

- OW1** Jack pine / Huckleberry / Black crowberry / Reindeer lichen
- OW2** Black spruce / Lambkill / Reindeer lichen
- OW3** Red spruce / Red-berried elder / Rock polypody
- OW4** Red pine – White pine / Broom crowberry / Grey reindeer lichen
- OW5** Red oak / Huckleberry / Cow-wheat – Rice grass / Reindeer lichen
- OW6** White birch – Red oak – White ash / Marginal wood fern – Herb-Robert

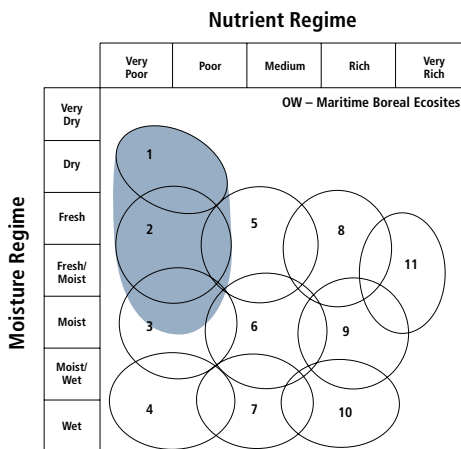
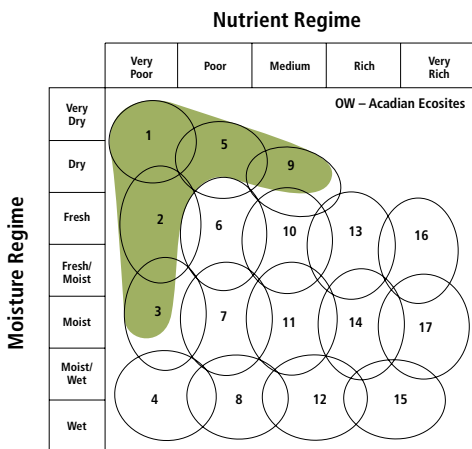
Concept: These are open woodlands ecosystems usually with tree coverage less than 30%. They occur on a variety of sites where growth and density are limited by low fertility, lack of moisture, thin soils and/or exposed bedrock. Stunted tree growth, a well developed shrub layer, and at times extensive coverage of reindeer lichens (*Cladina spp.*) are typical for this group. All Vegetation Types (VT) in this group are found in the Acadian Ecosite group, with some also found in the Maritime Boreal Ecosite group.

Vegetation: Pine, black spruce, red maple and red oak are common trees associated with this group. Huckleberry, lambkill, rhodora, blueberry and wild raisin often dominate the shrub layer. Dwarf heaths are also common including broom crowberry and black crowberry. The herb layer is often poorly developed but can include bracken, cow-wheat, rice grass and poverty grass. Common lichens include grey reindeer lichen, green reindeer lichen and star-tipped reindeer lichen.

Environmental Setting/ Site Conditions: Vegetation types in this group are found on bedrock outcrops, shallow glacial tills, colluvium and sandy outwash plains. Soils are usually dry and nutrient poor, but some sites fall outside of these norms. Vegetation types form small patches on the landscape. This group is found throughout mainland Nova Scotia and is scattered in Cape Breton.

Successional Dynamics: Open woodlands are mainly edaphic climax associations limited by low moisture, exposure and nutrient poor soils. Windthrow and fire are the main natural 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

Woodlands generally occur in conditions which are too harsh to support full canopy forests and their associated species. These small patch ecosystems are usually found on sharp crests and ridges, cliffs, rocky outcrops and slopes and/or sand flats. Sites often have thin, droughty, very stony or sandy soils and may have high bedrock exposure. Stands are typically stunted and/or open featuring species tolerant of low moisture, reduced soil accumulation and climatic extremes. High reindeer lichen cover is a characteristic feature, except on talus (units OW3 and OW6), taking decades to dominate ground cover. Habitat values vary considerably among units. For example, talus forests can support several uncommon small mammal and land snail species. Boreal and subarctic plants are associated with cooler woodlands, while inland and some types of coastal woodlands may support upland Atlantic Coastal plain species. Most of this group are unlikely to support old growth, however they may exhibit long term ecological continuity.

OW1

Jack Pine / Huckleberry / Black crowberry / Reindeer lichen

Pinus banksiana / *Gaylussacia baccata* /
Empetrum nigrum / *Cladina* spp.

n=8



Blandford,
Lunenburg County

Concept: This open coniferous woodland is characterized by jack pine canopy dominance, thin acidic soils and prominent reindeer lichen, black crowberry and huckleberry cover. It is found on exposed rock ridges or thin glacial till, where it may co-occur with SP1 (Jack pine / Bracken – Teaberry forest). OW1 is typically on very-dry to dry sites, but occasionally occurs on moister soil, usually with thicker organic layers.

Vegetation: The canopy has low to moderate crown closure and is usually dominated by jack pine or co-dominated by jack pine and black spruce. Few other tree species are represented. The very well-developed woody understory features high huckleberry cover, with lesser but frequent rhodora, lambkill and low bush blueberry. Herb cover and species richness is reduced, although dwarf heaths like black crowberry and less often, broom crowberry, are characteristic, especially in coastal areas. The dense lichen layer is characterized by grey, green, lesser green and star-tipped reindeer lichen species.

Environmental Setting: This low elevation ecosystem is found in areas where thin acidic soils, exposed bedrock and cool climatic conditions limit plant productivity and species richness. It occurs on upper slopes and crests of rocky hill

Ecological Features

This nationally unique, range-limited ecosystem is one of the least common VTs, largely isolated to cool dry ridges and hill tops. These sites are somewhat prone to lightning strikes that may help maintain jack pine dominance. The rocky woodland's most remarkable features include its rarity, restricted distribution, and relatively specific environmental requirements.

These collectively contribute to OW1's high vulnerability, presenting unique conservation challenges. The Jack pine / Huckleberry / Black crowberry / Reindeer lichen woodland supports uncommon habitat conditions, but associated animal and lichen species are undocumented. This small patch ecosystem may provide plant habitat for mountain sandwort,

crests and ridges, and on flatter, usually thin, glacial deposit. Soils are usually dry, nutrient very poor, coarse textured and stony. Microtopography is reduced, while site exposure is very high. The ecosystem occurs in the Atlantic Coastal and Eastern ecoregions, with outliers on the coastal fringe of the Cape Breton Highlands. This relatively uncommon Vegetation Type (VT) is also rare in New Brunswick. It isn't known from anywhere else in Canada.

Successional Dynamics: The Jack pine / Huckleberry / Black crowberry / Reindeer lichen woodland is expressed as an early successional stage, but is not expected to advance to later successional stages. Shallow, nutrient very poor soils and exposure generally prevent the transition to other pine or black spruce vegetation types. The VT persists as an edaphic climax but is also strongly shaped by harsh climatic factors (e.g. strong desiccating (drying) winds, cool temperatures and sometimes salt spray). Fire is a component of stand history in some stands but is not required for ecosystem persistence, because serotinous (refers to cones which remain closed until opened by excessive heat, usually from fires) jack pine cones often open and release seed without fire in these woodlands. Other disturbances include windthrow and breakage.

red crowberry and a small group of flora with Atlantic Coastal Plain affinities (e.g. inkberry, broom crowberry and pine barren goldenheather). It supports an open, sometimes stunted, canopy with abundant shrub and lichen cover. Productivity, tree age, canopy height and old growth potential are all low.

Characteristic Plants

OW1

	Freq. (%)	Cover (%)
Jack pine	88	21.9
Black spruce	88	3.7
Red maple	38	6.0
Tamarack	25	1.5
Hemlock	13	3.0
White pine	13	0.1
Tree Layer (Mean % Cover)		25
Huckleberry	100	36.9
Lambkill	100	8.5
False holly	88	4.0
Lowbush blueberry	75	5.5
Wild raisin	75	1.5
Serviceberry	75	0.4
Rhodora	63	9.3
Jack pine	63	4.4
Red maple	63	0.4
Black spruce	50	5.9
Chokeberries	50	1.1
White pine	38	1.3
Downy alder	38	1.2
Common blackberry	25	2.5
Velvet-leaf blueberry	25	0.8
Sweet gale	25	0.3
Ground juniper	25	0.1
Shrub Layer (Mean % Cover)		70
Teaberry	100	4.1
Bracken	88	12.7
Black crowberry	88	10.4
Mayflower	63	0.8
Bunchberry	50	3.9
Wild lily-of-the-valley	50	0.8
Starflower	50	0.1
Three-toothed cinquefoil	38	1.7
Poverty grass	38	1.0
Pink lady's slipper	38	0.1
Mountain sandwort	25	0.1
Ground pine	25	0.1
Cow-wheat	25	0.1
White-haired panic grass	25	0.1
Herb Layer (Mean % Cover)		29
Grey reindeer lichen	88	24.3
Schreber's moss	75	20.0
Star-tipped reindeer lichen	63	3.0
Wavy dicranum	63	1.4
Broom moss	50	0.4
Ladies tresses	50	0.3
Dicranums	38	0.5
Cup lichens	25	1.5
Hair-cap moss	25	0.5
Sphagnum tenellum	25	0.1
Bazzania	25	0.1
Bryo-Lichen Layer (Mean % Cover)		43

Distinguishing Features

A woodland characterized by scattered jack pine, exposed bedrock and prominent reindeer lichen, black crowberry and huckleberry cover.



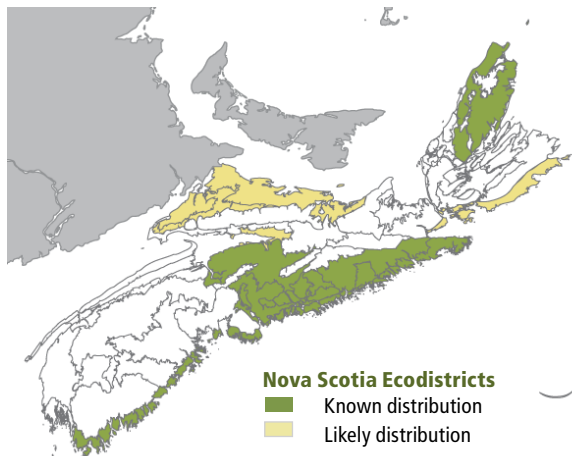
Black crowberry

Site Characteristics

Slope Position:	Crest ³ Level ³ Upper ³ Middle ¹
Surface Stoniness:	(Non - Slightly) ⁶ (Very - Excessively) ³ nd ¹
Bedrock Outcrop:	(Very - Excessively) ⁶ (Slightly - Moderately) ³ nd ¹
Elevation Range:	22 - 108m
Slope Gradient:	Level ⁴ Gentle ³ nd ³
Aspect:	South ¹ West ³ None ⁶
Exposure:	Exposed ⁷ Other ² nd ¹
Microtopography:	Level ⁸ Slightly ¹ nd ¹
Drainage:	Rapid ⁵ Imperfect ³ Moderately well ¹ nd ¹

Soil Characteristics

Soil Type:	ST15 ⁶ ST2 ¹ ST6 ¹ ST15-G ¹ ST16 ¹
Parent Material:	Bedrock ⁵ Glacial till ³ Organic/Bedrock ¹ Till/Bedrock ¹
Rooting Depth (cm):	(<30) ⁵ (30-45) ³ nd ²
Duff Thickness (cm):	(6-10) ⁴ (11-20) ² nd ⁴



OW2

Black spruce / Lambkill / Reindeer lichen

Picea mariana / *Kalmia angustifolia* / *Cladina* spp.

n=28



Riversdale,
Colchester County

Concept: The Black spruce / Lambkill / Reindeer lichen woodland is found on acidic rock outcrops and thin glacial soils. This coniferous ecosystem is characterized by its open black spruce canopy, very poor soils, low productivity and prominent representation of reindeer lichens.

Vegetation: The open canopy is dominated by black spruce or co-dominated by black spruce and pine (white or red). Other tree species are uncommon. The well-developed woody understory is comprised of acid tolerant shrubs (e.g. lambkill, low bush blueberry and wild raisin). Species usually found on moist soils (e.g. rhodora and false holly) are supported by surface peat deposits found over mineral soil or in cracks and depressions of exposed bedrock. Herbaceous species richness and abundance is reduced. Reindeer lichens (usually grey and/or lesser green) are frequent and usually abundant. In some occurrences, bryophyte cover is higher than lichen cover.

Environmental Setting: OW2 is associated with dry to moist, nutrient very poor soils that are often shallow to bedrock and/or stony. The low elevation ecosystem is found on rocky outcrops or on shallow glacial tills. Soil moisture increases with organic accumulation, particularly where near-surface bedrock is present or cemented (orstein) soil horizons reduce drainage. Site exposure is moderate to high, while surface microtopography and stoniness is low. It occurs throughout the province but is especially common in the Eastern and Western ecoregions. OW2 is uncommon but widespread across the Maritimes. Although this Vegetation Type (VT) is similar to boreal lichen woodlands from eastern Canada, it is considered nationally distinct.

Successional Dynamics: This early successional ecosystem is largely maintained by exposure and limiting soil conditions. It will not succeed to latter successional stages (e.g. other black spruce or pine vegetation types) and is considered a type of edaphic climax. Possible disturbances include fire, windthrow and breakage. Black spruce will regenerate on OW2 sites by seed and/or layering. Most stands have uneven age class structures.

Ecological Features

The Black spruce / Lambkill / Reindeer lichen is unique to the east coast, occurring as a small patch ecosystem in each of the four Atlantic Provinces. This relatively rare woodland has strong boreal affinity, but the presence of northern temperate species (e.g. huckleberry,

rhodora and chokeberry, among others) differentiates the VT from its boreal analogs in Quebec and Ontario. Limited distribution in Nova Scotia may present a conservation challenge. This ecosystem supports unique habitat conditions, but associated animal, plant and lichen

species are undocumented. It typically features a very open canopy, and high shrub and lichen cover. Productivity, tree age, canopy height and old growth potential are all low.

Characteristic Plants

OW2

	Freq. (%)	Cover (%)
Black spruce	96	14.3
White pine	46	4.8
Tamarack	29	4.4
Balsam fir	25	2.4
Red pine	21	7.8
Grey birch	14	5.5
Red maple	14	3.8
White birch	7	3.5
Red spruce	7	3.0
White spruce	4	8.0
Heart-leaf birch	4	3.0
Red oak	4	2.0
Large-tooth aspen	4	0.1

Tree Layer (Mean % Cover)

22

Lambkill	96	24.5
Wild raisin	96	1.8
Black spruce	89	15.9
False holly	82	3.3
Red maple	68	3.7
Velvet-leaf blueberry	64	5.3
Rhodora	61	6.3
Serviceberry	57	0.2
Huckleberry	54	25.5
Lowbush blueberry	50	10.3
Balsam fir	43	2.0
Grey birch	39	3.8
Labrador tea	36	8.6
White pine	25	3.2
Ground juniper	25	2.3
Chokeberries	25	0.2
Mountain-ash	21	0.1

Shrub Layer (Mean % Cover)

78

Teaberry	86	4.2
Bracken	75	12.2
Bunchberry	64	2.2
Mayflower	50	0.6
Pink lady's slipper	46	0.2
Starflower	36	0.5
Wild lily-of-the-valley	36	0.2
Black crowberry	29	18.1
Creeping snowberry	29	0.7
Cow-wheat	21	0.2

Herb Layer (Mean % Cover)

21

Grey reindeer lichen	100	22.2
Schreber's moss	89	31.9
Star-tipped reindeer lichen	64	6.0
Wavy dicranum	50	3.2
Ladies tresses	46	11.1
Cup lichens	39	0.5
Green reindeer lichen	32	8.3
Broom moss	32	1.5
Hair-cap moss	32	0.8
Bazzania	21	6.8

Bryo-Lichen Layer (Mean % Cover)

69

Distinguishing Features

This woodland is characterized by scattered black spruce, and sometimes, white or red pine, exposed bedrock, stony and/or shallow soils and prominent reindeer lichen.



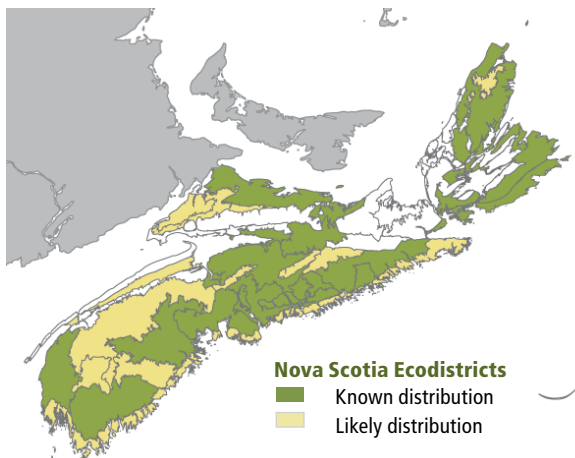
Reindeer lichen

Site Characteristics

Slope Position:	Level ⁵ Crest ³ Other ²
Surface Stoniness:	(Non - Slightly) ⁶ (Very - Excessively) ³ (Moderately) ¹
Bedrock Outcrop:	(Non-Rocky) ⁵ (Very - Excessively) ⁴ (Slightly - Moderately) ¹
Elevation Range:	9 - 327m
Slope Gradient:	Level ⁷ Gentle ¹ Moderate ¹ nd ¹
Aspect:	West ¹ None ² Other ¹
Exposure:	Moderate ⁶ Exposed ² Other ²
Microtopography:	Level ⁸ Slightly ¹ Moderately ¹
Drainage:	Imperfect ³ Rapid ³ Well ³ Other ¹

Soil Characteristics

Soil Type:	ST15 ³ ST3 ² ST1 ¹ ST2-G ¹ ST16 ¹ Other ²
Parent Material:	Glacial till ⁶ Till/Bedrock ² Glaciofluvial ¹ Organic/Bedrock ¹
Rooting Depth (cm):	(<30) ⁵ (30-45) ² (>45) ¹ nd ²
Duff Thickness (cm):	(6-10) ³ (11-20) ⁴ nd ³

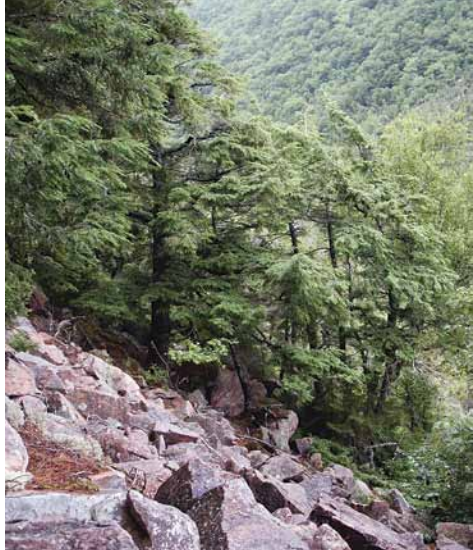


OW3

Red spruce / Red-berried elder / Rock polypody

Picea rubens / *Sambucus racemosa* /
Polypodium virginianum

n=3



Cheticamp River Valley,
Cape Breton
Highlands National Park,
Inverness County

Concept: This somewhat uncommon woodland is characterized by its open coniferous canopy, low species richness and unique talus substrate. It is found only in areas where topography and bedrock outcropping allow the formation of talus slopes. Sites often contain only patches of vegetation across a broader talus matrix. Red spruce, black spruce and/or hemlock are common canopy dominants, and the understory is similarly variable. OW3 is comparable to OW6 (White birch – Red oak – White ash / Marginal wood fern – Herb-Robert), but is generally associated with less fertile substrates.

Vegetation: The poorly-developed canopy may be dominated by a number of evergreen tree species, but sampled stands support high levels of red spruce or hemlock. Understory associates include vascular plants common to acidic conifer forest and/or rocky substrates (e.g. foxberry, rock polypody, marginal wood fern), but most of these species are infrequent. Bryophyte cover is usually low. On older sites, shrubs and bryophytes may form a mat over underlying talus.

Ecological Features

Softwood talus woodlands are uncommon small patch ecosystems that are both under sampled and poorly understood in Nova Scotia. Plots were established in warmer areas of the province, where temperate flora are more common. Stronger boreal expressions

are expected in cooler areas of Cape Breton. Red spruce / Red-berried elder / Rock polypody woodland supports remarkably unique habitat conditions, but most associated animal, plant and lichen species are undocumented. Exceptions include the rock vole, Gaspé and long

tailed shrews, and various land snails. Canopy closure is variable but stand structures tend to be complex, supporting diverse microhabitats. The ecosystem has moderate potential to develop old growth where slopes have stabilized.

Characteristic Plants

OW3

	Freq. (%)	Cover (%)
Red spruce	67	37.0
Hemlock	67	16.0
White birch	67	3.5
Red maple	67	2.0
Balsam fir	33	11.0
Black spruce	33	10.0
Yellow birch	33	5.0
White pine	33	5.0
Beech	33	2.0
Sugar maple	33	1.0
Ironwood	33	1.0
Tree Layer (Mean % Cover)		51
Red-berried elder	67	3.5
Velvet-leaf blueberry	67	2.0
Balsam fir	67	1.5
Red spruce	33	6.0
False holly	33	5.0
Red raspberry	33	4.0
Striped maple	33	3.0
Hemlock	33	3.0
White pine	33	2.0
Serviceberry	33	1.0
Beaked hazelnut	33	1.0
Labrador tea	33	1.0
Fly-honeysuckle	33	1.0
Red oak	33	1.0
Lowbush blueberry	33	1.0
Shrub Layer (Mean % Cover)		14
Rock polypody	67	1.5
Foxberry	33	10.0
Marginal wood fern	33	5.0
Creeping snowberry	33	3.0
Sarsaparilla	33	2.0
Common hair grass	33	2.0
Spinulose wood fern	33	2.0
Teaberry	33	2.0
White goldenrod	33	2.0
Rough goldenrod	33	1.0
Starflower	33	1.0
Poverty grass	33	0.5
Umbel-like sedge	33	0.1
Herb Layer (Mean % Cover)		11
Cup lichens	100	1.7
Grey reindeer lichen	67	6.0
Schreber's moss	67	5.5
Pin cushion moss	67	0.8
Green reindeer lichen	33	1.0
Juniper polytrichum	33	1.0
Bazzania	33	1.0
Wavy dicranum	33	0.5
Stair-step moss	33	0.5
Hair-cap moss	33	0.1
Bryo-Lichen Layer (Mean % Cover)		11

Distinguishing Features

This softwood woodland of spruce and hemlock occurs on talus slopes. Rock polypody is common.



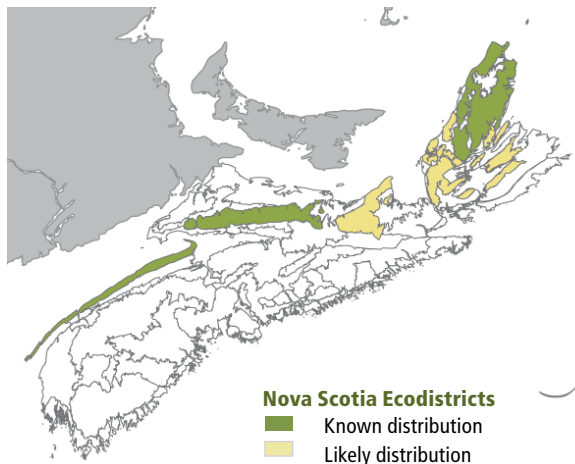
Talus slope, CBHNP
[Envirofoto]

Site Characteristics

Slope Position:	Crest ³ Middle ³ Upper ³
Surface Stoniness:	(Very - Excessively) ¹⁰
Bedrock Outcrop:	nd ¹⁰
Elevation Range:	150 - 220m
Slope Gradient:	Moderate ⁷ nd ³
Aspect:	South ⁷ nd ³
Exposure:	Mod. exposed ⁷ nd ³
Microtopography:	nd ¹⁰
Drainage:	nd ¹⁰

Soil Characteristics

Soil Type:	nd ¹⁰
Parent Material:	Colluvium ¹⁰
Rooting Depth (cm):	(<30) ⁷ nd ³
Duff Thickness (cm):	nd ¹⁰



OW4

Red pine – White pine / Broom crowberry / Grey reindeer lichen

Pinus resinosa – *Pinus strobus* / *Corema conradii* /
Cladina rangiferina

n=13



Hibernia,
Queens County

Concept: This sparsely treed coniferous woodland is a transitional successional stage, encompassing species of both open heathland and closed canopy pine forest usually SP2 (Red pine / Blueberry / Bracken). The ecosystem is characterized by low crown closure, frequent red pine, and high broom crowberry cover; reindeer lichens are abundant in some occurrences. The Red pine – White pine / Broom crowberry / Grey reindeer lichen woodland is found on dry sandy or coarse loamy soils with low humus accumulation and reduced nutrient availability. Many occurrences originate with fire.

Vegetation: The open evergreen canopy is dominated by red pine and/or white pine, but the latter condition is less common. On somewhat moister soils, black spruce and/or larch may be prominent, while pine is absent or sparse. Deciduous tree species may be found scattered but most are uncommon. Non-native trees species (e.g. Scotch pine, Black locust) are rapidly spreading in some occurrences and threatening ecosystem persistence. Lower strata are dominated by low shrubs. Broom crowberry is abundant in all occurrences but is typically excluded under denser tree crowns. Herbaceous cover is reduced except near exposed sand and around disturbed sites (i.e. often caused by all-terrain vehicle traffic). Forest species (e.g. wild lily-of-the-valley, starflower, pink lady's slipper, bluebead lily and checkered

rattlesnake plantain) occur under tree or tall shrub cover. Reindeer lichen abundance is moderate to high.

Environmental Setting: OW4 is mainly found on dry, sandy, nutrient very poor soils associated with glaciofluvial deposits or shallow, gravelly and/or coarse textured glacial tills. Most soils are deep and well drained but the presence of cemented (orstein) soil horizons in some sites can impede drainage and increase available moisture in the rooting zone. This Vegetation Type (VT) is found in warmer areas and is excluded from the coast. It is found in the Valley and Central Lowlands and Western ecoregions. This VT is nationally, if not globally, unique. It is not found outside Nova Scotia.

Successional Dynamics: This is an early successional woodland community. It is the first treed successional stage expressed in broom crowberry heathland on mainland Nova Scotia. The ecosystem often occurs on the edges of open barrens as a transition to closed forest. In other sites, trees may be more evenly and widely scattered. Fire is a component of stand history in most occurrences, but long-standing fire suppression programs have promoted higher tree presence, contributing to the loss of open broom crowberry heathland. In the absence of fire or other disturbances, the woodland will succeed to SP2 (Red pine / Blueberry / Bracken).

Ecological Features

Global occurrences of this provincially uncommon ecosystem are limited to Nova Scotia. The often sandy small patch woodland's most remarkable features include its rarity, restricted distribution, and relatively specific environmental requirements (including a potential dependency on fire for establishment and maintenance). These collectively contribute to OW4's

high vulnerability, which presents unique conservation challenges. Unlike some of the other rare woodlands in Nova Scotia (e.g. OW1, OW2 and OW5) many occurrences of this ecosystem are critically threatened by human activities, including aggregate mining, commercial and residential development, fire suppression and some types of logging. OW4 supports

extraordinarily unique habitat conditions, but most associated species are undocumented. Some exceptions include: vesper sparrow, arrowleaved violet, Case's ladies'-tresses, Canada mountain-ricegrass, rock-rose, pine barren goldenheather and dixie reindeer lichen. Many of these are species of high conservation concern.

Characteristic Plants

OW4

	Freq. (%)	Cover (%)
Red pine	75	13.8
White pine	67	9.1
Grey birch	58	5.3
Black spruce	50	9.5
Tamarack	17	2.5
Red oak	17	2.1
Scotch pine	8	10.0
Red maple	8	3.0
Smooth serviceberry	8	2.0
Pin cherry	8	1.0
Jack pine	8	0.1
Black cherry	8	0.1

Tree Layer (Mean % Cover)

	Freq. (%)	Cover (%)
Broom crowberry	100	61.3
Lowbush blueberry	100	3.3
Lambkill	75	9.2
Black spruce	67	3.1
White pine	67	2.5
Sweetfern	67	0.8
Grey birch	58	2.5
Red pine	58	1.7
Ground juniper	42	1.0
Smooth serviceberry	42	0.6
Wild raisin	42	0.6
Huckleberry	33	2.9
Rhodora	33	1.3
Bayberry	25	5.0
Tamarack	25	1.1
Red maple	25	0.9
Inkberry	25	0.2
Black cherry	25	0.1

Shrub Layer (Mean % Cover)

	Freq. (%)	Cover (%)
Bracken	75	3.5
Teaberry	75	1.2
Bearberry	67	14.4
Umbel-like sedge	50	0.4
Old-field goldenrod	50	0.4
Common hair grass	50	0.3
Starflower	50	0.1
Ground cedar	42	0.3
Hudsonia	42	0.1
Cow-wheat	33	0.4
Lions paw	33	0.3
White goldenrod	33	0.2
Wild lily-of-the-valley	33	0.1
Hair fescue	25	0.2
Rice grass	25	0.1
Kentucky bluegrass	25	0.1

Herb Layer (Mean % Cover)

	Freq. (%)	Cover (%)
Grey reindeer lichen	100	11.7
Schreber's moss	67	1.1
Star-tipped reindeer lichen	58	3.9
Green reindeer lichen	33	1.5
Juniper polytrichum	33	0.8
Hair-cap moss	33	0.3

Bryo-Lichen Layer (Mean % Cover)

Distinguishing Features

This softwood woodland is characterized by open growing red pine. Broom crowberry is abundant but is typically excluded under denser tree crowns. Soils are very dry and sandy. Reindeer lichen can be extensive.



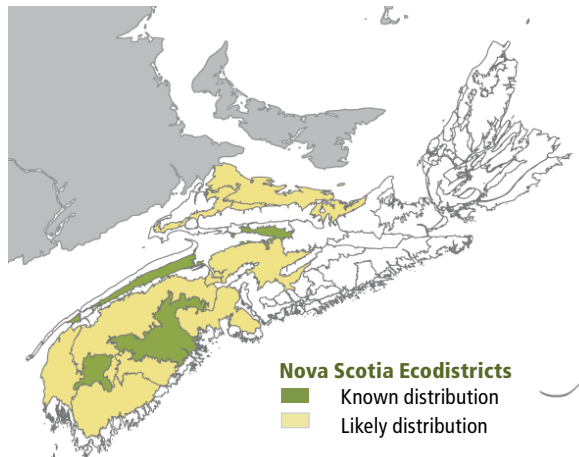
Broom crowberry

Site Characteristics

Slope Position:	Level ⁸ Middle ¹ Upper ¹
Surface Stoniness:	(Non - Slightly) ⁴ (Very - Excessively) ² (Moderately) ¹ nd ³
Bedrock Outcrop:	(Non-rocky) ⁵ (Very - Excessively) ¹ nd ⁴
Elevation Range:	10 - 140m
Slope Gradient:	Level ⁸ Gentle ²
Aspect:	South ¹ None ⁸ nd ¹
Exposure:	Moderate ⁴ Mod. exposed ¹ nd ⁵
Microtopography:	Level ³ Slightly ² Moderately ¹ nd ⁴
Drainage:	Well ⁴ Rapid ² nd ⁴

Soil Characteristics

Soil Type:	ST1 ⁴ ST15 ² nd ⁴
Parent Material:	Glaciofluvia ⁸ Glacial till ²
Rooting Depth (cm):	(<30) ² (30-45) ² (>45) ¹ nd ⁵
Duff Thickness (cm):	(6-10) ³ (11-20) ² nd ⁵



Nova Scotia Ecodistricts
 ■ Known distribution
 ■ Likely distribution

OW5

Red oak / Huckleberry / Cow-wheat – Rice grass / Reindeer lichen

Quercus rubra / *Gaylussacia baccata* /
Melampyrum lineare – *Oryzopsis asperifolia* /
Cladina spp.

n=3



Moses Mountain,
Hants County

Concept: This relatively uncommon ecosystem develops on acidic glacial soil and or exposed bedrock. It is characterized by an open canopy of red oak and by dense huckleberry cover. The ecosystem has been called a wooded barren or savanna, and is often found in areas where there is an abrupt change in relief. Many occurrences are adjacent to lakes or on steep ridges or sharply rounded crests.

Vegetation: Red oak and lesser red maple dominate the open deciduous canopy. In southwestern Nova Scotia, black cherry may be a frequent but minor component of stand structure. The well-developed understory usually includes abundant huckleberry, although lambkill cover may be relatively abundant in some occurrences. Other important shrubs include witch-hazel, lowbush blueberry and wild raisin. Herbaceous species abundance and richness is reduced, but species characteristic of open dry forest (e.g. bracken, mayflower, cow-wheat, rice grass) are well represented. Reindeer lichens are abundant in some occurrences.

Ecological Features

Red oak / Huckleberry / Cow-wheat – Rice grass / Reindeer lichen woodlands are under sampled and poorly understood in Nova Scotia. This small patch ecosystem is one of our most temperate woodlands. It is somewhat uncommon in Nova Scotia, and much

rarer in New Brunswick. Analyses of eastern Canadian forests and woodlands have not yet addressed this VT, but early comparisons indicate the ecosystem may be restricted to the Maritimes, presenting important conservation challenges. This ecosystem supports unique habitat

Environmental Setting: The OW5 ecosystem may occur on rock ridges but most occurrences are on upper slopes and crests of thin glacial deposits. Sites have high exposure and moderate to high surface stoniness; microtopography is low. This Vegetation Type (VT) is found across the Western ecoregion and in parts of the Annapolis Valley ecodistrict. OW5 is often found interspersed with IH2 (Red oak – Red maple / Witch-hazel). The VT is also scattered across southern and eastern New Brunswick.

Successional Dynamics: The woodland occurs as an early to mid-successional phase. General successional relationships are poorly understood, but the ecosystem is expected to persist as an edaphic climax, because dry, nutrient very poor soils generally prevent succession to other VTs. The woodland is maintained by tree senescence and windthrow, but many occurrences, particularly those on glacial soils, originate with fire.

conditions, but associated animal, plant and lichen species are undocumented. It typically features a very open canopy and high shrub and lichen cover. Productivity, tree age, canopy height and old growth potential are all low.

Characteristic Plants

OW5

	Freq. (%)	Cover (%)
Red oak	100	30.7
Red maple	67	15.0
White pine	33	5.0
White spruce	33	2.0
Large-tooth aspen	33	0.1
Tree Layer (Mean % Cover)		43
Red maple	100	9.0
Red oak	100	8.2
Witch-hazel	100	5.8
Velvet-leaf blueberry	100	4.3
Huckleberry	67	63.5
Lambkill	67	8.5
Lowbush blueberry	67	7.0
Black spruce	67	4.5
White pine	67	4.5
White spruce	67	4.0
Wild raisin	67	1.3
Striped maple	33	9.0
White birch	33	7.0
Balsam fir	33	2.1
Red spruce	33	2.0
Serviceberry	33	1.0
Sweetfern	33	0.3
Staghorn sumac	33	0.3
Grey birch	33	0.1
Bush-honeysuckle	33	0.1
White ash	33	0.1
Ground juniper	33	0.1
Hemlock	33	0.1
Shrub Layer (Mean % Cover)		79
Bracken	100	9.0
Sarsaparilla	100	1.8
Starflower	100	0.2
Teaberry	67	8.3
Bunchberry	67	4.0
Cow-wheat	67	1.0
Wood aster	67	0.3
Poverty grass	67	0.3
Wild lily-of-the-valley	67	0.2
Pink lady's slipper	67	0.1
Rice grass	67	0.1
Mayflower	33	1.0
Evergreen wood fern	33	0.2
Marginal wood fern	33	0.1
Herb Layer (Mean % Cover)		22
Grey reindeer lichen	100	10.3
Schreber's moss	100	4.8
Hypnum moss	67	9.0
Star-tipped reindeer lichen	67	3.5
Green reindeer lichen	67	1.5
Wavy dicranum	67	1.0
Broom moss	33	10.0
Hair-cap moss	33	1.0
Cup lichens	33	0.5
Bazzania	33	0.5
Bryo-Lichen Layer (Mean % Cover)		29

Distinguishing Features

Red oak is diagnostic of this hardwood woodland, often with red maple, exposed bedrock and prominent reindeer lichen and huckleberry cover. Witch-hazel is common.



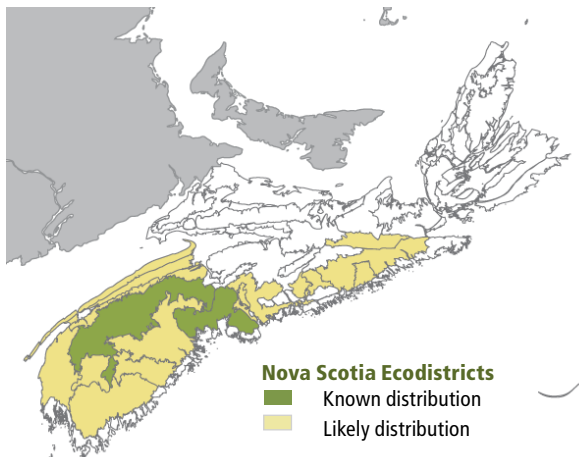
Star-tipped reindeer lichen

Site Characteristics

Slope Position:	Upper ⁷ Crest ³
Surface Stoniness:	(Very - Excessively) ⁷ (Moderately) ³
Bedrock Outcrop:	(Slightly - Moderately) ⁷ (Very - Excessively) ³
Elevation Range:	107 - 175m
Slope Gradient:	Gentle ⁷ Moderate ³
Aspect:	North ³ South ⁷
Exposure:	Exposed ⁷ Moderate ³
Microtopography:	Level ⁷ Slightly ³
Drainage:	Rapid ⁷ Well ³

Soil Characteristics

Soil Type:	ST15 ⁷ ST2 ³
Parent Material:	Glacial till ⁷ Till/Bedrock ³
Rooting Depth (cm):	(<30) ⁷ nd ³
Duff Thickness (cm):	(0-5) ⁷ (11-20) ³



Nova Scotia Ecodistricts
 Known distribution
 Likely distribution

OW6

White birch – Red oak – White ash / Marginal wood fern – Herb-Robert

Betula papyrifera – *Quercus rubra* – *Fraxinus americana* /
Dryopteris marginalis – *Geranium robertianum*

n=5



North Mountain,
Kings County

Concept: The White birch - Red oak - White ash / Marginal wood fern - Herb-Robert woodland is found on stony colluvium deposits and relatively stable talus slopes. OW6 is similar to OW3 (Red spruce / Red-berried elder / Rock polypody), but is generally associated with richer site conditions. OW6 is a rare woodland Vegetation Type (VT) found only in areas where steep topography and nearby mafic bedrock outcropping has led to rich stony colluvium and talus deposits. Deciduous woodlands on more acidic deposits have not been surveyed.

Vegetation: Canopy composition is somewhat variable but usually includes white birch, red oak and/or white ash; any of these tree species may dominate. A less common variant of OW6 is characterized by high ironwood cover. Understory associates may include plants tolerant of disturbance (e.g. red raspberry, white goldenrod and poverty grass), droughty substrates (e.g. marginal wood fern, fibrous root sedge, hair-bell and hay-scented fern) and/or nutrient enrichment (e.g. herb-Robert, Solomon's seal and maidenhair spleenwort).

Ecological Features

Hardwood talus woodlands are an uncommon small patch ecosystem that are both undersampled and poorly understood in Nova Scotia. Plots were established on nutrient rich talus, but OW6 has been observed on more acidic substrates. Acidic (low nutrient) sites do not support white ash or ironwood,

and have higher relative levels of beech, yellow birch and red maple. Similarly, stands from cooler areas are less likely to feature red oak or white ash. White birch – Red oak – White ash / Marginal wood fern – Herb-Robert woodland supports particularly unique habitat conditions, but most associated animal, plant and

Environmental Setting: The ecosystem is supported by soils associated with stony colluvium or embedded in crevices among talus rock fragments. These fragments of broken and weathered rock are found on side slopes and bases and are usually angular and cobble to boulder sized. Woodland vegetation can sometimes grow on islands of stable talus found within a larger area of more active deposition. The ecosystem is found at moderate elevations on steeper slopes, particularly in areas with more rugged topography. Most stands are in the North Mountain ecodistrict, but outliers occur in parts of Cape Breton. This Vegetation Type is also scattered across New Brunswick.

Successional Dynamics: An early to mid-successional stage is described, but successional development is strongly limited by site constraints. On more stable talus, gaps between rock fragments may become in-filled with deeper mineral soil and humus providing a better medium for the development of upland tolerant hardwood forest. This could be marked by a full Vegetation Type change as site conditions improve.

lichen species are undocumented. Some exceptions include the rock vole, Gaspé and long tailed shrews, various land snails, shepherdia and anise-root. Canopy closure is variable but stand structures tend to be complex, supporting diverse microhabitats.

Characteristic Plants

OW6

	Freq. (%)	Cover (%)
White birch	100	12.6
White ash	100	8.0
Red oak	80	22.5
Sugar maple	80	3.3
Ironwood	60	10.7
Beech	60	9.3
White spruce	20	14.0
Yellow birch	20	5.0
Balsam fir	20	2.0
Red maple	20	2.0
Red spruce	20	2.0
Tree Layer (Mean % Cover)		58
Beaked hazelnut	60	4.3
Red oak	60	2.3
Striped maple	60	1.7
Fly-honeysuckle	60	0.8
Western poison ivy	40	20.0
Red-berried elder	40	7.5
Beech	40	5.0
White birch	40	3.5
White ash	40	3.5
White spruce	40	1.0
Witch-hazel	20	10.0
Red raspberry	20	5.0
Balsam fir	20	2.0
Red maple	20	2.0
Sugar maple	20	1.0
Ironwood	20	1.0
Choke cherry	20	1.0
Hemlock	20	1.0
Shrub Layer (Mean % Cover)		27
Fibrous-root sedge	100	2.3
White goldenrod	80	3.5
Marginal wood fern	80	3.0
Poverty grass	80	1.7
Herb-Robert	60	8.3
Common hair grass	60	5.2
Wood goldenrod	60	1.3
Christmas fern	60	1.2
Rough hawkweed	60	0.5
Sarsaparilla	60	0.4
Wood aster	40	5.0
Calico aster	40	1.3
Canada bluegrass	40	0.5
Heart-leaved aster	40	0.3
Common speedwell	40	0.3
Maidenhair spleenwort	40	0.2
Drooping wood sedge	20	3.0
Fireweed	20	1.0
Meadow hawkweed	20	1.0
Fowl meadow grass	20	1.0
Bracken	20	1.0
Rusty woodsia	20	1.0
New York aster	20	0.5
Strawberry	20	0.5
Hemp-nettle	20	0.5
Red baneberry	20	0.3
Rock polypody	20	0.2
Herb Layer (Mean % Cover)		25

Distinguishing Features

This hardwood woodland of white birch, red oak and ironwood occurs on talus slopes. White goldenrod, marginal wood fern and herb-Robert are strong indicators.



Red oak

Site Characteristics

Slope Position:	Middle ⁴ Upper ⁴ Lower ²
Surface Stoniness:	nd ¹⁰
Bedrock Outcrop:	nd ¹⁰
Elevation Range:	61 - 200m
Slope Gradient:	Moderate ⁸ Gentle ²
Aspect:	East ² South ⁸
Exposure:	nd ¹⁰
Microtopography:	nd ¹⁰
Drainage:	nd ¹⁰

Soil Characteristics

Soil Type:	nd ¹⁰
Parent Material:	Colluvium ¹⁰
Rooting Depth (cm):	nd ¹⁰
Duff Thickness (cm):	nd ¹⁰

