



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00123

Pinus contorta / *Gymnocarpium dryopteris*

Lodgepole Pine / Common Oak Fern

Pin tordu / Gymnocarpe du chêne

Subassociations: 123a *typic*, 123b *Alnus viridis*, 123c *Lonicera involucrata*, 123d *Abies lasiocarpa*

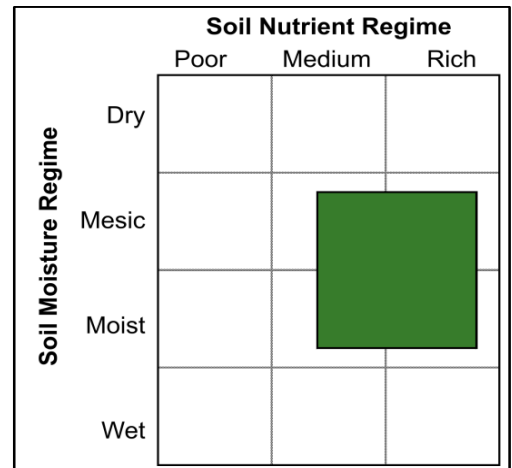
CNVC Alliance: CA00039 *Picea glauca* – *Pinus contorta* / *Lonicera involucrata* / *Gymnocarpium dryopteris*

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

Type Description

Concept: CNVC00123 is a boreal coniferous forest Association that occurs in the Rocky Mountain foothills of Alberta. It has an open to moderately closed canopy of lodgepole pine (*Pinus contorta*), sometimes with a minor component of white spruce (*Picea glauca*), and a relatively species rich understory. The shrub layer varies from moderately to well developed, depending on the patchiness of shrubs. It typically includes squashberry (*Viburnum edule*) and prickly rose (*Rosa acicularis*), and often includes bristly black currant (*Ribes lacustre*) and bracted honeysuckle (*Lonicera involucrata*). Green alder (*Alnus viridis*) can be abundant when present. Regenerating *P. glauca* is often present and *Abies lasiocarpa* dominates the shrub layer of its subassociation. The herb and dwarf shrub layer is well developed to dense and commonly includes bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), dwarf raspberry (*Rubus pubescens*), stiff clubmoss (*Lycopodium annotinum*), fireweed (*Chamerion angustifolium*), common oak fern (*Gymnocarpium dryopteris*), bluejoint reedgrass (*Calamagrostis canadensis*), clasping-leaved twisted-stalk (*Streptopus amplexifolius*), naked mitrewort (*Mitella nuda*), pink pyrola (*Pyrola asarifolia*), woodland horsetail (*Equisetum sylvaticum*), arctic sweet coltsfoot (*Petasites frigidus*) and wild lily-of-the-valley (*Maianthemum canadense*). Knight's plume moss (*Ptilium crista-castrensis*), red-stemmed feathermoss (*Pleurozium schreberi*) and stairstep moss (*Hylocomium splendens*) dominate the well-developed moss layer. CNVC00123 occurs on mesic to moist, nutrient-medium to rich sites in a region with a subhumid continental climate. These are among the most productive sites in the region. CNVC00123 typically establishes as the first cohort after fire. Four subassociations are distinguished: *typic*, *Alnus viridis*, *Lonicera involucrata* and *Abies lasiocarpa*.

Vegetation: CNVC00123 is a coniferous forest Association with a moderately closed canopy dominated by *Pinus contorta*, sometimes with a minor component of *Picea glauca* or *Abies lasiocarpa* (see Comments). Both the shrub and herb layers are diverse and include species indicative of nutrient-rich sites. The shrub layer varies from moderately to well developed, depending on subassociation. It usually includes *Viburnum edule*, *Rosa acicularis*, *Ribes lacustre* and *Lonicera involucrata*, as well as regenerating *P. glauca*. Dominance of *Alnus viridis*, *L. involucrata* and *A. lasiocarpa* distinguishes three subassociations from the *typic*. The herb and dwarf shrub layer is well developed to dense. It typically includes *Cornus canadensis*, *Linnaea borealis*, *Rubus pubescens*, *Lycopodium annotinum*, *Chamerion angustifolium*, *Gymnocarpium dryopteris*, *Calamagrostis canadensis*, *Streptopus amplexifolius*, *Mitella nuda*, *Pyrola asarifolia*, *Equisetum sylvaticum*, *Petasites frigidus* and *Maianthemum canadense*. When present, *Aralia nudicaulis* and *Rubus pedatus* can be abundant. *Ptilium crista-castrensis*, *Pleurozium schreberi* and *Hylocomium splendens* dominate the well-developed moss layer.





***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Type Description (cont'd)

Environment: CNVC00123 occurs in a subhumid continental climate where regional fire cycles are short (<100 years) or intermediate (100-270 years). It is typically found on mesic to moist, nutrient-medium to rich sites; these are some of the most productive sites in the foothills of Alberta. Stands are usually on level or gentle to moderate slopes, often on water-receiving middle-slope topopositions. Seepage often enhances moisture and nutrient availability on these sites. On slopes, stands are more common on cooler, north or east-facing aspects. Soils are usually fine textured (e.g., fine loams, silts, clays) and derived from morainal parent materials. Mor humus forms are common, but compared to other boreal Associations, moders are more likely to develop.

The four subassociations have similar site characteristics, with minor exceptions. Moder humus forms are slightly more common in the *typic* subassociation. The *Alnus viridis* subassociation has a slightly richer nutrient regime. The *Lonicera involucrata* subassociation occurs almost exclusively on level sites, whereas the *Abies lasiocarpa* subassociation is more common on moderate slopes with moist, silt or clay soils.

Dynamics: CNVC00123 is an early to mid-successional Association that is naturally perpetuated by stand-replacing fire. *Pinus contorta* has medium thick bark, with only moderate tolerance to fire, but reaches reproductive maturity at a young age and produces abundant seeds in serotinous cones. Moderate and high severity fires melt the resin of cones to release their seeds. These fires also remove competing vegetation and improve seedbed quality by reducing organic matter and exposing mineral soil. Maximum seed release can therefore coincide with optimal conditions for seedling establishment, survival and growth.

Succession typically proceeds with ingress of *Picea glauca* into the stand by seed dissemination from nearby sources. If seeds are available following disturbance, *P. glauca* sometimes re-colonizes at approximately the same time as *P. contorta*, but since it grows more slowly it usually requires several decades to attain canopy height. *P. glauca* is shade-tolerant and able to self-replace once established in a stand. Succession is often re-initiated by fire before a stand reaches the mid-successional stage, but in the prolonged absence of disturbance *P. glauca* can gradually dominate the overstory. A late successional *P. glauca*-dominated condition (e.g., CNVC00098 [*Picea glauca* / *Gymnocarpium dryopteris*]) could develop after approximately 120 years. When *Abies lasiocarpa* is present (e.g., the *Abies lasiocarpa* subassociation), it can become co-dominant with *P. glauca* as in CNVC00100 [*Abies lasiocarpa* – *Picea glauca* / *Gymnocarpium dryopteris*].

After fire or harvesting, species such as *Calamagrostis canadensis* and *Rubus idaeus* can be highly competitive with regenerating conifers on these sites and delay stand re-establishment.

In recent years, mountain pine beetle (*Dendroctonus ponderosae*) has caused significant economic and ecological impacts to *P. contorta* forests in sub-boreal British Columbia (BC). Within its historic range in interior BC, beetle cycles occur every 20-40 years. At low population densities, the insect preferentially attacks and kills older, less vigorous trees, opening canopy gaps. At epidemic levels however, mass attacks can extend over large areas and overwhelm the defenses of vigorously growing immature pines. Recently the beetle has spread northward and eastward into boreal *P. contorta* forests, affecting even hybrid *Pinus x murraybanksiana* and *P. banksiana* stands in northern Alberta. 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. Because the mountain pine beetle is novel to boreal ecosystems, long-term effects on these forests are uncertain.

Range: CNVC00123 occurs primarily in the Rocky Mountain foothills of Alberta. It also occurs occasionally in the boreal highlands of northwestern and northern Alberta (Cameron Hills, Clear Hills, Buffalo Head Hills, Naylor Hills, and Caribou Mountains) in small dispersed stands on lower-elevation seepage slopes.

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: Clear Hills Upland, Mid-Boreal Uplands, Western Alberta Upland

Rowe's Forest Regions and Sections of Canada: Boreal: Lower Foothills, Mixedwood, Upper Foothills

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: Lower Boreal Highlands, Upper Boreal Highlands; Foothills: Lower Foothills, Upper Foothills



Corresponding Types and Associations

123a typic	Alberta	WC/LF/F/01/05	Pl / fern / feather moss
		WC/UF/F/01/04	Pl / fern / feather moss
123b <i>Alnus viridis</i>	Alberta	SW/UF/E/01/01	Pl / green alder / fern
		WC/LF/F/01/02	Pl / green alder / fern
		WC/UF/F/01/01	Pl / green alder / fern
123c <i>Lonicera involucrata</i>	Alberta	WC/LF/F/01/01	Pl / bracted honeysuckle / fern
		WC/UF/F/01/02	Pl / bracted honeysuckle / fern
123d <i>Abies lasiocarpa</i>	Alberta	WC/LF/F/01/03	Pl / fir / fern
		WC/UF/F/01/03	Pl / fir / fern / feather moss



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Vegetation Summary*

Species Name ^T	Association CNVC00123		Subassociation 123a <i>typic</i>		Subassociation 123b <i>Alnus viridis</i>	
	78 plots		17 plots		41 plots	
	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]
Overstory Trees						
<i>Pinus contorta</i>	38	100	42	100	39	100
<i>Picea glauca</i>	7	55	7	41	8	51
<i>Picea mariana</i>	6	33	8	35	4	32
<i>Populus tremuloides</i>	5	26	4	24	5	29
<i>Abies lasiocarpa</i>	12	23	13	24	18	12
<i>Betula papyrifera</i>	2	18	2	29	2	15
<i>Populus balsamifera</i>	4	8	2	6	7	7
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(25 34 48 61 76)		(31 38 53 63 73)		(30 35 49 59 80)	
Understory Woody Shrubs and Regenerating Trees						
<i>Viburnum edule</i>	5	90	3	76	7	95
<i>Rosa acicularis</i>	4	90	3	76	4	95
<i>Lonicera involucrata</i>	5	72	2	53	3	76
<i>Alnus viridis</i>	23	71	3	41	32	93
<i>Ribes lacustre</i>	2	67	1	53	3	73
<i>Picea glauca</i>	3	62	2	59	4	56
<i>Vaccinium myrtilloides</i>	3	58	2	59	4	59
<i>Abies lasiocarpa</i>	8	53	2	65	6	39
<i>Rubus idaeus</i>	6	51	5	47	7	51
<i>Rhododendron groenlandicum</i>	3	47	1	59	3	44
<i>Sorbus scopulina</i>	1	42	1	47	1	41
<i>Vaccinium membranaceum</i>	3	37	4	47	3	37
<i>Spiraea lucida</i>	3	35	2	35	3	44
<i>Picea mariana</i>	4	28	4	29	2	27
<i>Betula papyrifera</i>	4	27	4	35	7	15
<i>Rubus parviflorus</i>	7	17	12	18	5	15
<i>Ribes triste</i>	1	17	1	12	1	27
<i>Sambucus racemosa</i>	1	17	1	24	1	15
<i>Oplopanax horridus</i>	2	14	1	24	4	5
<i>Salix bebbiana</i>	3	12	-	-	3	22
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(19 30 48 58 90)		(14 15 25 31 41)		(36 41 59 78 100)	
Understory Herbs and Dwarf Shrubs						
<i>Cornus canadensis</i>	10	97	10	100	11	95
<i>Linnaea borealis</i>	4	96	3	100	4	95
<i>Rubus pubescens</i>	5	88	3	88	5	93
<i>Lycopodium annotinum</i>	9	85	10	76	9	80
<i>Chamerion angustifolium</i>	3	82	3	88	3	93



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Vegetation Summary (cont'd)*

Species Name ^T	Association CNVC00123		Subassociation 123a <i>typic</i>		Subassociation 123b <i>Alnus viridis</i>	
	% Cover [±]	% Presence ^A	% Cover [±]	% Presence ^A	% Cover [±]	% Presence ^A
<i>Gymnocarpium dryopteris</i>	9	81	6	100	8	68
<i>Calamagrostis canadensis</i>	9	76	10	76	7	76
<i>Streptopus amplexifolius</i>	2	68	1	82	2	63
<i>Mitella nuda</i>	2	68	3	59	1	71
<i>Pyrola asarifolia</i>	2	65	1	53	3	73
<i>Equisetum sylvaticum</i>	2	65	1	53	2	78
<i>Petasites frigidus</i>	2	64	2	65	2	59
<i>Maianthemum canadense</i>	2	60	2	76	2	59
<i>Aralia nudicaulis</i>	9	56	5	59	12	54
<i>Mertensia paniculata</i>	2	55	2	53	2	61
<i>Rubus pedatus</i>	11	51	10	47	9	51
<i>Arnica cordifolia</i>	3	49	2	35	4	59
<i>Vaccinium vitis-idaea</i>	5	41	6	29	5	49
<i>Orthilia secunda</i>	1	35	1	29	1	34
<i>Galium trifidum</i>	1	31	1	29	1	37
<i>Maianthemum racemosum</i>	1	29	1	35	1	29
<i>Dryopteris expansa</i>	3	27	11	18	2	34
<i>Heracleum maximum</i>	3	26	1	12	3	29
<i>Viola renifolia</i>	1	23	1	12	1	34
<i>Leymus innovatus</i>	7	21	2	18	9	24
<i>Equisetum arvense</i>	4	21	1	18	3	24
<i>Fragaria virginiana</i>	2	21	1	6	2	27
<i>Actaea rubra</i>	2	19	1	18	2	22
<i>Gaultheria hispidula</i>	1	19	2	24	1	20
<i>Athyrium filix-femina</i>	1	19	1	24	1	17
<i>Eurybia conspicua</i>	1	19	1	18	1	24
<i>Symphyotrichum ciliolatum</i>	1	19	1	18	1	27
<i>Dryopteris carthusiana</i>	1	17	1	24	1	17
<i>Tiarella trifoliata</i>	6	15	2	12	9	12
<i>Equisetum pratense</i>	6	15	1	12	2	15
<i>Vaccinium caespitosum</i>	4	14	3	24	6	12
<i>Lathyrus ochroleucus</i>	1	14	2	12	1	15
<i>Neottia cordata</i>	1	13	1	12	1	10
<i>Lycopodium dendroideum</i>	2	8	1	6	2	7
<i>Veratrum viride</i>	1	6	1	6	-	-
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(31 42 64 89 100)		(30 38 56 73 90)		(36 49 68 90 100)	
Bryophytes and Lichens						
<i>Ptilium crista-castrensis</i>	23	96	24	100	19	93
<i>Pleurozium schreberi</i>	26	92	39	94	21	90
<i>Hylocomium splendens</i>	14	67	15	71	15	68
<i>Dicranum fuscescens</i>	1	31	2	35	1	32
<i>Peltigera aphthosa</i>	2	26	1	29	1	29
<i>Polytrichum commune</i>	4	24	1	35	2	17
<i>Cladonia sp.</i>	2	24	2	24	2	24
<i>Polytrichum juniperinum</i>	1	24	1	35	1	22
<i>Dicranum polysetum</i>	2	22	2	29	1	20



***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00123		Subassociation 123a <i>typic</i>		Subassociation 123b <i>Alnus viridis</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Ptilidium pulcherrimum</i>	1	19	1	24	1	22
<i>Cladina mitis</i>	1	18	1	35	1	12
<i>Plagiomnium medium</i>	7	10	15	6	7	7
<i>Sphagnum capillifolium</i>	3	5	1	12	-	-
<i>Dicranum undulatum</i>	1	5	-	-	1	5
<i>Polytrichum strictum</i>	2	4	-	-	1	2
Bryo-Lichen Stratum Cover (P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀) [‡]	(12 41 62 88 96)		(50 71 79 93 95)		(5 15 52 85 95)	

* 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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Vegetation Summary (cont'd)*

Species Name ^T	Subassociation 123c <i>Lonicera involucrata</i>		Subassociation 123d <i>Abies lasiocarpa</i>	
	12 plots		8 plots	
	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]
Overstory Trees				
<i>Pinus contorta</i>	27	100	38	100
<i>Picea glauca</i>	4	67	7	88
<i>Picea mariana</i>	6	42	12	25
<i>Populus tremuloides</i>	4	25	5	13
<i>Abies lasiocarpa</i>	5	17	9	88
<i>Betula papyrifera</i>	1	25	-	-
<i>Populus balsamifera</i>	-	-	1	25
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(11 17 34 44 66)		(43 43 56 68 76)	
Understory Woody Shrubs and Regenerating Trees				
<i>Viburnum edule</i>	5	92	2	88
<i>Rosa acicularis</i>	5	92	2	88
<i>Lonicera involucrata</i>	14	100	1	50
<i>Alnus viridis</i>	5	58	3	38
<i>Ribes lacustre</i>	3	58	2	75
<i>Picea glauca</i>	3	75	3	75
<i>Vaccinium myrtilloides</i>	4	58	2	50
<i>Abies lasiocarpa</i>	5	50	24	100
<i>Rubus idaeus</i>	4	67	3	38
<i>Rhododendron groenlandicum</i>	3	50	9	38
<i>Sorbus scopulina</i>	2	25	1	63
<i>Vaccinium membranaceum</i>	2	8	5	63
<i>Spiraea lucida</i>	5	25	-	-
<i>Picea mariana</i>	8	33	1	25
<i>Betula papyrifera</i>	2	42	2	50
<i>Rubus parviflorus</i>	4	33	-	-
<i>Ribes triste</i>	-	-	-	-
<i>Sambucus racemosa</i>	-	-	1	38
<i>Oplopanax horridus</i>	1	8	2	50
<i>Salix bebbiana</i>	-	-	-	-
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(22 35 46 48 83)		(27 29 41 52 56)	
Understory Herbs and Dwarf Shrubs				
<i>Cornus canadensis</i>	10	100	6	100
<i>Linnaea borealis</i>	5	92	2	100
<i>Rubus pubescens</i>	13	75	2	88
<i>Lycopodium annotinum</i>	9	100	2	100
<i>Chamerion angustifolium</i>	5	67	1	38



***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Vegetation Summary (cont'd)*

Species Name ^T	Subassociation 123c <i>Lonicera involucrata</i>		Subassociation 123d <i>Abies lasiocarpa</i>	
	% Cover [±]	% Presence ^A	% Cover [±]	% Presence ^A
<i>Gymnocarpium dryopteris</i>	14	83	10	100
<i>Calamagrostis canadensis</i>	12	75	8	75
<i>Streptopus amplexifolius</i>	5	67	2	63
<i>Mitella nuda</i>	4	75	1	63
<i>Pyrola asarifolia</i>	3	75	1	38
<i>Equisetum sylvaticum</i>	2	42	2	63
<i>Petasites frigidus</i>	2	75	1	75
<i>Maianthemum canadense</i>	3	25	1	88
<i>Aralia nudicaulis</i>	10	50	4	75
<i>Mertensia paniculata</i>	3	58	2	25
<i>Rubus pedatus</i>	17	42	11	75
<i>Arnica cordifolia</i>	1	42	1	38
<i>Vaccinium vitis-idaea</i>	3	42	2	25
<i>Orthilia secunda</i>	1	25	1	63
<i>Galium trifidum</i>	2	25	1	13
<i>Maianthemum racemosum</i>	1	8	2	50
<i>Dryopteris expansa</i>	-	-	1	50
<i>Heracleum maximum</i>	3	33	1	25
<i>Viola renifolia</i>	1	8	1	13
<i>Leymus innovatus</i>	3	25	-	-
<i>Equisetum arvense</i>	10	25	-	-
<i>Fragaria virginiana</i>	2	33	-	-
<i>Actaea rubra</i>	5	17	1	13
<i>Gaultheria hispidula</i>	3	8	1	25
<i>Athyrium filix-femina</i>	2	17	1	25
<i>Eurybia conspicua</i>	2	17	-	-
<i>Symphyotrichum ciliolatum</i>	1	8	-	-
<i>Dryopteris carthusiana</i>	1	8	1	13
<i>Tiarella trifoliata</i>	8	8	5	50
<i>Equisetum pratense</i>	19	25	4	13
<i>Vaccinium caespitosum</i>	1	8	1	13
<i>Lathyrus ochroleucus</i>	2	25	-	-
<i>Neottia cordata</i>	1	8	1	38
<i>Lycopodium dendroideum</i>	-	-	1	25
<i>Veratrum viride</i>	1	8	1	38
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(38 48 72 100 100)		(15 26 53 72 92)	
Bryophytes and Lichens				
<i>Ptilium crista-castrensis</i>	25	100	30	100
<i>Pleurozium schreberi</i>	22	92	26	100
<i>Hylocomium splendens</i>	11	58	12	63
<i>Dicranum fuscescens</i>	1	8	2	50
<i>Peltigera aphthosa</i>	6	25	-	-
<i>Polytrichum commune</i>	45	8	2	63
<i>Cladonia sp.</i>	1	17	3	38
<i>Polytrichum juniperinum</i>	1	8	1	38
<i>Dicranum polysetum</i>	-	-	3	50



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Vegetation Summary (cont'd)*

Species Name [†]	Subassociation 123c <i>Lonicera involucrata</i>		Subassociation 123d <i>Abies lasiocarpa</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Ptilidium pulcherrimum</i>	1	8	1	13
<i>Cladina mitis</i>	1	17	1	13
<i>Plagiomnium medium</i>	2	17	6	25
<i>Sphagnum capillifolium</i>	-	-	5	25
<i>Dicranum undulatum</i>	-	-	1	25
<i>Polytrichum strictum</i>	-	-	3	25
Bryo-Lichen Stratum Cover (P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀) [‡]	(35 41 61 82 87)		(49 57 74 87 99)	

* 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)



Forest / Forêt

Association CNVC00123

Pinus contorta / *Gymnocarpium dryopteris*

Lodgepole Pine / Common Oak Fern

Pin tordu / Gymnocarpe du chêne

Site / Soil Characteristics

	Association CNVC00123 78 plots	Subassociation 123a <i>typic</i> 17 plots	Subassociation 123b <i>Alnus viridis</i> 41 plots
Elevation Range (min–mean–max meters)	762–1103–1463 missing data (9)	762–1055–1330 missing data (12)	883–1132–1463 missing data (12)
Slope Gradient (% frequency)	steep (3) moderately steep (3) moderate (19) gentle (24) level (50) missing data (1)	steep (0) moderately steep (0) moderate (6) gentle (53) level (41) missing data (0)	steep (5) moderately steep (2) moderate (22) gentle (22) level (46) missing data (2)
Aspect (% frequency)	north (27) east (23) south (19) west (13) level (17) missing data (1)	north (29) east (29) south (12) west (18) level (12) missing data (0)	north (27) east (20) south (24) west (12) level (15) missing data (2)
Meso Toposition (% frequency)	crest / upper (9) mid (24) lower / toe (10) level (8) missing data (49)	crest / upper (0) mid (35) lower / toe (6) level (12) missing data (47)	crest / upper (12) mid (17) lower / toe (12) level (5) missing data (54)
Moisture Regime (% frequency)	mesic (56) moist (41) wet (3)	mesic (65) moist (35) wet (0)	mesic (56) moist (39) wet (5)
Nutrient Regime (% frequency)	medium (55) rich (40) missing data (5)	medium (71) rich (24) missing data (6)	medium (41) rich (54) missing data (5)



***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Site / Soil Characteristics (cont'd)

	Association CNVC00123	Subassociation 123a <i>typic</i>	Subassociation 123b <i>Alnus viridis</i>
Soil Parent Material (% frequency)	bedrock (1) colluvium (4) eolian (3) moraine / till (72) fluvial (12) glaciofluvial (3) glaciolacustrine (6)	bedrock (0) colluvium (0) eolian (12) moraine / till (71) fluvial (18) glaciofluvial (0) glaciolacustrine (0)	bedrock (2) colluvium (5) eolian (0) moraine / till (71) fluvial (7) glaciofluvial (5) glaciolacustrine (10)
Soil Rooting Zone Substrate (% frequency)	non-soil (5) sandy (1) coarse loamy (6) fine loamy (27) silty (14) clayey (21) missing data (26)	non-soil (0) sandy (0) coarse loamy (6) fine loamy (29) silty (6) clayey (24) missing data (35)	non-soil (7) sandy (0) coarse loamy (10) fine loamy (24) silty (17) clayey (20) missing data (22)
Root Restricting Depth (% frequency)	missing data (100)	missing data (100)	missing data (100)
Humus Form (% frequency)	mor (22) moder (6) mull (1) missing data (71)	mor (29) moder (12) mull (0) missing data (59)	mor (20) moder (5) mull (2) missing data (73)



Forest / Forêt

Association CNVC00123

Pinus contorta / *Gymnocarpium dryopteris*

Lodgepole Pine / Common Oak Fern

Pin tordu / Gymnocarpe du chêne

Site / Soil Characteristics (cont'd)

Subassociation	Subassociation
123c <i>Lonicera involucrata</i>	123d <i>Abies lasiocarpa</i>
12 plots	8 plots

Elevation Range (min–mean–max meters)

876–1098–1370	960–1073–1370
missing data (0)	missing data (0)

Slope Gradient (% frequency)

steep (0)	steep (0)
moderately steep (8)	moderately steep (0)
moderate (8)	moderate (50)
gentle (0)	gentle (13)
level (83)	level (38)
missing data (0)	missing data (0)

Aspect (% frequency)

north (17)	north (38)
east (25)	east (25)
south (8)	south (25)
west (17)	west (0)
level (33)	level (13)
missing data (0)	missing data (0)

Meso Toposition (% frequency)

crest / upper (0)	crest / upper (25)
mid (42)	mid (13)
lower / toe (8)	lower / toe (13)
level (17)	level (0)
missing data (33)	missing data (50)

Moisture Regime (% frequency)

mesic (58)	mesic (38)
moist (42)	moist (63)
wet (0)	wet (0)

Nutrient Regime (% frequency)

medium (67)	medium (75)
rich (25)	rich (25)
missing data (8)	missing data (0)



***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Site / Soil Characteristics (cont'd)

	Subassociation 123c <i>Lonicera involucrata</i>	Subassociation 123d <i>Abies lasiocarpa</i>
Soil Parent Material (% frequency)	bedrock (0) colluvium (8) eolian (0) moraine / till (75) fluvial (8) glaciofluvial (0) glaciolacustrine (8)	bedrock (0) colluvium (0) eolian (0) moraine / till (75) fluvial (25) glaciofluvial (0) glaciolacustrine (0)
Soil Rooting Zone Substrate (% frequency)	non-soil (8) sandy (8) coarse loamy (0) fine loamy (50) silty (0) clayey (17) missing data (17)	non-soil (0) sandy (0) coarse loamy (0) fine loamy (0) silty (38) clayey (25) missing data (38)
Root Restricting Depth (% frequency)	missing data (100)	missing data (100)
Humus Form (% frequency)	mor (8) moder (8) mull (0) missing data (83)	mor (38) moder (0) mull (0) missing data (63)



Canadian National Vegetation Classification (CNVC)
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Forest / Forêt

Association CNVC00123

Pinus contorta / *Gymnocarpium dryopteris*

Lodgepole Pine / Common Oak Fern

Pin tordu / Gymnocarpe du chêne

Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity:

Confidence:

Strength:

Related Concepts

Similar CNVC Associations:

CNVC00084 [*Pinus contorta* – *Populus tremuloides* – *Populus balsamifera* / *Gymnocarpium dryopteris*] is a similar mixedwood Association that occurs on comparable boreal sites in the same range and has *Populus* spp. in the overstory.

CNVC00085 [*Pinus contorta* – *Betula papyrifera* / *Oplopanax horridus*] is a similar mixedwood Association that occurs on comparable boreal sites in the same range and has *Betula papyrifera* in the overstory.

CNVC00107 [*Pinus contorta* / *Alnus viridis* / *Arnica cordifolia* / *Pleurozium schreberi*] occurs on mesic to moist, nutrient-medium to poor boreal sites in the same range. It has lower constancy and cover of the nutrient-demanding species that characterize CNVC00123 and has greater abundance of the heath species *Rhododendron groenlandicum* and *Vaccinium vitis-idaea*.

CNVC00122 [*Pinus contorta* / *Viburnum edule* – *Rosa acicularis* / *Hylocomium splendens*] occurs on mesic to moist, nutrient-medium boreal sites in the same range and has less diverse shrub and herb layers. It has lower constancy and cover of the nutrient-demanding understory species of CNVC00123 like *Ribes lacustre*, *Gymnocarpium dryopteris*, *Rubus pedatus* and *Streptopus amplexifolius*.

CNVC00124 [*Pinus contorta* / *Oplopanax horridus*] occurs on similar, or slightly moister, boreal sites in the same range and has greater constancy and cover of *Oplopanax horridus*, with less *Alnus viridis* and poor moss layer development.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

Similar *P. contorta* dominated forests occur in the montane and subalpine zones of the Rocky Mountains, in the sub-boreal zone of British Columbia, and in Yukon and Northwest Territories. These forests are described elsewhere in the CNVC.

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir).

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



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Pinus contorta / *Gymnocarpium dryopteris* CNVC00123

Source Information

Number of source plots for CNVC00123: 78

Number of source plots for 123a typic: 17

Number of source plots for 123b *Alnus viridis*: 41

Number of source plots for 123c *Lonicera involucrata*: 12

Number of source plots for 123d *Abies lasiocarpa*: 8

Information Sources:

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

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

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

Date of Concept: March, 2012

Date of Description: July, 2016

Classification References:

Archibald, J.H.; Klappstein, G.D.; Corns, I.G.W. 1996. Field guide to ecosites of southwestern Alberta. Nat. Resour. Can., Can. For. Ser., North. For. Cent., Edmonton, AB. Spec. Rep. 8.

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. Cent., Edmonton, AB. Spec. Rep. 9.

Characterization References:

Abrahamson, I. 2015. *Picea glauca*. 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/picgla/all.html> (accessed: October 2, 2015).

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***Pinus contorta* / *Gymnocarpium dryopteris* CNVC00123**

Characterization References (cont'd):

Strong, W. L.; Pluth, D.J.; La Roi, G.H.; Corns, I.G.W. 1991. Forest understory plants as predictors of lodgepole pine and white spruce site quality in west-central Alberta. *Can. J. For. Res.* 21:1675-1683.

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. Baldwin and K. Chapman. *Pinus contorta* / *Gymnocarpium dryopteris* [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. July, 2016; generated Sep/09/2016; cited ENTER DATE ACCESSED. 16 p. Canadian National Vegetation Classification Association: CNVC00123. Available from <http://cnvc-cnvc.ca>. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.