Wetland / Tourbière boisée **Association CNVC00282**

Picea mariana / Rhododendron groenlandicum – Kalmia angustifolia / Sphagnum spp.

Black Spruce / Common Labrador Tea – Sheep Laurel / Peat Mosses

Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Sphaignes

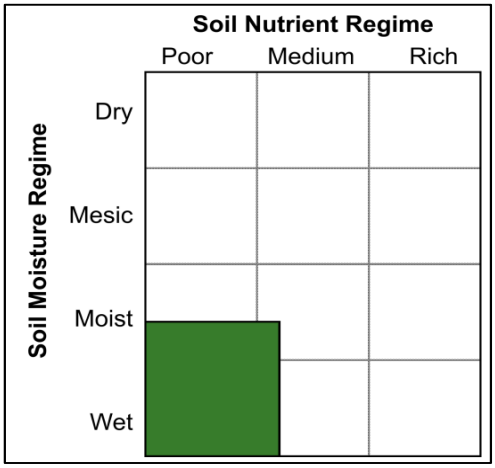
Subassociations: *282a typic, 282b Pinus banksiana*
CNVC Alliance: CA00044 *Picea mariana / Rhododendron groenlandicum – Vaccinium angustifolium / Sphagnum* spp.
CNVC Group: CG0019 Ontario-Quebec Boreal Black Spruce Poor – Intermediate Treed Wetland

Type Description

Concept: CNVC00282 is a boreal wetland coniferous forest Association that ranges from Manitoba to Quebec. It has a moderately closed canopy of black spruce (*Picea mariana*). The understory is species poor, with a preponderance of ericaceous species. The shrub layer is dense, comprising regenerating black spruce and abundant common Labrador tea (*Rhododendron groenlandicum*), as well as velvet-leaved blueberry (*Vaccinium myrtilloides*), early lowbush blueberry (*V. angustifolium*), and in the eastern portion of the range, sheep laurel (*Kalmia angustifolia*). The herb layer is sparse; only creeping snowberry (*Gaultheria hispidula*), three-leaved false Solomon's seal (*Maianthemum trifolium*) and sedges (*Carex* spp.) are common. The moss layer is continuous and dominated by peat mosses (*Sphagnum* spp.), but red-stemmed feathermoss (*Pleurozium schreberi*) and reindeer lichens (*Cladina* spp.) are common on dry microsites (e.g., peat hummocks). CNVC00282 occurs on wet, acidic, nutrient-poor sites in a region with a boreal climate that grades from subhumid continental in the west, to very humid and more maritime-influenced in the east. Substrates are usually organic soils formed from slowly decomposing *Sphagnum* and other mosses. Although fire can occasionally occur, this is typically a stable condition that is maintained by a persistently high water table and poor nutrient conditions; local hydrology is the main driver of vegetation dynamics. Two subassociations are distinguished, *typic* and *Pinus banksiana*.

Vegetation: CNVC00282 is a coniferous forest Association with a moderately closed canopy of *Picea mariana*, occasionally with *Pinus banksiana* codominant (distinguishing a subassociation of the same name). *Abies balsamea* is occasionally present in the tree layer, especially in the Quebec portion of the range. Generally, the species present in CNVC00282 are tolerant of wet, acidic substrates and poor nutrient status. The shrub layer is dense but species poor, primarily consisting of abundant *Rhododendron groenlandicum* and, in the Quebec portion of the range, *Kalmia angustifolia. Vaccinium myrtilloides, V. angustifolium* and regenerating *P. mariana* are also common. The herb layer is typically sparse, but *Gaultheria hispidula*, *Maianthemum trifolium* and some *Carex* spp. (e.g., *C. trisperma*) commonly occur. The continuous moss layer is dominated by *Sphagnum* spp. (e.g., *S. fuscum, S. capillifolium, S. russowii, S. magellanicum* and *S. girgensohnii*). Some of these species form dense hummocks with dry exposed tops that are covered by *Pleurozium schreberi. Cladina* spp. and other lichens are present on the driest of these microsites.

Source: Natural Resources Canada - Canadian Forest Service



Picea mariana / Rhododendron groenlandicum – Kalmia angustifolia / Sphagnum spp. CNVC00282

Type Description (cont'd)

Environment: CNVC00282 occurs on peat-accumulating sites with permanently high water tables in a region with a boreal climate that grades from subhumid continental in the west, to very humid and more maritime-influenced in the east. Organic material thickness over mineral or bedrock substrates varies from approximately 20 cm to > 1 m, qualifying as a peatland. Groundwater flow is adequate to maintain a forest physiognomy with weak minerotrophic conditions in the rooting layer, but nutrient status is generally poor. Surface microtopography is moderately hummocky; hollows can be in contact with groundwater at certain times of the growing season. CNVC00282 often forms large, contiguous stands either in landscape basins or adjacent to larger wetland complexes, often in the narrow transition between richer wet *Picea mariana* forests (e.g., CNVC00298 [*Picea mariana / Alnus incana / Gaultheria hispidula / Sphagnum* spp.]) and poorer woodland conditions (e.g., CNVC00283 [*Picea mariana / Chamaedaphne calyculata – Vaccinium angustifolium / Sphagnum* spp.]). Compared to the *typic*, the *Pinus banksiana* subassociation is not as wet. These stands often have < 40 cm of organic material over mineral soil, and although typical humus forms are peatymors, mors are more frequent than for the *typic* subassociation.

Dynamics: CNVC00282 is a stable condition that is maintained by a persistently high water table, an acidic substrate and poor nutrient status. Local hydrology is the main driver of vegetation dynamics. Although fires occur on peatlands, they are infrequent and of limited extent because these sites are so wet. Consequently, stands of CNVC00282 tend to be long lived and multi-aged, with trees up to or exceeding 200 years. *Picea mariana* can establish from seed under favourable conditions (e.g., suitable seedbed) but typically self-replaces on these sites by vegetative layering.

Because of limited groundwater inputs and a cold climate, decomposition is slow, and peat accumulates over time. In the absence of hydrological changes, this process can raise the rooting zone above the water table, which further reduces nutrient availability for tree growth and promotes succession to a less productive, woodland community, such as CNVC00283 [*Picea mariana / Chamaedaphne calyculata – Vaccinium angustifolium / Sphagnum* spp.], and ultimately to an open bog condition (M876 [North American Boreal & Sub-boreal Acidic Bog & Fen]).

Long-term change in the water table (either by anthropogenic activities or natural causes [e.g., beaver dams]) usually results in changes to the vegetation community. A rise in the water table can result in tree mortality and transition to open wetland vegetation. A drop in the water table can sometimes result in the development of more productive feathermoss forests (e.g., CNVC00276 [*Picea mariana / Rhododendron groenlandicum – Vaccinium angustifolium / Pleurozium schreberi (Sphagnum* spp.*)*]). Enrichment of the rooting layer, typically by groundwater flow, can stimulate development of more productive wetland forest conditions (e.g., CNVC00298) by increasing supplies of oxygen and macronutrients, and by reducing acidity.

The *Pinus banksiana* subassociation can form after a fire on sites where there is a shallow peat deposit over moist mineral soil. Since *P. banksiana* neither regenerates on deep peat deposits nor reproduces vegetatively, it is gradually replaced on these sites by *P. mariana.*

Range: CNVC00282 occurs in the boreal region of Quebec and Ontario and likely extends into southeastern Manitoba as far west as Lake Winnipeg. In Quebec, it ranges east to the Lower North Shore of the Gulf of Saint Lawrence and occurs in the Gaspé region. The *typic* subassociation is recognized in Quebec and Ontario. The *Pinus banksiana* subassociation is described only from western Quebec.

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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Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Sphaignes

Distribution

Countries: Canada

Provinces / Territories / States: Manitoba, Ontario, Quebec

Terrestrial Ecozones and Ecoregions of Canada: Atlantic Highlands: Appalachians, Northern New Brunswick Uplands; Boreal Shield: Abitibi Plains, Algonquin-Lake Nipissing, Central Laurentians, Lac Seul Upland, Lake Nipigon, Lake of the Woods, Lake Timiskaming Lowland, Mecatina Plateau, Rivière Rupert Plateau, Southern Laurentians, Thunder Bay-Quetico; Hudson Plains: James Bay Lowland; Taiga Shield: Mecatina River, Smallwood Reservoir-Michikamau

Rowe's Forest Regions and Sections of Canada: Boreal: Central Plateau, Chibougamau-Natashquan, East James Bay, Gaspé, Gouin, Hudson Bay Lowlands, Laurentide-Onatchiway, Lower English River, Missinaibi-Cabonga, Northeastern Transition, Northern Clay, Northern Coniferous, Superior, Upper English River; Great Lakes-St. Lawrence: Algoma, Algonquin-Pontiac, Eastern Townships, Haileybury Clay, Laurentian, Quetico, Saguenay, Sudbury-North Bay, Temiscouata-Restigouche, Timagami

NAAEC CEC Ecoregions of North America (Levels I & II): Hudson Plains; Northern Forests: Atlantic Highlands, Mixed Wood Shield, Softwood Shield; Taiga: Taiga Shield

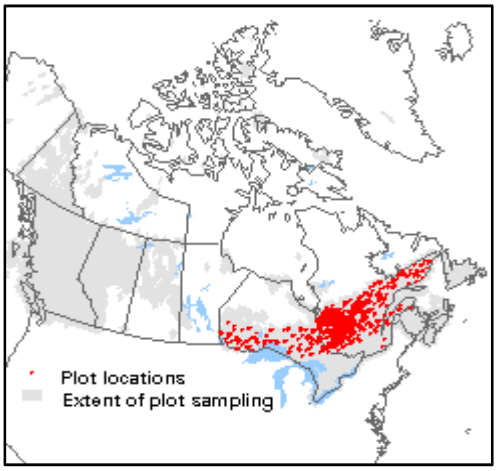
Nature Conservancy of Canada Ecoregions: Boreal Shield, Eastern Taiga Shield, Great Lakes, Hudson Plains, Northern Appalachians-Acadia, Superior-Lake of the Woods

Ecozones and Ecoregions of Manitoba: Boreal Shield

Manitoba Protected Areas Initiative Natural Regions: Manitoba Lowlands: Lake of the Woods; Precambrian Boreal Forest: Lac Seul Upland

Ecological Land Classification of Ontario (ecoregions and ecodistricts): 2E-2, 2E-4, 3E-1, 3E-2, 3E-4, 3E-5, 3E-6, 3E-7, 3S-1, 3S-2, 3S-3, 3S-4, 3S-5, 3W-1, 3W-2, 3W-3, 3W-4, 3W-5, 4E-1, 4E-3, 4E-4, 4E-5, 4S-1, 4S-2, 4S-3, 4S-4, 4S-5, 4S-6, 4W-1, 4W-2, 5S-2

Bioclimatic Domains and Subdomains of Québec: 2 Est, 3 Est, 3 Ouest, 4 Est, 4 Ouest, 5 Est, 5 Ouest, 6 Est, 6 Ouest, 7



Corresponding Types and Associations

282a typic	Ontario	BwTr11-1	*Picea mariana / Rhododendron groenlandicum (Vaccinium angustifolium) / Sphagnum* spp.
	Quebec	QC037A	*Picea mariana / Ledum groenlandicum / Sphagnum* spp. *[Typique]*
282b Pinus banksiana	Quebec	QC005	*Pinus banksiana - Picea mariana / Ledum groenlandicum - Kalmia angustifolia / Sphagnum* spp.

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Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Sphaignes

Vegetation Summary*

	Association CNVC00282		Subassociation 282a *typic*		Subassociation 282b *Pinus banksiana*	
	930 plots		**908 plots**		**22 plots**	
Species Name[†]	% Cover[±]	% Presence[^]	% Cover[±]	% Presence[^]	% Cover[±]	% Presence[^]
Overstory Trees						
Picea mariana	**36**	**99**	**36**	**100**	**22**	**95**
Abies balsamea	5	27	5	27	3	9
Pinus banksiana	11	10	7	8	**27**	**100**
Betula papyrifera	6	6	6	6	6	23
Populus tremuloides	3	1	2	1	3	23
Tree Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})[‡]	**(19 32 44 50 66)**		**(19 32 44 50 66)**		**(32 36 51 66 66)**	
Understory Woody Shrubs and Regenerating Trees						
Rhododendron groenlandicum	**45**	**100**	**46**	**100**	**23**	**95**
Picea mariana	23	98	23	98	12	95
Vaccinium myrtilloides	5	84	5	84	6	77
Kalmia angustifolia	**13**	**79**	**13**	**79**	**20**	**95**
Vaccinium angustifolium	5	76	5	75	8	100
Chamaedaphne calyculata	8	52	8	52	22	50
Abies balsamea	7	45	7	46	3	27
Kalmia polifolia	2	40	2	40	4	45
Salix sp.	5	33	5	32	5	91
Alnus incana	5	30	4	30	15	41
Amelanchier sp.	3	22	3	21	3	55
Larix laricina	3	21	3	21	3	18
Betula papyrifera	4	15	4	14	3	27
Ilex mucronata	4	11	4	10	9	55
Viburnum nudum	3	11	3	10	5	50
Sorbus americana	3	9	3	8	3	23
Pinus banksiana	5	2	5	1	4	45
Shrub Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})[‡]	**(49 66 81 99 99)**		**(49 66 81 99 99)**		**(49 68 79 99 99)**	
Understory Herbs and Dwarf Shrubs						
Gaultheria hispidula	5	98	5	98	3	77
Maianthemum trifolium	4	70	4	71	5	50
Carex sp.	5	60	5	60	4	64
Cornus canadensis	3	59	3	59	3	64
Rubus chamaemorus	5	50	5	51	2	9
Vaccinium oxycoccos	3	42	3	43	2	18
Lycopodium annotinum	2	37	2	38	3	9
Coptis trifolia	2	33	2	32	2	55
Equisetum sp.	5	26	5	26	3	14
Equisetum sylvaticum	4	26	4	26	2	5
Clintonia borealis	2	22	2	21	2	23

Picea mariana / *Rhododendron groenlandicum – Kalmia angustifolia* / *Sphagnum* spp. CNVC00282

Vegetation Summary (cont'd)*

Species Name†	Association CNVC00282 % Cover±	Association CNVC00282 % Presence^	Subassociation 282a *typic* % Cover±	Subassociation 282a *typic* % Presence^	Subassociation 282b *Pinus banksiana* % Cover±	Subassociation 282b *Pinus banksiana* % Presence^
Maianthemum canadense	2	13	2	13	4	32
Poaceae	3	12	3	12	5	27
Pteridium aquilinum	3	2	3	2	2	23
Herb Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(3 3 14 16 33)**		**(3 3 14 16 33)**		**(1 3 9 16 31)**	
Bryophytes and Lichens						
Pleurozium schreberi	18	98	18	98	19	100
Cladina rangiferina	5	84	4	84	5	77
Sphagnum sp.	**57**	**79**	**57**	**79**	**55**	**82**
Dicranum sp.	3	66	3	66	2	68
Sphagnum fuscum	**14**	**56**	**14**	**56**	**14**	**64**
Ptilium crista-castrensis	4	54	4	54	4	64
Cladonia sp.	3	54	3	54	2	41
Sphagnum magellanicum	**11**	**43**	**11**	**43**	**2**	**41**
Polytrichum sp.	3	43	2	42	5	91
Cladina stellaris	4	42	4	42	2	23
Sphagnum girgensohnii	**23**	**41**	**22**	**42**	**35**	**27**
Ptilidium ciliare	3	38	3	39	2	14
Cladina mitis	2	37	2	37	2	41
Hylocomium splendens	4	31	4	31	3	9
Bryo-Lichen Stratum Cover (P_{10} P_{25} Mean P_{75} P_{90})‡	**(90 90 89 90 90)**		**(90 90 89 90 92)**		**(70 75 83 90 90)**	

* 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 CNVC00282 **930 plots**	Subassociation 282a *typic* **908 plots**	Subassociation 282b *Pinus banksiana* **22 plots**
Elevation Range (min–mean–max meters)			
	20–352–835	20–353–835	110–327–565
Slope Gradient (% frequency)			
	very steep (0)	very steep (0)	very steep (0)
	steep (1)	steep (1)	steep (0)
	moderately steep (2)	moderately steep (2)	moderately steep (0)
	moderate (3)	moderate (3)	moderate (5)
	gentle (12)	gentle (12)	gentle (9)
	level (81)	**level (81)**	**level (86)**
	missing data (2)	missing data (2)	missing data (0)
Aspect (% frequency)			
	north (9)	north (8)	north (18)
	east (7)	east (7)	east (9)
	south (5)	south (5)	south (5)
	west (9)	west (9)	west (5)
	level (70)	**level (70)**	**level (64)**
	missing data (1)	missing data (1)	missing data (0)
Meso Topoposition (% frequency)			
	crest / upper (4)	crest / upper (4)	crest / upper (9)
	mid (13)	mid (13)	mid (14)
	lower / toe (11)	lower / toe (11)	lower / toe (18)
	depression (4)	depression (4)	depression (5)
	level (67)	**level (67)**	**level (55)**
Moisture Regime (% frequency)			
	very dry (0)	very dry (0)	very dry (0)
	dry (0)	dry (0)	dry (0)
	mesic (7)	mesic (7)	mesic (27)
	moist (28)	moist (27)	moist (36)
	wet (65)	**wet (65)**	wet (36)
Nutrient Regime (% frequency)			
	missing data (100)	missing data (100)	missing data (100)

Picea mariana / *Rhododendron groenlandicum – Kalmia angustifolia* / *Sphagnum* spp. CNVC00282

Site / Soil Characteristics (cont'd)

	Association CNVC00282	Subassociation 282a *typic*	Subassociation 282b *Pinus banksiana*
Soil Parent Material (% frequency)			
	bedrock (0)	bedrock (0)	bedrock (5)
	colluvium (1)	colluvium (1)	colluvium (0)
	eolian (0)	eolian (0)	eolian (5)
	moraine / till (24)	moraine / till (24)	moraine / till (18)
	fluvial (0)	fluvial (0)	fluvial (0)
	glaciofluvial (6)	glaciofluvial (5)	glaciofluvial (18)
	lacustrine (2)	lacustrine (2)	lacustrine (0)
	glaciolacustrine (20)	glaciolacustrine (20)	glaciolacustrine (18)
	marine (1)	marine (0)	marine (18)
	organic (45)	**organic (46)**	organic (18)
	missing data (1)	missing data (1)	missing data (0)
Soil Rooting Zone Substrate (% frequency)			
	non-soil (1)	non-soil (1)	non-soil (5)
	sandy (5)	sandy (4)	sandy (14)
	coarse loamy (4)	coarse loamy (4)	coarse loamy (5)
	fine loamy (3)	fine loamy (3)	fine loamy (5)
	silty (1)	silty (1)	silty (0)
	clayey (3)	clayey (3)	clayey (0)
	organic (47)	**organic (47)**	organic (18)
	missing data (37)	missing data (37)	missing data (55)
Root Restricting Depth (% frequency)			
	0 – 20 cm (5)	0 – 20 cm (5)	0 – 20 cm (5)
	21 – 99 cm (43)	21 – 99 cm (42)	21 – 99 cm (55)
	≥ 100 cm (4)	≥ 100 cm (4)	≥ 100 cm (0)
	missing data (48)	missing data (48)	missing data (41)
Humus Form (% frequency)			
	mor (17)	mor (16)	mor (41)
	moder (1)	moder (1)	moder (0)
	mull (0)	mull (0)	mull (0)
	peatymor (82)	**peatymor (82)**	**peatymor (59)**
	missing data (1)	missing data (1)	missing data (0)

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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:

CNVC00112 [*Picea mariana / Vaccinium vitis-idaea / Sphagnum* spp.] is a less productive woodland condition that occurs on comparable or poorer sites from British Columbia to northwestern Ontario. It has a woodland physiognomy and higher constancy and abundance of *Vaccinium vitis-idaea*. It contains less *V. myrtilloides* and lacks *V. angustifolium* and *Kalmia angustifolia*.

CNVC00276 [*Picea mariana / Rhododendron groenlandicum – Vaccinium angustifolium / Pleurozium schreberi (Sphagnum* spp.*)*] occurs in the same range on sites that are neither as wet nor as poor. It typically has greater canopy cover and a moss layer with greater cover of *Pleurozium schreberi* and less of *Sphagnum* mosses (see Dynamics).

CNVC00283 [*Picea mariana / Chamaedaphne calyculata – Vaccinium angustifolium / Sphagnum* spp.] occurs in the same range on poorer wetland sites. It has a similar floristic composition, although with higher constancy and cover of *Chamaedaphne calyculata*, but is less productive, with stunted trees and a woodland physiognomy (see Environment and Dynamics).

CNVC00288 [*Picea mariana – Larix laricina / Rhododendron groenlandicum / Gaultheria hispidula / Sphagnum* spp.] occurs on similar sites in the same range but has *Larix laricina* codominant with *Picea mariana*.

CNVC00290 [*Picea mariana (Abies balsamea) / Rhododendron groenlandicum / Sphagnum* spp.] occurs on moist to wet, nutrient-medium sites in Quebec. It has more *Abies balsamea* in the tree and shrub layers and much lower abundance of ericaceous shrubs.

CNVC00298 [*Picea mariana / Alnus incana / Gaultheria hispidula / Sphagnum* spp.] occurs on wet, nutrient-medium to rich sites in the same range. It has abundant *Alnus incana* in the shrub layer and much lower abundance of ericaceous shrubs (see Environment).

CNVC00335 [*Picea mariana / Kalmia angustifolia / Pleurozium schreberi – Sphagnum capillifolium*] occurs on similar sites on insular Newfoundland. It has more *Abies balsamea* in the tree layer and a shrub layer with less *Rhododendron groenlandicum* and *Chamaedaphne calyculata*, no *Vaccinium myrtilloides* and more abundant *Kalmia angustifolia*.

CNVC00339 [*Picea mariana – Kalmia angustifolia – Ilex mucronata / Sphagnum* spp. – *Cladina* spp. – *Pleurozium schreberi*] occurs on comparable wind-exposed boreal sites on Cape Breton Island, Nova Scotia and insular Newfoundland. It has a krummholtz physiognomy with more *Abies balsamea, Ilex mucronata, Kalmia angustifolia, Rhododendron canadense* and *Viburnum nudum* in the shrub layer.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

CNVC00282 is consistent with the concept of a coniferous treed swamp in the Canadian Wetland Classification System.

Picea mariana / *Rhododendron groenlandicum – Kalmia angustifolia* / *Sphagnum* spp. CNVC00282

Source Information

Number of source plots for CNVC00282: 930
Number of source plots for 282a *typic*: 908
Number of source plots for 282b *Pinus banksiana*: 22
Information Sources:

McMurray, S.C., Johnson, J.A., Zhou, K., Uhlig, P.W.C. 2015. Ontario ecological land classification program - Ecological Data Repository (EDR). Ont. Min. Nat. Resour. & For., Sci.& Info. Branch, Sault Ste. Marie, ON.

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Concept Authors: K. Baldwin, K. Chapman, M. Major, C. Morneau, P. Uhlig, M. Wester
Description Authors: K. Baldwin and K. Chapman
Date of Concept: December, 2012
Date of Description: November, 2016

Classification References:

Bergeron, J-F.; Grondin, P.; Blouin, J. 1999. Rapport de classification écologique du sous-domaine bioclimatique de la pessière à mousses de l'ouest. Min. des Res. nat. du Qué, Dir. des inv. for., Sainte-Foy, QC.

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