



Classification and Description of Vegetation Associations in Arctic Regions

Phase 3: Sub-Arctic Database Completion and Arctic Vegetation Classification Association Descriptions

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Overview

The Canadian National Vegetation Committee is extending the Canadian National Vegetation Classification to include vegetation associations in Arctic regions. This project has several Phases. Phase 1 was completed in January 2010 (de Groot *et al.* 2010). This report covers Phase 3: Sub-Arctic Database Completion and Arctic Vegetation Classification Association Descriptions.

There were 6 deliverables for Phase 3:

1. A revised comprehensive Arctic vegetation classification, at the plant association and sub-association rank, but including a provisional taxonomic hierarchy, compatible with standards of the CVNC
2. CNVC “short” preliminary factsheets for each arctic vegetation association
3. Expanded Subarctic classification database, including additional vegetation and ecological plot/releve data and standardized species nomenclature
4. Expanded vegetation tracking table, including new data sources
5. Updates plot distribution map, with locations of additional data entered into the classification database
6. Final report

Phase 3 also included identifying and acquiring data for the classification of Subarctic vegetation. The process of acquiring and assessing the quality and usability of existing vegetation plot data from the Canadian and Alaskan Arctic and Subarctic followed the methods described in de Groot *et al.* (2010). The plot database now contains plots from 10,673 plots.

The vegetation classification identified 58 vegetation associations. Factsheets were produced for each association.

Introduction

Phase 3 of the project Classification and Description of Vegetation Associations in Arctic Regions, included completing vegetation plot data acquisition for sub-Arctic areas, the revision of the Arctic classification, the writing of short factsheets for the associations of the Arctic classification, the production an updated plot distribution map, and the acquisition of vegetation plot data for Subarctic areas for a vegetation classification of the Subarctic. This report, gives details of this process.

Expanded Classification Database

The plot database from Phase 1 was expanded to include additional plots from both sub-Arctic and Arctic regions. The Subarctic plots were added in preparation of a Subarctic vegetation classification. The additional Arctic plots came from newly sourced data and from data that was identified but not obtained in Phase 1. As in Phase 1, documents were acquired from a number of different sources and in a variety of formats, including theses, reports, and private and government databases. Data was sourced through on-line data warehouses, contacting authors directly, published reports and papers, and by interlibrary loan of materials.

In Phase 2, data from 3,629 plots was added to the plot database. The majority of this data was obtained digitally. Additionally, data for over 1,300 plots has been obtained that has yet to be imported into the database, for a variety of reasons, such as waiting for plant species identification clarification from the authors.

In Phase 3 the data that was obtained in Phase 2 was imported into the database once it was harmonized. The database now contains data from 10,673 plots.

Data Tracking Spreadsheet

Accompanying this report is a spreadsheet that lists all the potential data sources that were assessed during Phase 1 and 2. This spreadsheet provides details of the source, including whether it contained vegetation plot data, if this data was acquired, and if it was accepted into the database. This spreadsheet contains 468 entries, of which 74 have data that has been accepted into the plot database.

Plot Location Map

A map showing the location of all accepted plots and the Terrestrial Ecozone (Marshall 1999) they are in was created (Map 1). The plots are generally well distributed across western and far northern portion of the Canadian Arctic, with some clustering in proximity to established research stations. Data from mainland Nunavut is lacking, but a working relationship with ecologists from this area who are working on a vegetation classification is being developed, and some plot data has been obtained but further work on plant identification is required before it can be used. Data is still lacking from Arctic portions of Quebec, but some data from Subarctic Quebec has been obtained, and a working relationship with ecologists from

Subarctic Quebec who are working on a vegetation classification is being developed. Data from Tornat Mountains National Park in Arctic Labrador has been obtained, but required further work on plant species identification before it can be used.

Plot Database Status

The plot database now contains data from 10,673 plots. The distribution of the plots in was mapped and summarized where plot locations were available. The summary was done by Terrestrial Ecozone (Marshall 1999).

VPro Metadata File

For each project from which data was brought into the database, a metadata file was created in VPro allowing details of the project to be permanently tied to individual plots. So, each plot can be tracked back to its source project, the author(s), the data collected and sample methods, and any changes made to the data.

Arctic Ecosystem Classification Summary

The vegetation classification identified 58 Arctic vegetation associations. The associations had a variety physiognomies; with tundra and wetlands being the most common (Table 1).

Table 1. List of Arctic vegetation associations

CNVC Code	Physiognomy	Association name
ARC001	Shrubland	Green alder - Scrub birch - Tussock-grass
ARC002	Shrubland	Green alder - Scrub birch - Northern Labrador tea
ARC003	Shrubland	Green alder - Diamond-leaved willow - Water sedge
ARC004	Barrens	Meadow-foxtail - Two-flowered rush / Rusty hookmoss
ARC005	Tundra	Meadow-foxtail - Arctic wood-rush
ARC006	Tundra	Alpine meadow-foxtail - Mountain sorrel
ARC007	Barrens	Alpine meadow-foxtail - Wood-rush
ARC009	Wetlands	Pendantgrass
ARC010	Tundra	Polargrass - Mountain-avens - Arctic willow
ARC011	Tundra	Polargrass - Wood-rush - Arctic willow
ARC013	Shrubland	Scrub birch - Northern Labrador tea - Bigelow's sedge
ARC014	Shrubland	Scrub birch - Star reindeer lichen
ARC015	Tundra	Scrub birch - Mountain-avens
ARC016	Wetlands	Scrub birch - Lingonberry - Sheathed cotton-grass
ARC017	Wetlands	Scrub birch - Northern Labrador tea - Cloudberry
ARC018	Shrubland	Scrub birch - Bog blueberry - Lingonberry
ARC019	Wetlands	Water sedge
ARC020	Wetlands	Bog blueberry - Narrow-leaved cotton-grass - Water sedge
ARC022	Wetlands	Cordroot sedge - Water sedge
ARC024	Shore zone	Hoppner's Sedge
ARC025	Tundra	Angle-leaved mountain-heather - Paperdoll lichen - Reindeer lichen
ARC026	Tundra	Four-angled mountain-heather - Entire-leaved mountain-avens - Short-leaved sedge
ARC027	Tundra	Four-angled mountain-heather - entire-leaved mountain-avens - Net-veined willow

ARC028	Tundra	Angle-leaved mountain-heather - Arctic willow - Mosses
ARC030	Tundra	Angle-leaved Mountain-heather - Bog bilberry - Northern Labrador tea
ARC032	Tundra	Mountain-avens - Muskeg sedge
ARC033	Tundra	Mountain-avens - Water sedge - Arctic willow
ARC035	Tundra	Mountain-avens - Paper doll lichen
ARC036	Tundra	Mountain-avens - Horsetail - Bearberry
ARC037	Tundra	Mountain-avens - Narrow-leaved cotton-grass - Arctic willow
ARC038	Tundra	Mountain-avens - Arctic willow
ARC039	Tundra	entire-leaved mountain-avens - Arctic willow - Tundra milk-vetch
ARC040	Tundra	Mountain-avens - Bog blueberry
ARC041	Barrens	Mountain-avens - Purple saxifrage
ARC042	Wetlands	Fisher's tundra-grass - Water sedge
ARC043	Tundra	Crowberry - Bog blueberry - Paperdoll lichen
ARC044	Wetlands	Arctic willow - Narrow-leaved cotton-grass - Fragile sedge
ARC045	Wetlands	Chamisso's cotton-grass - Water sedge - Peat-moss
ARC047	Wetlands	Sheathed cotton-grass - peat-moss
ARC048	Shore zone	Seabeach Sandwort
ARC049	Shore zone	Dune Wildrye
ARC051	Barrens	Icegrass
ARC052	Barrens	Narrow-leaved alkaligrass
ARC053	Shore zone	Creeping Alkaligrass
ARC055	Tundra	Arctic willow - Meadow-foxtail
ARC056	Wetlands	Arctic willow - Water sedge - Scorpion-moss
ARC057	Tundra	Arctic willow - Milk-vetch - Locoweed
ARC058	Shore zone	Red Glasswort
ARC059	Wetlands	Diamond-leaved willow - Water sedge
ARC060	Wetlands	Diamond-leaved willow - Narrow-leaved cotton-grass - Water sedge - peat-moss
ARC061	Wetlands	Diamond-leaved willow - Sheathed cotton-grass
ARC062	Wetlands	Richardson's willow - Water sedge
ARC064	Barrens	Purple mountain saxifrage - Mountain-sorel
ARC065	Barrens	Purple mountain saxifrage - Arctic poppy
ARC066	Wetlands	Tufted clubrush - Watersedge - Scorpion-moss
ARC068	Tundra	Scrub birch - Northern Labrador tea - Muskeg sedge
ARC069	Barrens	Alpine willowherb - Arctic willow
ARC070	Alpine	White and entire-leaved mountain-avens - Moss campion

References

- de Groot, A.J., I. Ronalds, R. Klassen and W. MacKenzie. 2010. Classification and description of vegetation association in Arctic regions - Phase 1: data acquisition and data entry. Bulkley Valley Centre for Natural Resource Research and Management, Smithers B.C. for Environment Yukon, Whitehorse, Yukon.
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- Marshall, I. 1999. Ecosystems of Canada. Ecosystem Stratification Working Group, Agriculture and Agrifood Canada and Environment Canada. Ottawa, Ont.