



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Subassociations: 310a *Hylocomium splendens*, 310b *Rhytidiadelphus loreus*, 310c *Cornus stolonifera*, 310d *Oxalis montana*

CNVC Alliance: CA00007 *Abies balsamea* (*Betula papyrifera* – *B. alleghaniensis*) / *Dryopteris carthusiana*

CNVC Group: CG0003 Atlantic Boreal Mesic Balsam Fir – Paper Birch – White Spruce Forest



Source: S. Basquill

Type Description

Concept: CNVC00310 is a boreal coniferous forest Association that occurs in New Brunswick, Nova Scotia and insular Newfoundland. It has a closed canopy dominated by balsam fir (*Abies balsamea*), often with minor presence of paper birch (*Betula papyrifera*). The shrub layer varies from poorly to moderately developed and consists mainly of regenerating balsam fir. A dense herb layer with abundant wood ferns (*Dryopteris carthusiana*, *D. campyloptera* and/or *D. intermedia*) characterizes this Association. The prominence of shaded wood moss (*Hylocomiastrum umbratum*) and greater broom moss (*Dicranum majus*) along with red-stemmed feathermoss (*Pleurozium schreberi*) and knight's plume moss (*Ptilium crista-castrensis*) in the well-developed moss layer is also distinctive. CNVC00310 occurs in a region with a humid to very humid, maritime-influenced boreal climate. It is typically found on mesic to moist, nutrient-medium to rich sites. These are some of the most productive sites in the region. It is a late successional condition that occurs where fire has been absent for a long period. Windthrow and insect outbreaks are the primary natural disturbances. Canopy gaps or large patches that result from these disturbances promote self-replacement of this Association by the release of balsam fir regeneration. Four subassociations are recognized: *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Cornus stolonifera* and *Oxalis montana*.

Vegetation: CNVC00310 is a coniferous forest Association with a closed canopy dominated by *Abies balsamea*, usually with low abundance of *Betula papyrifera* (see Comments) and/or *Picea glauca*. The poorly developed shrub layer is dominated by *A. balsamea* regeneration. A dense herb layer with abundant *Dryopteris* spp., including *D. carthusiana*, *D. campyloptera* and/or *D. intermedia*, characterizes this Association. Other species that are common amidst the ferns include *Lysimachia borealis*, *Maianthemum canadense*, *Cornus canadensis* and *Clintonia borealis*. The moss layer is usually well developed and typically includes *Pleurozium schreberi*, *Ptilium crista-castrensis*, *Hylocomiastrum umbratum* and *Dicranum majus*.

Four subassociations are distinguished: *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Cornus stolonifera* and *Oxalis montana*. The moss layer of the *Hylocomium splendens* subassociation is dominated by *H. splendens*, with lower cover of *P. schreberi* and *D. majus*. Where this subassociation occurs within the limited range of *Betula alleghaniensis* in Newfoundland, it occasionally has minor cover of *B. alleghaniensis* in the tree or shrub layers. The *Rhytidiadelphus loreus* subassociation has a dense moss layer dominated by *R. loreus*, *H. umbratum* and *D. majus*. The *Cornus stolonifera* subassociation is characterized by *C. stolonifera* in the shrub layer, and very high cover of *D. carthusiana* in the herb layer. The *Oxalis montana* subassociation is differentiated by the abundance of this forb and greater cover of *D. campyloptera* and *D. intermedia* relative to *D. carthusiana*.

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



***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Type Description (cont'd)

Environment: CNVC00310 occurs in a humid to very humid, maritime-influenced boreal climate where regional fire cycles are long (270-500 years) or very long (>500 years). It is found most frequently on mesic to moist, nutrient-medium to rich sites; these are among the most productive sites in this region of the boreal. Stands are usually on level sites or gentle to moderate slopes, often on cooler aspects (either east or north-facing). Soils are typically coarse-textured, well-drained and derived from morainal parent materials. Seepage enhances the moisture and nutrient availability on these sites. Mor humus forms are typical.

There are site distinctions among the four subassociations. The *Hylocomium splendens* subassociation occurs more frequently on mesic slopes than do the other subassociations, which are most common on moist level sites. The *Rhytidiadelphus loreus* subassociation occurs where moist shallow tills cover limestone bedrock in western Newfoundland. Where its range overlaps with the *Hylocomium splendens* subassociation, the *Rhytidiadelphus loreus* subassociation occurs at higher elevations.

Dynamics: CNVC00310 is a stable self-perpetuating late successional forest Association. Wildfires are generally absent from its range but strong winds are frequent, often causing local windthrow gaps. Insect defoliation by spruce budworm (*Choristoneura fumiferana*) and hemlock looper (*Lambdina fiscellaria fiscellaria*) is common in these forests, particularly in the mature to senescent stages of stand development, and can lead to extensive canopy mortality. While insect disturbance has considerable impact on the commercial yields of timber, it rarely has long-term consequences for ecosystem composition and structure in these forests. Following disturbance (including harvesting), stands tend to recover by release of understory *Abies balsamea* regeneration. Small-scale gap or patch disturbances typically result in an uneven age structure within stands, but severe broad-scale disturbance can create large openings that release understory trees that are more or less the same age.

When fires do occur, they are usually of anthropogenic origin and are rarely extensive. Fire eliminates *A. balsamea*; early seral hardwoods such as *Betula papyrifera* and *B. alleghaniensis* are likely to dominate the initial post-fire stand on these sites (e.g., CNVC00315 [*Betula papyrifera* – *B. alleghaniensis* / *Dryopteris carthusiana*]). Over time, as humus builds up in a stand, *A. balsamea* seedlings are better able to establish and survive in the low-light environment than are *Betula* seedlings; *A. balsamea* persists in the understory as advanced regeneration until being released by further canopy disturbance. Thus, these sites usually return to *A. balsamea* dominance over time.

Abies balsamea regeneration is heavily grazed by moose (*Alces alces*) in some locations, so these stands can have a relatively higher cover of *Picea glauca*, which is not grazed to the same extent.

Range: CNVC00310 occurs in the boreal highlands of northern New Brunswick and Cape Breton Island, Nova Scotia, and on insular Newfoundland. Three subassociations are described from Newfoundland: the *Hylocomium splendens* subassociation occurs in southwestern and central Newfoundland, the *Rhytidiadelphus loreus* subassociation is known from southwestern Newfoundland, and the *Cornus stolonifera* subassociation is described from the Northern Peninsula. The *Oxalis montana* subassociation is described from New Brunswick and Cape Breton Island.

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>

Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Distribution

Countries: Canada

Provinces / Territories / States: New Brunswick, Newfoundland and Labrador, Nova Scotia

Terrestrial Ecozones and Ecoregions of Canada: Atlantic Highlands: Appalachians, Northern New Brunswick Uplands; Atlantic Maritime: Cape Breton Highlands, Nova Scotia Highlands; Boreal Shield: Central Newfoundland, Northern Peninsula, Southwestern Newfoundland

Rowe's Forest Regions and Sections of Canada: Acadian: Cape Breton-Antigonish, Cape Breton Plateau; Boreal: Corner Brook, Gaspé, Grand Falls, Northern Peninsula

NAAEC CEC Ecoregions of North America (Levels I & II): Northern Forests: Atlantic Highlands, Softwood Shield

Nature Conservancy of Canada Ecoregions: Boreal Shield, Northern Appalachians-Acadia

Ecological Land Classification of New Brunswick (ecoregions): Highlands

Ecological Land Classification of Nova Scotia (ecozones and ecoregions): Acadian Forest: Cape Breton Highlands, Northern Plateau

Ecoregions of Newfoundland: Central Newfoundland, Northern Peninsula, Southwestern Newfoundland



Corresponding Types and Associations

310a <i>Hylocomium splendens</i>	Newfoundland and Labrador	C Dry_L_bF	Central: <i>Dryopteris</i> - <i>Lycopodium</i> - balsam fir forest
		W Fdh	Western: <i>Dryopteris</i> - <i>Hylocomium</i> - balsam fir forest
310b <i>Rhytidiadelphus loreus</i>	Newfoundland and Labrador	W Fdr	Western: <i>Dryopteris</i> - <i>Rhytidiadelphus</i> - balsam fir forest
310c <i>Cornus stolonifera</i>	Newfoundland and Labrador	N DA	Northern: <i>Dryopteris</i> - balsam fir forest
310d <i>Oxalis montana</i>	Maritimes Region	A178c <i>Dryopteris campyloptera</i> -u	<i>Abies balsamea</i> - <i>Picea glauca</i> / <i>Sorbus americana</i> / <i>Dryopteris intermedia</i> / <i>Pleurozium schreberi</i> Forest [<i>Dryopteris campyloptera</i>]



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Vegetation Summary*

Species Name [†]	Association CNVC00310		Subassociation 310a <i>Hylocomium splendens</i>		Subassociation 310b <i>Rhytidiadelphus loreus</i>	
	35 plots		13 plots		5 plots	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
Overstory Trees						
<i>Abies balsamea</i>	72	100	77	100	68	100
<i>Betula papyrifera</i>	9	71	9	92	7	80
<i>Picea glauca</i>	5	51	4	46	3	80
<i>Betula alleghaniensis</i>	9	20	9	54	-	-
<i>Picea mariana</i>	5	11	1	15	10	40
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(40 56 73 98 100)		(67 91 89 100 100)		(55 75 80 93 97)	
Understory Woody Shrubs and Regenerating Trees						
<i>Abies balsamea</i>	16	94	11	92	10	100
<i>Betula papyrifera</i>	6	54	2	31	15	20
<i>Picea glauca</i>	7	43	1	8	3	20
<i>Amelanchier bartramiana</i>	5	43	1	15	1	40
<i>Sorbus decora</i>	2	43	1	23	1	40
<i>Acer spicatum</i>	3	34	4	54	1	20
<i>Sorbus americana</i>	3	34	1	62	1	20
<i>Rubus idaeus</i>	2	31	-	-	1	20
<i>Ribes glandulosum</i>	2	23	-	-	1	20
<i>Cornus stolonifera</i>	8	11	-	-	3	20
<i>Betula alleghaniensis</i>	2	11	2	31	-	-
<i>Viburnum edule</i>	2	11	-	-	3	20
<i>Vaccinium ovalifolium</i>	1	11	-	-	1	60
<i>Taxus canadensis</i>	7	9	7	23	-	-
<i>Ribes lacustre</i>	1	6	1	8	-	-
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(5 8 26 31 52)		(5 6 18 20 37)		(5 5 20 21 44)	
Understory Herbs and Dwarf Shrubs						
<i>Lysimachia borealis</i>	5	97	4	92	7	100
<i>Maianthemum canadense</i>	7	94	10	92	8	100
<i>Cornus canadensis</i>	13	83	11	85	10	80
<i>Clintonia borealis</i>	11	83	12	69	22	80
<i>Dryopteris carthusiana</i>	39	66	33	100	39	100
<i>Coptis trifolia</i>	6	46	-	-	1	20
<i>Linnaea borealis</i>	6	43	3	46	9	80
<i>Solidago macrophylla</i>	4	40	-	-	2	40
<i>Aralia nudicaulis</i>	4	37	-	-	15	20
<i>Streptopus lanceolatus</i>	2	37	1	23	-	-
<i>Oxalis montana</i>	17	34	-	-	-	-
<i>Dryopteris campyloptera</i>	23	31	-	-	-	-
<i>Moneses uniflora</i>	1	31	1	15	1	20
<i>Oclemena acuminata</i>	9	29	-	-	-	-



***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00310		Subassociation 310a <i>Hylocomium splendens</i>		Subassociation 310b <i>Rhytidiadelphus loreus</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Phegopteris connectilis</i>	4	29	-	-	-	-
<i>Athyrium filix-femina</i>	4	26	-	-	-	-
<i>Osmunda claytoniana</i>	3	26	-	-	-	-
<i>Thelypteris noveboracensis</i>	3	23	-	-	-	-
<i>Monotropa uniflora</i>	1	23	1	15	-	-
<i>Gaultheria hispidula</i>	1	23	1	8	-	-
<i>Calamagrostis canadensis</i>	1	20	-	-	-	-
<i>Carex trisperma</i>	< 1	17	-	-	-	-
<i>Neottia cordata</i>	1	14	1	15	1	20
<i>Streptopus amplexifolius</i>	1	14	1	23	1	20
<i>Dryopteris intermedia</i>	18	11	-	-	-	-
<i>Lycopodium annotinum</i>	5	11	6	23	-	-
<i>Viola macloskeyi</i>	1	11	-	-	-	-
<i>Viola blanda</i>	10	9	10	23	-	-
<i>Orthilia secunda</i>	1	9	1	23	-	-
<i>Platanthera obtusata</i>	1	9	-	-	-	-
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(41 54 77 100 100)		(40 45 65 86 100)		(71 88 88 97 99)	
Bryophytes and Lichens						
<i>Pleurozium schreberi</i>	11	86	10	85	4	60
<i>Ptilium crista-castrensis</i>	4	86	4	100	6	100
<i>Hylocomiastrum umbratum</i>	18	80	8	69	20	100
<i>Dicranum majus</i>	12	80	12	85	17	100
<i>Rhytidiadelphus loreus</i>	8	60	2	62	21	100
<i>Hylocomium splendens</i>	34	51	49	92	4	60
<i>Sphagnum capillifolium</i>	9	51	1	69	-	-
<i>Bazzania trilobata</i>	2	49	3	62	1	20
<i>Dicranum fuscescens</i>	1	46	1	31	-	-
<i>Polytrichum commune</i>	2	34	1	15	3	20
<i>Dicranum scoparium</i>	4	29	2	38	-	-
<i>Plagiothecium laetum</i>	1	29	-	-	-	-
<i>Brachythecium starkei</i>	1	26	-	-	-	-
<i>Tetraphis geniculata</i>	1	26	-	-	-	-
<i>Alectoria ochroleuca</i>	1	23	-	-	-	-
<i>Hypnum pallescens</i>	1	23	-	-	-	-
<i>Ptilidium ciliare</i>	1	23	-	-	-	-
<i>Bryoria trichodes</i>	1	17	-	-	-	-
<i>Polytrichastrum ohioense</i>	1	11	-	-	-	-
<i>Rhytidiadelphus triquetrus</i>	2	9	2	23	-	-
<i>Dicranum montanum</i>	1	9	-	-	-	-
<i>Brachythecium</i> sp.	1	3	-	-	-	-
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(33 46 67 86 100)		(44 61 75 97 100)		(39 39 68 86 94)	

* 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)



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Vegetation Summary (cont'd)*

Species Name [†]	Subassociation 310c <i>Cornus stolonifera</i>		Subassociation 310d <i>Oxalis montana</i>	
	3 plots		14 plots	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
Overstory Trees				
<i>Abies balsamea</i>	63	100	70	100
<i>Betula papyrifera</i>	13	100	9	43
<i>Picea glauca</i>	2	67	7	43
<i>Betula alleghaniensis</i>	-	-	-	-
<i>Picea mariana</i>	-	-	-	-
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(68 74 77 84 84)		(40 42 54 63 65)	
Understory Woody Shrubs and Regenerating Trees				
<i>Abies balsamea</i>	3	67	23	100
<i>Betula papyrifera</i>	1	33	7	93
<i>Picea glauca</i>	1	33	8	86
<i>Amelanchier bartramiana</i>	-	-	6	79
<i>Sorbus decora</i>	1	33	2	64
<i>Acer spicatum</i>	2	33	1	21
<i>Sorbus americana</i>	-	-	8	21
<i>Rubus idaeus</i>	-	-	2	71
<i>Ribes glandulosum</i>	1	67	2	36
<i>Cornus stolonifera</i>	10	100	-	-
<i>Betula alleghaniensis</i>	-	-	-	-
<i>Viburnum edule</i>	1	100	-	-
<i>Vaccinium ovalifolium</i>	1	33	-	-
<i>Taxus canadensis</i>	-	-	-	-
<i>Ribes lacustre</i>	1	33	-	-
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(10 12 16 20 23)		(7 20 37 39 83)	
Understory Herbs and Dwarf Shrubs				
<i>Lysimachia borealis</i>	1	100	5	100
<i>Maianthemum canadense</i>	9	67	3	100
<i>Cornus canadensis</i>	-	-	17	100
<i>Clintonia borealis</i>	29	67	6	100
<i>Dryopteris carthusiana</i>	80	100	12	14
<i>Coptis trifolia</i>	4	33	6	100
<i>Linnaea borealis</i>	13	100	1	14
<i>Solidago macrophylla</i>	3	67	5	71
<i>Aralia nudicaulis</i>	2	33	3	79
<i>Streptopus lanceolatus</i>	-	-	2	71
<i>Oxalis montana</i>	-	-	17	86
<i>Dryopteris campyloptera</i>	-	-	23	79
<i>Moneses uniflora</i>	-	-	1	57
<i>Oclemena acuminata</i>	-	-	9	71



***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Vegetation Summary (cont'd)*

Species Name [†]	Subassociation 310c <i>Cornus stolonifera</i>		Subassociation 310d <i>Oxalis montana</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Phegopteris connectilis</i>	-	-	4	71
<i>Athyrium filix-femina</i>	-	-	4	64
<i>Osmunda claytoniana</i>	-	-	3	64
<i>Thelypteris noveboracensis</i>	-	-	3	57
<i>Monotropa uniflora</i>	-	-	1	43
<i>Gaultheria hispidula</i>	-	-	1	50
<i>Calamagrostis canadensis</i>	-	-	1	50
<i>Carex trisperma</i>	-	-	< 1	43
<i>Neottia cordata</i>	2	67	-	-
<i>Streptopus amplexifolius</i>	-	-	1	7
<i>Dryopteris intermedia</i>	-	-	18	29
<i>Lycopodium annotinum</i>	-	-	1	7
<i>Viola macloskeyi</i>	-	-	1	29
<i>Viola blanda</i>	-	-	-	-
<i>Orthilia secunda</i>	-	-	-	-
<i>Platanthera obtusata</i>	1	100	-	-
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(100 100 100 100 100)		(45 61 78 100 100)	
Bryophytes and Lichens				
<i>Pleurozium schreberi</i>	2	67	15	100
<i>Ptilium crista-castrensis</i>	3	67	2	71
<i>Hylocomiastrum umbratum</i>	19	100	25	79
<i>Dicranum majus</i>	28	100	3	64
<i>Rhytidiadelphus loreus</i>	-	-	6	57
<i>Hylocomium splendens</i>	3	67	4	7
<i>Sphagnum capillifolium</i>	-	-	16	64
<i>Bazzania trilobata</i>	-	-	1	57
<i>Dicranum fuscescens</i>	1	67	1	71
<i>Polytrichum commune</i>	1	33	2	57
<i>Dicranum scoparium</i>	1	33	8	29
<i>Plagiothecium laetum</i>	-	-	1	71
<i>Brachythecium starkei</i>	-	-	1	64
<i>Tetraphis geniculata</i>	-	-	1	64
<i>Alectoria ochroleuca</i>	-	-	1	57
<i>Hypnum pallescens</i>	-	-	1	57
<i>Ptilidium ciliare</i>	-	-	1	57
<i>Bryoria trichodes</i>	-	-	1	43
<i>Polytrichastrum ohioense</i>	-	-	1	29
<i>Rhytidiadelphus triquetrus</i>	-	-	-	-
<i>Dicranum montanum</i>	-	-	1	21
<i>Brachythecium</i> sp.	1	33	-	-
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(41 49 54 63 64)		(26 41 61 72 83)	

* 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 CNVC00310

Abies balsamea / *Dryopteris* spp. / *Hylocomiastrum umbratum*

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Site / Soil Characteristics

	Association CNVC00310 35 plots	Subassociation 310a <i>Hylocomium splendens</i> 13 plots	Subassociation 310b <i>Rhytidiadelphus loreus</i> 5 plots
Elevation Range (min–mean–max meters)	30–240–493 missing data (37)	30–146–229 missing data (23)	274–314–381 missing data (0)
Slope Gradient (% frequency)	steep (3) moderately steep (3) moderate (14) gentle (17) level (51) missing data (11)	steep (8) moderately steep (0) moderate (31) gentle (15) level (31) missing data (15)	steep (0) moderately steep (0) moderate (0) gentle (20) level (40) missing data (40)
Aspect (% frequency)	north (20) east (23) south (14) west (11) level (20) missing data (11)	north (15) east (38) south (15) west (15) level (0) missing data (15)	north (20) east (20) south (20) west (0) level (0) missing data (40)
Meso Topoposition (% frequency)	crest / upper (23) mid (3) lower / toe (14) missing data (60)	crest / upper (0) mid (0) lower / toe (0) missing data (100)	crest / upper (0) mid (0) lower / toe (0) missing data (100)
Moisture Regime (% frequency)	dry (6) mesic (34) moist (57) wet (3)	dry (0) mesic (62) moist (31) wet (8)	dry (0) mesic (20) moist (80) wet (0)
Nutrient Regime (% frequency)	poor (11) medium (29) missing data (60)	poor (0) medium (0) missing data (100)	poor (0) medium (0) missing data (100)



***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Site / Soil Characteristics (cont'd)

	Association CNVC00310	Subassociation 310a <i>Hylocomium splendens</i>	Subassociation 310b <i>Rhytidiadelphus loreus</i>
Soil Parent Material (% frequency)	colluvium (3) moraine / till (71) fluvial (3) glaciofluvial (6) missing data (17)	colluvium (0) moraine / till (54) fluvial (8) glaciofluvial (15) missing data (23)	colluvium (0) moraine / till (100) fluvial (0) glaciofluvial (0) missing data (0)
Soil Rooting Zone Substrate (% frequency)	non-soil (3) coarse loamy (34) missing data (63)	non-soil (0) coarse loamy (8) missing data (92)	non-soil (0) coarse loamy (60) missing data (40)
Root Restricting Depth (% frequency)	21 – 99 cm (3) ≥ 100 cm (3) missing data (94)	21 – 99 cm (0) ≥ 100 cm (0) missing data (100)	21 – 99 cm (0) ≥ 100 cm (0) missing data (100)
Humus Form (% frequency)	mor (14) missing data (86)	mor (8) missing data (92)	mor (40) missing data (60)



Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Site / Soil Characteristics (cont'd)

Subassociation	Subassociation
310c <i>Cornus stolonifera</i>	310d <i>Oxalis montana</i>
3 plots	14 plots

Elevation Range (min–mean–max meters)

152–168–183	412–438–493
missing data (0)	missing data (71)

Slope Gradient (% frequency)

steep (0)	steep (0)
moderately steep (0)	moderately steep (7)
moderate (0)	moderate (7)
gentle (33)	gentle (14)
level (67)	level (71)
missing data (0)	missing data (0)

Aspect (% frequency)

north (33)	north (21)
east (0)	east (14)
south (0)	south (14)
west (0)	west (14)
level (67)	level (36)
missing data (0)	missing data (0)

Meso Toposition (% frequency)

crest / upper (0)	crest / upper (57)
mid (0)	mid (7)
lower / toe (0)	lower / toe (36)
missing data (100)	missing data (0)

Moisture Regime (% frequency)

dry (0)	dry (14)
mesic (0)	mesic (21)
moist (100)	moist (64)
wet (0)	wet (0)

Nutrient Regime (% frequency)

poor (0)	poor (29)
medium (0)	medium (71)
missing data (100)	missing data (0)



***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Site / Soil Characteristics (cont'd)

	Subassociation 310c <i>Cornus stolonifera</i>	Subassociation 310d <i>Oxalis montana</i>
Soil Parent Material (% frequency)		
	colluvium (0)	colluvium (7)
	moraine / till (0)	moraine / till (93)
	fluvial (0)	fluvial (0)
	glaciofluvial (0)	glaciofluvial (0)
	missing data (100)	missing data (0)
Soil Rooting Zone Substrate (% frequency)		
	non-soil (0)	non-soil (7)
	coarse loamy (0)	coarse loamy (57)
	missing data (100)	missing data (36)
Root Restricting Depth (% frequency)		
	21 – 99 cm (0)	21 – 99 cm (7)
	≥ 100 cm (0)	≥ 100 cm (7)
	missing data (100)	missing data (86)
Humus Form (% frequency)		
	mor (0)	mor (14)
	missing data (100)	missing data (86)



Forest / Forêt

Association CNVC00310

Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum

Balsam Fir / Wood Ferns / Shaded Wood Moss

Sapin baumier / Dryoptères / Hylocomie boréale

Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity:

Confidence:

Strength:

Related Concepts

Similar CNVC Associations:

CNVC00222 [*Abies balsamea* / *Pleurozium schreberi*] occurs on mesic, nutrient-medium sites in the same range. It has a less developed herb layer with lower abundance of *Dryopteris* spp., and a moss layer dominated by *Pleurozium schreberi*.

CNVC00225 [*Abies balsamea* (*Picea glauca*) / *Acer spicatum* / *Oxalis montana*] occurs on comparable boreal sites in New Brunswick, Nova Scotia and Quebec. It has more *Picea glauca* in the canopy and abundant *Acer spicatum* in the shrub layer.

CNVC00278 [*Abies balsamea* / *Pleurozium schreberi* – *Sphagnum* spp.] usually occurs on moister, slightly poorer sites on insular Newfoundland. It often has a minor component of *Picea mariana* in the tree and shrub layers, less developed shrub and herb layers and abundant *Sphagnum* mosses.

CNVC00309 [*Abies balsamea* / *Vaccinium vitis-idaea* / *Pleurozium schreberi* – *Bazzania trilobata*] occurs on dry to mesic, nutrient-poor to medium boreal sites in Nova Scotia and insular Newfoundland. It lacks the *Dryopteris* spp. of CNVC00310 and has greater *Gaultheria hispidula* and *Vaccinium vitis-idaea* in the herb and dwarf shrub layer. It usually has abundant *Pleurozium schreberi* and *Bazzania trilobata* in the moss layer.

CNVC00311 [*Abies balsamea* (*Betula alleghaniensis*) / *Dryopteris carthusiana*] is a similar mixedwood Association that occurs on comparable sites on insular Newfoundland. It has greater cover of *Betula alleghaniensis* and/or *B. papyrifera* in the overstory and a less developed moss layer.

CNVC00348 [*Abies balsamea* / *Taxus canadensis* / *Rubus pubescens* / *Dicranum majus*] occurs on moist, nutrient-rich sites on insular Newfoundland. It is often found down-slope from CNVC00310 in a toposequence where it receives more seepage and consequently has greater abundance of nutrient-demanding species such as *Cornus stolonifera*, *Rubus pubescens*, *Gymnocarpium dryopteris*, *Athyrium filix-femina* and *Mitella nuda*.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Nova Scotia plots in CNVC00310 are classified as HL1 [Balsam fir / Mountain-ash / Large-leaved goldenrod] in Neily et al. 2011.

CNVC00310 includes the concepts of Fdl #8 *Dryopteris* – *Lycopodium* – Balsam fir, Fdh #5 *Dryopteris* – *Hylocomium* – Balsam fir and Fdr #7 *Dryopteris* – *Rhytidadelphus* – Balsam fir, and elements of Fd#6 *Dryopteris* – Balsam fir from Meades & Moores 1994.

Comments

In the general context of boreal forests, this Association, and particularly the *Hylocomium splendens* subassociation, is notable for its content of *Betula alleghaniensis*, which is usually considered a temperate species. CNVC00310 lacks understory species typically associated with temperate forests however, so is classified here as a boreal forest Association.

CNVC00310 rarely develops in the more continental interior of Newfoundland where fire is more frequent.

Betula papyrifera here refers to both *B. papyrifera* (paper birch) and *B. cordifolia* (heart-leaved birch).



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

<http://cnvc-cnvc.ca>

***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Source Information

Number of source plots for CNVC00310: 35

Number of source plots for 310a *Hylocomium splendens*: 13

Number of source plots for 310b *Rhytidiadelphus loreus*: 5

Number of source plots for 310c *Cornus stolonifera*: 3

Number of source plots for 310d *Oxalis montana*: 14

Information Sources:

Basquill, S.P. (compiler). 2015. Maritime provinces of Canada regional forest ecosystem plot database. Standardized forest ecosystem plot data compilation and classification from N.B. Dept. Nat. Resour.; P.E.I. For., Fish, & Wildlife Div., Dept. Commun., Land, & Environ.; N.S. Dept. Nat. Resour.; N.S. Environ.; Parks Can.; the Atlantic Can. Conserv. Data Centre; and other sources. Atlantic Can. Conserv. Data Centre, Sackville, NB.

Natural Resources Canada, Canadian Forest Service, Atlantic Region. 2006. Forest vegetation plot descriptions from the following publications: Damman, A.W.H. 1963, 1964, 1967; Meades, W.J. (1976, 1986). Nat. Res. Canada, Corner Brook, NL.

Concept Authors: K. Baldwin, K. Chapman, B. Meades, S. Basquill

Description Authors: B. Meades, K. Chapman and K. Baldwin

Date of Concept: February, 2012

Date of Description: October, 2016

Classification References:

Basquill, S.; Beaudette, D.; Cameron, R.; Curley, R.; Fenton, N.; Glen, W.; Gordon, S.; Hutchinson, J.; Kelly, G.; Loo, J.; Lynds, A.; MacAskill, D.; MacKinnon, D.; MacQuarrie, K.; Makepeace, S.; Matson, B.; Neily, P.; Quigley, E.; Zelazny, V. 2009 (updated 2015). Forest communities of the Maritime provinces of Canada. Atlantic Canada Conservation Data Centre, Sackville, NB.

Damman, A.W.H. 1963. A reconnaissance survey of the ecological conditions in the forests of the Roddickton area, Newfoundland. For. Res. Branch, Can. Dept. For., NL. Mimeo 63-N-1.

Damman, A.W.H. 1964. Some forest types of central Newfoundland and their relation to environmental factors. The Society of American Foresters, US. Monograph 8.

Damman, A.W.H. 1967. The forest vegetation of western Newfoundland and site degradation associated with vegetation change. PhD thesis, Univ. of Michigan, Ann Arbor, MI, US.

Meades, W.J. 1983. The origin and successional status of anthropogenic dwarf shrub heath in Newfoundland. Adv. Space Res. 2(8):97-101.

Meades, W.J.; Moores, L. 1994. Forest site classification manual: a field guide to the Damman forest types of Newfoundland. 2nd ed. Corner Brook, Western Newfoundland Model Forest, Inc., NL. FRDA Rep. 003.

Characterization References:

Bergeron, Y.; Chen, H.Y.H.; Kenkel, N.C.; Leduc, A.; Macdonald, S.E. 2014. Boreal mixedwood stand dynamics: ecological processes underlying multiple pathways. For. Chron. 90(2):202-213.

Boulanger, Y.; Gauthier, S.; Burton, P.J. 2014. A refinement of models projecting future Canadian fire regimes using homogeneous fire regime zones. Can. J. For. Res. 44(4):365-376.

Collins, E.H. 1951. A study of the boreal forest formation in northern Cape Breton. M.Sc. thesis, Acadia Univ., Wolfville, NS.

Greene, D.F.; Zasada, J.C.; Sirois, L.; Kneeshaw, D.; Morin, H.; Charron, I.; Simard, M.J. 1999. A review of the regeneration dynamics of North American boreal forest tree species. Can. J. For. Res. 29:824-839.

Kenkel, N.C.; Walker, D.J.; Watson, P.R.; Caners, R.T.; Lastra, R.A. 1997. Vegetation dynamics in boreal forest ecosystems. Coenoses 12(2-3):97-108.

Kneeshaw, D.D.; Bergeron, Y. 1998. Canopy gap characteristics and tree replacement in the southeastern boreal forest. Ecology 79(3):783-794.

McCarthy, J. 2001. Gap dynamics of forest trees: a review with particular attention to boreal forests. Environ. Rev. 9(1):1-59.



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

<http://cnvc-cnvc.ca>

***Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* CNVC00310**

Characterization References (cont'd):

McCarthy, J.W.; Weetman, G. 2006. Age and size structure of gap-dynamic old-growth boreal forest stands in Newfoundland. *Silva Fennica* 40(2):209-230.

Meades, S.J.; Meades, W.J. 2016+. Flora of Newfoundland and Labrador. In prep. Centre for Forest Science and Innovation (CFSI), For. Branch, For. and Agrifoods Agency, Gov. NL, and Atlantic For. Centre-Corner Brook, Can. For. Serv., Nat. Resour. Can, Corner Brook, NL.

Neily, P.; Basquill, S.; Quigley, E.; Stewart, B.; Keys, K. 2011. Forest ecosystem classification for Nova Scotia, Part I: Vegetation types. N.S. Dept. Nat. Resour., Renew. Resour. Branch, NS.

Sullivan, J. 1994. *Betula alleghaniensis*. 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/betall/all.html> (accessed: September 15, 2016).

Thompson, I.D.; Larson, D.J.; Montevecchi, W.A. 2003. Characterization of old "wet boreal" forests, with an example from balsam fir forests of western Newfoundland. *Environ. Rev.* 11:523-546.

Uchytel, R.J. 1991. *Abies balsamea*. 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/abibal/all.html> (accessed: May 26, 2015).

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

The information contained in this factsheet is based on data and expert knowledge that is current to the date of description. As new information becomes available, the factsheet will be updated.

For more information about the contents of this factsheet and definitions of attribute names and data classes, see the **Understanding the Factsheet** link at <http://cnvc-cnvc.ca>.

Suggested Citation: *Abies balsamea* / *Dryopteris* spp. / *Hylocomiastrum umbratum* [online]. Sault Ste. Marie, Ontario, Canada : Canadian National Vegetation Classification generated Oct/21/2016; cited ENTER DATE ACCESSED. 14 p. Canadian National Vegetation Classification Association: CNVC00310. Available from <http://cnvc-cnvc.ca>. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.