

MW1 Red spruce – Yellow birch / Evergreen wood fern

MW2 Red spruce – Red maple – White birch / Goldthread **MW2a** Aspen variant

MW3 Hemlock – Yellow birch / Evergreen wood fern

MW4 Balsam fir – Red maple / Wood sorrel – Goldthread

MW5 White birch – Balsam fir / Starflower

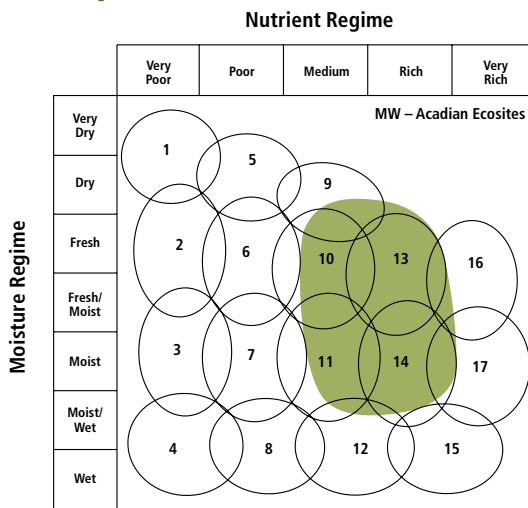
Concept: This group represents early to late successional mixedwood Vegetation Type (VT) found on zonal sites within the Acadian Ecosite groups. Vegetation types can be difficult to categorize at times due to variation in tree species mix and abundance. Earlier successional stages are dominated by red maple, white birch and balsam fir, but they usually contain residuals from past stand-level disturbances. Late successional stages contain yellow birch along with red spruce or hemlock. Herb and bryophyte diversity is high and coverage can be extensive, especially in the yellow birch mixedwoods. Early and mid successional stages are usually even-aged whereas late successional stages can develop uneven-aged characteristics due to the longevity of dominant species.

Vegetation: Vegetation types are closed canopy forests with a range of species depending on disturbance history. Earlier successional stages are dominated by red maple, white birch, aspen and balsam fir; while later stages have red spruce, hemlock, yellow birch and sugar maple as dominants. The shrub layer consists mainly of regenerating trees and the herb layer is comprised of typical woodland species. The presence of several fern species is not unusual. The extent of bryophyte cover depends on the abundance of hardwood species and the related loss of spore germination sites due to leaf litter.

Environmental Setting: Vegetation types in this group are found on a range of slope positions. Most sites are non-rocky, but surface stoniness can be variable. Soils are mainly derived from glacial till deposits. A wide range of moisture levels can be found, but fertility is generally medium to rich throughout. Various VTs form the matrix forest or large patches in many ecodistricts. This group is found throughout the province except in the Cape Breton Taiga (100) and Atlantic Coastal (800) ecoregions.

Successional Dynamics: This group is associated with early to late successional zonal VTs. Depending on site conditions and disturbance history, eventual climax forests are either mixedwood or softwood VTs dominated by red spruce, hemlock, yellow birch, sugar maple and beech. Mid-successional stages usually have a significant component of red maple, white birch and/or balsam fir in the overstory and are typically even-aged. Late successional stages dominated by shade-tolerant species will develop an uneven-aged structure between infrequent stand-level disturbance events. Disturbance agents include hurricanes (windthrow), fire, insects and harvesting.

Edatopic Grid



Ecological Features

Mixedwood forests embody features of both coniferous and deciduous ecosystems, composed of either shade-tolerant or intolerant canopy species, depending on the mechanism of stand origin. These large patch to matrix forests have complex canopy structures including softwood or hardwood inclusions or, more commonly, a blend of both growth forms. Understory plant composition tends to be shaped by overstory structure and soil attributes. Bryophytes are more abundant under softwood canopy components, while deciduous trees promote shrub and herb cover. Mixedwood forests are used by numerous wildlife species, including those associated with both hardwood and softwood forest. Few fauna are exclusive to mixedwood forests but some recur frequently, especially in mature stands. The best known mixedwood associates are birds (e.g. sharp shinned hawk, northern goshawk, veery, solitary vireo, black-throated blue warbler, black and white warbler, American redstart and ovenbird). The potential for old growth and rare plants is variable, depending on successional stage and site conditions.

MW1

Red spruce – Yellow birch / Evergreen wood fern

Picea rubens – *Betula alleghaniensis* /
Dryopteris intermedia

n=30



Shepherders Junction,
Colchester County

Concept: This late successional mixedwood Vegetation Type (VT) has an overstory co-dominated by red spruce and yellow birch, with lesser amounts of mostly shade-tolerant trees. It is similar to MW3 (Hemlock – Yellow birch / Evergreen wood fern), but with greater red spruce prominence. In eastern Nova Scotia, balsam fir can take the place of red spruce in this VT (e.g. St. George's ecodistrict). The longevity and shade tolerance of the dominant overstory tree species aids in the development of old forest characteristics, maintained by gap disturbances.

Vegetation: Red spruce and yellow birch are the dominant overstory trees. A suite of other shade-tolerant trees (e.g. sugar maple, hemlock, beech, balsam fir, red maple, white pine and white ash) may also be present to varying degrees. The shrub layer is moderately developed and includes mainly regenerating trees, striped maple and fly-honeysuckle. Several fern species are common in the well-developed herb layer including evergreen wood fern, New York fern and hay-scented fern. Wood sorrel, wood aster, rose twisted stalk, Indian cucumber root and some club-mosses are also common. Herb layer species can be used to assess relative site conditions, with hay-scented fern usually found on drier, poorer sites, and Christmas fern, northern beech fern and shining club-moss found on moister, richer sites. Bryophyte development varies, with coverage directly related to relative softwood abundance in the overstory. Schreber's moss and stair-step moss are the main species. *Bazzania* can also be common where coarse woody debris has accumulated on the forest floor.

Ecological Features

This closed canopy forest is matrix-forming in central Nova Scotia and a large patch forest elsewhere. The shade tolerance and longevity of red spruce and yellow birch promotes development of uneven-aged canopy structures and old growth. Large trees can provide nest sites for pileated

woodpeckers, barred owls, red-tailed hawks and northern goshawks. Downed coarse woody debris may provide cover for red-backed salamanders and small mammals. Mixedwood forests can also provide both shelter and food for overwintering deer. Yellow birch is

an abundant source of seed during the winter for many species of birds and small mammals. Birch trees in these forests may be deformed, and eventually killed, by birch cinder conch, a fungal growth occasionally harvested for Chaga tea.

Environmental Setting: MW1 is mainly associated with fresh to fresh-moist, nutrient medium to rich soils of variable texture. This VT can be found throughout mainland Nova Scotia, but is most common in central and eastern sections of the province and along the Bay of Fundy shore. Coarse woody debris coverage can be quite variable on MW1 sites due to the short lifespan of balsam fir which is always a significant component of this VT. Red spruce – Yellow birch / Evergreen wood fern is a climax Acadian mixedwood VT found on zonal sites throughout mainland Nova Scotia. This VT is also found throughout New Brunswick, but is absent from Prince Edward Island.

Successional Dynamics: MW1 is a late successional climatic climax VT dominated by red spruce and yellow birch. It can develop from several early and mid-successional VTs including SH5 (Red spruce – Balsam fir / Schreber's moss), SH6 (Red spruce – Balsam fir / Stair-step moss – Sphagnum), SH8 (Balsam fir / Wood fern / Schreber's moss) and MW4 (Balsam fir – Red maple / Wood sorrel – Goldthread). Early successional stages can be by-passed if, at the time of disturbance, advanced red spruce and yellow birch regeneration is present and retained. Depending on disturbance history, this VT can be even-aged, but it will develop an uneven-aged structure as it matures. Between large-scale disturbance events, this VT will maintain itself through gap replacement or possibly transition to MW3 (Hemlock – Yellow birch / Evergreen wood fern).

Characteristic Plants

	MW1	
	Freq. (%)	Cover (%)
Red spruce	100	38.2
Yellow birch	100	20.9
Red maple	73	13.5
Sugar maple	43	6.2
Balsam fir	40	6.8
Beech	30	4.2
Hemlock	20	9.3
White birch	20	2.5
White ash	13	4.5
White pine	10	4.3
Tree Layer (Mean % Cover)		79
Balsam fir	87	7.9
Red spruce	87	3.5
Yellow birch	87	0.7
Red maple	73	1.5
Striped maple	70	4.5
Sugar maple	60	1.3
Beech	57	2.4
Fly-honeysuckle	50	0.7
White pine	27	0.4
Hemlock	20	1.8
Velvet-leaf blueberry	20	0.7
Red oak	20	0.1
Shrub Layer (Mean % Cover)		19
Wild lily-of-the-valley	90	2.9
Starflower	90	0.6
Evergreen wood fern	77	6.1
Wood-sorrel	63	6.4
Sarsaparilla	63	1.7
New York fern	60	6.3
Bunchberry	60	3.5
Goldthread	60	3.0
Partridge-berry	57	0.2
Hay-scented fern	53	9.9
Rose twisted stalk	43	0.2
Shining club-moss	40	1.6
Ground pine	40	0.6
Bluebead lily	40	0.5
Wood aster	40	0.3
Indian cucumber root	40	0.1
Painted trillium	33	0.1
Twinflower	30	2.3
Violets	30	0.3
Indian pipe	30	0.1
Christmas fern	27	0.2
Northern beech fern	27	0.2
Eastern spreading wood fern	20	2.6
Pink lady's slipper	20	0.1
Herb Layer (Mean % Cover)		30
Bazzania	90	3.9
Broom moss	83	1.7
Stair-step moss	77	13.4
Schreber's moss	77	5.2
Hypnum moss	77	1.9
Hair-cap moss	47	0.6
Fern moss	37	0.9
Wavy dicranum	33	1.3
Bryo-Lichen Layer (Mean % Cover)		22

Distinguishing Features

Yellow birch and red spruce dominate these mixedwood forests that occur on well drained soils.

In eastern Nova Scotia the red spruce is often replaced by balsam fir. An assortment of ferns, notably evergreen wood fern, New York fern and hay-scented fern dominate the herb layer.



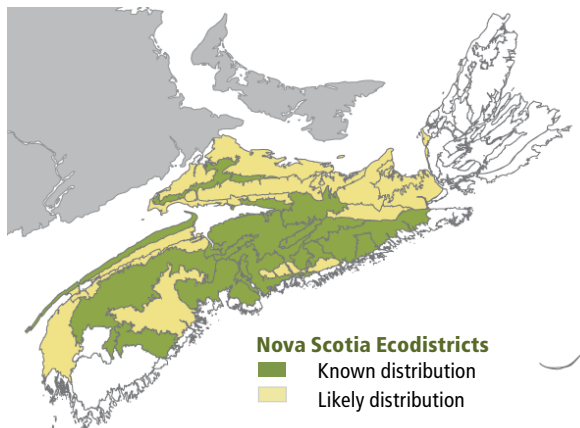
Evergreen wood fern

Site Characteristics

Slope Position:	Middle ⁴ Upper ³ Lower ² Level ¹
Surface Stoniness:	(Non - Slightly) ⁴ (Moderately) ⁴ (Very - Excessively) ²
Bedrock Outcrop:	(Non-rocky) ⁹ (Slightly - Moderately) ¹
Elevation Range:	54 - 246m
Slope Gradient:	Gentle ⁷ Moderate ² Level ¹
Aspect:	North ¹ East ³ South ³ West ² None ¹
Exposure:	Moderate ⁶ Mod. exposed ³ Mod. sheltered ¹
Microtopography:	Moderately ⁴ Slightly ³ Strongly ³
Drainage:	Well ⁵ Moderately well ⁴ Imperfect ¹

Soil Characteristics

Soil Type:	ST2 ³ ST2-L ³ ST2-G ¹ ST3-L ¹ ST6 ¹ Other ¹
Parent Material:	Glacial till ¹⁰
Rooting Depth (cm):	(<30) ¹ (30-45) ⁵ (>45) ⁴
Duff Thickness (cm):	(0-5) ¹ (6-10) ⁷ (11-20) ²





Tidney River
Wilderness Area,
Queens County

MW2

Red spruce – Red maple – White birch / Goldthread

Picea rubens – *Acer rubrum* – *Betula papyrifera* /
Coptis trifolia

MW2a

Aspen variant

Populus grandidentata – *Populus tremuloides*

n=20

Concept: This mid-successional mixedwood Vegetation Type (VT) has an overstory co-dominated by red spruce and red maple, accompanied by lesser amounts of various other trees. There is one variant (MW2a) where aspen (trembling and/or large-tooth) co-dominates with spruce and maple. MW2 usually occurs as a result of partial harvesting or windthrow. It is a common mixedwood VT found throughout mainland Nova Scotia.

Vegetation: Red spruce and red maple are the dominant overstory trees, with either trembling or large-tooth aspen co-dominant in variant MW2a. Several shade-tolerant trees (e.g. sugar maple, beech, white pine, hemlock) are typical but lesser overstory species. The shrub layer is moderately developed and includes mainly regenerating trees, striped maple and fly-honeysuckle. The herb layer is represented by typical mixedwood forest flora, however species normally associated with poorer sites (e.g. bracken, bunchberry and goldthread) are more common in MW2 than they are in yellow birch mixedwood VTs (MW1 and MW3). Bryophyte development varies, with coverage directly related to relative softwood abundance in the overstory. Schreber's moss and stair-step moss are the main species. *Bazzania* can also be common where coarse woody debris has accumulated on the forest floor.

Ecological Features

This closed canopy forest typically occurs as large patches following stand or patch-scale disturbances such as clearcutting or partial harvesting. Red maple regeneration is by seed or coppice. This ecosystem provides several ecological functions including the facilitation of nutrient cycling, rapid site revegetation

after disturbance, and the establishment of nurse crops for later successional species such as red spruce, hemlock and yellow birch. Residual trees from early successional stages are common and may provide notable wildlife habitat values and increased forest structural complexity. Large trees can provide nest

sites for pileated woodpeckers, barred owls and northern goshawks. Downed coarse woody debris may provide cover for red-backed salamanders and small mammals. Mixedwood forests may also provide both shelter and food for overwintering deer.

Characteristic Plants	MW2		MW2a	
	Freq. (%)	Cover (%)	Freq. (%)	Cover (%)
Red spruce	100	32.1	100	34.0
Red maple	100	24.0	80	16.5
Balsam fir	67	10.1	40	15.0
White birch	53	12.1	40	7.5
Yellow birch	47	9.3	20	0.1
Black spruce	20	12.7		
Sugar maple	20	3.3		
Hemlock	13	6.0	20	12.0
Beech	13	5.0	20	0.1
White pine	13	4.0	40	2.5
Large-tooth aspen	7	15.0	80	33.5
Trembling aspen	7	10.0	40	14.0
Red oak	7	8.0	40	2.5
Tree Layer (Mean % Cover)		81		93
Balsam fir	100	11.8	100	5.7
Red spruce	87	4.0	60	4.4
Red maple	67	1.4	100	1.1
Yellow birch	47	1.3	20	0.1
Striped maple	47	0.4	60	2.5
Wild raisin	47	0.1	40	0.1
White pine	40	0.4	60	0.2
Fly-honeysuckle	40	0.1	40	0.1
Beech	33	1.7	40	0.1
Lowbush blueberry	33	1.0		
False holly	33	0.2		
Lambkill	27	2.3	20	2.0
Velvet-leaf blueberry	27	0.6	60	0.7
Sugar maple	13	1.0	20	0.1
Hemlock	13	0.5	40	0.1
Serviceberry	13	0.3	80	0.1
Red oak	7	0.1	60	0.2
Shrub Layer (Mean % Cover)		20		13
Starflower	100	1.7	80	1.1
Wild lily-of-the-valley	87	1.3	100	0.5
Goldthread	73	3.2	20	1.0
Bracken	60	5.1	60	3.3
Sarsaparilla	60	3.2	60	0.7
Painted trillium	60	0.1	60	0.1
Bunchberry	53	3.4	40	5.0
Evergreen wood fern	53	2.6	40	0.1
Partridge-berry	53	0.1	20	0.1
Hay-scented fern	47	5.9	20	0.1
New York fern	40	14.8	40	0.1
Cinnamon fern	40	2.9		
Twinflower	40	0.7	20	1.5
Bluebead lily	40	0.3	60	0.1
Indian cucumber root	40	0.1	40	0.1
Pink lady's slipper	40	0.1	40	0.1
Wood aster	33	0.1	40	0.3
Wood-sorrel	27	7.6	20	2.0
Herb Layer (Mean % Cover)		28		8
Bazzania	93	5.3	80	2.9
Schreber's moss	87	8.0	80	1.3
Hypnum moss	87	2.5	80	1.4
Broom moss	87	1.9	100	0.4
Stair-step moss	67	8.3	60	0.8
Hair-cap moss	47	0.3	80	0.3
Wavy dicranum	40	2.3	20	0.3
Bryo-Lichen Layer (Mean % Cover)		23		6

Distinguishing Features

Red spruce and early successional species such as red maple, white birch and aspen occur in this mixedwood forest on well drained soils. For the variant MW2a, aspen replaces much of the red maple. Bracken fern, bunchberry and goldthread are common.



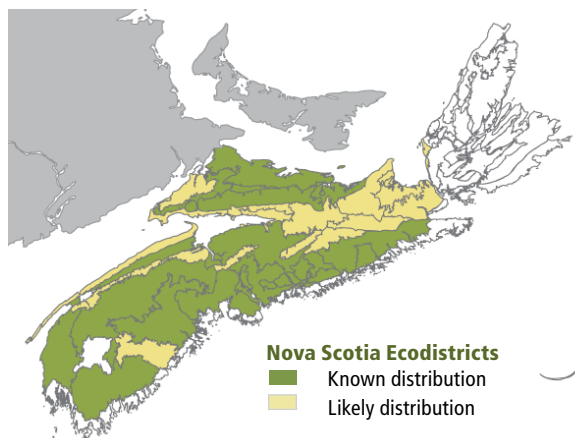
Goldthread [John Gillis]

Site Characteristics

Slope Position:	Crest ² Lower ² Middle ² Upper ² Other ¹ nd ¹
Surface Stoniness:	(Non - Slightly) ⁵ (Moderately) ³ (Very - Excessively) ²
Bedrock Outcrop:	(Non-rocky) ⁹ (Slightly - Moderately) ¹
Elevation Range:	24 - 211m
Slope Gradient:	Gentle ⁶ Level ² Other ¹ nd ¹
Aspect:	North ³ East ¹ South ¹ West ³ None ¹ nd ¹
Exposure:	Moderate ⁶ Mod. exposed ³ Mod. sheltered ¹
Microtopography:	Moderately ⁴ Slightly ² Strongly ² Level ¹ nd ¹
Drainage:	Moderately well ⁵ Imperfect ² Well ² nd ¹

Soil Characteristics

Soil Type:	ST2 ³ ST3-L ² ST6 ² ST2-G ¹ ST3 ¹ Other ¹
Parent Material:	Glacial till ⁰
Rooting Depth (cm):	(<30) ³ (30-45) ³ (>45) ⁴
Duff Thickness (cm):	(0-5) ¹ (6-10) ⁵ (11-20) ³ nd ¹



MW3

Hemlock – Yellow birch / Evergreen wood fern

Tsuga canadensis – *Betula alleghaniensis* /
Dryopteris intermedia

n=34



Durham,
Pictou County

Concept: This late successional mixedwood Vegetation Type (VT) has an overstory co-dominated by hemlock and yellow birch. Various other trees, including many shade-tolerant species, may be lesser associates. This VT is similar to MW1 (Red spruce – Yellow birch / Evergreen wood fern), but has greater hemlock prominence. The longevity and shade tolerance of the dominant overstory tree species aids in the development of old forest characteristics, maintained by gap disturbances. Hemlock – Yellow birch / Evergreen wood fern is a climax Acadian mixedwood VT found on zonal sites.

Vegetation: Hemlock is the dominant overstory tree, co-occurring with yellow birch and/or red maple. A suite of other shade-tolerant trees (e.g. sugar maple, beech, balsam fir, white pine and white ash) may also be present to varying degrees. The shrub layer is moderately developed and includes mainly regenerating trees, striped maple and fly-honeysuckle. The herb layer is represented by typical mixedwood forest flora. Ferns, club-mosses, and various flowering perennials such as bluebead lily, wild lily-of-the-valley, starflower, Indian cucumber root, partridge-berry and wood aster are common. Poorer sites can support pink lady's slipper, teaberry and bracken, while richer sites are represented by Christmas fern, oak fern and northern beech fern. Sites with higher moisture may support cinnamon fern and creeping snowberry, while drier sites may contain increased hay-scented fern. Bryophyte development varies, with coverage directly related to relative softwood abundance in the

overstory. Schreber's moss and stair-step moss are the main bryophyte species. *Bazzania* can also be common where coarse woody debris has accumulated on the forest floor.

Environmental Setting: MW3 is mainly associated with fresh to fresh-moist, nutrient medium to rich soils of variable texture. Coarse woody debris coverage can be quite variable on MW3 sites due to the short lifespan of balsam fir which is always a significant component of this VT. This VT can be found throughout mainland Nova Scotia, with scattered occurrences in Cape Breton. This ecosystem occurs on Prince Edward Island and in parts of southern and central New Brunswick, but it is relatively rare in both jurisdictions.

Successional Dynamics: MW3 is a late successional climatic climax VT co-dominated by hemlock with lesser yellow birch and/or red maple. It can develop from several early and mid-successional VTs including SH5 (Red spruce – Balsam fir / Schreber's moss), SH6 (Red spruce – Balsam fir / Stair-step moss – Sphagnum), SH8 (Balsam fir / Wood fern / Schreber's moss) and MW4 (Balsam fir – Red maple / Wood sorrel – Goldthread). Early successional stages can be by-passed if, at the time of disturbance, advanced hemlock regeneration is present and retained. Depending on disturbance history this VT can be even-aged, but it will develop an uneven-aged structure as it matures. Between large-scale disturbance events this VT will maintain itself through gap replacement.

Ecological Features

This closed canopy forest is matrix-forming in central Nova Scotia and a large patch forest elsewhere. The shade tolerance and longevity of hemlock and yellow birch promote development of uneven-aged canopy structure and old growth. Large trees can provide nest

sites for pileated woodpeckers, red-tailed hawks and northern goshawks. Downed coarse woody debris may provide cover for red-backed salamanders and small mammals. Mixedwood forests can also provide both shelter and food for overwintering deer. Yellow birch is

an abundant source of seed during the winter for many species of birds and small mammals. Birch trees in these forests may be deformed and killed by birch cinder conch, a fungal growth occasionally harvested for Chaga tea.

Characteristic Plants

MW3

	Freq. (%)	Cover (%)
Hemlock	100	38.0
Red maple	82	18.6
Yellow birch	82	11.3
Sugar maple	50	9.4
Balsam fir	50	8.1
Red spruce	44	9.2
White ash	29	4.0
White birch	24	10.4
White pine	24	5.0
Beech	18	4.8
Ironwood	15	4.2
White spruce	15	3.4
Tree Layer (Mean % Cover)		83
Balsam fir	100	4.8
Hemlock	88	1.9
Striped maple	76	1.4
Red maple	68	1.9
Red spruce	59	2.9
Fly-honeysuckle	59	0.5
Sugar maple	56	0.5
Yellow birch	53	3.0
Beech	53	1.5
White ash	44	0.1
White pine	38	3.5
White spruce	32	3.0
Shrub Layer (Mean % Cover)		17
Wild lily-of-the-valley	100	2.6
Starflower	88	0.6
Evergreen wood fern	76	3.8
Rose twisted stalk	50	0.1
Indian pipe	47	0.1
Wood aster	47	0.1
Christmas fern	44	1.2
Sarsaparilla	44	0.7
Bluebead lily	41	0.4
Indian cucumber root	41	0.1
New York fern	38	8.3
Northern beech fern	35	1.1
Partridge-berry	35	0.5
Ground pine	32	0.5
Cinnamon fern	29	0.5
Goldthread	29	0.5
Painted trillium	29	0.1
Wood-sorrel	26	0.7
Twinflower	24	1.3
Violets	24	0.2
Bunchberry	21	3.3
Herb Layer (Mean % Cover)		16
Stair-step moss	82	10.4
Bazzania	79	2.5
Broom moss	76	0.9
Schreber's moss	71	5.1
Hypnum moss	68	1.1
Wavy dicranum	29	0.9
Shaggy moss	21	1.0
Fern moss	21	0.3
Hair-cap moss	21	0.2
Pin cushion moss	21	0.2
Bryo-Lichen Layer (Mean % Cover)		17

Distinguishing Features

This mixedwood forest occurs on well drained soils dominated by yellow birch and hemlock with a significant component of red maple. Striped maple and fly-honeysuckle along with ferns are very common in the well-developed shrub and herb layers.



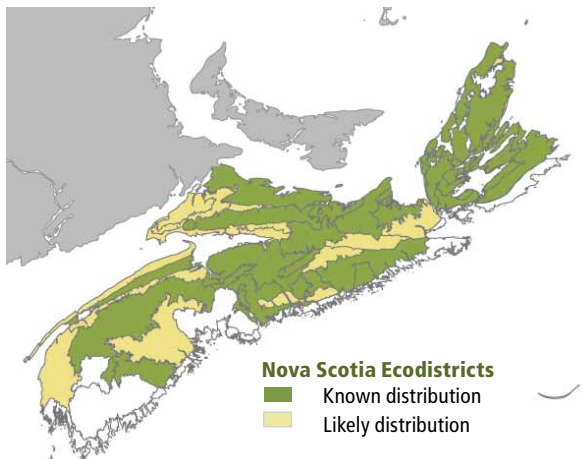
Yellow birch

Site Characteristics

Slope Position:	Level ³ Lower ³ Middle ² Upper ²
Surface Stoniness:	(Non - Slightly) ⁸ (Moderately) ²
Bedrock Outcrop:	(Non-rocky) ⁹ (Slightly - Moderately) ¹
Elevation Range:	15 - 152m
Slope Gradient:	Gentle ⁴ Level ³ Steep ¹ Other ¹ nd ¹
Aspect:	North ³ East ² South ² West ¹ None ²
Exposure:	Moderate ⁶ Sheltered ² Mod. exposed ¹ Mod. sheltered ¹
Microtopography:	Moderately ⁴ Slightly ⁴ Strongly ²
Drainage:	Moderately well ⁴ Imperfect ³ Well ³

Soil Characteristics

Soil Type:	ST2 ² ST6 ² ST1 ¹ ST2-L ¹ ST3-L ¹ ST8 ¹ ST12 ¹ Other ¹
Parent Material:	Glacial till ⁷ Alluvium ¹ Colluvium ¹ Glaciofluvial ¹
Rooting Depth (cm):	(<30) ¹ (30-45) ⁴ (>45) ⁴ nd ¹
Duff Thickness (cm):	(0-5) ² (6-10) ⁵ (11-20) ² nd ¹



MW4

Balsam fir – Red maple / Wood sorrel – Goldthread

Abies balsamea – *Acer rubrum* /
Oxalis acetosella – *Coptis trifolia*

n=12



Moose River,
Pictou County

Concept: This early to mid-successional mixedwood Vegetation Type (VT) has an overstory co-dominated by balsam fir and red maple, with a variety of other associates. MW4 is a broadly defined VT that follows stand-replacing disturbance events such as windthrow or harvesting. Residual trees (survivors of past disturbance events) should not be used for classifying this VT from others. Due to the short-lived nature of balsam fir, this VT often has significant levels of coarse wood debris and/or numerous snags. Balsam fir – Red maple / Wood sorrel – Goldthread is a commonly found VT in eastern Nova Scotia.

Vegetation: Balsam fir and red maple are the dominant overstory trees, with lesser red spruce, yellow birch, white birch, white spruce and/or aspen. Minor levels of black spruce can also be found on some sites. The shrub layer is moderately developed and includes mainly regenerating trees (especially balsam fir and red maple). The herb layer is represented by common forest flora (e.g. wild lily-of-the-valley, starflower, bluebead lily, goldthread and wood sorrel). Bracken, hay-scented fern and cinnamon fern can also be found – their presence and relative abundance reflecting available moisture. Bryophyte development varies, with coverage directly related to relative softwood abundance in the overstory. Schreber’s moss, stair-step moss and broom

moss are the main species. Bazzania can also be common where coarse woody debris has accumulated on the forest floor.

Environmental Setting: MW4 is mainly associated with fresh to moist, nutrient medium soils of variable texture. This VT is common throughout eastern Nova Scotia and is scattered elsewhere. It is common throughout the Maritime provinces, but less frequent across higher elevation of northern New Brunswick.

Successional Dynamics: MW4 is an early to mid-successional VT dominated by balsam fir and red maple. It is an even-aged forest that usually follows stand-level disturbances such as windthrow and harvesting. MW4 can sometimes renew itself through natural stand deterioration (facilitated by minor insect predation, disease and natural senescence) followed by development of advanced regeneration. Over time, and with possible increases in red spruce presence, MW4 could succeed to other VTs including: SH5 (Red spruce – Balsam fir / Schreber’s moss), SH6 (Red spruce – Balsam fir / Stair-step moss – Sphagnum), SH3 (Red spruce – Hemlock / Wild lily-of-the-valley) or MW1 (Red spruce – Yellow birch / Evergreen wood fern). Residuals in the overstory can provide evidence of pre-disturbance conditions and should be considered when assessing possible successional trends.

Ecological Features

This closed canopy forest typically occurs as large patches following stand-level disturbances such as fire or harvesting. Regeneration is by seed and coppice. This ecosystem provides several ecological functions including the facilitation of nutrient cycling, rapid site revegetation after disturbance, and the establishment

of nurse crops for later successional species such as red spruce, hemlock and yellow birch. Residual trees from early successional stages are common and may provide notable wildlife habitat values and increased forest structural complexity. Mixedwood forests can also provide both shelter and food for

overwintering deer. Sapling stage forests are an ideal habitat for snowshoe hare, and are a favoured browsing habitat for moose and deer. Red maple provides one of the most important early and abundant sources of pollen and nectar for a wide range of insects.

Characteristic Plants

MW4

	Freq. (%)	Cover (%)
Red maple	100	29.8
Balsam fir	92	36.0
Red spruce	42	12.4
Yellow birch	42	8.2
White spruce	33	8.0
Trembling aspen	25	5.7
White birch	25	4.0
Black spruce	17	10.0
Tree Layer (Mean % Cover)		82
Balsam fir	100	3.9
Red maple	92	1.8
Velvet-leaf blueberry	58	0.2
Serviceberry	50	0.1
Red spruce	42	5.4
False holly	42	0.7
Lambkill	42	0.4
Yellow birch	33	1.3
Striped maple	33	0.5
Wild raisin	33	0.1
Trembling aspen	25	0.3
Red oak	25	0.2
Fly-honeysuckle	25	0.1
Lowbush blueberry	25	0.1
Shrub Layer (Mean % Cover)		13
Wild lily-of-the-valley	100	2.6
Starflower	92	1.3
Goldthread	83	2.7
Bunchberry	75	5.0
Wood-sorrel	67	12.6
Cinnamon fern	67	3.2
Sarsaparilla	67	1.5
Evergreen wood fern	67	1.3
Bluebead lily	67	0.7
New York fern	58	5.1
Wood aster	58	0.8
Bracken	50	2.6
Interrupted fern	42	1.6
Ground pine	42	0.3
Hay-scented fern	33	0.2
Indian pipe	33	0.1
Twinflower	25	2.4
Bristly club-moss	25	0.2
Partridge-berry	25	0.2
Violets	25	0.2
White panicle aster	25	0.1
Herb Layer (Mean % Cover)		31
Broom moss	100	1.3
Schreber's moss	83	14.7
Stair-step moss	83	13.8
Bazzania	83	6.9
Common green sphagnum	58	2.7
Hypnum moss	58	0.9
Hair-cap moss	50	2.2
Wavy dicranum	42	3.3
Grey reindeer lichen	25	0.1
Bryo-Lichen Layer (Mean % Cover)		36

Distinguishing Features

This mixedwood forest of balsam fir and red maple establishes after a stand-level disturbance. The herbaceous layer is generally comprised of common woodland plants such as wild lily-of-the-valley, starflower, bluebead lily, goldthread and wood sorrel.



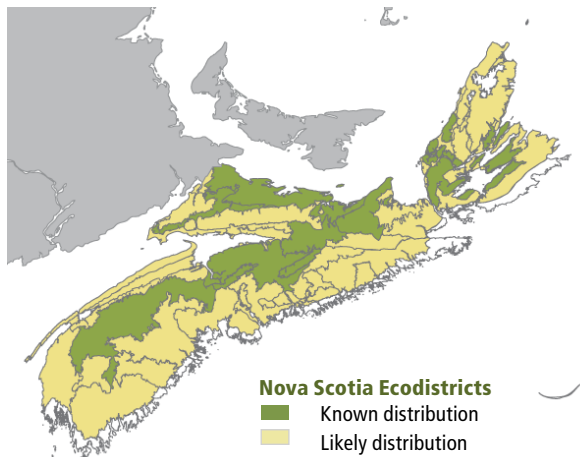
Bluebead lily

Site Characteristics

Slope Position:	Level ⁵ Lower ² Upper ² Toe ¹
Surface Stoniness:	(Non - Slightly) ⁸ (Moderately) ¹ (Very - Excessively) ¹
Bedrock Outcrop:	(Non-rocky) ¹⁰
Elevation Range:	39 - 252m
Slope Gradient:	Level ⁶ Gentle ⁴
Aspect:	North ³ East ¹ South ¹ West ² None ³
Exposure:	Moderate ⁶ Mod. exposed ² Mod. sheltered ²
Microtopography:	Moderately ⁶ Slightly ⁴
Drainage:	Imperfect ⁶ Moderately well ⁴

Soil Characteristics

Soil Type:	ST6 ⁵ ST2 ¹ ST3 ¹ ST5 ¹ ST9 ¹ ST12 ¹
Parent Material:	Glacial till ¹⁰
Rooting Depth (cm):	(<30) ³ (30-45) ⁷
Duff Thickness (cm):	(6-10) ⁶ (11-20) ³ nd ¹



MW5

White birch – Balsam fir / Starflower

Betula papyrifera – *Abies balsamea* /
Trientalis borealis

n=4



Fox River,
Cumberland County

Concept: This early successional mixedwood Vegetation Type (VT) has an overstory co-dominated by white birch and balsam fir. Various other trees may have a minor presence. MW5 is a broadly defined VT that follows stand-replacing disturbance events such as windthrow or harvesting. Residual trees (survivors of past disturbance events) should not be used for classifying this VT from others. Due to the short-lived nature of balsam fir, this VT often supports significant levels of coarse wood debris and/or numerous snags. White birch – Balsam fir / Starflower is commonly found VT in eastern Nova Scotia.

Vegetation: White birch and balsam fir are the dominant overstory trees, with lesser red spruce, yellow birch, white spruce and/or red maple. Minor amounts of black spruce, hemlock and white pine can also be found on some sites. The shrub layer is moderately developed and dominated by regenerating trees (especially balsam fir and red maple). The herb layer is represented by typical forest flora including wild lily-of-the-valley, starflower, bluebead lily, goldthread and wood sorrel. Bracken, hay-scented fern and cinnamon fern can also be found – their presence and relative abundance reflecting available moisture. Bryophyte development varies; its coverage

directly related to softwood overstory abundance. Schreber's moss, stair-step moss and broom moss are the main species. *Bazzania* can also be common where coarse woody debris has accumulated on the forest floor.

Environmental Setting: MW5 is mainly associated with fresh to moist, nutrient-medium soils of variable texture. This VT has not been well sampled but appears to occur throughout eastern Nova Scotia and is scattered elsewhere. It is common in New Brunswick and Prince Edward Island.

Successional Dynamics: MW5 is an early successional VT dominated by white birch and balsam fir. It is an even-aged VT that usually follows stand-level disturbances such as windthrow and harvesting. As the short-lived and shade-intolerant white birch starts to lose overstory dominance, other mid and late successional VTs can develop including SH5 (Red spruce – Balsam fir / Schreber's moss), SH6 (Red spruce – Balsam fir / Stair-step moss – Sphagnum) and SH8 (Balsam fir / Wood fern / Schreber's moss). Residuals in the overstory can provide evidence of pre-disturbance conditions and should be considered when assessing possible successional trends.

Ecological Features

This closed canopy patch forest typically follows stand-level disturbances such as harvesting. Regeneration is by seed or coppice. This ecosystem provides several ecological functions including the facilitation of nutrient cycling, rapid

site revegetation after disturbance, and the establishment of nurse crops for later successional species such as red spruce, hemlock and yellow birch. Residual trees from early successional stages are common and may provide notable

wildlife habitat values and increased forest structural complexity. Mixedwood forests provide both shelter and food for overwintering deer. Sapling stage occurrences may provide browsing habitat for snowshoe hare, deer and moose.

Characteristic Plants

MW5

	Freq. (%)	Cover (%)
White birch	100	41.8
Balsam fir	75	32.0
White spruce	75	7.7
Red spruce	50	13.5
Yellow birch	50	7.0
Hemlock	50	0.1
Red maple	50	0.1
Black spruce	25	5.0
White pine	25	5.0
Tree Layer (Mean % Cover)		84
Balsam fir	100	3.1
Wild raisin	75	0.4
Red maple	50	21.6
Black spruce	50	4.3
White birch	50	3.0
Velvet-leaf blueberry	50	0.5
Lambkill	50	0.1
Mountain-ash	50	0.1
White pine	50	0.1
Fly-honeysuckle	25	0.5
Striped maple	25	0.5
Beech	25	0.3
Bush-honeysuckle	25	0.1
False holly	25	0.1
Hemlock	25	0.1
Serviceberry	25	0.1
Sugar maple	25	0.1
Shrub Layer (Mean % Cover)		19
Starflower	100	0.1
Wild lily-of-the-valley	75	8.1
Bracken	75	4.3
Indian pipe	75	0.1
Evergreen wood fern	50	4.0
Bunchberry	50	3.0
Twinflower	50	1.1
Bluebead lily	50	0.1
Painted trillium	50	0.1
Wood-sorrel	25	40.0
Goldthread	25	16.0
Shining club-moss	25	4.5
Hay-scented fern	25	2.0
Bristly club-moss	25	0.1
Cinnamon fern	25	0.1
Cow-wheat	25	0.1
Eastern spreading wood fern	25	0.1
Interrupted fern	25	0.1
Partridge-berry	25	0.1
Pink lady's slipper	25	0.1
Rose twisted stalk	25	0.1
Running club-moss	25	0.1
Wood reed	25	0.1
Herb Layer (Mean % Cover)		30
Broom moss	100	2.9
Schreber's moss	75	6.7
Stair-step moss	75	1.9
Bazzania	75	1.3
Hypnum moss	75	1.1
Wavy dicranum	50	1.3
Bryo-Lichen Layer (Mean % Cover)		12

Distinguishing Features

This mixedwood forest of balsam fir and red maple establishes after a stand-level disturbance. The herbaceous layer is generally comprised of common woodland plants such as wild lily-of-the-valley, starflower, bluebead lily, goldthread and wood sorrel.



Starflower

Site Characteristics

Slope Position:	Middle ⁵ Upper ⁵
Surface Stoniness:	(Non - Slightly) ⁸ (Very - Excessively) ²
Bedrock Outcrop:	(Non-rocky) ¹⁰
Elevation Range:	83 - 144m
Slope Gradient:	Gentle ⁸ Steep ²
Aspect:	East ³ South ⁴ West ³
Exposure:	Moderate ⁵ Mod. exposed ⁵
Microtopography:	Moderately ⁶ Slightly ² Strongly ²
Drainage:	Well ⁸ Moderately well ²

Soil Characteristics

Soil Type:	ST2 ⁶ ST1 ² ST6 ²
Parent Material:	Glacial till ⁸ Colluvium ²
Rooting Depth (cm):	(30-45) ⁶ (>45) ² nd ²
Duff Thickness (cm):	(6-10) ⁸ nd ²

