

Wetland and Coastal Wildlife Habitats in New Brunswick

Department of Energy and Resource Development
November 2017

TABLE OF CONTENTS

Introduction..... 1

Wetland and Coastal Feature Inventory 1

Wetland and Coastal Habitats..... 3

 Wetland Habitats..... 6

 Wet Meadow / Tidal Marsh 6

 Emergent Shallow Marsh 7

 Deep Marsh / Aquatic Bed 8

 Bog 10

 Fen..... 12

 Alder or Shrub Swamp 12

 Marsh Complex (Water Near and Water Far)..... 14

 Wet Shrub Complex (Water Near and Water Far)..... 15

 Cedar Swamp 16

 Floodplain Forest 16

 Vernal Pool..... 17

 Wetland Margin 17

 Beaver Pond 17

 Coastal Habitats..... 18

 Salt Marsh 18

 Beach..... 19

 Dune 19

 Mud Flat 20

 Rocky Shore..... 21

References..... 22

Appendix 1. Habitat relationships of species associated with wetlands and coastal areas 23

INTRODUCTION

The New Brunswick *Crown Lands and Forests Act* (1980) provides for the integrated management of the resources of Crown land, which includes habitat for the maintenance of fish and wildlife populations. The *New Brunswick Biodiversity Strategy* identifies healthy and resilient native ecosystems and viable populations of native species among its conservation outcomes (PNB 2009). Goals for the management of New Brunswick Crown land include maintaining the natural diversity and ecological characteristics of the Acadian forest and providing the habitat necessary to support populations of native wildlife at desired levels. To that end, the habitat requirements of vertebrate species associated with old forest were described in the document *Old Forest Communities and Old-forest Wildlife Habitats in New Brunswick* (NB ERD 2017).

The *Coastal Areas Protection Policy for New Brunswick* and the *New Brunswick Wetlands Conservation Policy* identify coastal areas and wetlands as unique and valuable habitat for wildlife (NB DELG 2002, NB DNRE/DELG 2002). There are 197 vertebrate species associated with coastal and wetland areas. The intent here is to identify their habitat requirements, to describe the suite of habitats needed to support them, and to define those habitats such that they can be identified from the Province's aerial inventory.

This document presents our current understanding of the habitat relationships of wetland and coastal vertebrates of New Brunswick. It is intended as a tool to assess habitat abundance across broad spatial and temporal scales and to help set management targets for these ecosystems.

WETLAND AND COASTAL FEATURE INVENTORY

The building blocks for describing coastal and wetland habitats are the inventory attributes *Wetland Class* (WC) and *Vegetation Type* (VT). WC is assigned to an entire wetland or to major sections of one, and describes the overall character of the wetland, or its general type. The values for WC are the terms typically used to describe a wetland in 1 or 2 words (Table 1). VT describes characteristics of the dominant vegetation, such as trees, shrubs or emergents (Table 2). It is applied at a finer resolution than WC, and hence can identify "islands" within a wetland that are different in character. Further resolution is available from *Vegetation Cover* (VC), an index to the proportion of the feature that is covered with vegetation, and from *Impoundment Modifier* (IM), an indicator of whether, and how, a feature is impounded (beaver pond (BP), DU impoundment (DU), and other man-made impoundment (MI)).

To address spatial criteria of wetland habitats, open-water and forest polygons were buffered 30 m into wetland polygons, and wetland polygons were buffered 30 m into the forest. Four spatial variables were calculated and applied to either wetland or forest area: (1) *Water30mB* was applied to wetland area in the open-water buffer, (2) *Water30mP* was applied to entire wetland polygons that overlapped with the open-water buffer, (3) *Wet30mB* was applied to forest area in wetland buffer, and (4) *For30mB* was applied to wetland area in the forest buffer.

The highest-level classification of the Province's land inventory assigns polygons to 1 of 4 *Categories*: Forest, Wetland (includes coastal areas), Non-forest Upland, and Water Body. Most of the area considered to be wetland or coastal habitat is classified as Wetland in the land inventory; however, a number of wet conditions classified as Forest are also important. To address this, 4 new *Wetland Classes* were created for forest polygons: Wet Hardwood (WetHW), Wet Cedar (WetCE), Wet Black

Spruce or Larch (WetBSTL) and Wet Shrub (WetSHRB). Criteria are that they be within certain ranges of overstory composition, and have site-condition indicators of seasonally saturated, poorly drained, or “borderline forested wetland”. The latter value indicates softwood-dominated conditions that very nearly meet the conditions for being classified as wetland rather than as forest.

Table 1. Description of values for the wetland and coastal inventory feature attribute Wetland Class (WC).

WC	Description
AB	Aquatic Bed - wetlands dominated by permanent shallow standing water (<2 metres in depth during mid-summer), and which may contain plants that grow on or below the surface of the water
BC	Beach - unconsolidated deposits of sand, gravel, cobble and boulders on the shores of freshwater or coastal water bodies
BO	Bog - wetlands typically covered by peat, which have a saturated water regime, a closed drainage system, and are frequently covered by ericaceous shrubs, sedges, sphagnum moss or black spruce
CM	Coastal Marsh - wetlands dominated by rooted herbaceous plants that drain directly into coastal waters and have the potential to be at least partially inundated with salt or brackish water
DU	Dune – raised and unconsolidated sand or gravel deposits capping beach environments which may be vegetated with salt-tolerant vegetation, such as marram grass, or with ericaceous vegetation or trees
FE	Fen - wetlands typically covered by peat which have a saturated water regime, an open drainage system and are typically covered by sedges
FM	Freshwater Marsh - wetlands dominated by rooted herbaceous plants; includes most typical marshes as well as seasonally flooded wet meadows
FW	Forested Wetland - forested areas with abundant standing water; includes the seasonally flooded forest of the Saint John River Valley and other floodplains
RK	Rocky Shore - areas of bedrock exposed between the high and low tide marks on coastal shores; are often vegetated with rockweed and other plants that attach to the rock substrate
SB	Shrub Wetland - wetlands dominated by a variety of shrubs; includes shrub-dominated marshes and alder thickets
TF	Tidal Flat - areas of mud and sandy mud between the high and low tide marks which can be vegetated with various types of seaweed or sea grasses such as eel grass

Table 2. Description of values for the wetland and coastal inventory feature attribute Vegetation Type (VT).

VT	Description
AW	Alders - alder stands or swales that are associated with a watercourse or a wetland
EV	Emergent Vegetation - common plants include cattails, bur-reeds, sedges, rushes and grasses like bluejoint and cordgrass, flowering herbaceous plants, goldenrods and asters
FH	Forested Hardwood Vegetation - hardwood tree species such as silver maple
FS	Forested Softwood Vegetation - softwood tree species such as cedar, tamarack and black spruce
FU	Feature Unvegetated - coastal features or shoreline features that do not have visible vegetation
FV	Feature Vegetated - coastal or shoreline features that have visible vegetation
OV	Open-water Vegetated - open water with vegetation present on top of or near the water surface
OW	Open-water Unvegetated - open water with no vegetation present
SV	Shrub Vegetation (except alder) - dominant shrubs are willows, dogwoods, meadow sweet, bog rosemary, leatherleaf, Labrador tea and saplings of trees such as red maple

WETLAND AND COASTAL HABITATS

The habitat requirements of the Province’s coastal and wetland species were assembled from literature search and review by local experts. Species were assigned to all possible combinations of coastal and wetland attributes – WC, VT, VC, IM and the 4 spatial ones.

Habitats were then defined by grouping species together based on their assignments to habitat attributes. Building habitats upwards from the requirements of individual species leads to a fragmenting of the original attributes; for example, a particular value of *Wetland Class* could be assigned to more than one habitat type, with the split between types being on *Vegetation Type* or *Vegetation Cover*. The process also leads to some overlap in definition among habitats. Coastal and wetland habitat definitions are given in Table 3 and Table 4, followed by a description of each type. The habitat associations for all coastal and wetland vertebrates are provided in Appendix 1.

Table 3. Compositional and spatial criteria for wetland habitats in New Brunswick. (See Table 4 for footnotes)

Habitat Type	Compositional and Spatial Criteria							
	Land Category	Wetland Class ¹	Vegetation Type ²	VC ³	BP ⁴ or CO ⁵	Water30mB ⁶	Water30mP ⁷	Wet30mB ⁸ or For30mB ⁹
Wet meadow / Tidal marsh	Wetland	FM	EV	5	--	--	--	--
	Wetland	CM	FV	4, 5	--	--	--	--
	Wetland	FM	SV	2 - 5	--	--	--	--
Emergent shallow marsh	Wetland	FM	EV	1 - 4	--	--	--	--
Deep marsh / Aquatic bed	Wetland	AB	EV, FV, OV, OW	1 - 4	--	--	--	--
	Wetland	FM	FV, OV, OW	1 - 4	--	--	--	--
Bog – Open	Wetland	BO, FE	EV	--	--	--	--	--
Bog – Pond	Wetland	BO, FE	OV, OW	--	--	--	--	--
Bog – Shrub	Wetland	BO, FE	AW, SV	--	--	--	--	--
Bog - Partially treed	Wetland	BO, FE	FS	1 - 4	--	--	--	--
Bog - Fully treed	Wetland	BO, FE	FS	5	--	--	--	--
	Wetland	FW	FS	--	--	--	--	--
	Forest	WetBSTL ¹⁰	--	--	--	--	--	--
Bog – Coastal	Wetland	BO, FE	--	--	CO	--	--	--
Fen	Wetland	FE	--	--	--	--	--	--
Alder or shrub wetland	Wetland	SB	SV, AW, FS, FH, EV	--	--	--	--	--
	Wetland	FM	AW	--	--	--	--	--
	Forest	WetSHRB ¹¹	--	--	--	--	--	--
Marsh complex – Water near	Wetland	FM, CM, AB	EV, FU, FV, OW	5	--	Yes	--	--
	Wetland	CM, AB, FE, FW	EV, FV, OV	5	--	Yes	--	--
	Wetland	SB	EV	5	--	Yes	--	--
Marsh complex – Water far	Wetland	FM, CM, AB	EV, FU, FV, OW	5	--	--	Yes	--
	Wetland	CM, AB, FE, FW	EV, FV, OV	5	--	--	Yes	--
	Wetland	SB	EV	5	--	--	Yes	--
Wet shrub complex - Water near	Wetland	FE, FM, SB	SV	5	--	Yes	--	--
Wet shrub complex - Water far	Wetland	FE, FM, SB	SV	5	--	--	Yes	--
Beaver Pond	Wetland	AB, FE, FW, FM, SB	--	--	Yes	--	--	--
Wetland margin	Wetland	Various ¹²	Various ¹²	1 - 4	--	--	--	Yes
	Forest	Any forest	--	--	--	--	--	Yes
Floodplain forest ¹³	Wetland	FW	FH	--	--	--	--	--
	Forest	WetHW ¹⁴	--	--	--	--	--	--
Cedar swamp	Forest	WetCE ¹⁵	--	--	--	--	--	--

Table 4. Compositional and spatial criteria for coastal habitats in New Brunswick

Habitat Type	Compositional and Spatial Criteria							
	Land Category	Wetland Class ¹	Vegetation Type ²	VC ³	BP ⁴ or CO ⁵	Water30mB ⁶	Water30mP ⁷	Wet30mB ⁸ or For30mB ⁹
Salt marsh	Wetland	CM	FV	--	--	--	--	--
Beach	Wetland	BC, DU	FU, FV	1, 2	--	--	--	--
Dune	Wetland	BC, DU	FU, FV	3 - 5	--	--	--	--
Mud flat	Wetland	TF	--	--	--	--	--	--
Rocky shore	Wetland	RK	--	--	--	--	--	--

¹ Wetland Class: See Table 1

² Vegetation Type: See Table 2

³ Vegetation Cover: 1 through 5 for <5%, 5-25%, 26-75%, 76-95% and >95% vegetation cover, respectively

⁴ Beaver pond: wetland area is part of a pond formed by beaver activity

⁵ Coastal: feature is within 500 m of coast

⁶ Water30mB: wetland area within 30-m buffer applied to open water

⁷ Water30mP: entire wetland polygons that overlap with 30-m buffer applied to open water

⁸ Wet30mB: forest area within 30-m buffer applied to wetlands

⁹ For30mB: wetland area within 30-m buffer applied to forest

^{10, 11, 14, 15} WetBSTL, WetSHRB, WetHW and WethW: forest that is seasonally saturated, poorly drained, or that very nearly meets the criteria to be classified as a wetland, and that is dominated by black spruce or larch (WetBSTL), by shrub species (WetSHRB), by hardwood species (WetHW), or by cedar (WetCE)

¹² Wetland margin: wetland area in Wetland margin habitat meets the WC and VT criteria of Emergent shallow marsh or Deep marsh/Aquatic bed

¹³ Floodplain forest: Assessed area is reduced by removing area ≥ 500 m from a waterbody or ≤ 500 m from a bog or fen, unless within 2008 flood line

Wetland Habitats

Wet Meadow / Tidal Marsh

Wet Meadow / Tidal Marsh Habitat includes high coastal marsh and emergent (seasonally flooded) floodplain wetlands dominated by cordgrass (*Spartina*) and adjacent idle fields and pasture. Its distribution is closely tied to that of cordgrass. It is most abundant on the coast and in the lower Saint John river floodplain. Species of high conservation concern found in this habitat type include yellow rail, short-eared owl and bobolink. Forty-two species are strongly associated with this habitat, of which 31 are considered common (Table 5). There are 45K ha of Wet Meadow / Tidal Marsh Habitat in New Brunswick.

Table 5. Vertebrate species associated with Wet Meadow / Tidal Marsh Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Sub-habitat	Uncommon	Min Patch Size
MEADOW VOLE	Breeding			None
MUSKRAT	Breeding			None
MEADOW JUMPING MOUSE	Breeding			None
EASTERN COYOTE	Breeding			>20
RED FOX	Breeding			>20
ERMINE	Breeding			>5
AMERICAN MINK	Breeding			>5
STRIPED SKUNK	Breeding			>5
SNOW GOOSE	Migrant		Yes	>20
AMERICAN WIGEON	Breeding			None
AMERICAN BLACK DUCK	Breeding	Beaver pond		None
GREEN-WINGED TEAL	Breeding	Beaver pond		None
COMMON GOLDENEYE	Breeding	Beaver pond		None
HOODED MERGANSER	Breeding	Beaver pond		None
AMERICAN BITTERN	Breeding			>5
GREAT BLUE HERON	Breeding			None
NORTHERN HARRIER	Breeding			>20
ROUGH-LEGGED HAWK	Overwinter		Yes	>5
AMERICAN KESTREL	Breeding			>20
YELLOW RAIL	Breeding		Yes	>5
SANDHILL CRANE	Breeding		Yes	>20
BLACK-BELLIED PLOVER	Migrant			>20
AMERICAN GOLDEN PLOVER	Migrant			>20
GREATER YELLOWLEGS	Migrant			>5
WHIMBREL	Migrant			na
LEAST SANDPIPER	Migrant			na
PECTORAL SANDPIPER	Migrant			na
WILSON'S PHALAROPE	Breeding		Yes	None
SNOWY OWL	Overwinter		Yes	>20
SHORT-EARED OWL	Breeding		Yes	>20
NORTHERN SHRIKE	Overwinter		Yes	>20
PURPLE MARTIN	Breeding		Yes	None
SEDGE WREN	Breeding		Yes	None

Species	Population	Sub-habitat	Uncommon	Min Patch Size
AMERICAN PIPIT	Migrant			None
SAVANNAH SPARROW	Breeding			None
NELSON'S SPARROW	Breeding			>20
SWAMP SPARROW	Breeding			None
BOBOLINK	Breeding		Yes	None
RED-WINGED BLACKBIRD	Breeding			None
AMERICAN TOAD	Breeding			None
WOOD FROG	Breeding			None
NORTHERN LEOPARD FROG	Breeding			None

Emergent Shallow Marsh

Emergent Shallow Marsh Habitat maintains water during the growing season and is dominated by rooted emergent vegetation such as cattails, freshwater cordgrass, bulrush, sedges and reeds. Emergent shallow marshes are intermediate in flood duration and water depth between seasonally flooded meadows and shallow open-water environments. The large wetland complexes along the lower Saint John River include a significant component of emergent shallow marsh, much of which is impounded. Fifty-three species are strongly associated with this type, of which 38 are considered common (Table 6). There are 21K ha of Emergent Shallow Marsh Habitat in New Brunswick.

Table 6. Vertebrate species associated with Emergent Shallow Marsh Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Sub-habitat	Uncommon	Min Patch Size
WATER SHREW	Breeding			None
SILVER-HAIRED BAT	Breeding		Yes	na
BEAVER	Breeding	Beaver pond		None
MEADOW VOLE	Breeding			None
MUSKRAT	Breeding			None
SOUTHERN BOG LEMMING	Breeding			None
MEADOW JUMPING MOUSE	Breeding			None
RACCOON	Breeding			>20
AMERICAN MINK	Breeding			>5
RIVER OTTER	Breeding			>20
CANADA GOOSE	Breeding			None
WOOD DUCK	Breeding			None
GADWALL	Breeding		Yes	None
AMERICAN WIGEON	Breeding			None
AMERICAN BLACK DUCK	Breeding			None
MALLARD	Breeding			None
BLUE-WINGED TEAL	Breeding			None
NORTHERN SHOVELER	Breeding		Yes	None
NORTHERN PINTAIL	Breeding			None
GREEN-WINGED TEAL	Breeding			None
COMMON GOLDENEYE	Breeding			None
HOODED MERGANSER	Breeding			None

Species	Population	Sub-habitat	Uncommon	Min Patch Size
RUDDY DUCK	Breeding		Yes	>5
RUDDY DUCK	Migrant		Yes	>5
PIED-BILLED GREBE	Breeding			>5
AMERICAN BITTERN	Breeding			>5
LEAST BITTERN	Breeding		Yes	>5
GREAT BLUE HERON	Breeding			None
GREEN HERON	Breeding		Yes	None
BLACK-CROWNED NIGHT-HERON	Breeding			None
NORTHERN HARRIER	Breeding			>20
VIRGINIA RAIL	Breeding		Yes	>5
SORA	Breeding			None
COMMON GALLINULE	Breeding		Yes	None
SANDHILL CRANE	Breeding		Yes	>20
WILSON'S PHALAROPE	Breeding		Yes	None
BLACK TERN	Breeding		Yes	>20
WILLOW FLYCATCHER	Breeding		Yes	None
EASTERN KINGBIRD	Breeding			>5
PURPLE MARTIN	Breeding		Yes	None
MARSH WREN	Breeding		Yes	>5
SWAMP SPARROW	Breeding			None
RED-WINGED BLACKBIRD	Breeding			None
EASTERN PAINTED TURTLE	Breeding			None
COMMON SNAPPING TURTLE	Breeding			>5
WOOD TURTLE	Breeding	Beaver pond		None
AMERICAN TOAD	Breeding			None
SPRING PEEPER	Breeding			None
GRAY TREEFROG	Breeding		Yes	None
BULLFROG	Breeding			None
GREEN FROG	Breeding			None
MINK FROG	Breeding			None
WOOD FROG	Breeding			None
NORTHERN LEOPARD FROG	Breeding			None

Deep Marsh / Aquatic Bed

Deep Marsh / Aquatic Bed Habitat includes can include emergent wetlands, shrub wetlands, aquatic beds, and brackish marshes typical of floodplain or dikeland soils that are permanently or usually flooded. Emergent vegetation is limited and floating-leaved or submerged species tend to dominate. Water depth is generally less than 2 metres, with aquatic beds being the deepest. This habitat can occur in isolated depressions, along lakes or rivers, or as part of wetland complexes. Active management of wetlands has increased its occurrence in the Province. Forty-five species are strongly associated with this type, of which 31 are considered common (Table 7). There are 8,100 ha of Deep Marsh / Aquatic Bed Habitat in New Brunswick.

Table 7. Vertebrate species associated with Deep Marsh / Aquatic Bed Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
SILVER-HAIRED BAT	Breeding	Yes	na
BEAVER	Breeding		None
MUSKRAT	Breeding		None
RACCOON	Breeding		>20
AMERICAN MINK	Breeding		>5
RIVER OTTER	Breeding		>20
CANADA GOOSE	Breeding		None
WOOD DUCK	Breeding		None
GADWALL	Breeding	Yes	None
AMERICAN WIGEON	Breeding		None
AMERICAN BLACK DUCK	Breeding		None
MALLARD	Breeding		None
BLUE-WINGED TEAL	Breeding		None
NORTHERN SHOVELER	Breeding	Yes	None
NORTHERN PINTAIL	Breeding		None
GREEN-WINGED TEAL	Breeding		None
RING-NECKED DUCK	Breeding		None
GREATER SCAUP	Migrant	Yes	>20
LESSER SCAUP	Breeding	Yes	None
COMMON GOLDENEYE	Breeding		None
HOODED MERGANSER	Breeding		None
RUDDY DUCK	Breeding	Yes	>5
	Migrant	Yes	>5
PIED-BILLED GREBE	Breeding		>5
AMERICAN BITTERN	Breeding		>5
LEAST BITTERN	Breeding	Yes	>5
GREAT BLUE HERON	Breeding		None
GREEN HERON	Breeding	Yes	None
OSPREY	Breeding		>20
VIRGINIA RAIL	Breeding	Yes	>5
SORA	Breeding		None
COMMON GALLINULE	Breeding	Yes	None
AMERICAN COOT	Breeding	Yes	None
BLACK TERN	Breeding	Yes	>20
COMMON TERN	Breeding		None
BELTED KINGFISHER	Breeding		None
WILLOW FLYCATCHER	Breeding	Yes	None
EASTERN KINGBIRD	Breeding		>5
PURPLE MARTIN	Breeding	Yes	None
EASTERN PAINTED TURTLE	Breeding		None

Species	Population	Uncommon	Min Patch Size
COMMON SNAPPING TURTLE	Breeding		>5
RED-SPOTTED NEWT	Breeding		None
BULLFROG	Breeding		None
GREEN FROG	Breeding		None
MINK FROG	Breeding		None
NORTHERN LEOPARD FROG	Breeding		None

Bog

Bog Habitats have saturated, closed and acidic water regimes with varying depths of decaying organic matter (peat). Sub-habitats are distinguished by dominant vegetative or other cover, or by location: sphagnum moss (Open); sedges and sphagnum moss (Sedge); ericaceous shrubs (Shrub); black spruce and ericaceous shrubs (Partially Treed); black spruce (Fully Treed); open water (Pond); and Coastal. The distribution of bogs is closely related to topography with most found within the Eastern Lowland Ecoregion of New Brunswick. Forty species are strongly associated with these types, of which 25 are considered common (Table 8). There are 303K ha of Bog Habitat in New Brunswick.

Table 8. Vertebrate species associated with Bog Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Sub-habitat	Uncommon	Min Patch Size
WATER SHREW	Breeding	Sedge		None
		Part Treed		
SILVER-HAIRED BAT	Breeding		Yes	na
DEER MOUSE	Breeding	Shrub		None
MEADOW VOLE	Breeding	Sedge		None
SOUTHERN BOG LEMMING	Breeding	Sedge		None
		Part Treed		
		Full Treed		
NORTHERN BOG LEMMING	Breeding	Open	Yes	None
		Sedge		
		Shrub		
		Part Treed		
		Full Treed		
MEADOW JUMPING MOUSE	Breeding	Sedge		None
EASTERN COYOTE	Breeding			>20
RED FOX	Breeding			>20
ERMINE	Breeding	Sedge		
		Shrub		
		Part Treed		
		Full Treed		
NORTHERN PINTAIL	Breeding	Coastal		None
NORTHERN HARRIER	Breeding			>20
ROUGH-LEGGED HAWK	Overwinter		Yes	>5
YELLOW RAIL	Breeding	Sedge	Yes	>5
SANDHILL CRANE	Breeding		Yes	>20

Species	Population	Sub-habitat	Uncommon	Min Patch Size
SOLITARY SANDPIPER	Breeding	Pond	Yes	>20
		Shrub		
		Part Treed		
	Migrant	Shrub	Yes	na
Part Treed				
GREATER YELLOWLEGS	Migrant	Pond		>5
UPLAND SANDPIPER	Breeding		Yes	
ESKIMO CURLEW	Migrant	Coastal	Yes	na
WHIMBREL	Migrant	Open		na
		Pond		
		Sedge		
		Shrub		
		Part Treed		
SNOWY OWL	Overwinter		Yes	>20
SHORT-EARED OWL	Breeding	Open	Yes	>20
		Pond		
		Sedge		
		Shrub		
AMERICAN THREE-TOED WOODPECKER	Breeding	Part Treed	Yes	>5
		Full Treed		
OLIVE-SIDED FLYCATCHER	Breeding	Part Treed		>5
		Full Treed		
YELLOW-BELLIED FLYCATCHER	Breeding	Part Treed		None
		Full Treed		
GRAY JAY	Breeding	Part Treed		>5
		Full Treed		
SEDGE WREN	Breeding	Sedge	Yes	None
RUBY-CROWNED KINGLET	Breeding	Part Treed		None
		Full Treed		
HERMIT THRUSH	Breeding	Part Treed		None
		Full Treed		
TENNESSEE WARBLER	Breeding	Part Treed		None
		Full Treed		
PALM WARBLER	Breeding	Shrub		>5
		Part Treed		
		Full Treed		
SAVANNAH SPARROW	Breeding	Sedge		None
CANADA WARBLER	Breeding	Part Treed		None
		Full Treed		
LINCOLN'S SPARROW	Breeding	Shrub		None
		Part Treed		
		Full Treed		
SWAMP SPARROW	Breeding	Shrub		None
RUSTY BLACKBIRD	Breeding	Shrub	Yes	None
		Part Treed		

Species	Population	Sub-habitat	Uncommon	Min Patch Size
FOUR-TOED SALAMANDER	Breeding	Open	Yes	None
		Shrub		
		Part Treed		
GRAY TREEFROG	Breeding	Part Treed	Yes	None
		Full Treed		
MINK FROG	Breeding	Pond		None
PICKEREL FROG	Breeding	Pond		None

Fen

Fen Habitat has a saturated but open drainage system with varying depths of decaying organic matter (peat). Fens may be associated with bogs, but not necessarily so. They have contact with flowing water with a mineral substrate, and the lateral flow tends to reduce their acidity relative to that of bogs. Typical vegetation is sphagnum moss, sedges, ericaceous shrubs and black spruce. However, fens can be associated with a wide range of nutrient conditions and vegetation patterns vary accordingly. On sites with rich ground water inputs, unique plant assemblages can occur. Although many of the species associated with Bog Habitats will also use fens, there are 3 species associated with Fen Habitat that do not use bogs (Table 9). There are 61K ha of Fen Habitat in New Brunswick.

Table 9. Vertebrate species associated with Fen Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
MUSKRAT	Breeding	None
RIVER OTTER	Breeding	>20
GREATER YELLOWLEGS	Migrating	>5

Alder or Shrub Swamp

Alder or Shrub Swamp Habitat is composed of wetlands that support tall shrubs or alders and that are not associated with bogs or fens. Shrub swamps are often located along streams or small rivers, and within floodplain wetland complexes. Forty-five vertebrates are strongly associated with this habitat type, of which 36 are considered common (Table 10). There are 149K of Alder or Shrub Swamp Habitat in New Brunswick.

Table 10. Vertebrate species associated with Alder or Shrub Wetland Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Sub-habitat	Uncommon	Min Patch Size
WATER SHREW	Breeding			None
SILVER-HAIRED BAT	Breeding		Yes	na
DEER MOUSE	Breeding			None
MUSKRAT	Breeding			None
MEADOW JUMPING MOUSE	Breeding			None
EASTERN COYOTE	Breeding			>20
RED FOX	Breeding			>20
AMERICAN BLACK BEAR	Breeding			>20
ERMINE	Breeding			>5

Species	Population	Sub-habitat	Uncommon	Min Patch Size
AMERICAN MINK	Breeding			>5
RIVER OTTER	Breeding			>20
AMERICAN BLACK DUCK	Breeding	Beaver pond		None
GREEN-WINGED TEAL	Breeding	Beaver pond		None
COMMON GOLDENEYE	Breeding	Beaver pond		None
HOODED MERGANSER	Breeding	Beaver pond		None
GREEN HERON	Breeding		Yes	None
BLACK-CROWNED NIGHT-HERON	Breeding			None
NORTHERN HARRIER	Breeding			>20
AMERICAN WOODCOCK	Migrant			na
	Breeding			None
BLACK-BILLED CUCKOO	Breeding			None
ALDER FLYCATCHER	Breeding			None
WILLOW FLYCATCHER	Breeding		Yes	None
EASTERN KINGBIRD	Breeding			>5
NORTHERN SHRIKE	Overwinter		Yes	>20
PURPLE MARTIN	Breeding		Yes	None
VEERY	Breeding			None
AMERICAN ROBIN	Breeding			None
GRAY CATBIRD	Breeding			None
BROWN THRASHER	Breeding		Yes	None
CEDAR WAXWING	Breeding			None
NORTHERN WATERTHRUSH	Breeding			None
COMMON YELLOWTHROAT	Breeding			None
YELLOW WARBLER	Breeding			None
CANADA WARBLER	Breeding			None
WILSON'S WARBLER	Breeding			None
AMERICAN TREE SPARROW	Overwinter			na
SWAMP SPARROW	Breeding			None
RED-WINGED BLACKBIRD	Breeding			None
RUSTY BLACKBIRD	Breeding	Beaver pond	Yes	None
COMMON GRACKLE	Breeding			None
COMMON REDPOLL	Overwinter			None
AMERICAN GOLDFINCH	Breeding			None
FOUR-TOED SALAMANDER	Breeding		Yes	None
AMERICAN TOAD	Breeding			None
GRAY TREEFROG	Breeding		Yes	None

Marsh Complex (Water Near and Water Far)

The two Marsh Complex Habitats are herbaceous wetlands with spatial relationships to open water and almost complete vegetative cover. They include freshwater and coastal marshes, aquatic beds, and some fen and shrub wetlands, and are included here as discrete habitats in recognition of the unique ecological value of marshes in close proximity to open water.

The “Water Near” version of the habitat includes only the area within 30 m of still water or a large watercourse, and the “Water Far” version includes the entire area of all polygons that come within 30 m of same. The mean size of wetland polygons adjacent to open water is 5 ha; the latter habitat would therefore include the wetland area within roughly 250 m.

Seven vertebrate species are strongly associated with the Marsh Complex – Water Far Habitat, 5 of which are common (Table 11). All species would also be expected in the “Water Near” version of the habitat. Eleven vertebrates are strongly associated with The Marsh Complex – Water Near Habitat, all of which are common (Table 12). There are 1,900 and 7,900 ha of Marsh Complex – Water Near and Water Far Habitats in New Brunswick, respectively.

Table 11. Vertebrate species associated with Marsh Complex – Water Far Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
RACCOON	Breeding		>20
AMERICAN BITTERN	Breeding		>5
GREAT BLUE HERON	Breeding		None
GREEN HERON	Breeding	Yes	None
EASTERN KINGBIRD	Breeding		>5
PURPLE MARTIN	Breeding	Yes	None
BULLFROG	Breeding		None

Table 12. Vertebrate species associated with Marsh Complex – Water Near Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
BEAVER	Breeding	None
MUSKRAT	Breeding	None
AMERICAN MINK	Breeding	>5
RIVER OTTER	Breeding	>20
CANADA GOOSE	Breeding	None
WOOD DUCK	Breeding	None
AMERICAN BLACK DUCK	Breeding	None
MALLARD	Breeding	None
GREEN-WINGED TEAL	Breeding	None
COMMON GOLDENEYE	Breeding	None
GREEN FROG	Breeding	None

Wet Shrub Complex (Water Near and Water Far)

The two Wet Shrub Complex Habitats are ericaceous wetlands with spatial relationships to open water and almost complete vegetative cover. They include freshwater marshes, fens and shrub wetlands, and are included here as discrete habitats in recognition of the unique ecological value of shrub wetlands marshes in close proximity to open water

The “Water Near” version includes only the area within 30 m of still water or a large watercourse, and the “Water Far” version includes the entire area of all polygons that come within 30 m of same. The mean size of wetland polygons adjacent to open water is 5 ha; the latter habitat would therefore include the wetland area within roughly 250 m.

Eight vertebrate species are strongly associated with the Wet Shrub Complex – Water Far Habitat, 5 of which are common (Table 13). All species would also be expected in the “Water Near” version of the habitat. Ten vertebrates are strongly associated with The Wet Shrub Complex – Water Near Habitat, all of which are common (Table 14). There are 2,900 and 12,500 ha of Wet Shrub Complex – Water Near and Water Far Habitats in New Brunswick, respectively.

Table 13. Vertebrate species associated with Wet Shrub Complex – Water Far Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
RACCOON	Breeding		>20
AMERICAN BITTERN	Breeding		>5
GREAT BLUE HERON	Breeding		None
GREEN HERON	Breeding	Yes	None
WILLOW FLYCATCHER	Breeding	Yes	None
EASTERN KINGBIRD	Breeding		>5
PURPLE MARTIN	Breeding	Yes	None
BULLFROG	Breeding		None

Table 14. Vertebrate species associated with Wet Shrub Complex – Water Near Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
BEAVER	Breeding	None
MUSKRAT	Breeding	None
AMERICAN MINK	Breeding	>5
RIVER OTTER	Breeding	>20
CANADA GOOSE	Breeding	None
AMERICAN BLACK DUCK	Breeding	None
MALLARD	Breeding	None
GREEN-WINGED TEAL	Breeding	None
COMMON GOLDENEYE	Breeding	None
GREEN FROG	Breeding	None

Cedar Swamp

Cedar Swamp Habitat is composed of coniferous forest stands dominated by eastern cedar and is saturated throughout the growing season. Soils in cedar swamps are less acidic and better oxygenated than forested wetlands dominated by black spruce or eastern larch. Fourteen species are strongly associated with the type, all of which are common (Table 15). There are 67K ha of Cedar Swamp Habitat in New Brunswick.

Table 15. Vertebrate species associated with Cedar Swamp Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
WATER SHREW	Breeding	None
STAR-NOSED MOLE	Breeding	None
DEER MOUSE	Breeding	None
RED-BACKED VOLE	Breeding	None
SOUTHERN BOG LEMMING	Breeding	None
AMERICAN BLACK BEAR	Breeding	>20
AMERICAN MARTEN	Breeding	>20
ERMINE	Breeding	>5
WHITE-TAILED DEER	Breeding	>5
MOOSE	Breeding	>20
YELLOW-BELLIED FLYCATCHER	Breeding	None
NORTHERN WATERTHRUSH	Breeding	None
BLACK-AND-WHITE WARBLER	Breeding	None
CANADA WARBLER	Breeding	None

Floodplain Forest

Riparian Floodplain Habitat includes bottomland hardwood and associated tall shrub swamp within river floodplains. Common tree species include silver maple, green ash, red oak and balsam poplar. Seventeen vertebrate species are strongly associated with the type, of which 16 are considered common (Table 16). Many associated species require tree cavities during the breeding season. The distributions of 3 species, great-crested flycatcher, warbling vireo and Baltimore oriole, are closely tied to the distribution of this habitat type. There are 11,200 ha of Floodplain Forest Habitat in New Brunswick.

Table 16. Vertebrate species associated with Floodplain Forest Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
EASTERN GRAY SQUIRREL	Breeding		None
SOUTHERN BOG LEMMING	Breeding		None
MEADOW JUMPING MOUSE	Breeding		None
ERMINE	Breeding		>5
WOOD DUCK	Breeding		None
COMMON GOLDENEYE	Breeding		None
HOODED MERGANSER	Breeding		None
BALD EAGLE	Breeding	Yes	None

Species	Population	Uncommon	Min Patch Size
GREAT CRESTED FLYCATCHER	Breeding		None
WARBLING VIREO	Breeding		None
VEERY	Breeding		None
AMERICAN ROBIN	Breeding		None
CEDAR WAXWING	Breeding		None
NORTHERN WATERTHRUSH	Breeding		None
AMERICAN REDSTART	Breeding		None
COMMON GRACKLE	Breeding		None
BALTIMORE ORIOLE	Breeding		None

Vernal Pool

Vernal Pool Habitat is a naturally-occurring, temporary to semi-permanent pool (without fish) that occurs in a shallow depressions, often in forested landscapes. Five species are strongly associated with the type, of which 4 are common (Table 17). Vernal pool area has not been estimated.

Table 17. Vertebrate species associated with Vernal Pool Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
BLUE-SPOTTED SALAMANDER	Breeding		None
SPOTTED SALAMANDER	Breeding		None
SPRING PEEPER	Breeding		None
GRAY TREEFROG	Breeding	Yes	None
WOOD FROG	Breeding		None

Wetland Margin

Wetland Margin Habitat includes the forest/wetland edge (30 m on each side) of wetland polygons designated as either Emergent Shallow Marsh or Deep Marsh / Aquatic Bed (see definitions above). Five species are strongly associated with the habitat type, all of which are common (Table 18). There are 35K ha of Wetland Margin Habitat in New Brunswick.

Table 18. Vertebrate species associated with Wetland Margin Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
EASTERN COYOTE	Breeding	>20
RED FOX	Breeding	>20
ERMINE	Breeding	>5
STRIPED SKUNK	Breeding	>5
COMMON GRACKLE	Breeding	None

Beaver Pond

Beaver Pond Habitat includes aquatic beds, bogs, fens, forested wetlands, freshwater marshes and shrub wetlands that are associated with a beaver pond. Six species are strongly associated with the habitat type, all of which are common (Table 19). There are 37K ha of Beaver Pond Habitat in New Brunswick.

Table 19. Vertebrate species associated with Beaver Pool Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Min Patch Size
AMERICAN BLACK DUCK	Breeding	None
GREEN-WINGED TEAL	Breeding	None
COMMON GOLDENEYE	Breeding	None
HOODED MERGANSER	Breeding	None
RUSTY BLACKBIRD	Breeding	None
WOOD TURTLE	Breeding	None

Coastal Habitats

Salt Marsh

Salt Marsh Habitat is found in saline coastal marshes that are sufficiently protected from wave action to allow accumulation of sediment and organic matter. They are characterized by species adapted to periodically-flooded salt or brackish environments. Coastal marshes can be divided into high and low marsh. High salt marsh generally lies above the mean high tide and is flooded only during the highest tides. Salt-meadow grass is common, along with other salt- and flood-tolerant plants. Low salt marsh sits below the mean high tide and receives daily inundation; salt-water cordgrass is often the dominant vegetation. Much of the Province's salt marsh has been lost due to protection from flooding by earthen dikes, or infilling to allow alternate land uses such as agriculture and coastal development. Thirty-five species are strongly associated with Salt Marsh Habitat, of which 30 are common (Table 20). There are 14K ha of Salt Marsh Habitat in New Brunswick.

Table 20. Vertebrate species associated with Salt Marsh Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
MEADOW VOLE	Breeding		None
EASTERN COYOTE	Breeding		>20
RED FOX	Breeding		>20
AMERICAN MINK	Breeding		>5
RIVER OTTER	Breeding		>20
BRANT	Migrant		na
	Overwinter	Yes	na
GADWALL	Breeding	Yes	na
AMERICAN BLACK DUCK	Overwinter		None
MALLARD	Overwinter		None
NORTHERN PINTAIL	Breeding		None
GREEN-WINGED TEAL	Migrant		None
LESSER SCAUP	Migrant	Yes	na
GREAT BLUE HERON	Breeding		None
BLACK-CROWNED NIGHT-HERON	Breeding		None
NORTHERN HARRIER	Breeding		>20
BLACK-BELLIED PLOVER	Migrant		>20
SEMIPALMATED PLOVER	Migrant		na

Species	Population	Uncommon	Min Patch Size
GREATER YELLOWLEGS	Migrant		>5
WILLET	Breeding		na
LESSER YELLOWLEGS	Migrant		na
WHIMBREL	Migrant		na
HUDSONIAN GODWIT	Migrant		na
SEMIPALMATED SANDPIPER	Migrant		na
LEAST SANDPIPER	Migrant		na
WHITE-RUMPED SANDPIPER	Migrant		na
BAIRD'S SANDPIPER	Migrant	Yes	na
PECTORAL SANDPIPER	Migrant		na
DUNLIN	Migrant		na
SHORT-BILLED DOWITCHER	Migrant		na
HORNED LARK	Breeding	Yes	na
AMERICAN PIPIT	Migrant		None
LAPLAND LONGSPUR	Overwinter	Yes	na
SNOW BUNTING	Overwinter		None
SAVANNAH SPARROW	Breeding		None
NELSON'S SPARROW	Breeding		>20

Beach

Beach Habitat is composed of unconsolidated sand, gravel, cobble or boulders on the shores of freshwater or coastal water bodies. Nine species are strongly associated with this habitat type, of which 6 are common (Table 21). There are 2,900 ha of Beach Habitat in New Brunswick.

Table 21. Vertebrate species associated with Beach Habitat.

Species	Population	Uncommon	Min Patch Size
EASTERN COYOTE	Breeding		>20
RED FOX	Breeding		>20
AMERICAN MINK	Breeding		>5
STRIPED SKUNK	Breeding		>5
GREAT BLUE HERON	Breeding		None
PIPING PLOVER	Breeding	Yes	na
RUDDY TURNSTONE	Migrant		na
RED KNOT	Migrant	Yes	na
SANDERLING	Overwinter	Yes	na
	Migrant	Yes	na

Dune

Dune Habitat is composed of unconsolidated sand or gravel deposits that cap beach environments. They have raised topography and may be vegetated with salt-tolerant vegetation, such as marram grass, or with ericaceous vegetation or trees. Twelve species are strongly associated with this habitat type, of which 9 are common (Table 22). There are 2,200 ha of Dune Habitat in New Brunswick.

Table 22. Vertebrate species associated with Dune Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
EASTERN COYOTE	Breeding		>20
RED FOX	Breeding		>20
STRIPED SKUNK	Breeding		>5
NORTHERN HARRIER	Breeding		>20
WILLET	Breeding		na
SHORT-EARED OWL	Breeding	Yes	>20
HORNED LARK	Breeding	Yes	na
BANK SWALLOW	Breeding		na
AMERICAN PIPIT	Migrant		None
LAPLAND LONGSPUR	Overwinter	Yes	None
SNOW BUNTING	Overwinter		None
SAVANNAH SPARROW	Breeding		None

Mud Flat

Mud Flat Habitat is areas of mud or sandy mud between the high and low tide marks which can be vegetated with various types of seaweed or sea grasses. Eighteen species are strongly associated with this habitat type, of which 15 are common (Table 23).

Table 23. Vertebrate species associated with Mud Flat Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
AMERICAN BLACK DUCK	Overwinter		None
BUFFLEHEAD	Migrant	Yes	na
	Overwinter	Yes	na
GREAT BLUE HERON	Breeding		None
BLACK-CROWNED NIGHT-HERON	Breeding		None
BLACK-BELLIED PLOVER	Migrant		>20
SEMIPALMATED PLOVER	Migrant		na
GREATER YELLOWLEGS	Migrant		>5
LESSER YELLOWLEGS	Migrant		na
WHIMBREL	Migrant		na
HUDSONIAN GODWIT	Migrant		na
RUDDY TURNSTONE	Migrant		na
RED KNOT	Migrant	Yes	na
SEMIPALMATED SANDPIPER	Migrant		na
WHITE-RUMPED SANDPIPER	Migrant		na
BAIRD'S SANDPIPER	Migrant	Yes	na
PECTORAL SANDPIPER	Migrant		na
DUNLIN	Migrant		na
SHORT-BILLED DOWITCHER	Migrant		na

Rocky Shore

Rocky Shore Habitats are areas of bedrock exposed between the high and low tide marks on coastal shores. They are often vegetated with rockweed and other plants that attach to the rock substrate. Thirteen species are strongly associated with the habitat type, of which 11 are common (Table 24). There are 509 ha of Rocky Shore Habitat in New Brunswick.

Table 24. Vertebrate species associated with Rocky Shore Habitat, their populations statuses and minimum patch sizes (ha).

Species	Population	Uncommon	Min Patch Size
BRANT	Migrant		na
	Overwinter	Yes	na
AMERICAN BLACK DUCK	Migrant		na
	Overwinter		na
KING EIDER	Overwinter	Yes	na
COMMON EIDER	Breeding		na
	Migrant		na
	Overwinter		na
HARLEQUIN DUCK	Overwinter	Yes	na
SURF SCOTER	Overwinter	Yes	na
	Migrant		na
WHITE-WINGED SCOTER	Migrant		na
BLACK SCOTER	Migrant		na
DOUBLE-CRESTED CORMORANT	Breeding		na
GREAT BLUE HERON	Breeding		None
BLACK-CROWNED NIGHT-HERON	Breeding		None
RUDDY TURNSTONE	Migrant		na
PURPLE SANDPIPER	Overwinter		na
	Migrant		na

REFERENCES

- Boone, R. B. and W. B. Krohn. 1998a. Maine gap analysis vertebrate data - Part I: distribution, habitat relations, and status of amphibians, reptiles, and mammals in Maine. Part of final contract report to USGS Biological Resources Division, Gap Analysis Program, Moscow, Idaho. 175 pp. plus appendices.
- Boone, R. B. and W. B. Krohn. 1998b. Maine gap analysis vertebrate data - Part II: distribution, habitat relations, and status of breeding birds in Maine. Part of final contract report to USGS Biological Resources Division, Gap Analysis Program, Moscow, Idaho. 367 pp. plus appendices.
- DeGraaf, R. M. and D. D. Rudis. 1986. New England wildlife: Habitat, natural history, and distribution. Gen. Tech. Rep. NE-108. Broomall, PA: U.S.D.A. Forest Service, Northeastern Forest Experiment Station. 491 p.
- DeGraaf, R. M., M. Yamasaki, W. B. Leak and J. W. Lanier. 1992. New England wildlife: Management of forested habitats. Gen. Tech. Rep. NE-144. Radnor, PA: U.S.D.A. Forest Service, Northeastern Forest Experiment Station. 271 p.
- Dilworth, T., ed. 1984. Land mammals of New Brunswick. Fredericton NB: Tim Dilworth. xi + 228 p.
- Elderkin, M. F. 1989. Habitat supply analysis: Forest birds in New Brunswick. Unpub. Rep., New Brunswick Dept. Natural Resources and Energy: v + 154 p.
- Erskine, A. J. 1992. Atlas of breeding birds of the Maritime Provinces. Nova Scotia Museum. x + 270 p.
- NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life, version 7.1. NatureServe, Arlington, Virginia. Web application: <http://www.natureserve.org/explorer>
- Poole. A., ed. 2012. The Birds of North America Online [web application]. Ithaca: Cornell Lab of Ornithology. Web application: <http://bna.birds.cornell.edu>
- Province of New Brunswick. 2009. Biodiversity Strategy. 23 pp. Web application: <http://www2.gnb.ca/content/dam/gnb/Departments/nr-rn/pdf/en/ForestsCrownLands/Biodiversity.pdf>
- New Brunswick Department of Environment and Local Government. 2002. A coastal areas protection policy for New Brunswick. 15 pp. Web application: <http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Water-Eau/CoastalAreasProtectionPolicy.pdf>
- New Brunswick Department of Energy and Resource Development. 2017. Old forest communities and old-forest wildlife habitats in New Brunswick. 20 pp.
- New Brunswick Departments of Natural Resources and Energy and of Environment and Local Government. 2002. New Brunswick wetlands conservation policy. Web application: <http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Report-Rapport/WetlandsTerresHumides.pdf>
- Stewart, R. L. M., K. A. Bredin, A. R. Couturier, A. G. Horn, D. Lepage, S. Makepeace, P. D. Taylor, M.-A. Villard and R. M. Whittam (editors). 2015. Second Atlas of the Breeding Birds of the Maritime Provinces. Bird Studies Canada. Web application: <http://www.mba-aom.ca/?lang=fr>

Appendix 1. Habitat relationships of species associated with wetlands and coastal areas. Forest habitats are described in *Old Forest Communities and Old-forest Wildlife Habitats in New Brunswick*. Upland, Freshwater and Marine habitat types are not fully described.

Species	Population	Not Common ¹	Habitat Class	Habitat Type	
				Type	Sub-type ²
WATER SHREW	Breeding		Wetland	Emergent Shallow Marsh	
				Bog	Partially Treed
					Sedge
				Alder or Shrub Wetland	
			Cedar Swamp		
Freshwater	Any Open Freshwater				
STAR-NOSED MOLE	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Cedar Swamp	
LITTLE BROWN BAT	Breeding		Forest	Spruce-fir	Mid / Old
			Upland	Any Upland	
			Wetland	Any Wetland	
			Freshwater	Any Open Freshwater	
TRICOLORED BAT	Breeding	✓	Forest	Any Forest Type	Mid / Old
			Upland	Any Upland	
			Wetland	Any Wetland	
			Freshwater	Any Open Freshwater	
SILVER-HAIRED BAT	Breeding	✓	Forest	Any Forest Type	Any Stage
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Bog	Any
			Alder or Shrub Wetland		
Freshwater	Any Open Freshwater				
HOARY BAT	Breeding		Forest	Any Forest Type	Mid / Old
			Upland	Softwood Woodland	
				Hardwood Woodland	
			Wetland	Any Wetland	
Freshwater	Any Open Freshwater				
EASTERN GRAY SQUIRREL	Breeding		Upland	Hardwood Woodland	
			Wetland	Floodplain Forest	
BEAVER	Breeding		Forest	Hardwood	Any Stage
				Mixedwood	Any Stage
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Near	
			Wet Shrub Complex - Water Near		
Freshwater	Any Open Freshwater				

¹ Not Common: Species with populations that are rare or uncommon

² Sub-type: Successional stage of forest habitats, or sub-type of wetland habitats. Multiple successional stages are equivalent.

Species	Population	Not Common	Habitat Class	Habitat Type		
				Type	Sub-type	
DEER MOUSE	Breeding		Forest	Spruce-fir	Any Stage	
			Upland	Softwood Woodland		
				Hardwood Woodland		
				Upland Shrub		
			Wetland	Bog	Shrub	
				Alder or Shrub Wetland		
Cedar Swamp						
RED-BACKED VOLE	Breeding		Forest	Spruce-fir	Any Stage	
			Wetland	Cedar Swamp		
MEADOW VOLE	Breeding		Upland	Softwood Woodland		
				Hardwood Woodland		
				Upland Shrub		
				Grassland		
				Open Low Vegetation		
			Wetland	Wet Meadow / Tidal Marsh		
				Emergent Shallow Marsh		
				Bog	Sedge	
Coastal	Salt Marsh					
MUSKRAT	Breeding		Wetland	Wet Meadow / Tidal Marsh		
				Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Fen		
				Alder or Shrub Wetland		
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
			Freshwater	Any Open Freshwater		
SOUTHERN BOG LEMMING	Breeding		Wetland	Emergent Shallow Marsh		
				Bog		Sedge
						Partially Treed
						Fully Treed
				Floodplain Forest		
Cedar Swamp						
NORTHERN BOG LEMMING	Breeding	✓	Wetland	Bog	Fully Treed	
					Sedge	
					Shrub	
					Partially Treed	
					Open	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
MEADOW JUMPING MOUSE	Breeding		Forest	Hardwood	Young
			Upland	Grassland	
			Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Bog	Sedge
				Alder or Shrub Wetland	
Floodplain Forest					
EASTERN COYOTE	Breeding		Forest	Any Forest Type	Any Stage
			Upland	Any Upland	
			Wetland	Wet Meadow / Tidal Marsh	
				Bog	Any
				Alder or Shrub Wetland	
				Wetland Margin	
			Coastal	Salt Marsh	
				Beach	
Dune					
RED FOX	Breeding		Forest	Any Forest Type	Young
			Upland	Any Upland	
			Wetland	Wet Meadow / Tidal Marsh	
				Bog	Any
				Alder or Shrub Wetland	
				Wetland Margin	
			Coastal	Salt Marsh	
				Beach	
Dune					
AMERICAN BLACK BEAR	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Alder or Shrub Wetland	
				Cedar Swamp	
RACCOON	Breeding		Forest	Any Forest Type	Old
			Upland	Any Upland	
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Far	
				Wet Shrub Complex - Water Far	
Freshwater	Any Open Freshwater				
AMERICAN MARTEN	Breeding		Forest	Any Forest Type	Old
			Wetland	Cedar Swamp	

Species	Population	Not Common	Habitat Class	Habitat Type		
				Type	Sub-type	
ERMINE	Breeding		Forest	Any Forest Type	Young	
			Upland	Softwood Woodland		
				Hardwood Woodland		
				Upland Shrub		
				Grassland		
				Open Low Vegetation		
			Wetland	Wet Meadow / Tidal Marsh		
				Bog		Partially Treed
						Shrub
						Fully Treed
						Sedge
Alder or Shrub Wetland						
Wetland Margin						
Floodplain Forest						
Cedar Swamp						
AMERICAN MINK	Breeding		Wetland	Wet Meadow / Tidal Marsh		
				Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Alder or Shrub Wetland		
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
			Coastal	Salt Marsh		
				Beach		
Freshwater	Any Open Freshwater					
STRIPED SKUNK	Breeding		Upland	Any Upland		
			Wetland	Wet Meadow / Tidal Marsh		
				Wetland Margin		
			Coastal	Beach		
				Dune		
RIVER OTTER	Breeding		Wetland	Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Fen		
				Alder or Shrub Wetland		
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
			Coastal	Salt Marsh		
			Freshwater	Any Open Freshwater		
WHITE-TAILED DEER	Breeding		Forest	Spruce-fir	Old	
				Hardwood	Young	
				Mixedwood	Young	
			Wetland	Cedar Swamp		

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
MOOSE	Breeding		Forest	Spruce-fir	Old
				Hardwood	Young
				Mixedwood	Old
				Mixedwood	Young
			Wetland	Cedar Swamp	
				Any Wetland	
Freshwater	Any Open Freshwater				
SNOW GOOSE	Migrating	✓	Upland	Agriculture	
			Wetland	Wet Meadow / Tidal Marsh	
			Coastal	Estuary	
BRANT	Migrating		Coastal	Salt Marsh	
				Estuary	
				Rocky Shoreline	
	Non-breeding	✓	Coastal	Salt Marsh	
				Rocky Shoreline	
CANADA GOOSE	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Near	
				Wet Shrub Complex - Water Near	
	Migrating		Upland	Agriculture	
				Coastal	Estuary
Freshwater				Any Open Freshwater	
WOOD DUCK	Breeding		Forest	Spruce-fir	Old
				Hardwood	Old
				Mixedwood	Old
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Near	
				Floodplain Forest	
GADWALL	Breeding	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
			Coastal	Salt Marsh	
				Coastal Island	
AMERICAN WIGEON	Breeding		Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	

Species	Population	Not Common	Habitat Class	Habitat Type		
				Type	Sub-type	
AMERICAN BLACK DUCK	Breeding		Wetland	Wet Meadow / Tidal Marsh	Beaver Pond	
				Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Alder or Shrub Wetland	Beaver Pond	
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
	Migrating			Upland	Agriculture	
				Wetland	Any Wetland	
				Coastal	Estuary	
					Rocky Shoreline	
	Non-breeding			Coastal	Salt Marsh	
					Estuary	
Mud Flat						
Rocky Shoreline						
MALLARD	Breeding		Wetland	Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
	Non-breeding			Upland	Agriculture	
				Coastal	Salt Marsh	
BLUE-WINGED TEAL	Breeding		Wetland	Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
NORTHERN SHOVELER	Breeding	✓	Wetland	Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
NORTHERN PINTAIL	Breeding		Wetland	Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Bog	Coastal	
			Coastal	Salt Marsh		
				Estuary		
GREEN-WINGED TEAL	Breeding		Wetland	Wet Meadow / Tidal Marsh	Beaver Pond	
				Emergent Shallow Marsh		
				Deep Marsh / Aquatic Bed		
				Alder or Shrub Wetland	Beaver Pond	
				Marsh Complex - Water Near		
				Wet Shrub Complex - Water Near		
	Migrating			Wetland	Any Wetland	
				Coastal	Salt Marsh	
				Freshwater	Any Open Freshwater	
RING-NECKED DUCK	Breeding		Wetland	Deep Marsh / Aquatic Bed		
			Freshwater	Lake-Pond		
	Migrating			Freshwater	Any Open Freshwater	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
GREATER SCAUP	Breeding	✓	Freshwater	River-Stream	
	Migrating	✓	Wetland	Deep Marsh / Aquatic Bed	
			Coastal	Estuary	
			Freshwater	River-Stream	
Non-breeding		Coastal	Estuary		
LESSER SCAUP	Breeding	✓	Wetland	Deep Marsh / Aquatic Bed	
	Migrating	✓	Coastal	Salt Marsh	
			Freshwater	Any Open Freshwater	
KING EIDER	Non-breeding	✓	Coastal	Estuary	
				Rocky Shoreline	
COMMON EIDER	Breeding		Coastal	Coastal Island	
				Estuary	
				Rocky Shoreline	
	Migrating		Coastal	Estuary	
				Rocky Shoreline	
	Non-breeding		Coastal	Near Shore	
Estuary					
HARLEQUIN DUCK	Breeding	✓	Coastal	Estuary	
			Freshwater	River-Stream	
	Non-breeding	✓	Coastal	Rocky Shoreline	
			Marine	Near Shore	
SURF SCOTER	Migrating		Coastal	Estuary	
				Rocky Shoreline	
			Marine	Near Shore	
	Non-breeding	✓	Coastal	Estuary	
WHITE-WINGED SCOTER	Migrating		Coastal	Estuary	
				Rocky Shoreline	
			Marine	Near Shore	
	Non-breeding	✓	Marine	Near Shore	
BLACK SCOTER	Migrating		Coastal	Estuary	
				Rocky Shoreline	
			Marine	Near Shore	
LONG-TAILED DUCK	Migrating		Marine	Near Shore	
	Non-breeding		Coastal	Estuary	
			Marine	Near Shore	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
BUFFLEHEAD	Migrating	✓	Freshwater	Any Open Freshwater	
			Coastal	Estuary	
		Mud Flat			
	Non-breeding	✓	Coastal	Estuary	
Mud Flat					
COMMON GOLDENEYE	Breeding		Forest	Any Forest Type	Old
			Wetland	Wet Meadow / Tidal Marsh	Beaver Pond
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	Beaver Pond
				Marsh Complex - Water Near	
			Wet Shrub Complex - Water Near		
	Floodplain Forest				
	Migrating		Freshwater	Any Open Freshwater	
			Coastal	Estuary	
Freshwater			Any Open Freshwater		
Non-breeding		Coastal	Estuary		
		Freshwater	River-Stream		
BARROW'S GOLDENEYE	Migrating	✓	Coastal	Estuary	
			Freshwater	Any Open Freshwater	
	Non-breeding	✓	Coastal	Estuary	
HOODED MERGANSER	Breeding		Forest	Any Forest Type	Old
			Wetland	Wet Meadow / Tidal Marsh	Beaver Pond
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	Beaver Pond
	Floodplain Forest				
Freshwater	Any Open Freshwater				
COMMON MERGANSER	Breeding		Forest	Any Forest Type	Old
			Freshwater	Any Open Freshwater	
	Migrating		Coastal	Estuary	
			Freshwater	Any Open Freshwater	
	Non-breeding		Coastal	Estuary	
Freshwater			River-Stream		
RED-BREASTED MERGANSER	Breeding		Coastal	Coastal Island	
				Estuary	
Non-breeding		Coastal	Estuary		
RUDDY DUCK	Breeding	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
	Migrating	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
RED-THROATED LOON	Migrating		Coastal	Estuary	
			Marine	Near Shore	
	Non-breeding		Coastal	Estuary	
			Marine	Near Shore	
COMMON LOON	Breeding		Freshwater	Lake-Pond	
	Migrating		Coastal	Estuary	
			Marine	Near Shore	
			Freshwater	Any Open Freshwater	
	Non-breeding		Coastal	Estuary	
Marine		Near Shore			
PIED-BILLED GREBE	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
HORNED GREBE	Migrating		Coastal	Estuary	
			Marine	Near Shore	
	Non-breeding		Coastal	Estuary	
			Marine	Near Shore	
RED-NECKED GREBE	Migrating	✓	Coastal	Estuary	
			Marine	Near Shore	
	Non-breeding	✓	Coastal	Estuary	
			Marine	Near Shore	
LEACH'S STORM-PETREL	Breeding		Coastal	Coastal Island	
			Marine	Continental Shelf	
	Non-breeding		✓	Marine	Continental Shelf
NORTHERN GANNET	Breeding	✓	Coastal	Coastal Island	
			Marine	Any Marine	
	Migrating	✓	Marine	Any Marine	
DOUBLE-CRESTED CORMORANT	Breeding		Coastal	Coastal Island	
				Estuary	
				Rocky Shoreline	
	Migrating		Freshwater	Any Open Freshwater	
			Coastal	Estuary	
GREAT CORMORANT	Migrating		Marine	Near Shore	
			Non-breeding	Coastal	Coastal Island
	Marine			Near Shore	
AMERICAN BITTERN	Breeding		Upland	Grassland	
			Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Far	
				Wet Shrub Complex - Water Far	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
LEAST BITTERN	Breeding	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
GREAT BLUE HERON	Breeding		Forest	Any Forest Type	Mid / Old
			Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Far	
				Wet Shrub Complex - Water Far	
			Coastal	Salt Marsh	
				Mud Flat	
				Beach	
			Freshwater	Rocky Shoreline	
Freshwater	Any Open Freshwater				
GREEN HERON	Breeding	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	
				Marsh Complex - Water Far	
				Wet Shrub Complex - Water Far	
Freshwater	Lake-Pond				
BLACK-CROWNED NIGHT-HERON	Breeding		Forest	Any Forest Type	Mid / Old
			Wetland	Emergent Shallow Marsh	
				Alder or Shrub Wetland	
			Coastal	Salt Marsh	
				Coastal Island	
				Mud Flat	
Freshwater	Rocky Shoreline				
OSPREY	Breeding		Forest	Any Forest Type	Old
			Wetland	Deep Marsh / Aquatic Bed	
			Coastal	Estuary	
			Freshwater	Any Open Freshwater	
BALD EAGLE	Breeding	✓	Forest	Spruce-fir	Old
				Pine	Old
				Tolerant Hardwood	Old
				Mixedwood	Old
			Wetland	Floodplain Forest	
	Coastal	Estuary			
	Freshwater	Any Open Freshwater			
Non-breeding	✓	Coastal	Estuary		
		Freshwater	River-Stream		

Species	Population	Not Common	Habitat Class	Habitat Type			
				Type	Sub-type		
NORTHERN HARRIER	Breeding		Upland	Upland Shrub			
				Grassland			
				Open Low Vegetation			
			Wetland			Wet Meadow / Tidal Marsh	
						Emergent Shallow Marsh	
						Bog	Any
						Alder or Shrub Wetland	
			Coastal			Salt Marsh	
						Dune	
ROUGH-LEGGED HAWK	Non-breeding	✓	Upland	Grassland			
				Agriculture			
				Open Low Vegetation			
			Wetland	Wet Meadow / Tidal Marsh			
				Bog	Any		
AMERICAN KESTREL	Breeding		Forest	Any Forest Type	Old		
			Upland	Grassland			
				Agriculture			
				Open Low Vegetation			
			Wetland	Wet Meadow / Tidal Marsh			
			MERLIN	Breeding		Forest	Any Forest Type
Upland	Any Upland						
Wetland	Any Wetland						
GYRFALCON	Non-breeding	✓	Coastal	Any Coastal			
PEREGRINE FALCON	Breeding	✓	Wetland	Any Wetland			
			Coastal	Any Coastal			
YELLOW RAIL	Breeding	✓	Wetland	Wet Meadow / Tidal Marsh			
				Bog	Sedge		
VIRGINIA RAIL	Breeding	✓	Wetland	Emergent Shallow Marsh			
				Deep Marsh / Aquatic Bed			
SORA	Breeding		Wetland	Emergent Shallow Marsh			
				Deep Marsh / Aquatic Bed			
COMMON GALLINULE	Breeding	✓	Wetland	Emergent Shallow Marsh			
				Deep Marsh / Aquatic Bed			
AMERICAN COOT	Breeding	✓	Wetland	Deep Marsh / Aquatic Bed			
SANDHILL CRANE	Breeding	✓	Upland	Grassland			
				Agriculture			
			Wetland	Wet Meadow / Tidal Marsh			
				Emergent Shallow Marsh			
				Bog	Any		
BLACK-BELLIED PLOVER	Migrating		Wetland	Wet Meadow / Tidal Marsh			
			Coastal	Salt Marsh			
				Mud Flat			

Species	Population	Not Common	Habitat Class	Habitat Type		
				Type	Sub-type	
AMERICAN GOLDEN PLOVER	Migrating		Upland	Grassland		
				Open Low Vegetation		
SEMIPALMATED PLOVER	Migrating		Coastal	Salt Marsh		
				Mud Flat		
PIPING PLOVER	Breeding	✓	Coastal	Beach		
SOLITARY SANDPIPER	Breeding	✓	Wetland	Bog	Shrub	
					Pond	
	Migrating	✓	Wetland	Bog	Partially Treed	
					Freshwater	Any Open Freshwater
GREATER YELLOWLEGS	Migrating		Wetland	Wet Meadow / Tidal Marsh		
				Bog	Pond	
			Coastal	Fen		
				Salt Marsh		
WILLET	Breeding		Upland	Grassland		
			Coastal	Salt Marsh		
LESSER YELLOWLEGS	Migrating		Coastal	Dune		
				Salt Marsh		
ESKIMO CURLEW	Migrating	✓	Wetland	Mud Flat		
				Bog	Coastal	
WHIMBREL	Migrating		Upland	Softwood Woodland		
				Grassland		
				Open Low Vegetation		
			Wetland	Bog	Wet Meadow / Tidal Marsh	
					Sedge	
					Open	
					Shrub	
Coastal	Mud Flat	Partially Treed				
		Pond				
HUDSONIAN GODWIT	Migrating		Coastal	Salt Marsh		
				Mud Flat		
RUDDY TURNSTONE	Migrating		Coastal	Mud Flat		
				Beach		
				Rocky Shoreline		
RED KNOT	Migrating	✓	Coastal	Mud Flat		
				Beach		

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
SANDERLING	Migrating	✓	Coastal	Beach	
	Non-breeding	✓	Coastal	Beach	
SEMIPALMATED SANDPIPER	Migrating		Coastal	Salt Marsh	
				Mud Flat	
LEAST SANDPIPER	Migrating		Wetland	Wet Meadow / Tidal Marsh	
			Coastal	Salt Marsh	
WHITE-RUMPED SANDPIPER	Migrating		Coastal	Salt Marsh	
				Mud Flat	
BAIRD'S SANDPIPER	Migrating	✓	Coastal	Salt Marsh	
				Mud Flat	
PECTORAL SANDPIPER	Migrating		Wetland	Wet Meadow / Tidal Marsh	
			Coastal	Salt Marsh	
			Coastal	Mud Flat	
PURPLE SANDPIPER	Migrating		Coastal	Rocky Shoreline	
	Non-breeding		Coastal	Rocky Shoreline	
DUNLIN	Migrating		Coastal	Salt Marsh	
				Mud Flat	
SHORT-BILLED DOWITCHER	Migrating		Coastal	Salt Marsh	
				Mud Flat	
WILSON'S SNIPE	Breeding		Upland	Grassland	
			Wetland	Any Wetland	
	Migrating		Upland	Grassland	
			Wetland	Any Wetland	
AMERICAN WOODCOCK	Breeding		Forest	Hardwood	Young
				Mixedwood	Young
			Upland	Hardwood Woodland	
				Upland Shrub	
	Migrating		Forest	Hardwood	Young
				Mixedwood	Young
			Upland	Hardwood Woodland	
				Upland Shrub	
WILSON'S PHALAROPE	Breeding	✓	Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
BLACK-LEGGED KITTIWAKE	Breeding	✓	Coastal	Coastal Island	
			Marine	Near Shore	
	Non-breeding	✓	Marine	Near Shore	
BONAPARTE'S GULL	Migrating	✓	Coastal	Any Coastal	
			Marine	Near Shore	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
BLACK-HEADED GULL	Migrating	✓	Coastal	Estuary	
			Marine	Near Shore	
			Freshwater	Any Open Freshwater	
	Non-breeding	✓	Coastal	Any Coastal	
			Marine	Near Shore	
LAUGHING GULL	Breeding	✓	Coastal	Any Coastal	
			Marine	Near Shore	
RING-BILLED GULL	Breeding		Coastal	Any Coastal	
			Marine	Near Shore	
			Freshwater	Any Open Freshwater	
HERRING GULL	Breeding		Coastal	Any Coastal	
			Marine	Near Shore	
ICELAND GULL	Non-breeding		Coastal	Any Coastal	
			Marine	Near Shore	
GLAUCOUS GULL	Non-breeding		Coastal	Any Coastal	
			Marine	Near Shore	
GREAT BLACK-BACKED GULL	Breeding		Coastal	Any Coastal	
			Marine	Near Shore	
CASPIAN TERN	Migrating	✓	Coastal	Estuary	
			Marine	Near Shore	
BLACK TERN	Breeding	✓	Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
ROSEATE TERN	Breeding	✓	Coastal	Coastal Island	
			Marine	Near Shore	
COMMON TERN	Breeding		Wetland	Deep Marsh / Aquatic Bed	
			Coastal	Coastal Island	
				Any Coastal	
			Marine	Near Shore	
			Freshwater	Lake-Pond	
				River-Stream	
Any Open Freshwater					
ARCTIC TERN	Breeding	✓	Coastal	Coastal Island	
			Marine	Any Marine	
COMMON MURRE	Breeding	✓	Coastal	Coastal Island	
			Marine	Any Marine	
	Non-breeding		Marine	Continental Shelf	
RAZORBILL	Breeding		Coastal	Coastal Island	
			Marine	Any Marine	
	Non-breeding		Marine	Any Marine	
BLACK GUILLEMOT	Breeding		Coastal	Coastal Island	
			Marine	Near Shore	
	Non-breeding		Marine	Near Shore	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
ATLANTIC PUFFIN	Breeding	✓	Coastal	Coastal Island	
			Marine	Any Marine	
	Non-breeding	✓	Marine	Continental Shelf	
BLACK-BILLED CUCKOO	Breeding		Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
SNOWY OWL	Non-breeding	✓	Upland	Upland Shrub	
				Grassland	
				Agriculture	
				Open Low Vegetation	
			Wetland	Wet Meadow / Tidal Marsh	
			Bog	Any	
			Coastal	Any Coastal	
SHORT-EARED OWL	Breeding	✓	Wetland	Wet Meadow / Tidal Marsh	
				Bog	Open
					Pond
			Sedge		
			Coastal	Dune	
BELTED KINGFISHER	Breeding		Wetland	Deep Marsh / Aquatic Bed	
			Coastal	Any Coastal	
			Freshwater	Any Open Freshwater	
AMERICAN THREE-TOED WOODPECKER	Breeding	✓	Forest	Spruce-fir	Old
			Wetland	Bog	Partially Treed Fully Treed
OLIVE-SIDED FLYCATCHER	Breeding		Forest	Spruce-fir	Old
			Wetland	Bog	Fully Treed Partially Treed
YELLOW-BELLIED FLYCATCHER	Breeding		Forest	Spruce-fir	Any Stage
			Wetland	Bog	Partially Treed Fully Treed
				Cedar Swamp	
ALDER FLYCATCHER	Breeding		Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
WILLOW FLYCATCHER	Breeding	✓	Upland	Upland Shrub	
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	
Wet Shrub Complex - Water Far					
GREAT CRESTED FLYCATCHER	Breeding		Upland	Hardwood Woodland	
			Wetland	Floodplain Forest	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
EASTERN KINGBIRD	Breeding		Upland	Upland Shrub	
				Agriculture	
				Open Low Vegetation	
			Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	
				Marsh Complex - Water Far	
Freshwater	Wet Shrub Complex - Water Far				
	Any Open Freshwater				
NORTHERN SHRIKE	Non-breeding	✓	Upland	Upland Shrub	
				Grassland	
				Open Low Vegetation	
			Wetland	Wet Meadow / Tidal Marsh	
				Alder or Shrub Wetland	
WARBLING VIREO	Breeding		Upland	Hardwood Woodland	
			Wetland	Floodplain Forest	
GRAY JAY	Breeding		Forest	Spruce-fir	Mid / Old
			Wetland	Bog	Fully Treed Partially Treed
AMERICAN CROW	Breeding		Forest	Any Forest Type	Any Stage
			Upland	Any Upland	
			Wetland	Any Wetland	
			Coastal	Any Coastal	
			Freshwater	Any Open Freshwater	
COMMON RAVEN	Breeding		Forest	Any Forest Type	Old
			Upland	Any Upland	
			Wetland	Any Wetland	
			Coastal	Any Coastal	
			Freshwater	Any Open Freshwater	
HORNED LARK	Breeding	✓	Upland	Agriculture	
				Open Low Vegetation	
			Coastal	Salt Marsh Dune	
PURPLE MARTIN	Breeding	✓	Wetland	Upland	Any Upland
				Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Alder or Shrub Wetland	
				Marsh Complex - Water Far	
			Wet Shrub Complex - Water Far		
Freshwater	Any Open Freshwater				

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
TREE SWALLOW	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Any Wetland	
			Freshwater	Any Open Freshwater	
BANK SWALLOW	Breeding		Upland	Agriculture	
			Coastal	Dune	
			Freshwater	Any Open Freshwater	
CLIFF SWALLOW	Breeding		Upland	Any Upland	
			Wetland	Any Wetland	
			Freshwater	Any Open Freshwater	
BARN SWALLOW	Breeding		Upland	Any Upland	
			Wetland	Any Wetland	
			Freshwater	Any Open Freshwater	
SEDGE WREN	Breeding	✓	Wetland	Wet Meadow / Tidal Marsh Bog	Sedge
MARSH WREN	Breeding	✓	Wetland	Emergent Shallow Marsh	
RUBY-CROWNED KINGLET	Breeding		Forest	Spruce-fir	Mid / Old
			Wetland	Bog	Fully Treed
				Bog	Partially Treed
VEERY	Breeding		Forest	Hardwood	
			Wetland	Alder or Shrub Wetland	
				Floodplain Forest	
HERMIT THRUSH	Breeding		Forest	Any Forest Type	Mid / Old
			Wetland	Bog	Partially Treed
					Fully Treed
AMERICAN ROBIN	Breeding		Forest	Any Forest Type	Any Stage
			Upland	Any Upland	
			Wetland	Alder or Shrub Wetland	
Floodplain Forest					
GRAY CATBIRD	Breeding		Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
BROWN THRASHER	Breeding	✓	Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
AMERICAN PIPIT	Migrating		Upland	Grassland	
			Wetland	Wet Meadow / Tidal Marsh	
			Coastal	Salt Marsh	
Dune					
CEDAR WAXWING	Breeding		Forest	Any Forest Type	Young
			Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
Floodplain Forest					

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
LAPLAND LONGSPUR	Non-breeding	✓	Upland	Any Upland	
			Wetland	Any Wetland	
			Coastal	Salt Marsh	
Dune					
SNOW BUNTING	Non-breeding		Upland	Any Upland	
			Wetland	Any Wetland	
			Coastal	Salt Marsh	
Dune					
NORTHERN WATERTHRUSH	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Alder or Shrub Wetland	
				Floodplain Forest	
Cedar Swamp					
	BLACK-AND-WHITE WARBLER	Breeding		Forest	Hardwood
Wetland				Cedar Swamp	
TENNESSEE WARBLER	Breeding		Forest	Spruce-fir	
			Wetland	Bog	Fully Treed Partially Treed
COMMON YELLOWTHROAT	Breeding		Forest	Any Forest Type	Young
			Wetland	Alder or Shrub Wetland	
AMERICAN REDSTART	Breeding		Forest	Hardwood	
			Upland	Hardwood Woodland	
				Upland Shrub	
Wetland	Floodplain Forest				
YELLOW WARBLER	Breeding		Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	
PALM WARBLER	Breeding		Forest	Black Spruce	Young
			Wetland	Bog	Fully Treed
					Shrub
Partially Treed					
CANADA WARBLER	Breeding		Wetland	Bog	Fully Treed
				Bog	Partially Treed
				Alder or Shrub Wetland	
				Cedar Swamp	
Wet Forest					
WILSON'S WARBLER	Breeding		Forest	Any Forest Type	Young
			Wetland	Alder or Shrub Wetland	
AMERICAN TREE SPARROW	Non-breeding		Upland	Upland Shrub	
			Wetland	Alder or Shrub Wetland	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
SAVANNAH SPARROW	Breeding		Upland	Grassland	
				Agriculture	
			Wetland	Wet Meadow / Tidal Marsh	
				Bog	Sedge
			Coastal	Salt Marsh	
Dune					
NELSON'S SPARROW	Breeding		Wetland	Wet Meadow / Tidal Marsh	
			Coastal	Salt Marsh	
LINCOLN'S SPARROW	Breeding		Forest	Black Spruce	Young
			Wetland	Bog	Shrub
					Partially Treed
Fully Treed					
SWAMP SPARROW	Breeding		Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Bog	Shrub
				Alder or Shrub Wetland	
BOBOLINK	Breeding		Upland	Grassland	
			Wetland	Wet Meadow / Tidal Marsh	
RED-WINGED BLACKBIRD	Breeding		Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Alder or Shrub Wetland	
RUSTY BLACKBIRD	Breeding	✓	Forest	Black Spruce	Young
			Wetland	Bog	Partially Treed
					Shrub
Alder or Shrub Wetland	Beaver Pond				
COMMON GRACKLE	Breeding		Upland	Softwood Woodland	
				Upland Shrub	
			Wetland	Alder or Shrub Wetland	
				Wetland Margin	
Floodplain Forest					
BALTIMORE ORIOLE	Breeding		Upland	Hardwood Woodland	
			Wetland	Floodplain Forest	
COMMON REDPOLL	Non-breeding		Forest	Hardwood	Mid / Old
			Upland	Upland Shrub	
				Agriculture	
Wetland	Alder or Shrub Wetland				
AMERICAN GOLDFINCH	Breeding		Upland	Upland Shrub	
				Grassland	
				Open Low Vegetation	
			Wetland	Alder or Shrub Wetland	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
EASTERN PAINTED TURTLE	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
			Freshwater	Lake-Pond	
COMMON SNAPPING TURTLE	Breeding		Wetland	Emergent Shallow Marsh	
			Freshwater	Any Open Freshwater	
WOOD TURTLE	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Emergent Shallow Marsh	Beaver Pond
			Freshwater	River-Stream	
BLUE-SPOTTED SALAMANDER	Breeding		Forest	Hardwood	Any Stage
			Wetland	Vernal Pool	
			Freshwater	Lake-Pond	
SPOTTED SALAMANDER	Breeding		Forest	Hardwood	Any Stage
				Mixedwood	Any Stage
			Wetland	Vernal Pool	
			Freshwater	Lake-Pond	
RED-SPOTTED NEWT	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Deep Marsh / Aquatic Bed	
			Freshwater	Any Open Freshwater	
FOUR-TOED SALAMANDER	Breeding	✓	Wetland	Bog	Partially Treed
					Shrub
					Open
				Alder or Shrub Wetland	
AMERICAN TOAD	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Alder or Shrub Wetland	
Freshwater	Lake-Pond				
SPRING PEEPER	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Emergent Shallow Marsh	
				Vernal Pool	
GRAY TREEFROG	Breeding	✓	Forest	Any Forest Type	Any Stage
			Wetland	Emergent Shallow Marsh	
				Bog	Fully Treed
				Alder or Shrub Wetland	Partially Treed
				Vernal Pool	
BULLFROG	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Far	
				Wet Shrub Complex - Water Far	
			Freshwater	Lake-Pond	

Species	Population	Not Common	Habitat Class	Habitat Type	
				Type	Sub-type
GREEN FROG	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
				Marsh Complex - Water Near	
			Freshwater	Wet Shrub Complex - Water Near	
			Freshwater	Lake-Pond	
MINK FROG	Breeding		Wetland	Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
			Freshwater	Bog	Pond
			Freshwater	Any Open Freshwater	
WOOD FROG	Breeding		Forest	Any Forest Type	Any Stage
			Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Vernal Pool	
NORTHERN LEOPARD FROG	Breeding		Wetland	Wet Meadow / Tidal Marsh	
				Emergent Shallow Marsh	
				Deep Marsh / Aquatic Bed	
			Freshwater	Lake-Pond	
PICKEREL FROG	Breeding		Wetland	Bog	Pond
			Freshwater	Any Open Freshwater	

¹ Not Common: Species with populations that are rare or uncommon

² Sub-type: Successional stage of forest habitats, or sub-type of wetland habitats. Multiple successional stages are equivalent