



Forest / Forêt

Association CNVC00079

***Picea glauca* – *Betula papyrifera* (*Populus tremuloides*) / *Equisetum arvense* – *E. pratense***

White Spruce – Paper Birch (Trembling Aspen) / Field Horsetail – Meadow Horsetail

Épinette blanche – Bouleau à papier (Peuplier faux-tremble) / Prêle des champs – Prêle des prés

**Subassociations:** 79a *typic*, 79b *Alnus incana*

**CNVC Alliance:** CA00037 *Picea glauca* / *Equisetum arvense* – *E. pratense*

**CNVC Group:** CG0015 Cordilleran Boreal Moist White Spruce – Trembling Aspen (Balsam Poplar) Forest

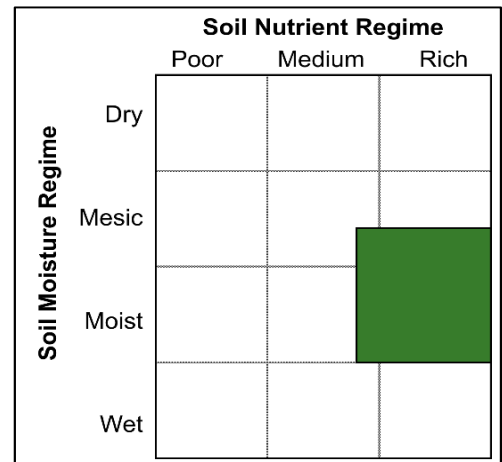


Source: Yukon government

### Type Description

**Concept:** CNVC00079 is a boreal mixedwood forest Association that occurs in Alberta, Yukon and likely British Columbia. It has an open to moderately closed canopy, usually dominated by white spruce (*Picea glauca*) with paper birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*) or balsam poplar (*P. balsamifera*) as canopy associates. It has a relatively diverse understory. The shrub layer is usually well developed and commonly includes prickly rose (*Rosa acicularis*) and squashberry (*Viburnum edule*). A well-developed, species-rich herb and dwarf shrub layer dominated by field horsetail (*Equisetum arvense*) and/or meadow horsetail (*E. pratense*) characterizes this Association. Other common species include tall bluebells (*Mertensia paniculata*), bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), naked mitrewort (*Mitella nuda*) and dwarf raspberry (*Rubus pubescens*). The moss layer is poorly to moderately developed depending on the amount of broad-leaf litter on the forest floor and is dominated by feathermosses (*Hylocomium splendens*, *Pleurozium schreberi* and *Ptilium crista-castrensis*). CNVC00079 occurs on moist, nutrient-rich sites (often floodplains) in a region with a subhumid continental climate. It is a mid-seral condition that can succeed an early seral post-fire hardwood Association or develop after low-severity fires or partial disturbances, such as insect outbreaks, flooding or windthrow, in a late-seral white spruce forest. Two subassociations are recognized, *typic* and *Alnus incana*.

**Vegetation:** CNVC00079 is a mixedwood forest Association with an open to moderately closed canopy of *Picea glauca* and any combination of *Betula papyrifera*, *Populus tremuloides* or *P. balsamifera*. The understory is relatively species rich. *Rosa acicularis* and *Viburnum edule* are common, and sometimes abundant, in the well-developed shrub layer. Abundance of *Alnus incana* (see Comments) in the shrub layer distinguishes a subassociation with that name. The herb and dwarf shrub layer is well developed and characterized by dominance of *Equisetum arvense* and/or *E. pratense*, with lower cover of several other species including *Mertensia paniculata*, *Cornus canadensis*, *Linnaea borealis*, *Mitella nuda* and *Rubus pubescens*. *Calamagrostis canadensis* may be locally abundant in larger canopy openings in the Alberta (and likely British Columbia) portion of the range. The moss layer is poorly to moderately developed and usually includes *Hylocomium splendens*, *Pleurozium schreberi* and *Ptilium crista-castrensis*. The moss layer is typically better developed in stands with less broad-leaf litter (i.e., greater conifer cover).





***Picea glauca* – *Betula papyrifera* (*Populus tremuloides*) / *Equisetum arvense* – *E. pratense* CNVC00079**

### Type Description (cont'd)

**Environment:** CNVC00079 occurs in a subhumid continental climate on moist, nutrient-rich sites. It is typically found on floodplains, in narrow linear bands along rivers and lakeshores, or in localized stands on valley slopes. These are some of the most productive sites in this region of the boreal. Stands are frequently on level sites or lower and toe-slope topopositions. Soils are often fine textured and parent materials, although variable, are most commonly fluvial. The medium to high nutrient status of these sites is maintained by cation-rich mineral substrates (e.g., fine loams, silts and clays) that are replenished by occasional flooding or by nutrient-rich seepage or groundwater fluctuation. Mor and moder humus forms are common, although peatmors can develop over time on sites that are not usually flooded.

Within the range of CNVC00079 regional fire cycles are short (<100 years), intermediate (100-270 years) or long (270-500 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.

**Dynamics:** CNVC00079 is a mid-seral condition that can succeed an early seral Association that establishes after fire or flooding (e.g., CNVC00078 [*Populus balsamifera* – *P. tremuloides* / *Equisetum arvense* – *E. pratense*]) or form when a partial disturbance like low-severity fire, flooding, insect outbreak or windthrow, occurs in a late-seral condition such as CNVC00096 [*Picea glauca* / *Equisetum arvense* – *E. pratense*].

After stand-replacing disturbance (especially fire), *Picea glauca* is usually eliminated. Instead, the pioneer species *Populus balsamifera*, *P. tremuloides* and/or *Betula papyrifera* are likely to form the initial stand on these sites because they are adapted to disturbance (e.g., CNVC00078). *P. glauca* becomes established in these stands when seeds are disseminated from nearby sources, either at the same time as the pioneer hardwoods or by ingress into the stand over time. It grows more slowly, so usually requires several decades to attain canopy height and form CNVC00079. CNVC00096 may develop over time in the continued absence of stand-replacing disturbance (usually at least 100 years).

After disturbance, species such as *Calamagrostis canadensis* and *Alnus incana* can be highly competitive with regenerating *P. glauca* on these sites and delay stand re-establishment. *A. incana* can form dense thickets in canopy openings, particularly after harvesting when tree removal can contribute to a rise in the water table by reducing evapotranspiration. Being moderately shade tolerant, *A. incana* persists even as the canopy closes, limiting light available for plants beneath it.

**Range:** CNVC00079 occurs in boreal regions of Alberta and Yukon and likely in British Columbia. It also occurs in the Rocky Mountain foothills, and likely montane, regions of Alberta.

### Conservation Status (NatureServe)

**Global Conservation Rank:** no applicable rank

**National Conservation Rank:** not yet determined

**Subnational Conservation Rank:** not yet determined



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

<http://cnvc-cnvc.ca>

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## Distribution

**Countries:** Canada

**Provinces / Territories / States:** Alberta, British Columbia, Yukon

**Terrestrial Ecozones and Ecoregions of Canada:** Boreal Cordillera: Klondike Plateau, Hyland Highland, Liard Basin, Yukon Plateau - North; Boreal Plains: Boreal Transition, Clear Hills Upland, Mid-Boreal Uplands, Muskwa Plateau, Peace Lowland, Wabasca Lowland, Western Alberta Upland, Western Boreal; Boreal Shield

**Rowe's Forest Regions and Sections of Canada:** Boreal: Alpine Forest - Tundra, Central Yukon, Dawson, Eastern Yukon, Hay River, Lower Foothills, Mixedwood, Upper Liard, Upper Mackenzie

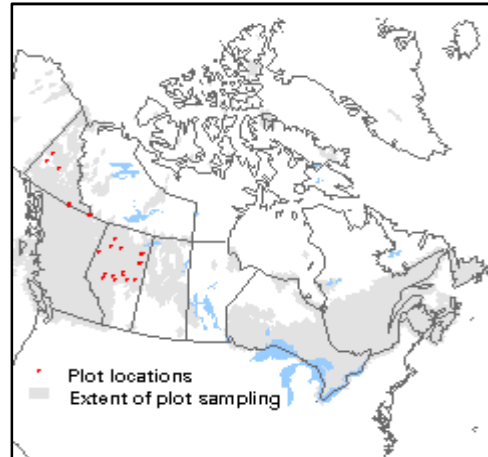
**NAAEC CEC Ecoregions of North America (Levels I & II):** Northern Forests: Boreal Plains, Softwood Shield; Northwestern Forested Mountains: Boreal Cordillera; Taiga: Taiga Plains

**Nature Conservancy of Canada Ecoregions:** Boreal Cordillera, Boreal Plains, Boreal Shield, Taiga Plains, Yukon Plateau and Flats

**Ecozones and Ecoregions of the Yukon:** Boreal Cordillera: Hyland Highland, Klondike Plateau, Liard Basin, Yukon Plateau - North; Boreal Plains: Muskwa Plateau

**Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones):** BWBS

**Natural Regions and Subregions of Alberta:** Boreal Forest: Athabasca Plain, Central Mixedwood, Dry Mixedwood, Lower Boreal Highlands; Foothills: Lower Foothills



## Corresponding Types and Associations

<b>79a <i>typic</i></b>	Yukon	ASw30	<i>Populus tremuloides</i> – <i>Picea glauca</i> / <i>Equisetum</i> spp. – <i>Cornus canadensis</i>
		SwW34	<i>Picea glauca</i> – <i>Betula neoalaskana</i> / <i>Cornus stolonifera</i> – <i>Viburnum edule</i> / <i>Equisetum arvense</i>
	Alberta	NN/BM/E/02/05	Pb - Sw / fern / feather moss
		NN/BM/F/02/01	Pb - Sw / horsetail
		WC/LF/1/02/01	Pb - Sw / horsetail
<b>79b <i>Alnus incana</i></b>	Yukon	ASw29	<i>Populus tremuloides</i> – <i>Picea glauca</i> / <i>Alnus incana</i> / <i>Rubus pubescens</i> – <i>Equisetum</i> spp.



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Vegetation Summary\*

Species Name <sup>†</sup>	Association CNVC00079		Subassociation 79a <i>typic</i>		Subassociation 79b <i>Alnus incana</i>	
	54 plots		50 plots		4 plots	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<b>Overstory Trees</b>						
<i>Picea glauca</i>	23	100	22	100	25	100
<i>Betula papyrifera</i>	15	80	15	84	1	25
<i>Populus tremuloides</i>	15	35	15	30	11	100
<i>Populus balsamifera</i>	10	28	11	28	1	25
<i>Picea mariana</i>	4	7	4	6	1	25
<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>(21 30 46 61 78)</b>		<b>(21 30 47 63 78)</b>		<b>(31 32 37 39 45)</b>	
<b>Understory Woody Shrubs and Regenerating Trees</b>						
<i>Rosa acicularis</i>	11	94	12	94	9	100
<i>Viburnum edule</i>	9	91	9	92	8	75
<i>Cornus stolonifera</i>	7	57	7	58	6	50
<i>Betula papyrifera</i>	8	54	8	54	6	50
<i>Picea glauca</i>	4	50	4	50	2	50
<i>Rubus idaeus</i>	2	35	2	36	1	25
<i>Ribes lacustre</i>	2	35	2	38	-	-
<i>Alnus incana</i>	14	31	11	26	22	100
<i>Salix sp.</i>	6	31	5	32	10	25
<i>Shepherdia canadensis</i>	4	24	4	22	3	50
<i>Alnus viridis</i>	6	20	6	20	5	25
<i>Lonicera involucrata</i>	3	20	3	22	-	-
<i>Populus balsamifera</i>	2	20	2	20	1	25
<i>Populus tremuloides</i>	5	15	4	14	11	25
<i>Lonicera dioica</i>	1	13	1	12	1	25
<i>Ribes oxycanthoides</i>	2	11	2	10	1	25
<i>Picea mariana</i>	1	7	1	6	1	25
<i>Ribes glandulosum</i>	2	6	2	4	1	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>(21 29 45 59 77)</b>		<b>(20 29 44 59 77)</b>		<b>(31 42 52 64 72)</b>	
<b>Understory Herbs and Dwarf Shrubs</b>						
<i>Mertensia paniculata</i>	3	85	3	88	1	50
<i>Equisetum arvense</i>	17	83	18	86	9	50
<i>Cornus canadensis</i>	7	74	6	76	30	50
<i>Linnaea borealis</i>	4	72	4	74	9	50
<i>Mitella nuda</i>	4	70	4	72	6	50
<i>Rubus pubescens</i>	7	63	7	64	10	50
<i>Chamerion angustifolium</i>	4	50	4	52	< 1	25
<i>Aralia nudicaulis</i>	5	44	5	42	5	75
<i>Petasites frigidus</i>	2	37	2	38	< 1	25
<i>Equisetum pratense</i>	18	35	18	38	-	-



***Picea glauca* – *Betula papyrifera* (*Populus tremuloides*) / *Equisetum arvense* – *E. pratense* CNVC00079**

**Vegetation Summary (cont'd)\***

Species Name†	Association CNVC00079		Subassociation 79a <i>typic</i>		Subassociation 79b <i>Alnus incana</i>	
	Cover‡	Presence^	Cover‡	Presence^	Cover‡	Presence^
<i>Pyrola asarifolia</i>	1	35	1	38	-	-
<i>Calamagrostis canadensis</i>	9	30	9	32	-	-
<i>Equisetum scirpoides</i>	1	30	1	28	3	50
<i>Galium boreale</i>	1	30	1	32	-	-
<i>Circaea alpina</i>	2	22	2	24	-	-
<i>Maianthemum canadense</i>	1	22	1	24	-	-
<i>Vaccinium vitis-idaea</i>	7	20	7	22	-	-
<i>Orthilia secunda</i>	1	19	1	18	< 1	25
<i>Lycopodium annotinum</i>	1	17	1	16	1	25
<i>Geocaulon lividum</i>	4	15	4	14	< 1	25
<i>Pyrola sp.</i>	1	7	1	6	1	25
<i>Equisetum sp.</i>	10	4	10	2	10	25
<i>Pyrola minor</i>	1	2	-	-	1	25
<i>Solidago multiradiata</i>	< 1	2	-	-	< 1	25
<b>Herb Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)‡</b>	<b>(24 32 53 74 95)</b>		<b>(24 33 54 76 96)</b>		<b>(16 22 41 60 64)</b>	
<b>Bryophytes and Lichens</b>						
<i>Hylocomium splendens</i>	24	35	25	36	< 1	25
<i>Pleurozium schreberi</i>	14	30	14	32	-	-
<i>Ptilium crista-castrensis</i>	15	26	15	28	-	-
<i>Peltigera aphthosa</i>	< 1	6	1	4	< 1	25
<i>Dicranum sp.</i>	< 1	4	1	2	< 1	25
<b>Bryo-Lichen Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)‡</b>	<b>(1 10 36 51 87)</b>		<b>(1 10 38 60 87)</b>		<b>(2 4 14 22 27)</b>	

\* 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<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 CNVC00079 54 plots	Subassociation 79a <i>typic</i> 50 plots	Subassociation 79b <i>Alnus incana</i> 4 plots
<b>Elevation Range (min–mean–max meters)</b>	365–654–890 missing data (56)	365–644–870 missing data (54)	890–890–890 missing data (75)
<b>Slope Gradient (% frequency)</b>	gentle (4) level (46) missing data (50)	gentle (4) level (48) missing data (48)	gentle (0) level (25) missing data (75)
<b>Aspect (% frequency)</b>	north (4) east (6) south (11) west (2) level (15) missing data (63)	north (4) east (6) south (12) west (2) level (14) missing data (62)	north (0) east (0) south (0) west (0) level (25) missing data (75)
<b>Meso Toposition (% frequency)</b>	crest / upper (2) mid (7) lower / toe (9) depression (2) level (28) missing data (52)	crest / upper (2) mid (8) lower / toe (10) depression (2) level (28) missing data (50)	crest / upper (0) mid (0) lower / toe (0) depression (0) level (25) missing data (75)
<b>Moisture Regime (% frequency)</b>	mesic (7) moist (28) wet (2) missing data (63)	mesic (8) moist (30) wet (2) missing data (60)	mesic (0) moist (0) wet (0) missing data (100)
<b>Nutrient Regime (% frequency)</b>	medium (6) rich (31) missing data (63)	medium (6) rich (34) missing data (60)	medium (0) rich (0) missing data (100)



***Picea glauca* – *Betula papyrifera* (*Populus tremuloides*) / *Equisetum arvense* – *E. pratense* CNVC00079**

<b>Site / Soil Characteristics (cont'd)</b>			
	Association CNVC00079	Subassociation 79a <i>typic</i>	Subassociation 79b <i>Alnus incana</i>
<b>Soil Parent Material (% frequency)</b>			
	moraine / till (4)	moraine / till (4)	moraine / till (0)
	fluvial (19)	fluvial (20)	fluvial (0)
	glaciofluvial (2)	glaciofluvial (2)	glaciofluvial (0)
	lacustrine (9)	lacustrine (10)	lacustrine (0)
	glaciolacustrine (4)	glaciolacustrine (4)	glaciolacustrine (0)
	missing data (63)	missing data (60)	missing data (100)
<b>Soil Rooting Zone Substrate (% frequency)</b>			
	sandy (4)	sandy (4)	sandy (0)
	fine loamy (6)	fine loamy (6)	fine loamy (0)
	silty (4)	silty (2)	silty (25)
	clayey (6)	clayey (6)	clayey (0)
	missing data (81)	missing data (82)	missing data (75)
<b>Root Restricting Depth (% frequency)</b>			
	missing data (100)	missing data (100)	missing data (100)
<b>Humus Form (% frequency)</b>			
	mor (4)	mor (4)	mor (0)
	missing data (96)	missing data (96)	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:

CNVC00078 [*Populus balsamifera* – *P. tremuloides* / *Equisetum arvense* – *E. pratense*] is a similar hardwood Association that occurs on comparable sites in the same range (see Dynamics).

CNVC00083 [*Picea glauca* – *Populus tremuloides* – *P. balsamifera* / *Lonicera involucrata* / *Rubus pubescens*] occurs on moist to mesic, nutrient-rich to medium sites in the same range. It has less *Betula papyrifera* in the overstory and lacks dominance of *Equisetum* spp. in the understory.

CNVC00096 [*Picea glauca* / *Equisetum arvense* – *E. pratense*] is a similar conifer Association that occurs on comparable sites in the same range (see Dynamics).

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

### Comments

*Alnus incana* here refers to ssp. *tenuifolia* (mountain alder).

### Source Information

Number of source plots for CNVC00079: 54

Number of source plots for 79a typic: 50

Number of source plots for 79b *Alnus incana*: 4

Information Sources:

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

Ecosystem and Landscape Classification Program. 2017. YBECMaster ecosystem plot database [VPro13/MSAccess 2010 format]. Ecol. Land Class. Prog. Dept. Env., Govt. Yukon, Whitehorse, Yukon.

**Concept Authors:** L. Allen, J. Archibald, K. Baldwin, K. Chapman, N. Flynn, C. Kennedy, K. McKenna, D. Meidinger

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

**Date of Concept:** March, 2012

**Date of Description:** August, 2017





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**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.

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**Characterization References:**

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Peters, V.S.; Macdonald, E.; Dale, M.R.T. 2006. Patterns of initial versus delayed regeneration of white spruce in boreal mixedwood succession. *Can. J. For. Res.* 36:1597-1609.

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Uchytil, R.J. 1991. *Betula papyrifera*. In: Fire Effects Information System. U.S. Dept. Agric., For. Serv., Rocky Mt. Res. Stn., Fire Sci. Lab., Missoula, MT, US. Available: <http://www.fs.fed.us/database/feis/plants/tree/betpap/all.html> (accessed: May 27, 2015).

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>.

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