Canadian National Vegetation Classification (CNVC)
Classification nationale de la végétation du Canada

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North American Northern Boreal Woodland

Macrogroup M179

Terres boisées boréales nordiques de l'Amérique du Nord

Boreal Forest & Woodland

D014 North American Boreal Forest & Woodland

M179 North American Northern Boreal Woodland

CM179a Alaskan-Yukon Northern Boreal Woodland

CM179b East-Central Northern Boreal Woodland

M156 Alaskan-Yukon North American Boreal Forest & Woodland

M495 Eastern North American Boreal Forest

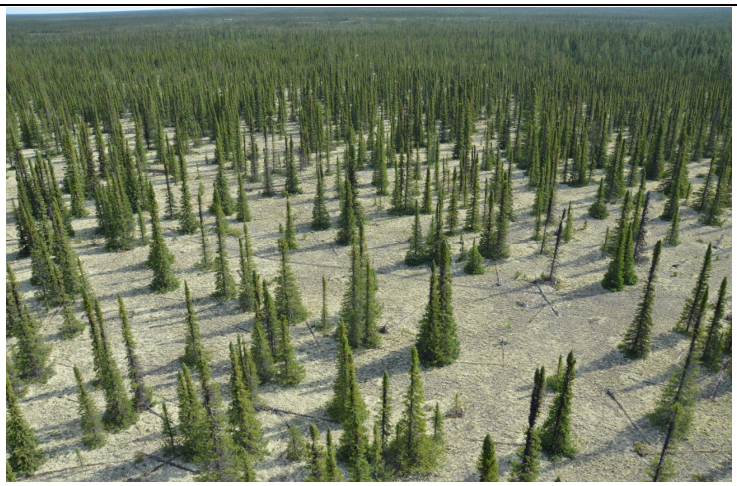
M496 West-Central North American Boreal Forest

Concept

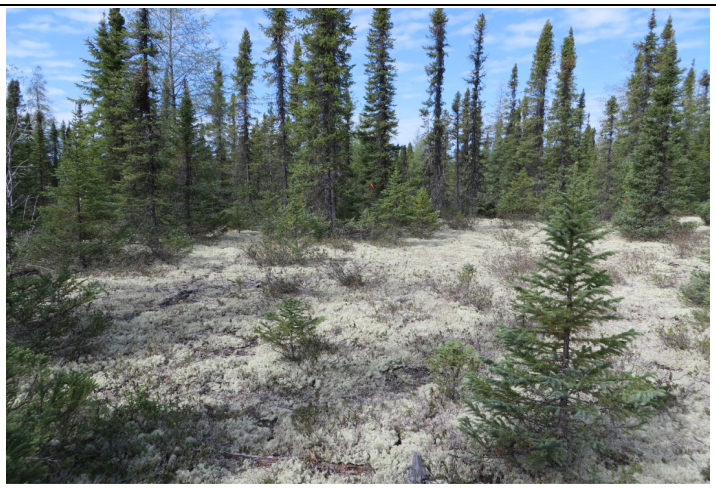
M179 describes northern boreal upland treed vegetation, typically exhibiting woodland physiognomy (<25% cover in the tree layer) with ground cover of lichens. The Canadian range extends from the Alaska – Yukon border to the coast of Labrador and, in northern Alberta, including the highest elevations of the Cameron Hills and Caribou Mountains. Tree species are overwhelmingly evergreen coniferous, but small components of deciduous coniferous and cold-deciduous broad-leaved species occur. Stands of M179 are predominantly open continuous woodlands but vary from closed forests, on the most favourable sites in southern parts of the range, to very open patchy stands of short-statured trees near the continental treeline. On wind-exposed sites, especially near treeline, woodlands often occur as tree islands or ribbons in a matrix of shrub tundra; trees develop a krummholtz growth form in response to physical damage by extreme cold and blowing snow and ice crystals. Frequent stand-replacing fires create a diverse landscape mosaic, especially in the southern portion of the range; regional fire cycles are shorter to the west of Hudson Bay. Black spruce (*Picea mariana*) and white spruce (*P. glauca*) are the main tree species, sometimes with small amounts of tamarack (*Larix laricina*), jack pine (*Pinus banksiana*), balsam poplar (*Populus balsamifera*) and/or balsam fir (*Abies balsamea*). Understories are dominated by patches of conifer regeneration, cold-deciduous broad-leaved low shrubs and prostrate dwarf shrubs. A continuous lichen layer, sometimes with patches of feathermosses, characterizes most woodland stands. Common understory species throughout the range include bog bilberry (*Vaccinium uliginosum*), shrub birches (mainly arctic dwarf birch [*Betula nana*] and glandular birch [*B. glandulosa*]), willows (*Salix* spp.), green alder (*Alnus viridis*), common Labrador tea (*Rhododendron groenlandicum*), lingonberry (*V. vitis-idaea*) and black crowberry (*Empetrum nigrum*). The most common mat-forming lichen species are reindeer lichens (*Cladina* spp.); stairstep moss (*Hylocomium splendens*) and red-stemmed feathermoss (*Pleurozium schreberi*) are the most prominent feathermosses.

M179 occurs in northern boreal and subarctic climates, characterized by very long, cold winters and short, cool to moderately warm summers. Although maritime influences are pronounced on the Labrador coast, a continental climate is the norm for most of the range. A strong west to east precipitation gradient divides the range into a subhumid portion, in Northwest Territories and Yukon, and a humid portion near and east of Hudson Bay. Mean annual temperatures vary from approximately -4°C to -10°C. With the exception of a few areas in the Cordillera, elevations are <800 mASL. M179 occupies portions of the Arctic Coastal Plain, Cordilleran, Interior Plains and Precambrian Shield physiographic regions. Except for northern Yukon, all parts of the range experienced late Pleistocene glaciation; soils are mostly Brunisols and Luvisols developed in glacial surficial materials, with Cryosols occurring sporadically. Discontinuous permafrost occurs in peatlands and some wet mineral soils throughout the range; continuous permafrost occurs in fine- and medium-textured soils in some northern portions of the range.

Two subtypes distinguish northern boreal woodlands from western Canada, CM179a [Alaskan-Yukon Northern Boreal Woodland], and from east-central Canada, CM179b [East-Central Northern Boreal Woodland].



Black spruce (*Picea mariana*) dominated woodland with small widely spaced trees and lichen-dominated understory on coarse-textured, calcareous glaciomarine soils; inland from the coast of Hudson Bay near Fort Severn Ontario.
Source: G. Racey, Ontario Ministry of Natural Resources and Forestry



Black spruce (*Picea mariana*) dominated woodland on the Pipowatan Peat Plateau, a raised permafrost peat formation near Fort Severn Ontario. The open understory is dominated by low ericaceous shrubs (e.g., bog bilberry (*Vaccinium uliginosum*) and reindeer lichens (*Cladina* spp.).
Source: S. Vasiliauskas, Ontario Ministry of Natural Resources and Forestry

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Vegetation

Physiognomy and Structure

M179 is typified by upland woodlands (<25% cover in the tree layer), but stand structure as well as tree growth and form vary considerably across gradients of climate, wind exposure and site conditions. In the southern portion of the range, stands of closed forest occur on warm aspects and in moist, wind-sheltered locations (e.g., river valleys). Under these conditions, trees reach heights of 15-20 m and have symmetrical crowns with live branches to the ground. Stands become more open and patchy northward until, at continental treeline, woodlands occur as tree islands or ribbons in a matrix of shrub tundra. Here, trees develop characteristic krummholtz shapes, including stunted growth, "flag" structures and sub-niveal foliage mats, in response to physical damage by extreme cold and blowing snow and ice crystals; heights are usually 2-5 m. Topographic vegetation patterns reflect the south-north gradient within the M179 range. In the south, closed canopy forests typically occur on lower slopes, with woodlands on upper slopes and crest positions; near treeline, sheltered low slopes and valleys support woodlands while exposed upper slopes, hilltops and ridge crests are vegetated by treeless tundra. Tree species are overwhelmingly evergreen coniferous, but small components of deciduous coniferous and cold-deciduous broad-leaved species are present. Understories are dominated by patches of conifer regeneration, cold-deciduous broad-leaved low shrubs and prostrate dwarf shrubs. A continuous lichen layer, sometimes with patches of feathermosses, characterizes most woodland stands; however, shrub height and growth form as well as patchiness of lichen and moss cover are highly variable depending on stand and site conditions. On wind-exposed sites with limited protection by snow, extensive lichen carpets are replaced by patches of exposed mineral soil alternating with a complex of prostrate shrubs (including arctic species) intertwined with lichens. Frequent stand-replacing fires create a diverse landscape mosaic, especially in the southern portion of the range; individual woodland stands are seldom over 100 years old. Treed wetlands within the range of M179 are described by M299 [North American Boreal Conifer Poor Swamp]; riparian forests are described by M300 [North American Boreal Flooded & Rich Swamp Forest].

Floristics

Picea mariana and *P. glauca* are the primary tree species in M179 woodlands. In general, *P. mariana* is the main species on acidic soils (especially on the Precambrian Shield) and on moist or cold sites. Treed stands on permafrost-raised peat formations (e.g., peat plateaux and mounds) are typically populated by *P. mariana*. *P. glauca* is more nutrient-demanding than *P. mariana* and is prevalent where soils with higher pH occur, especially in western portions of the Hudson Bay Lowland and west of the Shield in Northwest Territories (NWT) and Yukon. Both species reproduce by seed; with semi-serotinous cones, *P. mariana* is particularly well adapted to releasing seeds following fire. These species also regenerate by vegetative layering wherever low branches are in contact with the ground, especially under harsh environmental conditions where tree growth is stunted. Stands can be even-aged or uneven-aged.

Other tree species occur as occasional associates, usually with low abundance. *Larix laricina* occurs throughout the range, but is more common in the east. In Quebec and Labrador, *Abies balsamea* is found on fire-protected sites in southern areas. In Ontario, Manitoba, Saskatchewan and eastern Northwest Territories, *Pinus banksiana* is common in the southern part of the range. In the Caribou Hills and Cameron Mountains of northern Alberta and southern NWT, *Pinus contorta* (see Comments) and hybrid Murraybanks' pine (*Pinus* x *murraybanksiana*) are found. *Betula papyrifera* and/or *B. neoalaskana* are common in some locations. *Populus tremuloides* is occasionally present on warm sites in southern areas; *P. balsamifera* occurs on nutrient-rich, often moist, sites throughout the range.

Understory development is typically patchy. Conifer regeneration usually constitutes a large proportion of shrub cover. Shrub species can occur with erect growth form on sheltered sites or in prostrate form on wind-exposed sites. Common understory species throughout the range include *Vaccinium uliginosum, Betula* spp. (mainly *B. nana* and *B. glandulosa*), *Salix* spp., *Alnus viridis*, *Rhododendron groenlandicum*, *R. tomentosum, V. vitis-idaea* and *Empetrum nigrum*. Lichen species diversity is high, but the most common mat-forming species are *Cladina* spp. Feathermosses (primarily *Hylocomium splendens* and *Pleurozium schreberi*) can dominate ground cover when tree canopies are closed. On raised peat formations, peat mosses (*Sphagnum* spp.) are important constituents of the ground layer.

M179 is divided into two subtypes: CM179a [Alaskan-Yukon Northern Boreal Woodland] describes woodlands with prominent components of arctic/alpine and western North American flora; CM179b [East-Central Northern Boreal Woodland] describes woodlands containing more boreal and eastern North American species. Stands of CM179a are usually dominated by *Picea glauca*. Many species in CM179a are characteristic of substrates with high pH (e.g., *Dasiphora fruticosa, Shepherdia canadensis, Rhododendron lapponicum, Arctous rubra, Dryas integrifolia, D. alaskana, Lupinus arcticus, Hedysarum americanum* and *Silene acaulis*). Other common species include *Salix glauca, S. reticulata, Cassiope tetragona, Festuca altaica, Carex scirpoidea, Arctous alpina, Anticlea elegans, Saussurea angustifolia* and *Hylocomium splendens.* CM179b largely characterizes woodlands of the Precambrian Shield, where acidic substrates are prevalent and *P. mariana* is the overwhelmingly dominant tree species. Ericaceous species, such as *Rhododendron groenlandicum*, *V. vitis-idaea, Empetrum nigrum, V. cespitosum* and *Arctostaphylos uva-ursi*, are typically prevalent in the understory. In Ontario, Quebec and Labrador, *V. angustifolium, Gaultheria hispidula, Cornus canadensis* and *Solidago macrophylla* are important understory species. *Pleurozium schreberi* is the dominant feathermoss. In eastern Canada, continuous lichen carpets are usually dominated by *Cladina stellaris, C. rangiferina* and/or *C. mitis*. Throughout the central part of the range, between Churchill, Manitoba and Great Slave Lake, distinct *P. mariana* and *P. glauca* woodlands occur with *Stereocaulon paschale* dominating the ground cover.

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Vegetation (cont'd)

Dynamics

Environmental site characteristics, plant species autecology and seed/propagule availability, and disturbance history (i.e., type, severity and frequency) are important influences on secondary succession trends within the woodlands of M179. However, at the northern latitudes where M179 occurs, vegetation dynamics are ultimately controlled by climatic factors. The cold environment, short growing season and, at least in western Canada, low precipitation result in slow plant growth and marginal conditions for production of viable seeds and successful seedling establishment. Tree regeneration success fluctuates with seasonal variation in temperature and moisture, and post-disturbance establishment of northern woodland stands is particularly dependent on suitable weather and microclimatic conditions. Wildfire is the primary mechanism for stand-replacement, but site-scale conditions of wind exposure, snow distribution and permafrost all contribute to stand maintenance and regeneration. For example, melting of permafrost releases water into soils, often causing sinkholes and substrate slumping that undermine stands of trees creating "drunken forests". Anthropogenic disturbance is uncommon, except near settlements; forest harvesting is not a major factor in these woodlands and forests.

Stand-replacing fires, usually caused by lightning, are the most widespread form of landscape scale disturbance. Regional fire cycles vary considerably within the M179 range, from very long (>500 years) in Yukon, Nunavut, the Hudson Bay Lowland, Quebec and Labrador, to intermediate (100-270 years) in northwestern NWT and short (<100 years) in northern Saskatchewan and south-central NWT. In any specific region, fire frequency decreases northward. Fires vary considerably in size, but large fires are common because they are not actively suppressed except near settlements. Burn severity is variable within each fire, so a spatial mosaic of burned and residual patches is typical on the post-fire landscape. Site-scale moisture and nutrient status are important determinants of post-disturbance succession. On moist, nutrient-rich sites, intense competition from shrubs and herbs immediately following fire can limit the availability of microsites suitable for the germination and growth of conifers. On mesic to dry sites, post-fire conditions are usually suitable for seed germination and growth of *Picea mariana, P. glauca, Pinus* spp. or *Larix laricina* if seed sources are available. Once established, the open woodland stand structure is relatively stable and can be self-perpetuating, even in the absence of fire, rarely succeeding to closed conifer feathermoss forests. The "stalled" succession that maintains the open structure is thought to be related to the development of the dense lichen carpet which creates very dry surface moisture conditions and prevents successful ingress of *Picea* spp.

With the exception of occasional presence of *Abies balsamea* in fire-sheltered locations in Quebec and Labrador, tree species succession does not typically occur. However, distinct post-fire species-successional phases have been described for the understories of M179 woodlands. In the first decade following fire, the ground cover is predominantly charred humus with patches of the mosses *Polytrichum juniperinum, P. piliferum* and *Ceratodon purpureus.* Vascular plants, including *Chamerion angustifolium, Capnoides sempervirens* and *Calamagrostis canadensis* often occur in small patches. The second successional phase is characterized by *Cladonia* spp. lichens (e.g., *C. coccifera, C. pyxidata, C. deformis* and *C. cornuta*) with clumps of dwarf shrubs, such as *Vaccinium vitis-idaea, V. uliginosum* and *Empetrum nigrum.* The final phase is dominated by *Cladina stellaris* or *Stereocaulon paschale,* with lesser amounts of *Cladina rangiferina*, *C. arbuscula* and *C. mitis*. The time interval between successional phases varies with moisture availability, and is longer in continental areas and on coarse-textured soils.

Wind is a prominent disturbance agent on exposed sites, especially on crest topopositions throughout the range and near the northern treeline. In some cases, fire removes patches of humus and wind erosion further exposes mineral soil. In addition to erosion of the soil humus layer and the direct abrasion of plants by airborne soil particles and ice crystals, wind can remove protective snow cover, introducing soil frost cycles that prevent many plants from rooting. This provides habitat for pioneer species, such as *Oxytropis campestris, Artemisia campestris, Arabidopsis arenicola, Stellaria longipes, Carex bigelowii, C. deflexa* and *C. glacialis.* Mosses such as *Polytrichum piliferum, Ceratodon purpureus* and *Racomitrium canescens* also play an important role in soil stabilization.

Grazing and trampling by woodland caribou (*Rangifer tarandus*) can affect lichen species dominance in local areas. In northern Quebec and Labrador, considerable vegetation impact was attributed to an increase in population size of the George River caribou herd in the mid-1980s. Grazed areas dominated by *Cladina* spp., particularly *Cladina stellaris,* were replaced by crustose lichens, *Cladonia* spp. and *Cetraria* spp. In a few areas of lighter grazing, *Stereocaulon* spp. replaced *Cladina* spp. as the dominant lichen group. It is unclear what the primary factors are that influence the prevalence of *Stereocaulon* spp. in northern boreal lichen woodlands. In eastern Canada and Fenno-Scandia, dominance of *Stereocaulon* spp. is attributed to grazing by caribou/reindeer, whereas in west-central Canada the extensive tracts of *Stereocaulon* woodland are attributed to shallow winter snow depths resulting from a dry climate.

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Environment

Climate

In Canada, M179 woodlands occur in northern boreal and subarctic climates from the Alaska border to the Labrador coast, characterized by very long, cold winters and short, cool to moderately warm summers. Although maritime influences are pronounced on the Labrador coast, a continental climate is the norm for most of the M179 range. A strong west to east precipitation gradient divides the range into a subhumid climatic portion, in Northwest Territories (NWT) and Yukon, and a humid portion near and east of Hudson Bay. Mean annual temperatures vary from approximately -5°C to -10°C in Yukon and western NWT, to -4°C to -6°C in Labrador and the southern Hudson Bay Lowland. Growing degree days above 5°C (GDD) average between 400 and 600 across the range. The short growing season is enhanced by long daylengths; however, frost or snow can occur any day of the year. Mean annual precipitation increases from <300 mm in the west to approximately 800 mm in Labrador.

Especially near treeline, the northern boreal environment is windy and snow is significantly re-distributed from exposed locations. Snow cover protects vegetation from extreme winter cold and abrasion by wind-driven ice particles, and snowmelt provides moisture into the growing season. Slope, aspect and wind exposure control site-scale patterns of insolation, snow deposition and melting. Southerly and westerly aspects are warmer; snowmelt on these sites occurs earlier in the spring and microclimatic thermal conditions favour the survival of plant species at their northern range limits. Northerly aspects are cooler and snowmelt occurs later, delaying the onset of the growing season. Consequently, there is considerable variation in the temperature, moisture and growing season length at the scale of microsites.

The M179 range represents a south to north transition between the warmer climate of the boreal forest and the colder arctic climate to the north. It is the northernmost area in Canada that supports tree growth on upland sites and its northern boundary, the continental treeline, represents the climatic limit of survival for tree species. While the position of the continental treeline has been relatively stable in Canada over a period of several centuries, macro-fossil evidence and radiocarbon dating suggest that, especially in the eastern portion of the range, treeline was at least 200-300 km north of its present position during a warmer climatic period between 1000 and 4000 BP. Since then, the southward shift of treeline is considered to have been related to cooler and drier climates that resulted in an increase in fire frequency and inability of trees to produce viable seeds for successful regeneration at their former stand locations. With recent climate warming, it is possible that the continental treeline could again shift northward in some locations if moisture stress and wildfire activity are not limiting.

Physiography, Geology, Topography and Soils

The majority of the M179 range lies on the Precambrian Shield (Kazan, Hudson, James, Laurentian and Davis regions). However, in western Canada it occurs in portions of the Cordilleran and Interior Plains physiographic regions and of the Arctic Coastal Plain physiographic province.

In Yukon and western NWT, M179 woodlands occur on a series of low elevation plains and plateaux underlain by Paleozoic, Mesozoic and late Proterozoic sedimentary rocks. The topography is generally rolling or undulating with low relief, although there are some low elevation ridge and hill systems. In the MacKenzie and Franklin Mountains, the North Ogilvie region and the Old Crow Range, M179 occurs below 800 – 1200 mASL; in the Richardson Mountains, it occurs below approximately 600 mASL. M179 woodlands also occur on the Mackenzie Delta. On the Precambrian Shield in eastern NWT, Nunavut, Saskatchewan, Manitoba, Ontario, Quebec and Labrador, elevations are generally <600 mASL, except in parts of central Quebec and western Labrador where a series of higher plateaux have elevations as high as 1100 mASL and M179 generally occurs below about 800 mASL. Most of the Shield landscapes are characterized by broad expanses of rolling terrain containing numerous wetlands and lakes with local relief rarely exceeding 100 m. The geology comprises Precambrian sedimentary and crystalline rocks. On the Hudson Bay Lowland, Paleozoic carbonate-rich strata overlie the Precambrian rocks creating a level plain with extensive wetlands. Here, relief is provided by a series of low beach ridges, caused by ongoing post-glacial isostatic recovery, that run parallel to the Hudson and James Bay coastlines.

The majority of the range was affected by late Pleistocene glaciation with the exception of northern Yukon, which remained unglaciated during this period (it was part of Beringia). In most glaciated areas, surficial landscape expression is dominated by glacial features and bedrock-controlled terrain. In the unglaciated areas of northern Yukon, surficial materials consist of fine to coarse-textured colluvium from weathering of ancient bedrock, or glaciofluvial or glaciolacustrine deposits created by water released from glaciers outside the area. The Mackenzie Delta comprises recent and ancient fluvial and fluvial-marine sediments. On the Shield and raised plateaux of the Interior Plains, shallow till veneers often overlie bedrock on upland sites, while deeper deposits of glacial drift fill landscape depressions. On the Hudson Bay Lowland, raised sandy beach ridges are interspersed with marine clays and silts, often covered by peat. Mineral soils are typically Brunisols and Luvisols, with Gleysols and Cryosols in poorly drained locations. Although peatlands dominated by Organic Cryosols are common and often extensive in poorly drained landscape depressions within the range of M179, treed vegetation on these sites is primarily described by M299 [North American Boreal Conifer Poor Swamp].

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Physiography, Geology, Topography and Soils (cont'd)

Geochemistry strongly influences species composition in M179 woodlands. Dominance of *Picea mariana* is often associated with acidic substrates (including *Sphagnum* dominated peatlands); *P. glauca* is prevalent on basic or circumneutral soils. Species that prefer soils with higher pH values are more common in CM179a [Alaskan-Yukon Northern Boreal Woodland], occurring most frequently in the Cordilleran, Arctic Coastal Plain and Interior Plains physiographic areas of western Canada and on the Hudson Bay Lowlands. Species more characteristic of acidic soils dominate the understories of CM179b [East-Central Northern Boreal Woodland], especially on Shield-derived soils.

Discontinuous permafrost is a characteristic of peatlands and some wet, fine-textured mineral soils throughout the range; continuous permafrost occurs in fine- and medium-textured soils in some northern portions of the range. In these areas, active permafrost features (e.g., earth hummocks, cryoturbated surface soil horizons, palsas, peat plateaux, ice wedge polygons, and sorted and non-sorted circles or stripes) are common; in the south, these features occur only sporadically. Depth to permafrost affects the temperature of the active substrate layer, and thus, the effective growing season for vegetation. Elevated permafrost features can raise peat surfaces above the surrounding water table, sometimes making them suitable for establishment of *Picea mariana* woodlands.

The interplay between vegetation, topography and microclimate is evident across the south to north gradient of the M179 range, but is particularly pronounced near the continental treeline. In the southern portion of the range, at the transition from boreal forests, stand canopies may be more closed and tree height and shape are not appreciably affected by topographic position. In these areas, shrub species have erect stature and the ground layer is usually dominated by a continuous carpet of lichens. In the mid-portions of the range, this stand structure is maintained on sheltered slopes but on exposed topographic crests woodlands become more open, trees are stunted and the luxuriant lichen carpets are often replaced by patchy mats of intertwined lichens and prostrate shrubs. Near treeline, vegetation on exposed sites is dominated by shrub tundra, with tree species occurring only in dwarf form. Woodland canopies on mid-slopes are very open and the trees show pronounced effects of pruning by wind-blown ice crystals.

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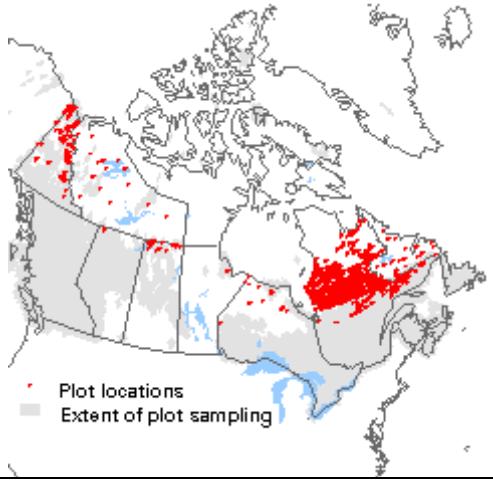
Distribution and Geographic Range

In Canada, M179 describes high latitude upland woodlands that occur from Yukon to the coast of Labrador and, in northern Alberta, at the highest elevations of the Cameron Hills and Caribou Mountains. The Canadian range is the main portion of the global range of North American northern boreal woodlands, extending west into Alaska.



Related Concepts

M179 includes primarily upland woodlands that have been described in provincial/territorial publications for some portions of the Subarctic Woodland bioclimatic zone in Yukon; the Low and High Subarctic Level III ecoregions in Northwest Territories; the Boreal Subarctic natural subregion in Alberta; the Taiga Shield ecozone of Saskatchewan; and ecoregions 0E [Hudson Bay Coast], 1E [Northern Taiga], 2E [James Bay] and 2W [Big Trout Lake] in Ontario.

USNVC M179 [North American Northern Boreal Woodland] describes the rangewide characteristics of North American northern boreal woodlands. This CNVC factsheet describes the Canadian expression of this vegetation, which includes conditions treated in USNVC Groups G633 [Western Canadian Subarctic Woodland], G635 [Eastern Canadian Subarctic Woodland] and (in part) G859 [Alaska-Yukon Northern Boreal Mesic Woodland].

Treed wetlands within the range of M179 are described by M299 [North American Boreal Conifer Poor Swamp]; riparian forests are described by M300 [North American Boreal Flooded & Rich Swamp Forest].

Comments

M179 describes low elevation northern boreal upland treed communities dominated by *Picea glauca* and *P. mariana* that typically exhibit woodland physiognomy with ground cover of lichens rather than feathermosses. South of the range of M179, closed boreal forests that, in addition to *P. glauca* and *P. mariana,* include dominance by *Populus tremuloides*, *Betula papyrifera* and/or *B. neoalaskana, Pinus contorta* and/or *P. banksiana, Abies balsamea* and/or *A. lasiocarpa* (see below) are described by M156 [Alaskan-Yukon North American Boreal Forest & Woodland], M496 [West-Central North American Boreal Forest] and M495 [Eastern North American Boreal Forest].

Pinus contorta here refers to variety *latifolia* (lodgepole pine).
Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

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Source Information

Number of Source Plots for M179: 2170 (Canadian National Vegetation Classification. 2015. CNVC Master Database [VPro13/MSAccess 2010 format]. Natural Resources Canada, Sault Ste. Marie, ON.)

Information Sources (data):

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Description Authors: K. Baldwin, W. Meades, D. Downing
Date of Concept: March, 2018
Date of Description: April, 2019

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North American Northern Boreal Woodland

Macrogroup M179

Terres boisées boréales nordiques de l'Amérique du Nord

Comparison of Vegetation Characteristics for Boreal Forest Macrogroups

		n=2170	n=1673	n=6851	n=15705	
Lifeform	**Species Name**	**M179 Northern Woodland**	**M156 Alaskan-Yukon**	**M496 West-Central**	**M495 Eastern**	**Species Common Name**
Tree	*Larix laricina*	■■■				tamarack
	Abies lasiocarpa		****			subalpine fir
	Picea glauca	****	■■■■	■■■■	■■■■	white spruce
	Populus tremuloides		■■■■■	■■■■■	■■■■	trembling aspen
	Pinus banksiana + P. contorta		■■■■	■■■■■	****	jack + lodgepole pines
	Picea mariana	■■■■■	****	■■■■	■■■■■	black spruce
	Betula papyrifera + B. neoalaskana			****	■■■■	paper + Alaska birches
	Abies balsamea				■■■■■	balsam fir
Shrub	*Vaccinium uliginosum*	■■■	***			bog bilberry
	Betula spp. (shrub)	■■■	■■■■			shrub birches
	Salix spp. (shrub)	■■■	■■■	***	■■■	shrub willows
	Rhododendron groenlandicum	■■■■	■■■■	■■■	■■■■	common Labrador tea
	Rosa acicularis		■■■	■■■		prickly rose
	Viburnum edule			■■■		squashberry
	Alnus viridis	****		■■■■	****	green alder
	Vaccinium myrtilloides			■■■	■■■	velvet-leaved blueberry
	Vaccinium angustifolium	■■■			■■■	early lowbush blueberry
	Sorbus decora + S. americana				■■■	showy & American mountain-ashes
	Kalmia angustifolia				■■■■	sheep laurel
	Acer spicatum				■■■■	mountain maple
Herb/ Dwarf Shrub	*Arctous rubra*		***			red bearberry
	Festuca altaica		***			northern rough fescue
	Lupinus arcticus		■■			arctic lupine
	Empetrum nigrum	■■■	■■■			black crowberry
	Geocaulon lividum	**	■■■			northern comandra
	Arctostaphylos uva-ursi		■■■■	***		common bearberry
	Mertensia paniculata		**	■■		tall bluebells
	Vaccinium vitis-idaea	■■	■■■	■■■		lingonberry
	Chamerion angustifolium	**	■■	■■■		fireweed
	Linnaea borealis	**	■■■	■■■	■■	twinflower
	Cornus canadensis	■■■		■■■	■■■	bunchberry
	Petasites frigidus			■■		arctic sweet coltsfoot
	Calamagrostis canadensis			■■■		bluejoint reedgrass
	Leymus innovatus			■■■		downy lymegrass
	Rubus pubescens			■■■	***	dwarf raspberry
	Maianthemum canadense			■■	■■■	wild lily-of-the-valley
	Aralia nudicaulis			***	■■■	wild sarsaparilla
	Clintonia borealis				■■■	yellow clintonia
	Gaultheria hispidula	■■			■■■	creeping snowberry
	Lysimachia borealis				■■	northern starflower
	Coptis trifolia	**			■■	goldthread
	Eurybia macrophylla				***	large-leaved aster
Moss/Lichen	*Cladonia* spp. + *Cladina* spp.	■■■■■	■■■■	■■■	■■■	clad + reindeer lichens
	Hylocomium splendens	****	■■■■■	■■■■	■■■■	stairstep moss
	Pleurozium schreberi	■■■■	■■■■	■■■■	■■■■■	red-stemmed feathermoss
	Ptilium crista-castrensis	■■■		■■■■	■■■	knight's plume moss

Legend

Constancy:	Black bar >= 50%	*Cover:*	5 bars >= 25%	2 bars >=1%
	Grey bar >= 30%		4 bars >= 10%	1 bar =<1%
	Asterisk >= 20%		3 bars >= 3%	

North American Northern Boreal Woodland

Macrogroup M179

Terres boisées boréales nordiques de l'Amérique du Nord

Comparison of Vegetation Characteristics for Macrogroup Subtypes in M179

Layer	Species Name	CM179a Alaskan-Yukon Woodland (n=288)	CM179b East-Central Woodland (n=1882)	Common Name
Tree	*Populus balsamifera*	****		balsam poplar
	Picea glauca	■■■■	****	white spruce
	Picea mariana	****	■■■■■	black spruce
	Larix laricina		▪▪▪	tamarack
	Pinus banksiana		****	jack pine
	Abies balsamea		***	balsam fir
Shrub	*Shepherdia canadensis*	▪▪▪		soapberry
	Dasiphora fruticosa	▪▪▪		shrubby cinquefoil
	Alnus viridis	****	****	green alder
	Salix spp. (shrub)	▪▪▪▪	▪▪	shrub willows
	Vaccinium uliginosum	■■■	■■■	bog bilberry
	Betula spp. (shrub)	▪▪▪	■■■	shrub birches
	Rhododendron groenlandicum	***	■■■■	common Labrador tea
	Vaccinium angustifolium		■■■	early lowbush blueberry
	Rubus chamaemorus		**	cloudberry
Herb/ Dwarf Shrub	*Anticlea elegans*	**		mountain death camas
	Lupinus arcticus	***		arctic lupine
	Arctous alpina	****		alpine bearberry
	Carex scirpoidea	***		single-spike sedge
	Festuca altaica	**		northern rough fescue
	Cassiope tetragona	▪▪▪		four-angled mountain heather
	Salix reticulata	▪▪▪		net-veined willow
	Hedysarum americanum	▪▪▪		alpine hedysarum
	Arctous rubra	■■■		red bearberry
	Rhododendron lapponicum	■■■		Lapland rosebay
	Dryas integrifolia	■■■■		entire-leaved mountain avens
	Empetrum nigrum	▪▪▪	■■■	black crowberry
	Vaccinium vitis-idaea	▪▪▪	■■	lingonberry
	Cornus canadensis		■■■	bunchberry
	Lycopodium annotinum		▪▪	stiff clubmoss
	Gaultheria hispidula		▪▪	creeping snowberry
	Vaccinium caespitosum		▪▪	dwarf bilberry
	Geocaulon lividum		**	northern comandra
	Coptis trifolia		**	goldthread
	Solidago macrophylla		**	large-leaved goldenrod
Moss/Lichen	*Cladonia* spp. + *Cladina* spp.	▪▪▪▪	■■■■■	clad + reindeer lichens
	Pleurozium schreberi		■■■■	red-stemmed feathermoss
	Ptilium crista-castrensis		▪▪▪	knight's plume moss
	Hylocomium splendens	****		stairstep moss

Legend

Constancy:	Black bar >= 50%	*Cover:*	5 bars >= 25%	2 bars >=1%
	Grey bar >= 30%		4 bars >= 10%	1 bar =<1%
	Asterisk >= 20%		3 bars >= 3%	