



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

<http://cnvc-cnvc.ca>

Woodland / Terre boisée

Association CNVC00307

Picea mariana* (*Abies balsamea*) / *Kalmia angustifolia* / *Pleurozium schreberi
Black Spruce (Balsam Fir) / Sheep Laurel / Red-stemmed Feathermoss
Épinette noire (Sapin baumier) / Kalmia à feuilles étroites / Pleurozie dorée

Subassociations: 307a *typic*, 307b *Viburnum nudum*

CNVC Alliance: CA00002 *Picea mariana* / *Kalmia angustifolia* / *Pleurozium schreberi*

CNVC Group: CG0002 Atlantic Boreal Mesic-Moist Black Spruce – Balsam Fir – Paper Birch Forest



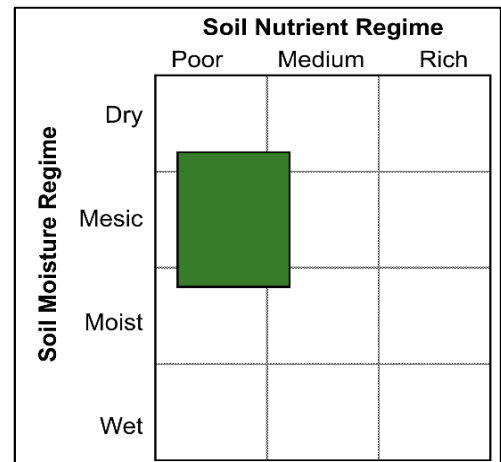
Source: B. Meades

Type Description

Concept: CNVC00307 is a boreal coniferous woodland Association that occurs on the island of Newfoundland. The tree layer is dominated by black spruce (*Picea mariana*), usually with lower abundance of balsam fir (*Abies balsamea*). Ericaceous shrub species, mainly sheep laurel (*Kalmia angustifolia*) and early lowbush blueberry (*Vaccinium angustifolium*), form a dense shrub layer. The herb layer is moderately to well developed, although only creeping snowberry (*Gaultheria hispidula*) and bunchberry (*Cornus canadensis*) are constant. Red-stemmed feathermoss (*Pleurozium schreberi*) and broom mosses (*Dicranum* spp.) dominate the moderately developed to continuous moss layer. Reindeer lichens (*Cladina* spp., especially *C. rangiferina*) and clad lichens (*Cladonia* spp.) are usually present. CNVC00307 occurs on mesic, nutrient-poor sites that have been repeatedly disturbed by fire and/or logging. Frequent disturbances encourage the profuse development of a dense ericaceous shrub layer that inhibits succession to a forested condition, instead promoting the long-term maintenance of these woodlands on the landscape. This Association occurs extensively in the relatively more continental climate of central Newfoundland where the frequency of natural fire is higher. Two subassociations are distinguished, *typic* and *Viburnum nudum*.

Vegetation: CNVC00307 is a coniferous woodland Association with an open to moderately closed tree layer dominated by *Picea mariana*, usually with lower abundance of *Abies balsamea*. *Kalmia angustifolia* forms a dense, almost continuous shrub layer intermixed with *Vaccinium angustifolium* (see Comments). *Gaultheria hispidula* and *Cornus canadensis* are the main species in the moderately to well-developed herb/dwarf shrub layer. *Pleurozium schreberi* dominates the moderately developed to continuous moss layer, which also includes small patches of *Dicranum undulatum*, *D. scoparium*, *Cladina rangiferina* and *Cladonia* spp. Two subassociations are recognized, *typic* and *Viburnum nudum* (see Comments). The *Viburnum nudum* subassociation generally has a more diverse shrub layer, with patches of *V. nudum* and *Ilex mucronata*, and a less developed moss layer.

Environment: Although the overall boreal climate of insular Newfoundland is mainly very humid and maritime, CNVC00307 is most common in central Newfoundland where the climate is the least humid and most continental. It occurs primarily on mesic, nutrient-poor sites. Soils are usually well-drained and coarse-textured, developing on water shedding upper slopes or in shallow soils over bedrock. The regional fire cycle is long (270-500 years) throughout the range of CNVC00307, but these stands are most common in areas that have burned repeatedly. Humus forms are mors.





***Picea mariana* (*Abies balsamea*) / *Kalmia angustifolia* / *Pleurozium schreberi* CNVC00307**

Type Description (cont'd)

Dynamics: CNVC00307 is a woodland condition that arises where there has been failure of *Picea mariana* to regenerate after severe disturbance. A closed black spruce forest (e.g., CNVC00350 [*Picea mariana* / *Pleurozium schreberi* – *Hylocomium splendens*]) would normally occupy these sites, but sometimes *P. mariana* fails to regenerate and the ensuing stand is only partially treed.

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 recolonize after fire. Regeneration failure can happen when there is inadequate seed supply resulting from successive fires occurring before trees have reached reproductive maturity, after logging or a combination of fire and logging. Regeneration failure could also occur if a fire follows a spruce budworm (*Choristoneura fumiferana*) outbreak that has diminished the seed crop or viability, or from unusually high seedling mortality.

Once formed, these woodlands become relatively stable because the thick mor humus layer is unfavourable to conifer seedling establishment. Intense competition for nutrients from the dense ericaceous shrub layer, in particular *Kalmia angustifolia*, further inhibits development of a closed forest. This ericad 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 further inhibit *P. mariana* seed germination (physically and chemically) and affect seedling growth by reducing available nitrogen and limiting ectomycorrhizal relationships. Succession to untreed *Kalmia angustifolia* heathlands could occur with further disturbance by cutting or fire.

Occasionally, with sufficient seed supply, fires can accelerate the return to a closed forest by burning off the humus to expose mineral soil, creating a more suitable seedbed for *P. mariana* seedlings to establish. CNVC00307 sites have been successfully regenerated to closed *P. mariana* forests by mechanical scarification followed by planting.

Range: CNVC00307 occurs throughout insular Newfoundland where disturbance by fire and/or cutting is frequent. The *typic* subassociation is described from the Northern Peninsula and central Newfoundland, and the *Viburnum nudum* subassociation is described from the Avalon Peninsula.

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

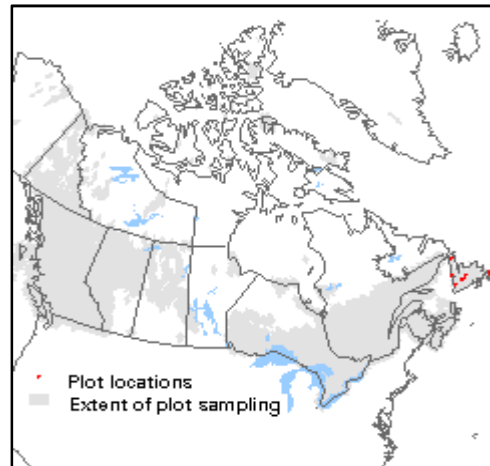
Terrestrial Ecozones and Ecoregions of Canada: Boreal Shield: Central Newfoundland, Maritime Barrens, Northern Peninsula, Southwestern Newfoundland

Rowe's Forest Regions and Sections of Canada: Boreal: Avalon, Corner Brook, Grand Falls, Newfoundland-Labrador Barrens, 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: Central Newfoundland, Maritime Barrens, Northern Peninsula, Southwestern Newfoundland



Corresponding Types and Associations

307a typic	Newfoundland and Labrador	C Kal_bs	Central: <i>Kalmia</i> - black spruce forest
		N KPt	Northern: <i>Kalmia</i> - black spruce forest
		W KP	Western: <i>Kalmia</i> - black spruce forest
307b Viburnum nudum	Newfoundland and Labrador	E KP	Eastern: <i>Kalmia</i> - black spruce forest



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Vegetation Summary*

Species Name [†]	Association CNVC00307		Subassociation 307a <i>typic</i>		Subassociation 307b <i>Viburnum nudum</i>	
	20 plots		15 plots		5 plots	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
Overstory Trees						
<i>Picea mariana</i>	30	95	35	93	16	100
<i>Abies balsamea</i>	15	70	11	60	21	100
<i>Betula papyrifera</i>	1	35	1	47	-	-
<i>Larix laricina</i>	24	25	29	13	20	60
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(20 36 46 57 68)		(22 38 45 55 61)		(20 21 51 66 77)	
Understory Woody Shrubs and Regenerating Trees						
<i>Kalmia angustifolia</i>	50	100	55	100	37	100
<i>Vaccinium angustifolium</i>	18	95	15	93	26	100
<i>Rhododendron groenlandicum</i>	6	50	4	47	11	60
<i>Picea mariana</i>	13	45	9	40	19	60
<i>Abies balsamea</i>	19	35	6	20	28	80
<i>Viburnum nudum</i>	11	35	3	13	14	100
<i>Rhododendron canadense</i>	7	30	5	33	19	20
<i>Juniperus communis</i>	7	25	3	13	11	60
<i>Betula papyrifera</i>	3	25	2	13	3	60
<i>Amelanchier bartramiana</i>	2	20	3	13	2	40
<i>Ilex mucronata</i>	23	15	-	-	23	60
<i>Alnus viridis</i>	8	15	-	-	8	60
<i>Sorbus americana</i>	1	15	1	7	2	40
<i>Rubus idaeus</i>	3	10	-	-	3	40
<i>Prunus pensylvanica</i>	2	10	-	-	2	40
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(36 75 78 100 100)		(31 72 75 98 100)		(63 100 88 100 100)	
Understory Herbs and Dwarf Shrubs						
<i>Gaultheria hispida</i>	4	90	4	93	2	80
<i>Cornus canadensis</i>	11	70	9	67	16	80
<i>Vaccinium vitis-idaea</i>	6	55	7	67	1	20
<i>Maianthemum canadense</i>	3	40	5	33	1	60
<i>Linnaea borealis</i>	8	30	1	20	14	60
<i>Lysimachia borealis</i>	2	30	2	13	2	80
<i>Clintonia borealis</i>	2	25	2	27	2	20
<i>Lycopodium obscurum</i>	1	25	1	20	2	40
<i>Avenella flexuosa</i>	3	20	1	7	3	60
<i>Empetrum nigrum</i>	2	20	1	13	3	40
<i>Pteridium aquilinum</i>	40	15	19	7	51	40
<i>Solidago macrophylla</i>	2	15	-	-	2	60
<i>Chamerion angustifolium</i>	1	15	1	7	2	40
<i>Carex brunnescens</i>	1	10	-	-	1	40
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(6 8 31 46 66)		(5 7 23 34 55)		(24 46 54 71 87)	



***Picea mariana (Abies balsamea) / Kalmia angustifolia / Pleurozium schreberi* CNVC00307**

Vegetation Summary (cont'd)*

Species Name†	Association CNVC00307		Subassociation 307a <i>typic</i>		Subassociation 307b <i>Viburnum nudum</i>	
	% Cover‡	% Presence^	% Cover‡	% Presence^	% Cover‡	% Presence^
Bryophytes and Lichens						
<i>Pleurozium schreberi</i>	36	100	42	100	18	100
<i>Dicranum undulatum</i>	13	85	14	100	7	40
<i>Cladina rangiferina</i>	9	85	8	93	13	60
<i>Cladonia sp.</i>	10	70	13	73	2	60
<i>Dicranum scoparium</i>	5	65	5	80	2	20
<i>Hylocomium splendens</i>	13	55	13	67	15	20
<i>Ptilium crista-castrensis</i>	4	55	4	60	3	40
<i>Cladina mitis</i>	8	45	8	47	12	40
<i>Peltigera aphthosa</i>	6	30	6	40	-	-
<i>Sphagnum capillifolium</i>	4	30	4	40	-	-
<i>Ptilidium ciliare</i>	6	25	7	27	1	20
<i>Cladina arbuscula</i>	2	20	1	13	3	40
<i>Dicranum majus</i>	3	15	-	-	3	60
<i>Dicranum polysetum</i>	3	10	-	-	3	40
Bryo-Lichen Stratum Cover (P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀)‡	(28 59 77 100 100)		(59 77 88 100 100)		(13 27 44 60 84)	

* 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 = Xth percentile (e.g., P₁₀ = 10th percentile)



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Site / Soil Characteristics

	Association CNVC00307 20 plots	Subassociation 307a typic 15 plots	Subassociation 307b Viburnum nudum 5 plots
Elevation Range (min–mean–max meters)	15–72–182 missing data (55)	15–30–46 missing data (67)	80–125–182 missing data (20)
Slope Gradient (% frequency)	gentle (20) level (55) missing data (25)	gentle (7) level (60) missing data (33)	gentle (60) level (40) missing data (0)
Aspect (% frequency)	east (10) south (35) west (25) level (5) missing data (25)	east (0) south (33) west (27) level (7) missing data (33)	east (40) south (40) west (20) level (0) missing data (0)
Meso Toposition (% frequency)	crest / upper (5) mid (5) missing data (90)	crest / upper (0) mid (0) missing data (100)	crest / upper (20) mid (20) missing data (60)
Moisture Regime (% frequency)	dry (5) mesic (85) moist (10)	dry (7) mesic (80) moist (13)	dry (0) mesic (100) moist (0)
Nutrient Regime (% frequency)	missing data (100)	missing data (100)	missing data (100)
Soil Parent Material (% frequency)	moraine / till (20) glaciofluvial (10) missing data (70)	moraine / till (13) glaciofluvial (13) missing data (73)	moraine / till (40) glaciofluvial (0) missing data (60)
Soil Rooting Zone Substrate (% frequency)	sandy (5) missing data (95)	sandy (0) missing data (100)	sandy (20) missing data (80)
Root Restricting Depth (% frequency)	missing data (100)	missing data (100)	missing data (100)
Humus Form (% frequency)	mor (100)	mor (100)	mor (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:

CNVC00205 [*Picea mariana* / *Kalmia angustifolia* – *Rhododendron canadense* / *Cladina* spp.] is a similar *Picea mariana*-dominated woodland condition that occurs on drier sites in the same range. It is edaphically limited and typically has less than 20% tree layer cover with little to no *Abies balsamea*, a less developed herb layer and a ground layer dominated by lichens rather than by feathermosses.

CNVC00338 [*Picea mariana* / *Rhododendron canadense* – *Taxus canadensis* / *Pleurozium schreberi*] is a similar *Picea mariana*-dominated woodland condition that occurs on moister sites in western Newfoundland. Its shrub layer is dominated by *Rhododendron canadense* rather than *Kalmia angustifolia*.

CNVC00350 [*Picea mariana* / *Pleurozium schreberi* – *Hylocomium splendens*] occurs on slightly less impoverished sites in the same range and has a forest rather than woodland physiognomy. It has lower abundance of ericaceous shrubs (see Dynamics).

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications: CNVC00307 is equivalent to SK #20 [*Kalmia* – Black spruce] in Meades & Moores 1994.

Comments

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

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

Source Information

Number of source plots for CNVC00307: 20

Number of source plots for 307a *typic*: 15

Number of source plots for 307b *Viburnum nudum*: 5

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: March, 2012

Date of Description: December, 2017



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Classification References:

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Characterization References:

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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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