

- CE1 Eastern white cedar / Speckled alder /
Cinnamon fern / Sphagnum CE1a Poison ivy variant
- CE2 Eastern white cedar – Balsam fir / Stair-step moss

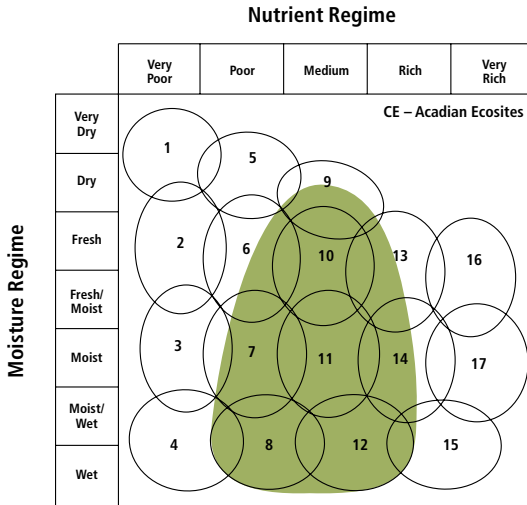
Concept: The presence of eastern white cedar (in any stand or site condition) defines this group. Only two broadly described Vegetation Types (VT) are currently recognized, one each in an upland and wetland setting. Diverse and well developed shrub, herb and bryophyte layers are typical. It is known that cedar can also occur on alluvial floodplain soils, shallow to bedrock soils and old field sites. Fact sheets for these units will be developed as more data are collected. Vegetation types in this group are found only in the Acadian Ecosite group.

Vegetation: Cedar, red maple, white ash, balsam fir and black spruce are common associates in the canopy. Understory vegetation reflects soil moisture and nutrient regimes present. The greatest diversity occurs on wet sites and in western Nova Scotia where Atlantic Coastal Plain flora are more common. Cedar regeneration is usually present in both VTs.

Environmental Setting: Vegetation types in this group are usually found on lower flats, lower and toe positions of gentle slopes, shallow depressions and old river terraces. Most sites have little (if any) surface stoniness or exposed bedrock. Soils are generally derived from glacial till, fluvial and/or organic deposits. Site fertility is usually moderate to high. Vegetation types only form small patches on the landscape. This uncommon group is mainly found in the Western ecoregion (700) with a few scattered locations known in the Northumberland Lowlands (530) and Cumberland Marshes (550) ecodistricts. Old field cedar forests are known on the North Mountain ecodistrict (920). Cedar on alluvial soils are scattered along the Annapolis River and small tributaries. Cedar on shallow soils over bedrock are scattered along the Valley Slope ecodistrict (710).

Successional Dynamics: Successional dynamics of cedar VTs in Nova Scotia are not fully understood. Cedar is a shade tolerant species and can regenerate and persist in the understory until openings allow further development. Between stand-level disturbance events, natural tree senescence should promote uneven age class development.

Edatopic Grid



Ecological Features

Occurrences of this small patch ecosystem rarely cover a hectare. The overstory is typically well developed, composed of cedar and other tree species. Cedar stands are clustered in two different areas of the province; a small group of stands are found in the northern mainland, while the remainder occurs in the western counties. These geographically isolated sub-populations show little evidence of genetic interaction and it is unclear whether they were once continuous or whether their separation has been long standing, resulting from different post glacial migration events. Cedar trees are relatively long lived and very resistant to disease, insects and decay. The foliage and bark of young trees are a favoured browse of several herbivores, including deer, snowshoe hare and porcupine. Wetter stands in western Nova Scotia often support Atlantic Coastal Plain flora, including some rare species. Cedar is legally protected and listed as vulnerable under the Nova Scotia Endangered Species Act.

CE1

Eastern white cedar / Speckled alder / Cinnamon fern / Sphagnum

Thuja occidentalis / *Alnus incana* / *Osmunda cinnamomea* / *Sphagnum* spp.

CE1a

Poison ivy variant

Toxicodendron radicans

n=10



Oxford Junction,
Cumberland County

Concept: This mid to late successional ecosystem is the only wet cedar forest found in Nova Scotia. The very uncommon Eastern white cedar / Speckled alder / Cinnamon fern / Sphagnum forest is characterized by cedar canopy dominance and moderate to high levels of sphagnum. CE1a, the poison ivy variant, is typified by species with Atlantic Coastal Plain affinity (e.g. poison ivy, inkberry, Elliott's goldenrod, catbriar and others).

Vegetation: Canopy layers are well developed, with moderate to high levels of cedar and lesser amounts of red maple, black spruce and white ash. Woody understory and herbaceous layers are variably developed. Common species include speckled alder, winterberry, cinnamon fern and three seeded sedge. Occurrences of CE1a may include poison ivy, huckleberry, inkberry, skunk cabbage, Elliott's goldenrod, catbriar and/or button sedge, as well as other Atlantic Coastal Plain species. The typically dense bryophyte layer includes prominent common green sphagnum.

Environmental Setting: The Eastern white cedar / Speckled alder / Cinnamon fern / Sphagnum forest usually occurs on poorly to very poorly drained flats and depressions, scattered at low elevation across western and northern Nova Scotia. Most stands are supported by nutrient medium

to rich organic soil, but poorly drained mineral soil also provides suitable habitat for this Vegetation Type (VT). Sites are moderately exposed with little microtopography or surface stoniness. In Yarmouth and Digby counties, lakeside stands can occur on elevated terraces or ridges called ice ramparts. These terraces are formed by the shoreward movement and pushing action of ice during winter freeze up. The VT is much more common in both New Brunswick and Prince Edward Island, although less so in the latter province. CE1a is not found outside Nova Scotia.

Successional Dynamics: Successional patterns of this mid to late successional Vegetation Type are not fully understood. Most occurrences are maintained by gap dynamics, but some stands show evidence of small-scale timber harvest, a disturbance agent that generally favours black spruce, balsam fir and/or tamarack regeneration. Windthrow, harvesting, flooding and ice scour are potential stand-level disturbance agents. Depending on the disturbance regime, site fertility and local seed sources, CE1 could transition from WD4 (Red maple / Poison ivy / Sphagnum) or WC7 (Tamarack – Black spruce / Lambkill / Sphagnum). Between major disturbance events, natural tree senescence promotes uneven age class development and related changes in stand structure.

Ecological Features

Occurrences of this small patch ecosystem rarely cover a hectare. The variably composed overstory provides moderate to dense canopy cover. Deer may browse cedar heavily in winter,

while snowshoe hare eat the foliage and gnaw young treebark. Cedar are long-lived and resistant to disease and insects. The oldest Nova Scotia trees exceed 250 years. Cedar wood is very

decay resistant resulting in dead trees that may persist for many decades. Cedar is legally protected and listed as vulnerable under the Nova Scotia Endangered Species Act.

Characteristic Plants	CE1		CE1a	
	Freq. (%)	Cover (%)	Freq. (%)	Cover (%)
Eastern white cedar	100	51.8	100	41.6
Red maple	80	9.8	100	9.4
White ash	60	7.7	60	12.0
Balsam fir	60	6.7	40	4.0
Tamarack	60	5.7	20	12.0
Black spruce	40	12.0	80	20.5
Red spruce	20	0.1	80	5.5
White pine			40	5.0
Tree Layer (Mean Cover)		81		83
Balsam fir	80	10.3	60	6.4
Eastern white cedar	80	2.8	60	10.5
Red maple	80	0.5	80	4.0
Speckled alder	80	0.5	60	1.3
Winterberry	60	0.7	80	0.4
Labrador tea	60	0.2	20	0.1
Lambkill	60	0.2	20	0.1
Black spruce	40	8.0	40	0.6
False holly	40	0.1	20	1.0
Ground hemlock (Yew)	40	0.1		
Mountain-ash	40	0.1	20	1.0
Highbush blueberry	20	2.0	40	0.1
Bayberry	20	0.1	40	1.3
Poison ivy			80	2.3
Huckleberry			80	1.8
White ash			40	1.3
Shrub Layer (Mean Cover)		17		33
Cinnamon fern	100	25.0	100	11.4
Wild lily-of-the-valley	100	0.4	80	1.5
Twinflower	80	0.8		
Three seeded sedge	60	2.3	60	2.9
Sarsaparilla	60	2.2	40	2.8
Dwarf raspberry	60	1.0	20	1.0
Sensitive fern	60	0.7	20	0.5
Partridge-berry	60	0.4	20	1.0
Creeping snowberry	60	0.1		
Oak fern	40	1.1		
Skunk cabbage	40	0.8	20	0.1
Fowl manna grass	40	0.5		
Massachusetts fern	40	0.5		
Bladder sedge	40	0.3		
Crested wood fern	40	0.1	20	1.0
Starflower	40	0.1	60	2.7
Bluebead lily	20	0.5	60	1.9
Royal fern	20	0.1	80	0.8
Blue flag			40	0.3
Trailing blackberry			40	0.2
Northern long sedge			40	0.1
Herb Layer (Mean Cover)		34		12
Common green sphagnum	80	12.0	60	17.3
Shaggy moss	80	1.9	20	0.1
Stair-step moss	60	31.3	20	0.5
Bazzania	60	3.7	60	3.5
Pale fat-leaved sphagnum	40	20.0	40	15.0
Brittle stem sphagnum	40	17.3		
Flat topped sphagnum	40	7.0	20	6.0
Blunt-leaved sphagnum	20	2.0	40	3.5
Ladies' tresses	20	2.0	40	11.5
Bryo-Lichen Layer (Mean Cover)		57		32

Distinguishing Features

These are wet softwood forests with cedar.

The variant, CE1a, displays a strong Atlantic Coastal Plain flora affinity

in the understory.

Species such as poison ivy, inkberry, Elliott's goldenrod and others are often present.



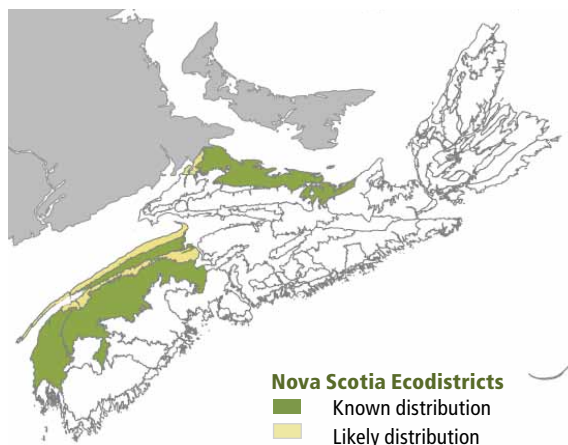
Poison ivy

Site Characteristics

Slope Position:	Level ⁷ Depression ² Lower ¹
Surface Stoniness:	(Non - Slightly) ⁸ (Moderately) ¹ (Very - Excessively) ¹
Bedrock Outcrop:	(Non-rocky) ¹⁰
Elevation Range:	14 - 168m
Slope Gradient:	Level ⁹ Moderate ¹
Aspect:	South ¹ None ⁹
Exposure:	Moderate ⁷ Mod. sheltered ² Sheltered ¹
Microtopography:	Level ⁶ Slightly ² Moderately ¹ nd ¹
Drainage:	Very poor ⁵ Poor ⁴ nd ¹

Soil Characteristics

Soil Type:	ST14 ⁹ ST4 ¹
Parent Material:	Organic ³ Lacustrine ¹
Rooting Depth (cm):	(<30) ⁴ (30-45) ¹ nd ⁵
Duff Thickness (cm):	(21-40) ¹ (>40) ⁹



Nova Scotia Ecodistricts

- Known distribution
- Likely distribution

CE2

Eastern white cedar – Balsam fir / Stair-step moss

Thuja occidentalis – *Abies balsamea* /
Hylocomium splendens

n=6



Oxford Junction,
Cumberland County

Concept: This mid-successional Vegetation Type (VT) has an overstory dominated by a range of species, but consistently includes a significant component of eastern white cedar. It is cedar's presence, in either the canopy or high shrub layer, which defines this otherwise variable VT. CE2 stands can be classed as either softwood or mixedwood depending on tree species composition. It is an uncommon VT and is the only upland cedar forest found in the province.

Vegetation: Eastern white cedar is a co-dominant with several other trees including red spruce, balsam fir, white pine, hemlock, red maple and white ash. Other less common associates are white birch, trembling aspen and white spruce. Development of the shrub layer is variable, but usually includes regenerating trees, beaked hazelnut and fly- honeysuckle. The herb layer is generally dominated by a variety of fern species including interrupted fern, bracken, lady fern, cinnamon fern and oak fern. These species are indicative of the range of moisture and nutrient conditions associated with CE2 stands. The well developed bryophyte layer is dominated by stair-step moss, Schreber's moss and bazzania.

Environmental Setting: CE2 is mainly associated with fresh-moist to moist, nutrient medium to rich soils of variable texture. CE2 is an uncommon VT that occurs mainly in western Nova Scotia in the Clare, Annapolis Valley and Valley Slope ecodistricts. It is also found scattered in northern Nova Scotia within the Northumberland Lowlands ecodistrict.

Successional Dynamics: CE2 is considered mid-successional, but successional patterns are not fully understood. As a shade-tolerant species, eastern white cedar will regenerate and persist in the understory until an opening in the canopy allows it to develop further. In the absence of a stand-level disturbance, it is likely that cedar will maintain itself as the dominant canopy species. An early successional stage of CE2 may be MW4 (Balsam fir – Red maple / Wood sorrel – Goldthread). Depending on disturbance history CE2 can be even-aged, but it will develop uneven age class structures as it matures.

Ecological Features

Occurrences of this small patch ecosystem rarely cover a hectare. Cedar occurs as an intermediate sized tree in this closed canopy forest. Deer may browse cedar heavily in winter, while

snowshoe hare will eat the foliage and gnaw young tree bark. Cedar are long-lived and resistant to disease and insects. The oldest Nova Scotia trees exceed 250 years. Cedar wood is very decay

resistant resulting in dead trees that may persist for many decades. Cedar is legally protected and listed as vulnerable under the Nova Scotia Endangered Species Act.

Characteristic Plants

CE2

	CE2	
	Freq. (%)	Cover (%)
Eastern white cedar	100	30.8
Balsam fir	83	6.4
Red spruce	67	11.5
Red maple	67	6.8
White pine	50	13.3
Hemlock	33	8.5
White ash	33	7.5
White birch	33	4.0
Sugar maple	33	3.5
Yellow birch	33	2.0
Trembling aspen	17	24.0
White spruce	17	16.0
Black spruce	17	2.0
Tree Layer (Mean Cover)		69
Balsam fir	100	4.1
Red maple	83	0.9
Red spruce	67	3.0
Eastern white cedar	50	6.3
Beaked hazelnut	50	1.8
Fly-honeysuckle	33	1.8
Trembling aspen	33	1.5
Mountain maple	33	0.6
White ash	33	0.3
Serviceberry	33	0.2
Lambkill	33	0.1
Shrub Layer (Mean Cover)		14
Starflower	100	1.1
Wild lily-of-the-valley	83	9.4
Sarsaparilla	83	0.7
Bracken	67	13.1
Goldthread	67	3.3
Twinflower	50	1.7
Bluebead lily	50	1.3
Interrupted fern	33	25.0
Cinnamon fern	33	9.0
Lady fern	33	5.8
Oak fern	33	2.5
Wood-sorrel	33	1.0
Spinulose wood fern	33	0.8
Christmas fern	33	0.5
Dwarf raspberry	33	0.5
Partridge-berry	33	0.5
Indian pipe	33	0.1
Mitrewort	33	0.1
Wood aster	33	0.1
Herb Layer (Mean Cover)		40
Stair-step moss	100	14.2
Bazzania	100	7.1
Schreber's moss	83	17.3
Hypnum moss	67	2.2
Wavy dicranum	50	0.4
Shaggy moss	33	7.6
Broom moss	33	1.8
Ladies' tresses	33	1.0
Bryo-Lichen Layer (Mean Cover)		43

Distinguishing Features

Cedar is the key identifier for this well to imperfectly drained upland softwood and/or mixed forest. Cedar occurs in the canopy as a co-dominant or intermediate.



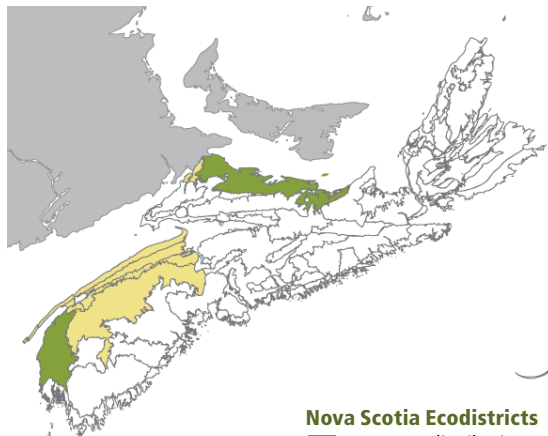
Cedar
[R.A. Howard @ USDA-NRCS PLANTS Database]

Site Characteristics

Slope Position:	Level ³ Lower ³ Upper ³
Surface Stoniness:	(Non - Slightly) ⁷ (Moderately) ³
Bedrock Outcrop:	(Non-rocky) ¹⁰
Elevation Range:	16 - 44m
Slope Gradient:	Gentle ⁵ Level ² nd ³
Aspect:	North ² South ² West ² None ² nd ²
Exposure:	Mod. sheltered ⁶ Mod. exposed ² nd ²
Microtopography:	Moderately ⁵ Slightly ³ Strongly ²
Drainage:	Imperfect ⁸ Moderately well ²

Soil Characteristics

Soil Type:	ST6 ³ ST12 ³ ST9 ² nd ²
Parent Material:	Glacial till ⁸ Alluvium ²
Rooting Depth (cm):	(30-45) ⁶ (>45) ² nd ²
Duff Thickness (cm):	(0-5) ² (11-20) ⁵ nd ³



Nova Scotia Ecodistricts
■ Known distribution
■ Likely distribution