

Arctic Vegetation Plots in Northern NWT and YT, Canada, 1965-1966

Documentation Revision Date: 2018-12-31

Data Set Version: 1

Summary

This dataset provides vegetation, soil, and plot characteristics for 154 study plots located at three sites across the Richardson Mountains, Northwest Territories (NWT), and the British Mountains, Yukon Territory (YT). Study sites in the NWT included areas near Canoe Lake and Divided Lake; the study site in the YT was near Trout Lake. Specific attributes include dominant vegetation, species cover, and the physical characteristics of the plot areas. A soil pit was dug at each plot and the physical and chemical characteristics were determined for soil horizons. The data were collected in June, July, and August of 1965 and July and August of 1966.

The plots were subjectively located in 14 broad plant communities and six broad habitat types. Topographically, the two areas were dissimilar, but had similar environmental conditions and plant community types.

There are two data files with this dataset in comma-separated (.csv) format.



Figure 1. Lake shore vegetation at Canoe Lake. In the foreground is *Arctophiletum fulvae*, bordered by a band of *Eriophorum scheuchzeri*. The cut bank supports *Salix pulchra*. Photo from Lambert (1968).

Citation

Lambert, J.D.H. 2018. Arctic Vegetation Plots in Northern NWT and YT, Canada, 1965-1966. ORNL DAAC, Oak Ridge, Tennessee, USA.
<https://doi.org/10.3334/ORNLDAAAC/1543>

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1. Data Set Overview

This dataset provides vegetation, soil, and plot characteristics for 154 study plots located at three sites across the Richardson Mountains, Northwest Territories (NWT), and the British Mountains, Yukon Territory (YT). Study sites in the NWT included areas near Canoe Lake and Divided Lake; the study site in the YT was near Trout Lake. Specific attributes include dominant vegetation, species cover, and the physical characteristics of the plot areas. A soil pit was dug at each plot and the physical and chemical characteristics were determined for soil horizons. The data were collected in June,

July, and August of 1965 and July and August of 1966. The Plots were subjectively located in 14 broad plant communities and six broad habitat types. Topographically, the two areas were dissimilar, but had similar environmental conditions and plant community types.

The Pre-ABoVE vegetation plot datasets were curated to create the Alaska Arctic Vegetation Archive (AVA-AK; Walker et al. 2016b, Walker 2013). The AVA-AK is a regional database that is part of the larger Arctic Vegetation Archive (Walker 2016a, Walker et al. 2013, Walker and Reynolds 2011). The database contains vegetation plots from homogeneous plant communities with tables of cover or cover-abundance scores for all species and accompanying environmental site data. Field data were collected using Braun-Blanquet, US National Vegetation Classification protocols, or comparable methods.

Project: Arctic-Boreal Vulnerability Experiment (ABoVE)

The [Arctic-Boreal Vulnerability Experiment](#) (ABoVE) is a NASA Terrestrial Ecology Program field campaign that will take place in Alaska and western Canada between 2016 and 2021. Climate change in the Arctic and Boreal region is unfolding faster than anywhere else on Earth. ABoVE seeks a better understanding of the vulnerability and resilience of ecosystems and society to this changing environment.

Acknowledgements:

These data files were edited by Donald A. Walker, Amy L. Breen and Lisa A. Druckenmiller at the University of Alaska Fairbanks' Alaska Geobotany Center and obtained via the Arctic Geoecological Atlas (<http://arcticatlas.geobotany.org/>), which provides access to existing Arctic vegetation plot and map data in support of the ABoVE campaign.

2. Data Characteristics

Spatial Coverage: Canoe Lake and Divided Lake in the Richardson Mountains, Northwest Territories, and Trout Lake in the British Mountains, Yukon Territory

ABoVE Grid Location: Ahh1Avv0Bh4Bv5

Spatial Resolution: Point resolution

Temporal Coverage: 1965-06-09 to 1966-08-13

Temporal Resolution: Each plot was visited only once

Study Area (All latitude and longitude given in decimal degrees)

Site	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude
Canoe Lake and Divided Lake in the Richardson Mountains, Northwest Territories, and Trout Lake in the British Mountains, Yukon Territory	-138.748	-135.697	68.82445	68.22028

Data File Information: There are two data files with this dataset in comma-separated (.csv) format.

Table 1. Data files

Data File Name	Descriptions
Canadian_West_Arctic_Species_Data.csv	The estimated percent land cover by species per plot
Canadian_West_Arctic_Environmental_Data.csv	Comprehensive set of environmental characterization data

Data Descriptions: The column names, their units and descriptions for each of the *.csv data files are listed below.

Table 2. Variables in the data file **Canadian_West_Arctic_Species_Data.csv**

These files contain species cover data for the vegetation plots. Both the author's determination and the current taxonomy according to the Panarctic Species List (PASL) are listed. Taxa are listed in alphabetical order according to the accepted PASL name. The data accession numbers from the Turboveg database are also included.

Column number	Column header	Description
1	PASL_taxon_scientific_name	Current nomenclature according to the Panarctic Species List (PASL)
2	PASL_taxon_scientific_name_author	Current nomenclature according to the Panarctic Species List (PASL) with the data authors name
3	dataset_taxon	Dataset taxonomy

Column number	Column header	Description
4-156	TURBOVEG_plot_accession_number and dataset_plot_number_author	Two rows of column headers which are plot numbers/accession numbers. The first row is TURBOVEG accession numbers. Column headers for TURBOVEG accession numbers: 3001-3154. The 2nd row is dataset_plot_number_author, column headers are 1-182. The species cover classes follow the Braun-Blanquet (BB) scale: r = rare + = common, but less than 1 percent cover 1 = 1 to 5 percent 2 = 6 to 25 percent 3 = 25 to 50 percent 4 = 51 to 75 percent 5 = 76 to 100 percent

Data file note: In four instances, taxa were lumped into a single taxon in the PASL: 1) Bryum pseudotriquetrum (Bryum bimum and Bryum pseudotriquetrum), 2) Calliergon trifarium (Calliergon trifarium and Psuedocalliergon trifarium), 3) Carex riishirensis (Carex montanensis and Carex podocarpa), and 4) Pohlia nutans (Pohlia nutans and Pohlia rutilans).

Table 3. Variables in the data file **Canadian_West_Arctic_Environmental_Data.csv**

Column number	Variable	Units/format	Description
1	date	yyyymmdd	Date plot was investigated
2	plot_id	numeric	Plot number as provided by the author
3	locality		Site location: Canoe Lake, Divided Lake, or Trout Lake
4	longitude		Longitude of plot. Georeference of general study areas at Canoe Lake, Divided Lake, and Trout Lake provided from Google Earth
5	latitude		Latitude of plot. Georeference of general study areas at Canoe Lake, Divided Lake, and Trout Lake provided from Google Earth
6	plot_area	m ²	Area of the plots
7	elevation	m	Elevation
8	slope_gradient	degrees	Plot slope- the average inclination of the ground surface from the horizontal plane
9	exposure	degrees	The topographic position of the plot in relation to a particular cardinal point
10	land_form		Describes the old land surface topography
11	relief_profile		A profile of the surface shape of the sample plot (concave, convex, hummocky, flat)
12	duration_snow	months	An estimate of the snow duration from observations. The length of time between snowfall remaining in the fall and complete melt from the plot surface in late spring or anytime during the summer
13	soil_drainage		Soil drainage observations (well drained, poor, impeded, moderate)
14	soil_hygrotape		The moisture regime status of the plots studied in the Low Arctic Sub-alpine/Foothill Zone. Refers to hygrotape classes. Refer to the companion file Canadian_WestArctic_Lambert_1968.pdf provided with this dataset for additional information on the classes
15	thaw_depth	cm	Thaw depth (active layer depth)
16	ph_organic_layer		pH of the soil organic layer
17	ph_organic_mineral_layer		pH of the soil organic mineral layer
18	ph_mineral_layer		pH of the soil mineral layer

Column number	Variable	Units/format	Description
19	plant_association		Plants associated with soils and habitat
20	cover_mosses	%	Percent of mosses in the plant community
21	cover_lichen	%	Percent of plot that was lichen
22	cover_rock	%	Percent of plot that was rock
23	cover_water	%	Percent of plot that was open water

Data User Note: Additional soil chemistry data are available in Lambert (1968) that is provided as a companion file.

Companion Files: There are two companion files with this dataset in .pdf format.

Table 4. Companion files

File name	Description
Canadian_West_Arctic_Lambert_1968.pdf	A report providing detailed information of the study by J. Lambert, 1968
Canadian_West_Arctic_Plot_Photos.pdf	Photos of the study areas by J. Lambert, 1968

3. Application and Derivation

These data and information could be useful to climate change studies.

4. Quality Assessment

Refer to the companion file **Canadian_West_Arctic_Lambert_1968.pdf** for quality assurance information.

5. Data Acquisition, Materials, and Methods

Site description

The study sites included Canoe Lake and Divided Lake in the Richardson Mountains, Northwest Territories, and Trout Lake in the British Mountains, Yukon Territory, in the subalpine/foothill zone in northern Canada. The area is 10 to 110 miles wide, being narrow in front of the British and Richardson Mountains and extending inland.

The topography at Trout Lake is very irregular. The lake is three miles long and half a mile wide, and lies in a shallow basin formed by shale erosion. The area has a closed system pingo, low-centered polygons around the pingo, and tundra mudflow. The terrain around Trout Lake is more regular than Canoe Lake and is related to the homogeneity of the bedrock. The more elevated areas are dry with only sparse vegetation. West of the lake are low-centered polygons. Topographically, the two areas are dissimilar, but the environmental conditions and majority of plant community types are similar and common to both (Lambert, 1968).

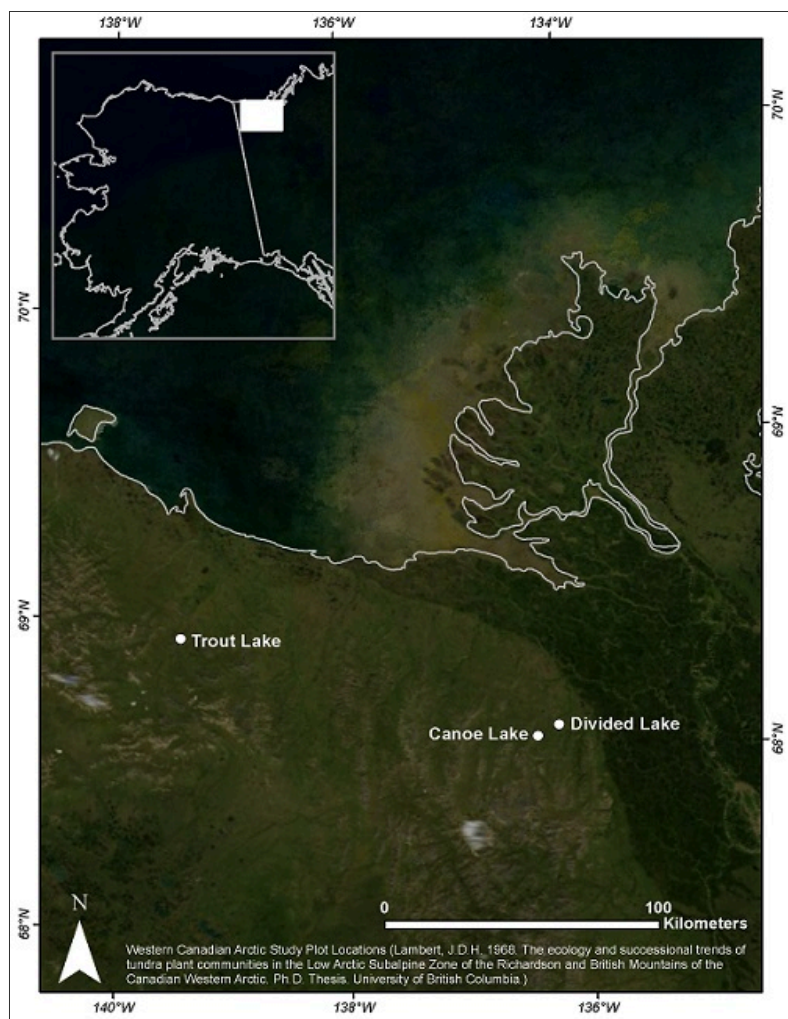


Figure 2. Location map of the study sites.

Plot characterization

Vegetation plot data were collected in June, July, and August of 1965 and July and August of 1966. One hundred fifty-four plots were subjectively located across the study areas. Depending on the vegetation type, sample plots varied between 16, 25 and 100 square meters. Sample plots were not permanently marked.

Plots were located in 14 broad plant communities and six broad habitat types including:

- (1) willow shrub vegetation of riparian areas and warm habitats (13 plots),
- (2) sedge grass and dwarf shrub mire and fen vegetation (27 plots),
- (3) bog vegetation, acidic mires including tussock tundra (32 plots),
- (4) deep snowbed vegetation (20 plot),
- (5) dry to moist dwarf-shrub heath and low shrub vegetation on acidic nutrient poor substrates (48 plots), and
- (6) dry and mesic dwarf-shrub and graminoid vegetation on non-acidic substrates (14 plots).

The cover of vascular and nonvascular plant species was originally recorded according to the cover abundance scale developed by Krajina (1933). For the Turboveg database, the original species cover classes were converted to follow the old Braun-Blanquet (BB) scale as listed in Table 2. Plant cover by percent is also recorded in the environmental data file.

Table 7. The cover abundance scale developed by Krajina (1933) and originally used by the author:

1 = sporadic
2 = 0 to 1 percent
3 = 1 to 5 percent
4 = 5 to 10 percent
5 = 10 to 25 percent

6 = 25 to 33 percent
7 = 33 to 50 percent
8 = 50 to 75 percent
9 = 75 to 99 percent
10 = 100 percent



Figure 3. Study site vegetation: *Betulo-Eriophoretum vaginati (salicetosum reticulatae)* (Photo from Lambert, 1968).

Soil characterization

A soil pit was dug at each study plot. This dataset provides the pH and drainage observations. In addition, thaw depth (the depth of the active layer) was recorded for most study plots. For additional information regarding soil data, refer to the companion file **Canadian_West_Arctic_Lambert_1968.pdf** provided with this dataset.

6. References

- Krajina, V. 1933. Die Pflanzengesellschaften des Mlynica-Tales in den Vysoké Tatry. Beih. Bot. Cbl., Dresden 50: 1–224.
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