

- WC1** Black spruce / Cinnamon fern / Sphagnum
- WC2** Black spruce / Lambkill – Labrador tea / Sphagnum. . . **WC2a** Huckleberry – Inkberry variant
- WC3** Jack pine – Black spruce / Rhodora / Sphagnum. . . . **WC3a** Black spruce variant
- WC4** Red pine – Black spruce / Huckleberry – Rhodora / Sphagnum
- WC5** Red spruce – Balsam fir / Cinnamon fern / Sphagnum
- WC6** Balsam fir / Cinnamon fern – Three seeded sedge / Sphagnum
- WC7** Tamarack – Black spruce / Lambkill / Sphagnum . . . . **WC7a** Huckleberry – Inkberry variant
- WC8** Hemlock / Cinnamon fern – Sensitive fern / Sphagnum

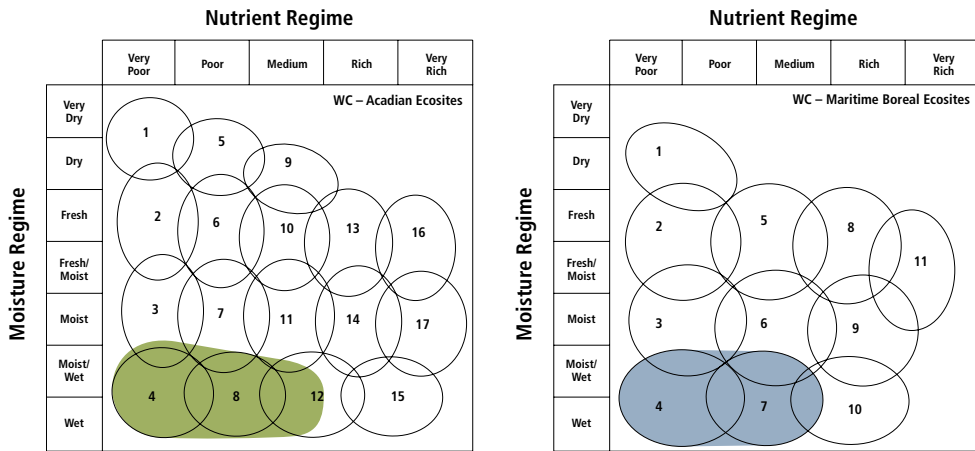
**Concept:** These are wet forest ecosystems with water at or near the surface for most of the year. They are generally dominated by softwood species such as black spruce, tamarack and balsam fir with an understory of plants tolerant of wet, acidic (nutrient poor) soils. They usually occur on moderately exposed, level to depressional topography with soils derived from either mineral or organic parent material. All Vegetation Types (VT) are found in the Acadian Ecosite group, with black spruce dominated VTs also found in the Maritime Boreal Ecosite group.

**Vegetation:** Crown closure can be moderate to high in VTs of this group, but some stands only support widely spaced trees. Black spruce is the main overstory species, with other VTs distinguished by tamarack, jack pine, red pine, balsam fir, red spruce and/or hemlock cover. The shrub layer is usually well developed with ericaceous species, false holly and winterberry. Characteristic herbs include cinnamon fern, creeping snowberry and several sedge species. Sphagnum moss coverage is generally extensive.

**Environmental Setting:** Vegetation types in this group are found on upper and lower flats, lower and toe positions of gentle slopes, shallow depressions and riparian zones. Most sites have little (if any) exposed bedrock, but surface stoniness can be variable. Soils are generally derived from glacial till and/or organic deposits. Fertility is generally low except where nutrient availability is enhanced by ground water or seepage inputs. Rooting depth is strongly limited by high water levels. VTs can form small to large patches (and sometimes matrix forests) on the landscape. This group is found throughout the province, but is prominent in the Northumberland Bras d’Or Lowlands (500), Valley and Central Lowlands (600) and Atlantic Coastal ecoregions as well as the Sable (760) ecoregion.

**Successional Dynamics:** These wet coniferous forests are mainly edaphic climax communities limited by excessive moisture and low fertility. Fluctuating water levels, windthrow, insects and disease are significant disturbance agents. Stands within a given VT may display a range of development stages depending on disturbance history and natural senescence.

## Edatopic Grids



## Ecological Features

These small to large patch forests usually develop on wet organic or mineral soils, but are occasionally found on moist upland sites. Wet coniferous forests receive water from precipitation, springs, seepage or surface flows. Water flows and nutrient inputs in this group are lower than those in wet deciduous forests, while peat accumulation is generally higher. These forests make important contributions to landscape diversity, carbon and water budgets. They can provide habitat for numerous plants, lichens, invertebrates and vertebrates (including moose, spruce grouse, rusty blackbird, swamp and Lincoln's sparrows, wood turtle and several amphibians). Edaphic climax forests in this group are self sustaining, and many express long term ecological continuity and old growth characteristics. Wetter stands may persist as woodlands, with stunted and widely spaced trees.

## Black spruce / Cinnamon fern / Sphagnum

*Picea mariana* / *Osmunda cinnamomea* /  
*Sphagnum* spp.

n=65



Tyndal Road,  
Cumberland County

**Concept:** The Black spruce / Cinnamon fern / Sphagnum forest is characterized by black spruce canopy dominance, moderate to high herbaceous cover, and by a well-developed layer of sphagnum mosses. It is found on wet, nutrient poor soil, persisting as an edaphic climax. This Vegetation Type (VT) is similar to WC2 (Black spruce / Lambkill – Labrador tea / Sphagnum), which is an even more nutrient poor ecosystem found on sites with further reduced ground and surface water flow.

**Vegetation:** Crown closure is moderate to high, although some stands support more widely spaced trees. The canopy is heavily dominated by black spruce, or infrequently by hybrid black spruce-red spruce, with lesser balsam fir. Other trees are sparsely scattered with low cover. The understory supports low to moderate levels of woody species but higher herbaceous cover. Characteristic vascular plants include false holly, cinnamon fern, creeping snowberry, goldthread and three seeded sedge. Bryophyte development is high, composed of sphagnum moss and lesser amounts of common upland species. Ladies' tresses and/or pale fat-leaved sphagnum, with small pockets of common green or flat topped sphagnum, are common.

### Ecological Features

This small-patch ecosystem has variable crown closure and height but dense herbaceous and bryophyte cover. Productivity is generally low, although stands on richer sites may support higher species richness, including some rare plants (e.g. showy lady's slipper, alder-leaved buckthorn, black ash, brittle

stem sphagnum and golden ragwort). Vegetation is slow growing, limiting its forage value for herbivorous wildlife, although WC1 can provide summer thermal cover for moose, winter cover for deer, habitat for amphibians, and can support other unique habitat features. Wet forests contribute to carbon and nitrogen budgets

and are often associated with headwaters, functioning to regulate water flow, provide filtration and recharge groundwater. These forests can sustain old growth conditions which are easily overlooked due to the generally small trees. It can support prominent levels of dwarf mistletoe and associated witches broom.

## Characteristic Plants

### WC1

	Freq. (%)	Cover (%)
Black spruce	91	43.4
Balsam fir	60	9.3
Red maple	51	7.6
Tamarack	34	7.0
White pine	17	6.4
<b>Tree Layer (Mean % Cover)</b>		<b>57</b>
False holly	89	4.7
Black spruce	86	7.8
Lambkill	85	1.9
Balsam fir	82	4.8
Red maple	82	1.3
Wild raisin	65	1.6
Velvet-leaf blueberry	49	1.3
Labrador tea	38	1.6
Lowbush blueberry	35	1.1
Serviceberry	23	0.2
Mountain-ash	20	0.1
<b>Shrub Layer (Mean % Cover)</b>		<b>23</b>
Bunchberry	92	4.7
Cinnamon fern	88	26.0
Goldthread	82	3.6
Creeping snowberry	80	2.4
Three seeded sedge	65	8.4
Sarsaparilla	46	1.0
Wild lily-of-the-valley	43	0.9
Bracken	40	7.6
Twinflower	38	2.9
Starflower	38	0.4
Pink lady's slipper	34	0.1
Bluebead lily	29	0.6
Three-leaved false Solomon's seal	26	2.6
Painted trillium	25	0.1
Dwarf raspberry	22	1.0
Indian pipe	22	0.1
New York fern	20	8.7
<b>Herb Layer (Mean % Cover)</b>		<b>49</b>
Schreber's moss	98	25.5
Stair-step moss	75	7.1
Bazzania	75	4.3
Ladies' tresses	57	17.9
Pale fat-leaved sphagnum	48	32.7
Flat topped sphagnum	42	18.4
Wavy dicranum	42	2.2
Broom moss	37	1.4
Grey reindeer lichen	34	0.5
Common green sphagnum	32	26.2
Hair-cap moss	32	0.9
Plume moss	28	2.4
Hypnum moss	23	1.0
Cup lichens	22	0.6
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>91</b>

## Distinguishing Features

This poorly drained softwood forest of black spruce usually occurs in a peatland setting (peat deeper than 40 cm).

High cover to cinnamon fern and other herbs such as creeping snowberry and three seeded sedge is common.

The shrub layer is less developed compared to WC2.

An abundance of sphagnum moss species are present.



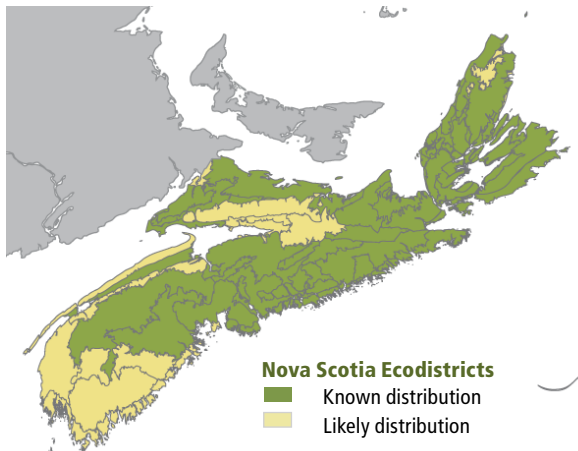
Cinnamon fern

## Site Characteristics

Slope Position:	Level <sup>8</sup> Other <sup>2</sup>
Surface Stoniness:	(Non - Slightly) <sup>8</sup> (Moderately) <sup>1</sup> (Very - Excessively) <sup>1</sup>
Bedrock Outcrop:	(Non-rocky) <sup>10</sup>
Elevation Range:	10 - 469m
Slope Gradient:	Level <sup>8</sup> Gentle <sup>2</sup>
Aspect:	North <sup>1</sup> None <sup>8</sup> Other <sup>1</sup>
Exposure:	Moderate <sup>7</sup> Exposed <sup>1</sup> Mod. exposed <sup>1</sup> Other <sup>1</sup>
Microtopography:	Level <sup>7</sup> Slightly <sup>2</sup> Other <sup>1</sup>
Drainage:	Poor <sup>5</sup> Very poor <sup>4</sup> Imperfect <sup>1</sup>

## Soil Characteristics

Soil Type:	ST14 <sup>4</sup> ST4 <sup>3</sup> ST7 <sup>2</sup> ST6 <sup>1</sup>
Parent Material:	Glacial till <sup>5</sup> Organic <sup>4</sup> Other <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>7</sup> (30-45) <sup>2</sup> nd <sup>1</sup>
Duff Thickness (cm):	(11-20) <sup>3</sup> (21-40) <sup>3</sup> (>40) <sup>3</sup> nd <sup>1</sup>



## WC2

### Black spruce / Lambkill – Labrador tea / Sphagnum

*Picea mariana* / *Kalmia angustifolia* –  
*Ledum groenlandicum* / *Sphagnum* spp.

## WC 2a

### Huckleberry – Inkberry variant

*Gaylussacia baccata* – *Ilex glabra*

n=39



Black Lake,  
Cumberland County

**Concept:** This nutrient poor to very poor coniferous forest is characterized by black spruce canopy dominance and by high shrub and sphagnum moss cover. It is found on poorly drained mineral or organic deposits, persisting as an edaphic climax. The ecosystem is the most acidic, wet black spruce forest in Nova Scotia. Stands with coastal plain species like inkberry and/or moderate to high levels of huckleberry distinguish the variant WC2a. WC2 is similar to WC1 (Black spruce / Cinnamon fern / Sphagnum), another wet black spruce forest with higher herbaceous cover and slightly less acidic soils.

**Vegetation:** Crown closure is low to moderate, increasing light availability to lower strata and promoting shrub abundance. The overstory is dominated by black spruce and/or hybrid black spruce-red spruce. In younger, more exposed, or extremely wet stands, the canopy may be formed by stunted trees in the tall shrub layer. The woody understory is thick with lambkill and scattered Labrador tea, rhodora and false holly. Creeping snowberry and goldthread characterize the sparse herbaceous layer. The dense bryophyte carpet is dominated by sphagnum moss. Ladies' tresses and flat topped sphagnum are common. Red fat-leaved sphagnum is much more frequent than in other coniferous wet forests of the province.

### Ecological Features

Crown closure in this small patch ecosystem is low to moderate, while the understory is thick with shrubs and regenerating trees. Plant species richness and site productivity is reduced, limiting habitat diversity and rare species potential. However, WC2a, the huckleberry-inkberry variant, occasionally supports somewhat rare Atlantic Coastal Plain plants like skunk cabbage,

high-bush blueberry and Elliot's goldenrod. Similar to other wet forests, this wet forest can regulate water flow, provide filtration, and recharge groundwater. Reduced productivity and the presence of allelopathic plants (those that produce biochemicals that affect nearby plants) like lambkill can negatively influence black spruce regeneration and growth, resulting in lower canopy cover.

These ecosystems provide thermal cover for moose and winter cover for deer. They can support numerous bird species, but specific associates are undocumented. These forests can sustain old growth conditions which are easily overlooked due to the generally small trees. It can support prominent levels of dwarf mistletoe and associated witches broom.

**Environmental Setting:** This ecosystem usually occurs on poorly drained flats, underlain by coarse textured glacial tills or peat. Some stands are found on imperfectly drained soil, but this is very uncommon. Ground and surface water flow is minimal and/or low in nutrients. Rooting potential is limited by compacted and/or saturated soils. Sites are moderately exposed, with very little microtopography. Sloped occurrences are usually found on the cooler aspects. Most stands are found in the Northumberland - Bras d'Or and Valley - Central Lowland ecoregions, but some extend into upland and even highland areas. Occurrences of WC2a are largely limited to the Western ecoregion. WC2 is widespread and abundant across the Maritime Provinces, but is particularly common in lowland regions.

**Successional Dynamics:** This forest is a type of edaphic climax, meaning it is maintained by limiting site conditions including soil saturation and shallow rooting potential. Tree windthrow and uprooting are common mechanisms of renewal, but fire and timber harvest can sometimes play a role. Most stands are mid-successional but this ecosystem can be expressed at a variety of successional stages. WC2 does not shift to other vegetation types after major disturbance, but does change in development stage. Uneven age class distributions are typically developed between these disturbances. Vegetative layering is the dominant form of black spruce regeneration.



Characteristic Plants	WC2		WC2a	
	Freq. (%)	Cover (%)	Freq. (%)	Cover (%)
Black spruce	94	41.7	71	28.0
Tamarack	38	3.2	57	4.5
Balsam fir	25	5.8		
Red maple	19	5.2	43	13.3
White pine	6	1.5	43	3.7
Hybrid spruce	3	65.0	14	40.0
<b>Tree Layer (Mean % Cover)</b>		<b>45</b>		<b>36</b>
Lambkill	100	13.6	100	10.5
Black spruce	97	15.0	100	10.1
False holly	94	3.4	100	14.8
Wild raisin	88	2.0	100	2.3
Labrador tea	81	5.9	86	3.8
Red maple	78	1.8	100	5.9
Velvet-leaf blueberry	72	3.7	57	3.0
Balsam fir	66	3.0	57	1.8
Rhodora	53	6.6	29	10.1
Lowbush blueberry	44	3.7	43	3.0
Serviceberry	38	0.3	43	0.5
Tamarack	25	0.2	43	0.8
Mountain-ash	22	0.1	14	0.1
Speckled alder	19	2.2	14	0.1
Huckleberry	19	0.9	71	34.8
Winterberry	13	0.6	29	7.0
Inkberry			43	10.0
<b>Shrub Layer (Mean % Cover)</b>		<b>51</b>		<b>81</b>
Bunchberry	94	7.9	100	6.6
Creeping snowberry	75	2.8	71	12.9
Goldthread	75	2.0	100	1.0
Cinnamon fern	56	2.9	57	3.3
Three seeded sedge	50	4.3	43	15.3
Bracken	47	6.5	43	8.3
Pink lady's slipper	34	0.1	29	0.1
Starflower	31	0.3	57	0.1
Wild lily-of-the-valley	25	0.8	43	0.1
Teaberry	22	0.2	29	0.1
Mayflower	19	0.3	43	0.1
Sarsaparilla	13	0.8	43	0.2
Trailing blackberry	13	0.2	43	0.7
Painted trillium	13	0.1	29	0.3
Round-leaved sundew	6	0.2	43	0.1
Partridge-berry	6	0.1	43	0.2
Pitcher-plant	3	1.0	43	2.0
Dwarf raspberry	3	0.5	29	2.5
Button sedge			29	1.5
<b>Herb Layer (Mean % Cover)</b>		<b>24</b>		<b>34</b>
Schreber's moss	94	37.7	86	24.3
Stair-step moss	72	3.8		
Ladies' tresses	69	33.6	71	17.4
Wavy dicranum	59	2.0	29	10.5
Grey reindeer lichen	56	1.3	86	0.1
Bazzania	50	3.1	57	0.3
Flat topped sphagnum	44	13.7	43	16.3
Broom moss	41	2.5	29	0.5
Red fat-leaved sphagnum	25	27.7	43	11.0
Common green sphagnum	22	9.5		
Pale fat-leaved sphagnum	16	12.4	29	6.5
Brown fat-leaved sphagnum	6	6.5	29	56.5
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>94</b>		<b>71</b>

## Distinguishing Features

Black spruce dominates this poorly drained softwood forest with a high shrub cover. The variant WC2a will have coastal plain species like inkberry and/or moderate to high levels of huckleberry. The herb layer is less developed than in WC1.



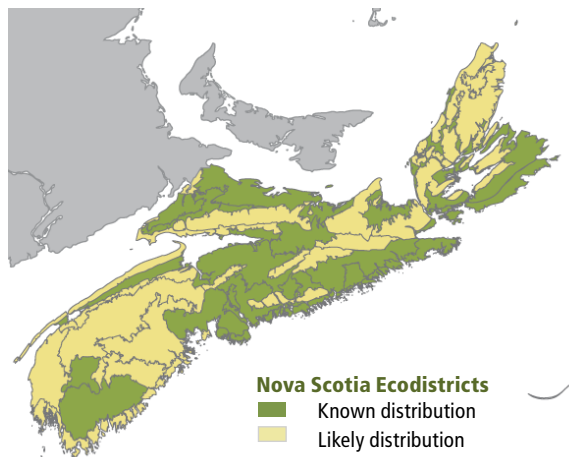
Labrador tea

## Site Characteristics

Slope Position:	Level <sup>8</sup> Lower <sup>1</sup> Other <sup>1</sup>
Surface Stoniness:	(Non - Slightly) <sup>8</sup> (Moderately) <sup>1</sup> (Very - Excessively) <sup>1</sup>
Bedrock Outcrop:	(Non-rocky) <sup>10</sup>
Elevation Range:	9 - 182m
Slope Gradient:	Level <sup>9</sup> Gentle <sup>1</sup>
Aspect:	East <sup>1</sup> None <sup>8</sup> Other <sup>1</sup>
Exposure:	Moderate <sup>8</sup> Mod. sheltered <sup>1</sup> Other <sup>1</sup>
Microtopography:	Level <sup>7</sup> Slightly <sup>2</sup> Moderately <sup>1</sup>
Drainage:	Poor <sup>5</sup> Very poor <sup>4</sup> Imperfect <sup>1</sup>

## Soil Characteristics

Soil Type:	ST4 <sup>4</sup> ST14 <sup>3</sup> ST7 <sup>2</sup> Other <sup>1</sup>
Parent Material:	Glacial till <sup>6</sup> Organic <sup>3</sup> Glaciofluvial <sup>1</sup> Other <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>8</sup> (30-45) <sup>1</sup> nd <sup>1</sup>
Duff Thickness (cm):	(6-10) <sup>1</sup> (11-20) <sup>3</sup> (21-40) <sup>3</sup> (>40) <sup>2</sup> nd <sup>1</sup>



## WC3

### Jack pine – Black spruce / Rhodora / Sphagnum

*Pinus banksiana* – *Picea mariana* /  
*Rhododendron canadense* / *Sphagnum* spp.

#### WC3a

#### Black spruce variant

*Picea mariana*

n=9



Thomson Station,  
Cumberland County

**Concept:** The Jack pine – Black spruce / Rhodora / Sphagnum is the wettest jack pine forest in Nova Scotia. Most occurrences are on poorly to very poorly drained soil, derived from acidic glacial till or, less commonly, organic deposits. The overstory is dominated by jack pine, or co-dominated by jack pine and black spruce; the latter condition described by WC3a, the black spruce variant.

**Vegetation:** Canopy layers are dominated by jack pine (or co-dominated by jack pine and black spruce). Tamarack and/or balsam fir are infrequent associates. Limiting site conditions and the prevalence of inherently small crowned conifers reduces canopy closure and promotes shrub abundance. Rhodora is present and usually dominant in most stands, with admixtures of lambkill and/or Labrador tea. Huckleberry is less common but abundant in some occurrences. Jack pine regeneration is low or absent from the understory. Herbaceous cover is reduced, largely comprised of scattered teaberry, mayflower and other common upland forest species. Bracken fern, mayflower, hair-cap moss and wavy dicranum are more frequent than in any other wet coniferous forest in Nova Scotia. Sphagnum moss, particularly ladies' tresses, and small patches of upland species are typical in the well-developed bryophyte layer.

#### Ecological Features

An open canopy of narrow-crowned conifers characterizes this very uncommon small patch ecosystem. The woody understory is dense with ericaceous shrubs and black spruce. Productivity is low, few rare plant species are expected, and old growth potential is low. This wet forest is often

a transition between open wetlands and upland coniferous forest, providing important hydrologic and biogeochemical functions. Reduced productivity and the presence of allelopathic plants (those that produce biochemicals that affect nearby plants) like lambkill can negatively influence black spruce regeneration and

**Environmental Setting:** The Jack pine - Black spruce / Rhodora / Sphagnum forest usually occurs on poorly drained mineral soil, but may be found on peat deposits. Mineral soils are acidic loams with reduced rooting potential. Some stands are on imperfectly drained sites but most are poorly or very poorly drained; organic soils are found on the wettest sites. This low elevation ecosystem is usually on moderately exposed flats but may be found in lower topographic positions of gentle slopes or in shallow depressions with very little microtopography. Sloped occurrences are usually found on cooler aspects. This uncommon forest is largely limited to northern and central parts of the mainland and parts of Cape Breton. WC3 extends into lowlands of eastern New Brunswick, where it is relatively common, and onto Prince Edward Island where it is extremely rare.

**Successional Dynamics:** This early to mid-successional forest usually originates with fire, promoting jack pine regeneration. Extreme weather events can dry litter, surface soil horizons, and the somewhat flammable ericaceous plant layer to allow these normally wet stands to burn. Such conditions are uncommon however and many stands form through seed-in from adjacent uplands. The Jack pine – Black spruce / Rhodora / Sphagnum forest will succeed to WC2 (Black spruce / Lambkill – Labrador tea / Sphagnum).

growth, resulting in lower canopy cover. Occurrences may provide locally if not provincially important habitat for various invertebrates, birds, amphibians, small mammals, reptiles and lichens. By virtue of its rarity, restricted Canadian range and fire dependency, this ecosystem may present unique conservation challenges.

Characteristic Plants	WC3		WC3a	
	Freq. (%)	Cover (%)	Freq. (%)	Cover (%)
Jack pine	100	27.0	100	18.5
Black spruce	100	5.2	100	34.8
Tamarack	40	3.5		
Balsam fir	20	3.0		
Red maple	20	0.1	25	2.0
Red pine	20	0.1	25	0.1
White pine	20	0.1		
Grey birch			25	0.1
White birch			25	0.1
<b>Tree Layer (Mean % Cover)</b>		<b>34</b>		<b>54</b>
Rhodora	100	28.6	75	34.3
Lambkill	100	19.6	100	18.3
Black spruce	100	9.4	100	2.5
Red maple	100	4.2	100	1.1
Serviceberry	100	0.7	25	0.2
Labrador tea	80	8.8	100	5.5
Velvet-leaf blueberry	80	6.4	50	1.0
Lowbush blueberry	80	3.5	75	2.0
Wild raisin	80	1.8	75	0.1
Huckleberry	60	26.7	50	5.1
False holly	60	7.3	100	4.9
Ground juniper	40	2.0		
Tamarack	40	2.0	25	0.1
Balsam fir	40	1.5		
Willows	40	1.5		
Jack pine	40	1.0		
Chokeberries	40	0.3	50	0.1
Downy alder	40	0.2		
Leather-leaf	20	3.0	25	0.1
Black chokeberry	20	0.5	25	1.0
<b>Shrub Layer (Mean % Cover)</b>		<b>100</b>		<b>62</b>
Bracken	100	7.4	50	10.0
Teaberry	80	13.5	75	3.7
Bunchberry	80	5.8	75	3.5
Starflower	60	0.4	25	0.1
Mayflower	60	0.1	75	0.2
Pink lady's slipper	60	0.1	75	0.4
Wild lily-of-the-valley	40	0.6	25	0.5
Goldthread	40	0.2	75	0.8
Three seeded sedge			75	1.4
Cinnamon fern			50	12.5
Creeping snowberry			50	3.1
Ground pine			50	0.1
Indian pipe			50	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>24</b>		<b>21</b>
Schreber's moss	100	62.6	100	35.0
Ladies' tresses	80	12.5	100	31.3
Wavy dicranum	80	3.5	100	1.8
Flat topped sphagnum	40	18.5	25	43.0
Grey reindeer lichen	40	8.5	50	0.5
Russ's sphagnum	20	4.0		
Bazzania	20	3.0	25	5.0
Stair-step moss	20	2.0	25	0.1
Pale fat-leaved sphagnum	20	0.1	50	22.5
Common green sphagnum			25	20.0
Broom moss			25	5.0
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>90</b>		<b>98</b>

## Distinguishing Features

Jack pine is diagnostic of this poorly drained softwood forest. The woody shrub layer is well developed with rhodora, lambkill and Labrador tea. Sphagnum mosses dominate the groundcover.



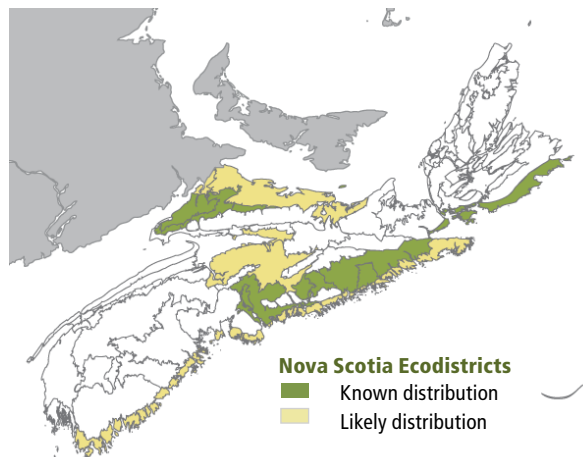
Rhodora

## Site Characteristics

Slope Position: Level<sup>7</sup> Lower<sup>2</sup> Upper<sup>1</sup>  
 Surface Stoniness: (Non - Slightly)<sup>10</sup>  
 Bedrock Outcrop: (Non-rocky)<sup>9</sup> (Slightly - Moderately)<sup>1</sup>  
 Elevation Range: 12 - 110m  
 Slope Gradient: Level<sup>7</sup> Gentle<sup>3</sup>  
 Aspect: East<sup>1</sup> South<sup>3</sup> Other<sup>6</sup>  
 Exposure: Moderate<sup>8</sup> Mod. exposed<sup>2</sup>  
 Microtopography: Level<sup>9</sup> Slightly<sup>1</sup>  
 Drainage: Poor<sup>6</sup> Very poor<sup>2</sup> Imperfect<sup>2</sup>

## Soil Characteristics

Soil Type: ST4<sup>6</sup> ST6<sup>2</sup> ST7<sup>2</sup>  
 Parent Material: Glacial till<sup>9</sup> Glaciofluvial<sup>1</sup>  
 Rooting Depth (cm): (<30)<sup>9</sup> (30-45)<sup>1</sup>  
 Duff Thickness (cm): (6-10)<sup>1</sup> (11-20)<sup>8</sup> (21-40)<sup>1</sup>





## WC4

### Red pine – Black spruce / Huckleberry – Rhodora / Sphagnum

*Pinus resinosa* – *Picea mariana* / *Gaylussacia baccata* – *Rhododendron canadense* / *Sphagnum* spp.

n=3



Lapland,  
Lunenburg County

**Concept:** This uncommon wet forest is characterized by red pine canopy dominance, a well-developed shrub layer, and prominent sphagnum moss cover. The early to mid-successional ecosystem is the wettest red pine forest found in Nova Scotia. Most occurrences are initiated by (and may be maintained through) fire, but windthrow can also expose mineral soil and promote red pine recruitment.

**Vegetation:** Canopy layers are dominated by red pine or co-dominated by red pine and either black spruce or white pine. Crown closure is typically low but increases on less saturated soil. The understory is well developed, with moderate to high shrub and bryophyte cover. Acid tolerant shrubs including huckleberry, rhodora, low bush blueberry, wild raisin and Labrador tea, among others, are frequent. Red pine recruitment is low to absent beneath the canopy. The herb layer is reduced except in stands with prominent bracken. Bryophyte cover is well developed but species poor. Ladies' tresses is the only prominent sphagnum species.

#### Ecological Features

The small patch Red pine – Black spruce / Huckleberry – Rhodora / Sphagnum is an uncommon ecosystem characterized by low canopy closure but high shrub and bryophyte cover. Soils are acidic with low surface and ground water flow, reducing microhabitat variability, productivity and species richness. Reduced productivity and the presence of allelopathic plants

(those that produce biochemicals that affect other plants) like lambkill can negatively influence black spruce regeneration and growth, resulting in lower canopy cover. These forests can have an older cohort of fire-scarred red pine "parent trees", frequently with cavities and hollow trunks. Rare plants are not documented from the ecosystem

**Environmental Setting:** The Red pine - Black spruce / Huckleberry - Rhodora / Sphagnum forest occurs on moderately exposed flats and gentle slopes. Soils are poorly drained glacial tills with low rooting potential and usually high organic layer accumulation. It is largely known from the Western ecoregion on moderately exposed flats and gentle slopes; microtopography is slight to moderate and aspect is variable. WC4 is somewhat rare in New Brunswick and absent from Prince Edward Island.

**Successional Dynamics:** This early to mid-successional forest originates with fire or windthrow, both of which may promote red pine regeneration. Tree uprooting resulting from windthrow exposes mineral soil required for red pine seed germination. Red pine's presence decreases between disturbance events. This favours black spruce, a longer-lived species with the flexibility to regenerate through either seeding or layering. In the absence of fire, the ecosystem will eventually succeed to WC2 (Black spruce / Lambkill – Labrador tea / Sphagnum).

and old growth potential is low. This wet forest is rare in Nova Scotia, and with its fire dependency, may present additional conservation challenges. WC4 may provide locally if not provincially unique habitat for particular wildlife, but specific associates are undocumented.

## Characteristic Plants

WC4

	Freq. (%)	Cover (%)
Red pine	100	19.0
Black spruce	67	14.0
Red maple	67	6.0
White pine	33	20.0
Balsam fir	33	3.0
<b>Tree Layer (Mean % Cover)</b>		<b>40</b>
Lambkill	100	27.7
Lowbush blueberry	100	5.5
Black spruce	100	2.4
Wild raisin	100	2.2
Serviceberry	100	0.1
Huckleberry	67	20.0
Rhodora	67	16.0
Grey birch	67	6.5
Red maple	67	2.8
False holly	67	2.5
Labrador tea	67	2.0
Tamarack	67	0.3
Speckled alder	67	0.1
White pine	67	0.1
Leather-leaf	33	80.0
Velvet-leaf blueberry	33	15.0
Pale laurel	33	2.0
Balsam fir	33	1.0
Broom crowberry	33	0.5
Red chokeberry	33	0.5
Ground juniper	33	0.3
Chokeberries	33	0.1
Trailing blackberry	33	0.1
Red pine	33	0.1
<b>Shrub Layer (Mean % Cover)</b>		<b>85</b>
Bracken	67	42.5
Bunchberry	67	20.0
Teaberry	67	13.0
Large cranberry	33	25.0
Creeping snowberry	33	5.0
Dwarf raspberry	33	2.0
Pitcher-plant	33	1.0
Rushes	33	1.0
Mayflower	33	0.5
False violet	33	0.2
Partridge-berry	33	0.2
Black crowberry	33	0.1
Bog-goldenrod	33	0.1
Cinnamon fern	33	0.1
Goldthread	33	0.1
Indian pipe	33	0.1
Pink lady's slipper	33	0.1
Rose pogonia	33	0.1
Rough aster	33	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>62</b>
Ladies' tresses	100	79.3
Schreber's moss	67	3.5
Grey reindeer lichen	67	1.8
Brown fat-leaved sphagnum	33	5.0
Russ's sphagnum	33	5.0
Wavy dicranum	33	0.5
Star-tipped reindeer lichen	33	0.1
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>85</b>

## Distinguishing Features

Red pine is diagnostic of this poorly drained softwood forest with a high shrub cover, dominated by lambkill, huckleberry and rhodora. Bracken, bunchberry and teaberry are often abundant.



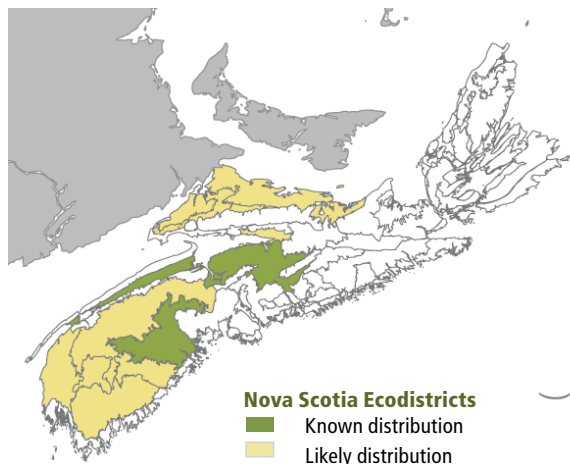
Huckleberry

## Site Characteristics

Slope Position:	Level <sup>7</sup> Middle <sup>3</sup>
Surface Stoniness:	(Non - Slightly) <sup>10</sup>
Bedrock Outcrop:	(Non-rocky) <sup>7</sup> (Slightly - Moderately) <sup>3</sup>
Elevation Range:	28 - 101m
Slope Gradient:	Level <sup>10</sup>
Aspect:	West <sup>3</sup> None <sup>7</sup>
Exposure:	Moderate <sup>10</sup>
Microtopography:	Level <sup>7</sup> Moderately <sup>3</sup>
Drainage:	Poor <sup>10</sup>

## Soil Characteristics

Soil Type:	ST7 <sup>7</sup> ST4 <sup>3</sup>
Parent Material:	Glacial till <sup>7</sup> Glaciofluvial <sup>3</sup>
Rooting Depth (cm):	(<30) <sup>10</sup>
Duff Thickness (cm):	(6-10) <sup>3</sup> (11-20) <sup>3</sup> (21-40) <sup>3</sup>



## WC5

### Red spruce – Balsam fir/ Cinnamon fern / Sphagnum

*Picea rubens* – *Abies balsamea* /  
*Osmunda cinnamomea* / *Sphagnum* spp.

n=19



Castlereagh,  
Colchester County

**Concept:** This mature coniferous ecosystem is one of two wet red spruce forests found in Nova Scotia. WD8 is a comparable Vegetation Type (VT) with low to moderate levels of both red spruce and red maple. Red spruce – Balsam fir/ Cinnamon fern / Sphagnum forest is found on soils with reduced rooting potential and relatively low nutrient availability, but sites are generally more productive than those supporting wet black spruce forests (e.g. WC1 and WC2). It is a low-elevation ecosystem characterized by red spruce dominance and high sphagnum moss cover.

**Vegetation:** The evergreen canopy is dominated by red spruce with lesser but frequent balsam fir. Few other tree species are frequent in the canopy, but it is well developed with moderate to high crown closure. Woody shrub and herbaceous cover is low to moderate. Forest plants common to wet forest (e.g. cinnamon fern) are present, but few species are prominent. Sphagnum mosses largely dominate the dense bryophyte layer. Similar to other moderately-productive, wet coniferous VTs (i.e. WC6, WC7 and WC8), common green sphagnum is characteristic.

**Environmental Setting:** The Red spruce - Balsam fir/ Cinnamon fern / Sphagnum forest is found on lowland plains and gently rolling uplands. It is common on moderately exposed flats, depressions and in lower and toe positions of

gentle slopes; aspect of the slope is variable. Soils are usually derived from fine to moderately textured glacial tills with low to moderate nutrient availability. Peat accumulation can be high, and while some stands grow on organic soil, most are on gleyed or heavily mottled mineral deposits. Sites are slightly to moderately mounded and generally have more microtopography than other wet coniferous forests in Nova Scotia. The VT is found throughout Nova Scotia, but is more common in the Eastern and Western ecoregions of the mainland. WC5 is relatively widespread and common in New Brunswick but rare on Prince Edward Island.

**Successional Dynamics:** This mid to late successional ecosystem is a type of edaphic climax, renewed by tree senescence, windthrow and other small to intermediate scaled disturbance agents. Between such disturbances, natural senescence can shape age class, favoring uneven stand structures. Windthrow and harvesting are the main stand-level disturbance agents. The mature forest may succeed from WC6 (Balsam fir / Cinnamon fern - Three seeded sedge / Sphagnum), WD6 (Red maple – Balsam fir / Wood aster / Sphagnum) or WD8 (Red spruce – Red maple / Wood sorrel – Sensitive fern / Sphagnum). Depending on disturbance history and nearby stand composition, WC5 may transition to WC8 (Hemlock / Cinnamon fern – Sensitive fern / Sphagnum).

### Ecological Features

This relatively common ecosystem occurs as a small patch in larger upland matrix forests, at the edge of open wetlands, or adjacent to other wet forest types. It is a temperate wet forest, characterized by high canopy development, low woody understory cover and high bryophyte cover; herbaceous development is variable.

Sites are somewhat acidic with only moderate microhabitat variability and species richness. Wet red spruce forests are generally found on more productive sites than similar wet black spruce forests, but few rare plants are documented. Old growth potential is low to moderate but may be higher in areas less prone to patch

and stand-replacing disturbance. This well-developed wet forest may provide cover for moose and deer and locally important habitat features for numerous other forest wildlife. Similar to other wet forests, WC5 can regulate water flow, provide filtration, and recharge groundwater that are distinct from upland ecosystems.

## Characteristic Plants

WC5

	Freq. (%)	Cover (%)
Red spruce	100	49.0
Balsam fir	84	19.1
Red maple	79	5.3
Black spruce	37	18.1
White birch	37	2.3
Yellow birch	21	2.5
Hemlock	16	5.0
White pine	16	2.0
Trembling aspen	11	6.0
<b>Tree Layer (Mean % Cover)</b>		<b>79</b>
Balsam fir	95	5.2
Red spruce	84	3.8
Red maple	74	0.2
Lambkill	53	0.7
False holly	53	0.1
Velvet-leaf blueberry	42	0.3
Wild raisin	37	0.1
Lowbush blueberry	32	0.3
Yellow birch	26	0.2
Striped maple	21	0.2
White pine	21	0.1
<b>Shrub Layer (Mean % Cover)</b>		<b>10</b>
Goldthread	100	1.9
Cinnamon fern	89	5.8
Bunchberry	89	0.6
Starflower	63	0.1
New York fern	53	4.5
Wood-sorrel	53	0.9
Bluebead lily	53	0.2
Wild lily-of-the-valley	47	0.2
Three seeded sedge	42	0.7
Twinflower	42	0.7
Creeping snowberry	42	0.2
Wood aster	37	0.1
Evergreen wood fern	32	2.6
Bracken	32	2.2
Painted trillium	32	0.1
Sarsaparilla	26	0.2
Partridge-berry	21	0.6
Indian pipe	21	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>14</b>
Bazzania	100	14.4
Schreber's moss	95	22.8
Stair-step moss	95	17.0
Common green sphagnum	68	22.1
Hypnum moss	63	1.5
Ladies' tresses	58	13.0
Pale fat-leaved sphagnum	47	1.1
Broom moss	47	1.0
Wavy dicranum	37	1.8
Hair-cap moss	37	0.2
Grey reindeer lichen	26	0.1
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>87</b>

## Distinguishing Features

Red spruce dominates this poorly drained softwood forest with some balsam fir. Sphagnum mosses, particularly common green and ladies' tresses dominate the groundcover. Both the shrub and herb layer are not well developed.



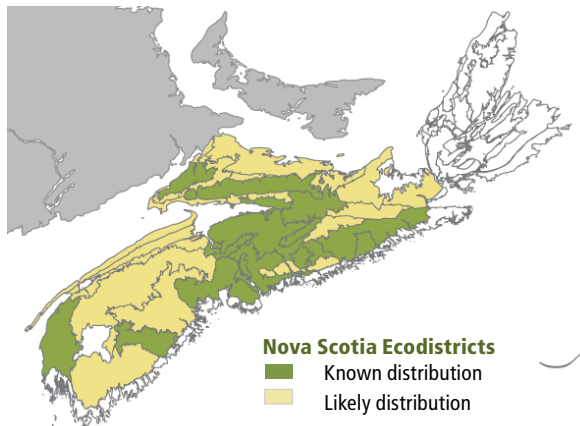
*Brittle stem sphagnum*

## Site Characteristics

Slope Position:	Level <sup>6</sup> Toe <sup>2</sup> Lower <sup>1</sup> Depression <sup>1</sup>
Surface Stoniness:	(Non - Slightly) <sup>8</sup> (Moderately) <sup>1</sup> (Very - Excessively) <sup>1</sup>
Bedrock Outcrop:	(Non-rocky) <sup>10</sup>
Elevation Range:	13 - 287m
Slope Gradient:	Level <sup>7</sup> Gentle <sup>3</sup>
Aspect:	North <sup>1</sup> East <sup>2</sup> South <sup>1</sup> West <sup>1</sup> None <sup>5</sup>
Exposure:	Moderate <sup>5</sup> Mod. exposed <sup>2</sup> Mod. sheltered <sup>2</sup> Sheltered <sup>1</sup>
Microtopography:	Slightly <sup>5</sup> Level <sup>2</sup> Moderately <sup>2</sup> Strongly <sup>1</sup>
Drainage:	Poor <sup>2</sup> Very poor <sup>2</sup> Imperfect <sup>1</sup>

## Soil Characteristics

Soil Type:	ST4 <sup>5</sup> ST7 <sup>4</sup> ST14 <sup>1</sup>
Parent Material:	Glacial till <sup>7</sup> Glaciofluvial <sup>1</sup> Lacustrine <sup>1</sup> Organic <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>8</sup> (30-45) <sup>1</sup> nd <sup>1</sup>
Duff Thickness (cm):	(6-10) <sup>1</sup> (11-20) <sup>4</sup> (21-40) <sup>4</sup> nd <sup>1</sup>





## Balsam fir / Cinnamon fern – Three seeded sedge / Sphagnum

*Abies balsamea* / *Osmunda cinnamomea* –  
*Carex trisperma* / *Sphagnum* spp.

**n=18**



Mount Thom,  
Pictou County

**Concept:** This coniferous forest is characterized by balsam fir canopy dominance and high sphagnum moss cover. The early to mid-successional ecosystem is generally associated with wet soils, but may occur on imperfectly drained sites. Low to moderate nutrient availability is typical but this Vegetation Type (VT) is usually on richer sites than wet black spruce – pine forests (WC1 - WC4).

**Vegetation:** Canopy layers are usually well developed, but some stands are open with stunted and/or more widely-spaced trees. The canopy is heavily dominated by balsam fir. Other important co-dominants may include white spruce, black spruce and/or red maple. The shrub layer is variably developed but usually supports low to moderate cover. Few woody shrubs are frequent. False holly, wild raisin and/or lambkill may be sparsely scattered but they are not especially prominent. Herbaceous cover is moderate, largely comprised of wet site species (e.g. cinnamon fern, three seeded sedge) and common upland coniferous forest plants. Sphagnum species dominate the dense bryophyte layer. Common green and ladies' tresses sphagnum mosses are typical.

### Ecological Features

The Balsam fir / Cinnamon fern – Three seeded sedge / Sphagnum forest occurs as a small patch in larger upland conifer or mixedwood forests, at the edge of open wetlands, or adjacent to other types of wet forest. The ecosystem is characterized by moderate to high canopy development, usually sparse woody understory cover

but generally dense herbaceous and bryophyte cover. Old growth potential is low but may be higher in cooler or sheltered areas, less prone to patch and stand-replacing disturbance. In cooler areas, this ecosystem may persist as a type of edaphic climax, representing an important component of landscape structure, but

**Environmental Setting:** The Balsam fir / Cinnamon fern - Three seeded sedge / Sphagnum forest occurs on poorly drained flats, in shallow depressions and on gentle to moderate slopes. Most sites are at least moderately exposed and have very little microtopography. Cooler slopes are favoured, but aspect is somewhat variable. Soils are usually derived from glacial tills, but organic deposits also provide suitable habitat. Low to moderate nutrient availability is typical. The VT is primarily found scattered throughout central and eastern Nova Scotia. WC6 is widespread throughout the Maritime Provinces.

**Successional Dynamics:** In cooler highland and coastal ecoregions, the forest may persist as a type of edaphic climax but elsewhere, it will succeed to WC5 (Red spruce – Balsam fir / Cinnamon fern / Sphagnum) or WC8 (Hemlock / Cinnamon fern – Sensitive fern / Sphagnum). Depending on disturbance regime and the local ecological context, WC6 could also transition to WD2 (Red maple / Cinnamon fern / Sphagnum), WD6 (Red maple – Balsam fir / Wood aster / Sphagnum), WD8 (Red spruce – Red maple / Wood sorrel – Sensitive fern / Sphagnum) or even CE1 (Eastern white cedar / Speckled alder / Cinnamon fern / Sphagnum). Common disturbance agents are tree mortality caused by windthrow, timber harvest and spruce budworm defoliation.

successional dynamics are not completely understood. Similar to all wet forests, this ecosystem supports valuable habitat, distinct ecological features and unique biogeochemical functions. Documented rare plant associates include: creeping rattlesnake plantain, showy lady's slipper, meadow horsetail and foamflower.



Characteristic Plants	WC6	
	Freq. (%)	Cover (%)
Balsam fir	100	42.3
Black spruce	67	12.3
Red maple	61	4.1
White spruce	33	11.7
White birch	28	5.2
White pine	17	2.0
White ash	11	3.0
Hemlock	11	1.5
Red spruce	11	1.5
Tamarack	11	1.5
<b>Tree Layer (Mean % Cover)</b>		<b>60</b>
Balsam fir	83	12.8
False holly	61	3.8
Red maple	61	1.0
Black spruce	50	3.9
Wild raisin	50	0.3
Lambkill	39	0.5
White birch	33	3.4
Velvet-leaf blueberry	33	2.8
Serviceberry	33	0.1
Fly-honeysuckle	28	0.6
Yellow birch	28	0.3
Mountain-ash	28	0.2
Lowbush blueberry	22	0.1
Striped maple	22	0.1
<b>Shrub Layer (Mean % Cover)</b>		<b>20</b>
Cinnamon fern	89	26.4
Bunchberry	89	3.3
Starflower	83	0.4
Sarsaparilla	78	4.0
Goldthread	78	3.7
Twinflower	72	4.4
Wood-sorrel	67	3.3
Three seeded sedge	67	3.2
Creeping snowberry	61	6.8
Wild lily-of-the-valley	44	1.0
New York fern	33	14.2
Bluebead lily	33	4.6
Dwarf raspberry	33	1.4
Evergreen wood fern	33	1.1
Crested wood fern	33	0.2
Lady fern	22	0.4
Violets	22	0.3
Teaberry	22	0.2
Indian pipe	22	0.1
Rough goldenrod	22	0.1
Wood aster	22	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>60</b>
Schreber's moss	94	10.0
Stair-step moss	89	18.5
Bazzania	83	2.8
Common green sphagnum	61	39.2
Ladies' tresses	44	6.8
Broom moss	44	1.8
Plume moss	39	0.8
Pale fat-leaved sphagnum	28	34.8
Wavy dicranum	28	0.7
Flat topped sphagnum	22	24.9
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>92</b>

## Distinguishing Features

This is a poorly drained softwood forest dominated by balsam fir with occasional spruces and red maple.

Cinnamon fern and three seeded sedge are common herbs, while sphagnum mosses dominate the groundcover.



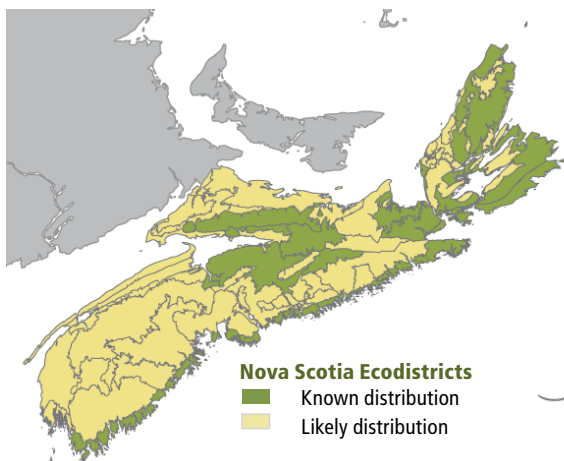
Common green sphagnum

## Site Characteristics

Slope Position:	Level <sup>7</sup> Middle <sup>2</sup> Lower <sup>1</sup>
Surface Stoniness:	(Non - Slightly) <sup>8</sup> (Moderately) <sup>1</sup> (Very - Excessively) <sup>1</sup>
Bedrock Outcrop:	(Non-rocky) <sup>10</sup>
Elevation Range:	6 - 445m
Slope Gradient:	Level <sup>7</sup> Gentle <sup>3</sup>
Aspect:	North <sup>2</sup> South <sup>2</sup> None <sup>6</sup>
Exposure:	Moderate <sup>4</sup> Exposed <sup>3</sup> Mod. exposed <sup>2</sup> Other <sup>1</sup>
Microtopography:	Level <sup>6</sup> Slightly <sup>3</sup> nd <sup>1</sup>
Drainage:	Poor <sup>3</sup> Very poor <sup>3</sup> Imperfect <sup>1</sup>

## Soil Characteristics

Soil Type:	ST4 <sup>3</sup> ST14 <sup>3</sup> ST3 <sup>1</sup> ST6 <sup>1</sup> ST7 <sup>1</sup> ST13 <sup>1</sup>
Parent Material:	Glacial till <sup>6</sup> Organic <sup>3</sup> Lacustrine <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>6</sup> (30-45) <sup>2</sup> (>45) <sup>1</sup> nd <sup>1</sup>
Duff Thickness (cm):	(6-10) <sup>1</sup> (11-20) <sup>2</sup> (21-40) <sup>2</sup> (>40) <sup>2</sup> nd <sup>3</sup>



## WC7

### Tamarack – Black spruce / Lambkill / Sphagnum

*Larix laricina* – *Picea mariana* /  
*Kalmia angustifolia* / *Sphagnum* spp.

#### WC7a

### Huckleberry – Inkberry variant

*Gaylussacia baccata* – *Ilex glabra*

n=17



Otter Brook,  
Colchester County

**Concept:** This wet coniferous forest is characterized by tamarack canopy dominance or co-dominance and high sphagnum cover. It is the only wet tamarack forest ecosystem classified from Nova Scotia. Stands with coastal plain species like inkberry and/or moderate to high levels of huckleberry distinguish the inkberry variant WC7a; most of these occur in the Western ecoregion. WC7 is common on poorly drained flats and depressions, with low to moderate nutrient availability.

**Vegetation:** Canopy layers are usually well developed but trees may be widely spaced and restricted to the tall shrub layer. Some stands have enough red maple to support mixedwood canopy structures. Prominent levels of larch characterize this typically coniferous ecosystem. Many stands are co-dominated by black spruce, while occurrences in western Nova Scotia may support scattered white pine. The understory is well developed but herb and shrub cover is variable. Generally, stands with high shrub cover support lower herbaceous cover and vice versa. Characteristic woody shrub species include lambkill and wild raisin. Few herbs are frequent, but three seeded sedge is often present. The dense bryophyte layer is largely dominated by pale fat-leaved sphagnum and flat topped sphagnum.

#### Ecological Features

This usually wet coniferous forest is our only tamarack on organic soils, representing an important component of landscape structure. It is relatively common, often found fringing open wetlands or developing after black spruce peatlands are disturbed by harvesting. The usually open canopy allows abundant light to the forest

floor, promoting understory development and supporting wildlife that requires dense cover, moist soils and/or small pools or tracts of standing water. These include numerous bird, amphibian and invertebrate wildlife species. Documented rare plants include showy lady's slipper, black ash and alder-leafed buckthorn. Atlantic Coastal

**Environmental Setting:** The Tamarack - Black Spruce / Sphagnum forest usually occurs on poorly to very poorly drained flats or shallow depressions. Most stands are supported by organic soil, derived from sphagnum moss, but gleyed or strongly mottled till (and, less commonly, lake or river deposits) are similarly typical. This ecosystem is occasionally expressed on moist mineral soil. Most sites have little if any microtopography and variable exposure. Occurrences are often at low elevation, but may be found up to 400 meters, or higher. Tamarack - Black spruce / Sphagnum forest is widespread and relatively common throughout the Maritime Provinces, but the WC7a variant is limited to Nova Scotia.

**Successional Dynamics:** This is an early to mid-successional ecosystem that may persist as an edaphic climax. It can follow stand-replacing timber harvest or severe windthrow, or succeed open wetland vegetation types in peatland successional sequences. Between disturbance events, natural senescence can create uneven-aged stands and promote increased black spruce cover. Higher relative soil fertility usually limits this Vegetation Type from fully transitioning to WC1 (Black spruce / Cinnamon fern / Sphagnum) or WC2 (Black spruce / Lambkill - Labrador tea / Sphagnum). However, on poorer sites WC7a may succeed to WC2a.

Plain species (e.g. Virginia chain fern, inkberry, catbrier, skunk cabbage and Elliot's goldenrod, among others) may be present in WC7a. Canadian occurrences of WC7a are limited to Nova Scotia, representing a particularly important element of provincial biodiversity.

Characteristic Plants	WC7		WC7a	
	Freq. (%)	Cover (%)	Freq. (%)	Cover (%)
Tamarack	93	41.1	100	31.5
Black spruce	80	20.3	100	21.5
Red maple	40	6.7	100	7.5
Balsam fir	20	6.0		
White pine	7	2.0	50	12.0
<b>Tree Layer (Mean % Cover)</b>		<b>59</b>		<b>67</b>
Black spruce	87	13.3	50	3.0
Red maple	73	4.6	50	2.0
Speckled alder	60	17.1		
Lambkill	60	2.9	50	0.1
Wild raisin	60	1.8	50	0.1
Balsam fir	60	1.4	100	0.5
Labrador tea	53	9.2	100	0.4
False holly	47	6.5	100	0.5
Tamarack	47	3.5		
Winterberry	40	4.9		
Meadow-sweet	40	3.4		
Velvet-leaf blueberry	40	0.9	50	0.5
Roses	40	0.7		
Leather-leaf	33	9.0		
Rhodora	33	5.2	50	0.5
Serviceberry	33	0.1		
Lowbush blueberry	27	0.1	50	0.1
Small cranberry	20	1.7		
Huckleberry	13	0.5	50	50.0
Inkberry			100	2.8
<b>Shrub Layer (Mean % Cover)</b>		<b>49</b>		<b>33</b>
Bunchberry	60	5.0	100	0.3
Cinnamon fern	53	7.4	100	6.0
Three seeded sedge	53	3.1	100	3.1
Three-leaved false Solomon's seal	53	2.7		
Blue flag	47	0.2		
Blue joint	40	1.5		
Goldthread	40	1.1	100	0.3
Creeping snowberry	33	1.7		
Violets	33	0.7		
Marsh fern	33	0.2		
Wild lily-of-the-valley	33	0.1		
Stiff sedge	27	42.6		
Crested wood fern	27	0.2		
Loosetrife	27	0.2		
Trailing blackberry	27	0.1	50	0.1
Dwarf raspberry	20	16.7		
Pitcher-plant	20	0.2	50	1.0
Starflower	20	0.2	100	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>40</b>		<b>11</b>
Pale fat-leaved sphagnum	80	25.3	50	20.0
Schreber's moss	73	4.7	100	3.5
Flat topped sphagnum	60	50.6	50	45.0
Bazzania	47	3.0	100	5.5
Stair-step moss	40	2.6		
Ladies' tresses	33	5.8	50	5.0
Red fat-leaved sphagnum	20	12.7		
Common green sphagnum	13	42.5	50	60.0
Hypnum moss	13	0.5	50	2.0
Brown fat-leaved sphagnum	7	1.0	50	40.0
Fine sphagnum	7	0.3	50	4.0
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>79</b>		<b>98</b>

## Distinguishing Features

Tamarack is diagnostic of this poorly drained softwood forest with variable levels of black spruce, red maple and speckled alder.

The variant WC7a will have Coastal Plain species like inkberry and/or moderate to high levels of huckleberry. Sphagnum mosses are abundant with the three fat-leaved species common.



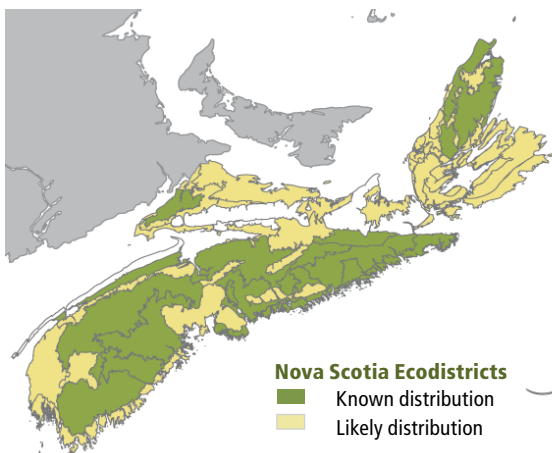
*Inkberry*

## Site Characteristics

Slope Position:	Level <sup>8</sup> Depression <sup>2</sup>
Surface Stoniness:	(Non - Slightly) <sup>9</sup> nd <sup>1</sup>
Bedrock Outcrop:	(Non-rocky) <sup>9</sup> nd <sup>1</sup>
Elevation Range:	8 - 415m
Slope Gradient:	Level <sup>10</sup>
Aspect:	None <sup>10</sup>
Exposure:	Moderate <sup>6</sup> Mod. sheltered <sup>2</sup> Exposed <sup>1</sup> Sheltered <sup>1</sup>
Microtopography:	Level <sup>9</sup> Other <sup>1</sup>
Drainage:	Very poor <sup>6</sup> Poor <sup>3</sup> Imperfect <sup>1</sup>

## Soil Characteristics

Soil Type:	ST14 <sup>6</sup> ST4 <sup>1</sup> ST6 <sup>1</sup> ST7 <sup>1</sup> ST10 <sup>1</sup>
Parent Material:	Organic <sup>7</sup> Lacustrine <sup>2</sup> Other <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>7</sup> (30-45) <sup>1</sup> (>45) <sup>1</sup> nd <sup>1</sup>
Duff Thickness (cm):	(6-10) <sup>1</sup> (21-40) <sup>2</sup> (>40) <sup>5</sup> nd <sup>1</sup>



## Hemlock / Cinnamon fern – Sensitive fern / Sphagnum

*Tsuga canadensis* / *Osmunda cinnamomea* –  
*Onoclea sensibilis* / *Sphagnum* spp.

n=7



South Brookfield,  
Queens County

**Concept:** Poor to very poorly drained mineral soils support the relatively uncommon Hemlock / Cinnamon fern - Sensitive fern / Sphagnum forest. This is the wettest hemlock forest in Nova Scotia. The Vegetation Type (VT) occurs in warmer ecoregions where it persists as an edaphic climax. WC8 is characterized by hemlock canopy dominance and prominent cinnamon fern, sensitive fern and common green sphagnum.

**Vegetation:** Crown closure is high in the typically evergreen canopy. Most stands are strongly dominated by hemlock, but some are co-dominated by moderate amounts of red maple. Other trees (e.g. red spruce, yellow birch) are frequent but very sparsely scattered. The understory is relatively open, with low woody and herbaceous density but high sphagnum cover. Characteristic species include cinnamon fern, sensitive fern, wood aster, common green sphagnum and common upland plants.

**Environmental Setting:** Most occurrences are on poorly drained mineral soil derived from glacial till deposits, but organic sites are occasionally occupied. Soils have moderate

nutrient availability, largely maintained by the flow of ground water and sometimes surface water. This ecosystem occurs in sites that are more sheltered than most coniferous wetlands of Nova Scotia. It is somewhat restricted to the warmer western ecoregion, but may also be found in the eastern ecoregion. This ecosystem has been observed in parts of southern New Brunswick and on Prince Edward Island but is much more common in Nova Scotia.

**Successional Dynamics:** This is a mid to late successional ecosystem, typically supporting uneven-aged stands. Most occurrences are maintained by gap dynamics, but some stands show evidence of small-scale timber harvest. Windthrow and harvesting are the main stand-level disturbance agents. The mature forest may succeed from WC6 (Balsam fir / Cinnamon fern – Three seeded sedge / Sphagnum), WD6 (Red maple – Balsam fir / Wood aster / Sphagnum) or WD8 (Red spruce – Red maple / Wood sorrel – Sensitive fern / Sphagnum). Depending on disturbance history and nearby stand composition, WC8 may transition from WC5 (Red spruce – Balsam fir/ Cinnamon fern / Sphagnum).

### Ecological Features

A common landscape component in northern New England, this uncommon wet forest is the most temperate coniferous wet forest in Nova Scotia. It occurs in sheltered basins, sometimes near open wetlands, but more often as small to moderate sized patches in upland matrix forest. The dense canopy

overtops a sparse woody understory but usually extensive herbaceous and bryophyte cover. In western Nova Scotia, where most stands occur, this ecosystem is a locally important component of landscape structure. It supports unique habitat values including thermal cover for moose, foraging habitat for numerous

birds, and shelter for invertebrates, amphibians and reptiles. Few rare plants are documented, but black ash, alder-leaved buckthorn and various Atlantic Coastal Plain species have been observed. Old growth potential is moderate to high.



Characteristic Plants	WC8	
	Freq. (%)	Cover (%)
Hemlock	100	41.3
Red maple	100	11.1
Yellow birch	86	6.2
Red spruce	71	8.8
Balsam fir	43	11.3
White ash	43	8.0
White pine	43	5.3
Hybrid spruce	14	40.0
White spruce	14	2.0
<b>Tree Layer (Mean % Cover)</b>		<b>81</b>
Hemlock	100	3.3
Red spruce	86	1.5
Red maple	86	0.2
Balsam fir	71	6.5
Yellow birch	57	0.6
White pine	57	0.1
Red oak	43	0.1
Witch-hazel	29	6.0
Poison ivy	29	1.6
Velvet-leaf blueberry	29	0.8
Striped maple	29	0.6
White ash	29	0.6
Winterberry	29	0.5
<b>Shrub Layer (Mean % Cover)</b>		<b>16</b>
Cinnamon fern	100	3.6
Goldthread	100	0.5
Wild lily-of-the-valley	86	0.3
Sensitive fern	71	1.6
Bunchberry	71	0.5
Wood aster	71	0.2
Sarsaparilla	57	0.6
Evergreen wood fern	57	0.2
Partridge-berry	57	0.2
Starflower	57	0.2
New York fern	43	15.0
Teaberry	43	0.4
Three seeded sedge	43	0.2
Trailing blackberry	43	0.1
Painted trillium	43	0.1
Twinflower	43	0.1
Wood-sorrel	43	0.1
Water-horehound	29	0.5
Crested wood fern	29	0.3
Creeping snowberry	29	0.1
Dwarf raspberry	29	0.1
<b>Herb Layer (Mean % Cover)</b>		<b>17</b>
Bazzania	100	13.4
Stair-step moss	100	10.0
Schreber's moss	86	5.4
Common green sphagnum	71	10.2
Pale fat-leaved sphagnum	57	16.6
Hypnum moss	57	3.3
Ladies' tresses	43	5.5
Broom moss	43	0.4
Wavy dicranum	43	0.4
Prickly sphagnum	29	3.5
Rhizomniums	29	0.8
Mniiums	29	0.4
<b>Bryo-Lichen Layer (Mean % Cover)</b>		<b>64</b>

## Distinguishing Features

Hemlock is diagnostic of this poorly drained mixedwood or softwood forest. Yellow birch, red maple, balsam fir and red spruce are common.

The woody shrub layer is primarily regenerating tree species.



*Red fat-leaved sphagnum*

## Site Characteristics

Slope Position:	Level <sup>9</sup> Toe <sup>1</sup>
Surface Stoniness:	(Very - Excessively) <sup>4</sup> (Non - Slightly) <sup>3</sup> (Moderately) <sup>3</sup>
Bedrock Outcrop:	(Non-rocky) <sup>9</sup> (Slightly - Moderately) <sup>1</sup>
Elevation Range:	44 - 167m
Slope Gradient:	Level <sup>10</sup>
Aspect:	North <sup>1</sup> None <sup>9</sup>
Exposure:	Mod. sheltered <sup>6</sup> Moderate <sup>4</sup>
Microtopography:	Level <sup>8</sup> Slightly <sup>1</sup> Moderately <sup>1</sup>
Drainage:	Poor <sup>7</sup> Very poor <sup>3</sup>

## Soil Characteristics

Soil Type:	ST4 <sup>7</sup> ST10 <sup>1</sup> ST13 <sup>1</sup> ST14 <sup>1</sup>
Parent Material:	Glacial till <sup>7</sup> Organic <sup>2</sup> Alluvium <sup>1</sup>
Rooting Depth (cm):	(<30) <sup>10</sup>
Duff Thickness (cm):	(6-10) <sup>3</sup> (11-20) <sup>6</sup> nd <sup>1</sup>

