Canadian National Vegetation Classification (CNVC)
Classification nationale de la végétation du Canada (CNVC)
http://cnvc-cnvc.ca

Forest / Forêt **Association CNVC00245**

Pinus banksiana / Vaccinium angustifolium / Cladina spp.

Jack Pine / Early Lowbush Blueberry / Reindeer Lichens
Pin gris / Bleuet à feuilles étroites / Cladonies

Subassociations: none
CNVC Alliance: CA00009 *Pinus banksiana (Picea mariana) / Vaccinium angustifolium / Cladina* spp.
CNVC Group: CG0005 Ontario-Quebec Boreal Dry-Mesic Black Spruce – Jack Pine Forest

Type Description

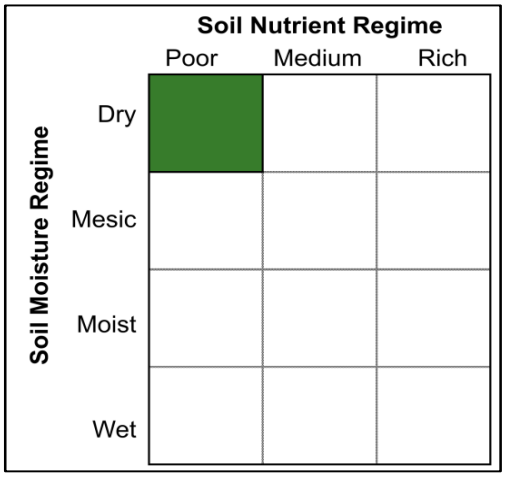
Concept: CNVC00245 is a boreal coniferous forest Association that occurs in Ontario and Manitoba. It has a sparse to open tree layer of jack pine (*Pinus banksiana*) and a poorly to moderately developed shrub layer comprising jack pine, black spruce (*Picea mariana)* and blueberries, both early lowbush blueberry (*Vaccinium angustifolium*) and velvet-leaved blueberry (*V. myrtilloides*). The herb and dwarf shrub layer is usually poorly developed; common bearberry (*Arctostaphylos uva-ursi)* is sometimes abundant, but only American cow-wheat (*Melampyrum lineare*) is consistently present. The moss and lichen layer is well developed and dominated by reindeer lichens (*Cladina rangiferina*, *C. mitis* and *C. stellaris*). Patches of red-stemmed feathermoss (*Pleurozium schreberi*) are also present. CNVC00245 occurs on dry, nutrient-poor sites in a region with a continental boreal climate that is subhumid in the western part of its range and becomes increasingly humid eastward. These are the driest, most nutrient-impoverished sites capable of supporting tree-dominated vegetation in the region. CNVC00245 is an early seral condition with dynamics that are driven by fire and limited by edaphic conditions.

Vegetation: CNVC00245 is a coniferous forest Association with a sparse to open tree layer of *Pinus banksiana,* sometimes with *Picea mariana* present. The shrub layer is poorly to moderately developed, comprising low abundance of *P. banksiana* and *P. mariana,* and the ericaceous shrubs *Vaccinium angustifolium* and *V. myrtilloides.* Herb and dwarf shrub cover is sparse; only *Melampyrum lineare* is consistently present, although sometimes *Arctostaphylos uva-ursi* can be abundant. The moss and lichen layer is well developed and characterized by abundant drought-tolerant lichens, *Cladina rangiferina, C. mitis* and *C. stellaris*. Patches of *Pleurozium schreberi* and minor amounts of *Dicranum polysetum* are often present on moister microsites (e.g., shady areas and depressions).

Environment: CNVC00245 occurs in a continental boreal climate that is subhumid in the western part of its range, becoming increasingly humid farther east. It is found on dry, nutrient-poor sites; these are the driest, poorest sites capable of supporting tree-dominated vegetation in the region. Stands are usually on level sites or gentle to moderately steep slopes on water-shedding, crest or upper-slope topopositions. On slopes, stands are more frequently on warmer (often drier) aspects, either west or south-facing. Stands are commonly on coarse-textured, rapidly or well-drained glaciofluvial surficial materials, but they also occur frequently on eolian deposits and on shallow soils over bedrock. Mor humus forms are typical.

CNVC00245 occurs where the regional fire cycle is intermediate (100-270 years). These stands may burn more frequently than the regional average.

Source: Natural Resources Canada - Canadian Forest Service



Pinus banksiana / *Vaccinium angustifolium* / *Cladina* spp. CNVC00245

Type Description (cont'd)

Dynamics: CNVC00245 is an early seral Association that usually develops on edaphically limited sites where fire is the primary disturbance. *Pinus banksiana* has medium thick bark, with only moderate tolerance to fire, but it reaches reproductive maturity at a young age and produces abundant seeds in serotinous cones. Moderate and high severity fires can melt the resin of cones to release their seeds.

Picea mariana is often a component of these stands. It also recolonizes fire-prepared sites as part of the first cohort. Although slower-growing than *P. banksiana*, it is longer lived and better able to regenerate in the absence of fire so can become dominant on these sites over time. However, because of the high frequency of fires within the range of CNVC00245 and the slow rate of succession on these dry, poor sites, such late seral conditions are rare.

CNVC00245 typically occurs on sites that do not support a closed canopy forest, but it can also result from regeneration failure in a closed stand (e.g., CNVC00207 [*Pinus banksiana (Picea mariana)* / *Vaccinium angustifolium* / *Pleurozium schreberi*]). This could happen when successive fires occur before trees have reached reproductive maturity, when a low severity fire kills trees without generating enough heat to release seeds or when seedling mortality is unusually high. The resulting open canopy promotes an increase in *Cladina* cover. Lichens dry out quickly, becoming a highly flammable and continuous fuel source, contributing to more frequent ignitions and faster-burning but lower severity fires that perpetuate the openness of the stand. Lichen cover can also inhibit conifer germination and seedling survival.

Jack pine budworm (*Choristoneura pinus pinus*) can reduce growth and cause top kill of *P. banksiana* but does not usually result in widespread tree mortality. Dead wood and needle litter may increase the flammability of these stands after an outbreak.

Range: CNVC00245 occurs in the boreal region of Ontario and likely extends into southeastern Manitoba as far west as Lake Winnipeg.

Conservation Status (NatureServe)

Global Conservation Rank: no applicable rank
National Conservation Rank: not yet determined
Subnational Conservation Rank: not yet determined

Forest / Forêt **Association CNVC00245**

Pinus banksiana / *Vaccinium angustifolium* / *Cladina* spp.

Jack Pine / Early Lowbush Blueberry / Reindeer Lichens
Pin gris / Bleuet à feuilles étroites / Cladonies

Distribution

Countries: Canada

Provinces / Territories / States: Manitoba, Ontario

Terrestrial Ecozones and Ecoregions of Canada: Boreal Shield: Abitibi Plains, Lac Seul Upland, Lake Nipigon, Lake of the Woods, Lake Timiskaming Lowland, Thunder Bay-Quetico

Rowe's Forest Regions and Sections of Canada: Boreal: Central Plateau, Lower English River, Missinaibi-Cabonga, Northern Clay, Superior, Upper English River; Great Lakes-St. Lawrence: Quetico

NAAEC CEC Ecoregions of North America (Levels I & II): Northern Forests: Mixed Wood Shield, Softwood Shield

Nature Conservancy of Canada Ecoregions: Boreal Shield, Great Lakes, Superior-Lake of the Woods

Ecozones and Ecoregions of Manitoba: Boreal Shield

Manitoba Protected Areas Initiative Natural Regions: Manitoba Lowlands: Lake of the Woods; Precambrian Boreal Forest: Lac Seul Upland

Ecological Land Classification of Ontario (ecoregions and ecodistricts): 3E-1, 3E-2, 3E-5, 3E-6, 3S-2, 3W-1, 3W-2, 3W-3, 3W-4, 3W-5, 4S-1, 4S-2, 4S-3, 4S-4, 4W-1, 4W-2

Corresponding Types and Associations

CNVC00245	Ontario	BTr1-4	Pinus banksiana / Vaccinium angustifolium / Cladonia spp. Woodland

Forest / Forêt **Association CNVC00245**

Pinus banksiana / Vaccinium angustifolium / Cladina spp.

Jack Pine / Early Lowbush Blueberry / Reindeer Lichens

Vegetation Summary*

	Association CNVC00245 31 plots	
Species Name†	% Cover‡	% Presence^
Overstory Trees		
Pinus banksiana	**21**	**97**
Picea mariana	5	42
Tree Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(8 15 22 31 35)**	
Understory Woody Shrubs and Regenerating Trees		
Vaccinium angustifolium	**11**	**77**
Vaccinium myrtilloides	3	74
Pinus banksiana	7	71
Picea mariana	3	68
Diervilla lonicera	4	32
Abies balsamea	2	32
Betula papyrifera	3	29
Rosa acicularis	1	29
Prunus pensylvanica	1	26
Shrub Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(6 9 23 27 46)**	
Understory Herbs and Dwarf Shrubs		
Melampyrum lineare	1	61
Maianthemum canadense	2	55
Arctostaphylos uva-ursi	15	39
Cypripedium acaule	1	29
Solidago hispida	1	26
Gaultheria procumbens	3	23
Herb Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(1 4 15 22 38)**	
Bryophytes and Lichens		
Cladina rangiferina	**18**	**100**
Cladina mitis	**24**	**90**
Pleurozium schreberi	16	87
Cladina stellaris	**10**	**87**
Dicranum polysetum	3	84
Cladonia sp.	8	58
Polytrichum juniperinum	2	35
Polytrichum piliferum	1	32
Stereocaulon paschale	2	23
Dicranum ontariense	1	23
Bryo-Lichen Stratum Cover (P10 P25 Mean P75 P90)‡	**(37 53 72 92 96)**	

* species present in > 20% of sample plots are listed

† see **Botanical Nomenclature** link at http://cnvc-cnvc.ca for botanical sources, synonyms and common names

‡ average percent cover of a species within the plots in which it occurs (i.e., characteristic cover)

^ percent frequency occurrence for a species within the total plots

‡ $P_x = X^{th}$ percentile (e.g., $P_{10} = 10^{th}$ percentile)

Forest / Forêt **Association CNVC00245**

Pinus banksiana / *Vaccinium angustifolium* / *Cladina* spp.

Jack Pine / Early Lowbush Blueberry / Reindeer Lichens
Pin gris / Bleuet à feuilles étroites / Cladonies

Site / Soil Characteristics

	Association CNVC00245
	31 plots
Elevation Range (min–mean–max meters)	
	203–363–508
	missing data (3)
Slope Gradient (% frequency)	
	steep (6)
	moderately steep (26)
	moderate (13)
	gentle (13)
	level (42)
Aspect (% frequency)	
	north (10)
	east (3)
	south (19)
	west (45)
	level (23)
Meso Topoposition (% frequency)	
	crest / upper (68)
	mid (19)
	lower / toe (3)
	level (10)
Moisture Regime (% frequency)	
	very dry (19)
	dry (71)
	mesic (6)
	missing data (3)
Nutrient Regime (% frequency)	
	missing data (100)

Pinus banksiana / *Vaccinium angustifolium* / *Cladina* spp. CNVC00245

Site / Soil Characteristics (cont'd)

	Association CNVC00245
Soil Parent Material (% frequency)	
	bedrock (19)
	eolian (13)
	moraine / till (16)
	glaciofluvial (35)
	lacustrine (13)
	missing data (3)
Soil Rooting Zone Substrate (% frequency)	
	non-soil (19)
	sandy (32)
	coarse loamy (19)
	silty (3)
	missing data (26)
Root Restricting Depth (% frequency)	
	0 – 20 cm (23)
	21 – 99 cm (19)
	≥ 100 cm (32)
	missing data (26)
Humus Form (% frequency)	
	mor (84)
	moder (6)
	mull (3)
	missing data (6)

ISSN 1916-3266

Forest / Forêt **Association CNVC00245**

Pinus banksiana / Vaccinium angustifolium / Cladina spp.

Jack Pine / Early Lowbush Blueberry / Reindeer Lichens
Pin gris / Bleuet à feuilles étroites / Cladonies

Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity: **Confidence:**
Strength:

Related Concepts

Similar CNVC Associations:

CNVC00127 [*Pinus banksiana / Vaccinium myrtilloides / Arctostaphylos uva-ursi / Cladina* spp.] ranges from northwestern Ontario to Alberta and occurs on comparable boreal sites. It lacks *Vaccinium angustifolium* and has more *Arctostaphylos uva-ursi* and *V. vitis-idaea* in the herb and dwarf shrub layer.

CNVC00201 [*Pinus banksiana (Picea mariana) / Kalmia angustifolia (Rhododendron groenlandicum) / Cladina* spp.] occurs on comparable boreal sites in northeastern Ontario and Quebec but has *Kalmia angustifolia* and more abundant ericaceous shrubs.

CNVC00207 [*Pinus banksiana (Picea mariana) / Vaccinium angustifolium / Pleurozium schreberi*] occurs on better sites in the same range and has greater canopy cover. It also has greater cover of feathermosses and less of *Cladina* lichens (see Dynamics).

CNVC00244 [*Picea mariana – Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea / Cladina* spp.] ranges from Saskatchewan to northwestern Ontario and occurs on comparable boreal sites but typically has more *Picea mariana* in the tree layer. It lacks *Vaccinium angustifolium* and has more *V. vitis-idaea* in the herb and dwarf shrub layer.

CNVC00246 [*Picea mariana / Rhododendron groenlandicum – Vaccinium angustifolium / Cladina* spp.] occurs on similar sites in the same range but has *Picea mariana* dominant.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

Source Information

Number of source plots for CNVC00245: 31
Information Sources:

McMurray, S.C., Johnson, J.A., Zhou, K., Uhlig, P.W.C. 2015. Ontario ecological land classification program - Ecological Data Repository (EDR). Ont. Min. Nat. Resour. & For., Sci.& Info. Branch, Sault Ste. Marie, ON.

Concept Authors: K. Baldwin, K. Chapman, P. Uhlig, M. Wester
Description Authors: K. Chapman and K. Baldwin
Date of Concept: November, 2011
Date of Description: March, 2016

Pinus banksiana / Vaccinium angustifolium / Cladina spp. CNVC00245

Classification References:

Uhlig, P.W.C., Chapman, K., Baldwin, K., Wester, M., Yanni, S. 2016. Draft boreal treed vegetation type factsheets. Ecol. Land Class. Prog., Ont. Min. Nat. Resour. & For., Sci. & Info Branch, Sault Ste. Marie, ON.

Characterization References:

Bergeron, Y.; Chen, H.Y.H.; Kenkel, N.C.; Leduc, A.; Macdonald, S.E. 2014. Boreal mixedwood stand dynamics: ecological processes underlying multiple pathways. For. Chron. 90(2):202-213.

Boulanger, Y.; Gauthier, S.; Burton, P.J. 2014. A refinement of models projecting future Canadian fire regimes using homogeneous fire regime zones. Can. J. For. Res. 44(4):365-376.

Bridge, S.R.J. 2001. Spatial and temporal variations in the fire cycle across Ontario. OMNR, Northeast Sci. Tech., South Porcupine, ON. NEST TR-043.

Carey, J.H. 1993. Pinus banksiana. In: Fire Effects Information System. U.S. Dept. Agric., For. Serv., Rocky Mt. Res. Stn., Fire Sci. Lab., Missoula, MT, US. Available: http://www.fs.fed.us/database/feis/plants/tree/pinban/all.html (accessed: May 26, 2015).

Fryer, J.L. 2014. Picea mariana. In: Fire Effects Information System. U.S. Dept. Agric., For. Serv., Rocky Mt. Res. Stn., Fire Sci. Lab., Missoula, MT, US. Available: http://www.fs.fed.us/database/feis/plants/tree/picmar/all.html (accessed: May 26, 2015).

Gauthier, S.; Gagnon, J.; Bergeron, Y. 1993. Population age structure of Pinus banksiana at the southern edge of the Canadian boreal forest. J. Veg. Sci. 4:783-790.

Greene, D.F.; Zasada, J.C.; Sirois, L.; Kneeshaw, D.; Morin, H.; Charron, I.; Simard, M.J. 1999. A review of the regeneration dynamics of North American boreal forest tree species. Can. J. For. Res. 29:824-839.

Kenkel, N.C.; Walker, D.J.; Watson, P.R.; Caners, R.T; Lastra, R.A. 1997. Vegetation dynamics in boreal forest ecosystems. Coenoses 12(2-3):97-108.

Munger, G.T. 2008. Cladonia spp. In: Fire Effects Information System. U.S. Dept. Agric., For. Serv., Rocky Mt. Res. Stn,. Fire Sci. Lab., Missoula, MT, US. Available: http://www.fs.fed.us/database/feis/lichens/claspp/all.html (accessed: May 28, 2015).

Nealis, V.G. 1995. Population biology of the jack pine budworm. Pages 55-71 in: W.J.A. Volney, V.G. Nealis, G.M. Howse, A.R. Westwood, D.R. McCullough, and B.L. Laishley (eds.) Jack Pine Budworm Biology and Management, Proc. of the Jack Pine Budworm Symp. January 24-26, 1995. Winnipeg, MB. Nat. Resour. Can., Can. For. Serv., North. For. Centre, Edmonton, AB. Info. Rep. NOR-X-342.

Ontario Ministry of Natural Resources. 2009. Ecological land classification ecosites field manual – operational draft, April 20th, 2009 – boreal. Ecol. Land Class. Working Grp, Ont. Min. Nat. Resour., Sci. & Info Branch, Inven. Monit. Assess. Sect., Sault Ste. Marie, ON.

Senici, D.; Chen, H.Y.H.; Bergeron, Y.; Cyr, D. 2010. Spatiotemporal variations of fire frequency in central boreal forest. Ecosystems 13(8):1227-1238.

Van Sleeuwen, M. 2006. Natural fire regimes in Ontario. Ont. Min. Nat. Resour., Queen's Printer for Ont., Toronto, ON.

Zoladeski, C.A.; Wickware, G.M.; Delorme, R.J.; Sims, R.A.; Corns, I.G.W. 1995. Forest ecosystem classification for Manitoba: field guide. Nat. Res. Can., Can. For. Serv., North. For. Centre, Edmonton, AB. Special Rep. 2.

The information contained in this factsheet is based on data and expert knowledge that is current to the date of description. As new information becomes available, the factsheet will be updated.

For more information about the contents of this factsheet and definitions of attribute names and data classes, see the **Understanding the Factsheet** link at http//cnvc-cnvc.ca.

Suggested Citation: K. Chapman and K. Baldwin. *Pinus banksiana / Vaccinium angustifolium / Cladina* spp. [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. March, 2016; generated Jun/21/2016; cited ENTER DATE ACCESSED. 8 p. Canadian National Vegetation Classification Association: CNVC00245. Available from http://cnvc-cnvc/ca. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.