



Forest / Forêt

Association CNVC00118

***Pinus contorta* / *Vaccinium vitis-idaea* – *Arctostaphylos uva-ursi* / *Cladina* spp.**
Lodgepole Pine / Lingonberry – Common Bearberry / Reindeer Lichens
Pin tordu / Airelle rouge – Raisin d'ours / Cladonies

Subassociations: 118a *typic*, 118b *Rhododendron groenlandicum*
CNVC Alliance: CA00027 *Pinus contorta* / *Arctostaphylos uva-ursi* / *Cladina* spp.
CNVC Group: CG0012 Cordilleran Boreal Dry Lodgepole Pine Forest



Source: Yukon government

Type Description

Concept: CNVC00118 is a boreal coniferous forest Association that occurs in Yukon, British Columbia and Alberta. It has an open tree layer of lodgepole pine (*Pinus contorta*). Shrub layer development varies from sparse to dense, depending on the patchiness of shrubs, but is typically species poor. Prickly rose (*Rosa acicularis*) is usually common but not abundant. Common Labrador tea (*Rhododendron groenlandicum*) and, to a lesser extent, velvet-leaved blueberry (*Vaccinium myrtilloides*) can be abundant when present. The herb and dwarf shrub layer is moderately developed and usually dominated by lingonberry (*V. vitis-idaea*) and/or common bearberry (*Arctostaphylos uva-ursi*), with twinflower (*Linnaea borealis*) common but less abundant. The moss and lichen layer is usually moderately developed to continuous; clad (*Cladonia* spp.) and reindeer (*Cladina* spp.) lichens and red-stemmed feathermoss (*Pleurozium schreberi*) are the most abundant taxa. CNVC00118 occurs on dry, nutrient-poor sites in a region with a subhumid continental climate. These are among the driest, most nutrient-impooverished sites capable of supporting tree-dominated vegetation in the region. CNVC00118 is an early seral condition with dynamics that are driven by fire and limited by edaphic conditions. Two subassociations are distinguished, *typic* and *Rhododendron groenlandicum*.

Vegetation: CNVC00118 is a coniferous forest Association with an open tree layer of *Pinus contorta* (see Comments section). Sporadically, *Picea glauca* and *P. mariana* occur in the tree and/or shrub layers. The shrub layer is moderately developed in the *typic* subassociation, but dense in the *Rhododendron groenlandicum* subassociation, where there is abundant *R. groenlandicum*, and less abundant *Vaccinium myrtilloides*. *Rosa acicularis* is constant but low in cover in both subassociations. The herb and dwarf shrub layer is moderately developed and dominated by *Vaccinium vitis-idaea* and/or *Arctostaphylos uva-ursi*. *Linnaea borealis* is common, but generally occurs with low cover. The moss and lichen layer is characterized by abundant drought-tolerant lichens, especially *Cladina mitis* and *C. rangiferina* but also *C. stellaris* and *Cladonia* spp. Patches of *Pleurozium schreberi* are often present on moister microsites (e.g., shady areas and depressions). This layer is moderately developed in the *typic* subassociation and continuous in the *Rhododendron groenlandicum* subassociation, where there is more abundant *P. schreberi* as well as *Hylocomium splendens*.

Environment: CNVC00118 occurs in a subhumid continental boreal climate on dry, nutrient-poor sites; these are among the driest, poorest sites capable of supporting tree-dominated vegetation in the region. Stands are usually on level sites or water-shedding crest or upper to middle-slope topositions. On slopes, stands are more frequently on warmer (often drier) aspects, either south or west-facing. Soils are usually rapidly drained, coarse textured (sands or coarse loams) developed in (glacio)fluvial, morainal, or colluvial surficial deposits. Mor humus forms are typical.

CNVC00118 occurs where the regional fire cycle is intermediate (100-270 years), long (270-500 years) or even very long (>500 years). These stands may burn more frequently than the regional average.

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



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Type Description (cont'd)

Dynamics: CNVC00118 is an early seral Association that usually develops on edaphically limited sites where fire is the primary disturbance. *Pinus contorta* has medium thick bark, with only moderate tolerance to fire, but it reaches reproductive maturity at a young age and produces abundant seeds in serotinous cones. Moderate and high severity fire can melt the resin of cones to release their seeds.

CNVC00118 typically occurs on sites that do not support a closed canopy forest, but it can also result from regeneration failure in a closed stand (e.g., CNVC00120 [*Pinus contorta* – *Picea mariana* / *Vaccinium vitis-idaea* / *Pleurozium schreberi*]). This could happen when successive fires occur before trees have reached reproductive maturity, when a low severity fire kills trees without generating enough heat to release seeds or when seedling mortality is unusually high. The resulting open canopy promotes an increase in *Cladina* cover. Lichens dry out quickly, becoming a highly flammable and continuous fuel source, contributing to more frequent ignitions and faster-burning but lower severity fires that perpetuate the openness of the stand. Lichen cover can also inhibit conifer germination and seedling survival.

Although *P. contorta* is intolerant of shade, the open tree layer that characterizes this Association may allow the development of a sparse *P. contorta* understory. Insect outbreaks that kill mature trees (e.g., mountain pine beetle [*Dendroctonus ponderosae*]) can promote the establishment and growth of understory *P. contorta*. If tree regeneration is not present, or is killed by the outbreak, low shrubs, grasses and forbs could develop a more continuous understory layer in response to increased light, water and nutrient availability after the tree layer dies.

In recent years, mountain pine beetle has caused significant economic and ecological impacts on *P. contorta* forests in temperate British Columbia (BC). Recently the beetle has spread northward and eastward into boreal *P. contorta* forests, affecting even hybrid *Pinus x murraybanksiana* and *P. banksiana* stands. Climate change and forest management practices, including fire suppression, have likely contributed to these unprecedented beetle densities, as well as to the expansion of its range and host species. Since the mountain pine beetle is novel to boreal ecosystems, long-term effects on these forests are uncertain.

Range: CNVC00118 occurs in the boreal regions of Yukon, British Columbia and Alberta as well as the Rocky Mountain foothills and subalpine of Alberta. The *typic* subassociation is described from throughout the range of CNVC00118. The *Rhododendron groenlandicum* subassociation is only described from 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)

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Distribution

Countries: Canada

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

Terrestrial Ecozones and Ecoregions of Canada: Boreal Cordillera: Boreal Mountains and Plateaus, Liard Basin, Northern Canadian Rocky Mountains, Pelly Mountains, Yukon - Stikine Highlands, Yukon Southern Lakes; Boreal Plains: Clear Hills Upland, Muskwa Plateau, Peace Lowland, Western Alberta Upland; Montane Cordillera: Central Canadian Rocky Mountains, Eastern Continental Ranges, Omineca Mountains; Taiga Cordillera: Selwyn Mountains

Rowe's Forest Regions and Sections of Canada: Boreal: Central Yukon, Eastern Yukon, Lower Foothills, Northern Foothills, Stikine Plateau, Upper Foothills, Upper Liard, Upper Mackenzie; Subalpine: East Slope Rockies, Interior Subalpine

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

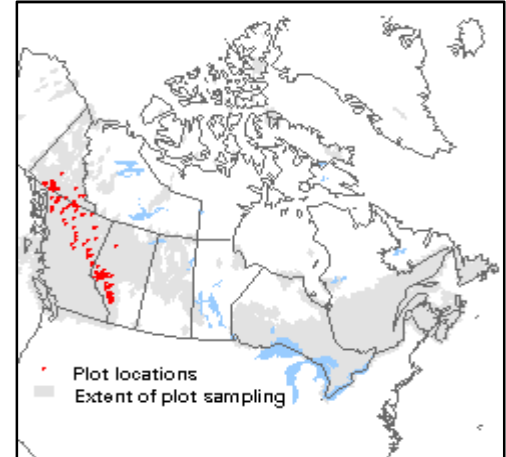
Nature Conservancy of Canada Ecoregions: Boreal Cordillera, Boreal Plains, Canadian Rocky Mountains, Central Interior, Montane Cordillera, Muskwa - Kechika, Taiga Cordillera, Taiga Plains

Ecozones and Ecoregions of the Yukon: Boreal Cordillera: Liard Basin, Pelly Mountains, Yukon - Stikine Highlands, Yukon Southern Lakes; Taiga Cordillera: Selwyn Mountains

Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones): BWBSdk, BWBSmk, BWBSmw, BWBSwk

British Columbia Ecoregion Classification (ecoregions): Boreal Mountains and Plateaus, Central Alberta Uplands, Central Canadian Rocky Mountains, Eastern Continental Ranges, Hay-Slave Lowland, Liard Basin, Muskwa Plateau, Northern Canadian Rocky Mountains, Omineca Mountains, Peace River Basin, Southern Alberta Upland, Yukon Southern Lakes, Yukon-Stikine Highlands

Natural Regions and Subregions of Alberta: Boreal Forest: Lower Boreal Highlands; Foothills: Lower Foothills, Upper Foothills; Rocky Mountain: Subalpine





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Corresponding Types and Associations

118a typic	Yukon	P01c	<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> / <i>Cladina</i> spp. [clad lichens]
		P01r	<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> / <i>Cladina</i> spp. [reindeer lichens]
		P02s	<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> [sparse]
		P02t	<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> [typic]
	British Columbia	BWBSdk /102	<i>Pinus contorta</i> – <i>Arctostaphylos uva-ursi</i> – <i>Vaccinium vitis-idaea</i>
		BWBSmk /102	<i>Pinus contorta</i> – <i>Arctostaphylos uva-ursi</i> – <i>Vaccinium vitis-idaea</i>
		BWBSmw /102	<i>Pinus contorta</i> – <i>Arctostaphylos uva-ursi</i> – <i>Vaccinium vitis-idaea</i>
		BWBSwk 1 /102	<i>Pinus contorta</i> – <i>Vaccinium vitis-idaea</i> – <i>Cladina</i> spp.
		BWBSwk 2 /102	<i>Pinus contorta</i> – <i>Vaccinium vitis-idaea</i> – <i>Cladina</i> spp.
		Alberta	SW/LF/A/01/01
	SW/LF/A/01/02		PI / bearberry
	SW/UF/A/01/01		PI / bog cranberry
	SW/UF/A/01/02		PI / bearberry / hairy wild rye
	WC/LF/B/01/01		PI / bearberry / lichen
	WC/LF/B/01/02		PI / blueberry / lichen
	WC/SA/B/01/01		PI / bearberry / lichen
WC/SA/B/01/02	PI / bog cranberry / lichen		
WC/UF/B/01/01	PI / bearberry		
WC/UF/B/01/03	PI / bog cranberry		
118b <i>Rhododendron groenlandicum</i>	Alberta	WC/UF/B/01/02	PI / Labrador tea / lichen



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Vegetation Summary*

Species Name [†]	Association CNVC00118		Subassociation 118a <i>typic</i>		Subassociation 118b <i>Rhododendron groenlandicum</i>	
	186 plots		177 plots		9 plots	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
Overstory Trees						
<i>Pinus contorta</i>	34	99	35	99	21	100
<i>Picea glauca</i>	3	38	3	38	5	33
<i>Picea mariana</i>	8	18	8	16	11	44
<i>Populus tremuloides</i>	3	16	3	16	3	22
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(14 20 37 50 65)		(13 21 37 50 66)		(17 20 28 35 43)	
Understory Woody Shrubs and Regenerating Trees						
<i>Rosa acicularis</i>	2	60	2	60	2	44
<i>Shepherdia canadensis</i>	4	51	4	50	2	56
<i>Pinus contorta</i>	4	49	4	49	8	56
<i>Picea glauca</i>	2	43	2	42	2	56
<i>Rhododendron groenlandicum</i>	10	33	5	29	39	100
<i>Juniperus communis</i>	3	26	3	27	2	11
<i>Salix</i> sp.	2	25	2	25	1	33
<i>Vaccinium myrtilloides</i>	12	22	12	18	10	100
<i>Picea mariana</i>	7	20	7	18	8	67
<i>Populus tremuloides</i>	3	20	3	19	3	44
<i>Alnus viridis</i>	4	15	4	14	3	22
<i>Spiraea lucida</i>	3	15	2	14	4	33
<i>Vaccinium membranaceum</i>	4	10	5	8	3	33
<i>Betula glandulosa</i>	2	8	2	7	1	22
<i>Salix glauca</i>	2	5	1	5	3	22
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(3 7 22 32 49)		(3 7 20 29 45)		(53 63 66 74 77)	
Understory Herbs and Dwarf Shrubs						
<i>Linnaea borealis</i>	5	75	5	76	2	67
<i>Vaccinium vitis-idaea</i>	10	74	10	73	17	100
<i>Arctostaphylos uva-ursi</i>	13	73	13	73	7	67
<i>Cornus canadensis</i>	3	51	3	49	3	100
<i>Chamerion angustifolium</i>	1	49	1	49	1	44
<i>Leymus innovatus</i>	4	38	4	37	5	56
<i>Vaccinium caespitosum</i>	3	28	3	27	4	67
<i>Geocaulon lividum</i>	1	21	1	21	1	22
<i>Empetrum nigrum</i>	5	20	5	21	-	-
<i>Fragaria virginiana</i>	2	20	2	20	2	22
<i>Pyrola chlorantha</i>	1	15	1	14	1	22
<i>Calamagrostis canadensis</i>	1	13	1	12	1	33
<i>Solidago simplex</i>	1	13	1	12	1	22



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00118		Subassociation 118a <i>typic</i>		Subassociation 118b <i>Rhododendron groenlandicum</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Diphasiastrum complanatum</i>	3	10	3	9	4	22
<i>Maianthemum canadense</i>	2	10	2	10	2	22
<i>Campanula</i> sp.	1	10	1	9	1	22
<i>Symphotrichum ciliolatum</i>	1	7	1	6	1	22
<i>Antennaria neglecta</i>	1	7	1	6	1	22
<i>Petasites frigidus</i>	2	6	2	5	1	22
<i>Lycopodium annotinum</i>	1	6	1	5	1	33
<i>Gaultheria hispidula</i>	1	3	1	2	1	33
<i>Agrostis scabra</i>	1	2	1	1	1	22
<i>Pedicularis racemosa</i>	1	1	-	-	1	22
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(2 8 29 45 64)		(2 7 28 43 64)		(16 19 39 52 62)	
Bryophytes and Lichens						
<i>Cladonia</i> sp.	8	77	8	77	9	67
<i>Peltigera aphthosa</i>	4	69	4	68	3	89
<i>Cladina mitis</i>	12	66	13	64	11	89
<i>Pleurozium schreberi</i>	21	65	19	63	44	100
<i>Hylocomium splendens</i>	7	44	6	42	11	78
<i>Cladina rangiferina</i>	8	41	9	40	5	67
<i>Polytrichum juniperinum</i>	2	39	2	39	1	33
<i>Stereocaulon tomentosum</i>	3	35	4	35	2	44
<i>Dicranum polysetum</i>	2	32	1	30	3	67
<i>Flavocetraria cucullata</i>	1	27	1	28	1	11
<i>Ptilium crista-castrensis</i>	7	24	7	23	7	44
<i>Flavocetraria nivalis</i>	2	23	2	23	6	22
<i>Cladina stellaris</i>	5	20	6	20	1	22
<i>Peltigera malacea</i>	3	20	3	20	10	11
<i>Peltigera canina</i>	2	20	2	21	1	11
<i>Pohlia nutans</i>	2	18	2	18	2	22
<i>Ptilidium pulcherrimum</i>	1	11	1	10	1	33
<i>Cladina</i> sp.	7	8	7	8	-	-
<i>Polytrichum commune</i>	2	6	3	5	1	44
<i>Icmadophila ericetorum</i>	1	2	1	1	1	22
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(9 25 50 79 94)		(9 24 48 75 93)		(60 81 84 93 98)	

* 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 CNVC00118 186 plots	Subassociation 118a <i>typic</i> 177 plots	Subassociation 118b <i>Rhododendron groenlandicum</i> 9 plots
Elevation Range (min–mean–max meters)	0–1014–1760 missing data (11)	0–1007–1760 missing data (12)	1050–1139–1210 missing data (0)
Slope Gradient (% frequency)	very steep (1) steep (7) moderately steep (14) moderate (9) gentle (13) level (48) missing data (9)	very steep (1) steep (7) moderately steep (15) moderate (9) gentle (13) level (46) missing data (10)	very steep (0) steep (0) moderately steep (0) moderate (0) gentle (11) level (89) missing data (0)
Aspect (% frequency)	north (7) east (8) south (23) west (16) level (29) missing data (18)	north (6) east (8) south (23) west (17) level (27) missing data (19)	north (22) east (0) south (11) west (0) level (67) missing data (0)
Meso Toposition (% frequency)	crest / upper (25) mid (15) lower / toe (4) depression (1) level (24) missing data (32)	crest / upper (26) mid (15) lower / toe (4) depression (1) level (25) missing data (29)	crest / upper (0) mid (0) lower / toe (0) depression (0) level (0) missing data (100)
Moisture Regime (% frequency)	very dry (2) dry (55) mesic (25) moist (1) missing data (18)	very dry (2) dry (53) mesic (27) moist (1) missing data (18)	very dry (0) dry (89) mesic (0) moist (0) missing data (11)
Nutrient Regime (% frequency)	poor (58) medium (15) rich (2) missing data (26)	poor (56) medium (14) rich (2) missing data (27)	poor (78) medium (22) rich (0) missing data (0)



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Site / Soil Characteristics (cont'd)

	Association CNVC00118	Subassociation 118a <i>typic</i>	Subassociation 118b <i>Rhododendron groenlandicum</i>
Soil Parent Material (% frequency)	colluvium (13) eolian (5) moraine / till (15) fluvial (13) glaciofluvial (32) lacustrine (1) glaciolacustrine (1) missing data (22)	colluvium (14) eolian (5) moraine / till (14) fluvial (12) glaciofluvial (32) lacustrine (1) glaciolacustrine (1) missing data (23)	colluvium (0) eolian (0) moraine / till (33) fluvial (33) glaciofluvial (33) lacustrine (0) glaciolacustrine (0) missing data (0)
Soil Rooting Zone Substrate (% frequency)	non-soil (13) sandy (24) coarse loamy (22) fine loamy (4) silty (4) clayey (3) missing data (30)	non-soil (14) sandy (24) coarse loamy (23) fine loamy (5) silty (4) clayey (3) missing data (28)	non-soil (0) sandy (22) coarse loamy (11) fine loamy (0) silty (0) clayey (0) missing data (67)
Root Restricting Depth (% frequency)	0 – 20 cm (2) 21 – 99 cm (4) ≥ 100 cm (4) missing data (90)	0 – 20 cm (2) 21 – 99 cm (4) ≥ 100 cm (5) missing data (90)	0 – 20 cm (0) 21 – 99 cm (0) ≥ 100 cm (0) missing data (100)
Humus Form (% frequency)	mor (41) moder (4) peatymor (1) missing data (54)	mor (43) moder (4) peatymor (1) missing data (52)	mor (0) moder (0) peatymor (0) 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:

CNVC00127 [*Pinus banksiana* / *Vaccinium myrtilloides* / *Arctostaphylos uva-ursi* / *Cladina* spp.] occurs on comparable boreal sites from Alberta to northwestern Ontario and has dominance of *Pinus banksiana* rather than *P. contorta*.

CNVC00119 [*Pinus contorta* (*Picea glauca*) / *Shepherdia canadensis* / *Geocaulon lividum* / *Pleurozium schreberi*] occurs on mesic, nutrient-poor to medium boreal sites in British Columbia and Yukon and has more *Shepherdia canadensis* in the shrub layer and a moss and lichen layer dominated by feathermosses.

CNVC00120 [*Pinus contorta* – *Picea mariana* / *Vaccinium vitis-idaea* / *Pleurozium schreberi*] occurs on moister, slightly richer sites in the same range and has *Picea mariana* codominant and an understory dominated by feathermosses.

CNVC00361 [*Pinus contorta* / *Poaceae* – *Arctostaphylos uva-ursi* / *Cladina* spp.] occurs on comparable boreal sites in Yukon but has greater abundance of grasses.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

Pinus contorta here refers to var. *latifolia* (lodgepole pine).

Where CNVC00118 occurs at higher elevations (i.e., above 650 mASL) in northern Alberta, *P. contorta* may form fertile hybrids with *P. banksiana* that are recognized by intermediate cone characters; ecologically, the hybrid pine (*P. x murraybanksiana*) occupies comparable sites. Stands containing hybrid pine with similar understories on comparable sites are classified as CNVC00118 in northwestern Alberta (e.g., Caribou Mountains and west). Such stands at higher elevations in the Birch Mountains are classified as CNVC00127 [*Pinus banksiana* / *Vaccinium myrtilloides* / *Arctostaphylos uva-ursi* / *Cladina* spp.].



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Classification nationale de la végétation du Canada (CNVC)

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CNVC00118**

Source Information

Number of source plots for CNVC00118: 186

Number of source plots for 118a typic: 177

Number of source plots for 118b *Rhododendron groenlandicum*: 9

Information Sources:

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

Biogeoclimatic Ecosystem Classification Program of British Columbia. 2011. BECMaster ecosystem plot database [VPro13/MSAccess 2010 format]. W.H. MacKenzie (ed.) B.C. Min. For., Lands, and Nat. Res. Ops., Smithers, BC. Available: www.for.gov.bc.ca/hre/becweb/resources/information-requests (accessed: June 2015).

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, W. Mackenzie, K. McKenna, D. Meidinger

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

Date of Concept: March, 2012

Date of Description: August, 2017

Classification References:

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***Pinus contorta* / *Vaccinium vitis-idaea* – *Arctostaphylos uva-ursi* / *Cladina* spp.
CNVC00118**

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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.

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