



Forest / Forêt

Association CNVC00217

***Picea mariana* – *Abies balsamea* / *Rhododendron groenlandicum* / *Pleurozium schreberi***  
**Black Spruce – Balsam Fir / Common Labrador Tea / Red-stemmed Feathermoss**  
**Épinette noire – Sapin baumier / Thé du Labrador / Pleurozie dorée**

**Subassociations:** 217a *typic*, 217b *Kalmia angustifolia*

**CNVC Alliance:** CA00012 *Picea mariana* (*Pinus banksiana*) / *Vaccinium angustifolium* / *Pleurozium schreberi*

**CNVC Group:** CG0006 Ontario-Quebec Boreal Mesic-Moist Black Spruce (Jack Pine) Forest



Source: Natural Resources Canada - Canadian Forest Service

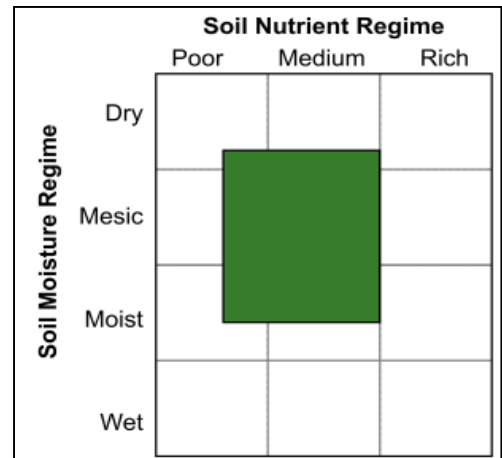
**Type Description**

**Concept:** CNVC00217 is a boreal coniferous forest Association that ranges from Manitoba to Quebec. The canopy is moderately closed, comprising roughly equal proportions of black spruce (*Picea mariana*) and balsam fir (*Abies balsamea*). The well-developed to dense shrub layer has abundant balsam fir and black spruce regeneration in addition to common Labrador tea (*Rhododendron groenlandicum*). It also includes paper birch (*Betula papyrifera*), velvet-leaved blueberry (*Vaccinium myrtilloides*), early lowbush blueberry (*V. angustifolium*) and in the eastern part of the range, sheep laurel (*Kalmia angustifolia*). The herb layer is poorly developed with only bunchberry (*Cornus canadensis*) and creeping snowberry (*Gaultheria hispidula*) common. A well-developed to continuous mat of feathermosses, in particular red-stemmed feathermoss (*Pleurozium schreberi*), further characterizes this Association. CNVC00217 occurs in a region with a continental boreal climate that is subhumid in the west, becoming increasingly humid and maritime farther east. It commonly occurs on sites that are mesic and nutrient-medium. It is a late seral condition with dynamics driven mainly by fire, outbreaks of spruce budworm (*Choristoneura fumiferana*) and windthrow. Although black spruce and balsam fir are present in every stand, climate, disturbance type and history and site conditions affect the relative dominance of each species. Two subassociations are distinguished, *typic* and *Kalmia angustifolia*.

**Vegetation:** CNVC00217 is a coniferous forest Association with a moderately closed canopy codominated by *Picea mariana* and *Abies balsamea*. The shrub layer is well developed to dense and characterized by pervasive *P. mariana* and *A. balsamea* regeneration, as well as abundant *Rhododendron groenlandicum*. *Vaccinium myrtilloides*, *V. angustifolium* and *Betula papyrifera* are usually present. The herb layer is poorly developed; only *Cornus canadensis* and *Gaultheria hispidula* are consistently present. A well-developed to continuous moss layer dominated by *Pleurozium schreberi* further characterizes this Association. Minor amounts of *Ptilium crista-castrensis*, *Cladina rangiferina*, *Dicranum* spp. and *Hylocomium splendens* are often present. The *typic* subassociation has slightly higher frequency of the herbs *Clintonia borealis*, *Maianthemum canadense* and *Linnaea borealis*. The *Kalmia angustifolia* subassociation has greater shrub cover with more abundant heath species, particularly *R. groenlandicum* and *K. angustifolia*.

**Environment:** CNVC00217 occurs in a continental boreal climate that is subhumid in the western part of its range, becoming very humid and more maritime in the east. It is found primarily on mesic, nutrient-medium sites. Stands are usually on gentle to moderately steep slopes, on middle to upper-slope topositions. Soils are usually moderately deep to deep, well drained and coarse-textured, often coarse loams or sands and typically derived from morainal parent materials. However, the *typic* subassociation occurs more frequently on glaciofluvial and lacustrine deposits than does the *Kalmia angustifolia* subassociation. Mor humus forms are common.

CNVC00217 occurs where regional fire cycles are intermediate (100-270 years), long (270-500 years) or even very long (>500 years). Fire cycle length and site conditions influence the relative dominance of *Picea mariana* and *Abies balsamea* in each stand. Longer fire cycles favour the late seral species *A. balsamea*. More extreme site conditions, either drier or wetter (and usually poorer) tend to favour the less nutrient-demanding species *P. mariana*. Conversely, *A. balsamea* is more competitive on sites with better nutrient status.





***Picea mariana* – *Abies balsamea* / *Rhododendron groenlandicum* / *Pleurozium schreberi*  
CNVC00217**

**Type Description (cont'd)**

**Dynamics:** CNVC00217 is a late seral condition with dynamics mainly driven by fire, outbreaks of spruce budworm (*Choristoneura fumiferana*) and windthrow. It can succeed a *Picea mariana* Association, such as CNVC00208 [*Picea mariana* – *Pinus banksiana* / *Vaccinium angustifolium* / *Pleurozium schreberi*] in the western part of the range, or CNVC00211 [*Picea mariana* / *Rhododendron groenlandicum* – *Kalmia angustifolia* / *Pleurozium schreberi*] or CNVC00214 [*Picea mariana* – *Betula papyrifera* / *Kalmia angustifolia* / *Pleurozium schreberi*] in the east.

*Picea mariana* and *Abies balsamea* both have thin bark and are unlikely to survive fire, but *P. mariana* has cones that open when heated to release seeds while *A. balsamea* cones are destroyed. Consequently, *P. mariana* typically forms the initial post-fire cohort while *A. balsamea* becomes established in the stand later when seeds are disseminated from nearby areas. As *A. balsamea* grows into the canopy over time, the CNVC00217 condition is formed.

Compared to *P. mariana*, *A. balsamea* is more vulnerable to spruce budworm, so outbreaks of this insect favour *P. mariana*. Proportions of these tree species are thus affected by the disturbance type, history, frequency and severity, in addition to site conditions (see Environment). If seeds from pioneer species, such as *Betula papyrifera* or *Pinus banksiana* are available, these species can form the initial post-fire stand (e.g., CNVC00207 [*Pinus banksiana* (*Picea mariana*) / *Vaccinium angustifolium* / *Pleurozium schreberi*]). The slower-growing, more shade tolerant species *P. mariana* and *A. balsamea* tend to replace these early seral species as the stand ages, potentially forming CNVC00217.

If a disturbance fails to eliminate the below-ground parts of *Rhododendron groenlandicum* or other heath species, they may initially impede the establishment and growth of tree seedlings. These semi-shade tolerant species gradually decline as the forest canopy closes and feathermosses begin to dominate the understory.

**Range:** CNVC00217 occurs in the boreal region of Quebec and Ontario and likely extends into southeastern Manitoba as far west as Lake Winnipeg. In Quebec it extends east to the Lower North Shore of the Gulf of Saint Lawrence near the St. Augustine River and is also known from Anticosti Island. CNVC00217 occurs sporadically in the northern temperate region, usually on sites with poor soils or that are cooler than normal for that region. The *typic* subassociation is recognized in Ontario and Quebec. The *Kalmia angustifolia* subassociation is described only from Quebec.

**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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**Épinette noire – Sapin baumier / Thé du Labrador / Pleurozie dorée**

## Distribution

**Countries:** Canada

**Provinces / Territories / States:** Manitoba, Ontario, Quebec

**Terrestrial Ecozones and Ecoregions of Canada:** Boreal Shield: Abitibi Plains, Algonquin-Lake Nipissing, Anticosti Island, Big Trout Lake, Central Laurentians, Lac Seul Upland, Lake Nipigon, Lake Timiskaming Lowland, Lake of the Woods, Mecatina Plateau, Rivière Rupert Plateau, Southern Laurentians, Thunder Bay-Quetico

**Rowe's Forest Regions and Sections of Canada:** Boreal: Anticosti, Central Plateau, Chibougamau-Natashquan, Gouin, Laurentide-Onatchiway, Lower English River, Missinaibi-Cabonga, Newfoundland-Labrador Barrrens, Northern Clay, Northern Coniferous, Superior, Upper English River; Great Lakes-St. Lawrence: Algoma, Algonquin-Pontiac, Middle Ottawa, Quetico, Timagami

**NAAEC CEC Ecoregions of North America (Levels I & II):** Northern Forests: Mixed Wood Shield, Softwood Shield

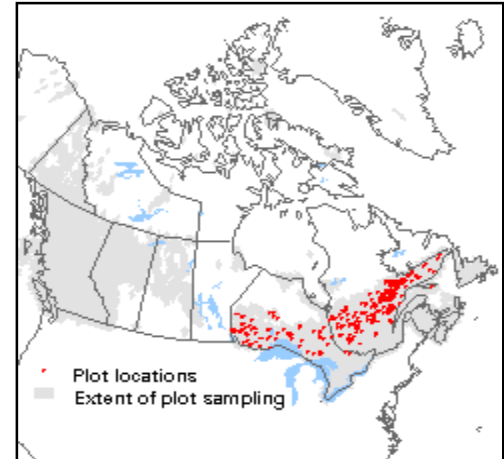
**Nature Conservancy of Canada Ecoregions:** Boreal Shield, Great Lakes, Superior-Lake of the Woods

**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):** 2W-1, 2W-3, 3E-1, 3E-2, 3E-4, 3E-5, 3E-6, 3S-1, 3S-2, 3S-3, 3S-4, 3S-5, 3W-1, 3W-2, 3W-3, 3W-4, 3W-5, 4E-3, 4E-4, 4S-1, 4S-2, 4S-3, 4S-4, 4S-5, 4S-6, 4W-1, 4W-2, 5E-10

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



## Corresponding Types and Associations

<b>217a typic</b>	Ontario	BTr7-11	<i>Picea mariana</i> - <i>Abies balsamea</i> / <i>Clintonia borealis</i> / <i>Pleurozium schreberi</i>
	Quebec	QC013A	<i>Picea mariana</i> - <i>Abies balsamea</i> / ( <i>Ledum groenlandicum</i> ) / <i>Pleurozium schreberi</i> [Typique]
		QC013B	<i>Picea mariana</i> - <i>Abies balsamea</i> / ( <i>Ledum groenlandicum</i> ) / <i>Pleurozium schreberi</i> [ <i>Alnus viridis</i> ]
		QC013C	<i>Picea mariana</i> - <i>Abies balsamea</i> / ( <i>Ledum groenlandicum</i> ) / <i>Pleurozium schreberi</i> [ <i>Pteridium aquilinum</i> ]
<b>217b <i>Kalmia angustifolia</i></b>	Quebec	QC014	<i>Picea mariana</i> - <i>Abies balsamea</i> / <i>Ledum groenlandicum</i> - <i>Kalmia angustifolia</i> / <i>Pleurozium schreberi</i>



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Vegetation Summary\*

Species Name <sup>†</sup>	Association CNVC00217		Subassociation 217a <i>typic</i>		Subassociation 217b <i>Kalmia angustifolia</i>	
	249 plots		152 plots		97 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 mariana</i>	24	99	25	99	23	100
<i>Abies balsamea</i>	18	98	18	97	19	100
<i>Betula papyrifera</i>	6	51	7	48	6	56
<i>Pinus banksiana</i>	10	23	10	36	3	3
<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>(32 36 50 66 66)</b>		<b>(26 37 50 66 75)</b>		<b>(32 36 49 50 66)</b>	
<b>Understory Woody Shrubs and Regenerating Trees</b>						
<i>Abies balsamea</i>	16	99	16	99	16	100
<i>Picea mariana</i>	15	96	10	93	21	100
<i>Rhododendron groenlandicum</i>	22	76	11	63	33	97
<i>Vaccinium myrtilloides</i>	5	72	4	67	6	79
<i>Vaccinium angustifolium</i>	5	70	4	64	6	80
<i>Betula papyrifera</i>	5	68	4	64	5	74
<i>Kalmia angustifolia</i>	13	51	5	30	17	84
<i>Amelanchier</i> sp.	4	43	3	35	5	55
<i>Alnus viridis</i>	12	33	14	36	8	30
<i>Sorbus americana</i>	3	28	3	23	4	35
<i>Salix</i> sp.	3	28	3	22	4	36
<i>Sorbus decora</i>	2	26	2	32	4	15
<i>Diervilla lonicera</i>	3	21	3	32	2	4
<i>Ilex mucronata</i>	4	17	4	14	4	23
<i>Acer spicatum</i>	3	13	3	20	3	2
<i>Rosa acicularis</i>	1	13	1	22	-	-
<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 36 61 83 99)</b>		<b>(16 26 47 66 83)</b>		<b>(49 66 82 99 99)</b>	
<b>Understory Herbs and Dwarf Shrubs</b>						
<i>Cornus canadensis</i>	4	92	4	93	4	90
<i>Gaultheria hispidula</i>	4	85	3	78	5	96
<i>Clintonia borealis</i>	3	61	2	72	3	45
<i>Maianthemum canadense</i>	2	60	2	70	3	44
<i>Linnaea borealis</i>	2	55	2	62	2	45
<i>Coptis trifolia</i>	2	52	2	56	2	45
<i>Lysimachia borealis</i>	2	43	2	54	2	25
<i>Lycopodium annotinum</i>	2	37	2	43	2	26
<i>Aralia nudicaulis</i>	2	34	2	47	2	14
<i>Vaccinium vitis-idaea</i>	2	25	2	22	2	30
<i>Carex</i> sp.	3	21	3	14	2	31
<i>Lycopodium obscurum</i>	2	20	2	26	2	9



***Picea mariana* – *Abies balsamea* / *Rhododendron groenlandicum* / *Pleurozium schreberi*  
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**Vegetation Summary (cont'd)\***

Species Name <sup>†</sup>	Association CNVC00217		Subassociation 217a <i>typic</i>		Subassociation 217b <i>Kalmia angustifolia</i>	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<i>Rubus pubescens</i>	2	18	2	26	5	4
<i>Eurybia macrophylla</i>	4	15	4	22	2	4
<i>Streptopus lanceolatus</i>	1	15	1	24	2	1
<i>Goodyera repens</i>	1	15	1	22	2	4
<i>Rubus chamaemorus</i>	2	11	2	5	2	21
<b>Herb Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(3 3 15 17 33)</b>		<b>(3 3 17 24 33)</b>		<b>(3 3 11 16 23)</b>	
<b>Bryophytes and Lichens</b>						
<i>Pleurozium schreberi</i>	<b>49</b>	<b>100</b>	<b>45</b>	<b>100</b>	<b>56</b>	<b>100</b>
<i>Ptilium crista-castrensis</i>	16	87	15	84	17	91
<i>Cladina rangiferina</i>	3	71	2	57	3	95
<i>Dicranum</i> sp.	3	67	4	50	3	94
<i>Hylocomium splendens</i>	8	61	9	61	7	61
<i>Cladonia</i> sp.	2	52	2	42	3	67
<i>Sphagnum</i> sp.	9	47	7	33	10	68
<i>Polytrichum</i> sp.	2	44	2	38	3	55
<i>Cladina mitis</i>	2	32	2	22	2	47
<i>Dicranum polysetum</i>	3	27	3	44	-	-
<i>Cladina stellaris</i>	3	25	2	15	3	40
<i>Ptilidium ciliare</i>	2	24	2	13	2	40
<i>Sphagnum fuscum</i>	4	22	2	13	4	38
<i>Bazzania trilobata</i>	2	16	2	11	2	24
<i>Dicranum fuscescens</i>	1	12	1	20	-	-
<b>Bryo-Lichen Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(38 70 75 90 90)</b>		<b>(33 50 70 90 92)</b>		<b>(70 90 84 90 90)</b>	

\* species present in > 20% of sample plots are listed

<sup>†</sup> see **Botanical Nomenclature** link at <http://cnvc-cnvc.ca> for botanical sources, synonyms and common names

<sup>‡</sup> average percent cover of a species within the plots in which it occurs (i.e., characteristic cover)

<sup>^</sup> percent frequency occurrence for a species within the total plots

<sup>‡</sup> P<sub>x</sub> = X<sup>th</sup> percentile (e.g., P<sub>10</sub> = 10<sup>th</sup> percentile)





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Épinette noire – Sapin baumier / Thé du Labrador / Pleurozie dorée

Site / Soil Characteristics

	Association CNVC00217 249 plots	Subassociation 217a <i>typic</i> 152 plots	Subassociation 217b <i>Kalmia angustifolia</i> 97 plots
<b>Elevation Range (min–mean–max meters)</b>	110–428–845 missing data (2)	150–415–845 missing data (3)	110–447–795 missing data (0)
<b>Slope Gradient (% frequency)</b>	steep (8) moderately steep (20) <b>moderate (24)</b> gentle (23) level (23) missing data (2)	steep (7) moderately steep (18) moderate (20) gentle (25) <b>level (26)</b> missing data (4)	steep (9) moderately steep (23) <b>moderate (29)</b> gentle (20) level (20) missing data (0)
<b>Aspect (% frequency)</b>	north (19) east (21) south (14) <b>west (29)</b> level (17)	north (16) east (20) south (16) <b>west (30)</b> level (18)	north (25) east (23) south (10) <b>west (26)</b> level (16)
<b>Meso Toposition (% frequency)</b>	crest / upper (28) <b>mid (48)</b> lower / toe (9) depression (1) level (13) missing data (0)	crest / upper (33) <b>mid (39)</b> lower / toe (11) depression (1) level (15) missing data (1)	crest / upper (21) <b>mid (62)</b> lower / toe (6) depression (1) level (10) missing data (0)
<b>Moisture Regime (% frequency)</b>	very dry (2) dry (8) <b>mesic (68)</b> moist (18) wet (2)	very dry (3) dry (12) <b>mesic (63)</b> moist (20) wet (2)	very dry (1) dry (3) <b>mesic (77)</b> moist (15) wet (3)
<b>Nutrient Regime (% frequency)</b>	missing data (100)	missing data (100)	missing data (100)



***Picea mariana* – *Abies balsamea* / *Rhododendron groenlandicum* / *Pleurozium schreberi*  
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**Site / Soil Characteristics (cont'd)**

	Association CNVC00217	Subassociation 217a <i>typic</i>	Subassociation 217b <i>Kalmia angustifolia</i>
<b>Soil Parent Material (% frequency)</b>	bedrock (2) eolian (0) <b>moraine / till (65)</b> glaciofluvial (13) lacustrine (11) glaciolacustrine (4) organic (2) missing data (2)	bedrock (0) eolian (1) <b>moraine / till (57)</b> glaciofluvial (18) lacustrine (18) glaciolacustrine (2) organic (1) missing data (4)	bedrock (4) eolian (0) <b>moraine / till (78)</b> glaciofluvial (6) lacustrine (0) glaciolacustrine (7) organic (4) missing data (0)
<b>Soil Rooting Zone Substrate (% frequency)</b>	non-soil (2) sandy (13) coarse loamy (20) fine loamy (3) silty (3) clayey (3) organic (3) missing data (53)	non-soil (0) sandy (14) coarse loamy (24) fine loamy (4) silty (5) clayey (5) organic (1) missing data (48)	non-soil (4) sandy (12) coarse loamy (13) fine loamy (1) silty (0) clayey (1) organic (6) missing data (62)
<b>Root Restricting Depth (% frequency)</b>	0 – 20 cm (8) <b>21 – 99 cm (50)</b> ≥ 100 cm (16) missing data (27)	0 – 20 cm (7) <b>21 – 99 cm (45)</b> ≥ 100 cm (26) missing data (22)	0 – 20 cm (9) <b>21 – 99 cm (57)</b> ≥ 100 cm (0) missing data (34)
<b>Humus Form (% frequency)</b>	<b>mor (86)</b> moder (6) mull (0) peatymor (7) missing data (0)	<b>mor (85)</b> moder (10) mull (1) peatymor (4) missing data (1)	<b>mor (88)</b> moder (0) mull (0) peatymor (12) 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:

CNVC00208 [*Picea mariana* – *Pinus banksiana* / *Vaccinium angustifolium* / *Pleurozium schreberi*] occurs on similar sites in Ontario but has more *Pinus banksiana* and less *Abies balsamea* (see Dynamics).

CNVC00211 [*Picea mariana* / *Rhododendron groenlandicum* – *Kalmia angustifolia* / *Pleurozium schreberi*] occurs on similar sites in northeastern Ontario and Quebec but lacks overstory *Abies balsamea* (see Dynamics).

CNVC00222 [*Abies balsamea* / *Pleurozium schreberi*] occurs on similar sites in the same range but lacks *Picea mariana*.

CNVC00277 [*Picea mariana* – *Abies balsamea* / *Pleurozium schreberi* – *Sphagnum* spp.] occurs on moister sites in the same range and has significant *Sphagnum* moss cover.

CNVC00292 [*Picea mariana* - *Abies balsamea* / *Vaccinium vitis-idaea* / *Pleurozium schreberi* - *Bazzania trilobata*] occurs on coastal sites in Nova Scotia, and has a more open canopy. It often has *Viburnum nudum* in the shrub layer, higher constancy of *Pteridium aquilinum* and *Vaccinium vitis-idaea* in the herb layer and more *Bazzania trilobata* in the moss layer.

CNVC00296 [*Picea mariana* – *Abies balsamea* / *Alnus incana*] occurs on moister, richer sites in the same range and has abundant *Alnus incana* in the shrub layer.

CNVC00350 [*Picea mariana* / *Pleurozium schreberi* – *Hylocomium splendens*] occurs on similar sites in Quebec but lacks overstory *Abies balsamea* (see Dynamics).

CNVC00351 [*Picea mariana* – *Abies balsamea* / *Pleurozium schreberi* (*Hylocomium splendens*)] occurs on similar sites in the same range but has lower abundance of ericaceous shrubs and more *Hylocomium splendens* in the moss layer.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

## Comments





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### Source Information

**Number of source plots for CNVC00217:** 249

**Number of source plots for 217a typic:** 152

**Number of source plots for 217b *Kalmia angustifolia*:** 97

#### Information Sources:

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***Picea mariana* – *Abies balsamea* / *Rhododendron groenlandicum* / *Pleurozium schreberi*  
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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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