Woodland / Terre boisée **Association CNVC00205**

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp.

Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens

Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies

Subassociations: none
CNVC Alliance: CA00001 *Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina* spp.
CNVC Group: CG0001 Atlantic Boreal Dry Black Spruce – Sheep Laurel Woodland

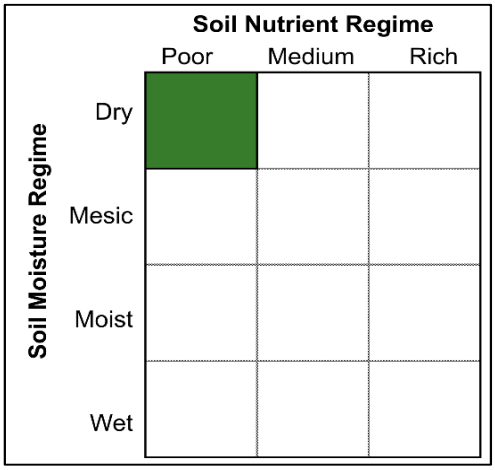
Type Description

Concept: CNVC00205 is a boreal coniferous woodland Association that is unique to central Newfoundland. It has an open tree layer dominated by black spruce (*Picea mariana*), sometimes with tamarack (*Larix laricina*), and a dense shrub layer dominated by ericaceous species, especially sheep laurel (*Kalmia angustifolia*), with lower abundance of early lowbush blueberry (*Vaccinium angustifolium*), rhodora (*Rhododendron canadense*) and common Labrador tea (*R. groenlandicum*). Black spruce is usually present in the shrub layer, and green alder (*Alnus viridis*) can be abundant when present. The herb layer is virtually nonexistent. The moss and lichen layer is continuous and dominated by reindeer lichens (*Cladina mitis, C. stellaris, C. rangiferina*), clad lichens (*Cladonia* spp.) and Easter foam lichen (*Stereocaulon paschale*). CNVC00205 occurs in central Newfoundland, where the climate is the driest and most continental on the island. It is restricted to dry, nutrient-poor sites; these are among the poorest sites capable of supporting tree-dominated vegetation in the region. These edaphic conditions maintain a woodland structure, and stands will not develop into a closed forest even at maturity.

Vegetation: CNVC00205 is a coniferous woodland Association characterized by an open tree layer of *Picea mariana,* with scattered *Larix laricina* and occasionally *Pinus strobus* (see Comments). The low shrub layer is dense (see Comments) typically comprising thick patches of *Kalmia angustifolia* and other heath species such as *Vaccinium angustifolium*, *Rhododendron canadense* and *R. groenlandicum*. *Alnus viridis* may be abundant where present. The herb/dwarf shrub layer is negligible, comprising mainly occasional occurrence of the heath species *V. vitis-idaea* and *Arctostaphylos uva-ursi*. The moss/lichen layer is continuous, consisting of lichen carpets of *Cladina mitis, C. stellaris, C. rangiferina, Stereocaulon paschale* and *Cladonia* spp. Feathermosses (e.g., *Pleurozium schreberi* and *Ptilium crista-castrensis*) may occur, but only at very low abundance.

Environment: Although the overall boreal climate of insular Newfoundland is mainly very humid and maritime, CNVC00205 occurrences are restricted to central Newfoundland where the climate is the least humid and most continental. Within this climatic setting, it occurs on the driest, most nutrient-impoverished sites; these are among the poorest sites capable of supporting tree-dominated vegetation in the region. Sites are usually old river terraces or bedrock ridges with coarse-textured, rapidly or well-drained soils. Soils are sands and gravels of glaciofluvial origin, tills overlying outwash materials, or shallow soils over bedrock. The regional fire cycle is long (270-500 years) throughout the range of CNVC00205, but these stands likely burn more frequently than the surrounding landscape because their site conditions lead to higher drying potential and make them more prone to fire.

Source: B. Meades



Picea mariana / *Kalmia angustifolia – Rhododendron canadense* / *Cladina* spp. CNVC00205

Type Description (cont'd)

Dynamics: CNVC00205 is a stable woodland condition that develops on dry, nutrient-poor sites that do not support a closed canopy forest. Fire is the primary disturbance; *Picea mariana* has thin bark with low tolerance to fire, but its semi-serotinous cones open when heated and disperse seeds, so it is well adapted to replace itself after fire.

Because of the low stem density in these stands, they are generally not harvested commercially but they may be subject to fuelwood cutting. Repeated disturbance by logging and/or fire may cause stands to succeed to a semi-stable *Kalmia angustifolia* dwarf shrub heathland.

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: CNVC00205 occurs in the central and eastern regions of insular Newfoundland. It is described from near Grand Falls-Windsor in the central region and near Terra Nova in the east.

Conservation Status (NatureServe)

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

Woodland / Terre boisée **Association CNVC00205**

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp.

Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens

Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies

Distribution

Countries: Canada

Provinces / Territories / States: Newfoundland and Labrador

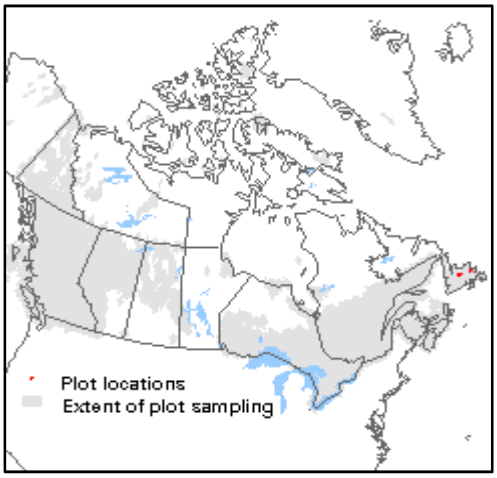
Terrestrial Ecozones and Ecoregions of Canada: Boreal Shield: Central Newfoundland

Rowe's Forest Regions and Sections of Canada: Boreal: Grand Falls

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

Nature Conservancy of Canada Ecoregions: Boreal Shield

Ecoregions of Newfoundland: Central Newfoundland



Corresponding Types and Associations

CNVC00205	Newfoundland and Labrador	C Clad_Kal_bS	Central: *Cladonia - Kalmia* - black spruce forest

Woodland / Terre boisée **Association CNVC00205**

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp.

Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens

Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies

Vegetation Summary*

	Association CNVC00205	
	11 plots	
Species Name†	% Cover±	% Presence^
Overstory Trees		
Picea mariana	**7**	**100**
Larix laricina	1	73
Pinus strobus	1	27
Tree Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(3 4 9 17 19)**	
Understory Woody Shrubs and Regenerating Trees		
Kalmia angustifolia	**35**	**100**
Vaccinium angustifolium	13	100
Rhododendron canadense	**9**	**91**
Rhododendron groenlandicum	3	73
Picea mariana	3	64
Populus tremuloides	2	55
Alnus viridis	24	45
Salix sp.	3	36
Betula papyrifera	6	27
Shrub Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(42 46 72 100 100)**	
Understory Herbs and Dwarf Shrubs		
Vaccinium vitis-idaea	4	55
Arctostaphylos uva-ursi	5	45
Herb Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(1 2 7 12 18)**	
Bryophytes and Lichens		
Cladina mitis	**42**	**100**
Cladonia sp.	20	100
Cladina stellaris	**8**	**100**
Cladina rangiferina	**24**	**91**
Stereocaulon paschale	14	73
Pleurozium schreberi	2	73
Ptilium crista-castrensis	1	64
Polytrichum juniperinum	6	55
Dicranum spurium	2	55
Ptilidium ciliare	3	45
Dicranum undulatum	1	45
Cetraria islandica	1	36
Bryo-Lichen Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(85 98 95 100 100)**	

* 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)

Woodland / Terre boisée **Association CNVC00205**

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp.

Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens
Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies

Site / Soil Characteristics

	Association CNVC00205
	11 plots
Elevation Range (min–mean–max meters)	
	—
	missing data (100)
Slope Gradient (% frequency)	
	missing data (100)
Aspect (% frequency)	
	missing data (100)
Meso Topoposition (% frequency)	
	missing data (100)
Moisture Regime (% frequency)	
	dry (100)
Nutrient Regime (% frequency)	
	missing data (100)
Soil Parent Material (% frequency)	
	missing data (100)
Soil Rooting Zone Substrate (% frequency)	
	missing data (100)
Root Restricting Depth (% frequency)	
	missing data (100)
Humus Form (% frequency)	
	missing data (100)

Woodland / Terre boisée **Association CNVC00205**

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp.

Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens

Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies

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 comparable boreal sites in Quebec. It has greater tree layer cover and much more abundant *Rhododendron groenlandicum* and less *R. canadense* in the shrub layer.

CNVC00206 [*Picea mariana / Betula glandulosa / Cladina* spp.] is a similar lichen woodland, but it occurs on a wider range of sites at climatic treeline in northern Quebec and Labrador. It has more abundant *Rhododendron groenlandicum* in the shrub layer and little to no *Kalmia angustifolia*. It also has species indicative or more northern subarctic conditions, such as *Betula glandulosa, Vaccinium uliginosum* and/or *Empetrum nigrum*.

CNVC00307 [*Picea mariana (Abies balsamea) / Kalmia angustifolia / Pleurozium schreberi*] is a similar woodland condition that occurs on more mesic sites in the same range. Its woodland structure results from frequent disturbances (fire and/or harvesting) that cause regeneration failure, rather than from edaphic limitations. It usually includes *Abies balsamea* in the tree layer, has greater herb layer cover, and feathermosses, rather than lichens, dominate the moss and lichen layer.

CNVC00338 [*Picea mariana / Rhododendron canadense – Taxus canadensis / Pleurozium schreberi*] occurs on moist to wet sites in the same range. It has greater tree layer cover, a shrub layer with lower abundance of *Kalmia angustifolia*, and feathermosses, rather than lichens, dominate the moss and lichen layer.

CNVC00350 [*Picea mariana / Pleurozium schreberi – Hylocomium splendens*] occurs on better sites in the same range. It has a more closed *Picea mariana*-dominated overstory with *Abies balsamea* as a minor associate, much lower abundance of ericaceous species in the understory and dominance of feathermosses, rather than lichens, in the moss and lichen layer.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications: CNVC00205 is equivalent to SKc #21 [Cladonia – Kalmia – Black spruce] in Meades & Moores 1994.

Comments

CNVC00205 is of significance to the conservation of *Pinus resinosa* (red pine) in Newfoundland. *P. resinosa* is only known from a small number of locations on the island and invariably occurs on sites comparable to this Association. It is absent from the vegetation description here due to its rarity.

Although this Association may contain sporadic occurrences of *Pinus strobus* (white pine) or *P. resinosa*, species that are usually considered temperate in the CNVC, their occurrence is uncommon in Newfoundland and this Association lacks understory species typically associated with temperate forests. CNVC00205 is therefore classified as a boreal forest Association.

In Newfoundland, the dense, almost continuous, shrub layer of ericaceous species is referred to as “goowiddy.”

Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina spp. CNVC00205

Source Information

Number of source plots for CNVC00205: 11

Information Sources:

Natural Resources Canada, Canadian Forest Service, Atlantic Region. 2006. Forest vegetation plot descriptions from the following publications: Damman, A.W.H. (1963, 1964, 1967); Meades, W.J. (1976, 1986). Nat. Res. Canada, Corner Brook, NL.

Concept Authors: K. Baldwin, K. Chapman, B. Meades
Description Authors: B. Meades, K. Chapman and K. Baldwin
Date of Concept: May, 2010
Date of Description: December, 2017

Classification References:

Damman, A.W.H. 1964. Some forest types of central Newfoundland and their relation to environmental factors. The Society of American Foresters, US. Monograph 8.

Meades, W.J.; Moores, L. 1994. Forest site classification manual: A field guide to the Damman forest types of Newfoundland. 2nd Edition. Corner Brook, Western Newfoundland Model Forest, Inc., NL. FRDA Rep. 003.

Characterization References:

Arsenault, A.; LeBlanc, R.; Earle, E; Brooks, D.; Clarke, B.; Lavigne, D.; Royer, L. 2016. Unravelling the past to manage Newfoundland's forests for the future. For. Chron. 92:487-502.

Banfield, C.E. 1983. Climate. Pages 37-106 in G.R. South, ed. Biogeography and ecology of the island of Newfoundland. Dr W Junk Publishers, The Hague.

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.

Damman, A.W.H. 1983. An ecological subdivision of the Island of Newfoundland. Pages 163-206 in G.R. South, ed. Biogeography and ecology of the Island of Newfoundland. Dr W Junk Publishers, The Hague, NL.

Mosseler, A.; Innes, D.J.; Roberts, B.A. 1991. Lack of allozymic variation in disjunct Newfoundland populations of red pine (Pinus resinosa). Can. J. For. Res. 21:525-528.

Roberts, B.A.; Bajzak, D. 1996. Site characteristics, growth and nutrition of natural red pine stands in Newfoundland. Environ. Monit. Assess. 39:509-530.

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: B. Meades, K. Chapman and K. Baldwin. *Picea mariana / Kalmia angustifolia – Rhododendron canadense / Cladina* spp. [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. December, 2017; generated Dec-07-2017; cited ENTER DATE ACCESSED. 7 p. Canadian National Vegetation Classification Association: CNVC00205. Available from http://cnvc-cnvc/ca. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.