



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00130

Picea mariana* / *Equisetum arvense* (*E. pratense*) / *Hylocomium splendens

Black Spruce / Field Horsetail (Meadow Horsetail) / Stairstep Moss

Épinette noire / Prêle des champs (Prêle des prés) / Hylonomie brillante

Subassociations: none

CNVC Alliance: CA00050 *Picea mariana* (*Larix laricina*) / *Vaccinium vitis-idaea* – *Equisetum* spp.

CNVC Group: CG0022 West-Central Boreal Black Spruce – Tamarack Poor – Intermediate Treed Wetland

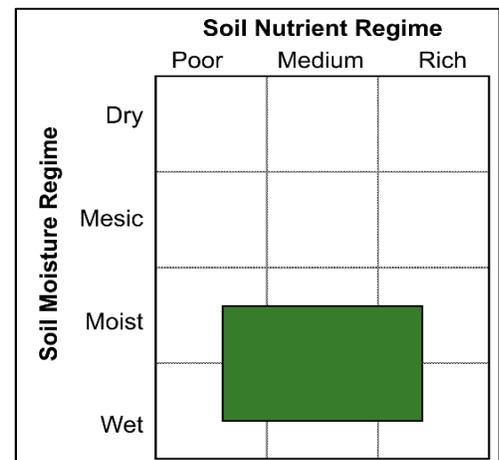
Type Description

Concept: CNVC00130 is a boreal wetland coniferous forest Association that occurs in Alberta. It usually has a moderately closed canopy that is dominated by black spruce (*Picea mariana*). White spruce (*P. glauca*) is often present but is seldom the leading species. Common Labrador tea (*Rhododendron groenlandicum*) is the main species in the moderately developed shrub layer, which typically also includes low cover of *Rosa acicularis*. The herb and dwarf shrub layer is dense and characterized by abundant horsetails (chiefly *Equisetum arvense* but also *E. scirpoides*, *E. sylvaticum* and *E. pratense*). This layer also commonly includes lingonberry (*Vaccinium vitis-idaea*), arctic sweet coltsfoot (*Petasites frigidus*), naked mitrewort (*Mitella nuda*), bunchberry (*Cornus canadensis*) and twinflower (*Linnaea borealis*). A continuous moss layer of stairstep moss (*Hylocomium splendens*), red-stemmed feathermoss (*Pleurozium schreberi*) and knight's plume moss (*Ptilium crista-castrensis*) further characterizes this Association. CNVC00130 occurs mainly on moist to wet, nutrient-medium sites in a region with a subhumid continental climate. Stands typically establish after fire or flooding and are self-replacing over time.

Vegetation: CNVC00130 is a coniferous forest Association with a moderately closed canopy dominated by *Picea mariana* with *P. glauca* as a common associate. The moderately developed shrub layer typically includes patches of *Rhododendron groenlandicum* and scattered *Rosa acicularis*. An important diagnostic feature of this Association is a dense herb and dwarf shrub layer with abundant *Equisetum* spp., including *E. arvense*, *E. scirpoides*, *E. sylvaticum* and *E. pratense*. This layer usually also includes *Vaccinium vitis-idaea*, *Petasites frigidus*, *Mitella nuda*, *Cornus canadensis* and *Linnaea borealis*. A continuous moss layer of *Hylocomium splendens*, *Pleurozium schreberi* and *Ptilium crista-castrensis* further characterizes this Association. *Sphagnum* spp. occur infrequently but can be locally abundant and are associated with wet organic soils.

Environment: CNVC00130 occurs in a subhumid continental boreal climate on moist to wet sites. It typically occupies the ecotone between upland and wetland forests. Stands are usually small in extent and are often found on lower or toe-slope topopositions where seepage enhances moisture and nutrient conditions. Stands also occur in level areas and shallow depressions, often on stream terraces and along pond shorelines. Soils are typically organic or fine-textured mineral soils developed in imperfectly to poorly drained till or (glacio)lacustrine parent materials. Nutrient regime varies from poor to rich, but sites are most frequently nutrient-medium.

Within the range of CNVC00130 regional fire cycles are short (<100 years) or intermediate (100-270 years). However, these stands often occur where there are natural fire breaks (e.g., water bodies) and may be less prone to fire than the surrounding landscape because of their moisture status.





***Picea mariana* / *Equisetum arvense* (*E. pratense*) / *Hylocomium splendens* CNVC00130**

Type Description (cont'd)

Dynamics: CNVC00130 is a self-perpetuating condition that is usually re-initiated by stand-replacing fire. Both *Picea* species have thin bark and rarely survive even low-severity fires. *P. mariana* has semi-serotinous cones that open when heated to disperse seeds. Its seeds can germinate on a variety of substrates, and seedbeds are usually improved by a fire that reduces the 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 for *P. mariana* can therefore coincide with optimal conditions for seedling establishment, survival and growth. *P. glauca* becomes established in these stands when seeds are disseminated from nearby sources, either immediately post-fire or by ingress into the stand over time. Both *Picea* species are tolerant of shade and able to self-replace once established in a stand. Over time, stands develop a multilayered canopy through understory regeneration. The relative proportions of *P. mariana* and *P. glauca* are partly determined by seed availability and partly by site, the latter favouring somewhat drier sites.

These sites are susceptible to water table fluctuations (either by anthropogenic activities or natural causes [e.g., beaver dams]). A rise in the water table could result in tree mortality and transition to open wetland vegetation. After disturbance, rapid growth of early successional shrub and grass species can compete with regenerating conifers on these sites and delay stand re-establishment. This can be particularly problematic after harvesting when tree removal can contribute to a rise in the water table by reducing evapotranspiration.

Range: CNVC00130 occurs in the Rocky Mountain foothills and boreal plains of Alberta.

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

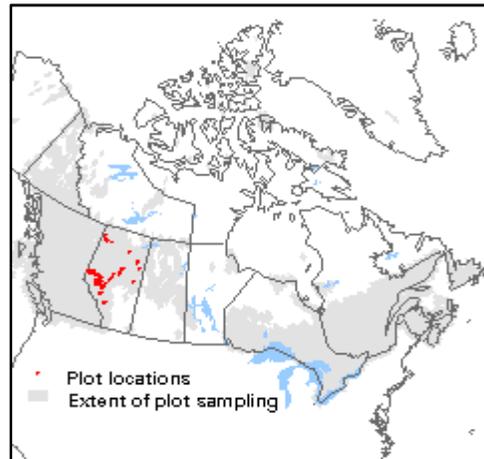
Terrestrial Ecozones and Ecoregions of Canada: Boreal Plains: Mid-Boreal Uplands, Peace Lowland, Wabasca Lowland, Western Alberta Upland

Rowe's Forest Regions and Sections of Canada: Boreal: Hay River, Lower Foothills, Mixedwood, Upper Foothills; Subalpine: East Slope Rockies

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

Nature Conservancy of Canada Ecoregions: Boreal Plains

Natural Regions and Subregions of Alberta: Boreal Forest: Central Mixedwood, Lower Boreal Highlands; Foothills: Lower Foothills, Upper Foothills



Corresponding Types and Associations

CNVC00130	Alberta	NN/BM/H/01/01	Sw – Sb / Labrador tea / horsetail
		WC/LF/J/01/01	Sb – Sw / Labrador tea / horsetail
		WC/UF/I/01/01	Sb – Sw / Labrador tea / horsetail



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Vegetation Summary*

Species Name [†]	Association CNVC00130	
	50 plots	
	% Cover [‡]	% Presence [^]
Overstory Trees		
<i>Picea mariana</i>	43	92
<i>Picea glauca</i>	23	58
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(30 41 55 67 81)	
Understory Woody Shrubs and Regenerating Trees		
<i>Rhododendron groenlandicum</i>	15	98
<i>Rosa acicularis</i>	4	72
<i>Lonicera involucrata</i>	4	56
<i>Picea mariana</i>	4	38
<i>Ribes lacustre</i>	1	32
<i>Salix</i> sp.	3	28
<i>Ribes triste</i>	1	28
<i>Viburnum edule</i>	2	24
<i>Picea glauca</i>	4	22
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(11 17 35 43 73)	
Understory Herbs and Dwarf Shrubs		
<i>Vaccinium vitis-idaea</i>	6	82
<i>Petasites frigidus</i>	3	82
<i>Equisetum arvense</i>	21	80
<i>Mitella nuda</i>	2	72
<i>Cornus canadensis</i>	7	62
<i>Linnaea borealis</i>	5	62
<i>Equisetum scirpoides</i>	6	60
<i>Mertensia paniculata</i>	2	58
<i>Achillea millefolium</i>	1	54
<i>Calamagrostis canadensis</i>	3	52
<i>Galium boreale</i>	1	46
<i>Equisetum sylvaticum</i>	17	42
<i>Equisetum pratense</i>	13	42
<i>Rubus pubescens</i>	2	42
<i>Chamerion angustifolium</i>	3	38
<i>Maianthemum trifolium</i>	2	38
<i>Carex vaginata</i>	6	32
<i>Symphyotrichum ciliolatum</i>	2	32
<i>Geocaulon lividum</i>	2	30
<i>Fragaria virginiana</i>	1	28
<i>Orthilia secunda</i>	1	26
<i>Leymus innovatus</i>	2	24



***Picea mariana* / *Equisetum arvense* (*E. pratense*) / *Hylocomium splendens* CNVC00130**

Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00130	
	Cover [‡] %	Presence [^] %
<i>Rubus arcticus</i>	2	24
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(29 40 67 94 100)	
Bryophytes and Lichens		
<i>Hylocomium splendens</i>	41	98
<i>Pleurozium schreberi</i>	26	78
<i>Ptilium crista-castrensis</i>	24	74
<i>Peltigera aphthosa</i>	2	62
<i>Sphagnum</i> sp.	7	52
<i>Aulacomnium palustre</i>	8	48
<i>Tomentypnum nitens</i>	2	36
<i>Cladonia</i> sp.	3	34
<i>Dicranum fuscescens</i>	1	28
<i>Pohlia nutans</i>	7	26
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(82 88 92 100 100)	

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



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Site / Soil Characteristics

Association
CNVC00130

50 plots

Elevation Range (min–mean–max meters)

290–945–1430
missing data (10)

Slope Gradient (% frequency)

moderate (6)
gentle (16)
level (60)
missing data (18)

Aspect (% frequency)

north (12)
east (10)
south (10)
west (20)
level (30)
missing data (18)

Meso Toposition (% frequency)

crest / upper (2)
mid (2)
lower / toe (14)
depression (8)
level (36)
missing data (38)

Moisture Regime (% frequency)

mesic (6)
moist (42)
wet (52)

Nutrient Regime (% frequency)

poor (34)
medium (36)
rich (28)
missing data (2)



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Site / Soil Characteristics (cont'd)

Association
CNVC00130

Soil Parent Material (% frequency)

colluvium (4)
moraine / till (24)
fluvial (10)
glaciofluvial (4)
lacustrine (4)
glaciolacustrine (22)
organic (30)
missing data (2)

Soil Rooting Zone Substrate (% frequency)

non-soil (4)
coarse loamy (2)
fine loamy (6)
silty (2)
clayey (8)
organic (38)
missing data (40)

Root Restricting Depth (% frequency)

missing data (100)

Humus Form (% frequency)

mor (10)
peatymor (10)
missing data (80)



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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:

CNVC00096 [*Picea glauca* / *Equisetum arvense* – *E. pratense*] occurs on richer sites that are not as wet in the same range. It is *Picea glauca* dominated, has greater *Viburnum edule* and less *Rhododendron groenlandicum* in the shrub layer and a moss layer with less *Sphagnum* spp.

CNVC00110 [*Picea glauca* – *P. mariana* / *Mertensia paniculata* / *Hylocomium splendens*] occurs on sites that are not as wet in the same range. It lacks understory dominance of *Equisetum* spp.

CNVC00113 [*Picea mariana* / *Equisetum arvense* / *Sphagnum* spp. – *Hylocomium splendens*] occurs in the same range on wetter sites that are nutrient-poor to medium. It has a more open, mostly pure, tree layer of *Picea mariana* and greater abundance of *Sphagnum* mosses.

CNVC00114 [*Picea mariana* / *Salix myrtilifolia* / *Hylocomium splendens* – *Aulacomnium palustre*] occurs in the same range but typically at higher elevations or latitudes (i.e., colder sites). It has greater abundance of *Salix myrtilifolia* in the shrub layer, less *Equisetum* spp. in the herb layer and greater *Aulacomnium palustre* in the moss layer.

CNVC00116 [*Larix laricina* – *Picea mariana* / *Betula pumila* – *B. glandulosa* / *Tomentypnum nitens*] occurs in the same range on wetter sites. It has greater *Larix laricina* in the tree and shrub layers and much less *Equisetum* spp. in the herb layer.

CNVC00128 [*Picea mariana* / *Vaccinium vitis-idaea* / *Pleurozium schreberi* (*Hylocomium splendens*)] occurs on moist, nutrient-poor to medium sites on the boreal plains from northwestern Alberta to Manitoba. It lacks the abundance of *Equisetum* spp. in the herb layer, and *Pleurozium schreberi*, rather than *Hylocomium splendens*, dominates the moss layer.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

CNVC00130 is consistent with the concept of a coniferous treed swamp in the Canadian Wetland Classification System.



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Source Information

Number of source plots for CNVC00130: 50

Information Sources:

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

Concept Authors: L. Allen, J. Archibald, K. Baldwin and K. Chapman

Description Authors: D. Downing, K. Chapman and K. Baldwin

Date of Concept: March, 2013

Date of Description: November, 2017

Classification References:

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

Beckingham, J.D.; Corns, I.G.W.; Archibald, J.H. 1996. Field guide to ecosites of west-central Alberta. Nat. Resour. Can., Can. For. Serv., North. For. Centre, Edmonton, AB. Spec. Rep. 9.

Characterization References:

Andison, D.W. 1998. Temporal patterns of age-class distributions on foothills landscapes in Alberta. *Ecography* 21(5):543-550.

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.

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Horton, K.W.; Lees, J.C. 1961. Black spruce in the foothills of Alberta. Can. Dept. For., For. Res. Branch., AB. Tech. Note No. 110.

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

Smith, K.B.; Smith, C.E.; Forest, S.F.; Richard, A.J. 2007. A field guide to the wetlands of the Boreal Plains ecozone of Canada. Ducks Unlimited Canada, Western Boreal Office, Edmonton, AB.

Stockdale, C. 2014. Fire regimes of western boreal Canada and the foothills of Alberta. A discussion document and literature review for the LANDWEB Project.



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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>.

Suggested Citation: D. Downing, K. Chapman and K. Baldwin. *Picea mariana* / *Equisetum arvense* (*E. pratense*) / *Hylocomium splendens* [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. November, 2017; generated Nov-20-2017; cited ENTER DATE ACCESSED. 10 p. Canadian National Vegetation Classification Association: CNVC00130. Available from <http://cnvc-cnvc.ca>. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.