Forest / Forêt **Association CNVC00201**

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp.

Jack Pine (Black Spruce) / Sheep Laurel (Common Labrador Tea) / Reindeer Lichens
Pin gris (Épinette noire) / Kalmia à feuilles étroites (Thé du Labrador) / Cladonies

Subassociations: *201a Pinus banksiana, 201b Picea mariana*
CNVC Alliance: CA00009 *Pinus banksiana (Picea mariana) / Vaccinium angustifolium / Cladina* spp.
CNVC Group: CG0005 Ontario-Quebec Boreal Dry-Mesic Black Spruce – Jack Pine Forest

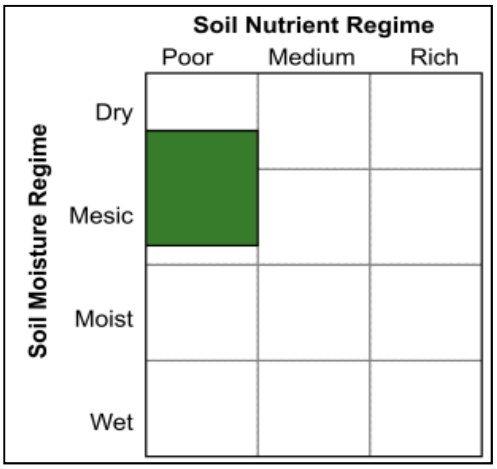
Type Description

Concept: CNVC00201 is a boreal coniferous forest Association that occurs in Quebec and Ontario. It has a moderately closed canopy of jack pine (*Pinus banksiana*), with black spruce (*Picea mariana*) as a companion species. The dense shrub layer comprises black spruce and abundant ericaceous species, including sheep laurel (*Kalmia angustifolia*), early lowbush blueberry (*Vaccinium angustifolium*), velvet-leaved blueberry (*V. myrtilloides*) and common Labrador tea (*Rhododendron groenlandicum*). Willows (*Salix* spp.) are usually present but not abundant. The herb layer is virtually nonexistent. The moss and lichen layer is continuous and dominated by reindeer lichens (*Cladina rangiferina*, *C. stellaris* and *C. mitis*). Patches of red-stemmed feathermoss (*Pleurozium schreberi*) are also present. CNVC00201 occurs in a region with a humid continental boreal climate, usually on mesic, nutrient-poor sites. These are among the poorest sites capable of supporting tree-dominated vegetation in the region. CNVC00201 is an early seral condition with dynamics that are driven by fire. Two subassociations are distinguished, *Pinus banksiana* and *Picea mariana*.

Vegetation: CNVC00201 is a coniferous forest Association with a moderately closed canopy that is dominated by *Pinus banksiana,* with a variable but lower abundance of *Picea mariana*. The shrub layer is dense, comprising *P. mariana* and abundant ericaceous shrubs, especially *Kalmia angustifolia* and *Vaccinium angustifolium* but also *V. myrtilloides* and *Rhododendron groenlandicum. Salix* spp. are common in the shrub layer but have low abundance. The herb layer is virtually nonexistent; there are no common species. The moss and lichen layer is continuous and characterized by abundant drought-tolerant lichens, including *Cladina rangiferina*, *C. stellaris* and *C. mitis*. Patches of *Pleurozium schreberi* and low but consistent cover of *Dicranum* spp. are often present on moister microsites (e.g., shady areas and depressions). Two subassociations are distinguished based on the cover of *P. mariana* in the tree layer. The *Pinus banksiana* subassociation has less than 5% cover, whereas the *Picea mariana* subassociation has more than 5% cover. The *Picea mariana* subassociation also has higher constancy and cover of other late seral species for these sites, such as *P. schreberi* and *C. stellaris*.

Environment: CNVC00201 occurs in a humid continental boreal climate, primarily on mesic, nutrient-poor sites; these are among the poorest sites capable of supporting tree-dominated vegetation in this region of the boreal. Stands are usually on level sites or gentle to moderate slopes on water-shedding, middle to upper-slope or crest topopositions. Soils are usually moderately deep, well drained and coarse-textured, often sands or coarse loams that are derived from glaciofluvial or morainal parent materials. Mor humus forms are typical. The *Pinus banksiana* subassociation is more common on glaciofluvial parent materials, whereas the *Picea mariana* subassociation occurs with greater frequency on tills, where soils may have higher silt content and slightly enhanced nutrient status.

CNVC00201 is most common where the regional fire cycle is intermediate (100-270 years). These stands may burn more frequently than the regional average.



Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp. CNVC00201

Type Description (cont'd)

Dynamics: CNVC00201 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 sometimes 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.

CNVC00201 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., CNVC00209 [*Pinus banksiana – Picea mariana / Kalmia angustifolia / 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.

Kalmia angustifolia is an aggressive competitor to conifer regeneration. It vigorously sprouts after disturbances that do not eliminate its root system (e.g., low severity fires or harvesting), reducing space available for tree establishment. Its litter may inhibit *P. mariana* seed germination (physically and chemically) and affect seedling growth by reducing available nitrogen and limiting ectomycorrhizal relationships.

Range: CNVC00201 occurs in the boreal region of northeastern Ontario and Quebec. It extends east from near Kapuskasing to the Upper North Shore of the Gulf of Saint Lawrence near the Moisie River, and to Matapedia in the Gaspé region. The *Pinus banksiana* subassociation is recognized in Ontario and Quebec. The *Picea mariana* subassociation is described only from Quebec.

Conservation Status (NatureServe)

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

Forest / Forêt **Association CNVC00201**

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp.

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Pin gris (Épinette noire) / Kalmia à feuilles étroites (Thé du Labrador) / Cladonies

Distribution

Countries: Canada

Provinces / Territories / States: Ontario, Quebec

Terrestrial Ecozones and Ecoregions of Canada: Atlantic Highlands: Appalachians; Boreal Shield: Abitibi Plains, Central Laurentians, Lake Timiskaming Lowland, Rivière Rupert Plateau, Southern Laurentians; Hudson Plains: James Bay Lowland

Rowe's Forest Regions and Sections of Canada: Boreal: Chibougamau-Natashquan, East James Bay, Gouin, Hudson Bay Lowlands, Laurentide-Onatchiway, Missinaibi-Cabonga, Northern Clay

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

Nature Conservancy of Canada Ecoregions: Boreal Shield, Hudson Plains, Northern Appalachians-Acadia

Ecological Land Classification of Ontario (ecoregions and ecodistricts): 3E-1, 3E-5, 3E-6, 3E-7

Bioclimatic Domains and Subdomains of Québec: 4 Est, 4 Ouest, 5 Est, 5 Ouest, 6 Est, 6 Ouest

Corresponding Types and Associations

201a Pinus banksiana	Ontario	BTr1-3	Pinus banksiana / Kalmia angustifolia / Cladonia spp.
	Quebec	QC001	Pinus banksiana / Kalmia angustifolia - Vaccinium angustifolium / Cladina spp.
201b Picea mariana	Quebec	QC004	Pinus banksiana - Picea mariana / Kalmia angustifolia / Cladina spp.

Forest / Forêt **Association CNVC00201**

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp.

Jack Pine (Black Spruce) / Sheep Laurel (Common Labrador Tea) / Reindeer Lichens
Pin gris (Épinette noire) / Kalmia à feuilles étroites (Thé du Labrador) / Cladonies

Vegetation Summary*

	Association CNVC00201 171 plots		Subassociation 201a *Pinus banksiana* 69 plots		Subassociation 201b *Picea mariana* 102 plots	
Species Name†	% Cover±	% Presence^	% Cover±	% Presence^	% Cover±	% Presence^
Overstory Trees						
Pinus banksiana	**33**	**100**	**42**	**100**	**27**	**100**
Picea mariana	**15**	**85**	**4**	**62**	**20**	**100**
Tree Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(32 36 47 50 66)**		**(33 36 47 53 66)**		**(32 32 46 49 66)**	
Understory Woody Shrubs and Regenerating Trees						
Picea mariana	12	99	7	97	15	100
Kalmia angustifolia	**32**	**96**	**37**	**94**	**29**	**97**
Vaccinium angustifolium	19	92	26	90	14	94
Salix sp.	4	74	3	70	4	77
Vaccinium myrtilloides	9	71	12	65	8	75
Rhododendron groenlandicum	**13**	**70**	**8**	**54**	**15**	**81**
Pinus banksiana	4	55	5	78	3	39
Amelanchier sp.	3	32	3	28	3	34
Alnus viridis	7	22	8	19	7	24
Shrub Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(36 49 67 86 99)**		**(34 50 66 86 99)**		**(36 49 68 86 99)**	
Understory Herbs and Dwarf Shrubs						
Gaultheria hispidula	2	40	2	25	2	51
Epigaea repens	2	36	3	42	2	32
Cornus canadensis	3	35	2	28	3	40
Maianthemum canadense	3	21	2	20	3	22
Coptis trifolia	2	16	2	7	2	23
Herb Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(0 0 3 3 3)**		**(0 0 3 3 7)**		**(0 0 3 3 3)**	

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp. CNVC00201

Vegetation Summary (cont'd)*

Species Name†	Association CNVC00201 % Cover±	Association CNVC00201 % Presence^	Subassociation 201a *Pinus banksiana* % Cover±	Subassociation 201a *Pinus banksiana* % Presence^	Subassociation 201b *Picea mariana* % Cover±	Subassociation 201b *Picea mariana* % Presence^
Bryophytes and Lichens						
Cladina rangiferina	**28**	**100**	**36**	**100**	**22**	**100**
Pleurozium schreberi	23	98	16	96	27	100
Cladina stellaris	**37**	**96**	**27**	**93**	**44**	**99**
Cladina mitis	**10**	**89**	**16**	**84**	**7**	**93**
Dicranum sp.	3	82	3	71	3	90
Cladonia sp.	3	57	3	48	3	63
Ptilium crista-castrensis	3	46	2	30	3	56
Ptilidium ciliare	3	43	2	28	3	53
Polytrichum sp.	3	40	3	35	2	44
Sphagnum fuscum	3	15	5	6	3	22
***Cladina* sp.**	**4**	**8**	**5**	**10**	**3**	**6**
Bryo-Lichen Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(90 90 88 90 90)**		**(70 90 85 90 90)**		**(90 90 90 90 90)**	

* 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 CNVC00201**

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp.

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Pin gris (Épinette noire) / Kalmia à feuilles étroites (Thé du Labrador) / Cladonies

Site / Soil Characteristics

	Association CNVC00201	Subassociation 201a *Pinus banksiana*	Subassociation 201b *Picea mariana*
	171 plots	**69 plots**	**102 plots**
Elevation Range (min–mean–max meters)			
	115–361–605	115–358–575	165–363–605
Slope Gradient (% frequency)			
	very steep (1)	very steep (1)	very steep (0)
	steep (1)	steep (1)	steep (1)
	moderately steep (4)	moderately steep (3)	moderately steep (5)
	moderate (19)	moderate (14)	moderate (22)
	gentle (28)	gentle (26)	gentle (29)
	level (47)	**level (54)**	**level (43)**
Aspect (% frequency)			
	north (12)	north (12)	north (12)
	east (9)	east (6)	east (12)
	south (13)	south (12)	south (14)
	west (29)	west (26)	west (31)
	level (37)	**level (45)**	level (31)
Meso Topoposition (% frequency)			
	crest / upper (29)	crest / upper (26)	crest / upper (30)
	mid (37)	mid (30)	**mid (42)**
	lower / toe (5)	lower / toe (6)	lower / toe (4)
	depression (1)	depression (1)	depression (0)
	level (29)	**level (36)**	level (24)
Moisture Regime (% frequency)			
	dry (13)	dry (16)	dry (11)
	mesic (86)	**mesic (84)**	**mesic (87)**
	moist (1)	moist (0)	moist (2)
Nutrient Regime (% frequency)			
	missing data (100)	missing data (100)	missing data (100)

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp. CNVC00201

Site / Soil Characteristics (cont'd)

	Association CNVC00201	Subassociation 201a *Pinus banksiana*	Subassociation 201b *Picea mariana*
Soil Parent Material (% frequency)			
	bedrock (2)	bedrock (1)	bedrock (3)
	colluvium (1)	colluvium (1)	colluvium (1)
	eolian (1)	eolian (0)	eolian (1)
	moraine / till (32)	moraine / till (20)	**moraine / till (40)**
	glaciofluvial (50)	**glaciofluvial (67)**	glaciofluvial (39)
	lacustrine (1)	lacustrine (1)	lacustrine (0)
	glaciolacustrine (13)	glaciolacustrine (9)	glaciolacustrine (16)
Soil Rooting Zone Substrate (% frequency)			
	non-soil (4)	non-soil (3)	non-soil (4)
	sandy (22)	sandy (25)	sandy (20)
	coarse loamy (18)	coarse loamy (19)	coarse loamy (17)
	silty (1)	silty (0)	silty (1)
	missing data (57)	missing data (54)	missing data (59)
Root Restricting Depth (% frequency)			
	0 – 20 cm (3)	0 – 20 cm (3)	0 – 20 cm (3)
	21 – 99 cm (68)	**21 – 99 cm (70)**	**21 – 99 cm (68)**
	≥ 100 cm (1)	≥ 100 cm (3)	≥ 100 cm (0)
	missing data (27)	missing data (25)	missing data (29)
Humus Form (% frequency)			
	mor (95)	**mor (96)**	**mor (95)**
	moder (5)	moder (4)	moder (5)

Forest / Forêt **Association CNVC00201**

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Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity: **Confidence:**
Strength:

Related Concepts

Similar CNVC Associations:

CNVC00204 [*Picea mariana / Rhododendron groenlandicum – Kalmia angustifolia / Cladina* spp.] occurs on similar sites in the same range but is dominated by *Picea mariana*, rather than *Pinus banksiana*.

CNVC00209 [*Pinus banksiana – Picea mariana / Kalmia angustifolia / 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).

CNVC00245 [*Pinus banksiana / Vaccinium angustifolium / Cladina* spp.] occurs in Ontario on comparable sites but has less abundant ericaceous shrubs and no *Kalmia angustifolia.*

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

Source Information

Number of source plots for CNVC00201: 171
Number of source plots for 201a Pinus banksiana: 69
Number of source plots for 201b Picea mariana: 102
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.

Ministère des Ressources naturelles, de la Faune et des Parcs, Forêt Québec. 2003. Base de données des points d'observation écologique (version 2003). Gouv. du Qué., Min. des Res. nat., de la Faune et des Parcs, Forêt Qué., Dir. des inv. for., QC.

Concept Authors: K. Baldwin, K. Chapman, C. Morneau, P. Uhlig, M. Wester
Description Authors: K. Chapman, K. Baldwin and J.-P. Saucier
Date of Concept: May, 2010
Date of Description: February, 2016

Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp. CNVC00201

Classification References:

Bergeron, J-F.; Grondin, P.; Blouin, J. 1999. Rapport de classification écologique du sous-domaine bioclimatique de la pessière à mousses de l'ouest. Min. des Res. nat. du Qué, Dir. des inv. for., Sainte-Foy, QC.

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Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp. CNVC00201

Characterization References (cont'd):

Ministère des Ressources naturelles. 2013. Le guide sylvicole du Québec, Tome 1, Les fondements biologiques de la sylviculture. Ouvrage collectif sous la supervision de B. Boulet et M. Huot. Les Publications du Québec, QC. 1044.

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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.

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