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

http://cnvc-cnvc.ca

Forest / Forêt   **Association CNVC00128**

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)
Black Spruce / Lingonberry / Red-stemmed Feathermoss (Stairstep Moss)
Épinette noire / Airelle rouge / Pleurozie dorée (Hylocomie brillante)

Subassociations: none
CNVC Alliance: CA00021 *Picea mariana – Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea / Pleurozium schreberi*
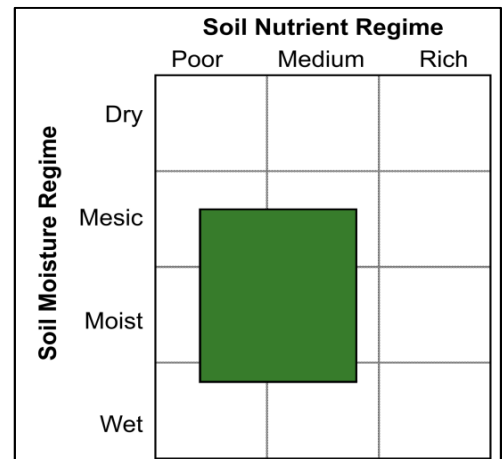**CNVC Group:** CG0010 Central Boreal Mesic-Moist Black Spruce – Jack Pine Forest

Type Description

Concept: CNVC00128 is a boreal coniferous forest Association that ranges from Alberta to Manitoba. It has a moderately closed canopy of black spruce (*Picea mariana*), sometimes with a minor component of jack pine (*Pinus banksiana*). The poorly to moderately developed shrub layer typically includes common Labrador tea (*Rhododendron groenlandicum*) and regenerating black spruce. The herb and dwarf shrub layer is generally sparse; lingonberry (*Vaccinium vitis-idaea*) and bunchberry (*Cornus canadensis*) are the only common species, although more nutrient-demanding species, like arctic sweet coltsfoot (*Petasites frigidus*), dwarf raspberry (*Rubus pubescens*), field horsetail (*Equisetum arvense*) and naked mitrewort (*Mitella nuda*), are occasionally present. A well-developed moss layer dominated by red-stemmed feathermoss (*Pleurozium schreberi*), with lower abundance of stairstep moss (*Hylocomium splendens*) and knight's plume moss (*Ptilium crista-castrensis*), further characterizes this Association. CNVC00128 occurs in a region with a subhumid continental boreal climate. It is most frequently found on moist, nutrient-poor to medium sites. It can be the first cohort after fire or succeed earlier seral conditions.

Vegetation: CNVC00128 is a coniferous forest Association with a moderately closed canopy of *Picea mariana,* sometimes with a minor component of *Pinus banksiana.* The shrub layer is poorly to moderately developed depending on the patchiness of shrubs but typically includes *Rhododendron groenlandicum* and regenerating *P. mariana*. The herb and dwarf shrub layer is usually sparse, with *Vaccinium vitis-idaea* and *Cornus canadensis* the only common species. Species indicative of slightly moister and richer site conditions, such as *Petasites frigidus, Rubus pubescens, Equisetum arvense* and *Mitella nuda,* are occasionally present. The moss layer is well developed and dominated by *Pleurozium schreberi,* with lower abundance of *Hylocomium splendens* and *Ptilium crista-castrensis*.

Environment: CNVC00128 occurs in a subhumid continental boreal climate. It is most commonly found on moist, nutrient-poor to medium sites, although it can occupy a wide range of site conditions. Stands are usually on level sites. Soils are often deep, but textures and parent materials are variable; fluvial, morainal, lacustrine and glaciofluvial parent materials are most common. Humus forms are predominantly mors.

CNVC00128 occurs where the regional fire cycle is intermediate (100-270 years). Fire cycle length and site conditions influence the relative dominance of *Picea mariana* and *Pinus banksiana* in each stand. Moister sites and longer fire cycles favour *P. mariana*.

Source: R. Wright

Soil Nutrient Regime — Poor / Medium / Rich (horizontal axis); **Soil Moisture Regime** — Dry / Mesic / Moist / Wet (vertical axis). Shaded area spans Poor–Medium nutrient and Mesic–Moist moisture.

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens) CNVC00128

Type Description (cont'd)

Dynamics: CNVC00128 usually recolonizes after fire, although it can also succeed earlier seral Associations in which pioneer species are dominant. The initial cohort consists of *Picea mariana*, sometimes with *Pinus banksiana*. Both of these species rarely survive fire but have cones that open when heated to disperse seeds. Seedbeds are usually improved by a fire that reduces organic matter thickness and exposes mineral soil. Fire can also reduce competing vegetation and help to release nutrients from the organic matter. Maximum seed release can therefore coincide with optimal conditions for seedling establishment, survival and growth of both species; however, *P. mariana* typically establishes more successfully than *P. banksiana* on these moister sites.

Where both species are present in the initial post-fire stand, *P. banksiana* grows more rapidly so it can dominate, with *P. mariana* in the understory or subcanopy (e.g., CNVC00323 [*Pinus banksiana – Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)*]). *P. mariana* is longer lived, more shade tolerant and better able to regenerate in the absence of fire, so it can become dominant on these sites over time, forming CNVC00128. These older stands develop an uneven-age structure.

On occasion, *Populus tremuloides* or *Betula papyrifera* can play a greater role in the initial post-fire stand (e.g., CNVC00125 [*Populus tremuloides – Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea*]). Unless the time between successive fires is short (<100 years), this early seral condition can succeed to CNVC00128 as *P. mariana* becomes dominant and self-replaces over time.

Range: CNVC00128 occurs on the boreal plains in west-central Canada from northwestern Alberta to western Manitoba.

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: Alberta, Manitoba, Saskatchewan

Terrestrial Ecozones and Ecoregions of Canada: Boreal Plains: Boreal Transition, Mid-Boreal Lowland, Mid-Boreal Uplands, Peace Lowland, Wabasca Lowland, Western Boreal; Taiga Plains: Northern Alberta Uplands

Rowe's Forest Regions and Sections of Canada: Boreal: Hay River, Manitoba Lowlands, Mixedwood, Northern Coniferous, Upper Churchill

**NAAEC CEC Ecoregions of North America (Levels I & II):** Northern Forests: Boreal Plains; Taiga: Taiga Plains

Nature Conservancy of Canada Ecoregions: Boreal Plains, Taiga Plains

Natural Regions and Subregions of Alberta: Boreal Forest: Boreal Subarctic, Central Mixedwood, Dry Mixedwood, Lower Boreal Highlands, Northern Mixedwood, Upper Boreal Highlands

Ecozones and Ecoregions of Saskatchewan: Boreal Plain: Boreal Transition, Mid-Boreal Lowland, Mid-Boreal Upland

Ecozones and Ecoregions of Manitoba: Boreal Plains

Manitoba Protected Areas Initiative Natural Regions: Manitoba Lowlands, Western Upland

Plot locations
Extent of plot sampling
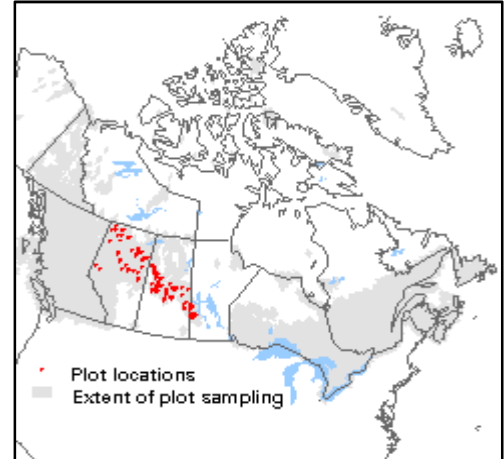
Corresponding Types and Associations

CNVC00128	Alberta	NN/BH/G/01/01	Sb - Pj / Labrador tea / feather moss
		NN/BM/G/01/01	Sb - Pj / Labrador tea / feather moss
		NN/BM/G/01/02	Sb - Pj / feather moss
		NN/SB/E/01/02	Sb - Pl / feather moss
	Saskatchewan	BP14	Black spruce / Labrador tea / feathermoss: Very moist sandy clay loam

Forest / Forêt   **Association CNVC00128**

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)
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Vegetation Summary*

Species Name†	Association CNVC00128 103 plots	
	% Cover±	% Presence^
Overstory Trees		
Picea mariana	**37**	**99**
Pinus banksiana	18	44
Populus tremuloides	14	30
Betula papyrifera	5	22
Picea glauca	19	21
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)‡	**(18 30 54 76 98)**	
Understory Woody Shrubs and Regenerating Trees		
Rhododendron groenlandicum	13	79
Picea mariana	6	67
Vaccinium myrtilloides	4	56
Rosa acicularis	2	56
Salix sp.	2	26
Viburnum edule	2	21
Populus tremuloides	1	20
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)‡	**(2 4 23 34 58)**	
Understory Herbs and Dwarf Shrubs		
Vaccinium vitis-idaea	**5**	**70**
Cornus canadensis	3	63
Linnaea borealis	1	53
Petasites frigidus	2	42
Chamerion angustifolium	1	35
Rubus pubescens	1	31
Equisetum arvense	3	30
Mitella nuda	3	29
Equisetum sylvaticum	2	28
Maianthemum canadense	1	27
Poaceae	2	25
Equisetum scirpoides	2	24
Geocaulon lividum	2	24
Fragaria virginiana	1	20
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)‡	**(1 4 16 18 39)**	
Bryophytes and Lichens		
Pleurozium schreberi	**40**	**94**
Hylocomium splendens	**18**	**90**
Ptilium crista-castrensis	5	66

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens) CNVC00128

Vegetation Summary (cont'd)*

Species Name†	Association CNVC00128 % Cover±	% Presence^
Cladonia sp.	2	65
Evernia mesomorpha	1	49
Cladina mitis	6	47
Parmelia sulcata	1	46
Dicranum sp.	1	44
Peltigera sp.	1	42
Hypogymnia physodes	2	40
Dicranum polysetum	1	35
Peltigera aphthosa	1	34
Vulpicida pinastri	1	32
Cladina rangiferina	4	26
Bryo-Lichen Stratum Cover		
(P_{10} P_{25} Mean P_{75} P_{90})‡	**(26 50 70 95 100)**	

* 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)

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Site / Soil Characteristics

Association
CNVC00128
103 plots

Elevation Range (min–mean–max meters)

257–520–870
missing data (12)

Slope Gradient (% frequency)

moderately steep (1)
moderate (2)
gentle (6)
level (86)
missing data (5)

Aspect (% frequency)

north (12)
east (6)
south (12)
west (5)
level (59)
missing data (7)

Meso Topoposition (% frequency)

crest / upper (10)
mid (9)
lower / toe (13)
depression (2)
level (60)
missing data (7)

Moisture Regime (% frequency)

very dry (1)
dry (3)
mesic (22)
moist (62)
wet (12)

Nutrient Regime (% frequency)

poor (23)
medium (9)
missing data (68)

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens) CNVC00128

Site / Soil Characteristics (cont'd)

	Association CNVC00128
Soil Parent Material (% frequency)	
	bedrock (1)
	eolian (3)
	moraine / till (23)
	fluvial (31)
	glaciofluvial (13)
	lacustrine (17)
	glaciolacustrine (2)
	organic (7)
	missing data (4)
Soil Rooting Zone Substrate (% frequency)	
	non-soil (1)
	sandy (1)
	coarse loamy (2)
	fine loamy (5)
	clayey (7)
	organic (7)
	missing data (78)
Root Restricting Depth (% frequency)	
	0 – 20 cm (1)
	≥ 100 cm (63)
	missing data (36)
Humus Form (% frequency)	
	mor (79)
	peatymor (1)
	missing data (20)

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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:

CNVC00120 [*Pinus contorta – Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi*] occurs on comparable boreal and foothills sites in western Alberta and northern British Columbia and has codominance of *Pinus contorta* var. *latifolia*.

CNVC00244 [*Picea mariana – Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea / Cladina* spp.] occurs on drier, poorer sites on the Precambrian Shield from Saskatchewan to northwestern Ontario and has a more open tree layer and a moss layer with lower cover of feathermosses and more of *Cladina* lichens.

CNVC00249 [*Picea mariana (Pinus banksiana) / Vaccinium myrtilloides / Pleurozium schreberi*] occurs on the Precambrian Shield from Alberta to northwestern Ontario on comparable sites. It has lower herb diversity because of the poorer nutrient status of the glacial soils on the Shield.

CNVC00323 [*Pinus banksiana – Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)*] typically occurs on drier sites in the same range and is dominated by *Pinus banksiana* rather than *Picea mariana* (see Dynamics).

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

In southwestern Manitoba, CNVC00128 best matches the concepts of ES43 [Black Spruce - Larch - Jack Pine - Feathermoss on Moist Sandy to Silty Soil] and ES53 [Black Spruce - Jack Pine - Feathermoss - Labrador-tea on Moist Fine Loamy to Clayey Soil] and partially matches the concepts of ES24 [Jack Pine - Black Spruce - Mixedwood on Fresh Coarse Loamy to Silty Soil] and ES36 [Black Spruce - Jack Pine - Feathermoss on Fresh Fine Loamy Soil] in Arnup et al. 2006.

Comments

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens) CNVC00128

Source Information

Number of source plots for CNVC00128: 103

Information Sources:

Alberta Environment and Parks. 2014. Ecological Site Information System (ESIS). Govt. AB, Edmonton, AB.

McLaughlan, M.S.; Wright, R.A.; Jiricka, R.D. 2010. Saskatchewan forest ecosystem classification [data set]. Sask. Min. Environ. For. Serv., Prince Albert, SK.

Concept Authors: L. Allen, K. Baldwin, K. Chapman, M. McLaughlan

Description Authors: K. Baldwin and K. Chapman

Date of Concept: November, 2011

Date of Description: March, 2016

Classification References:

Beckingham, J.D.; Archibald, J.H. 1996. Field guide to ecosites of northern Alberta. Nat. Resour. Can., Can. For. Serv., North. For. Cent., Edmonton, AB. Spec. Rep. 5.

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Characterization References:

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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.

Parisien, M.A.; Hirsch, K.G.; Lavoie, S.G.; Todd, J.B.; Kafka, V.G. 2004. Saskatchewan fire regime analysis. Can. For. Serv., North. For. Cent., Edmonton, AB. Info. Rep. NOR-X-394.

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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.

Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens) CNVC00128

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.