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**Additions to the Liverwort Flora of Naikoon Provincial Park,  
 Queen Charlotte Islands, British Columbia, Canada**

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The Queen Charlotte Islands lie in the Pacific Ocean 100 km west of the mainland east of British Columbia and extend from 51° 54' - 54° 13' N to 130° 58' - 133° 06' W. The Islands consist of over 150 islands with many short inlets. The major islands are Graham (largest and most populous) and Moresby. The Naikoon Provincial Park covers an area of 72,640 hectares at the north-eastern corner of Graham Island and extends from 53° 11' - 53° 34' N to 131° 30' - 132° 05' W (Fig. 1). The park faces Dixon Entrance (McIntyre Bay) to the north and Hecate Strait to the east. The southern boundary is the Tlell River. The Park consists mostly of the low, flat Argonaut Plain. The landscape was formed by deposits left from melt water originating from Wisconsinan glaciers.

Bogs are common and dominated by *Pinus contorta* (lodgepole pine), *Thuja plicata* (western red cedar) and *Chamaecyparis nootkatensis* (yellow cedar). However, *Taua heterophylla* (western hemlock) and *Picea sitchensis* (sitka spruce) are abundant along the river valleys and at the higher elevations. Canning (1975) recognizes the following communities in the park, 1) maritime communities, including beaches, rock or cliff communities and salt marshes, 2) swamp communities, 3) mire communities, 4) raised bog communities, 5) coastal sand-dune forest communities, and 6) closed forest communities. The average January and August temperatures are 4° C and 17° C respectively. Precipitation, almost always in the form of rain, averages 140 cm annually in the park, but 560 cm along the west coast.

There are several studies of the vascular plants of park, but there is no study of the Hepaticae, although several species were mentioned from the area by Schofield (1968, 1975). The hepatic flora of the park is very rich, especially along the Cape Fife trail, Tow Hill and around the *Sphagnum* bogs.

The authors made collecting trips to the park during the summer months of 1988, 1989 and 1990. Approximately 700 collections of liverworts, including some from Pure Lake which is outside the park were made. In the list below, each taxon is followed by the number of specimens collected in an area. This gives a rough estimate of abundance in each of the 3 general collecting areas, i.e. **Cape Fife** (areas 1-5 and 11-14, north end of park in Fig. 1), **Mayer Lake** (6-8, southern end of the study area) and **Pure Lake** (9, central part of the study area). In general, nomenclature follows Stotler & Crandall-Stotler (1977) and Grolle (1983a, 1983b).

- Bazzania ambigua* (Lindenb.) Trev. - decayed wood and soil. Cape Fife, 11; Mayer Lake, 2; Pure Lake, 1.  
*B. denudata* (Torr.) Trev. - decayed wood. Cape Fife, 26; Mayer Lake, 2.  
*B. tricrenata* (Wahlenb.) Lindb. - decayed wood. Cape Fife, 4.  
*Blepharostoma trichophyllum* (L.) Dum. subsp. *trichophyllum* - shaded, moist soil, rocks and decayed wood. Cape Fife, 24; Mayer Lake, 5; Pure Lake, 3.  
*Calypogeia azurea* Stotler & Crotz - shaded, decayed wood and moist soil. Cape Fife, 6; Pure Lake, 1.  
*C. fissa* (L.) Raddi - moist soil. Cape Fife, 1.  
*C. integristipula* Staph. - shaded, decayed wood and moist loam. Cape Fife, 7; Mayer Lake, 1; Pure Lake, 1.  
*C. muelleriana* (Schiffn.) K. Müll. - shaded, decayed wood and soil. Cape Fife, 10.  
*C. neesiana* (Mass. & Carest.) K. Müll. - shaded, decayed wood. Cape Fife, 3.  
*C. sphagnicola* (H. Arn. & J. Perss.) K. Müll. - shaded, decayed wood and moist soil. Cape Fife, 8; Mayer Lake, 11; Pure Lake, 1.  
*Cephalozia bicuspidata* (L.) Dum. subsp. *lammersiana* (Hub.) Schust. - shaded, decayed wood, moist rocks and sandy stream banks. Cape Fife, 30; Mayer Lake, 5; Pure Lake, 3.  
*C. lunulifolia* (Dum.) Dum. - shaded, decayed wood, wet rocks and stream banks. Cape Fife, 25; Pure Lake, 2.  
*C. macounii* (Aust.) Aust. - decayed wood and moist soil. Cape Fife, 7; Mayer Lake, 4; Pure Lake, 2.  
*C. pleniceps* (Aust.) Lindb. - shaded, decayed wood. Cape Fife, 2.  
*Cephaloziella divaricata* (Sm.) Schiffn. - moist ledges. Pure Lake, 1.  
*Chiloscyphus polyanthos* (L.) Corda - wet rocks. Cape Fife, 1.  
*Conocephalum conicum* (L.) Underw. - moist soil and wet rocks. Cape Fife, 9.  
*Diplophyllum albicans* (L.) Dum. - shaded, decayed wood, base of bark, soil and rocks. Cape Fife, 36; Mayer Lake, 6; Pure Lake, 1.  
*D. plicatum* Lindb. - shaded, decayed wood and thin soil over rocks. Cape Fife, 13.  
*D. taxifolium* (Wahlenb.) Dum. var. *taxifolium* - shaded, ledges and humus on rocks. Cape Fife, 1; Mayer Lake, 2.  
*Douinia ovata* (Dicks.) Buch. - shaded rocks and humus. Cape Fife, 2; Mayer Lake, 3; Pure Lake, 1. The margins of the leaves are more serrate than the typical form.  
*Frullania franciscana* M.A. Howe - bark. Cape Fife, 5; Pure Lake, 1.  
*F. nisquallensis* Sull. - branches and bark, dead wood and humus on rocks. Cape Fife, 16; Mayer Lake, 7; Pure Lake, 3.  
*Geocalyx graveolens* (Schrad.) Nees - shaded, decayed wood, thin soil over rocks. Cape Fife, 1; Pure Lake, 1.  
*Gymmocolea inflata* (Huds.) Dum. - wet rocks. Mayer Lake, 3; Pure Lake, 1.  
*Herbertus aduncus* (Dicks.) S. Gray subsp. *aduncus* - bark of hemlock. Cape Fife, 2.  
*Jamesoniella autumnalis* (DC.) Steph. - shaded, decayed wood and wet soil near

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- streams. Mayer Lake, 2.
- Kurzia sylvatica* (Evans) Grolle - decayed wood and soil. Cape Fife, 7; Mayer Lake, 2; Pure Lake, 1.
- Lepidozia reptans* (L.) Dum. - shaded, decayed wood. Cape Fife, 14; Mayer Lake, 3; Pure Lake, 1.
- Lophocolea bidentata* (L.) Dum. - shaded, decaying wood and burnt stumps. Cape Fife, 11; Mayer Lake, 2.
- Lophozia incisa* (Schrad.) Dum. - shaded, decayed wood. Cape Fife, 9; Pure Lake, 3.
- L. longiflora* (Nees) Schiffn. - decayed wood and soil. Cape Fife, 2; Mayer Lake, 4.
- L. ventricosa* (Dicks.) Dum. var. *ventricosa* - shaded, decayed wood and ledges. Cape Fife, 1; Mayer Lake, 4.
- Mylia anomala* (Hook.) S. Gray - *Sphagnum* in peat bogs. Pure Lake, 1.
- M. taylori* (Hook.) S. Gray - shaded, decayed wood and moist soil. Cape Fife 18; Mayer Lake, 5; Pure Lake, 1.
- Pellia endiviifolia* (Dicks.) Dum. - wet rocks and soil near streams. Cape Fife, 6; Pure Lake, 1.
- P. epiphylla* (L.) Corda - moist soil near streams. Cape Fife, 1; Mayer Lake, 4.
- P. neesiana* (Gotte) Limpr. - moist soil near streams. Cape Fife, 2; Mayer Lake, 1.
- Plagiochila asplenioides* (L.) Dum. - moist soil and decayed wood. Cape Fife, 4; Mayer Lake, 1.
- P. porolloides* (Torr.) Lindenb. - wet rocks and soil near streams. Cape Fife, 10.
- P. satoi* Hatt. - shaded bark. Cape Fife, 1.
- Pleurozia purpurea* Lindb. - moist soil. Cape Fife, 1.
- Porella cordaeana* (Hub.) Moore - rock outcrops near streams. Mayer Lake, 1.
- P. nvaicularis* (Lehm & Lindenb.) Lindb. - bark, decayed wood and humus on rocks. Cape Fife, 17; Mayer Lake, 3.
- Ptilidium pulcherrimum* (G. Web.) Hampe - decayed wood. Mayer Lake, 1.
- Radula bolanderi* Gott. - bark. Cape Fife, 5; Mayer Lake, 2.
- R. complanata* (L.) Dum. - bark. Cape Fife, 1.
- R. obtusiloba* Steph. subsp. *polyclada* (Evans) Hatt. - wet rocks. Cape Fife, 1.
- Riccartia latifrons* Lindb. - shaded, wet decayed wood. Cape Fife, 7; Mayer Lake, 4.
- R. palmata* (Hedw.) Carruth. - shaded, decayed wood. Cape Fife, 17; Mayer Lake, 3; Pure Lake, 3.
- Scapania bolanderi* Aust. - bark, decayed wood and soil. Cape Fife, 52; Mayer Lake, 13; Pure Lake, 5.
- S. umbrosa* (Schrad.) Dum. - shaded, decayed wood and wet soil near streams. Cape Fife, 7; Mayer Lake, 3.
- S. undulata* (L.) Dum. var. *undulata* - shaded, decayed wood and wet soil near streams. Cape Fife, 1; Mayer Lake, 2.

Voucher specimens have been deposited at the College of Great Falls, Montana (GFC), with available duplicates in the herbarium of the University of Cincinnati (CINC) and British Columbia Provincial Museum of Victoria, British Columbia, Canada (V).

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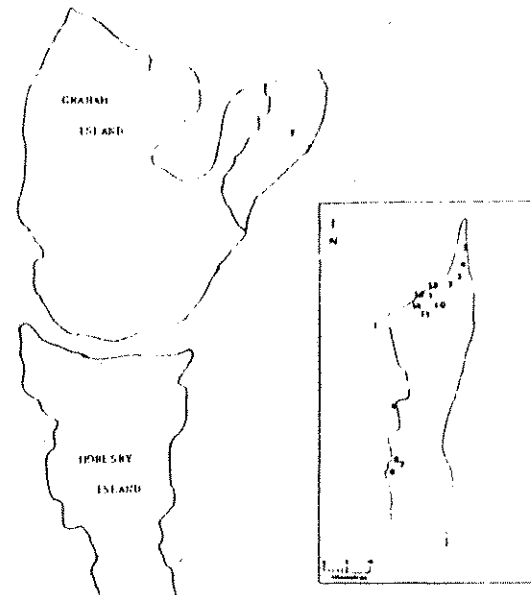


Figure 1. Naikoon Provincial Park, Canada collecting localities. 1. Entrance of Cape Fife Trail. 2. Cape Fife Trail. 3. *Sphagnum* bog, Cape Fife Trail. 4. End of Cape Fife Trail. 5. Fife Point. 6. Entrance of Mayer Lake. 7. Mayer Lake. 8. Stream into Mayer Lake. 9. Pure Lake. 10. River Trail. 11. Swan Creek. 12. East Beach Trail of Tow Hill. 13. South Beach of Tow Hill. 14. Tow Hill.