GEMTEC
www.gemtec.ca

Appendix F
VEC Wildlife and Wildlife Habitat

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 RATIONALE FOR THE VALUED ENVIRONMENTAL COMPONENT (VEC)

The Project footprint currently provides suitable habitat for several terrestrial wildlife species, including habitat that could support migratory birds. Migratory birds are protected under the federal *Migratory Bird Convention Act* (*MBCA*). Certain wildlife species are protected under federal or provincial *Species at Risk Acts* (*SARA* and *NBSAR*) or under the *New Brunswick Fish and Wildlife Act*. As such, Project related activities (*e.g.,* vegetation clearing, ground disturbance, noise, *etc.*) present potential interactions with wildlife and their habitat, which could impact terrestrial species and/or ecosystem health.

In order to assess any influence of the Project on wildlife and wildlife habitat, four components have been identified for the VEC:

- *Terrestrial Habitat* describes the general environmental conditions observed within the Project footprint;
- *Environmentally Significant Areas* (ESAs) are areas designated as protected or managed by federal, provincial, or non-government agencies;
- *Wildlife*, which for the purpose of this assessment includes all incidental sightings and evidence of wildlife species but does not include birds and fish, and *Wildlife Habitat*. This component also encompasses any wildlife species at risk (SAR) and species of conservation concern (SOCC). Wildlife SAR are considered species that have a protective status under Schedule 1 of the federal *Species at Risk Act* (*SARA*) or are protected under the provincial *New Brunswick Species at Risk Act* (*NBSAR*). Wildlife SOCC include species that are:
    - Considered rare in New Brunswick with a Atlantic Canada Conservation Data Centre (ACCDC) S-rank of S1 (imperiled) to S3S4 (vulnerable or apparently secure); and/or
    - Ranked At Risk, May Be At Risk or Sensitive by the New Brunswick Department of Energy and Resource Development (NBDERD); and
- *Birds,* including SAR and SOCC, and *Bird Habitat*. Bird SAR are considered species that have a protective status under Schedule 1 of the federal *SARA* or are protected under the provincial *NBSAR*. Bird SOCC include species that are:
    - Considered rare in New Brunswick with a ACCDC rank of S1 to S3; and/or
    - Ranked At Risk, May Be At Risk or Sensitive by the NBDERD.

2.0 BOUNDARIES FOR THE ENVIRONMENTAL EFFECTS ASSESSMENT

2.1 Spatial Boundaries

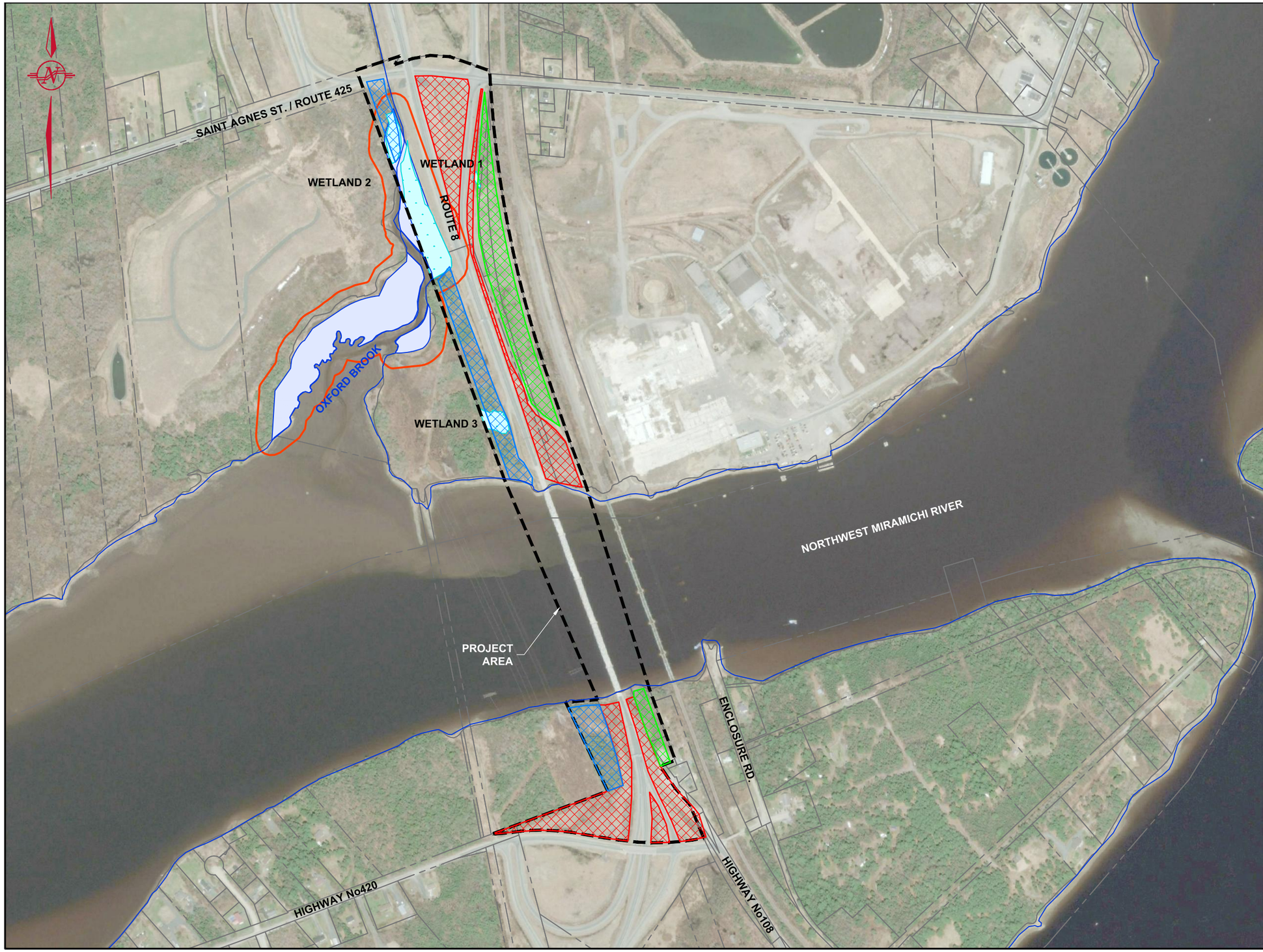
The assessment of wildlife and wildlife habitat has been completed for two spatial boundaries:

- The Project Area is defined as footprint of ground disturbance required for the Project activities (PIDs 40381345, 40381337, 40437121, 40445330, 40495780, 40164808, portion of 40163826, portion of 40143083, portion of 40336240, and portion of 40437139) as presented in Figure F-1; and
- The Assessment Area encompasses a 5 kilometre (km) radius of the Project Area where wildlife SAR and SOCC have been recorded by ACCDC.

2.2 Temporal Boundaries

The assessment of wildlife and wildlife habitat has been completed for the following temporal boundaries:

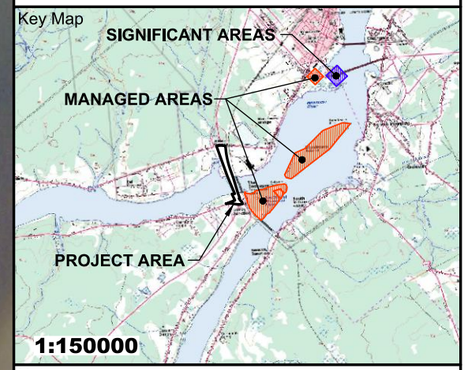
- The construction phase of the Project; and
- The operational and maintenance phase of the Project.



Legend

- DISTURBED HABITAT
- MATURE MIXED-WOOD
- YOUNG INTOLERANT HARDWOOD
- PROPERTY LINE
- PROJECT AREA

Key Map



Note

1. THIS DRAWING IS A SCHEMATIC REPRESENTATION. SIZES, LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

Drawn By	Checked By
CHG	JH
Calculations By	**Checked By**
---	----

Date

JUNE 2018

Project

EIA - NORTHWEST MIRAMICHI RIVER
NO.1 ANDERSON BRIDGE REPLACEMENT

Drawing

WILDLIFE HABITAT
SPATIAL BOUNDARIES AND HABITAT TYPES

Scale

1:7500

0 150 300 450m

File No.	Drawing	Revision No.
69214403	FIGURE F-1	0

GEMTEC
Consulting Engineers and Scientists

N:\DRAWINGS\6900\6921.44\69214403.DWG

3.0 METHODOLOGY

A two-pronged approach was used to determine the existing wildlife and wildlife habitat conditions, and any potential interaction with the Project, including:

- A desktop study of all existing information for habitat, wildlife SAR and wildlife SOCC within the Assessment Area; and
- Field investigations to delineate habitat types and to conduct a bird survey within the Project Area.

With respect to the Environmental Impact Assessment (EIA) process, interactions or effects of the Project on wildlife and wildlife habitat have been identified and are discussed. Where residual effects are anticipated, the proposed methods for mitigating the potential effects have been presented.

3.1 Terrestrial Habitat

Terrestrial habitat types were determined by reviewing the NBDERD forest inventory and then field verified. Biologist Derrick Mitchell of Boreal Environmental conducted a terrestrial habitat inventory on September 29 and September 30, 2017. The habitat inventory included traversing the entire Project Area and delineating the habitat types contained within the boundaries. Generally, the habitat types are described by forest composition species and vegetation age class.

3.2 Environmental Significant Areas (ESAs)

A data request was submitted to the ACCDC for a 5 km radius of the Project Area (*i.e.,* Assessment Area). The ACCDC report provides the location and information on significant or managed natural areas. A Managed Area (MA) is a site with some level of protection for wildlife within the boundaries. Ecologically Significant Areas (ESA) are sites that may or may not have legal protection. The ACCDC report in presented in Attachment F-1.

3.3 Wildlife

3.3.1 Desktop

The ACCDC report also provides the location of wildlife SOCC or SAR and the presence or absence of any location sensitive species within a 5 km radius of the Project Area. The ACCDC report was reviewed prior to completing any field investigations to determine the potential for any terrestrial wildlife SAR and/or SOCC within the Project Area. Upon completion of field investigations, habitat comparisons were completed for any SAR or SOCC that were recorded within the 5 km radius to the observed conditions within the Project Area.

3.3.2 Field

GEMTEC personnel visited the site on September 27 to 30, 2017 for the purposes of assessing the environmental conditions within the Project Area. Any incidental sighting or evidence of wildlife and critical habitat for SAR was recorded during the site visit. For the purposes of this assessment, critical habitat is defined as per the federal *SARA*.

3.4 Birds and Bird Habitat

3.4.1 Desktop

The ACCDC report was reviewed prior to completing any field investigations to determine the potential for any bird SAR and/or SOCC within the Project Area.

3.4.2 Field

Mr. Derrick Mitchell conducted a bird survey in the Project Area on September 29 and September 30, 2017. The bird survey included traversing the entire Project Area with special attention given to habitats with an elevated potential for bird SAR and SOCC observations or nests. Any incidental sightings or singing of bird SAR or SOCC were recorded and critical habitat, if any, was identified. For the purposes of this assessment, critical habitat is the habitat necessary for the survival or recovery of a listed endangered, threatened or extirpated species in Schedule 1 of *SARA* as identified in the recovery strategy or action plan for a given listed species.

4.0 DESCRIPTION OF EXISTING ENVIRONMENT

4.1 Terrestrial Habitats

Within the Project Area, there are two types of forested habitats present while the majority of the area is either existing infrastructure or disturbed ground (Figure F-1). Disturbed habitats within the Project Area consist of areas immediately adjacent to Route 8 and the transmission line Right of Ways (ROWs). Areas adjacent to Route 8 are dominated by various graminoid and shrub species.

The young intolerant hardwood habitat within the Project Area consist of early successional tree species approximately 25 to 30 years old. Dominant tree species are Red Maple (*Acer rubrum*), Balsam Fir (*Abies balsamea*), White Birch *(Betula papyrifera var. cordifolia),* and Trembling Aspen *(Populus tremuloides).* These stands tend to have a dense understory of Glossy Buckthorn *(Frangula alnus)* which is an invasive species.

Mature mixed-wood forest is approximately 60 to 80 years old with a closed overstory that is dominated by Red Maple (*Acer rubrum*), Trembling Aspen (*Populus tremuloides*), Eastern White Cedar (*Thuja occidentalis*), White Birch (*Betula papyrifera var. cordifolia*), and patches of dense Balsam Fir (*Abies balsamea*). These areas contain a sparse shrub layer and a herbaceous layer dominated by Bunchberry (*Cornus canadensis*), Wild Sarsaparilla (*Aralia nudicaulis*), Starflower (*Trientalis borealis*), and Wild Lily-of-the-Valley (*Maianthemum canadense*).

Wetland habitats generally consist of shrub dominated swamps and a tidal marsh, and are described in the Wetland and Vegetation VEC assessment presented in Appendix G of this EIA document. The Northwest Miramichi River is heavily influenced by tides within the Project Area and the estuarine intertidal zone is variable, with a maximum width of approximately 6 metres. This zone consists of mixed substrate and sparse vegetation.

4.2 Environmentally Significant Areas (ESAs)

The ACCDC report identified four MA and three ESAs within a 5 km radius of the Project Area (Figure F-1):

- The Strawberry Point Marsh MA and ESA is located approximately 3.5 km northeast of the Project Area. The Strawberry Point MA and ESA are managed by Ducks Unlimited Canada;
- The Enclosure MA and the Wilson's Point Refuge MA, are located 0.5 km southeast of the Project Area. The Enclosure is designated as a Provincial Park and Wilson's Point Refuge is a Wildlife Protection Area;
- Beaubears Island MA, a National Historic Site, is located approximately 1.3 km east of the Project Area, slightly downstream of the junction of the Northwest Miramichi River and the Southwest Miramichi River;

- The Jones Cove/Oxford Cove ESA is located within the northern portion of the Project Area and is considered significant for certain bird and flora species; and
- The Stewart Brook ESA is located approximately 4.4 km west of the Project Area and is considered significant for certain flora species.

No National Wildlife Areas (NWAs), Migratory Bird Sanctuaries (MBSs), Ramsar Sites, or New Brunswick Protected Natural Areas are located within 5 km of the Project Area (Environment Canada Protected Areas Network, 2017, Ramsar Sites Information Service, 2017, and NBDERD Protected Natural Areas, 2017).

4.3 Wildlife

White-Tailed Deer (*Odocoileus virginianus*) and Moose (*Alces alces*) scat and tracks were observed throughout the Project Area. This area is likely inhabited or frequented by other wildlife typical of New Brunswick including, but not limited to, Eastern Coyote (*Canis latrans*), Black Bear (*Ursus americanus*), Red Fox (*Vulpes vulpes*), Raccoon (*Procyon lotor*), Snowshoe Hare (*Lepus americanus*), Eastern Grey Squirrel (*Sciurus carolinensis*), and Eastern Chipmunk (*Tamias* striatus).

4.3.1 Wildlife Species at Risk (SAR) + Critical Habitat

The ACCDC had no records of wildlife SAR (excluding birds and fish) within the Assessment Area. Additionally, no wildlife SAR or associated critical habitat were observed within the Project Area and the habitat present is not likely to play an important role in the support of any non-bird wildlife SAR.

4.3.2 Wildlife Species of Conservation Concern (SOCC)

The ACCDC has two records of wildlife SAR (excluding birds and fish); the Monarch Butterfly (*Danaus plexippus*) and the Hoary Comma (*Polygonia gracilis*) are identifed as having been observed within the Assessment Area.

The Monarch Butterfly (*Danaus plexippus*) is ranked S3B, S3M (vulnerable breeding, migrant) by ACCDC and is designated as a species of Special Concern under *SARA* and *NBSAR*. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated the species as Endangered. In general, the Monarch Butterfly (*Danaus plexippus*) can be found wherever there is an abundance of wildflowers, especially Milkweed (*Asclepius* spp.). These plant species tend to grow along roadsides, on abandoned farmland, in dry sandy areas, and along river banks (COSEWIC, 2010). No Monarch Butterflies (*Danaus plexippus*) were observed during the field investigations. Although, scattered occurrences of Common Milkweed (*Asclepius syriaca*) were recorded along Route 8 during the flora surveys, no suitable Monarch Butterfly breeding habitat was identified. The roadside areas have an abundance of Goldenrod (*Solidago* spp.) and species belonging to the Aster genus (*Aster* spp.), which are used by adult Monarch Butterflies for foraging.

The Hoary Comma (*Polygonia gracilis*) is ranked S3 (vulnerable) by ACCDC and has a NBDERD rank of secure. This butterfly is found throughout New Brunswick with some frequency north and west of the Miramichi River (MBA, 2016). Typical habitat is boreal forest and specimens are often found on nectaring flowers such as Aster species (CBIF, 2014). Hoary Comma (*Polygonia gracilis*) were not identified during the field investigations.

Roadside wildflowers could provide nectar to butterflies migrating from August until mid-October. However, this type of roadside habitat is not limited in the region and the relatively small Project footprint is anticipated to have little effect (if any) on the regional abundance of wildflowers.

No terrestrial wildlife SOCC were observed within the Project Area and the terrestrial habitat present is not likely to support any other non-bird wildlife SOCC.

4.4 Birds and Bird Habitat

The ACCDC report lists 45 bird species that have been recorded within the Assessment Area. Most of the 45 bird species listed in the ACCDC report were recorded near Strawberry Point Marsh and Beaubears Island, both ESAs for birds. Beaubears Island and Strawberry Marsh Point are located 1.3 km and 3.6 km, respectively, from the Project Area.

4.4.1 Bird Species at Risk

Of the 45 bird species identified in the ACCDC report, eight were considered to be SAR. Of the eight, three bird SAR, Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*) and Common Nighthawk (*Chordeiles minor*), have a high or moderate potential for nesting and/or foraging in the Project Area. Table F-1 summarizes SAR birds and potential interactions with the Project based on known habitats in the Project Area.

The Common Nighthawk (*Chordeiles minor*) and the Barn Swallow (*Hirundo rustica*) are listed as Threatened under *SARA*, COSEWIC and the *NBSAR*. The Bank Swallow (*Riparia riparia*) is listed as Threatened under *SARA* and COSEWIC but does not have a provincial recognition.

Table F-1 Bird Species at Risk with 5 km of the Project Area + Potential Use of Project Area

Common Name	Scientific Name	S-Rank	NBDERD General Status	Nesting Habitat	Foraging Habitat	Probability of Nesting in Project Area
Whip-Poor-Will	*Caprimulgus vociferus*	S2B,S2M	At Risk	Rich moist woodlands, either deciduous or mixed forest with sparse understory, close to open areas	Same as nesting	Low
Barn Swallow	*Hirundo rustica*	S2B, S2M	Sensitive	Artificial structures, bridges, barns, and other outbuildings	Open habitats, fields, lakes, wetlands, shoreline	Moderate
Chimney Swift	*Chaetura pelagica*	S2S3B, S2M	At Risk	Chimneys, air vents, wells, hollow trees, and caves	Urban and suburban areas, rivers, lakes, forests, and fields	Low
Bank Swallow	*Riparia riparia*	S2S3B,S2S3M	Sensitive	Riverbanks, aggregate pits, road cuts, lake and ocean bluffs	Open habitats grasslands and meadows	High
Canada Warbler	*Wilsonia canadensis*	S3B, S3M	At Risk	Moist dense thickets near wetlands	Forages on ground or in dense understory thickets	Low
Bobolink	*Dolichonyx oryzivorus*	S3B, S3M	Sensitive	Hayfields and pastures	Same as nesting	Low
Common Nighthawk	*Chordeiles minor*	S3B, S4M	At Risk	Open area habitats, abandoned agriculture areas, disturbed areas, bogs, rock outcrops and gravel roofs	At high altitude or over open areas	Moderate
Barrow's Goldeneye Eastern pop	*Bucephala islandica (Eastern pop.)*	S2M, S2N	Sensitive	Forest areas adjacent to lakes and ponds in the north	Same as nesting	Low

No nests were identified for SAR bird species during the bird survey; however, the bridge deck and piers were not surveyed for nests due to inaccessibility at the time of the field investigations. The New Brunswick Department of Transportation and Infrastructure (NBDTI) will conduct an additional survey of the bridge within the breeding bird season of 2018 to detect the presence of any SAR nests on the null bridge prior to its removal. The presence or absence of other SAR with 'moderate' or 'high' likelihood of nesting in Table F-1 will also be investigated during this survey.

ACCDC range maps listed the Bald Eagle (*Haliaeetus leucocephalus)* as an additional "location sensitive" bird species that may be found in the Project Area. The Bald Eagle (*Haliaeetus leucocephalus*) is endangered under the *NBSAR*. Habitat for the Bald Eagle was found within the Project Area (*e.g.,* tall deciduous and coniferous trees, transmission poles, and bridges) and fishing and scavenging spots were observed. However, no evidence of Bald Eagle presence (*i.e.,* incidental sightings, nests) were observed.

4.4.2 Bird Species of Conservation Concern

Twenty-five (25) of the remaining 37 bird species recorded within the Assessment Area are considered SOCC and are known to breed in this region; these remaining species pass through this area during migration, and it is assumed that the Project will not impact these species. Table F-2 summarizes SOCC birds and the potential interactions with the Project based on known habitats in the Project Area.

No nests were identified for SOCC during the surveys; however, the bridge deck and piers were not surveyed for nests due to inaccessibility at the time of the field investigations. NBDTI will conduct an additional survey of the bridge within the breeding bird season of 2018 to detect the presence of any SOCC nests on the null bridge prior to its removal. The presence or absence of any other breeding SOCC will also be investigated during this survey.

Table F-2 Bird Species of Conservation Concern Recorded within 5 km of the Project Area

Common Name	Scientific Name	SRank	NBDERD General Status	Nesting Habitat	Foraging Habitat	Probability of Nesting in Project Area
Greater Yellowlegs	*Tringa melanoleuca*	S1?B,S5M	Secure	Coniferous swamps and bogs	Open marshes, mudflats, streams, ponds	Low
Lesser Scaup	*Aythya affinis*	S1B,S4M	Secure	Marsh ponds, lakes, bays, estuaries	Same as nesting	Low
Willow Flycatcher	*Empidonax traillii*	S1S2B,S1S2M	Sensitive	Shrub thickets, especially willows, near standing water or along streams	Perches within tall shrubs or low trees	Moderate
House Wren	*Troglodytes aedon*	S1S2B,S1S2M	Undetermined	Variety of semi-open habitats, including suburbs, orchards, woodlots, open forest, streamside groves	Shrubs and low tree branches	Moderate
Northern Mockingbird	*Mimus polyglottos*	S2B,S2M	Sensitive	Urban/suburban, farms, roadsides, shrub thickets Favors areas with dense low shrubs and open ground	Low shrubs and trees with perches	Moderate
Brown Thrasher	*Toxostoma rufum*	S2B,S2M	Sensitive	Dense shrub thickets around edges of deciduous or mixed woods, shrubby edges of swamps	Ground below dense shrub cover	Moderate
Gadwall	*Anas strepera*	S2B,S3M	Secure	Lakes, ponds, and coastal marshes	Same as nesting	Low

Common Name	Scientific Name	SRank	NBDERD General Status	Nesting Habitat	Foraging Habitat	Probability of Nesting in Project Area
Solitary Sandpiper	*Tringa solitaria*	S2B,S5M	Secure	Bogs and ponds surrounded by coniferous forest	Shallow water	Low
Snow Goose	*Chen caerulescens*	S2M	Secure	Arctic tundra	Agricultural fields during migration	Low
Glaucous Gull	*Larus hyperboreus*	S2N,S2M	Secure	High arctic	Coastal areas, freshwater lakes, agricultural fields, urban areas, and garbage dumps	Low
Great Crested Flycatcher	*Myiarchus crinitus*	S2S3B,S2S3M	Sensitive	Deciduous/mixed forests, and forest edges or abandoned orchards. Nests in natural cavity or old woodpecker holes	Forest edge or open habitat with perches	Low
Cliff Swallow	*Petrochelidon pyrrhonota*	S2S3B,S2S3M	Sensitive	Bridges, farms, cliffs, and river bluffs	Forages low over the water or very high over other terrain	Moderate
Pine Siskin	*Carduelis pinus*	S3	Secure	Coniferous and mixed woods, often around edges or clearings; sometimes in deciduous woods, isolated conifer stands	Fields, scrub thickets, suburban backyard feeders and gardens	Low

Common Name	Scientific Name	SRank	NBDERD General Status	Nesting Habitat	Foraging Habitat	Probability of Nesting in Project Area
Turkey Vulture	*Cathartes aura*	S3B,S3M	Secure	Hollow trees, crevices in cliffs, under rocks, caves, inside dense thickets, or in old buildings	Roadsides, suburbs, farm fields, and landfills	Low
Virginia Rail	*Rallus limicola*	S3B,S3M	Sensitive	Freshwater marshes, salt marshes, dense emergent vegetation	Same as nesting	Low
Killdeer	*Charadrius vociferus*	S3B,S3M	Sensitive	Open habitat, pastures, plowed fields, large lawns, mudflats, lake shores, coastal estuaries	Forages in open areas typically near water	High
Black-Billed Cuckoo	*Coccyzus erythropthalmus*	S3B,S3M	Secure	Deciduous thickets and shrub thickets on the edges of woodland or marshes. Also along shrubby edges of second growth of mixed forest	Same as nesting	Moderate
Warbling Vireo	*Vireo gilvus*	S3B,S3M	Secure	Open deciduous or mixed forest, also in orchards and parks	Deciduous trees and shrubs	Low
Indigo Bunting	*Passerina cyanea*	S3B,S3M	Secure	Forest and field edges, road sides, streams, rivers, and abandoned fields	Fields, lawns, grasslands, shrubs, and trees	Low
Brown-Headed Cowbird	*Molothrus ater*	S3B,S3M	Secure	Grasslands with low and scattered trees, forest edges, shrub thickets, fields, pastures, orchards, and residential areas	Fields and pastures	Moderate

Common Name	Scientific Name	SRank	NBDERD General Status	Nesting Habitat	Foraging Habitat	Probability of Nesting in Project Area
Baltimore Oriole	*Icterus galbula*	S3B,S3M	Secure	Breeds in deciduous or mixed woodland, open forest, or edges, riverside trees and shade trees	Same as nesting	Low
Cape May Warbler	*Dendroica tigrina*	S3B,S4S5M	Secure	Pure stands of spruce or mixed with fir near the forest edge	Same as nesting	Low
Northern Pintail	*Anas acuta*	S3B,S5M	Sensitive	Open country with shallow, seasonal wetlands and low vegetation	Shallow waters with exposed mudflats, including fresh and brackish marshes, lakes, flooded fields	Low
Red-Breasted Merganser	*Mergus serrator*	S3B,S5M,S4S5N	Secure	Shores of lakes and rivers, inside hollow stump, under rock, or in shallow burrow	Lakes and rivers	Low
Evening Grosbeak	*Coccothraustes vespertinus*	S3B, S3S4N, SUM	Sensitive	Coniferous and mixed forests; often associated with spruce and fir	Forages in trees and shrubs (fruiting)	Low

5.0 SUMMARY OF POTENTIAL EFFECTS

5.1 Construction Phase Potential Effects

Potential effects to birds, bird habitat, terrestrial wildlife and terrestrial habitat are detailed in the following sub-sections for the wildlife and wildlife habitat VEC during the construction phase of the Project.

5.1.1 Terrestrial Wildlife and Habitat Potential Effects

Potential effects to terrestrial wildlife and habitat as a result of the construction phase of the Project include the following:

- Vegetation clearing will take place within the proposed ROW (approximately 5 hectares (ha) of clearing) within the Project Area. Wildlife will not be able to utilize this area during the construction phase of the Project. However, the affected habitat is not considered to be of high value for wildlife and the conditions are abundant in the surrounding area. The loss of wildlife habitat will be partially offset by the removal of the null bridge structure and the rehabilitation of the approaches;
- Noise from construction activities may disrupt wildlife. Increased noise levels will be limited to active working periods when machinery is operating within the Project Area;
- Use of artificial light during nighttime operations may attract or disrupt wildlife species. In general, construction activities will be limited to day-light hours. As such, this effect is not discussed further in this VEC assessment;
- Accidental contaminant spills may result in wildlife injury and death and/or destruction of habitat or foraging areas; and
- Possibility of increased human interaction with wildlife as a result of increased personnel within the Project Area. Possibility of wildlife attraction to waste and garbage stored on site.

5.1.2 Birds and Bird Habitat Potential Effects

A list of birds and bird habitat known to occur within 5 km of the Project Area are summarized in Table F-1 and Table F-2. Potential effects to birds and bird habitat as a result of the construction phase of the Project include the following:

- Potential bird SAR habitat was identified within the Project Area and will be altered during the construction activities. Approximately 5 hectares of vegetation clearing is required for the Project that may have been used as foraging and/or nesting habitat for Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*) and/or Common Nighthawk (*Chordeiles minor*). Additionally, the Project Area includes approximately 50 metres of riverbank along the southern side of the Northwest Miramichi that provides suitable nesting habitat for Bank Swallow (*Riparia riparia*). Suitable habitat for these species is not limited within the

area and similar habitat conditions were observed on adjoining properties. Additionally, the loss of wildlife habitat will be partially offset by the removal of the null bridge structure and rehabilitation of the approaches. A follow-up bird survey will be conducted by NBDTI in the breeding season of 2018, to determine the actual use of the Project Area by migratory bird SAR and SOCC;

- Migratory birds may utilize the habitat within the Project Area and these birds and their nests are protected under the federal *MBCA*. Construction activities may alter or destroy migratory bird habitat as a result of the vegetation clearing, in-filling of wetlands and/or alteration of the riverbanks. Suitable habitat for these species is not limited within the area and similar habitat conditions were observed on adjoining properties;
- Noise from construction activities may disrupt bird species within the Project and Assessment Areas, or deter migratory birds from utilizing these areas. Sound quality potential effects are limited to active working periods when machinery is operating within the Project Area;
- Attraction to cleared or stockpile areas may result in an increase in bird injuries or deaths, and/or destruction of nests;
- Use of artificial light during nighttime operations may attract bird species. In general, construction activities will be limited to day-light hours. As such, this effect is not discussed further in this VEC assessment; and
- Accidental contaminant spills may result in bird injury or death and/or destruction of nests, habitat or foraging areas.

5.2 Operational and Maintenance Phase Potential Effects

Potential effects on birds, bird habitat, terrestrial wildlife and terrestrial habitat are detailed in the following sub-sections for the wildlife and wildlife habitat VEC during the operational and maintenance phase of the Project.

5.2.1 Terrestrial Wildlife and Habitat Potential Effects

Potential effects to terrestrial wildlife as a result of the operational and maintenance phase of the Project include the following:

- Vegetation clearing as part of summer maintenance activities may damage wildlife habitat. Vegetation clearing during the operational and maintenance phase is generally limited to roadside embankments and ditches, and is not likely to exceed the surficial area currently affected at the Project Area;
- Noise from maintenance activities may disrupt wildlife species. Increased noise levels will be limited to active working periods when machinery is operating within the Project Area and is not likely to exceed noise levels currently observed on-site;

- Accidental contaminant spills may result in wildlife injury or death and/or destruction of habitat or foraging areas; and
- Vehicular collisions may cause injury or death to involved wildlife; however, this effect is not expected to be greater than that currently observed on-site. Therefore, this effect is not discussed further in this VEC assessment.

5.2.2 Birds and Bird Habitat Potential Effects

Potential effects to birds and bird habitat as a result of the operational and maintenance phases of the Project include the following:

- Vegetation clearing as part of summer maintenance activities may destroy or alter bird SAR and/or migratory bird habitat. Vegetation clearing during the operational and maintenance phase is generally limited to roadside embankments and ditches and is not likely to exceed the surficial area currently affected at the Project Area;
- Noise from maintenance activities may disrupt bird species within the Project Area, or deter migratory birds from utilizing the area. Sound quality potential effects are limited to active working periods when machinery is operating within the Project Area. Operational noise is not expected to exceed noise levels currently observed on-site;
- Accidental contaminant spills may result in bird injury or death and/or destruction of nests, habitat or foraging areas; and
- Vehicular collisions may cause injury or death to involved birds; however, this effect is not expected to be greater than that currently observed on-site. Therefore, this effect is not discussed further in this VEC assessment.

5.3 Accidents, Malfunctions and Unplanned Events

There is a potential for accidents to occur during all phases of the Project. Accidents that may impact wildlife and wildlife habitat within the Project Area include:

- Fire;
- Failure of sedimentation and erosion controls structures;
- Vehicle collisions with wildlife; and
- Accidental release of hazardous chemicals or petroleum products.

6.0 PROPOSED MITIGATION MEASURES

The potential effects, standard NBDTI Environmental Management Manual (EMM) mitigation measures and any additional mitigation measures recommended by GEMTEC in order to minimize the potential effects to wildlife and wildlife habitat during the construction and operational and maintenance phases of the Project are summarized in Table F-3.

Table F-3 Summary of Mitigation Measures for Wildlife and Wildlife Habitat

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Construction Phase			
Birds and Bird Habitat	• Potential bird SAR habitat was identified within the Project Area and could be destroyed or altered during the construction activities; and • Construction activities may alter or destroy migratory bird habitat.	• 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.8 Excavation, Blasting and Aggregate Production; • 5.10 Fire Prevention and Contingency; • 5.15 Structures; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas.	• If vegetation clearing must take place within the bird-breeding season (April 15 to August 31), a non-intrusive nesting survey of the Project Area will be conducted by a bird expert; • The piers and abutments of the existing bridge should be surveyed for bird nests prior to the removal of the structure; • If a nesting bird species is encountered, contact with and disturbance of the species and its habitat will be avoided; and • An appropriate vegetated buffer will be established around any nests encountered to protect them from disturbance and work in that area will be avoided until after the birds have fledged or vacated.

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Birds and Bird Habitat	Noise from construction activities may disrupt bird species or deter migratory birds from utilizing the area.	• 5.8 Excavation, Blasting and Aggregate Production; • 5.15.1 Structures Construction; • 5.17 Temporary Ancillary Facility Management; and • 5.19 Vehicle and Equipment Management.	No additional mitigation measures are recommended by GEMTEC.
	Attraction to cleared/stockpile areas may result in an increase in bird injuries and/or deaths or destruction of nests.	• 5.3 Clearing; • 5.15.1 Structures Construction; • 5.18 Topsoil; • 5.20 Waste Management; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas.	
Terrestrial Wildlife and Habitat	Vegetation clearing will alter/destroy wildlife habitat within the Project Area.	• 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.8 Excavation, Blasting and Aggregate Production; • 5.10 Fire Prevention and Contingency; • 5.15 Structures; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas.	No additional mitigation measures are recommended by GEMTEC.

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Terrestrial Wildlife and Habitat	Noise from construction activities may disrupt wildlife.	• 5.8 Excavation, Blasting and Aggregate Production; • 5.15.1 Structures Construction; • 5.17 Temporary Ancillary Facility Management; and • 5.19 Vehicle and Equipment Management.	No additional mitigation measures are recommended by GEMTEC.
	Possibility of increased human interaction as a result of increased personnel within the Project Area, possible attraction to waste/garbage stored on site, and proximity to wildlife habitat (*e.g.,* forest, wetlands, river).	• 5.20 Waste Management.	

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Operational and Maintenance Phase			
Birds and Bird Habitat	Vegetation clearing as part of summer maintenance activities or maintenance activities may destroy or alter bird SAR and/or migratory bird habitat.	• 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.10 Fire Prevention and Contingency; • 5.15.2 Structures Maintenance; • 5.16 Summer Highway Maintenance; and • 5.23 Working Near Environmentally Sensitive Areas.	• If vegetation clearing must take place within the bird-breeding season (April 15 to August 31), a non-intrusive nesting survey of the Project Area will be conducted by a bird expert; • If a nesting bird species is encountered, contact with and disturbance of the species and its habitat will be avoided; and • An appropriate vegetated buffer will be established around any nests encountered to protect them from disturbance and work in that area will be avoided until after the birds have fledged or vacated.
	Noise from maintenance activities may disrupt bird species within the Project Area or deter migratory birds from utilizing the area.	• 5.15.2 Structures Maintenance; • 5.16 Summary Highway Maintenance; • 5.17 Temporary Ancillary Facility Management; • 5.19 Vehicle and Equipment Management; and • 5.21 Winter Highway Maintenance.	No additional mitigation measures are recommended by GEMTEC.

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Terrestrial Wildlife and Habitat	Vegetation clearing as part of summer maintenance activities or maintenance activities may damage wildlife habitat.	• 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.10 Fire Prevention and Contingency; • 5.15.2 Structures Maintenance; and • 5.16 Summer Highway Maintenance.	No additional mitigation measures are recommended by GEMTEC.
	Noise from maintenance activities may disrupt wildlife species.	• 5.15.2 Structures Maintenance; • 5.16 Summary Highway Maintenance; • 5.17 Temporary Ancillary Facility Management; • 5.19 Vehicle and Equipment Management; and • 5.21 Winter Highway Maintenance.	
Accidents, Malfunctions and Unplanned Events			
Fire	Increased potential for destruction of habitat and wildlife death from fire.	• 5.10 Fire Prevention and Contingency; • 5.12 Spill Management; • 5.13 Storage and Handling of Petroleum Products; • 5.14 Storage and Handling of Other Hazard Materials; and • 5.19 Vehicle and Equipment Management.	No additional mitigation measures are recommended by GEMTEC.

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Accidental Release of Contaminants	Increased potential for contaminants to be released into habitat through the accidental release of fuels and lubricants from construction/maintenance equipment or vehicle collisions.	• 5.10 Fire Prevention and Contingency; • 5.12 Spill Management; • 5.13 Storage and Handling of Petroleum Products; • 5.14 Storage and Handling of Other Hazard Materials; and • 5.19 Vehicle and Equipment Management.	No additional mitigation measures are recommended by GEMTEC.
	Accidental contaminant spills may result in wildlife injury, death and/or destruction of habitat or foraging areas.	• 5.1 Asphalt Concrete; • 5.10 Fire Prevention and Contingency; • 5.12 Spill Management; • 5.13 Storage and Handling of Petroleum Products; • 5.14 Storage and Handling of Other Hazard Materials; • 5.16 Summer Highway Maintenance; • 5.17 Temporary Ancillary Facility Management; • 5.19 Vehicle and Equipment Management; • 5.20 Waste Management; • 5.21 Winter Highway Maintenance; and • 5.23 Working Near Environmentally Sensitive Areas.	
Failure of Erosion Control Structures	Potential for sediment loading in habitats from ground disturbance.	• 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.18 Topsoil; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas.	

7.0 SUMMARY OF POTENTIAL SIGNIFICANT RESIDUAL EFFECTS

A significant residual effect to the wildlife and wildlife habitat VEC is considered to be:

- A decline in abundance of terrestrial wildlife populations beyond baseline conditions to the extent that the local viability of a given population would be compromised;
- The loss of habitat area and/or habitat function such that the ability of the Assessment Area to continue to support existing populations of SAR and SOCC is lost; and
- The destruction of wildlife SAR or their critical habitat.

The construction phase of the Project is expected to temporarily affect the wildlife and wildlife habitat within the Project Area. The construction of the proposed bridge will result in the loss of approximately 5 hectares of existing terrestrial wildlife habitat. A portion of the habitat loss will be offset by the natural rehabilitation of the null bridge abutments and approaches. The loss of habitat is not expected to impact any wildlife species at a population level, and the habitat conditions that will be lost are widely available in the Assessment Area. Furthermore, the proposed mitigation measures will reduce adverse effects to the extent that the construction phase of the Project is not expected to result in any significant residual effects to wildlife, wildlife habitat or birds. However, a follow-up bird survey will be conducted by NBDTI in the breeding season of 2018 to determine if any bird SAR or SOCC use the Project Area for breeding. Additional mitigation will be applied to avoid effects on bird SAR and SOCC, as required.

The operational and maintenance phase of the Project will not significantly alter environmental conditions that are currently observed on-site. The implementation of the proposed mitigation measures will minimize risks of adverse effects to wildlife and wildlife habitat; therefore, interactions during the operational and maintenance phase are considered to be non-significant.

8.0 REFERENCES

ACCDC (Atlantic Canada Conservation Data Centre), 2017. Ranking Data. Internet Publication: http://www.accdc.com/products/ranking.html Updated Sept 19, 2017.

Audubon. 2017. Guide to North American Birds. Accessed March 2, 2017. Website: http://www.audubon.org/bird-guide

Atlantic Canada Conservation Data Centre (ACCDC). 2017. Data Report 5928 Northwest Miramichi, NB.

Burrows, Roger. 2002. *Birds of Atlantic Canada*. Edmonton, Alberta. Lone Pine Publishing.

Birdlife International, Bird Studies and Nature Canada. 2016. Important Bird Areas of Canada. Accessed October, 2017. Website: http://www.ibacanada.com

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2017. Accessed November, 2017. Website: http://www.cosewic.gc.ca/eng/sct5/index_e.cfm

Environment Canada Protected Areas Network (ECPAN). 2017. Accessed October, 2017. Website: http://www.ec.gc.ca/ap-pa/default.asp?lang=En&n=7FC45404-1#a3

Environmental Management Manual. 2010. New Brunswick Department of Transportation and Infrastructure.

Erskine, A.J. 1992. Atlas of Breeding Birds of the Maritime Provinces. Nimbus Publishing and the Nova Scotia Museum, Halifax, NS. 270 pp.

GeoNB Wetland Mapping. Accessed October, 2017. Website: http://geonb.snb.ca/geonb/

Government of Canada. Species at Risk Public Registry. 2011. Accessed October, 2017. Website: https://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1

Government of New Brunswick. Species at Risk in New Brunswick: Parker's Pipewort. Accessed November 8, 2017. http://www2.gnb.ca/content/dam/gnb/Departments/nr-rn/pdf/en/Publications/SAR/pipewort.pdf

Maritime Breeding Bird Atlas. 2008. Maritime Breeding Bird Atlas 2006-2010. Internet Website: http://www.mba-aom.ca/ Accessed November, 2017.

Metalwark Web and Data. Butterflies and Moths of North America. 2017. Accessed November 7, 2017. Website: https://www.butterfliesandmoths.org/

New Brunswick Department of Environment and Local Government (NBDELG). 2012a. A Guide to Environmental Impact Assessment in New Brunswick. April 2012.

New Brunswick Department of Energy and Resource Development (NBDERD). 2017. Protected Natural Areas. Accessed October, 2017. Website: http://nbdnr.maps.arcgis.com/apps/webappviewer/index.html?id=ceb3caf9aba34466bbb0bfa0bb0c3ed5&locale=en

Service New Brunswick (SNB). 2017. Registry and Mapping Services. Accessed November, 2017. Website: https://www.planet.snb.ca/PLANET/index.html

Species At Risk Public Registry. 2013. Accessed October, 2017. Website: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=286

The Cornell Lab of Ornithology. All About Birds. 2015. Retrieved from https://www.allaboutbirds.org/

The IUCN Red List of Threatened Species. 2016. Accessed October, 2017, Website: http://www.iucnredlist.org/

The RAMSAR Convention Secretariat. 2018. The Ramsar Sites Information Service. Accessed October, 2017. Website: https://rsis.ramsar.org/

ATTACHMENTS

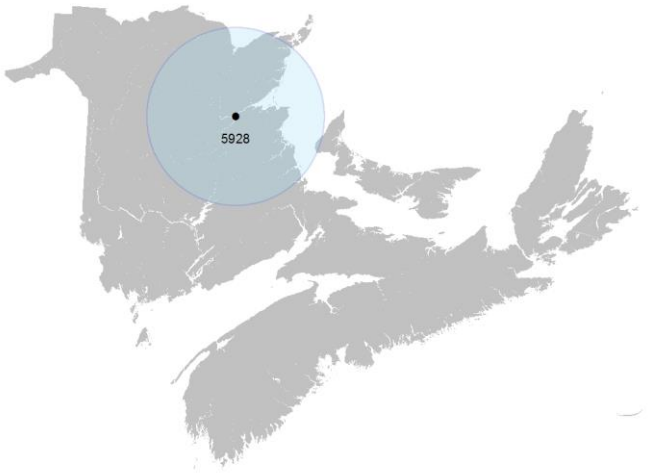
F-1 - ACCDC Report

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 5928: Northwest Miramichi, NB

Prepared 19 September 2017
by J. Churchill, Data Manager

CONTENTS OF REPORT



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
NorthwestMirNB_5928ob.xls	All Rare and legally protected *Flora and Fauna* in your study area
NorthwestMirNB_5928ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
NorthwestMirNB_5928ma.xls	All *Managed Areas* in your study area
NorthwestMirNB_5928sa.xls	All *Significant Natural Areas* in your study area
NorthwestMirNB_5928ff.xls	Rare and common *Freshwater Fish* in your study area (DFO database)

1.2 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting ACCDC data, recipients assent to the following limits of use:

a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c) The ACCDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
d) ACCDC data responses are restricted to the data in our Data System at the time of the data request.
e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
f) ACCDC data responses are not to be construed as exhaustive inventories of taxa in an area.
g) The absence of a taxon cannot be inferred by its absence in an ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

Please direct any additional questions about ACCDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sblaney@mta.ca

Animals (Fauna)
John Klymko, Zoologist
Tel: (506) 364-2660
jklymko@mta.ca

Plant Communities
Sarah Robinson, Community Ecologist
Tel: (506) 364-2664
srobinson@mta.ca

Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing
Jean Breau
Tel: (506) 364-2657
jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Stewart Lusk, Natural Resources: (506) 453-7110.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Sherman Boates, NSDNR: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NSDNR Regional Biologist:

Western: Duncan Bayne
(902) 648-3536
Duncan.Bayne@novascotia.ca

Western: Donald Sam
(902) 634-7525
Donald.Sam@novascotia.ca

Central: Shavonne Meyer
(902) 893-6353
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
(902) 893-5630
Kimberly.George@novascotia.ca

Eastern: Mark Pulsifer
(902) 863-7523
Mark.Pulsifer@novascotia.ca

Eastern: Donald Anderson
(902) 295-3949
Donald.Anderson@novascotia.ca

Eastern: Terry Power
(902) 563-3370
Terrance.Power@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

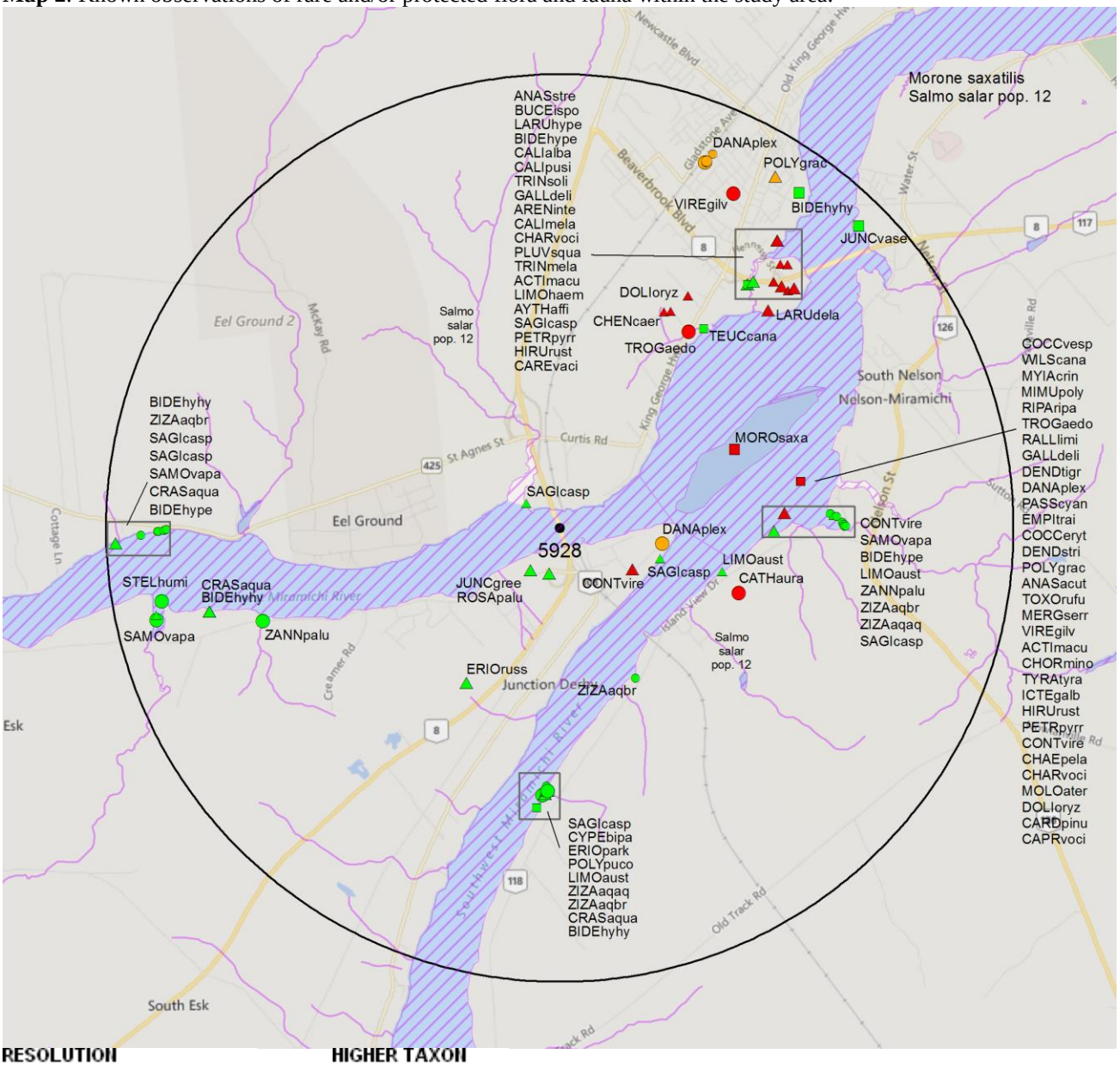
2.1 FLORA

The study area contains 59 records of 19 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 516 records of 46 vertebrate, 10 records of 2 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within the study area.

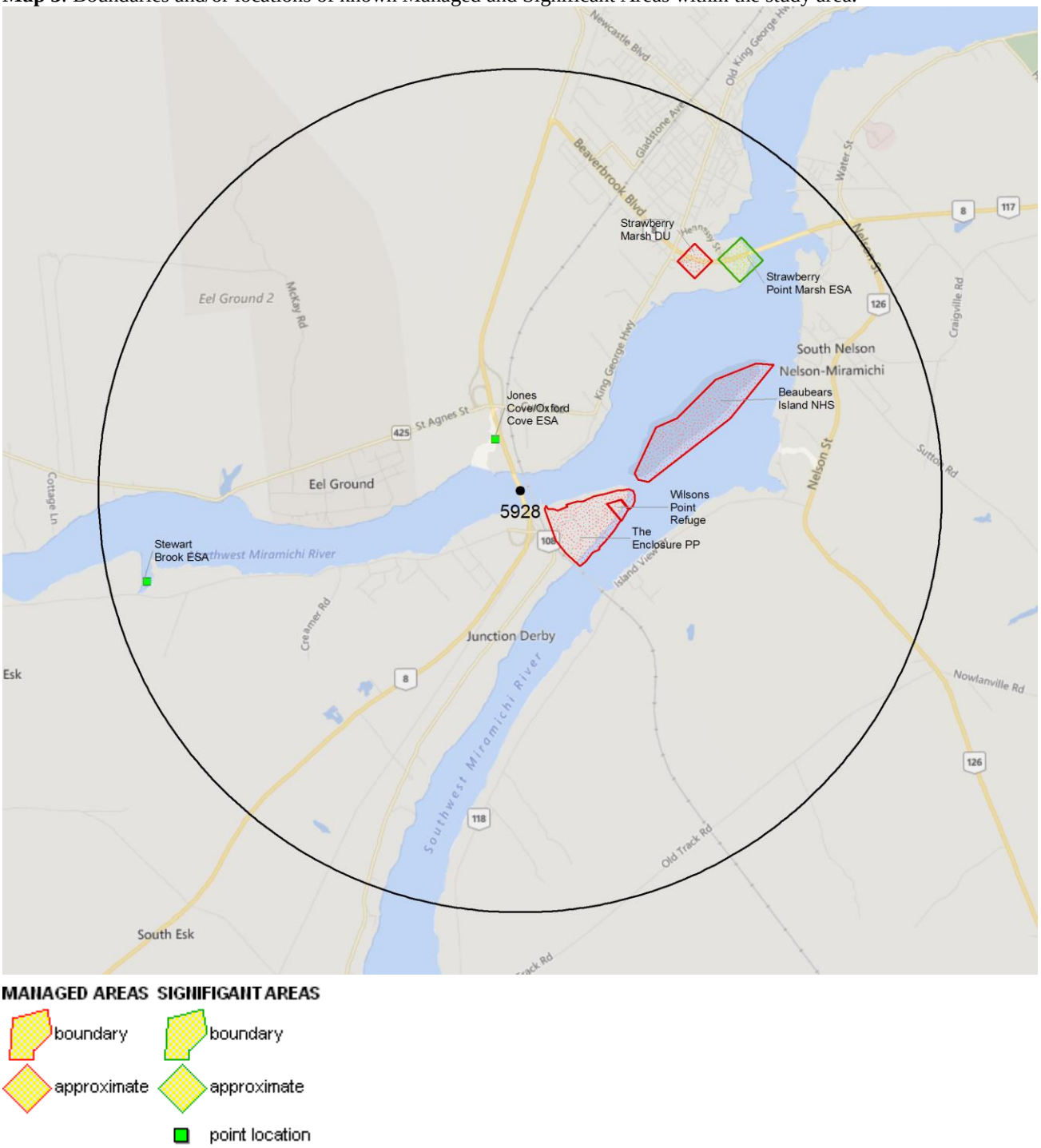


3.0 SPECIAL AREAS

3.1 MANAGED AREAS
The GIS scan identified 4 managed areas in the vicinity of the study area (Map 3 and attached file: *ma*.xls).

3.2 SIGNIFICANT AREAS
The GIS scan identified 3 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the study area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Eriocaulon parkeri*	Parker's Pipewort	Not At Risk		Endangered	S2	1 At Risk	1	2.9 ± 1.0
P	*Cyperus bipartitus*	Shining Flatsedge				S1	2 May Be At Risk	1	2.9 ± 0.0
P	*Juncus greenei*	Greene's Rush				S1	2 May Be At Risk	1	0.6 ± 1.0
P	*Zizania aquatica var. brevis*	Indian Wild Rice				S1	2 May Be At Risk	4	1.9 ± 0.0
P	*Sagittaria calycina var. spongiosa*	Long-lobed Arrowhead				S2	4 Secure	15	0.5 ± 0.0
P	*Juncus vaseyi*	Vasey Rush				S2	3 Sensitive	2	4.7 ± 10.0
P	*Zizania aquatica var. aquatica*	Indian Wild Rice				S2	5 Undetermined	2	2.4 ± 1.0
P	*Carex vacillans*	Estuarine Sedge				S2?	3 Sensitive	2	3.4 ± 1.0
P	*Bidens hyperborea*	Estuary Beggarticks				S3	4 Secure	3	3.1 ± 0.0
P	*Bidens hyperborea var. hyperborea*	Estuary Beggarticks				S3	4 Secure	6	3.1 ± 5.0
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	4 Secure	1	4.5 ± 0.0
P	*Crassula aquatica*	Water Pygmyweed				S3	4 Secure	3	2.9 ± 1.0
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	1	2.7 ± 5.0
P	*Polygonum punctatum var. confertiflorum*	Dotted Smartweed				S3	4 Secure	1	2.9 ± 1.0
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S3	4 Secure	9	3.0 ± 0.0
P	*Rosa palustris*	Swamp Rose				S3	4 Secure	1	0.5 ± 1.0
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	3	1.9 ± 0.0
P	*Zannichellia palustris*	Horned Pondweed				S3	4 Secure	2	3.1 ± 0.0
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	4 Secure	1	2.0 ± 1.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	2	2.7 ± 7.0
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S2B,S2M	3 Sensitive	6	2.7 ± 7.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	4	2.7 ± 7.0
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B,S2S3M	3 Sensitive	2	2.7 ± 7.0
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Threatened	S3B,S3M	1 At Risk	1	2.7 ± 7.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3B,S3M	3 Sensitive	7	2.7 ± 7.0
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	4	2.7 ± 7.0
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	3	3.8 ± 0.0
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern			S3B,S3S4N,SUM	3 Sensitive	1	2.7 ± 7.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Special Concern	S4B,S4M	4 Secure	6	0.9 ± 1.0
A	*Morone saxatilis*	Striped Bass	E,E,SC			S3	2 May Be At Risk	1	2.1 ± 10.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	4 Secure	85	3.6 ± 0.0
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	4 Secure	2	3.6 ± 1.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	3 Sensitive	2	2.7 ± 7.0
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	5 Undetermined	2	2.6 ± 0.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	3 Sensitive	1	2.7 ± 7.0
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	3 Sensitive	1	2.7 ± 7.0
A	*Anas strepera*	Gadwall				S2B,S3M	4 Secure	1	3.8 ± 0.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	4 Secure	9	3.6 ± 0.0
A	*Chen caerulescens*	Snow Goose				S2M	4 Secure	2	2.6 ± 0.0
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	4 Secure	1	3.8 ± 0.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	3 Sensitive	2	2.7 ± 7.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	5	2.7 ± 7.0
A	*Carduelis pinus*	Pine Siskin				S3	4 Secure	3	2.7 ± 7.0
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	4 Secure	1	2.1 ± 0.0
A	*Rallus limicola*	Virginia Rail				S3B,S3M	3 Sensitive	2	2.7 ± 7.0
A	*Charadrius vociferus*	Killdeer				S3B,S3M	3 Sensitive	74	2.7 ± 7.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	4 Secure	1	2.7 ± 7.0
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	4 Secure	6	2.7 ± 7.0
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	4 Secure	1	2.7 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	2 May Be At Risk	2	2.7 ± 7.0
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	4 Secure	6	2.7 ± 7.0
A	*Dendroica tigrina*	Cape May Warbler				S3B,S4S5M	4 Secure	1	2.7 ± 7.0
A	*Anas acuta*	Northern Pintail				S3B,S5M	3 Sensitive	1	2.7 ± 7.0
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	2	2.7 ± 7.0
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	4	3.6 ± 0.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	4	2.7 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	4 Secure	123	2.7 ± 7.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	4 Secure	27	2.7 ± 7.0
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	4 Secure	4	2.9 ± 0.0
A	*Dendroica striata*	Blackpoll Warbler				S3S4B,S5M	4 Secure	2	2.7 ± 7.0
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	4 Secure	11	3.6 ± 0.0
A	*Limosa haemastica*	Hudsonian Godwit				S3S4M	4 Secure	1	3.6 ± 0.0
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	4 Secure	51	3.6 ± 0.0
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	4 Secure	33	3.6 ± 0.0
A	*Calidris alba*	Sanderling				S3S4M,S1N	3 Sensitive	6	3.6 ± 0.0
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	3 Sensitive	8	1.1 ± 0.0
I	*Polygonia gracilis*	Hoary Comma				S3	4 Secure	2	2.7 ± 7.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting your study area are indicated below with "YES".

New Brunswick

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Chrysemys picta picta	Eastern Painted Turtle			No
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Haliaeetus leucocephalus	**Bald Eagle**		**Endangered**	**YES**
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat Hibernaculum		[Endangered][1]	[Endangered][1]	No

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
410	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
48	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
37	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
21	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
19	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
17	Coursol, F. 2005. Dataset from New Brunswick fieldwork for Eriocaulon parkeri COSEWIC report. Coursol, Pers. comm. to C.S. Blaney, Aug 26. 110 recs.
7	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
4	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
4	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
4	Dept of Fisheries & Oceans. 2001. Atlantic Salmon Maritime provinces overview for 2000. DFO.
4	Klymko, J.J.D. 2014. Maritimes Butterfly Atlas, 2012 submissions. Atlantic Canada Conservation Data Centre, 8552 records.
3	Klymko, J.J.D. 2012. Maritimes Butterfly Atlas, 2010 and 2011 records. Atlantic Canada Conservation Data Centre, 6318 recs.
3	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs.
3	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc.
2	Dept of Fisheris & Oceans. 2001. Atlantic Salmon Maritime provinces overview for 2000. DFO.
2	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
2	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
1	Atlantic Canada Conservation Area Database (ARCAD)
1	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
1	Bradford, R.G. et al. 1999. Update on the Status of Striped bass (Morone saxatilis) in eastern Canada in 1998.
1	Cdn Gazeteer
1	Dept of Fisheries & Oceans. 1999. Status of Wild Striped Bass, & Interaction between Wild & Cultured Striped Bass in the Maritime Provinces. , Science Stock Status Report D3-22. 13 recs.
1	EMR Place Names
1	Federal Lands db
1	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 20110 records of 126 vertebrate and 633 records of 63 invertebrate fauna; 4997 records of 261 vascular, 103 records of 56 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	1	52.7 ± 1.0	NB
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	1932	25.0 ± 0.0	NB
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	1 At Risk	4	50.1 ± 1.0	NB
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	2 May Be At Risk	425	84.5 ± 0.0	NB
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	197	32.2 ± 0.0	NB
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	6	17.1 ± 5.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened		Threatened	S1B,S1M	2 May Be At Risk	6	5.1 ± 7.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened		Threatened	S1S2B,S1S2M	2 May Be At Risk	57	10.3 ± 7.0	NB
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	49	2.7 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S2B,S2M	3 Sensitive	641	2.7 ± 7.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Special Concern	Threatened	S2B,S2M	1 At Risk	435	40.3 ± 7.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	1 At Risk	541	11.2 ± 0.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	232	2.7 ± 7.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B,S2S3M	3 Sensitive	372	2.7 ± 7.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B,S3M	1 At Risk	534	7.3 ± 7.0	NB
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Threatened	S3B,S3M	1 At Risk	418	2.7 ± 7.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3B,S3M	3 Sensitive	524	2.7 ± 7.0	NB
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	360	2.7 ± 7.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4	4 Secure	13	19.9 ± 1.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	1 At Risk	4	64.5 ± 0.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Endangered	S1B,S3M	1 At Risk	11	7.0 ± 20.0	NB
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	3 Sensitive	9	47.9 ± 0.0	NB
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	49	3.8 ± 0.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	2 May Be At Risk	188	7.3 ± 7.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern			S3B,S3S4N,SUM	3 Sensitive	384	2.7 ± 7.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern			S3M	3 Sensitive	3	80.9 ± 1.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Special Concern	S4B,S4M	4 Secure	380	0.9 ± 1.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern		Special Concern	S4N,S4M	4 Secure	1	73.3 ± 3.0	NB
A	*Odobenus rosmarus rosmarus*	Atlantic Walrus	Special Concern		Extirpated	SX		3	48.2 ± 1.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	4 Secure	12	61.9 ± 29.0	NB
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	2 May Be At Risk	1	80.9 ± 1.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1S2B,S1S2M	3 Sensitive	3	12.7 ± 1.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	2 May Be At Risk	13	19.7 ± 0.0	NB
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk	Special Concern		S2	3 Sensitive	16	70.6 ± 1.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk	Special Concern		S2B,S2M	2 May Be At Risk	10	10.7 ± 0.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B,S2M	3 Sensitive	6	49.8 ± 7.0	NB
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3		1	42.9 ± 1.0	NB
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S3	1 At Risk	41	23.0 ± 0.0	NB
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	3 Sensitive	549	30.5 ± 1.0	NB
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	3 Sensitive	7	12.1 ± 0.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	1 At Risk	350	0.6 ± 0.0	NB
A	*Canis lupus*	Gray Wolf	Not At Risk		Extirpated	SX	0.1 Extirpated	1	44.2 ± 100.0	NB
A	*Puma concolor pop. 1*	Eastern Cougar	Data Deficient		Endangered	SU	5 Undetermined	48	5.1 ± 1.0	NB
A	*Morone saxatilis*	Striped Bass	E,E,SC			S3	2 May Be At Risk	14	2.1 ± 10.0	NB
A	*Salvelinus alpinus*	Arctic Char				S1	3 Sensitive	10	69.0 ± 1.0	NB
A	*Synaptomys borealis*	Northern Bog Lemming				S1	5 Undetermined	3	51.7 ± 1.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S5M	4 Secure	583	3.6 ± 0.0	NB
A	*Aythya americana*	Redhead				S1B,S1M	8 Accidental	1	80.9 ± 1.0	NB
A	*Grus canadensis*	Sandhill Crane				S1B,S1M	8 Accidental	6	24.8 ± 1.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B,S1M	3 Sensitive	14	58.7 ± 7.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B,S1M	3 Sensitive	10	80.1 ± 7.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B,S1M	3 Sensitive	1	52.7 ± 0.0	NB
A	*Progne subis*	Purple Martin				S1B,S1M	2 May Be At Risk	18	22.6 ± 7.0	NB
A	*Thryothorus ludovicianus*	Carolina Wren				S1B,S1M	8 Accidental	1	9.7 ± 0.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	4 Secure	11	49.2 ± 0.0	NB
A	*Uria aalge*	Common Murre				S1B,S3N,S3M	4 Secure	3	95.4 ± 0.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	4 Secure	63	3.6 ± 1.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S4M,S2N	4 Secure	11	49.2 ± 1.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	2 May Be At Risk	106	10.3 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	2 May Be At Risk	33	30.5 ± 0.0	NB
A	*Branta bernicla*	Brant				S1N, S2S3M	4 Secure	54	48.4 ± 10.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	3 Sensitive	6	80.7 ± 0.0	NB
A	*Butorides virescens*	Green Heron				S1S2B,S1S2M	3 Sensitive	2	80.1 ± 7.0	NB
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B,S1S2M	3 Sensitive	79	20.3 ± 1.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B,S1S2M	3 Sensitive	19	2.7 ± 7.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B,S1S2M	2 May Be At Risk	5	53.5 ± 1.0	NB
A	*Troglodytes aedon*	House Wren				S1S2B,S1S2M	5 Undetermined	4	2.6 ± 0.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1S2B,S4N,S5M	4 Secure	20	89.6 ± 0.0	NB
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	3 Sensitive	10	48.8 ± 0.0	NB
A	*Microtus chrotorrhinus*	Rock Vole				S2?	5 Undetermined	29	85.6 ± 1.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B,S2M	3 Sensitive	50	2.7 ± 7.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2B,S2M	3 Sensitive	37	2.7 ± 7.0	NB
A	*Pooecetes gramineus*	Vesper Sparrow				S2B,S2M	2 May Be At Risk	74	16.4 ± 7.0	NB
A	*Anas strepera*	Gadwall				S2B,S3M	4 Secure	47	3.8 ± 0.0	NB
A	*Alca torda*	Razorbill				S2B,S3N,S3M	4 Secure	7	94.6 ± 14.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	3 Sensitive	72	22.6 ± 7.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	4 Secure	90	3.6 ± 0.0	NB
A	*Chen caerulescens*	Snow Goose				S2M	4 Secure	19	2.6 ± 0.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N,S2M	4 Secure	9	53.8 ± 1.0	NB
A	*Somateria spectabilis*	King Eider				S2N,S2M	4 Secure	2	73.3 ± 1.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N,S2M	4 Secure	17	3.8 ± 0.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	5 Undetermined	9	20.1 ± 1.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	3 Sensitive	69	24.5 ± 0.0	NB
A	*Salmo salar*	Atlantic Salmon				S2S3	2 May Be At Risk	2106	19.9 ± 1.0	NB
A	*Anas clypeata*	Northern Shoveler				S2S3B,S2S3M	4 Secure	55	5.9 ± 0.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S2S3B,S2S3M	3 Sensitive	28	2.7 ± 7.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	299	2.7 ± 7.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	3 Sensitive	45	20.8 ± 2.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	3 Sensitive	9	11.3 ± 0.0	NB
A	*Cepphus grylle*	Black Guillemot				S3	4 Secure	34	71.8 ± 3.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	4 Secure	102	5.4 ± 0.0	NB
A	*Carduelis pinus*	Pine Siskin				S3	4 Secure	288	2.7 ± 7.0	NB
A	*Prosopium cylindraceum*	Round Whitefish				S3	4 Secure	2	98.2 ± 0.0	NB
A	*Salvelinus namaycush*	Lake Trout				S3	3 Sensitive	4	83.6 ± 0.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	4 Secure	39	32.6 ± 0.0	NB
A	*Cathartes aura*	Turkey Vulture				S3B,S3M	4 Secure	14	2.1 ± 0.0	NB
A	*Rallus limicola*	Virginia Rail				S3B,S3M	3 Sensitive	10	2.7 ± 7.0	NB
A	*Charadrius vociferus*	Killdeer				S3B,S3M	3 Sensitive	574	2.7 ± 7.0	NB
A	*Tringa semipalmata*	Willet				S3B,S3M	3 Sensitive	215	23.8 ± 0.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B,S3M	4 Secure	70	2.7 ± 7.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3B,S3M	4 Secure	54	2.7 ± 7.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B,S3M	4 Secure	89	12.7 ± 7.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B,S3M	4 Secure	22	2.7 ± 7.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B,S3M	2 May Be At Risk	161	2.7 ± 7.0	NB
A	*Icterus galbula*	Baltimore Oriole				S3B,S3M	4 Secure	63	2.7 ± 7.0	NB
A	*Somateria mollissima*	Common Eider				S3B,S4M,S3N	4 Secure	107	47.5 ± 14.0	NB
A	*Dendroica tigrina*	Cape May Warbler				S3B,S4S5M	4 Secure	215	2.7 ± 7.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	3 Sensitive	124	2.7 ± 7.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	250	2.7 ± 7.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	535	3.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Phalaropus fulicarius*	Red Phalarope				S3M	3 Sensitive	5	32.2 ± 0.0	NB
A	*Melanitta nigra*	Black Scoter				S3M,S1S2N	3 Sensitive	124	30.5 ± 0.0	NB
A	*Bucephala albeola*	Bufflehead				S3M,S2N	3 Sensitive	40	5.8 ± 0.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	4 Secure	3	76.6 ± 0.0	NB
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	4 Secure	12	32.6 ± 0.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	234	2.7 ± 7.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	4 Secure	975	2.7 ± 7.0	NB
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	4 Secure	365	2.7 ± 7.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S3S4B,S5M	4 Secure	341	2.9 ± 0.0	NB
A	*Dendroica striata*	Blackpoll Warbler				S3S4B,S5M	4 Secure	164	2.7 ± 7.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	4 Secure	382	3.6 ± 0.0	NB
A	*Limosa haemastica*	Hudsonian Godwit				S3S4M	4 Secure	147	3.6 ± 0.0	NB
A	*Calidris pusilla*	Semipalmated Sandpiper				S3S4M	4 Secure	711	3.6 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3S4M	4 Secure	93	3.6 ± 0.0	NB
A	*Calidris alba*	Sanderling				S3S4M,S1N	3 Sensitive	372	3.6 ± 0.0	NB
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	173	6.9 ± 0.0	NB
I	*Coenonympha nipisiquit*	Maritime Ringlet	Endangered	Endangered	Endangered	S1	1 At Risk	38	70.4 ± 7.0	NB
I	*Gomphus ventricosus*	Skillet Clubtail	Endangered		Endangered	S1S2	2 May Be At Risk	1	84.0 ± 0.0	NB
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	3 Sensitive	19	1.1 ± 0.0	NB
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	2 May Be At Risk	26	30.2 ± 0.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern		Special Concern	S2	3 Sensitive	16	41.1 ± 0.0	NB
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	4	83.9 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumblebee	Special Concern			S3?	3 Sensitive	11	45.2 ± 0.0	NB
I	*Appalachina sayana*	Spike-lip Crater	Not At Risk			S3?		1	91.5 ± 1.0	NB
I	*Erora laeta*	Early Hairstreak				S1	2 May Be At Risk	2	76.3 ± 7.0	NB
I	*Somatochlora septentrionalis*	Muskeg Emerald				S1	2 May Be At Risk	3	80.0 ± 0.0	NB
I	*Leucorrhinia patricia*	Canada Whiteface				S1	2 May Be At Risk	8	52.7 ± 1.0	NB
I	*Plebejus saepiolus*	Greenish Blue				S1S2	4 Secure	17	24.0 ± 7.0	NB
I	*Cicindela ancocisconensis*	Appalachian Tiger Beetle				S2	5 Undetermined	1	50.3 ± 0.0	NB
I	*Satyrium calanus*	Banded Hairstreak				S2	3 Sensitive	1	48.1 ± 7.0	NB
I	*Strymon melinus*	Grey Hairstreak				S2	4 Secure	8	37.0 ± 1.0	NB
I	*Aeshna juncea*	Rush Darner				S2	3 Sensitive	1	80.0 ± 0.0	NB
I	*Somatochlora brevicincta*	Quebec Emerald				S2	5 Undetermined	7	80.4 ± 0.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S2	5 Undetermined	5	30.6 ± 0.0	NB
I	*Ladona exusta*	White Corporal				S2	5 Undetermined	1	63.6 ± 0.0	NB
I	*Coenagrion interrogatum*	Subarctic Bluet				S2	3 Sensitive	12	20.1 ± 0.0	NB
I	*Callophrys henrici*	Henry's Elfin				S2S3	4 Secure	11	21.5 ± 0.0	NB
I	*Desmocerus palliatus*	Elderberry Borer				S3		2	38.7 ± 0.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	4 Secure	1	53.8 ± 1.0	NB
I	*Xylotrechus quadrimaculatus*	a Longhorned Beetle				S3		1	80.4 ± 1.0	NB
I	*Xylotrechus undulatus*	a Longhorned Beetle				S3		1	88.2 ± 1.0	NB
I	*Calathus gregarius*	a Ground Beetle				S3	4 Secure	1	83.3 ± 1.0	NB
I	*Hyperaspis disconotata*	a Ladybird Beetle				S3	5 Undetermined	1	99.6 ± 5.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	4 Secure	4	31.4 ± 1.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	4 Secure	9	42.0 ± 0.0	NB
I	*Papilio brevicauda*	Short-tailed Swallowtail				S3	4 Secure	45	47.8 ± 0.0	NB
I	*Papilio brevicauda bretonensis*	Short-tailed Swallowtail				S3	4 Secure	16	48.1 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
I	*Lycaena hyllus*	Bronze Copper				S3	3 Sensitive	5	12.8 ± 0.0	NB
I	*Lycaena dospassosi*	Salt Marsh Copper				S3	4 Secure	96	23.2 ± 0.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	4 Secure	3	70.4 ± 7.0	NB
I	*Callophrys polios*	Hoary Elfin				S3	4 Secure	13	17.1 ± 0.0	NB
I	*Callophrys eryphon*	Western Pine Elfin				S3	4 Secure	10	40.8 ± 10.0	NB
I	*Plebejus idas*	Northern Blue				S3	4 Secure	21	52.2 ± 0.0	NB
I	*Plebejus idas empetri*	Crowberry Blue				S3	4 Secure	3	59.6 ± 0.0	NB
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	5	22.6 ± 1.0	NB
I	*Boloria eunomia*	Bog Fritillary				S3	5 Undetermined	5	51.4 ± 0.0	NB
I	*Boloria bellona*	Meadow Fritillary				S3	4 Secure	1	82.2 ± 7.0	NB
I	*Boloria chariclea*	Arctic Fritillary				S3	4 Secure	17	24.0 ± 7.0	NB
I	*Boloria chariclea grandis*	Purple Lesser Fritillary				S3	4 Secure	4	40.8 ± 10.0	NB
I	*Polygonia satyrus*	Satyr Comma				S3	4 Secure	17	25.8 ± 1.0	NB
I	*Polygonia gracilis*	Hoary Comma				S3	4 Secure	30	2.7 ± 7.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	4 Secure	5	18.1 ± 10.0	NB
I	*Gomphus abbreviatus*	Spine-crowned Clubtail				S3	4 Secure	14	17.6 ± 0.0	NB
I	*Dorocordulia lepida*	Petite Emerald				S3	4 Secure	3	83.7 ± 0.0	NB
I	*Somatochlora albicincta*	Ringed Emerald				S3	4 Secure	8	56.8 ± 1.0	NB
I	*Somatochlora cingulata*	Lake Emerald				S3	4 Secure	13	47.5 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3	4 Secure	12	20.1 ± 0.0	NB
I	*Williamsonia fletcheri*	Ebony Boghaunter				S3	4 Secure	8	21.4 ± 0.0	NB
I	*Lestes eurinus*	Amber-Winged Spreadwing				S3	4 Secure	17	38.4 ± 1.0	NB
I	*Enallagma geminatum*	Skimming Bluet				S3	5 Undetermined	4	88.4 ± 0.0	NB
I	*Enallagma signatum*	Orange Bluet				S3	4 Secure	1	88.4 ± 0.0	NB
I	*Stylurus scudderi*	Zebra Clubtail				S3	4 Secure	3	31.4 ± 0.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	3 Sensitive	3	45.9 ± 1.0	NB
I	*Leptodea ochracea*	Tidewater Mucket				S3	4 Secure	1	90.3 ± 0.0	NB
I	*Pantala hymenaea*	Spot-Winged Glider				S3B,S3M	4 Secure	1	99.2 ± 0.0	NB
I	*Satyrium liparops*	Striped Hairstreak				S3S4	4 Secure	18	20.1 ± 0.0	NB
I	*Satyrium liparops strigosum*	Striped Hairstreak				S3S4	4 Secure	8	41.7 ± 1.0	NB
I	*Cupido comyntas*	Eastern Tailed Blue				S3S4	4 Secure	1	45.9 ± 1.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle				SH	2 May Be At Risk	9	53.8 ± 1.0	NB
N	*Aulacomnium heterostichum*	One-sided Groove Moss				S1	2 May Be At Risk	1	49.0 ± 0.0	NB
N	*Campylostelium saxicola*	a Moss				S1	2 May Be At Risk	1	48.2 ± 0.0	NB
N	*Zygodon viridissimus var. viridissimus*	a Moss				S1	2 May Be At Risk	1	47.0 ± 0.0	NB
N	*Cinclidium stygium*	Sooty Cupola Moss				S1?	2 May Be At Risk	1	91.6 ± 0.0	NB
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1?	2 May Be At Risk	1	61.2 ± 1.0	NB
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	2 May Be At Risk	1	47.1 ± 0.0	NB
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	2 May Be At Risk	1	91.6 ± 0.0	NB
N	*Seligeria recurvata*	a Moss				S1?	2 May Be At Risk	1	96.8 ± 15.0	NB
N	*Rhizomnium pseudopunctatum*	Felted Leafy Moss				S1?	2 May Be At Risk	1	52.1 ± 0.0	NB
N	*Cephaloziella spinigera*	Spiny Threadwort				S1S2	6 Not Assessed	2	80.0 ± 0.0	NB
N	*Odontoschisma sphagni*	Bog-Moss Flapwort				S1S2	6 Not Assessed	1	52.1 ± 0.0	NB
N	*Pallavicinia lyellii*	Lyell's Ribbonwort				S1S2	6 Not Assessed	1	43.8 ± 1.0	NB
N	*Drummondia prorepens*	a Moss				S1S2	2 May Be At Risk	1	48.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
N	*Seligeria brevifolia*	a Moss				S1S2	3 Sensitive	4	47.1 ± 0.0	NB
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	6 Not Assessed	1	71.9 ± 1.0	NB
N	*Meesia triquetra*	Three-ranked Cold Moss				S2	2 May Be At Risk	1	86.9 ± 10.0	NB
N	*Platydictya jungermannioides*	False Willow Moss				S2	3 Sensitive	1	96.8 ± 15.0	NB
N	*Pohlia elongata*	Long-necked Nodding Moss				S2	3 Sensitive	4	48.1 ± 0.0	NB
N	*Pohlia sphagnicola*	a moss				S2	3 Sensitive	1	52.3 ± 0.0	NB
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	3 Sensitive	1	52.1 ± 0.0	NB
N	*Sphagnum flexuosum*	Flexuous Peatmoss				S2	3 Sensitive	2	43.8 ± 0.0	NB
N	*Tetrodontium brownianum*	Little Georgia				S2	3 Sensitive	5	48.1 ± 0.0	NB
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	2 May Be At Risk	1	55.0 ± 0.0	NB
N	*Barbilophozia lycopodioides*	Greater Pawwort				S2?	6 Not Assessed	1	77.5 ± 1.0	NB
N	*Anacamptodon splachnoides*	a Moss				S2?	3 Sensitive	1	61.8 ± 1.0	NB
N	*Bryum pallescens*	Pale Bryum Moss				S2?	5 Undetermined	1	47.0 ± 100.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	3 Sensitive	2	50.0 ± 0.0	NB
N	*Trichodon cylindricus*	Cylindric Hairy-teeth Moss				S2?	3 Sensitive	1	96.8 ± 15.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	5 Undetermined	1	48.6 ± 0.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S2S3	5 Undetermined	4	47.1 ± 0.0	NB
N	*Pohlia proligera*	Cottony Nodding Moss				S2S3	3 Sensitive	9	48.1 ± 0.0	NB
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2S3	3 Sensitive	2	70.0 ± 1.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	2 May Be At Risk	2	52.3 ± 0.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	2 May Be At Risk	1	47.1 ± 0.0	NB
N	*Dendriscocaulon umhausense*	a lichen				S2S3	3 Sensitive	1	48.1 ± 0.0	NB
N	*Schistidium maritimum*	a Moss				S3	4 Secure	1	52.1 ± 0.0	NB
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	3 Sensitive	1	48.1 ± 0.0	NB
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S3	5 Undetermined	1	51.2 ± 0.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	4 Secure	5	49.1 ± 0.0	NB
N	*Dicranella rufescens*	Red Forklet Moss				S3?	5 Undetermined	1	72.2 ± 7.0	NB
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3S4	4 Secure	1	71.2 ± 15.0	NB
N	*Dicranum majus*	Greater Broom Moss				S3S4	4 Secure	4	49.3 ± 0.0	NB
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	4 Secure	1	57.1 ± 10.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	4 Secure	1	58.1 ± 5.0	NB
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	4 Secure	2	47.1 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	4 Secure	1	48.7 ± 0.0	NB
N	*Sphagnum compactum*	Compact Peat Moss				S3S4	4 Secure	1	48.2 ± 1.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	4 Secure	1	72.3 ± 0.0	NB
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	4 Secure	1	72.3 ± 0.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	4 Secure	3	55.5 ± 0.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	4 Secure	1	49.1 ± 0.0	NB
N	*Rauiella scita*	Smaller Fern Moss				S3S4	3 Sensitive	1	49.2 ± 0.0	NB
N	*Pseudocyphellaria perpetua*	Gilded Specklebelly Lichen				S3S4	3 Sensitive	4	48.6 ± 0.0	NB
N	*Stereocaulon paschale*	Easter Foam Lichen				S3S4	5 Undetermined	1	74.5 ± 1.0	NB
N	*Leucodon brachypus*	a Moss				SH	2 May Be At Risk	9	47.0 ± 0.0	NB
N	*Splachnum luteum*	Yellow Collar Moss				SH	5 Undetermined	1	47.0 ± 100.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	1 At Risk	23	41.8 ± 0.0	NB
P	*Symphyotrichum laurentianum*	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	1 At Risk	27	53.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Symphyotrichum subulatum (Bathurst pop)*	Bathurst Aster - Bathurst pop.	Special Concern	Special Concern	Endangered	S2	1 At Risk	201	17.8 ± 0.0	NB
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	1 At Risk	1	87.5 ± 0.0	NB
P	*Lechea maritima var. subcylindrica*	Beach Pinweed	Special Concern			S2	3 Sensitive	443	47.2 ± 0.0	NB
P	*Eriocaulon parkeri*	Parker's Pipewort	Not At Risk		Endangered	S2	1 At Risk	82	2.9 ± 1.0	NB
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	1 At Risk	1	98.9 ± 0.0	NB
P	*Cryptotaenia canadensis*	Canada Honewort				S1	2 May Be At Risk	1	50.2 ± 1.0	NB
P	*Bidens eatonii*	Eaton's Beggarticks				S1	2 May Be At Risk	7	7.1 ± 0.0	NB
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	2 May Be At Risk	4	47.2 ± 0.0	NB
P	*Betula glandulosa*	Glandular Birch				S1	2 May Be At Risk	8	67.6 ± 0.0	NB
P	*Betula michauxii*	Michaux's Dwarf Birch				S1	2 May Be At Risk	3	51.1 ± 0.0	NB
P	*Cynoglossum virginianum var. boreale*	Wild Comfrey				S1	2 May Be At Risk	3	58.1 ± 0.0	NB
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S1	2 May Be At Risk	1	48.0 ± 0.0	NB
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	2 May Be At Risk	1	31.9 ± 10.0	NB
P	*Stellaria longipes*	Long-stalked Starwort				S1	2 May Be At Risk	1	97.2 ± 1.0	NB
P	*Triadenum virginicum*	Virginia St John's-wort				S1	2 May Be At Risk	1	16.3 ± 0.0	NB
P	*Vaccinium boreale*	Northern Blueberry				S1	2 May Be At Risk	12	67.6 ± 0.0	NB
P	*Vaccinium uliginosum*	Alpine Bilberry				S1	2 May Be At Risk	4	71.6 ± 0.0	NB
P	*Chamaesyce polygonifolia*	Seaside Spurge				S1	2 May Be At Risk	5	55.5 ± 5.0	NB
P	*Desmodium glutinosum*	Large Tick-Trefoil				S1	2 May Be At Risk	1	85.5 ± 0.0	NB
P	*Bartonia virginica*	Yellow Bartonia				S1	2 May Be At Risk	3	62.1 ± 0.0	NB
P	*Ranunculus lapponicus*	Lapland Buttercup				S1	2 May Be At Risk	1	96.0 ± 0.0	NB
P	*Ranunculus sceleratus*	Cursed Buttercup				S1	2 May Be At Risk	1	83.7 ± 100.0	NB
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	2 May Be At Risk	1	74.1 ± 1.0	NB
P	*Potentilla canadensis*	Canada Cinquefoil				S1	5 Undetermined	1	91.4 ± 0.0	NB
P	*Salix serissima*	Autumn Willow				S1	2 May Be At Risk	4	90.9 ± 0.0	NB
P	*Agalinis paupercula var. borealis*	Small-flowered Agalinis				S1	2 May Be At Risk	9	18.4 ± 0.0	NB
P	*Carex bigelowii*	Bigelow's Sedge				S1	2 May Be At Risk	1	67.7 ± 0.0	NB
P	*Carex glareosa var. amphigena*	Gravel Sedge				S1	2 May Be At Risk	2	95.5 ± 1.0	NB
P	*Carex saxatilis*	Russet Sedge				S1	2 May Be At Risk	6	89.2 ± 0.0	NB
P	*Carex viridula var. elatior*	Greenish Sedge				S1	2 May Be At Risk	11	90.8 ± 0.0	NB
P	*Cyperus diandrus*	Low Flatsedge				S1	2 May Be At Risk	2	9.6 ± 0.0	NB
P	*Cyperus bipartitus*	Shining Flatsedge				S1	2 May Be At Risk	13	2.9 ± 0.0	NB
P	*Scirpus pendulus*	Hanging Bulrush				S1	2 May Be At Risk	1	99.4 ± 0.0	PE
P	*Schoenoplectus smithii*	Smith's Bulrush				S1	2 May Be At Risk	18	7.0 ± 0.0	NB
P	*Juncus greenei*	Greene's Rush				S1	2 May Be At Risk	2	0.6 ± 1.0	NB
P	*Juncus stygius*	Moor Rush				S1	2 May Be At Risk	1	33.6 ± 0.0	NB
P	*Juncus stygius ssp. americanus*	Moor Rush				S1	2 May Be At Risk	3	59.5 ± 10.0	NB
P	*Juncus subtilis*	Creeping Rush				S1	2 May Be At Risk	3	57.3 ± 0.0	NB
P	*Juncus trifidus*	Highland Rush				S1	2 May Be At Risk	5	67.6 ± 0.0	NB
P	*Allium canadense*	Canada Garlic				S1	2 May Be At Risk	1	20.3 ± 1.0	NB
P	*Malaxis brachypoda*	White Adder's-Mouth				S1	2 May Be At Risk	2	90.8 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Calamagrostis stricta ssp. inexpansa*	Slim-stemmed Reed Grass				S1	2 May Be At Risk	1	54.6 ± 0.0	NB
P	*Dichanthelium xanthophysum*	Slender Panic Grass				S1	2 May Be At Risk	9	60.7 ± 0.0	NB
P	*Zizania aquatica var. brevis*	Indian Wild Rice				S1	2 May Be At Risk	16	1.9 ± 0.0	NB
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	2 May Be At Risk	2	18.5 ± 0.0	NB
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	2 May Be At Risk	1	74.5 ± 0.0	NB
P	*Huperzia selago*	Northern Firmoss				S1	2 May Be At Risk	3	67.7 ± 0.0	NB
P	*Bidens heterodoxa*	Connecticut Beggar-Ticks				S1?	2 May Be At Risk	2	53.8 ± 0.0	NB
P	*Cuscuta campestris*	Field Dodder				S1?	2 May Be At Risk	3	20.8 ± 0.0	NB
P	*Carex laxiflora*	Loose-Flowered Sedge				S1?	5 Undetermined	1	82.7 ± 2.0	NB
P	*Rumex aquaticus var. fenestratus*	Western Dock				S1S2	2 May Be At Risk	2	58.4 ± 0.0	NB
P	*Carex crawei*	Crawe's Sedge				S1S2	2 May Be At Risk	1	67.9 ± 0.0	NB
P	*Thelypteris simulata*	Bog Fern				S1S2	2 May Be At Risk	1	14.2 ± 1.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1S3	2 May Be At Risk	22	20.7 ± 0.0	NB
P	*Listera australis*	Southern Twayblade			Endangered	S2	1 At Risk	23	33.0 ± 0.0	NB
P	*Osmorhiza depauperata*	Blunt Sweet Cicely				S2	3 Sensitive	3	26.6 ± 1.0	NB
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2	3 Sensitive	4	33.6 ± 0.0	NB
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S2	3 Sensitive	30	49.8 ± 5.0	NB
P	*Ionactis linariifolius*	Stiff Aster				S2	3 Sensitive	67	8.0 ± 1.0	NB
P	*Symphyotrichum subulatum*	Annual Saltmarsh Aster				S2	1 At Risk	152	18.1 ± 0.0	NB
P	*Betula minor*	Dwarf White Birch				S2	3 Sensitive	5	67.6 ± 0.0	NB
P	*Arabis drummondii*	Drummond's Rockcress				S2	3 Sensitive	5	7.3 ± 1.0	NB
P	*Sagina nodosa*	Knotted Pearlwort				S2	3 Sensitive	1	78.0 ± 1.0	NB
P	*Stellaria longifolia*	Long-leaved Starwort				S2	3 Sensitive	3	50.3 ± 0.0	NB
P	*Atriplex franktonii*	Frankton's Saltbush				S2	4 Secure	2	48.4 ± 5.0	NB
P	*Chenopodium rubrum*	Red Pigweed				S2	3 Sensitive	12	47.4 ± 0.0	NB
P	*Hypericum dissimulatum*	Disguised St John's-wort				S2	3 Sensitive	1	70.5 ± 1.0	NB
P	*Astragalus eucosmus*	Elegant Milk-vetch				S2	2 May Be At Risk	1	18.5 ± 0.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	3 Sensitive	1	54.8 ± 10.0	NB
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2	3 Sensitive	20	48.4 ± 5.0	NB
P	*Myriophyllum humile*	Low Water Milfoil				S2	3 Sensitive	1	57.3 ± 1.0	NB
P	*Nuphar lutea ssp. rubrodisca*	Red-disked Yellow Pond-lily				S2	3 Sensitive	5	51.1 ± 0.0	NB
P	*Orobanche uniflora*	One-Flowered Broomrape				S2	3 Sensitive	3	31.1 ± 10.0	NB
P	*Polygonum amphibium var. emersum*	Water Smartweed				S2	3 Sensitive	1	18.5 ± 0.0	NB
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S2	3 Sensitive	8	20.1 ± 1.0	NB
P	*Hepatica nobilis var. obtusa*	Round-lobed Hepatica				S2	3 Sensitive	3	24.8 ± 0.0	NB
P	*Ranunculus longirostris*	Eastern White Water-Crowfoot				S2	5 Undetermined	1	88.3 ± 1.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S2	3 Sensitive	3	60.7 ± 1.0	NB
P	*Rosa acicularis ssp. sayi*	Prickly Rose				S2	2 May Be At Risk	133	47.5 ± 0.0	NB
P	*Galium kamtschaticum*	Northern Wild Licorice				S2	3 Sensitive	6	86.8 ± 5.0	NB
P	*Salix candida*	Sage Willow				S2	3 Sensitive	21	76.1 ± 0.0	NB
P	*Castilleja septentrionalis*	Northeastern Paintbrush				S2	3 Sensitive	2	89.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Viola novae-angliae*	New England Violet				S2	3 Sensitive	2	85.0 ± 1.0	NB
P	*Sagittaria calycina var. spongiosa*	Long-lobed Arrowhead				S2	4 Secure	144	0.5 ± 0.0	NB
P	*Carex granularis*	Limestone Meadow Sedge				S2	3 Sensitive	7	57.2 ± 5.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S2	3 Sensitive	9	90.8 ± 0.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S2	3 Sensitive	16	18.1 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2	3 Sensitive	6	61.8 ± 5.0	NB
P	*Carex salina*	Saltmarsh Sedge				S2	3 Sensitive	7	62.8 ± 0.0	NB
P	*Carex sprengelii*	Longbeak Sedge				S2	3 Sensitive	1	54.1 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S2	2 May Be At Risk	2	52.8 ± 0.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	3 Sensitive	9	42.5 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S2	2 May Be At Risk	2	59.1 ± 10.0	NB
P	*Blysmus rufus*	Red Bulrush				S2	3 Sensitive	55	56.3 ± 0.0	NB
P	*Juncus vaseyi*	Vasey Rush				S2	3 Sensitive	37	4.7 ± 10.0	NB
P	*Amerorchis rotundifolia*	Small Round-leaved Orchis				S2	2 May Be At Risk	8	85.1 ± 1.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	2 May Be At Risk	7	24.8 ± 0.0	NB
P	*Coeloglossum viride var. virescens*	Long-bracted Frog Orchid				S2	2 May Be At Risk	4	93.0 ± 5.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	2 May Be At Risk	1	14.1 ± 5.0	NB
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S2	3 Sensitive	22	27.4 ± 1.0	NB
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	3 Sensitive	8	20.2 ± 1.0	NB
P	*Agrostis mertensii*	Northern Bent Grass				S2	2 May Be At Risk	57	47.7 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	3 Sensitive	5	21.3 ± 0.0	NB
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	5	60.5 ± 0.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2	4 Secure	3	74.5 ± 0.0	NB
P	*Puccinellia laurentiana*	Nootka Alkali Grass				S2	3 Sensitive	2	46.5 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Indian Wild Rice				S2	5 Undetermined	7	2.4 ± 1.0	NB
P	*Piptatherum pungens*	Slender Rice Grass				S2	2 May Be At Risk	12	60.4 ± 1.0	NB
P	*Woodwardia virginica*	Virginia Chain Fern				S2	3 Sensitive	11	49.9 ± 0.0	NB
P	*Woodsia alpina*	Alpine Cliff Fern				S2	3 Sensitive	1	55.6 ± 0.0	NB
P	*Lycopodium sitchense*	Sitka Clubmoss				S2	3 Sensitive	2	67.5 ± 0.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S2	3 Sensitive	14	90.8 ± 0.0	NB
P	*Toxicodendron radicans*	Poison Ivy				S2?	3 Sensitive	4	42.0 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	5 Undetermined	1	56.4 ± 0.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	3 Sensitive	3	18.0 ± 0.0	NB
P	*Crataegus macrosperma*	Big-Fruit Hawthorn				S2?	5 Undetermined	1	60.7 ± 0.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2?	4 Secure	9	36.1 ± 1.0	NB
P	*Salix myricoides*	Bayberry Willow				S2?	3 Sensitive	4	33.5 ± 5.0	NB
P	*Carex vacillans*	Estuarine Sedge				S2?	3 Sensitive	3	3.4 ± 1.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2?	5 Undetermined	1	56.6 ± 0.0	NB
P	*Barbarea orthoceras*	American Yellow Rocket				S2S3	3 Sensitive	1	42.5 ± 0.0	NB
P	*Ceratophyllum echinatum*	Prickly Hornwort				S2S3	3 Sensitive	1	7.7 ± 0.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2S3	4 Secure	4	41.5 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Elatine americana*	American Waterwort				S2S3	3 Sensitive	19	7.2 ± 0.0	NB
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S2S3	3 Sensitive	2	51.4 ± 0.0	NB
P	*Geranium robertianum*	Herb Robert				S2S3	4 Secure	45	96.2 ± 0.0	PE
P	*Epilobium coloratum*	Purple-veined Willowherb				S2S3	3 Sensitive	3	46.0 ± 10.0	NB
P	*Rumex maritimus var. persicarioides*	Peach-leaved Dock				S2S3	5 Undetermined	2	56.8 ± 0.0	NB
P	*Rumex pallidus*	Seabeach Dock				S2S3	3 Sensitive	6	54.5 ± 0.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S2S3	4 Secure	2	83.7 ± 100.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S2S3	3 Sensitive	15	85.2 ± 0.0	NB
P	*Valeriana uliginosa*	Swamp Valerian				S2S3	3 Sensitive	8	90.8 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S2S3	4 Secure	9	50.5 ± 0.0	NB
P	*Juncus brachycephalus*	Small-Head Rush				S2S3	3 Sensitive	2	90.8 ± 0.0	NB
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	3 Sensitive	2	33.7 ± 1.0	NB
P	*Listera auriculata*	Auricled Twayblade				S2S3	3 Sensitive	17	53.6 ± 0.0	NB
P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S2S3	3 Sensitive	1	61.7 ± 0.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	3 Sensitive	1	95.1 ± 1.0	NB
P	*Stuckenia pectinata*	Sago Pondweed				S2S3	3 Sensitive	18	27.1 ± 1.0	NB
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	4 Secure	1	87.5 ± 0.0	NB
P	*Isoetes acadiensis*	Acadian Quillwort				S2S3	3 Sensitive	1	53.8 ± 0.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	3 Sensitive	19	8.5 ± 5.0	NB
P	*Arnica lanceolata*	Lance-leaved Arnica				S3	4 Secure	41	23.7 ± 0.0	NB
P	*Artemisia campestris ssp. caudata*	Field Wormwood				S3	4 Secure	4	49.4 ± 0.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3	4 Secure	106	3.1 ± 0.0	NB
P	*Bidens hyperborea var. hyperborea*	Estuary Beggarticks				S3	4 Secure	13	3.1 ± 5.0	NB
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	4 Secure	5	43.0 ± 0.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3	3 Sensitive	5	61.9 ± 5.0	NB
P	*Betula pumila*	Bog Birch				S3	4 Secure	121	48.2 ± 0.0	NB
P	*Arabis glabra*	Tower Mustard				S3	5 Undetermined	13	43.5 ± 0.0	NB
P	*Cardamine maxima*	Large Toothwort				S3	4 Secure	3	59.4 ± 0.0	NB
P	*Subularia aquatica var. americana*	Water Awlwort				S3	4 Secure	1	70.3 ± 1.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	4 Secure	8	4.5 ± 0.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	4 Secure	186	36.2 ± 5.0	NB
P	*Crassula aquatica*	Water Pygmyweed				S3	4 Secure	49	2.9 ± 1.0	NB
P	*Elatine minima*	Small Waterwort				S3	4 Secure	6	7.0 ± 0.0	NB
P	*Hedysarum alpinum*	Alpine Sweet-vetch				S3	4 Secure	5	52.5 ± 0.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	4 Secure	9	23.4 ± 0.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	4 Secure	6	19.1 ± 0.0	NB
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	4 Secure	5	5.7 ± 1.0	NB
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	59	2.7 ± 5.0	NB
P	*Nuphar lutea ssp. pumila*	Small Yellow Pond-lily				S3	4 Secure	7	24.1 ± 0.0	NB
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	4 Secure	23	21.1 ± 10.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3	4 Secure	2	68.3 ± 0.0	NB
P	*Polygala sanguinea*	Blood Milkwort				S3	3 Sensitive	21	32.0 ± 0.0	NB
P	*Polygonum arifolium*	Halberd-leaved Tearthumb				S3	4 Secure	28	43.8 ± 5.0	NB
P	*Polygonum punctatum*	Dotted Smartweed				S3	4 Secure	1	54.8 ± 2.0	NB
P	*Polygonum punctatum var. confertiflorum*	Dotted Smartweed				S3	4 Secure	37	2.9 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Polygonum scandens*	Climbing False Buckwheat				S3	4 Secure	47	18.8 ± 0.0	NB
P	*Littorella uniflora*	American Shoreweed				S3	4 Secure	2	89.2 ± 1.0	NB
P	*Primula mistassinica*	Mistassini Primrose				S3	4 Secure	2	84.9 ± 0.0	NB
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S3	4 Secure	194	3.0 ± 0.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	4 Secure	14	41.2 ± 0.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	4 Secure	2	58.1 ± 1.0	NB
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	12	58.6 ± 5.0	NB
P	*Thalictrum venulosum*	Northern Meadow-rue				S3	4 Secure	1	42.5 ± 0.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	4 Secure	5	56.7 ± 0.0	NB
P	*Rosa palustris*	Swamp Rose				S3	4 Secure	4	0.5 ± 1.0	NB
P	*Sanguisorba canadensis*	Canada Burnet				S3	4 Secure	46	72.8 ± 5.0	NB
P	*Galium boreale*	Northern Bedstraw				S3	4 Secure	2	65.2 ± 1.0	NB
P	*Salix interior*	Sandbar Willow				S3	4 Secure	1	65.2 ± 1.0	NB
P	*Salix pedicellaris*	Bog Willow				S3	4 Secure	28	16.2 ± 0.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	4 Secure	65	40.3 ± 1.0	NB
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3	4 Secure	18	19.2 ± 0.0	NB
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	123	1.9 ± 0.0	NB
P	*Veronica serpyllifolia ssp. humifusa*	Thyme-Leaved Speedwell				S3	4 Secure	11	36.1 ± 1.0	NB
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3	3 Sensitive	7	15.8 ± 0.0	NB
P	*Pilea pumila*	Dwarf Clearweed				S3	4 Secure	9	7.7 ± 0.0	NB
P	*Viola adunca*	Hooked Violet				S3	4 Secure	11	50.3 ± 0.0	NB
P	*Viola nephrophylla*	Northern Bog Violet				S3	4 Secure	6	86.7 ± 1.0	NB
P	*Carex aquatilis*	Water Sedge				S3	4 Secure	10	37.4 ± 1.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	4 Secure	3	54.8 ± 0.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3	4 Secure	6	43.5 ± 0.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3	4 Secure	3	50.3 ± 0.0	NB
P	*Carex chordorrhiza*	Creeping Sedge				S3	4 Secure	1	48.1 ± 0.0	NB
P	*Carex conoidea*	Field Sedge				S3	4 Secure	2	63.8 ± 10.0	NB
P	*Carex garberi*	Garber's Sedge				S3	3 Sensitive	24	20.7 ± 0.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3	4 Secure	6	52.9 ± 0.0	NB
P	*Carex lupulina*	Hop Sedge				S3	4 Secure	1	68.2 ± 1.0	NB
P	*Carex michauxiana*	Michaux's Sedge				S3	4 Secure	10	27.8 ± 0.0	NB
P	*Carex ormostachya*	Necklace Spike Sedge				S3	4 Secure	8	7.3 ± 1.0	NB
P	*Carex tenera*	Tender Sedge				S3	4 Secure	3	20.2 ± 1.0	NB
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	4 Secure	10	17.5 ± 0.0	NB
P	*Carex vaginata*	Sheathed Sedge				S3	3 Sensitive	6	90.8 ± 0.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3	4 Secure	29	31.7 ± 1.0	NB
P	*Carex recta*	Estuary Sedge				S3	4 Secure	15	37.8 ± 0.0	NB
P	*Cyperus dentatus*	Toothed Flatsedge				S3	4 Secure	2	33.0 ± 10.0	NB
P	*Cyperus esculentus*	Perennial Yellow Nutsedge				S3	4 Secure	3	21.5 ± 0.0	NB
P	*Eleocharis intermedia*	Matted Spikerush				S3	4 Secure	2	52.3 ± 0.0	NB
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3	4 Secure	85	20.1 ± 0.0	NB
P	*Rhynchospora fusca*	Brown Beakrush				S3	4 Secure	7	39.6 ± 0.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3	4 Secure	98	37.0 ± 0.0	NB
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S3	4 Secure	9	16.0 ± 0.0	NB
P	*Lemna trisulca*	Star Duckweed				S3	4 Secure	1	92.7 ± 2.0	NB
P	*Triantha glutinosa*	Sticky False-Asphodel				S3	4 Secure	47	23.5 ± 0.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	3 Sensitive	15	7.3 ± 1.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3	4 Secure	3	51.0 ± 0.0	NB
P	*Platanthera blephariglottis*	White Fringed Orchid				S3	4 Secure	109	14.8 ± 0.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	3 Sensitive	17	28.3 ± 100.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	3 Sensitive	6	42.5 ± 0.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3	4 Secure	5	60.7 ± 0.0	NB
P	*Dichanthelium depauperatum*	Starved Panic Grass				S3	4 Secure	29	18.9 ± 0.0	NB
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	4 Secure	11	41.4 ± 1.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	3 Sensitive	5	45.4 ± 0.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3	4 Secure	89	12.4 ± 5.0	NB
P	*Zannichellia palustris*	Horned Pondweed				S3	4 Secure	84	3.1 ± 0.0	NB
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	4 Secure	2	33.6 ± 0.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3	4 Secure	2	55.5 ± 0.0	NB
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S3	4 Secure	2	56.5 ± 0.0	NB
P	*Dryopteris fragrans var. remotiuscula*	Fragrant Wood Fern				S3	4 Secure	34	32.3 ± 0.0	NB
P	*Dryopteris goldiana*	Goldie's Woodfern				S3	3 Sensitive	4	85.9 ± 0.0	NB
P	*Isoetes tuckermanii*	Tuckerman's Quillwort				S3	4 Secure	5	7.1 ± 0.0	NB
P	*Lycopodium sabinifolium*	Ground-Fir				S3	4 Secure	14	48.1 ± 1.0	NB
P	*Huperzia appalachiana*	Appalachian Fir-Clubmoss				S3	3 Sensitive	8	7.3 ± 1.0	NB
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S3	3 Sensitive	4	55.5 ± 0.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	4 Secure	8	50.9 ± 0.0	NB
P	*Polypodium appalachianum*	Appalachian Polypody				S3	4 Secure	1	86.1 ± 0.0	NB
P	*Lobelia kalmii*	Brook Lobelia				S3S4	4 Secure	11	23.5 ± 0.0	NB
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	4 Secure	32	40.5 ± 1.0	NB
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	4 Secure	8	52.9 ± 0.0	NB
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	5 Undetermined	3	42.7 ± 0.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	4 Secure	1	51.6 ± 1.0	NB
P	*Rumex maritimus*	Sea-Side Dock				S3S4	4 Secure	31	39.4 ± 0.0	NB
P	*Rumex maritimus var. fueginus*	Tierra del Fuego Dock				S3S4	4 Secure	15	53.7 ± 0.0	NB
P	*Potentilla arguta*	Tall Cinquefoil				S3S4	4 Secure	3	33.6 ± 50.0	NB
P	*Rubus chamaemorus*	Cloudberry				S3S4	4 Secure	146	39.6 ± 0.0	NB
P	*Geocaulon lividum*	Northern Comandra				S3S4	4 Secure	76	12.4 ± 10.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	4 Secure	2	70.7 ± 1.0	NB
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	4 Secure	7	52.8 ± 0.0	NB
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	4 Secure	71	2.0 ± 1.0	NB
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	4 Secure	86	19.0 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	3 Sensitive	11	42.5 ± 0.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	4 Secure	11	48.3 ± 0.0	NB
P	*Calamagrostis stricta var. stricta*	Slim-stemmed Reed Grass				S3S4	4 Secure	5	72.0 ± 0.0	NB
P	*Distichlis spicata*	Salt Grass				S3S4	4 Secure	75	6.9 ± 0.0	NB
P	*Potamogeton oakesianus*	Oakes' Pondweed				S3S4	4 Secure	2	75.9 ± 10.0	NB
P	*Polygonum raii*	Sharp-fruited Knotweed				SH	0.1 Extirpated	3	73.2 ± 1.0	NB
P	*Montia fontana*	Water Blinks				SH	2 May Be At Risk	1	20.0 ± 1.0	NB
P	*Agalinis maritima*	Saltmarsh Agalinis				SX	0.1 Extirpated	2	59.6 ± 50.0	NB

5.1 SOURCE BIBLIOGRAPHY (100 km)

The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
4819	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
3515	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
2700	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
2507	Cowie, F. 2007. Electrofishing Population Estimates 1979-98. Canadian Rivers Institute, 2698 recs.
2234	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
1064	Pardieck, K.L. & Ziolkowski Jr., D.J.; Hudson, M.-A.R. 2014. North American Breeding Bird Survey Dataset 1966 - 2013, version 2013.0. U.S. Geological Survey, Patuxent Wildlife Research Center <www.pwrc.usgs.gov/BBS/RawData/>.
744	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
697	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
503	Amirault, D.L. & Stewart, J. 2007. Piping Plover Database 1894-2006. Canadian Wildlife Service, Sackville, 3344 recs, 1228 new.
441	Gravel, Mireille. 2010. Coordonnées GPS et suivi des tortues marquées, 2005-07. Kouchibouguac National Park, 480 recs.
435	Beaudet, A. 2007. Piping Plover Records in Kouchibouguac NP, 1982-2005. Kouchibouguac National Park, 435 recs.
402	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs.
394	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
394	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
304	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
301	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
237	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
232	Campbell, G. 2017. Maritimes Bicknell's Thrush database 2002-2015. Bird Studies Canada, Sackville NB, 609 recs.
177	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
175	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
175	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
159	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
125	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
122	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
120	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
120	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
115	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
93	Tremblay, E. 2006. Kouchibouguac National Park Digital Database. Parks Canada, 105 recs.
92	Mazerolle, D.M. 2005. Bouctouche Irving Eco-Centre rare coastal plant fieldwork results 2004-05. Irving Eco-centre, la Dune du Bouctouche, 174 recs.
86	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
86	Coursol, F. 2005. Dataset from New Brunswick fieldwork for Eriocaulon parkeri COSEWIC report. Coursol, Pers. comm. to C.S. Blaney, Aug 26. 110 recs.
83	Blaney, C.S.; Mazerolle, D.M.; Klymko, J; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
77	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
76	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
71	Klymko, J.J.D. 2014. Maritimes Butterfly Atlas, 2012 submissions. Atlantic Canada Conservation Data Centre, 8552 records.
70	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
65	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
64	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 11311 recs.
63	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
56	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
56	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
53	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
49	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
45	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
42	Busby, D.G. 1999. 1997-1999 Bicknell's Thrush data, unpublished files. Canadian Wildlife Service, Sackville, 17 recs.
41	Klymko, J.J.D. 2012. Maritimes Butterfly Atlas, 2010 and 2011 records. Atlantic Canada Conservation Data Centre, 6318 recs.
40	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
38	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
37	Allen, K. 2012. Rare plant spatial data from Pleasant Ridge cranberry farm. NB Deparment of Environment, Environmental Assessment Section, 39 recs.
37	Robinson, S.L. 2010. Fieldwork 2009 (dune ecology). Atlantic Canada Conservation Data Centre. Sackville NB, 408 recs.
36	Blaney, C.S. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 6719 recs.
36	Robinson, S.L. 2015. 2014 field data.

# recs	CITATION
35	Amirault, D.L. 2000. Piping Plover Surveys, 1983-2000. Canadian Wildlife Service, Sackville, unpublished data. 70 recs.
34	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
34	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
30	Campbell, G., Villamil, L. 2012. Heath Steele Mine Bird Surveys 2012.
29	Wood Turtle (Glyptemys insculpta) Miramichi Watershed Synopsis 2013 Compiled by: Vladimir King Trajkovic, EPt Miramichi River Environmental Assessment Committee
26	Hilaire Chiasson Rare vascular plant specimens in the Hilaire Chiasson Herabarium. 2015.
26	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
24	Doucet, D.A. & Edsall, J.; Brunelle, P.-M. 2007. Miramichi Watershed Rare Odonata Survey. New Brunswick ETF & WTF Report, 1211 recs.
24	Spicer, C.D. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 211 recs.
23	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
23	Keppie, D.M. 2005. Rare Small Mammal Records in NB, PE. Pers. comm. to K. Bredin; PE 1 rec., NB 24 recs, 23 recs.
23	McAlpine, D.F. 1998. NBM Science Collections: Wood Turtle records. New Brunswick Museum, Saint John NB, 329 recs.
22	Donell, R. 2008. Rare plant records from rare coastal plant project. Bouctouche Dune Irving Eco-centre. Pers. comm. to D.M. Mazerolle, 50 recs.
22	Klymko, J.J.D. 2016. 2014 field data. Atlantic Canada Conservation Data Centre.
21	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
21	Doucet, D.A. & Edsall, J. 2007. Ophiogomphus howei records. Atlantic Canada Conservation Data Centre, Sackville NB, 21 recs.
21	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
21	Kouchibouguac National Park, Natural Resource Conservation Sec. 1988. The Resources of Kouchibouguac National Park. Beach, H. (ed.) , 90 recs.
21	Mazerolle, M.J., Drolet, B., & Desrochers, A. 2001. Small Mammal Responses to Peat Mining of Southeastern Canadian Bogs. Can. J. Zool., 79:296-302. 21 recs.
20	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
20	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
19	Tingley, S. (compiler). 2001. Butterflies of New Brunswick. , Web site: www.geocities.com/Yosemite/8425/buttrfly. 142 recs.
18	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
16	Cowie, Faye. 2007. Surveyed Lakes in New Brunswick. Canadian Rivers Institute, 781 recs.
16	Mazerolle, D. 2003. Assessment of Seaside Pinweed (Lechea maritima var. subcylindrica) in Southeastern New Brunswick. Irving Eco-centre, la Dune du Bouctouche, 18 recs.
16	Webster, R.P. & Edsall, J. 2007. 2005 New Brunswick Rare Butterfly Survey. Environmental Trust Fund, unpublished report, 232 recs.
15	Belland, R.J. 1992. The Bryophytes of Kouchibouguac National Park. Parks Canada, Kouchibouguac NP, 101 pp. + map.
14	Boyne, A.W. 2000. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 168 recs.
14	Edsall, J. 2001. Lepidopteran records in New Brunswick, 1997-99. , Pers. comm. to K.A. Bredin. 91 recs.
14	Morton, L.D. & Savoie, M. 1983. The Mammals of Kouchibouguac National Park. Parks Canada Report prep. by Canadian Wildlife Service, Sackville, NB, Vols 1-4. 14 recs.
13	Majka, C. 2009. Université de Moncton Insect Collection: Carabidae, Cerambycidae, Coccinellidae. Université de Moncton, 540 recs.
13	Toner, M. 2005. Lynx Records 1996-2005. NB Dept of Natural Resources, 48 recs.
12	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 recs.
11	Canadian Wildlife Service, Atlantic Region. 2010. Piping Plover censuses 2006-09. , 35 recs.
11	Chiasson, R. & Dietz, S. 1998. Piper Project Report of Common Tern Observations. Corvus Consulting, Tabusintac NB, 20 recs.
11	David, M. 2000. CNPA website. Club de naturalistes de la Peninsule acadienne (CNPA), www.francophone.net/cnpa/rares. 16 recs.
11	Dept of Fisheries & Oceans. 1999. Status of Wild Striped Bass, & Interaction between Wild & Cultured Striped Bass in the Maritime Provinces. , Science Stock Status Report D3-22. 13 recs.
11	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
10	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
10	Sollows, M.C,. 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
10	Tremblay, E. 2001. Kouchibouguacis River Freshwater Mussel Data. Parks Canada, Kouchibouguac NP, 45 recs.
9	Mawhinney, K. & Seutin, G. 2001. Lepidoptera Survey of the Salt Marshes of of Kouchibouguac National Park. Parks Canada Unpublished Report, 5p. 9 recs.
9	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
9	Webster, R.P. 2001. R.P. Webster Collection. R. P. Webster, 39 recs.
8	Bateman, M.C. 2000. Waterfowl Brood Surveys Database, 1990-2000 . Canadian Wildlife Service, Sackville, unpublished data. 149 recs.
8	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
8	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.
7	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
7	Doucet, D.A. 2008. Wood Turtle Records 2002-07. Pers. comm. to S. Gerriets, 7 recs, 7 recs.
7	Toner, M. 2005. NB DNR fieldwork on Parker's Pipewort. NB Dept of Natural Resources. Pers. comm to C.S. Blaney, Dec 12, 8 recs.
6	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2000.
6	Chaput, G. 1999. Atlantic Salmon: Miramichi & SFA 16 Rivers. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-05. 6 recs.
6	Cronin, P. & Ayer, C.; Dubee, B.; Hooper, W.C.; LeBlanc, E.; Madden, A.; Pettigrew, T.; Seymour, P. 1998. Fish Species Management Plans (draft). NB DNRE Internal Report. Fredericton, 164pp.
6	Gowan, S. 1980. The Lichens of Kouchibouguac National Park, Parts I (Macrolichens) & II (Microlichens). National Museum of Natural Sciences. Ottawa, ON, 7 recs.
6	McLeod, D. & Merrithew, C. 2005. The Inventory of the Flora and Fauna of the French Fort Cove Nature Park. French Fort Cove Development Commission, 7 recs.

# recs	CITATION
6	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
6	Newell, R.E. 2008. Vascular Plants of Muzroll Lake. Pers. comm. to C.S. Blaney, 1 pg. 43 recs.
5	Blaney, C.S. 1999. Fieldwork 1999. Atlantic Canada Conservation Data Centre. Sackville NB, 292 recs.
5	Holder, M. & Kingsley, A.L. 2000. Peatland Insects in NB & NS: Results of surveys in 10 bogs during summer 2000. Atlantic Canada Conservation Data Centre, Sackville, 118 recs.
4	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
4	Dalton, M. & Saba, B.A. 1980. A preliminary report on the natural history of the Gaspé shrew. The Atlantic Center for the Environment, Ipwich, MA, 29 pp.
4	Gautreau-Daigle, H. 2007. Rare plant records from peatland surveys. Coastal Zones Research Institute, Shippagan NB. Pers. comm. to D.M. Mazerolle, 39 recs.
4	Godbout, V. 2000. Recherche de l'Aster du St-Laurent (Aster laurentianus) et du Satyre des Maritimes (Coenonympha nepisiquit) au Parc national Kouchibouguac et a Dune du Bouctouche, N-B. Irving Eco-centre, 23 pp.
4	Gravel, Mireille. 2010. Coordonnées des tortues des bois Salmon River Road, 2005. Kouchibouguac National Park, 4 recs.
4	Hoyt, J.S. 2001. Assessment and update status report on the Bathurst Aster (Symphyotrichum subulatum) in Canada. Committee on the Status of Endangered Wildlife in Canada, 4 recs.
4	McLeod, D. & Saunders, J. 2004. Cypripedium reginae. Pers. comm. to C.S. Blaney. 4 recs, 4 recs.
4	Parks Canada. 2010. Specimens in or near National Parks in Atlantic Canada. Canadian National Museum, 3925 recs.
4	Spicer, C.D., Popma, T.M. 2003. UPM Kymmene site survey 2003
4	Webster, R.P. 1997. Status Report on Maritime Ringlet (Coenonympha nipisquit) in Canada. Committee on the Status of Endangered Wildlife in Canada, 4 recs.
3	Amirault, D.L. 1997-2000. Unpublished files. Canadian Wildlife Service, Sackville, 470 recs.
3	Gautreau, R. 2005. Betula michauxii occurrence on Bog 324, near Baie-Ste-Anne, NB. Pers. comm. to C.S. Blaney, 3 recs.
3	Gauvin, J.M. 1979. Etude de la vegetation des marais sales du parc national Kouchibouguac, N-B. M.Sc. Thesis, Universite de Moncton, 248 pp.
3	Godbout, Valerié. 2010. Étude de l'Aster du Saint-Laurent dans le parc national Kouchibouguac, 2000-04. Parks Canada, 3 recs.
3	Grondin, P. & Blouin, J-L., Bouchard, D.; et al. 1981. Description et cartographie de la vegetation du cordon littoral. Parc National de Kouchibouguac. Le Groupe Dryade, 57 pp.
3	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2003-11. Atlantic Canada Conservation Data Centre. Sackville NB, 1337 recs.
3	Mazerolle, D. 2003. Assessment and Rehabilitation of the Gulf of St Lawrence Aster (Symphyotrichum laurentianum) in Southeastern New Brunswick. Irving Eco-centre, la Dune du Bouctouche, 13 recs.
3	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
3	Nelson Poirier. 2009. Rare plant finds in the Exmoor & Lyttleton areas. Pers. comm. to S. Blaney. 4 recs, 4 recs.
3	Sollows, M.C,. 2009. NBM Science Collections databases: Coccinellid & Cerambycid Beetles. New Brunswick Museum, Saint John NB, download Feb. 2009, 569 recs.
3	Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.
3	Spicer, C.D. 2004. Specimens from CWS Herbarium, Mount Allison Herbarium Database. Mount Allison University, 5939 recs.
3	Toner, M. 2001. Lynx Records 1973-2000. NB Dept of Natural Resources, 29 recs.
2	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
2	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
2	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
2	Bouchard, A. Herbier Marie-Victorin. Universite de Montreal, Montreal QC. 1999.
2	Bredin, K.A. 2001. WTF Project: Freshwater Mussel Fieldwork in Freshwater Species data. Atlantic Canada Conservation Data Centere, 101 recs.
2	Catling, P.M., Erskine, D.S. & MacLaren, R.B. 1985. The Plants of Prince Edward Island with new records, nomenclatural changes & corrections & deletions, 1st Ed. Research Branch, Agriculture Canada, Ottawa, Publication 1798. 22pp.
2	Donelle, R. 2007. Bouctouche Dune Rare Coastal Plant Data. Irving Eco-centre, la Dune du Bouctouche, 2 recs.
2	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
2	Godbout, V. 2001. Recherche de l'Aster du St-Laurent (Symphyotrichum laurentianum) dans les marais sales du sud-est du Nouveau-Brunswick. Irving Eco-centre, la Dune du Bouctouche, 23 pp.
2	Goltz, J.P. 2002. Botany Ramblings: 1 July to 30 September, 2002. N.B. Naturalist, 29 (3):84-92. 7 recs.
2	Madden, A. 1998. Wood Turtle records in northern NB. New Brunswick Dept of Natural Resources & Energy, Campbellton, Pers. comm. to S.H. Gerriets. 16 recs.
2	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
1	Boyne, A.W. 2001. Portage Island National Wildlife Area inspection visit. Canadian Wildlife Service, Sackville, 1 rec.
1	Bredin, K.A. 2001. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centere, 16 recs.
1	Bredin, K.A. 2002. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centere, 30 recs.
1	Brunelle, P.-M. 2005. Wood Turtle observations. Pers. comm. to S.H. Gerriets, 21 Sep. 3 recs, 3 recs.
1	Curley, F.R. 2005. PEF&W Collection 2003-04. PEI Fish & Wildlife Div., 716 recs.
1	Dibblee, R.L. 1999. PEI Cormorant Survey. Prince Edward Island Fisheries, Aquaculture & Environment, 1p. 21 recs.
1	Doucet, D.A. 2007. Fieldwork 2007: Insects (minus Odonata). ACCDC Staff, 1 rec.
1	Douglas, S.G. & G.C. Chaput & R. Bradford. 2001. Status of Striped Bass (Morone saxatilis) in the southern Gulf of St. Lawrence in 1999 & 2000. DFO Canadian Science Advisory Secretariat Res. Doc. 2001/058, 2001/058. 1 rec.
1	Edsall, J. 1993. Summer 1993 Report. New Brunswick Bird Info Line, 2 recs.
1	Elderkin, M. 2001. Bog Lemming record for Popple Depot NB. , Pers. comm. to K.A. Bredin. 1 rec.
1	Erskine, D. 1960. The plants of Prince Edward Island, 1st Ed. Research Branch, Agriculture Canada, Ottawa., Publication 1088. 1238 recs.
1	Glen, W. 1991. 1991 Prince Edward Island Forest Biomass Inventory Data. PEI Dept of Energy and Forestry, 10059 recs.
1	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
1	Goltz, J.P. 2007. Field Notes: Listera australis at Kouchibouguac National Park. , 7 recs.
1	Hinds, H.R. 1997. Vascular Plants of Cocagne Island. , 14 recs.
1	Klymko, J.J.D. 2011. Insect fieldwork & submissions, 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 742 recs.
1	Klymko, J.J.D. 2012. Insect field work & submissions. Atlantic Canada Conservation Data Centre, 852 recs.

# recs	CITATION
1	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2011. Atlantic Canada Conservation Data Centre. Sackville NB, 760 recs.
1	MacKinnon, C.M. 2000. Inspection visit to Inkerman MBS, June 5, 2000. Canadian Wildlife Service, Sackville, 1 rec.
1	Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
1	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
1	Nye, T. 2002. Wood Turtle observations in Westmorland, Queens Cos. , Pers. com. to S.H. Gerriets, Dec. 3. 3 recs.
1	Sabine, D.L. 2005. 2001 Freshwater Mussel Surveys. New Brunswick Dept of Natural Resources & Energy, 590 recs.
1	Sabine, D.L. 2013. Dwaine Sabine butterfly records, 2009 and earlier.
1	Saunders, J. 2009. White-Fringe Orchis photo and coordinates. Pers. comm. to S. Blaney, July 17. 1 rec, 1 rec.
1	Toner, M. 2009. Wood Turtle Sightings. NB Dept of Natural Resources. Pers. comm. to S. Gerriets, Jul 13 & Sep 2, 2 recs.
1	Tremblay, E., Craik, S.R., Titman, R.D., Rousseau, A. & Richardson, M.J. 2006. First Report of Black Terns Breeding on a Coastal Barrier Island. Wilson Journal of Ornithology, 118(1):104-106. 1 rec.
1	Young, A.D., Titman, R.D. 1986. Costs and benefits to Red-breasted Mergansers nesting in tern and gull colonies. Can. J. Zool., 64: 2339-2343.

F-2 - Habitat Comparison Table

GEMTEC
Consulting Engineers and Scientists

TABLE F2: SPECIES HABITAT COMPARISON			
Common Name	**Scientific Name**	**Prefered Habitat**	**Habitat Present**
Fauna			
Baltimore Oriole	*Icterus galbula*	Found high in leafy deciduous trees, but not deep in forests. Found in open woodlands, forest edge, orchards and stands of trees along rivers, in parks, and in backyards (All About Birds, 2015).	Yes
Bank Swallow	*Riparia riparia*	Bank Swallows live in low areas along rivers, streams, ocean coasts, or reservoirs. Bank Swallows build nests, often in large colonies, in vertical banks and bluffs (Birds of Atlantic Canada, 2017).	Yes
Barn Swallow	*Hirundo rustica*	Nests in and on artifical structures, including barns, garages, houses, bridges and road culverts; prefers open habitats for foraging, including grassy fields, pastures, lakes and river shorelines, cleared right of ways and wetlands (All About Birds, 2015).	Yes
Barrow's Goldeneye - Eastern pop.	*Bucephala islandica (Eastern pop.)*	Prefer alkaline to freshwater lakes. Small, high elevation lakes (SARA Registry, 2011).	No
Black-Bellied Plover	*Pluvialis squatarola*	Species frequents intertidal mudflats, saltmarshes, sandflats and beaches of oceanic coastlines (IUCN Red List, 2016).	No
Black-Billed Cuckoo	*Coccyzus erythropthalmus*	Dense second-growth woodlands, shrubby areas and thickets; often in tangled riparian areas and abandoned farmlands with low deciduous vegetation and adjacent open areas (Birds of Atlantic Canada, 2002).	No
Blackpoll Warbler	*Dendroica striata*	Breeds in coniferous and mixed scrub, open coniferous growth on dry fens and bogs, the backsides of ridged riverbanks and sparsely vegetated beach ridges (Birds of Atlantic Canada, 2002).	No
Bobolink	*Dolichonyx oryzivorus*	Nests in hayfields and pastures; also in wet prarie, graminoid peatlands and abandoned fields with tall grass (All About Birds, 2015).	No
Brown Thrasher	*Toxostoma rufum*	Scrubby fields, dense regenerating woods and forest edges. Rarely found away from thick undergrowth in forest (All About Birds, 2015).	No
Brown-Headed Cowbird	*Molothrus ater*	Brown-headed Cowbirds frequent many open habitats, such as agricultural and residential areas (Birds of Atlantic Canada, 2002).	No
Canada Warbler	*Wilsonia canadensis*	Wet, low-lying areas of mixed forests with a dense understory, especially riparian willow-alder thickets; also cedar woodlands and swamps (Birds of Atlantic Canada, 2002).	Yes
Cape May Warbler	*Dendroica tigrina*	Breeds in mature coniferous and mixed forests, especially in dense old-growth stands of white spruce and balsam fir (Birds of Atlantic Canada, 2002).	No
Chimney Swift	*Chaetura pelagica*	Nest in chimneys and on other vertical surfaces in dim, enclosed areas, including air vents, wells, hollow trees and caves. Forage over urban and suburban areas, rivers, lakes, forests and fields (All About Birds, 2015).	No
Cliff Swallow	*Petrochelidon pyrrhonota*	Steep banks, cliffs, bridges and buildings near watercourses; forages over water, fields and marshes (Birds of Atlantic Canada, 2002).	Yes
Common Nighthawk	*Chordeiles minor*	Wide range of open, vegetation free habitats (dunes, beaches, harvested forests, burntover areas, logged areas, rocky outcrops, barrens, grasslands, pastures, peat bogs, marshes, lakeshores, river banks), and also inhabits mixed and coniferous forests (Birds of Atlantic Canada, 2002).	Yes
Eastern Kingbird	*Tyrannus tyrannus*	Rural fields with scattered trees or hedgerows, clearings in fragmented forests, open roadsides, burned areas and near human settlements (Birds of Atlantic Canada, 2002).	Yes
Eastern Wood-Pewee	*Contopus virens*	Open mixed and deciduous woodlands with a sparse understory, especially woodland openings and edges; rarely in open coniferous woodlands (Birds of Atlantic Canada, 2002).	Yes
Evening Grosbeak	*Coccothraustes vespertinus*	Breed in mature and second-growth coniferous forests and nest in deciduous woodlands, parks, and orchards. They winter in both coniferous and deciduous forest and also urban and suburban areas (All About Birds, 2015).	No
Gadwall	*Anas strepera*	Reservoirs, ponds, fresh and salt water marshes, city parks, sewage ponds, or muddy edges of estuaries (All About Birds, 2015).	No
Glaucous Gull	*Larus hyperboreus*	Breed along both marine and freshwater coasts and offshore islands. They are rarely found far inland. They winter on maritime coasts, lakes, agricultural fields, urban areas, and garbage dumps (All About Birds, 2015).	No
Great Crested Flycatcher	*Myiarchus crinitus*	Deciduous and mixed woodlands and forests, usually near openings or edges. Nests in a tree cavity, nest box or other artificial cavity, often lined with grass, bark strips and feathers (Birds of Atlantic Canada, 2002).	Yes
Greater Yellowlegs	*Tringa melanoleuca*	Breed in bogs, alluvial wetlands, sedge meadows, fens and beaver ponds (Birds of Atlantic Canada, 2002).	No
Hoary Comma	*Polygonia gracilis*	Foothills, treeline woodland streamsides, brushlands (Metalmark Web and Data, 2017).	Yes
House Wren	*Troglodytes aedon*	Open forests, forest edges, areas with scattered grass and trees, backyards, farmyards and city parks (All About Birds, 2015).	No
Hudsonian Godwit	*Limosa haemastica*	Flooded fields, marshes, mud flats and shorelines (Birds of Atlantic Canada, 2002).	Yes
Indigo Bunting	*Passerina cyanea*	Deciduous forest and woodland edges, regenerating forest clearings, shrubby fields, orchards. Usually nest in an upright fork of a small tree or shrub or within a vine triangle (Birds of Atlantic Canada, 2002).	Yes
Killdeer	*Charadrius vociferus*	Open ground, fields, lakeshores, sandy beaches, mud flats, gravel stream beds, wet meadows and grasslands; in urban areas, parks and open ground, often at a distance from water (Birds of Atlantic Canada, 2002).	Yes
Lesser Scaup	*Aythya affinis*	Breed in woodland and tundra ponds, wetlands and lake edges with grassy margins. They migrate to lakes and large marshes and rivers (Birds of Atlantic Canada, 2002).	No
Monarch	*Danaus plexippus*	Open habitats including fields, meadows, weedy areas, marshes and roadsides (Butterflies and Moths of North America, 2017).	Yes
Northern Mockingbord	*Mimus polyglottos*	Hedges, suburban gardens and orchard margins with an abundance of available fruit; hedgerows of multiflora roses are especially important in winter. Nest in a small shrub or small tree (Birds of Atlantic Canada, 2002).	No
Northern Pintail	*Anas acuta*	Breeds in shallow wetlands, fields and lake edges. Nests in small depressions of vegetation (Birds of Atlantic Canada, 2002).	No
Pectoral Sandpiper	*Calidris melanotos*	Saltwater and freshwater marshes and pastures, shorelines, ditches and sewage outlets (Birds of Atlantic Canada, 2002).	Yes
Pine Siskin	*Carduelis pinus*	Breeds in coniferous and mixed forests and urban and rural ornamental and shade trees. Winters in coniferous and mixed forests, forest edges, meadows, roadsides, agricultural fields and backyards with feeders (Birds of Atlantic Canada, 2002).	No
Red-Breasted Merganser	*Mergus serrator*	Lakes and large rivers, especially those with rocky shorelines and islands (Birds of Atlantic Canada, 2002).	Yes
Ring-Billed Gull	*Larus delawarensis*	Congregate around humans, at garbage dumps, parking lots, and freshly plowed fields (All About Birds, 2015).	Yes
Ruddy Turnstone	*Arenaria interpres*	Shorelines, especially wave-washed rocks with plenty of seaweed, reservoirs, marshes and lagoons; also in cultivated fields (Birds of Atlantic Canada, 2002).	No

TABLE F2: SPECIES HABITAT COMPARISON			
Common Name	**Scientific Name**	**Prefered Habitat**	**Habitat Present**
Sanderling	*Calidris alba*	Sandy and muddy shorelines, cobble and pebble beaches, spits, lakeshores, marshes and reservoirs (Birds of Atlantic Canada, 2002).	Yes
Semipalmated Sandpiper	*Calidris pusilla*	Coastal mud flats, beaches and shorelines, spits and pond shores (Birds of Atlantic Canada, 2002).	Yes
Snow Goose	*Chen caerulescens*	Shallow wetlands, lakes and fields. Does not nest in Atlantic Canada (Birds of Atlantic Canada, 2002).	No
Solitary Sandpiper	*Tringa solitaria*	Breeds in heavily forested wetlands, bogs, fens and streams (Birds of Atlantic Canada, 2002).	Yes
Spotted Sandpiper	*Actitis macularius*	Shorelines, gravel beaches, ponds, marshes, drainage ditches, rivers, streams, swamps and sewage lagoons; occasionally seen in cultivated fields (Birds of Atlantic Canada, 2002).	Yes
Striped Bass	*Morone saxatilis*	Coastal waters up to 10km from shore and often found in bays. Migrate to freshwater rivers and lakes in spring to spawn (IUCN Red List, 2016).	Yes
Turkey Vulture	*Cathartes aura*	Common around open areas such as roadsides, suburbs, farm fields, countryside, and food sources such as landfills, trash heaps and construction sites (All About Brids, 2015).	No
Virginia Rail	*Rallus limicola*	Freshwater wetlands, especially cattail and bulrush marshes. Nest concelaed in emergent vegetation, usually suspended just over water (Birds of Atlantic Canada, 2002).	Yes
Warbling Vireo	*Vireo gilvus*	Breeds in open deciduous woodlands and parks and gardens with decidious trees (Birds of Atlantic Canada, 2002).	Yes
Whip-Poor-Will	*Caprimulgus vociferus*	They can be found in both purely deciduous and mixed deciduous-pine forests, often in areas with sandy soil (Birds of Atlantic Canada, 2002).	Yes
Willow Flycatcher	*Empidonax traillii*	Shrubby areas of hawthorn, apple, red osier dogwood, willow or other low growth on abandoned farmlands and in riparian corridors (Birds of Atlantic Canada, 2002).	No
Wilson's Snipe	*Gallinago delicata*	Live in muddy freshwater pond edges, damp fields and other wet, open habitats (All About Birds, 2015).	No
Location Sensitive Species			
Bald Eagle	*Haliaeetus leucocephalus*	Sea coasts, estuaries, large lakes and rivers. Nest usually in trees bordering lakes or large rivers but may be far from water (Birds of Atlantic Canada, 2002).	No