

# **Appendix Y**

## **ELC and Wildlife Species Habitat Analysis**



## **Identification of Primary and Secondary Habitat for Indicator Wildlife Species found in Southwestern Labrador**

The following text provides context to the assignment of primary, secondary and tertiary habitat classifications to ecotypes found in the Study Area as they relate to 25 indicator species that were used in the analysis of the effects of the Project on wildlife in the study area. Primary habitat provides all of the main habitat requirements for a species (e.g., abundance of food, protection, resting, spatial separation from predators and/or other habitat such as that utilized for breeding, denning or other activities). Secondary habitat provides an abundance of one or more of the three elements (or marginal amounts of all). Tertiary habitat is considered marginal habitat providing few or no habitat requirements, may be used as a corridor and/or avoided.

The wildlife species used in the analysis include seventeen bird, seven mammal and one amphibian species. This list represents a mixture of species characteristic of the region, species that are of social and economic importance, and species that are of conservation concern. The habitat preferences of these species are discussed in relation to the ecotypes that are present in the Study Area and ecotypes that provide primary and secondary habitat for each species are identified and the way in which they are expected to be used by the species is discussed. Ecotypes that are not considered to be primary or secondary habitat for a particular species are by default listed as tertiary habitat.

### **Greater Yellowlegs**

Greater Yellowlegs nest in bogs, marshes and muskeg in the boreal forest. Nests are typically situated near water. Patterned and non-patterned fens are listed as primary habitat since they provide the open wetland habitat and areas of open water that provide good nesting habitat for Greater Yellowlegs. Black Spruce / Tamarack-Sphagnum Woodland and Tamarack / Black Spruce-Feathermoss ecotypes are listed as secondary habitat. These ecotypes are frequently found at the margins of fens and the interface between these ecotypes provides good nesting sites (fallen logs) as well as perching sites. Riparian Marsh / Fen, Graminoid Fen and Shallow Open Water with Vegetation are also listed as secondary habitats. These wetlands generally do not provide ideal nesting habitat but do provide good foraging habitat.

### **Northern Harrier**

Northern Harriers are typically associated with grassy habitats such as marshes, fens, prairies, and agricultural land. Nests are generally situated in wetlands with a mixture of graminoids and low shrubs. In the RSA, Patterned Shrub Fen, Non-patterned Shrub Fen, Riparian Marsh / Fen and Graminoid Fen are considered to provide primary habitat since they provide both high quality nesting sites and foraging habitat for Northern Harriers. Riparian Thicket is listed as secondary habitat. In areas where this ecotype is interspersed with fens or marshes, the Riparian Thickets could provide nesting sites but would not be good foraging areas. Alpine heath, Hardwood Burn / Regeneration, Softwood Burn / Regeneration, and Black Spruce-Lichen ecotypes would not provide suitable nesting habitat but may be open enough to allow Northern Harriers to forage in them. These ecotypes are listed as secondary habitat. The ExposedEarth / Antropogenic ecotype is also listed as secondary habitat. In areas where grass and herb cover

has become established on these sites they can become foraging habitat for Northern Harriers. During the breeding bird surveys, Northern Harriers were observed foraging over vegetated tailings in the Wabush area.

### **Osprey**

Osprey nesting and feeding habitat are spatially separate; consequently, no one ecotype can provide primary habitat. Foraging occurs in open water areas occupied by fish. As such, the Open Water and Shallow Open Water with Vegetation ecotypes are listed as secondary habitat. Nests are constructed in the tops of trees and large snags that provide a commanding view of the surrounding area. Artificial nest sites such as power poles or towers are readily used as nesting sites. Ecotypes containing mature trees are capable of providing suitable nesting sites and are considered to be secondary habitat. These include the Hardwood Forest, Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss, Black Spruce-Lichen, and Black Spruce / Tamarack-Sphagnum Woodland ecotypes.

### **Gray Jay**

Gray Jays are associated with coniferous forest. Nesting occurs in spruce or fir with an optimal height of 3 to 7.5 m in height. Both wet and dry coniferous forests are used as nesting sites. Foraging may occur in a variety of habitats. Ecotypes that provide both nesting and foraging opportunities for Gray Jays include Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss, and Black Spruce / Tamarack-Sphagnum Woodland ecotypes. These are considered to be primary habitat for the Gray Jay. Ecotypes that provide foraging opportunities for Gray Jays include Hardwood Forest, Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Black Spruce-Lichen, Riparian Thicket, and Tamarack / Black Spruce-Feathermoss ecotypes. These are considered to be secondary habitat for Gray Jays.

### **Boreal Chickadee**

Boreal Chickadees are typically associated with coniferous and to a lesser extent Mixedwood forest. Nesting occurs in tree cavities including those constructed by Boreal Chickadees in rotten snags, woodpecker holes and natural cavities. Boreal Chickadees are non-migratory and these tree cavities are important for the survival of Boreal Chickadees during the winter months when they are used as roost sites. Ecotypes that can be expected to provide both nesting and foraging habitat include Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland and Mixedwood Forest ecotypes. Most Mixedwood Forest in the RSA is dominated by coniferous species and would be suitable for Boreal Chickadee. Other ecotypes that would be regularly used by Boreal Chickadee include Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Black Spruce-Lichen, and Tamarack / Black Spruce-Feathermoss ecotypes. These ecotypes would provide good foraging opportunities and limited nesting opportunities and are considered to be secondary habitat. Hardwood Forest and Riparian Thicket ecotypes may provide foraging opportunities for Boreal Chickadees but would not provide nesting habitat and are also listed as secondary habitat.

## **Common Loon**

Common Loons are almost entirely aquatic birds and utilize terrestrial habitats only as nesting sites. The Common Loons legs are set far back on the body to optimize swimming; however, this makes it very difficult for Common Loons to move on land. As a result, nest sites are located near the edge of the water where loons can easily slip into the water. Islands, the tips of points, floating vegetation mats and muskrat houses are used as nest sites. The Open Water and Shallow Open Water with Vegetation ecotypes are the only ecotypes that provide primary habitat for this species.

## **Common Goldeneye**

Common Goldeneyes nest in tree cavities but forage entirely in open water habitats. As such, no one ecotype provides primary habitat for this species. Given the relatively large size of this bird, large tree cavities are required for nesting. This limits nesting to mature stands located within 3 km of open water. Ecotypes that could provide suitable nesting habitat include Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Hardwood Forest, and Mixedwood Forest. Brood rearing and foraging occur mainly in small lakes that are generally unoccupied by fish and have little emergent vegetation. The only ecotype that would match this requirement would be the Open Water ecotype. This ecotype will overestimate the distribution of this species since it includes both large and small lakes and does not differentiate between waters containing fish and those that do not.

## **Barrow's Goldeneye**

Barrow's Goldeneyes nest in tree cavities but forage entirely in open water habitats. As such, no one ecotype provides primary habitat for this species. Given the relatively large size of this bird, large tree cavities are required for nesting. This limits nesting to mature stands located within 2 km of open water. Ecotypes that could provide suitable nesting habitat include Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Hardwood Forest, and Mixedwood Forest. Brood rearing and foraging occur mainly in small lakes that are generally unoccupied by fish and have little emergent vegetation. The only ecotype that would match this requirement would be the Open Water ecotype. This ecotype will overestimate the distribution of this species since it includes both large and small lakes and does not differentiate between waters containing fish and those that do not.

## **Olive-sided Flycatcher**

Olive-sided Flycatchers prefer to nest in areas that contain open habitats with snags or scattered live trees that they use as perches for foraging. Favored habitats include burns, wetlands with scattered trees or snags and clear-cut areas with scattered snags. Primary habitat in the RSA consists of the Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Non-patterned Shrub Fen and Patterned Shrub Fen ecotypes. Softwood dominated forest ecotypes including Black Spruce-Labrador Tea-Feathermoss, Black Spruce-Lichen, Black Spruce / Tamarack-Sphagnum Woodland and Mixedwood Forest may be used as nesting sites where they border burns or fens. These ecotypes are considered to be secondary habitat.

## **Common Nighthawk**

Common Nighthawks are aerial insectivores that forage on high flying insects. Foraging habitat is the air space above terrestrial and aquatic ecotypes. Common Nighthawks nest on bare ground in open habitat. Ecotypes in which nesting could be expected to occur include Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Black Spruce-Lichen, and Exposed Earth / Anthropogenic. Alpine Heath is listed as a secondary habitat since this ecotype mostly occurs at higher elevations where conditions are cool and windy during the breeding season and less suitable for incubating eggs and rearing chicks.

## **Rusty Blackbird**

Rusty Blackbirds are typically associated with coniferous treed wetlands or at the interface between coniferous forest and wetland habitat. Nests are typically constructed in conifers, shrubs or on stumps near areas of open water. Edge habitats are preferred. The Riparian Thicket and Tamarack / Black Spruce-Feathermoss ecotypes are the only ecotypes that are considered to provide primary habitat for Rusty Blackbird. Non-patterned Shrub Fen, Patterned Shrub Fen, Riparian Marsh / Fen, and Graminoid Fen as well as Black Spruce / Tamarack-Sphagnum Woodland situated adjacent to these ecotypes are considered to be secondary habitat since nesting and foraging may occur around the margins of these ecotypes.

## **Gray-cheeked Thrush**

Gray-cheeked Thrushes are typically found in habitats containing dense stands of spruce and fir. Areas of krumholz vegetation associated with alpine areas can provide suitable nesting habitat. Krumholz conifer stands associated with the Alpine Heath ecotype could potentially provide suitable nesting habitat for Gray-cheeked Thrush and are considered to be Primary habitat in the RSA. Mature conifer stands with dense conifer understories also provide suitable nesting habitat for this species. Most mature conifer stands in the RSA have relatively open understories although some stands with dense understories were encountered during the field surveys. Given the paucity of mature coniferous stands with dense conifer understories, mature coniferous forest ecotypes in the RSA such as Black Spruce-Labrador Tea-Feathermoss and Black Spruce / Tamarack-Sphagnum Woodland are considered to be secondary habitat. Gray-cheeked Thrushes will also nest in regenerating stands when dense stands of conifers are present. The Softwood Burn / Regeneration ecotype could potentially provide nesting habitat in the RSA. However, most of these regenerating stands in the RSA do not contain dense thickets of conifers and would not provide suitable nesting habitat. Given this limitation, the Softwood Burn / Regeneration ecotype is considered to be secondary habitat.

## **Short-eared Owl**

Short-eared Owls nest and forage in open habitats such as fens, marshes, fields, and pastures. In the RSA, primary habitat would be associated with the Riparian Marsh / Fen, Non-patterned Shrub Fen, Patterned Shrub Fen, Graminoid Fen, and Exposed Earth / Anthropogenic ecotypes. These ecotypes would provide both nesting and foraging habitat. The Exposed Earth / Anthropogenic ecotype would provide good foraging and nesting habitat in areas where disturbed areas have been rehabilitated and now support grassland or a mixture of grassland

and shrub thickets. Ecotypes that would provide secondary habitat include Alpine Heath, Hardwood Burn / Regeneration and Softwood Burn / Regeneration. Alpine Heath would provide foraging habitat but would have limited potential for nesting. Young Hardwood Burn / Regeneration and Softwood Burn / Regeneration may be open enough to provide suitable feeding habitat.

### **Lincoln's Sparrow**

Lincoln Sparrows are mostly found in shrubby wetlands with scattered trees. In the RSA, ecotypes that would provide primary habitat include Non-patterned Fen, Patterned Fen and Riparian Thicket. Ecotypes that would provide secondary habitat include Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss, Riparian Marsh / Fen, and Graminoid Fen. Hardwood Burn / Regeneration and Softwood Burn / Regeneration provide similar vegetation structure but may be too dry to be used regularly by Lincoln's Sparrows. Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss may be used to a limited extent as breeding habitat but have tree canopies that are too dense to be ideal habitat. Conversely, Riparian Marsh / Fen, and Graminoid Fen may not contain enough shrub and tree cover to provide good quality nesting habitat.

### **Tennessee Warbler**

Tennessee Warblers are typically found in open areas of boreal forest containing dense cover of shrubs and/or graminoids. The dense understory vegetation provides nesting habitat while the coniferous tree cover provides foraging habitat. In the RSA they were most commonly encountered in mature conifer stands with patches of willow in the understory. Ecotypes considered to be primary habitat in the RSA include Black Spruce-Labrador Tea-Feathermoss, Mixedwood Forest, Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss, Tamarack / Black Spruce-Feathermoss, Riparian Thicket and Hardwood Burn / Regeneration. Although the Riparian Thicket and Hardwood Burn / Regeneration ecotypes have little mature conifer cover, they contain large numbers of willows which are attractive to this species. These ecotypes may be particularly attractive when they occur in close proximity to mature conifer stands which provide feeding opportunities. Ecotypes considered to be secondary habitat include Hardwood Forest and Black Spruce-Lichen.

### **Spruce Grouse**

Spruce Grouse make use of a wide variety of vegetation types during the summer but focus their distribution on coniferous forest ecotypes during the winter months when they feed mainly on conifer needles. These mature stands also provide thermal cover during the winter months. Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, and Black Spruce-Lichen ecotypes are considered to be primary habitat for Spruce Grouse in the RSA since they provide foraging habitat, nesting habitat and thermal cover. Alpine Heath, Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Tamarack / Black Spruce-Feathermoss, Mixedwood Forest, Non-patterned Shrub Fen, Patterned Shrub Fen, and Graminoid Fen all provide secondary habitat for Spruce Grouse.

## **Canada Goose**

Canada geese are associated with open grassy areas which provide good grazing and nesting opportunities. Nests are often situated on small islands in pools in fens and bogs. Areas of open water provide feeding and resting habitat. Ecotypes in the RSA that are considered to provide primary habitat include Riparian Marsh / Fen, Patterned Shrub Fen, Non-patterned Shrub Fen, and Graminoid Fen. Ecotypes that would provide secondary habitat include Open Water, Shallow Open Water with Vegetation and Exposed Earth / Anthropogenic (revegetated areas).

## **Snowshoe Hare**

Snowshoe hares feed on a wide variety of herbaceous and woody plants. These plants must be located near ground level to allow snowshoe hares to feed on them although vegetation several metres tall can be browsed in the winter depending on snow depth. Dense vegetation cover is also required to provide cover from terrestrial and aerial predators. Ecotypes that can be expected to provide primary habitat for snowshoe hare include Hardwood Forest, Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss, Riparian Thicket, and Hardwood Burn / Regeneration. These ecotypes provide both food and cover. Alpine Heath, Softwood Burn / Regeneration and Black Spruce-Lichen ecotypes are classed as secondary habitat since they provide food resources but tend to have a limited amount of escape cover.

## **Porcupine**

Porcupines use the landscape differently in summer and winter. During the summer months they consume a wide variety of plant species and make use of a variety of vegetation types. During the winter months porcupines feed mainly on bark and twigs and tend to remain in close proximity to denning sites that provide shelter from inclement weather and predators. Some ecotypes such as the , Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss, and Black Spruce-Lichen provide feeding sites and denning sites or escape cover throughout the year. Other sites provide limited feeding opportunities or cover and tend to be used most frequently during the summer months when porcupines are more mobile. These include Hardwood Forest, Mixedwood Forest, Hardwood Burn / Regeneration, Softwood Burn / Regeneration, and Riparian Thicket ecotypes which are classed as secondary habitats.

## **Lynx**

Lynx feed primarily on snowshoe hare and as such they utilize many of the ecotypes that snowshoe hares use. Primary habitats include ecotypes such as Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Tamarack / Black Spruce-Feathermoss. These ecotypes provide an adequate supply of prey and also provide security from enemies such as wolves that cannot climb trees. More open or low growing ecotypes such as Riparian Thicket, and Hardwood Burn / Regeneration, Softwood Burn / Regeneration, Hardwood Forest, and Black Spruce-Lichen provide snowshoe hares but have limited amounts of cover. These ecotypes are considered to be secondary habitat.



## **Red Squirrel**

Red Squirrels are typically associated with forested areas. Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss and Black Spruce / Tamarack-Sphagnum Woodland provide primary habitat for Red Squirrel since they provide year-round sources of food in the form of conifer seeds as well as denning sites and good cover to escape detection by predators such as American Marten and raptors. Hardwood Forest provides good foraging opportunities and cover in the summer; however, these resources are substantially reduced during the rest of the year consequently, it is rated as secondary habitat. Similarly, Black Spruce-Lichen is listed as secondary habitat due to the low canopy cover associated with this ecotype. This reduces the availability of food and cover particularly during the winter months when the ground vegetation is covered by snow. Tamarack / Black Spruce-Feathermoss is also considered to be secondary habitat largely due to the sparse canopy and the generally small size of the trees found in this ecotype which limit foraging opportunities and reduce the amount of protective cover.

## **American Marten**

American Marten are typically associated with mature forest ecotypes. This species is arboreal and uses tree cover as means of accessing prey such as Red Squirrels and birds. Mature forest also provides protective cover from larger mammalian predators and raptors. Fallen timber in the understory of mature stands provides good foraging habitat for small mammals such as voles as well as secure denning and resting sites. Ecotypes that were considered to provide primary habitat for American Marten included Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss and Black Spruce / Tamarack-Sphagnum Woodland. Hardwood Forest, Black Spruce-Lichen and Tamarack / Black Spruce-Feathermoss ecotypes were listed as secondary habitat largely due to the lower tree cover in these ecotypes which reduces the availability of prey, protective cover and denning sites.

## **Moose**

Moose are habitat generalists with relatively large home ranges. This species makes use of forested ecotypes in various stages of succession, various wetland ecotypes as well as areas of open water. Forests provide browse, escape cover and thermal cover. Mature hardwood and Mixedwood Forests are listed as primary habitat since they provide cover and preferred food sources such as browse from deciduous trees. Forest ecotypes such as Black Spruce-Labrador Tea-Feathermoss and Black Spruce / Tamarack-Sphagnum Woodland and Tamarack / Black Spruce-Feathermoss are rated as secondary habitat since they do not provide the most favored browse species. Hardwood Burn / Regeneration, Softwood Burn / Regeneration and Riparian Thickets offer preferred browse species such as willow and birch but provide relatively little escape and thermal cover and are rated as secondary habitat. Wetlands and open water provide important summer habitat. Moose wade in open water to cool down, escape biting flies and feed on aquatic plants. The Shallow Open Water with Vegetation ecotype is a particularly attractive summer moose habitat and is listed as a primary habitat. Other wetlands such as fens (Riparian Marsh / Fen, Non-patterned Shrub Fen, Patterned Shrub Fen, and Graminoid Fen) are often associated with shallow water bodies and provide secondary habitat.

## **Beaver**

Beavers are closely associated with streams, ponds and lakes which provide escape cover, den sites (lodges or bank burrows) and food storage areas. These areas also provide summer food sources such as water lilies. As such, Open Water and Shallow Open Water with Vegetation are listed as primary habitat for beaver. Willows are an important food item for beavers in Labrador, particularly during the winter months. Willows are abundant in the Riparian Thicket ecotype, consequently, this ecotype is considered to be primary habitat for beaver. Riparian Marsh / Fen provides summer foods such as sedges and is also considered to be primary habitat. Although other ecotypes such as Hardwood Burn / Regeneration also produce abundant winter food in the form of willows, beavers typically do not forage far from water. In areas where terrestrial predators such as wolves and lynx are present, beaver may only forage up to 25 m from water. As such, only a very small proportion of these potential sources of food are utilized. Therefore this ecotype is listed as a tertiary habitat.

## **Wood Frog**

Wood frogs lay their eggs in small pools and ponds that are usually free of fish. The larvae develop in these water bodies and transform into adults in mid-summer. Adults forage in damp forest and shrub thickets surrounding the breeding sites. Adults are also present in wetland habitats associated with the breeding sites. In the RSA, Riparian Marsh / Fen, Non-patterned Shrub Fen, Patterned Shrub Fen, Graminoid Fen, and Shallow Open Water with Vegetation are considered to provide primary habitat for Wood Frogs since they provide breeding habitat and foraging habitat for both adults and larvae. Hardwood Forest, Mixedwood Forest, Black Spruce-Labrador Tea-Feathermoss, Black Spruce / Tamarack-Sphagnum Woodland, Riparian Thicket, Tamarack / Black Spruce-Feathermoss, and Open Water ecotypes provide secondary habitat. The terrestrial habitats provide foraging habitat for wood frogs as well as hibernation sites. Open water provides escape cover for adults and foraging habitat for larvae. However, areas of deep water often harbor predatory fish which make these areas dangerous for Wood Frogs.

## ELC Ecotype Designations for Wildlife Indicator Species Within the RSA

[illegible]

**Percentage of Primary, Secondary, and Tertiary Habitat of the RSA within the PDA for Wildlife Indicator Species Likely within the RSA**

<b>Species</b>	<b>Primary</b>	<b>Secondary</b>	<b>Tertiary</b>
Boreal Chickadee	1.4	3.4	1.0
Tennessee Warbler	2.1	5.0	0.9
Lincoln's Sparrow	6.0	3.3	0.9
Common Goldeneye	0	1.1	3.3
Common Loon	0.3	0	2.3
Canada Goose	5.7	0.3	2.3
Greater Yellowlegs	6.0	2.2	1.8
Spruce Grouse	1.2	3.8	0.3
Gray Jay	1.4	3.4	1.0
Northern Harrier	5.7	3.1	1.4
Osprey	0	1.2	3.3
Moose	1.8	2.4	0.2
Canada Lynx	1.7	3.4	1.0
American Marten	1.4	1.9	2.7
Porcupine	1.6	3.9	1.0
Snowshoe Hare	2.1	3.2	1.0
Beaver	0.3	0	2.3
Red Squirrel	1.4	1.9	2.7
Wood Frog	4.3	1.4	3.1

## ELC Ecotype Designations for Wildlife SOCC Likely within the RSA

ELC Ecotype	Olive-sided Flycatcher	Gray-cheeked Thrush	Rusty Blackbird	Common Nighthawk	Barrow's Goldeneye	Short-eared Owl
Alpine Heath	Tertiary	Primary	Tertiary	Secondary	Tertiary	Secondary
Hardwood Forest	Tertiary	Tertiary	Tertiary	Tertiary	Tertiary	Tertiary
Mixedwood Forest	Secondary	Tertiary	Tertiary	Tertiary	Secondary	Tertiary
Hardwood Burn / Regeneration	Primary	Tertiary	Tertiary	Primary	Tertiary	Secondary
Black Spruce-Labrador Tea-Feathermoss	Secondary	Secondary	Tertiary	Tertiary	Secondary	Tertiary
Softwood Burn / Regeneration	Primary	Secondary	Tertiary	Primary	Tertiary	Secondary
Black Spruce-Lichen	Secondary	Tertiary	Tertiary	Primary	Secondary	Tertiary
Black Spruce / Tamarack-Sphagnum Woodland	Secondary	Secondary	Secondary	Tertiary	Secondary	Tertiary
Riparian Thicket	Tertiary	Tertiary	Primary	Tertiary	Tertiary	Tertiary
Riparian Marsh / Fen	Tertiary	Tertiary	Tertiary	Tertiary	Tertiary	Primary
Non-Patterned Shrub Fen	Primary	Tertiary	Secondary	Tertiary	Tertiary	Primary
Tamarack / Black Spruce-Feathermoss (Water Track)	Tertiary	Tertiary	Primary	Tertiary	Tertiary	Tertiary
Patterned Shrub Fen	Primary	Tertiary	Secondary	Tertiary	Tertiary	Primary
Graminoid Fen	Tertiary	Tertiary	Secondary	Tertiary	Tertiary	Primary
Open Water	Tertiary	Tertiary	Tertiary	Tertiary	Secondary	Tertiary
Shallow Open Water with Vegetation	Tertiary	Tertiary	Tertiary	Tertiary	Tertiary	Tertiary
Exposed Earth / Anthropogenic	Tertiary	Tertiary	Tertiary	Primary	Tertiary	Primary