H. Klinggräff – unknown
- Sphagnum fimbriatum* Wilson & Hooker in J.D. Hooker – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum fuscum* (Schimper) H. Klinggräff – rare in NH, common in NL, unknown in SH, SL.
- Sphagnum girgensohnii* Russow – uncommon in NH, common in NL, unknown in SH, rare in SL.
- Sphagnum lenense* Pohle – unknown in NH, uncommon in NL, unknown in SH, SL.
- Sphagnum lindbergii* Schimper – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum magellanicum* Bridel – rare in NH, common in NL, unknown in SH, SL.
- **Sphagnum obtusum* Warnstorf – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-434; Stehn 06-441*
- **Sphagnum papillosum* Lindberg – unknown in NH, uncommon in NL, unknown in SH, SL. *Stehn 06-417; Brady 09-149; Walton 4059; Walton 07060*
- **Sphagnum platyphyllum* (Lindberg) Warnstorf – unknown in NH, rare in NL, unknown in SH, SL. *Stehn 06-552; Stehn 06-550*
- Sphagnum riparium* Ångström – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum rubellum* Wilson – rare in NH, NL, unknown in SH, SL.
- Sphagnum russowii* Warnstorf – unknown in NH, uncommon in NL, unknown in SH, SL. *Weber 10212 (NY)*
- Sphagnum squarrosum* Crome – rare in NH, uncommon in NL, rare in SH, uncommon in SL.
- Sphagnum subsecundum* Nees – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum teres* (Schimper) Ångström – unknown in NH, rare in NL, unknown in SH, SL.
- Sphagnum warnstorffii* Russow – rare in NH, common in NL, unknown in SH, SL.
- **Splachnum ampullaceum* Hedwig – unknown in NH, rare in NL, unknown in SH, rare in SL. *Walton 10849; Walton 14843; Bartlett 02-0478; Walton 08789*
- Splachnum luteum* Hedwig – rare in NH, NL, unknown in SH, SL.
- Splachnum rubrum* Hedwig – unknown
- Splachnum sphaericum* Hedwig – rare in NH, NL, unknown in SH, SL.
- **Splachnum vasculosum* Hedwig – unknown in NH, rare in NL, unknown in SH, SL. *Walton 11665*
- Stegonia latifolia* (Schwägrichen) Brotherus – rare in NH, unknown in NL, SH, SL.
- Straminergon stramineum* (Dickson ex Bridel) Hedenäs – rare in NH, common in NL, unknown in SH, common in SL.
- Syntrichia norvegica* F. Weber – uncommon in NH, NL, abundant in SH, rare in SL.
- Syntrichia ruralis* (Hedwig) F. Weber & D. Mohr – uncommon in NH, rare in NL, unknown in SH, SL.
- Tayloria froelichiana* (Hedwig) Mitten – unknown
- Tayloria lingulata* (Dickson) Lindberg – unknown in NH, NL, rare in SH, SL.
- Tayloria serrata* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gümbel – unknown
- Tetraphis pellucida* Hedwig – unknown in NH, rare in NL, unknown in SH, uncommon in SL.
var. *pellucida* – unknown
- Tetraplodon angustatus* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gümbel – unknown in NH, rare in NL, unknown in SH, SL.

- Tetraplodon mnioides* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gumbel – uncommon in NH, NL, rare in SH, unknown in SL.
- Tetraplodon paradoxus* (R. Brown) I. Hagen – unknown
- Tetraplodon urceolatus* (Hedwig) Bruch & Schimper in Bruch, Schimper & W. Gumbel – rare in NH, unknown in NL, SH, SL.
- **Tetrodontium repandum* (Funck) Schwägrichen – rare in NH, unknown in NL, SH, SL. Walton 11646. [Ann. 15]
- Thuidium recognitum* (Hedwig) Lindberg – rare in NH, uncommon in NL, unknown in SH, rare in SL.
- Timmia austriaca* Hedwig – common in NH, uncommon in NL, SH, unknown in SL.
- **Timmia megapolitana* Hedwig – unknown
- * var. *megapolitana* – unknown in NH, rare in NL, unknown in SH, rare in SL. Walton 3951; Walton 11419
- Timmia norvegica* J. E. Zetterstedt – rare in NH, NL, unknown in SH, SL.
subsp. *norvegica* – unknown in NH, NL, rare in SH, unknown in SL.
- Tomentypnum nitens* (Hedwig) Loeske – common in NH, abundant in NL, common in SH, uncommon in SL.
- **Tortella alpicola* Dixon – rare in NH, unknown in NL, SH, SL. Scelza 07-430
- Tortella fragilis* (Hooker & Wilson) Limpricht – common in NH, rare in NL, uncommon in SH, rare in SL.
- Tortella inclinata* (R. Hedwig) Limpricht – unknown in NH, rare in NL, SH, unknown in SL.
- **Tortella tortuosa* (Hedwig) Limpricht – common in NH, uncommon in NL, SH, unknown in SL.
- * var. *fragilifolia* (Juratzska) Limpricht – rare in NH, unknown in NL, SH, SL. Walton 14681b
- * var. *tortuosa* – unknown in NH, rare in NL, common in SH, SL.
- Tortula hoppeana* (Schultz) Ochyra – uncommon in NH, rare in NL, common in SH, unknown in SL.
- **Tortula leucostoma* (R. Brown) Hooker & Greville – rare in NH, unknown in NL, uncommon in SH, unknown in SL. Walton 9921; Nelson 08-117; Nelson 07-569; Nelson 10-010; Stehn 06-208. [Ann. 16]
- Tortula mucronifolia* Schäggrichen – rare in NH, unknown in NL, SH, SL.
- **Tortula systylia* (Schimper) Lindberg – rare in NH, unknown in NL, SH, SL. Walton 07547; Nelson 09-051; Walton 07147
- **Trichodon cylindricus* (Hedwig) Schimper – rare in NH, unknown in NL, SH, SL. Walton 07180
- * var. *cylindricus* – rare in NH, unknown in NL, SH, SL. Walton 14654; Walton 4144
- Trichostomum arcticum* Kaalaas – unknown
- **Trichostomum tenuirostre* (Hooker & Taylor) Lindberg – unknown
- * var. *tenuirostre* (Hooker & Taylor) Lindberg – rare in NH, unknown in NL, SH, SL. Stehn 06-110
- Ulota curvifolia* (Wahlenberg) Liljeblad – unknown in NH, rare in NL, unknown in SH, SL.
- **Ulota drummondii* (Greville) Bridel – unknown in NH, NL, SH, uncommon in SL. Nelson 07-970; Brady 11-084; Walton 14639; Walton 14631
- **Ulota hutchinsiae* (Smith) Hammar – unknown
- * var. *hutchinsiae* – unknown in NH, NL, SH, rare in SL. Walton 14634
- Voitia nivalis* Hornschuch – unknown. Travers 140 (CANM)
- Warnstorfia exannulata* (Schimper) Loeske in Nitardy – rare in NH, uncommon in NL, unknown in SH, uncommon in SL.

- Warnstorfia fluitans* (Hedwig) Loeske in Nitardy – rare in NH, uncommon in NL, unknown in SH, rare in SL.
- Warnstorfia pseudosarmentosa* (Cardot & Thériot) Tuomikoski & T. J. Koponen – unknown in NH, rare in NL, unknown in SH, SL.
- Warnstorfia sarmentosa* (Wahlenberg) Hedenäs – rare in NH, NL, SH, SL. *Weber 10165* (NY)
- Warnstorfia tundrae* (Arnell) Loeske in Nitardy – unknown in NH, rare in NL, unknown in SH, SL.
- Weissia controversa* Hedwig – unknown in NH, rare in NL, unknown in SH, SL.

HEPATOPSIDA

- Anastrophyllum assimile* (W. J. Hooker) Stephani – unknown. (Hong 1996)
- Anastrophyllum minutum* (Schreber in Cranz) R. M. Schuster – uncommon in NH, NL, unknown in SH, SL. *Weber 10142* (NY)
var. *minutum* – unknown
- Anastrophyllum saxicola* (Schrader) R. M. Schuster – unknown in NH, rare in NL, unknown in SH, SL.
- Aneura pinguis* (Linnaeus) Dumortier – rare in NH, unknown in NL, SH, SL.
- Anthelia julacea* (Lightfoot) Dumortier – rare in NH, unknown in NL, SH, SL.
- Anthelia juratzkana* (Limpricht) Trevisan de Saint Léon – rare in NH, NL, unknown in SH, SL.
- **Apomarsupella revoluta* (Nees) R. M. Shuster – rare in NH, unknown in NL, rare in SH, unknown in SL. *Walton 11652; Walton 11653; Walton 11639; Walton 6122*. [Ann. 17]
- **Asterella lindenbergiana* (Corda) Lindberg – unknown in NH, NL, rare in SH, unknown in SL. *Nelson 07-838*. [Ann. 18]
- **Barbilophozia atlantica* (Kaalaas) K. Müller – rare in NH, NL, unknown in SH, SL. *Walton 07250; Walton 07074; Walton 3311; Walton 3323*
- **Barbilophozia attenuata* (Nees in Martius) Loeske – unknown in NH, rare in NL, unknown in SH, SL. *Walton 07395; Walton 6621*
- Barbilophozia barbata* (Schreber) Loeske – rare in NH, NL, unknown in SH, SL.
- Barbilophozia binsteadii* (Kaalaas) Loeske – rare in NH, uncommon in NL, unknown in SH, SL.
- **Barbilophozia floerkei* (F. Weber & D. Mohr) Loeske – rare in NH, unknown in NL, SH, SL. *Walton 6226*
- Barbilophozia hatcheri* (Evans) Loeske – rare in NH, NL, unknown in SH, SL.
- **Barbilophozia hyperborea* (R. M. Schuster) Stotler & Crandall Stotler – rare in NH, NL, unknown in SH, SL. *Walton 6097; Bartlett 02-0222; Walton 6270; Walton 5306*
- Barbilophozia kunzeana* (Huebener) Gams – rare in NH, NL, unknown in SH, SL.
- Barbilophozia lycopodioides* (Wallroth) Loeske – rare in NH, NL, unknown in SH, SL.
- Barbilophozia quadriloba* (Lindberg) Loeske – rare in NH, NL, unknown in SH, SL.
- Blasia pusilla* Linnaeus – unknown in NH, rare in NL, unknown in SH, rare in SL.
- Blepharostoma trichophyllum* (Linnaeus) Dumortier – uncommon in NH, NL, unknown in SH, SL.
subsp. *trichophyllum* – rare in NH, NL, unknown in SH, rare in SL.
- **Bucegia romanica* Radian – rare in NH, unknown in NL, SH, SL. *Walton 5207; Walton 3442*
- **Calypogeia azurea* Stotler & Crotz – rare in NH, NL, unknown in SH, SL.
- **Calypogeia fissa* (Linnaeus) Raddi – unknown in NH, rare in NL, unknown in SH, SL. *Walton 3036; Walton 6691; Bartlett 02-0431*
- **Calypogeia integristipula* Stephani – unknown in NH, rare in NL, unknown in SH, SL. *Bartlett 02-1126a; Walton 6729; Walton 3583; Bartlett 02-1134a; Walton 6522*

- **Calypogeia muelleriana* (Schiffner) K. Müller – unknown in NH, rare in NL, unknown in SH, SL. *Walton 6811; Walton 3646*
- **Calypogeia neesiana* (C. Massalongo & Carestia) K. Müller – rare in NH, uncommon in NL, unknown in SH, SL.
- Calypogeia sphagnicola* (H. Arnell & J. Persson) Warnstorf & Loeske – unknown in NH, uncommon in NL, unknown in SH, SL.
- **Calypogeia suecica* (H. Arnell & J. Persson) K. Müller – unknown in NH, rare in NL, unknown in SH, SL. *Walton 6460; Bartlett 02-0428*
- Cephalozia bicuspidata* (Linnaeus) Dumortier – rare in NH, uncommon in NL, unknown in SH, SL.
- subsp. *ambigua* (A. Massalongo) R. M. Schuster – unknown in NH, rare in NL, unknown in SH, SL.
- subsp. *bicuspidata* – unknown
- Cephalozia connivens* (Dickson) Lindberg – unknown in NH, rare in NL, unknown in SH, SL.
- **Cephalozia lunulifolia* (Dumortier) Dumortier – unknown in NH, rare in NL, unknown in SH, SL.
- Cephalozia pleniceps* (Austin) Lindberg – uncommon in NH, NL, unknown in SH, SL.
- Cephaloziella arctica* Bryhn & C. Douin – unknown
- Cephaloziella divaricata* (Smith) Schiffner – unknown
- var. *divaricata* – rare in NH, NL, unknown in SH, SL.
- Cephaloziella subdentata* Warnstorf – unknown
- Chandonanthus setiformis* (Ehrhart) Lindberg – rare in NH, NL, unknown in SH, SL.
- **Chiloscyphus pallescens* (Ehrhart ex Hoffman) Dumortier – unknown in NH, rare in NL, unknown in SH, SL. *Bartlett 02-0191; Walton 07614*
- **Conocephalum conicum* (Linnaeus) Dumortier – rare in NH, unknown in NL, rare in SH, unknown in SL. *Walton 11322; Walton 5212*
- Diplophyllum taxifolium* (Wahlenberg) Dumortier – uncommon in NH, rare in NL, unknown in SH, SL.
- var. *macrosticta* H. Buch – unknown
- var. *taxifolium* – rare in NH, NL, unknown in SH, SL.
- Fossombronia foveolata* Lindberg – unknown
- **Frullania tamarisci* (Linnaeus) Dumortier – unknown
- * subsp. *nisquallensis* – unknown in NH, NL, SH, rare in SL. *Walton 11664; Walton 11663; Walton 11662*. [Ann. 19]
- Gymnocolea inflata* (Hudson) Dumortier – unknown in NH, uncommon in NL, unknown in SH, SL.
- Gymnomitrium commutatum* (Limpricht) Schiffner – rare in NH, unknown in NL, SH, SL.
- Gymnomitrium concinnatum* (Lightfoot) Corda – rare in NH, unknown in NL, SH, SL.
- Gymnomitrium corallioides* Nees – uncommon in NH, unknown in NL, SH, SL.
- **Herbertus dicranus* (Taylor) Trevisan – rare in NH, unknown in NL, uncommon in SH, unknown in SL. [Ann. 20]
- **Jungermannia atrovirens* Dumortier – rare in NH, unknown in NL, SH, SL. *Walton 6084*
- **Jungermannia eucordifolia* Schljakov – unknown in NH, NL, rare in SH, unknown in SL. *Walton 10187*
- **Leiocolea badensis* (Gottsche) Jørgenson – unknown in NH, rare in NL, unknown in SH, SL. *Bartlett 02-0215*
- **Leiocolea bantriensis* (Hooker) Jørgenson – unknown in NH, rare in NL, unknown in SH, SL. *Bartlett 02-2037*
- **Leiocolea collaris* (Nees) Schljakov – rare in NH, NL, unknown in SH, SL. *Walton 07588; Walton 07585*

- Leiocolea gillmanii* (Austin) A. Evans – rare in NH, NL, unknown in SH, SL.
- Leiocolea heterocolpos* (Thedenius ex Hartman) H. Buch – rare in NH, NL, unknown in SH, SL.
- Leiocolea rutheana* (Limpricht) K. Müller – unknown in NH, rare in NL, unknown in SH, SL.
- **Lepidozia reptans* (Linnaeus) Dumortier – unknown in NH, rare in NL, unknown in SH, SL.
Bartlett 02-0145
- Lophocolea minor* Nees – rare in NH, unknown in NL, SH, SL.
- **Lophozia bicrenata* (Schmidel ex Hoffman) Dumortier – unknown in NH, rare in NL, unknown in SH, SL. Walton 6465
- Lophozia excisa* (Dickson) Dumortier – rare in NH, uncommon in NL, unknown in SH, SL.
- Lophozia longidens* (Lindberg) Macoun – unknown in NH, rare in NL, unknown in SH, SL.
- **Lophozia obtusa* (Lindberg) A. Evans – unknown in NH, rare in NL, unknown in SH, SL.
Walton 3584; Bartlett 02-1000
- Lophozia pellucida* R. M. Schuster – unknown
- **Lophozia perssonii* H. Buch et S. W. Arnell – rare in NH, NL, unknown in SH, SL. Walton 3835
- Lophozia polaris* (R. M. Schuster) R. M. Schuster & Damsholt – rare in NH, NL, unknown in SH, SL.
- **Lophozia propagulifera* (Gottsche) Stephani – unknown in NH, rare in NL, unknown in SH, SL. Bartlett 02-0962. [Ann. 21]
- Lophozia silvicola* H. Buch – unknown in NH, rare in NL, unknown in SH, SL.
- **Lophozia sudetica* (Nees ex Huebener) Grolle – rare in NH, unknown in NL, SH, SL. Walton 5836
- Lophozia ventricosa* (Dickson) Dumortier – rare in NH, uncommon in NL, unknown in SH, SL.
- * var. *longiflora* (Nees) Macoun – unknown in NH, rare in NL, unknown in SH, SL. Walton 7259; Walton 5685
- var. *ventricosa* – rare in NH, NL, unknown in SH, SL.
- Lophozia wenzelii* (Nees) Stephani – rare in NH, NL, unknown in SH, SL.
- Mannia pilosa* (Hornemann) Frye & Clark – unknown
- Marchantia polymorpha* Linnaeus – rare in NH, NL, SH, unknown in SL.
- Marsupella apiculata* Schiffner – unknown
- **Marsupella boeckii* (Austin) Lindberg ex Kaalaas – rare in NH, unknown in NL, SH, SL.
Walton 6095
- Marsupella emarginata* (Ehrhart) Dumortier – unknown
- Mesoptychia sahlbergii* Evans – unknown in NH, rare in NL, unknown in SH, SL.
- **Moerckia blyttii* (Moerck ex Hornemann) Brockmüller – rare in NH, unknown in NL, SH, SL.
Walton 4013
- Mylia anomala* (Hooker) Gray – rare in NH, common in NL, unknown in SH, SL.
- Nardia compressa* (Hooker) Gray – unknown
- **Nardia geoscyphus* (De Notaris) Lindberg – rare in NH, unknown in NL, SH, SL. Walton 5618
- Nardia scalaris* (Schrader) Gray – unknown
- subsp. *scalaris* – unknown
- Odontoschisma macounii* (Austin) Underwood – unknown
- Pellia endiviifolia* (Dickson) Dumortier – rare in NH, NL, unknown in SH, SL.
- Pellia epiphylla* (Linnaeus) Corda in Opiz – unknown. Weber 10385 (NY)
- Pellia neesiana* (Gottsche) Limpricht – rare in NH, NL, unknown in SH, SL.
- **Plagiochila porelloides* (Torrey ex Nees) Lindenberg – rare in NH, unknown in NL, SH, SL.
Walton 3264
- Pleuroclada albescens* (Hooker) Spruce – uncommon in NH, unknown in NL, SH, SL.

- Preissia quadrata* (Scopoli) Nees – uncommon in NH, rare in NL, unknown in SH, SL.
- Ptilidium ciliare* (Linnaeus) Hampe – rare in NH, uncommon in NL, unknown in SH, SL.
- Ptilidium pulcherrimum* (Weber) Vainio – unknown in NH, uncommon in NL, unknown in SH, rare in SL.
- **Radula complanata* (Linnaeus) Dumortier – rare in NH, NL, unknown in SH, SL. *Walton* 3902. [Ann. 22]
- **Radula prolifera* S. W. Arnell – rare in NH, unknown in NL, SH, SL. *Walton* 6158; *Walton* 5886; *Walton* 11561. [Ann. 23]
- **Riccardia chamedryfolia* (Withering) Grolle – unknown in NH, rare in NL, unknown in SH, SL. *Walton* 3464; *Walton* 07034; *Walton* 07286. [Ann. 24]
- **Riccardia latifrons* Lindberg – unknown in NH, rare in NL, unknown in SH, SL. *Walton* 6794b; *Walton* 15184
- Scapania curta* (Martius) Dumortier – rare in NH, unknown in NL, SH, SL.
var. *curta* – unknown
- Scapania cuspiduligera* (Nees) K. Müller – rare in NH, NL, unknown in SH, SL.
var. *cuspiduligera* – unknown
- Scapania gymnostomophila* Kaalaas – unknown
- Scapania irrigua* (Nees) Nees in Gottsche, Lindenberg & Nees – rare in NH, NL, unknown in SH, SL.
- Scapania paludicola* Loeske & K. Müller – rare in NH, uncommon in NL, unknown in SH, SL.
- Scapania paludosa* (K. Müller) K. Müller – rare in NH, NL, unknown in SH, SL.
var. *paludicola* – unknown
- Scapania plicata* (Lindberg) Potemkin – unknown
- **Scapania scandica* (H. Arnell & H. Buch) Macvicar – unknown in NH, rare in NL, unknown in SH, SL. *Walton* 6928; *Walton* 6926
- Scapania subalpina* (Nees ex Lindenberg) Dumortier – rare in NH, unknown in NL, SH, SL.
- Scapania uliginosa* (Lindenberg) Dumortier – unknown in NH, rare in NL, unknown in SH, SL.
- **Scapania umbrosa* (Schrader) Dumortier – rare in NH, NL, unknown in SH, SL. *Walton* 3468
- **Scapania undulata* (Linnaeus) Dumortier – rare in NH, NL, unknown in SH, SL. *Walton* 5956; *Walton* 3954; *Walton* 5684
- * var. *undulata* – rare in NH, unknown in NL, SH, SL. *Walton* 5946
- Schistochilopsis incisa* (Schrader) Konstant. – uncommon in NH, rare in NL, unknown in SH, SL.
var. *incisa* – unknown
- * var. *opacifolia* (Culmann) Bakalin – uncommon in NH, rare in NL, unknown in SH, SL.
- **Solenostoma confertissima* (Nees) Schljakov – rare in NH, NL, unknown in SH, SL. *Walton* 07782
- Solenostoma rubrum* R. M. Schuster – unknown
- Solenostoma sphaerocarpum* (Hooker) Stephani – rare in NH, unknown in NL, SH, SL.
- Solenostoma subellipticum* (Lindberg ex Heeg) R.M. Schuster – unknown
- Tritomaria exsecta* (Schrader) Loeske – rare in NH, unknown in NL, SH, SL. *Hermann* 21498 (NY)
- **Tritomaria exsectiformis* Breidler – rare in NH, NL, unknown in SH, SL. *Walton* 5809; *Walton* 07316
- Tritomaria polita* (Nees) Jörgensen – rare in NH, NL, unknown in SH, SL.
var. *polita* – unknown
- Tritomaria quinquedentata* (Hudson) H. Buch – uncommon in NH, NL, unknown in SH, SL.
- Tritomaria scitula* (T. Taylor) E. H. Jörgensen – uncommon in NH, unknown in NL, SH, SL.