

APPENDIX Z

Key/Representative Birds and Wildlife Habitat Analysis



APPENDIX Z

The following provides context to the assignment of primary, secondary and tertiary habitat classifications for birds, wildlife, and species at risk (SAR)/species of conservation concern (SOCC) in relation to the availability of ELC habitat types found in the Project Regional Study Area (RSA). For the purpose of this assessment, the following was used to define primary, secondary and tertiary habitats:

- Primary habitat provides adequate quantity of species requirements of forage, breeding, and protection;
- Secondary habitat provides one or more of the species requirements (i.e., forage, breeding, and protection) or marginal amounts of all; and
- Tertiary habitat is considered marginal habitat providing a minimal quantity for species requirements. Habitats not considered to be primary or secondary habitat for a particular species are by default listed as tertiary.

Species characteristic of the region were selected, with an emphasis on those that are of social and economic importance or of conservation concern. ELC habitat types in the Study Area were identified as primary, secondary, and tertiary based on those species requirements (Table B-1, Table B-2).

Key or Representative Species of Birds and Other Wildlife

George River Caribou Herd

Approximately 34,000 km² of the George River Caribou Herd (GRCH) range occurs within the boreal forest, dominated by black spruce, white spruce and larch with a “continuous lichen carpet” (Schmelzer and Otto 2003). The summer ranges of the GRCH are typically shrub tundra, with minor components of sedge meadow, spruce tree stands, krummolz spruce and dwarf birch (Manseau et al. 1996). Calving ground of the GRCH includes the tundra of the Labrador Peninsula South of the Torngat Mountains (Bergerud et al. 2008). Female caribou use shrub tundra open habitats during the summer to avoid predators and insects, and may be joined by males during periods of intense insect activity (Bergerud and Luttich 2003). Primary Habitat for George River Caribou Herd in the Project Regional Study Area (RSA) includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest. Secondary habitats are riparian fen, northern ribbed fen, horizontal fen; moderately weathered rock barren; and slightly weathered rock barren. Tertiary habitats for George River Caribou Herd are water; human disturbance; and post fire burn/regeneration.

Black Bear

Black bear forage in various habitat types such as meadows, berry-dominated fields, and bogs depending on the time of year (Pelton 1999). Dens are often constructed using existing

blowdown or other coarse woody debris as the main structure, but crevices in rock formations are also used (Dennis et al. 1996). Black bear prefer areas with dense understory vegetation and spend the majority of their time in coniferous and deciduous forests, wetlands, and areas remote from humans (Pelton 1999). Primary habitat for black bear in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest. Secondary habitats are riparian fen, northern ribbed fen, horizontal fen; and post fire burn/regeneration. Tertiary habitats for black bear are water; human disturbance; moderately weathered rock barren, and slightly weathered rock barren.

Canada Lynx

During winter, lynx select complex multistory mature coniferous stands providing prey (*i.e.*, snowshoe hare (*Lepus americanus*)) and cover, while summer and denning habitat selection also include some younger forests with complex multistory (Moen et al. 2008, Squires et al. 2010, Simons-Legaard et al. 2013). Primary habitat for lynx in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and open spruce moss forest/closed spruce moss forest. Secondary habitats are shrub lichen barren and open lichen forest and post fire burn/regeneration. Tertiary habitats for lynx are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; moderately weathered rock barren, and slightly weathered rock barren.

American Marten

American marten require structural complexity of multistory mature coniferous forest (Smith and Schaefer 2002, Payer and Harrison 2003, Goose et al. 2005, Hearn et al. 2010). Forest structure complexity provides prey (such as red-backed voles (*s.n.*)) habitats, denning sites, thermoregulation, subnivean habitats, and protection from predators (Andruskiw et al. 2008, Godbout and Ouellet 2010, McLaren et al. 2013). Primary habitat for American marten in the RSA includes open spruce moss forest/closed spruce moss forest. Secondary habitats are flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and shrub lichen barren and open lichen forest. Tertiary habitats for American marten are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; post fire burn/regeneration; moderately weathered rock barren, and slightly weathered rock barren.

American Beaver

Beaver select habitat with availability preferred forage which consists of aquatic vegetation, particularly water lilies, and ericaceous shrubs in summer and alder (*Alnus* spp.) and birch (*Betula* spp.), followed by aspen and other hardwoods in winter (Northcott 1971). Beavers are closely associated with streams, ponds and lakes which provide escape cover and den sites such as lodges or bank burrows (Allen 1983). Primary habitat for beaver in the RSA includes water and flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. There are no secondary habitats for beaver in the study area. Tertiary habitats for beaver are riparian fen, northern ribbed fen, horizontal fen; open spruce moss forest/closed spruce moss forest;

shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration as they may provide foraging; moderately weathered rock barren, and slightly weathered rock barren.

Southern Red-backed Vole

Red-backed voles are associated with mature, moist forests (Simon *et al.* 1998). These mature forests provide forage (such as herbaceous vegetation, insects coniferous seeds, lichens, and fungi; Merritt and Merritt 1978) and downed woody debris as cover and breeding habitats (Fauteux *et al.* 2013). Primary habitat for Red-backed voles in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and open spruce moss forest/closed spruce moss forest. Secondary habitats are shrub lichen barren and open lichen forest. Tertiary habitats for Red-backed voles are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; post fire burn/regeneration; moderately weathered rock barren, and slightly weathered rock barren.

Canada Goose

Canada Goose is a migratory species that breeds in Labrador during the summer. Nesting habitats include lakes, ponds, marshes, muskegs, and wet hummocky areas with water nearby (Mowbray *et al.* 2002). Areas of open water provide resting and feeding habitat. Nests are often situated on small islands in pools in fens and bogs. They then move to brooding habitats which are generally wet, gradual banks of streams, ponds, rivers, and grassy meadows, aquatic ponds, and mud barrens for foraging and cover (Mowbray *et al.* 2002). Geese graze primarily on grasses and sedges (Mowbray *et al.* 2002). Primary habitat for Canada Goose in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats are water and riparian fen, northern ribbed fen, horizontal fen. Tertiary habitats for Canada Goose are open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Spruce Grouse

Spruce Grouse are found in coniferous stands as they feed primarily on coniferous needles, but also buds from shrubs and forbs, fungi, small arthropods, terrestrial snails, and grit (Boag and Schroeder 1992). Spruce Grouse appear to prefer young successional stands that are relatively dense especially at middle story which provides cover during foraging, roosting, and nesting, with the exception of male display sites (*i.e.*, drumming logs) (Boag and Schroeder 1992). Primary habitat for Spruce Grouse in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and open spruce moss forest/closed spruce moss forest;. Secondary habitats are riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; and post fire burn/regeneration. Tertiary habitats for Spruce Grouse are water, human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Greater Yellowlegs

Greater Yellowlegs is a migratory species that breeds in Labrador during the summer. They are associated with muskeg, wet bogs, wet bogs with small wooded islands, and coniferous forests with abundant clearings (Elphick and Tibbitts 1998). Nesting habitat types are frequently found at the base of coniferous trees near shrubby hummocks with cover and perching sites (Elphick and Tibbitts 1998). Greater Yellowlegs forage mainly on small aquatic and terrestrial invertebrates, small fish, frogs, and some seeds and berries (Elphick and Tibbitts 1998). Primary habitat for Greater Yellowlegs in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats are water; riparian fen, northern ribbed fen, horizontal fen; and open spruce moss forest/closed spruce moss forest. Tertiary habitats for Spruce Grouse are shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Tennessee Warbler

Tennessee Warblers are found in deciduous, mixed, and coniferous forests among open areas of boreal forest containing dense cover of shrubs and/or graminoids (Rimmer and McFarland 2012). The dense understory vegetation provides nesting habitat while the coniferous tree cover provides foraging habitat (Rimmer and McFarland 2012). Primary habitat for Tennessee Warbler in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats are open spruce moss forest/closed spruce moss forest; and post fire burn/regeneration. Tertiary habitats for Tennessee Warbler are water; riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Lincoln's Sparrow

Lincoln's Sparrow is a migratory species that breeds in Labrador during the summer. Lincoln's Sparrows are mostly found in wetlands (bogs and marshes) and riparian areas with a dense understory for cover and nesting habitats (Ammon 1995). They forage primarily on insects in dense understory during the breeding season (Ammon 1995). Primary habitat for Lincoln's Sparrow in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats are riparian fen, northern ribbed fen, horizontal fen. Tertiary habitats for Lincoln's Sparrow are water; open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Osprey

Osprey is a migratory species that breeds in Labrador during the summer. Osprey feed almost entirely on fish found in shallow water (Poole et al. 2002). Nests are stick structures with a wide base in open area for protection from predators and can be found in snags, treetops, cliffs, and anthropogenic platforms (Poole et al. 2002). Osprey nesting and feeding habitat are spatially

separate; consequently, no one habitat type can provide primary habitat and were not included in Table B-1. Secondary habitats include open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; and water. Tertiary habitats for Osprey include riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Species at Risk and Species of Conservation Concern

Little Brown Myotis

Little brown myotis roosts in decaying, live trees, or snags typically found in mature forest stands. In summer, they require suitable foraging areas and roosting sites such as south-facing cavity trees (Grindal 1999). There is limited information on bat distribution and biology in Labrador. The known maternal colonies in Labrador occur in buildings as natural maternal colonies are currently unknown (Broders et al. 2013). There is current no known hibernacula in Labrador (Broders et al. 2013). There is no primary habitat for little brown myotis in the RSA. Secondary habitats are open spruce moss forest/closed spruce moss forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren. Tertiary habitats for little brown myotis are water; riparian fen, northern ribbed fen, horizontal fen; flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; and shrub lichen barren and open lichen forest.

Least Weasel

The habitat of least weasel is closely tied to that of mouse and vole species as small mammals are a primary prey (Banfield 1974). The burrows of prey are often taken over and used by least weasel (Banfield 1974). A wide variety of habitats that include fields, meadows, riverbanks, parklands, mixed forests, and tundra may be used by the least weasel (Banfield 1974). Primary habitat for least weasel in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest; and post fire burn/regeneration. Secondary habitats are riparian fen, northern ribbed fen, horizontal fen. Tertiary habitats for least weasel are water; human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Pygmy Shrew

The pygmy shrew is found in a wide variety of habitat types in both coniferous and deciduous forest and wetlands, especially in grassy meadows and shrubby edges of bog and wet meadows (Banfield 1974). Leaf litter is important for this species for foraging for insects and other invertebrates, and decaying small mammals (Banfield 1974). Pygmy shrews make use of tunnels of other small mammals which providing cover (Banfield 1974). Primary habitat for pygmy shrew in the RSA includes open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest. Secondary habitats are flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Tertiary habitats for pygmy shrew are

water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

White-winged Scoter

White-winged Scoter migrates through the area and while overwintering along the coast of Newfoundland from western breeding grounds, thus will only discuss migration and foraging areas. During migration, White-winged Scoters are associated with inland freshwater habitats such as large lakes and rivers (Brown and Fredrickson 1997). They forage on aquatic and marine mollusks, crustaceans and insects with occasional plants and fish (Brown and Fredrickson 1997). Primary habitat for White-winged Scoter in the RSA includes water. Secondary habitats include riparian fen, northern ribbed fen, horizontal fen. Tertiary habitats for White-winged Scoter are flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

American Kestrel

American Kestrel is a migratory species that breeds in Labrador during the summer. American Kestrels are found in open to semi-open areas with short vegetation and sparse trees (Smallwood and Bird 2002). American Kestrels nest in tree cavities near edge habitats and in open areas (Smallwood and Bird 2002). They forage on mainly insect and other invertebrates as well as some small mammals and birds from perches (Smallwood and Bird 2002). Primary habitat for American Kestrel in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; and post fire burn/regeneration. There are no secondary habitats for American Kestrel. Tertiary habitats for American Kestrel are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Lesser Yellowlegs

Lesser Yellowlegs is a migratory species that may breed in Labrador during the summer. Lesser Yellowlegs finds breeding habitat in the open forest and forest/tundra transition habitats which include open woodlands, meadows and muskegs in the boreal ecosystem (Tibbitts and Moskoff 2014). They nest on dry ground of mossy hummocks near downed branches/logs under dense shrubs or small trees (Tibbitts and Moskoff 2014) Lesser Yellowlegs forage on a variety of aquatic and terrestrial invertebrates with occasional small fish and seeds while actively foraging in shallow freshwater lakes and shore edges (Tibbitts and Moskoff 2014). Primary habitat for Lesser Yellowlegs in the RSA includes riparian fen, northern ribbed fen, horizontal fen and flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats include water and open spruce moss forest/closed spruce moss forest. Tertiary habitats for Lesser Yellowlegs are shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Short-eared Owl

Short-eared Owl is a migratory species that breeds in Labrador during the summer. Short-eared Owls are associated with open areas such as meadows, marshes, bogs, and open woodland (Wiggins et al. 2006). They nest directly on the ground on dry sites (Wiggins et al. 2006). They prey on small mammals while flying low over open areas (Wiggins et al. 2006). Primary habitat for Short-eared Owl in the RSA includes fen and flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats include riparian fen, northern ribbed fen, horizontal fen; open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; moderately weathered rock barren; and slightly weathered rock barren. Tertiary habitats for Short-eared Owl are water; human disturbance; and post fire burn/regeneration.

Common Nighthawk

Common Nighthawk is a migratory species that breeds in Labrador during the summer. Common Nighthawk nest directly on the ground in coastal sand dunes and beaches, logged or slash/burned areas of forest, woodland clearings, prairies and plains, sagebrush and grassland habitat, open forests, rock outcrops, and flat gravel rooftops (Brigham et al. 2011). They are crepuscular, foraging almost entirely on flying insects during flight over 1 m from water or over 80m of the forest canopy (Brigham et al. 2011). Primary habitat for Common Nighthawk in the RSA includes shrub lichen barren and open lichen forest; human disturbance; and post fire burn/regeneration. Secondary habitats include flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Tertiary habitats for Common Nighthawk are water; riparian fen, northern ribbed fen, horizontal fen; open spruce moss forest/closed spruce moss forest; moderately weathered rock barren; and slightly weathered rock barren.

Olive-sided Flycatcher

Olive-sided Flycatcher is a migratory species that breeds in Labrador during the summer. Olive-sided Flycatchers are associated with edge habitats of coniferous forest and meadow or ponds, open forests, and disturbed areas such as burns (Altman and Sallabanks 2012). They nest in trees near horizontal tip with overhanging branch as cover (Altman and Sallabanks 2012). Olive-sided Flycatchers are known to forage almost entirely on flying insects from atop of tree and snags (Altman and Sallabanks 2012). Primary habitat for Olive-sided Flycatcher in the RSA includes open spruce moss forest/closed spruce moss forest; shrub lichen barren and open lichen forest; and post fire burn/regeneration. Secondary habitats include flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp. Tertiary habitats for Olive-sided Flycatcher are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Golden-crowned Kinglet

Golden-crowned Kinglet is a resident species and is most associated with remote boreal old-growth spruce-fir and subalpine forests, preferring dense forests during the breeding season

(Swanson et al. 2012). It may also be found in deciduous forests, and peat bogs with conifers and lower densities within logged or burned areas. Golden-crowned Kinglet nests in tops of coniferous trees near the trunk that offer cover (Swanson et al. 2012). They forage primarily on insects found in branches, tips, and bark of coniferous trees (Swanson et al. 2012). Primary habitat for Golden-crowned Kinglet in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and shrub lichen barren and open lichen forest. There are no secondary habitats in the RSA for Golden-crowned Kinglet. Tertiary habitats for Golden-crowned Kinglet are water; riparian fen, northern ribbed fen, horizontal fen; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Gray-cheeked Thrush

Gray-cheeked Thrush is a migratory species that breeds in Labrador during the summer. They are typically found in mature coniferous forests (Lowther et al. 2001). Gray-cheeked Thrush prefers to nest in dense shrubs understory of coniferous stands with a closed canopies (Lowther et al. 2001). Areas of krummholz vegetation associated with alpine areas can provide suitable nesting habitat. They forage on insects while on the ground (Lowther et al. 2001). Primary habitat for Gray-cheeked Thrush in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and open spruce moss forest/closed spruce moss forest. There are no secondary habitats in the RSA for Golden-crowned Kinglet. Tertiary habitats for Gray-cheeked Thrush are water; riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Nashville Warbler

Nashville Warbler is a migratory species that breeds in Labrador during the summer. At northerly latitudes, the Nashville Warbler is associated with coniferous stands of tamarack (*Larix laricina*) and spruce (*Picea spp.*) that are adjacent to bogs with Labrador Tea (Lowther and Williams 2011). They nest at habitat edges on the ground in well concealed locations under shrubs, thickets, or small trees in depressions of moss (Lowther and Williams 2011). This warbler forages on insects in tree branches (Lowther and Williams 2011). Primary habitat for Nashville Warbler in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp; open spruce moss forest/closed spruce moss forest; and post fire burn/regeneration. There are no secondary habitats in the RSA for Golden-crowned Kinglet. Tertiary habitats for Nashville Warbler are water; riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; human disturbance; moderately weathered rock barren; and slightly weathered rock barren.

Rusty Blackbird

Rusty Blackbird is a migratory species that breeds in Labrador during the summer. Rusty Blackbird are associated with wet coniferous forests, often found in fens, alder-willow bogs, muskegs, beaver ponds, and riparian areas (Avery 2013). They nest in dense trees and shrubs near water (Avery 2013). Rusty Blackbird forages primarily on insects and plants on the ground, particularly along pond, stream, and wetlands edges (Avery 2013). Primary habitat for Gray-cheeked Thrush in the RSA includes flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp and open spruce moss forest/closed spruce moss forest. There are no secondary habitats in the RSA for Golden-crowned Kinglet. Tertiary habitats for Gray-cheeked Thrush are water; riparian fen, northern ribbed fen, horizontal fen; shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.

Spring Peeper

Breeding habitat for spring peeper is widely varied as this species seems to breed almost anywhere that there is water present, although characteristically they are found to breed in temporary woodland ponds (Skelly 1996). For hibernation during the colder months this species seeks shelter under logs and loose bark. Past observations in Labrador included marsh areas (Bergman 1999). Primary habitat for spring peeper in the RSA includes riparian fen, northern ribbed fen, horizontal fen and flat bog, forested fen, shrubland, shrub swamp, forested swamp. Secondary habitats include water and open spruce moss forest/closed spruce moss forest. Tertiary habitats for spring peeper are shrub lichen barren and open lichen forest; human disturbance; post fire burn/regeneration; moderately weathered rock barren; and slightly weathered rock barren.



Table B-1 ELC Habitats for Key or Representative Birds and Wildlife Species in the RSA

ELC Habitat	Caribou (George River Herd)	Black Bear	Canada Lynx	American Marten	American Beaver	Red-backed Vole	Canada Goose	Spruce Grouse	Greater Yellowlegs	Tennessee Warbler	Lincoln's Sparrow
water	tertiary	tertiary	tertiary	tertiary	primary	tertiary	secondary	tertiary	secondary	tertiary	tertiary
riparian fen, northern ribbed fen, horizontal fen	secondary	secondary	tertiary	tertiary	tertiary	tertiary	secondary	secondary	secondary	tertiary	secondary
flat bog, forested bog, forested fen, shrubland, shrub swamp, forested swamp	primary	primary	primary	secondary	primary	primary	primary	primary	primary	primary	primary
open spruce moss forest/closed spruce moss forest	primary	primary	primary	primary	tertiary	primary	tertiary	primary	secondary	secondary	tertiary
shrub lichen barren and open lichen forest	primary	primary	secondary	secondary	tertiary	secondary	tertiary	secondary	tertiary	tertiary	tertiary
human disturbance	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary
post fire burn/regeneration	tertiary	secondary	secondary	tertiary	tertiary	tertiary	tertiary	secondary	tertiary	secondary	tertiary
moderately weathered rock barren	secondary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary
slightly weathered rock barren	secondary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary	tertiary



References

- Allen, A.W. 1983. Habitat Suitability Index Models: Beaver. US Fish and Wildlife Service, FWS/OBS-82/10.30 Revised.
- Altman, B. and R. Sallabanks. 2012. Olive-sided Flycatcher (*Contopus cooperi*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/502>. Accessed on: December 4, 2014.
- Ammon, Elisabeth M. 1995. Lincoln's Sparrow (*Melospiza lincolnii*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: The Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/191>. Accessed on: December 4, 2014.
- Andruskiw, M., J. M. Fryxell, I. D. Thompson, and J. A. Baker, 2008. Habitat-mediated variation in predation risk by the American marten. *Ecology*, 89: 2273–2280.
- Avery, M.L. 2013. Rusty Blackbird (*Euphagus carolinus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/200>. Accessed on: December 5, 2014.
- Banfield, A.W.F. 1974. The Mammals of Canada. Toronto: University of Toronto Press.
- Bergerud, T. and Luttich, S.N. 2003 Predation risk and optimal foraging trade-off in the demography and spacing of the George River Herd, 1958 to 1993. *Rangifer*, Special Issue No. 14: 169-191.
- Bergerud, A.T., Luttich, S.N., Camps, L., 2008. The Return of Caribou to Ungava. McGill-Queen's University Press, Montreal and Kingston.
- Bergman, C.M. 1999. Range Extension of Spring Peepers, *Pseudacris crucifer*, in Labrador. *Canadian Field-Naturalist* 113: 309-310.
- Boag, D. A. and M. A. Schroeder. 1992. Spruce Grouse (*Falcipecten canadensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/005>. Accessed on: December 3, 2014.
- Brigham, R. M., J. Ng, R.G. Poulin and S.D. Grindal. 2011. Common Nighthawk (*Chordeiles minor*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Available from: <http://bna.birds.cornell.edu/bna/species/213>. Accessed on: December 4, 2014.
- Broders, H.G., L.E. Burns, and S.C. McCarthy. 2013. First Record of the Northern Myotis (*Myotis septentrionalis*) from Labrador and Summer Distribution Records and Biology of Little Brown Bats (*Myotis lucifugus*) in Southern Labrador. *The Canadian Field-Naturalist* 127: 266-269.

- Brown, P.W. and L.H. Fredrickson. 1997. White-winged Scoter (*Melanitta fusca*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/274>. Accessed on: December 5, 2014.
- Dennis, W., S. Mahoney, and D. Snow. 1996. Ecology and Habitat Use of Black Bears in the Sepentine Lake Area of Western Newfoundland. A Cooperative Study of the Western Newfoundland Model Forest and the Newfoundland and Labrador Wildlife Division. Interim Report June 1993-August 1996.
- Elphick, C.S. and T.L. Tibbitts. 1998. Greater Yellowlegs (*Tringa melanoleuca*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/355>. Accessed on: December 4, 2014.
- Fauteux, D., M.J., Mazerolle, L. Imbeau, and P. Drapeau. 2013. Site Occupancy and Spatial Co-occurrence of Boreal Small Mammals are Favoured by Late-Decay Woody Debris. Canadian Journal of Forest Research 43: 419-427.
- Godbout, G. and J. Ouellet, 2010. Fine-scale habitat selection of American marten at the southern fringe of the boreal forest. Écoscience, 17: 175–185.
- Gosse, J.W., R. Cox, and S.W. Avery. 2005. Home-range Characteristics and Habitat Use by American Martens in Eastern Newfoundland. Journal of Mammalogy 86: 1156-1163.
- Grindal, S.D. 1999. Habitat use by bats, *Myotis spp.*, in western Newfoundland. Canadian Field-Naturalist, 113: 258-263.
- Hearn, B. J., D. J. Harrison, A. K. Fuller, C. G. Lundrigan, and W. J. Curran, 2010. Paradigm shifts in habitat ecology of threatened Newfoundland martens. Journal of Wildlife Management, 74: 719–728.
- Lowther, P.E., C.C. Rimmer, B. Kessel, S.L. Johnson and W.G. Ellison. 2001. Gray-cheeked Thrush (*Catharus minimus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/591>. Accessed on: December 5, 2014.
- Lowther, P.E. and J. M. Williams. 2011. Nashville Warbler (*Oreothlypis ruficapilla*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/205>. Accessed on: December 5, 2014.
- Manseau, M., Huot, J. and Crete, M. 1996. Effects of Summer Grazing by Caribou on Composition and Productivity of Vegetation: Community and Landscape Level. Journal of Ecology, 84 (4): 503-513.
- McLaren, B.E., P.T. Gammond, I.D. Thompson. 2013. Characteristics of the Boreal Mixedwood Forests Associated With the Use of Subnivean Access Points by American Martens. Ecoscience 20: 383-390.

- Merritt, J.F. and J.M. Merritt. 1978. Population ecology and energy relationships of *Clethrionomys gapperi* in a Colorado subalpine forest. *Journal of Mammalogy* 59: 576-598.
- Moen, R., C.L. Burdett, G.J. Niemi. 2008. Movement and Habitat Use of Canada Lynx During Denning in Minnesota. *Journal of Wildlife Management* 72: 1507-1513.
- Mowbray, T.B., C.R. Ely, J.S. Sedinger and R.E. Trost. 2002. Canada Goose (*Branta canadensis*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/682>. Accessed on: December 4, 2014.
- Northcott, T.H. 1971. Feeding habits of beaver in Newfoundland. *Oikos* 22: 407-410.
- Payer, D. and D. J. Harrison, 2003. Influence of forest structure on habitat use by American marten in an industrial forest. *Forest Ecology and Management*, 179: 145–156.
- Pelton, M.R., A.B. Coley, T.H. Eason, D.L. Doan Martinez, J.A. Pederson, F.T. Van Manen, and K.M. Weaver. 1999. American Black Bear Conservation Action Plan. Pages 144-156 in C. Servheen, S. Herrero, and B. Peyton, compilers. *Bears. Status survey and conservation action plan*. IUCN/SSC bear and polar bear specialist groups. IUCN, Gland, Switzerland and Cambridge, UK.
- Poole, A.F., R.O. Bierregaard and M.S. Martell. 2002. Osprey (*Pandion haliaetus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/683>. Accessed on: December 4, 2014.
- Rimmer, C. C. and K. P. Mcfarland. 2012. Tennessee Warbler (*Oreothlypis peregrina*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/350>. Accessed on: December 3, 2014.
- Schmelzer, I. and Otto, R. 2003. Winter range drift in the George River Caribou Herd: a response to summer forage limitation? *Rangifer*, Special Issue No. 14: 113-122
- Simon, N.P.P., Schwab, F.E., Baggs, E.M., Cowan, G.I., Cowan, Mc. T., 1998. Distribution of small mammals among successional and mature forest types in western Labrador. *Canadian Field Naturalist* 112, 441–445.
- Simons-Legaard, E.M., D.J., Harrison, W.B., Krohn, and J.H. Vashon. 2013. Canada Lynx Occurrence and Forest Management in the Acadian Forest. *Journal of Wildlife Management* 77: 565-578.
- Skelly, D.K. 1996. Pond Drying, Predators, and the Distribution of *Pseudacris* Tadpoles. *Copeia* 3: 599-605.

- Smallwood, J.A. and D.M. Bird. 2002. American Kestrel (*Falco sparverius*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/602>. Accessed on: December 5, 2014.
- Smith, A. C. and J. A. Schaefer, 2002. Home-range size and habitat selection by American marten (*Martes americana*) in Labrador. Canadian Journal of Zoology, 80: 1602–1609.
- Squires, J.R., N.J. Decesare, J.A. Kolbe, and L.F. Ruggiero. 2010. Seasonal Resource Selection of Canada Lynx in Managed Forests of the Northern Rocky Mountains. Journal of Wildlife Management 74: 1648-1660.
- Swanson, D.L., J.L. Ingold and R. Galati. 2012. Golden-crowned Kinglet (*Regulus satrapa*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/301>. Accessed on: December 5, 2014.
- Tibbitts, T.L. and W. Moskoff. 2014. Lesser Yellowlegs (*Tringa flavipes*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. Available from: <http://bna.birds.cornell.edu/bna/species/427>. Accessed on: December 5, 2014.
- Wiggins, D. A., D.W. Holt and S.M. Leasure. 2006. Short-eared Owl (*Asio flammeus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Available from: <http://bna.birds.cornell.edu/bna/species/062>. Accessed on: December 5, 2014.

