



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

<http://cnvc-cnvc.ca>

## Wetland

Association CNVC00335

***Picea mariana* / *Kalmia angustifolia* / *Pleurozium schreberi* – *Sphagnum capillifolium***

**Black Spruce / Sheep Laurel / Red-stemmed Feathermoss – Small Red Peat Moss**

**Épinette noire / Kalmia à feuilles étroites / Pleurozie dorée – Sphaigne grêle**

**Subassociations:** none

**CNVC Alliance:** CA00040 *Picea mariana* (*Abies balsamea*) / *Kalmia angustifolia* / *Sphagnum capillifolium*

**CNVC Group:** CG0016 Atlantic Boreal Black Spruce – Balsam Fir Poor – Intermediate Treed Wetland



Source: B. Meades

## Type Description

**Concept:** CNVC00335 is a boreal wetland coniferous forest Association that occurs on insular Newfoundland. It has a moderately closed canopy dominated by stunted (usually <10m height), small-diameter (usually <5cm DBH) black spruce (*Picea mariana*), usually with a minor component of balsam fir (*Abies balsamea*). The shrub layer is dense, sometimes with abundant black spruce, but sheep laurel (*Kalmia angustifolia*) dominates this layer and early lowbush blueberry (*Vaccinium angustifolium*) is consistently present with lower cover. The herb layer is moderately developed. Creeping snowberry (*Gaultheria hispidula*) and bunchberry (*Cornus canadensis*) are common; yellow clintonia (*Clintonia borealis*) can be abundant when present. The moss layer is continuous, characterized by abundant small red peat moss (*Sphagnum capillifolium*) and feathermosses, including red-stemmed feathermoss (*Pleurozium schreberi*), staircase moss (*Hylocomium splendens*) and knight's plume moss (*Ptilium crista-castrensis*), as well as three-leaved whipwort (*Bazzania trilobata*). CNVC00335 occurs on moist to wet, acidic, nutrient-poor sites throughout insular Newfoundland in a very humid maritime boreal climate. Exposure to strong and persistent winds contributes to the stunted growth form of black spruce. Substrates are usually organic soils formed from slowly decomposing *Sphagnum* and other mosses. Although fire can occasionally occur, this is typically a stable condition that is maintained by a persistently high water table and poor nutrient conditions; local hydrology is the main driver of vegetation dynamics.

**Vegetation:** CNVC00335 is a coniferous forest Association with a moderately closed canopy of stunted (usually < 10m height), small-diameter (usually < 5cm DBH) trees dominated by *Picea mariana* with a minor component of *Abies balsamea*. The shrub layer is dense and dominated by regenerating (primarily by branch layering) *P. mariana* and ericaceous shrubs, particularly *Kalmia angustifolia* and *Vaccinium angustifolium*. *Ilex mucronata* and *Viburnum nudum* (see Comments) occur frequently but in low abundance. The herb layer is poorly to moderately developed, but *Gaultheria hispidula* and *Cornus canadensis* are common, and *Clintonia borealis* can be abundant when present. A continuous mat comprising *Sphagnum capillifolium*, feathermosses (*Pleurozium schreberi*, *Hylocomium splendens* and *Ptilium crista-castrensis*) and *Bazzania trilobata* characterizes the moss layer.

		Soil Nutrient Regime		
		Poor	Medium	Rich
Soil Moisture Regime	Dry			
	Mesic			
	Moist			
	Wet			



***Picea mariana* / *Kalmia angustifolia* / *Pleurozium schreberi* – *Sphagnum capillifolium*  
CNVC00335**

### Type Description (cont'd)

**Environment:** CNVC00335 occurs on peat-accumulating sites with permanently high water tables in a region with a very humid maritime boreal climate. It most commonly occurs in the narrow transition between upland forests and open bogs, wherever groundwater flow is minimal (i.e., soils are acidic and nutrient-poor). It can also occur near the perimeter of mineral islands within extensive bog systems. These areas are windy, and the stunted growth characteristic of the trees in this Association is due to a combination of wind exposure and poor drainage. Soils are moist to wet with organic material thickness over mineral or bedrock substrates varying from approximately 20 cm to > 1 m. The surface horizon can dry out in the summer.

In the central Avalon Peninsula of Newfoundland, CNVC00335 is known from the south-facing slopes of ribbed moraines. On these sites, the more nutrient-demanding species *Taxus canadensis* is prominent in the understory, despite the poor nutrient status of CNVC00335. These sites have nutrient-rich seepage at depth, accessible only to deeply rooted species such as *T. canadensis*.

**Dynamics:** CNVC00335 is a stable condition that is maintained by a persistently high water table, an acidic substrate and poor nutrient status. Local hydrology is the main driver of vegetation dynamics. Although fires occur on peatlands, they are infrequent and of limited extent because these sites are so wet. Consequently, stands of CNVC00335 tend to be long lived and multi-aged, with trees up to or exceeding 200 years. *Picea mariana* can establish from seed under favourable conditions (e.g., suitable seedbed) but typically self-replaces on these sites by vegetative layering. *Abies balsamea* does not reproduce by layering, but can seed into these sites.

Because CNVC00335 occurs in a windy environment and stands are at the edge of open peatlands, wind exposure is significant and windthrow of individual trees does occur. However, these stands are well adapted to wind, with stunted trees and prolific vegetative layering, so stand-scale windthrow is rare.

**Range:** CNVC00335 occurs throughout insular Newfoundland.

### Conservation Status (NatureServe)

**Global Conservation Rank:** no applicable rank

**National Conservation Rank:** not yet determined

**Subnational Conservation Rank:** not yet determined



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**Distribution**

**Countries:** Canada

**Provinces / Territories / States:** Newfoundland and Labrador

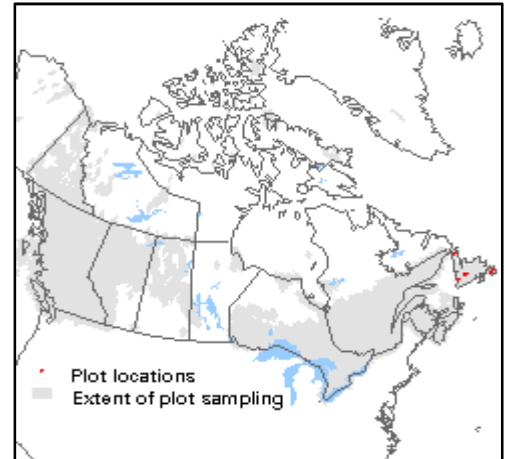
**Terrestrial Ecozones and Ecoregions of Canada:** Boreal Shield: Avalon Forest, Central Newfoundland, Northern Peninsula, Southwestern Newfoundland

**Rowe's Forest Regions and Sections of Canada:** Boreal: Avalon, Northern Peninsula

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

**Nature Conservancy of Canada Ecoregions:** Boreal Shield

**Ecoregions of Newfoundland:** Avalon Forest, Central Newfoundland, Northern Peninsula, Southwestern Newfoundland



**Corresponding Types and Associations**

<b>CNVC00335</b>	Newfoundland and Labrador	C Sph_Kal_bS	Central: Sphagnum - Kalmia - black spruce forest
		E KPnt	Eastern: Nemopanthus - Kalmia - black spruce forest [Taxus variant]
		N SKPw	Northern: Sphagnum - Kalmia - black spruce forest [wet variant]
		W KPn	Western: Nemopanthus - black spruce forest



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**Vegetation Summary\***

Species Name <sup>†</sup>	Association CNVC00335 12 plots	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<b>Overstory Trees</b>		
<i>Picea mariana</i>	42	92
<i>Abies balsamea</i>	10	75
<b>Tree Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(16 36 46 63 64)</b>	
<b>Understory Woody Shrubs and Regenerating Trees</b>		
<i>Kalmia angustifolia</i>	36	100
<i>Vaccinium angustifolium</i>	5	92
<i>Picea mariana</i>	27	58
<i>Ilex mucronata</i>	12	50
<i>Viburnum nudum</i>	5	50
<i>Taxus canadensis</i>	7	42
<i>Rhododendron canadense</i>	8	33
<i>Abies balsamea</i>	7	33
<i>Amelanchier bartramiana</i>	3	25
<i>Rhododendron groenlandicum</i>	2	25
<b>Shrub Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(51 67 72 87 92)</b>	
<b>Understory Herbs and Dwarf Shrubs</b>		
<i>Gaultheria hispidula</i>	8	100
<i>Cornus canadensis</i>	3	75
<i>Clintonia borealis</i>	12	58
<i>Coptis trifolia</i>	6	33
<i>Vaccinium vitis-idaea</i>	3	33
<i>Linnaea borealis</i>	2	33
<i>Lysimachia borealis</i>	1	33
<i>Orthilia secunda</i>	1	33
<b>Herb Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(4 12 24 32 47)</b>	
<b>Bryophytes and Lichens</b>		
<i>Pleurozium schreberi</i>	29	100
<i>Sphagnum capillifolium</i>	28	100
<i>Hylocomium splendens</i>	19	92
<i>Bazzania trilobata</i>	11	75
<i>Ptilium crista-castrensis</i>	4	75
<i>Cladonia</i> sp.	4	67
<i>Ptilidium ciliare</i>	3	58
<i>Cladina rangiferina</i>	8	50
<i>Dicranum undulatum</i>	7	50
<i>Dicranum scoparium</i>	3	33



***Picea mariana* / *Kalmia angustifolia* / *Pleurozium schreberi* – *Sphagnum capillifolium*  
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**Vegetation Summary (cont'd)\***

Species Name <sup>†</sup>	Association CNVC00335	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<i>Dicranum majus</i>	5	25
<i>Dicranum polysetum</i>	3	25
<i>Peltigera aphthosa</i>	2	25
<b>Bryo-Lichen Stratum Cover</b> (P <sub>10</sub> P <sub>25</sub> Mean P <sub>75</sub> P <sub>90</sub> ) <sup>‡</sup>	(100 100 95 100 100)	

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

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

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

<sup>^</sup> percent frequency occurrence for a species within the total plots

<sup>‡</sup> P<sub>x</sub> = X<sup>th</sup> percentile (e.g., P<sub>10</sub> = 10<sup>th</sup> percentile)



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### Site / Soil Characteristics

Association  
 CNVC00335

12 plots

#### Elevation Range (min–mean–max meters)

31–113–140  
 missing data (42)

#### Slope Gradient (% frequency)

moderately steep (33)  
 level (17)  
 missing data (50)

#### Aspect (% frequency)

north (8)  
 south (17)  
 west (17)  
 level (8)  
 missing data (50)

#### Meso Topoposition (% frequency)

mid (25)  
 missing data (75)

#### Moisture Regime (% frequency)

**moist (58)**  
 wet (42)

#### Nutrient Regime (% frequency)

missing data (100)

#### Soil Parent Material (% frequency)

moraine / till (25)  
 missing data (75)

#### Soil Rooting Zone Substrate (% frequency)

missing data (100)

#### Root Restricting Depth (% frequency)

missing data (100)

#### Humus Form (% frequency)

missing data (100)



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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:

CNVC00282 [*Picea mariana* / *Rhododendron groenlandicum* – *Kalmia angustifolia* / *Sphagnum* spp.] occurs on comparable sites from eastern Manitoba to Quebec. It has less *Abies balsamea* in the tree layer and a shrub layer with more abundant *Vaccinium myrtilloides*, *Rhododendron groenlandicum* and *Chamaedaphne calyculata*, and less *Kalmia angustifolia*.

CNVC00283 [*Picea mariana* / *Chamaedaphne calyculata* – *Vaccinium angustifolium* / *Sphagnum* spp.] occurs on comparable sites from eastern Manitoba to Quebec. It has a woodland physiognomy with less *Abies balsamea* and *Kalmia angustifolia* and more *Chamaedaphne calyculata*, *Rhododendron groenlandicum* and *Vaccinium myrtilloides*.

CNVC00293 [*Picea mariana* / *Sanguisorba canadensis* / *Rhytidadelphus triquetrus*] occurs on wet, nutrient-rich sites on insular Newfoundland and has abundant *Carex* spp. and *Sanguisorba canadensis* in the herb layer, with low abundance of *Sphagnum* mosses.

CNVC00312 [*Picea mariana* – *Abies balsamea* / *Osmundastrum cinnamomeum* – *Carex trisperma* / *Sphagnum* spp.] occurs on wet, nutrient-medium sites in the same range. It has more *Abies balsamea* in the tree layer, less *Kalmia angustifolia* and *Vaccinium angustifolium* in the shrub layer and a herb layer with abundant *Osmundastrum cinnamomeum* and *Carex trisperma*.

CNVC00339 [*Picea mariana* – *Kalmia angustifolia* – *Ilex mucronata* / *Sphagnum* spp. – *Cladina* spp. – *Pleurozium schreberi*] occurs on comparable sites on Cape Breton Island, Nova Scotia and southern insular Newfoundland. It is floristically similar to CNVC00335 but has a krummholtz physiognomy due to extreme wind exposure; its tree species, *Picea mariana* and *Abies balsamea*, are suppressed into the shrub layer. *Rubus chamaemorus*, *Epigaea repens* and *Empetrum nigrum* are also more common in CNVC00339.

CNVC00353 [*Picea mariana* / *Alnus incana* / *Carex vaginata* / *Rhytidadelphus triquetrus*] occurs on wet, nutrient-rich sites on insular Newfoundland and has a shrub layer with abundant *Alnus incana* and *Rhamnus alnifolia*, abundant *Carex vaginata* and *C. trisperma* in the herb layer and much lower abundance of *Sphagnum* mosses.

#### Related United States National Vegetation Classification Associations:

#### Relationships with Other Classifications:

CNVC00335 includes the concept of SKs #23 [Sphagnum – Kalmia – Black spruce] and elements of SKn #22 [Nemopanthus – Kalmia – Black spruce] from Meades & Moores 1994.

### Comments

CNVC00335 is consistent with the concept of a coniferous treed swamp in the Canadian Wetland Classification System.

*Viburnum nudum* here refers to var. *cassinoides* (wild raisin).



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### **Source Information**

**Number of source plots for CNVC00335:** 12

#### **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, 2012

**Date of Description:** November, 2016

### **Classification References:**

Damman, A.W.H. 1963. A reconnaissance survey of the ecological conditions in the forests of the Roddickton area, Newfoundland. For. Res. Branch, Can. Dept. For., NL. Mimeo 63-N-1.

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.

Damman, A.W.H. 1967. The forest vegetation of western Newfoundland and site degradation associated with vegetation change. PhD thesis, Univ. of Michigan, Ann Arbor, MI, US.

Meades, W.J. 1986. Successional status of ericaceous dwarf-shrub heath in eastern Newfoundland. PhD thesis, Univ. of Connecticut, Storrs, CT.

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

### **Characterization References:**

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.

Crum, H.A.; Planisek, S. 1988. A focus on peatlands and peat mosses. Univ. of Michigan Press, MI, US.

Delaney, B.B.; Cahill, M.J. 1978. A pattern of forest types on ribbed moraines in eastern Newfoundland. Can. J. For. Res. 8:116-120.

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Lavoie, M.; Paré, D.; Fenton, N.; Groot, A.; Taylor, K. 2005. Paludification and management of forested peatlands in Canada: a literature review. Environ. Rev. 13:21-50.

National Wetlands Working Group. 1988. Wetlands of Canada. Sustain. Dev. Branch, Environ. Can., Ottawa, ON and Polyscience Publications Inc., Montreal, QC. ELC Series No. 24.

National Wetlands Working Group. 1997. The Canadian wetland classification system. B.G. Warner, and C.D.A. Rubec (eds.) Wetlands Res. Centre, Univ. of Waterloo, Waterloo, ON.

Rydin, H.; Jeglum, J.K. 2006. The biology of peatlands. Oxford Univ. Press, Oxford, UK.

Simard, M.; Lecomte, N.; Bergeron, Y.; Bernier, P.Y.; Paré, D. 2007. Forest productivity decline caused by successional paludification of boreal soils. Ecol. Appl. 17(6):1619-1637.





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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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