

DILLON
CONSULTING

NATURAL FORCES DEVELOPMENTS LP

Bird and Bird Habitat Appendix 2021- 2022

Benjamins Mill Wind Project





December 14, 2022

Natural Forces Developments LP
Benjamins Mill Wind Project
1801 Hollis St Suite 1205
Halifax, NS
B3J 3N4

Attention: Megan MacIsaac

Bird and Bird Habitat Appendix: 2021-2022 Assessment for the Benjamins Mill Wind Project

Dillon Consulting Limited (Dillon) is pleased to provide you with the final report for the Bird and Bird assessments conducted as part of the environmental assessment for the Benjamins Mill Wind Project.

We trust the following meets your present needs. If you have any questions or comments, please contact the undersigned at (902)-450-4000 ext. 5052 at your convenience.

Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in black ink, appearing to read "Kelly Regan".

Kelly Regan, M.Sc.
Project Manager, Associate

KSR:lmk
Enclosure

Our file: 22-4064

45 Hebron Way
Suite 202
St. John's
Newfoundland and
Labrador
Canada
A1A 0P9
Telephone
709.754.2374
Fax
709.754.2380

Table of Contents

1.0	Introduction	1
1.1	Background	3
1.2	Purpose and Objectives of the Report	5
2.0	Project Description	6
3.0	Scope of Work	7
3.1	Spatial Boundaries.....	7
4.0	Methods	11
4.1	Desktop Analysis	11
4.1.1	Desktop Forest Habitat Assessment.....	11
4.1.2	Desktop Screening for Bird SAR and SoCC.....	11
4.2	Field Assessments	12
4.2.1	Survey Locations.....	13
4.2.2	Survey Program.....	17
4.3	Bird Species at Risk and Species of Conservation Concern Assessment	23
5.0	Results	24
5.1	Desktop Forest Habitat Assessment.....	24
5.1.1	Desktop Screening for Priority Species.....	26
5.2	Field Assessments	28
5.2.1	Winter Survey Program	28
5.2.2	Spring Migration Survey Program	30
5.2.3	Breeding Bird Survey Program	37
5.2.4	Fall Migration Survey Program.....	43
5.3	Bird SAR and SOCC Assessment	50
6.0	Effects Assessment and Mitigation Recommendations	59
6.1	Identification of Potential Environmental Effects	59

6.1.1	Approach to Project Components.....	59
6.1.2	Identification of Potential Environmental Effects.....	60
6.1.3	Standard Mitigation of Potential Environmental Effects.....	61
6.2	Residual Environmental Effects.....	65
6.3	Cumulative Environmental Effects.....	65
7.0	Summary and Conclusion	67
8.0	Closure	68
9.0	References	69

Figures

Figure 1: Project Location and Site Layout.....	2
Figure 2: Study Area and Local Assessment Area for Birds (Winter Search Areas and Diurnal Watch Count & Nocturnal Surveys Locations).....	9
Figure 3: Study Area and Local Assessment Areas for Birds (Point Count Locations).....	10
Figure 4: Forest within the LAA.....	25
Figure 5: Diversity of Bird Species Detected During the 2021 and 2022 Migratory Point Count Surveys.....	37
Figure 6: Bird Species Diversity detected during the Early and Late Breeding Bird Surveys in 2021-2022.....	41
Figure 7: Diversity of Bird Species Detected During the Fall 2021 and 2022 Migratory Point Count Surveys.....	50
Figure 8: Locations Where Bird Species at Risk Were Observed.....	58

Tables

Table 1: Spatial Boundaries for the Assessment of Birds and Bird Habitats.....	8
Table 2: Habitat Descriptions and Survey Years for the Point Count Survey Locations.....	14
Table 3: Survey Routes.....	16
Table 4: Timing of the Spring Migratory Stop-Over Surveys.....	18
Table 5: Timing of the Breeding Bird Surveys.....	20
Table 6: Fall Migration Survey Dates.....	22
Table 7: Historical Observations of SAR and SoCC within 10 km of the PDA Centre (AC CDC 2021, 2022).....	26

Table 8: Total Abundance of Birds Detected during Winter Resident Surveys	29
Table 9: Total Abundance of Birds Detected During Spring Migration Point Counts	31
Table 10: Summary of Species Observed during the Spring Migration Diurnal Watch Counts (2021-2022).....	34
Table 11: Summary of Bird Diversity and Abundance between 2021 and 2022	36
Table 12: Total Abundance of Birds Detected During Breeding Bird Point Count Survey	38
Table 13: Results of the 2021 Breeding Nocturnal Owl Survey	42
Table 14: Results of the Breeding Nightjar Survey.....	42
Table 15: Total Abundance of Birds Detected During Fall Migration Stop-Over Point Count Surveys.....	43
Table 16: Summary of Species Observed during the Fall Migration Diurnal Watch Counts (2021- 2022).....	47
Table 17: Summary of Bird Diversity and Abundance between 2021 and 2022	49
Table 18: Bird SAR and SoCC Detected in the LAA.....	52
Table 19: Bird SAR Observed during Field Studies and Bird SAR Documented by the AC CDC within 100km of the PDA.....	55
Table 20: Project Interactions with Environmental Components.....	60
Table 21: Potential Interactions and Proposed Mitigation for Birds	62

Appendices

- A Master Bird List and Survey Data
- B AC CDC Report (2022)

Introduction

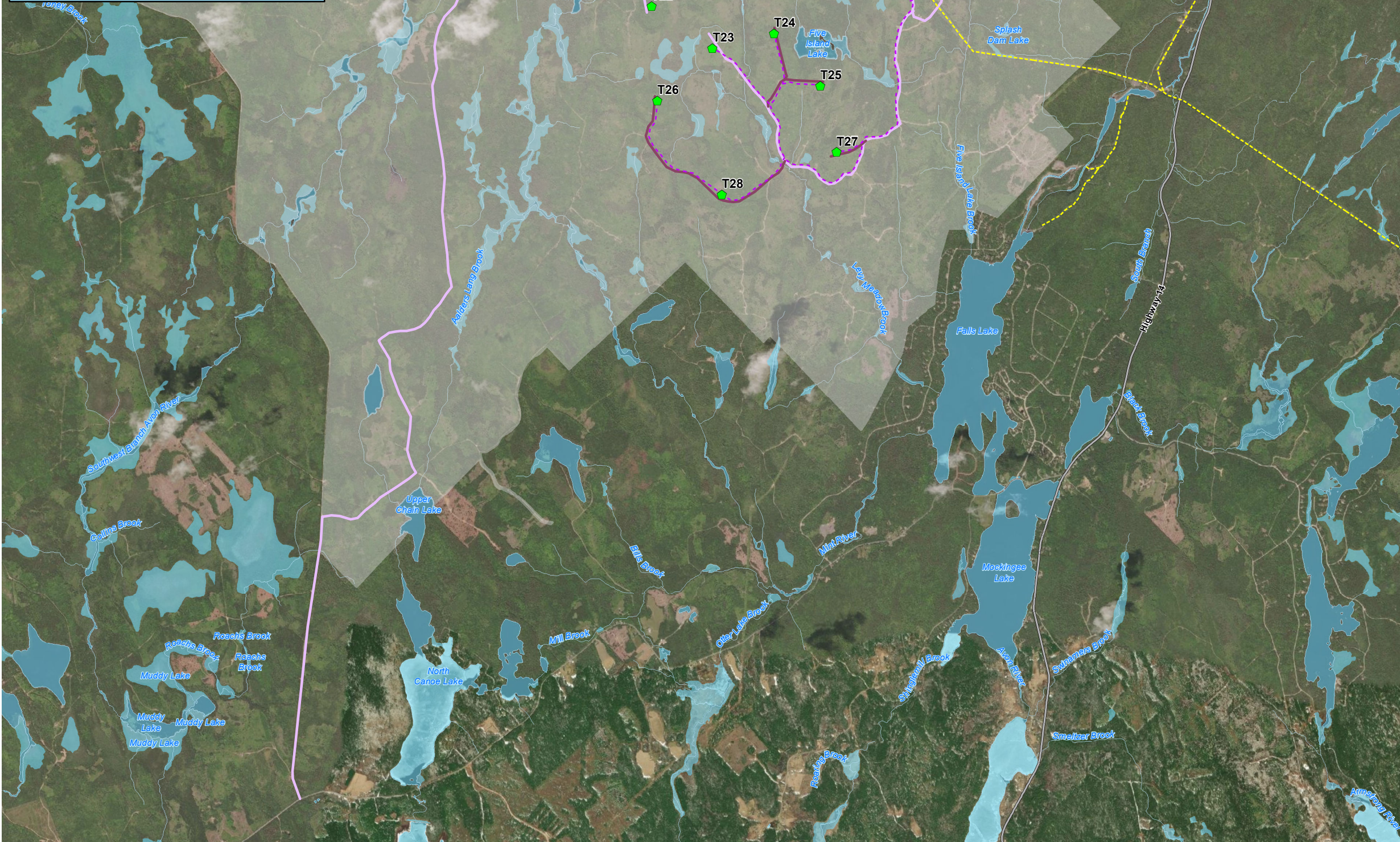
Dillon Consulting (Dillon) was retained by Natural Forces Developments Limited Partnership (the Proponent) on behalf of the Benjamins Mill Wind Limited Partnership to complete natural environment surveys in support of the development of a Nova Scotia Environmental Assessment Registration Document (EARD) and associated Addendum for the Benjamins Mill Wind Project (BMWPP or the Project). The Benjamins Mill Wind Limited Partnership is a partnership between the Proponent and Wskijnu'k Mtmo'taquinow Agency Limited, a corporate body wholly owned by the 13 Mi'kmaw bands in Nova Scotia.

The proposed Project consists of up to 28 wind turbine generators (WTGs) capable of producing up to 150 MW of renewable energy that will be connected to the existing Nova Scotia Power transmission grid via an overhead transmission line, as well as a substation (Figure 1). The Project is located in an undeveloped fragmented forested area in Hants County near the communities of Smiths Corner and Falls Lake. The WTGs are proposed to be located in areas that have been previously clear-cut through forestry activities, creating a highly fragmented habitat.

It is located in an area where birds and bird habitat is present and a key environmental concern associated with wind projects is the potential for effects to vegetation and lichen. Birds, including species at risk (SAR) and species of conservation concern (SoCC), are considered important features and valued environmental components (VECs) related to the proposed Project.

The Project is located in an area where birds and bird habitat are present. A key environmental concern associated with wind projects is the potential for effects to birds (e.g., collisions). Birds and bird habitat are considered important features and valued environmental components (VECs) because they are valued in their relationship with other wildlife and habitats, including other biological and physical components addressed as VECs in this EA. Natural environment surveys for the Project were conducted for VECs that were identified based on an understanding of the environmental features of the proposed project area, the nature of the Project, and the potential interactions that may occur between the Project and the environment/VECs.














Taking into consideration the objectives of the EARD, this report provides an effects assessment on birds and bird habitat, and includes: a summary of the baseline bird surveys conducted in support of the Benjamins Mill Wind Project EARD and Addendum, and includes: a brief description of the proposed project; a description of the scope and methodology used for the bird assessments, a summary of the results, and, an assessment of residual effects (including potential interactions and mitigation) of the proposed project on birds and bird habitat.

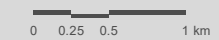


BENJAMINS MILL PROJECT

PROJECT LOCATION AND SITE LAYOUT

FIGURE 1

-  Proposed Turbine Location
-  Proposed Substation Location
-  Crown Land
-  Privately Owned Land
-  Proposed Collector Network
-  Roads to be Upgraded
-  Proposed Access Road
-  Proposed Alternative Access Road
-  Proposed Interconnection Line
-  Transmission Line
-  Highway
-  Watercourse
-  Waterbodies



SCALE 1:50,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: DU
MAP CHECKED BY: KB
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 21-1329
STATUS: DRAFT
DATE: 2022-12-14

1.1

Background

In Canada, important bird habitats are recognized by the Important Bird and Biodiversity Areas Program. This program aims to conserve, and monitor a network of sites that provide essential habitat for Canada's bird populations (Birds Canada 2022a). The nearest designated Important Bird Area (IBA), Southern Bight, Minas Basin (NS020), is located approximately 3 kilometres (km) north from the nearest proposed WTG location. This IBA is approximately 230 km² and is located within the Minas Basin and includes the Avon River. The area consists of intertidal habitats including mudflats, sandflats and salt marshes that provide foraging opportunities for migrating shorebirds. Between 1 and 2 million shorebirds use the mud flats of the head of the Minas Basin (in this and other adjacent IBAs) in the fall for staging before the southern migration. (Birds Canada 2022b).

Birds in Nova Scotia have protection under both provincial and federal legislation. The vast majority of bird species found in Nova Scotia are migratory and either breed in the province during the summer months, or pass through it during the spring and fall migratory periods. Birds in Nova Scotia have protection under both provincial and federal legislation. Jurisdiction for many migratory birds is federal, since migratory birds cross both provincial and international boundaries. The Migratory Birds Convention Act (MBCA) is the federal law which protects migratory birds in Canada (with similar legislation in the United States). The MBCA prohibits killing, injuring or harassing migratory birds, their nests, or their young without a permit from Environment and Climate Change Canada (ECCC). Migratory birds that are protected under the MBCA in Canada, and that are relevant to the Project, include:

- Waterfowl (e.g., ducks and geese);
- Rails (e.g., coots, gallinules, sora, and other rails);
- Shorebirds (e.g., plovers and sandpipers); and,
- Songbirds (e.g., thrushes and warblers).

Furthermore, species listed pursuant the federal Species at Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA) are afforded further protection as the destruction and harm to their nest, eggs, or young is prohibited.

Birds not addressed under federal jurisdiction include grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, and kingfishers. Most birds not included in this list are protected under provincial laws, most notably the Nova Scotia Lands and Forests Act and the Nova Scotia Wildlife Act. In Nova Scotia, all but three of the 225 bird species are protected by one of these Acts. English sparrows, crows, and starlings are considered pests, and are afforded no protection against killing (NSDNRR 2011).

The federal and provincial legislation that could apply to the Project include (but may not be limited to):

- *Migratory Bird Convention Act (ECCC 1994);*
- *Canadian Environmental Protection Act and regulations (ECCC 1999);*

- *Species at Risk Act* (ECCC 2002);
- *Transportation of Dangerous Goods Act*, and regulations (TC 1992);
- *Nova Scotia Environment Act* and regulations (NSG 1994-95);
- *Nova Scotia Water Resources Protection Act* and regulations (NSG 2000);
- *Nova Scotia Endangered Species Act* and regulations (NSG 1998a);
- *Nova Scotia Wilderness Areas Protection Act* and regulations (NSG 1998b); and,
- *Contingency Planning Guidelines* (NSECC 2021).

Several factors that greatly influence the diversity and abundance of birds in Nova Scotia include habitat factors, geography and seasonality (i.e., the timing of important annual events including migration and breeding; Davis and Browne 1996). Nova Scotia is an important migration pathway for birds due to the extensive coastline and abundance of bird habitats such as mud flats; therefore, bird assemblages can vary greatly seasonally and between regions. As such, a study design was proposed and discussed with Nova Scotia Department of Natural Resources and Renewables (NSDNRR) biologists prior to being implemented with consideration for the ecological setting of the site and the nearby important bird habitat. The proposed study included field survey methodologies for breeding birds, migratory birds and resident bird populations with strategic timing designed to match breeding and migratory windows specific for the region and targeted species, such as the common nighthawk (*Chordeiles minor*) and the Barred Owl (*Strix varia*).

1.2

Purpose and Objectives of the Report

Taking into consideration the objectives of the EARD, this report provides an effects assessment on birds and bird habitat, and includes a summary of the bird surveys that were conducted as part of the biophysical surveys undertaken in support of the Project's environmental assessment (EA) registration, as well as:

- Brief description of the proposed Project;
- A description of the scope and methods used for the surveys;
- A summary of the approach used to evaluate the data;
- Results of the desktop and field surveys;
- Potential effects of the Project on birds and bird habitat; and,
- Proposed mitigation based on industry best practice and experience.

The focus of this report is on birds and bird habitat, the surveys for which were completed over similar time frames as other focused biophysical surveys (i.e., wetlands, vegetation, bat and bat habitat, and wildlife and wildlife habitat). Separate reports will be provided for other components of the environment that were assessed as VECs for the Project.

2.0

Project Description

The following is a high-level summary of the Project. Please refer to the Benjamins Mill Wind Project Environmental Registration Document Addendum (the Addendum) dated December 2022 for further information.

The Project is located in Benjamins Mill in West Hants County, Nova Scotia. The Project is proposed to have an installed capacity of 150 MW, amounting to up to 28 WTGs and associated infrastructure, including a substation and overhead transmission line (Figure 1).

The Project is located on a mix of privately-owned and Crown lands approximately 3.3 km west of Highway 14. The privately-owned lands have undergone several generations of wood harvesting and have a network of existing forestry roads. The Crown lands are largely undisturbed with few existing roads across the property. The Project site was selected due to its attractive wind resource, elevation, proximity to and located of the Nova Scotia Power transmission system, distance from residences, previous forest harvesting activities across the site, and low environmental sensitivity. The existing mixed anthropogenic land uses and historical anthropogenic impacts in this area will be utilized in order to minimize impacts to undeveloped lands to the extent feasible.

The purpose of the Project is to contribute to Nova Scotia achieving their renewable electricity targets through the generation of clean and renewable energy. Not only will this have environmental benefits, but will also reduce Nova Scotia's reliance on imported energy sources through the development of a localized renewable energy generation (Renewable Electricity Regulations 2021).

3.0 Scope of Work

To support the assessment of potential effects of the Project on birds and bird habitat, the scope of work for the bird surveys was based on the recommended Environment and Climate Change Canada's Canadian Wildlife Service (CWS) protocols (EC-CWS 2007a), and feedback from Nova Scotia Environment and Climate Change (NSECC), and NSDNRR during the regulatory consultation process. The following scope of work (SOW) was completed as part of the bird and bird habitat assessment for the proposed Project. The scope of work included:

- An initial desktop assessment of bird and bird habitats near the Project;
- A desktop assessment of bird species at risk (SAR) and species of conservation concern (SoCC) with the potential to occur near the Project or previously identified in the region;
- Field Surveys for birds including:
 - Winter Residency Surveys (targeting overwintering/resident bird species);
 - Spring Surveys (targeting migrating birds using the area as a stopover and breeding nocturnal owls);
 - Summer Surveys (targeting breeding birds, including a targeted common nighthawk survey); and,
 - Fall Surveys (targeting migrating birds).
- An assessment of bird SAR, SoCC and potential habitat for priority bird species near the Project.

It is noted that as field work progressed, and as more information became available, the surveys were refined based on the available habitat types and expected species diversity within the Project study area.

3.1 Spatial Boundaries





For the purposes of the bird and bird habitat surveys conducted as part of the biophysical assessment for the Project, the spatial boundaries included the Potential Development Area (PDA), the study area, and the Local Assessment Area. The Canadian Wildlife Service (CWS) (2007b) recommends selecting survey locations within representative habitats likely to be used by songbirds in the region and spacing the survey locations at least 250 m apart in forest, or 500 m apart in open habitat. Following this recommendation, a study design was developed that incorporated a LAA defined as a 500 m buffer around the PDA. The survey locations selected within the LAA were designed to identify the Project specific environmental interactions in relation to potential turbine locations within a representative area that environmental interactions can be predicted and measured with a reasonable degree of accuracy and confidence. The extent of each spatial boundary and purpose for the assessment of birds and bird habitat is summarized in Table 1 and shown on Figure 2).

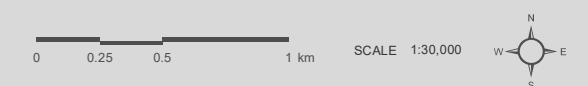
Table 1: Spatial Boundaries for the Assessment of Birds and Bird Habitats

Assessment Area	Definition	Purpose of Boundary
Potential Development Area	Area encompasses the Project footprint and a buffer of 15 m on either side of shoulders of the roadways (either existing or new) and collector lines and transmission line, a 75 m buffer around the base of each turbine location, and a 25 m buffer around the substation.	Represents the extent of anticipated areas that could undergo physical disturbance associated with the Project. This area encompasses the proposed 28 turbine locations and their associated infrastructure.
Study Area	Encompasses the area over which surveys (point count and watch surveys) were completed. These locations are presented on Figures 2 and 3.	The area included in focused surveys on foot. Observations in the study area are extrapolated and applied to understand potential effects of the Project on the LAA.
Local Assessment Area	Area includes a 500 m buffer around the potential development area of Project components including turbines, substations and access roads.	The maximum area where Project-specific environmental interactions can be predicted and measured with a reasonable degree of accuracy and confidence (i.e. the zone of influence of the Project phases on each VEC).

BENJAMINS MILL WIND PROJECT

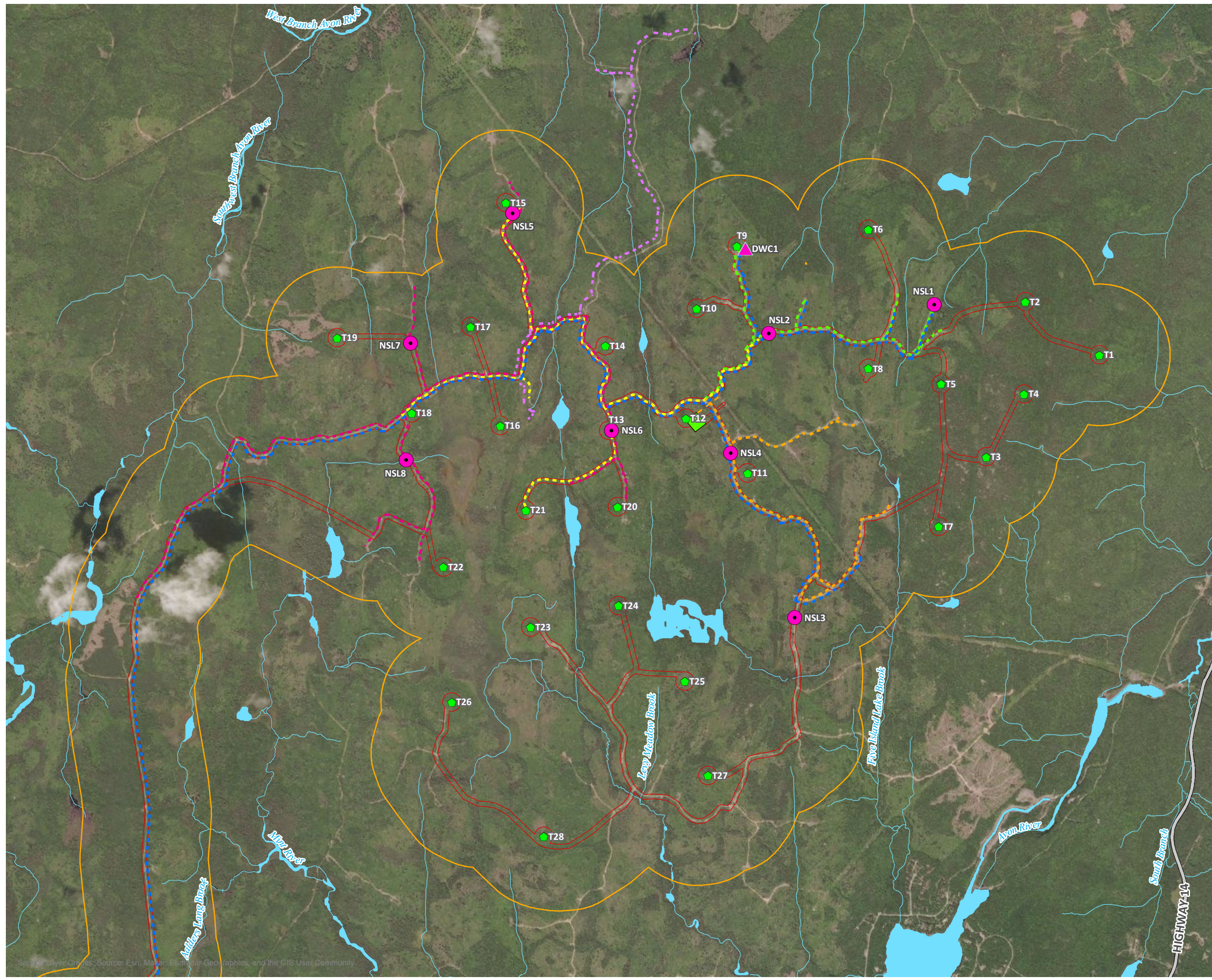
STUDY AND LOCAL ASSESSMENT AREA FOR BIRDS (WINTER SEARCH AREAS AND DIURNAL WATCH COUNT & NOCTURNAL SURVEY LOCATIONS)
FIGURE 2

-  Diurnal Watch Count Location
-  Nocturnal Survey Locations
- Winter Area Search**
-  April 13, 2021 (4.6 km)
-  April 14, 2021 (4.84 km)
-  April 7, 2021 (7.45 km)
-  April 9, 2021 (4.76 km)
-  February 22, 2022 (11.37 km)
-  February 26, 2022 (21.88 km)
-  Proposed Turbine Location
-  Proposed Substation Location
-  Local Assessment Area (LAA)
-  Potential Development Area (PDA)
-  Proposed Interconnection Line
-  Highway
-  Watercourse
-  Waterbody
-  Wetland














MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

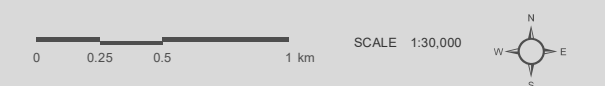
MAP CREATED BY: GAM
MAP CHECKED BY: KR
MAP PROJECTION: NAD 1983 UTM ZONE 20N



Source: Esri, Maxar, Earthstar, GeoGraphics, and the GIS User Community

STUDY AREA AND LOCAL ASSESSMENT AREAS FOR BIRDS (POINT COUNT LOCATIONS)
FIGURE 3

-  Point Count (2022)
-  Point Count (2021 & 2022)
-  Point Count (2021)
-  Proposed Turbine Location
-  Proposed Substation Location
-  Local Assessment Area (LAA)
-  Potential Development Area (PDA)
-  Highway
-  Watercourse
-  Waterbody
-  Wetland

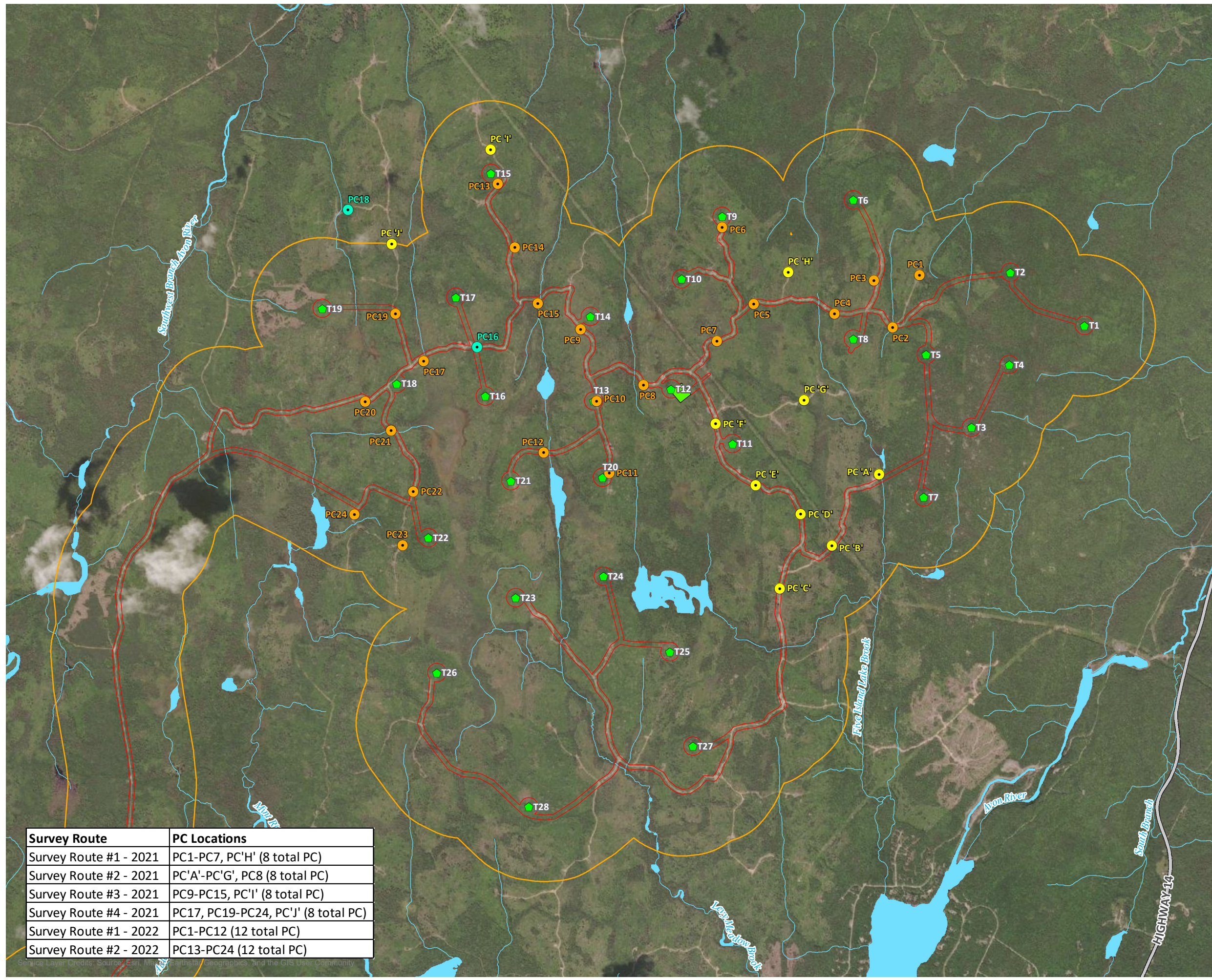


MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: GAM
MAP CHECKED BY: KR
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 22-4064
STATUS: DRAFT
DATE: 2022-12-13



Survey Route	PC Locations
Survey Route #1 - 2021	PC1-PC7, PC'H' (8 total PC)
Survey Route #2 - 2021	PC'A'-PC'G', PC8 (8 total PC)
Survey Route #3 - 2021	PC9-PC15, PC'I' (8 total PC)
Survey Route #4 - 2021	PC17, PC19-PC24, PC'J' (8 total PC)
Survey Route #1 - 2022	PC1-PC12 (12 total PC)
Survey Route #2 - 2022	PC13-PC24 (12 total PC)

4.0 Methods

4.1 Desktop Analysis

4.1.1 Desktop Forest Habitat Assessment

Mature forests typically have larger diameter trees and are effective habitat indicators for birds as they offer nest sites, perches, and provide sources for cavities that enhance the habitat for many forest birds (Treyger 2019). This assessment included a review of available background information sources and mapping to identify forested habitat for birds within the LAA. Information reviewed included the following sources:

- Publicly available GIS map layers (e.g., ecological land classification, forest and non-forest inventory, wetland inventory, Protected Natural Areas, Wildlife Management Zones);
- High-resolution Google Earth imagery, which was available for the site from September 2021, June 2020, November 2019, August 2018, and December 2017;
- Important Bird Areas (IBAs) of Canada mapping;
- Nova Scotia Natural Resources and Renewables Forest Inventory (NSDNRR 2021);
- Provincial Parks and Protected Areas mapping;
- Environmentally Sensitive Areas (ESAs) database;
- Federally-designated Migratory Bird Sanctuaries;
- Second Atlas of Breeding Birds of the Maritime Provinces (Stewart et al. 2015);
- Data Reports from the Atlantic Canada Conservation Data Centre (AC CDC; 2021 and 2022); and,
- Identified Protected Natural Areas (PNAs) and Wildlife Management Zones (WMZ).

This assessment used available forestry data from NSDNRR which was verified based on field observations noted during the 2021 and 2022 field surveys. Mature forest stands were determined based on the NSDNRR forest inventory and diameter at breast height (dbh).

4.1.2 Desktop Screening for Bird SAR and SoCC

Prior to conducting field work, a desktop screening for priority bird species and habitats within the LAA was completed. The purpose of the screening was to aid in the planning of the field surveys and to identify targeted species surveys to include in the bird and bird habitat biophysical assessments. The priority species screening included consultation with NSDNRR wildlife biologists and a desktop analysis, which includes data obtained from site-specific reports provided by the Atlantic Canada Conservation Data Centre (AC CDC).

For this assessment, priority species refer to SAR and SoCC based on the following definitions:

- **Species at Risk (SAR):** A species that is determined to be Endangered, Threatened, or Vulnerable/Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Nova Scotia Endangered Species Act (NSESA), or the federal Species at Risk Act (SARA); and,
- **Species of Conservation Concern (SoCC):** those species that are not SAR but are identified as regionally vulnerable or imperilled by the AC CDC (i.e., those species with AC CDC S-ranks of S1: Critically imperilled in province; S2: Imperilled in province; and S3: Vulnerable in province of Nova Scotia).

Readily-available information from reputable sources was reviewed to evaluate the potential for bird SAR and SoCC within the LAA. Dillon completed a review of the following sources and data lists for the purpose of characterizing existing conditions at the Project site:

- Data from the AC CDC (2021 and 2022);
- The Federal SAR public registry (ECCC 2022);
- The Provincial Endangered Species registry (NSDNR 2022); and,
- Second Maritimes Breeding Birds Atlas (MBBA; Stewart et al. 2015).

To provide information on potential occurrences of rare and endangered birds, and unique or sensitive wildlife habitats potentially existing within and/or near the LAA, a review of the following existing data and information sources was conducted:

- Listed species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Listed species under the federal Species at Risk Act (SARA) or the Nova Scotia Endangered Species Act (ESA);
- Important Bird Areas (IBAs) of Canada; and
- Federally-designated Migratory Bird Sanctuaries.

4.2 Field Assessments

Based on the desktop review, consultation with NSECC, as well as Wind Turbines and Birds: A Guidance Document for Environmental Assessment (EC-CWS 2007a), Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds - Report by Canadian Wildlife Service and Environment Canada (EC-CWS 2007b) and Guide to Preparing an EA Registration Document for Wind Power Projects in Nova Scotia (NSE 2021), the following approach for the bird surveys was completed with the objective of estimating both the number of bird species using the LAA, and their relative abundance and how bird presence and use of the LAA varies throughout the seasons.

Recommendations described in A Guide to Addressing Wildlife Species and Habitat in an EA Registration Document (NSE 2009) were consulted when planning field surveys to include the assessment for potential SAR and SoCC within the LAA.

Field surveys were performed by experienced specialists skilled at identifying birds by song, call and sight. Survey design was informed and developed based on professional experience, knowledge of the Project area, recommended techniques from CWS guidance documents (EC, 2007a; EC, 2007b). The general timing, purpose and description of the bird surveys conducted in 2021 and 2022 are described in Section 4.2.2 below. The following sections also present site-specific details of the various bird surveys completed for the bird and bird habitat focused effects assessment for the Project by season.

The surveys were scheduled so that data was collected across important seasonal periods for birds in Nova Scotia (i.e. spring and fall migration periods, peak breeding season and winter residency) during the two-year study period between 2021 and 2022. Additional targeted surveys were conducted in 2021 for breeding nocturnal owls and for breeding common nighthawks. Considerable effort was made such that surveys were conducted when weather conditions were appropriate for viewing and listening for birds (i.e., on days or nights with minimal forecasted fog, precipitation and forecasted wind speeds ≤ 20 km/h).

4.2.1 Survey Locations

Two years of bird surveys were undertaken for the Project. The survey locations and routes for the second year (2022) of the bird surveys were refined based on the results of the first year's (2021) surveys and updates to the PDA, aiming to increase coverage over more representative habitat types and assess areas not represented in 2021. Between the 2021 and 2022 field seasons, the proposed layout and design of the Project (i.e., PDA) was revised. As a result, the survey routes and Point Count locations for the Breeding Bird Surveys and Spring and Fall Migration Stop-Over Surveys were selected to collect data over representative habitats within the LAA, as well as provide overlapping locations between both survey years to allow comparability between study years.

In 2021, 32 Point Count locations were established over four survey routes and 22 of these locations were repeated during the 2022 spring and fall Migration Surveys and during the Breeding Bird Survey. In addition to the 22 Point Count locations that were surveyed for both years of the study, two additional Point Count locations were selected at representative locations in 2022 to better cover the revised PDA. The Point Count locations, survey years and representative habitat at each location are summarized in Table 2.

Diurnal Watch Counts were conducted during the 2021 and 2022 survey seasons. The location for the Diurnal Watch Counts are shown on Figure 2.

Table 2: Habitat Descriptions and Survey Years for the Point Count Survey Locations

Point Count Location	Survey Years	Primary Habitat	Secondary Habitat (if applicable)	Tertiary Habitat (if applicable)
PC 'A'	2021	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)	Wetland
PC 'B'	2021	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)	Wetland
PC 'C'	2021	Early successional deciduous regrowth (cutover)	Mixedwood forest (Riparian buffer zone)	n/a
PC 'D'	2021	Early successional deciduous regrowth (cutover)	Mixedwood forest (Riparian buffer zone)	n/a
PC 'E'	2021	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)	n/a
PC 'F'	2021	Wetland	Coniferous forest (small isolated island)	Early successional deciduous regrowth (cutover)
PC 'G'	2021	Wetland	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)
PC 'H'	2021	Early successional deciduous regrowth (cutover)	Wetland	Mixedwood forest
PC 'I'	2021	Wetland	Early successional deciduous regrowth (cutover)	n/a
PC 'J'	2021	Early successional deciduous regrowth (cutover)	Wetland	n/a
PC1	2021 and 2022	Early successional deciduous regrowth (cutover)	Mixedwood forest	n/a
PC2	2021 and 2022	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)	n/a

Point Count Location	Survey Years	Primary Habitat	Secondary Habitat (if applicable)	Tertiary Habitat (if applicable)
PC3	2021 and 2022	Early successional deciduous regrowth (cutover)	Mixedwood forest (Riparian buffer zone)	Hardwood forest
PC4	2021 and 2022	Treed Wetland (Treed Swamp/bog)	Early successional deciduous regrowth (cutover)	Hardwood forest
PC5	2021 and 2022	Wetland (Treed swamp)	Small pond (large borrow pit)	Mixedwood forest
PC6	2021 and 2022	Early successional deciduous regrowth (cutover)	Mixedwood forest	n/a
PC7	2021 and 2022	Wetland (Treed bog)	Early successional deciduous regrowth (cutover)	n/a
PC8	2021 and 2022	Conifer plantation (sapling stage)	Mixedwood forest (Riparian buffer zone)	n/a
PC9	2021 and 2022	Wetland (Open bog)	Conifer plantation (sapling stage)	n/a
PC10	2021 and 2022	Wetland (Open bog)	Conifer plantation (sapling stage)	Early successional deciduous regrowth (cutover)
PC11	2021 and 2022	Early successional deciduous regrowth (cutover)	Small pond (large borrow pit)	n/a
PC12	2021 and 2022	Wetland (Treed bog)	Small lake (Bennett Lake)	Early successional deciduous regrowth (cutover)
PC13	2021 and 2022	Early successional deciduous regrowth (cutover)	Mixedwood forest (Riparian buffer zone)	n/a
PC14	2021 and 2022	Wetland (Shrub swamp)	Early successional deciduous regrowth (cutover)	n/a
PC15	2021 and 2022	Wetland (Open fen)	Mixedwood forest	Early successional deciduous regrowth (cutover)
PC16	2022	Early successional deciduous regrowth (cutover)	Wetland (Treed bog)	Small pond (Large borrow pit)

Point Count Location	Survey Years	Primary Habitat	Secondary Habitat (if applicable)	Tertiary Habitat (if applicable)
PC17	2021 and 2022	Wetland (Treed swamp/bog)	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)
PC18	2022	Wetland (Open fen)	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)
PC19	2021 and 2022	Early successional deciduous regrowth (cutover)	Mixedwood forest (Riparian buffer zone)	n/a
PC20	2021 and 2022	Wetland (Treed swamp)	Conifer plantation (sapling stage)	Mixedwood forest (Riparian buffer zone)
PC21	2021 and 2022	Wetland (Treed swamp)	Mixedwood forest (Riparian buffer zone)	Conifer plantation (sapling stage)
PC22	2021 and 2022	Mixedwood forest (Riparian buffer zone)	Early successional deciduous regrowth (cutover)	Wetland (Open bog)
PC23	2021 and 2022	Mixedwood forest	Early successional deciduous regrowth (cutover)	Conifer plantation (sapling stage)
PC24	2021 and 2022	Wetland (Treed swamp)	Mixedwood forest	Small lake (Burnt Lake)

The Point Count locations were grouped into survey routes based on the area that can feasibly be surveyed each day. Four Survey Routes, including eight-point counts each were established in 2021, while two Survey Routes including 12-point counts each were established in 2022. The survey routes and the Point Count locations that they include are described below in Table 3 and are shown on Figure 3.

Table 3: Survey Routes

Survey Route	PC Locations
Survey Route #1 – 2021	PC#1 – PC#7 and PC 'H' (8 total point counts)
Survey Route #2 – 2021	PC 'A' – PC 'G' and PC#8 (8 total point counts)
Survey Route #3 – 2021	PC#9 – PC#15 and PC 'I' (8 total point counts)
Survey Route #4 – 2021	PC#17, PC#19 – PC#24 and PC 'J' (8 total point counts)
Survey Route #1 – 2022	PC#1 – PC#12 (12 total point counts)
Survey Route #2 – 2022	PC#13 – PC#24 (12 total point counts)

4.2.2 Survey Program

4.2.2.1 Winter Survey Program

Winter Resident Survey

Targeted Timing: January 1 to March 31

Occurred: April 7, 9, 13 and 14, 2021 and February 22 and 26, 2022.

Purpose: To assess and determine which species are resident in the area and can be anticipated to occur in the Project area year-round.

A Winter Resident Survey was completed for the assessment in 2022. Prior to this, a late-winter resident survey was conducted in 2021 in early April and detected some likely migrant species. An additional survey was completed in February of 2022 to assess true winter conditions. General area searches were conducted along six unique transects through the LAA: four in 2021 and two in 2022. All birds seen or heard were recorded and counted. The locations of general area searches are shown on Figure 2.

4.2.2.2 Spring Migration Survey Program

During the spring migration period, two different types of survey were employed: Migration Stop-Over Point Counts and Diurnal Watch Counts. The former determines the number and species of birds that land in the study area during their period of migration, while the latter examines the number, species, altitude and behaviour of birds flying over the study area during the daytime. The general methods for Migration Point Counts and Diurnal Watch Counts are described in the sections below.

Spring Migration Stop-Over Point Count Surveys

Targeted Timing: Spring migration period (April 15 to May 31)

Occurred: between April 27 and May 28, 2021 & between May 3 and May 26, 2022

Purpose: To determine the abundance and species of birds that may land and 'stop-over' within the LAA during the spring migratory period.

Point Counts were conducted at locations that were determined following a preliminary desktop assessment of the habitat types present within the LAA. Locations were selected to both maximize site coverage, as well as to target habitats similar to where WTGs or other infrastructure will be located. To extend coverage of representative habitats across the LAA, the Point Count locations were grouped into established survey routes, which can be surveyed within one morning period, that were selected to maintain consistency across seasonal surveys. The locations of point counts and the survey route groupings are shown on Figure 3.

Point counts were ten minutes in length during which all birds seen or heard were recorded. Spring Migration Point Counts typically began 30-60 minutes after sunrise, as many birds become active later in the morning in response to the colder dawn temperatures during this season.

For the spring surveys, the Point Count locations were surveyed five times within the targeted migration window in 2021 and four times in 2022. Table 4 summarizes the dates the surveys were conducted in the spring of 2021 and 2022. Eight-point counts were conducted along each of the four survey routes completed in 2021, and 12-point counts were conducted along each of the two survey routes completed in 2022.

Table 4: Timing of the Spring Migratory Stop-Over Surveys

Survey	Spring Survey Dates
Point Count Survey Route 1 – 2021	April 27, May 4, May 10, May 18, and May 24, 2021
Point Count Survey Route 2 – 2021	April 29, May 4, May 10, May 18, and May 28, 2021
Point Count Survey Route 3 – 2021	April 29, May 5, May 11, May 19, and May 25, 2021
Point Count Survey Route 4 – 2021	May 2, May 5, May 11, May 19, and May 25, 2021
Point Count Survey Route 1 – 2022	May 3, May 12, May 21, and May 26, 2022
Point Count Survey Route 2 – 2022	May 3, May 12, May 20, and May 26, 2022
Diurnal Watch Counts – 2021	May 4, May 7, and May 21
Diurnal Watch Counts – 2022	May 3, May 12, and May 21

Spring Migration Diurnal Watch Counts

Targeted Timing: Spring migration period (April 15 to May 31)

Occurred: between May 4 and May 21, 2021 and between May 3 and May 21, 2022

Purpose: To identify species and to estimate the number, approximate altitude and behaviour of birds flying over the study area during the daytime to determine abundance.

Spring Diurnal Watch Counts were conducted at a pre-determined, repeatable observation point within the LAA. The selected location provided as close as possible to an extended 360-degree view of the air space over the LAA and was in close proximity to the proposed site for the placement of the WTGs (Figure 2). These counts were often conducted following the completion of the Spring Migration Stop-over Point Counts and typically began during the mid-morning and continued into the early afternoon. Table 4 above summarizes the dates the surveys were conducted in the spring of 2021 and 2022.

Diurnal Watch Counts were recorded in ½ hour blocks of observations, and all birds seen or heard were recorded according to their species, number of individuals, location, and altitude relative to the observer (not to the point over which they were flying), and flight direction.

4.2.2.3 Breeding Bird Survey Program

During the 2021 and 2022 peak nesting season (i.e., June 1 – July 15), a breeding bird survey program was conducted to identify species and estimate the abundance of birds that breed in the LAA with particular attention paid to their habitat requirements and habitat availability within the LAA. This survey was also supplemented by targeted nocturnal breeding bird surveys conducted in 2021 for species that may breed in the area, but that are typically only detectable at night, or during twilight hours, such as nightjars (i.e. common nighthawk and eastern whip-poor-will) and nocturnal breeding owls.

Breeding Bird Point Count Surveys

Targeted Timing: June 1 to July 31

Occurred: between June 2 and June 29, 2021 & June 8 and July 14, 2022

Purpose: To estimate the abundance and identify which species of birds are anticipated to breed in the LAA with particular attention paid to their habitat requirements and habitat availability in the LAA.

Description: Point Counts were conducted along the survey routes established for the Migratory Point Count surveys. Within the general search area, all birds seen or heard within 10-minute interval surveys were recorded.

Breeding bird surveys were conducted during the summer months following the same survey routes established for the spring and fall Migration Stop-Over Point Counts, which are shown on Figure 3. For the breeding bird surveys, each survey route was completed twice each year, once early and once late, within the targeted peak breeding window. Special consideration was given to complete a portion of the survey within the June full moon phase to appropriately assess for the common nighthawk.

The use of targeted playback (i.e. broadcasting recorded bird sounds) was used occasionally at the discretion of the observer during the Breeding Bird Survey to detect possible SAR or SoCC in their vicinity. This would occur to either confirm a possible detection (when there was uncertainty) or to simply elicit a response from particular species when surveying appropriate habitat. The detrimental impact of playback recordings on breeding birds is noted, and, as such, the use of playback recordings was limited and employed sparingly to avoid undue disturbance to breeding birds. Table 5 below summarizes the survey dates of the Breeding Bird Surveys conducted in 2021 and 2022.

Table 5: Timing of the Breeding Bird Surveys

Survey	Surveyed Dates
Point Count Survey Route 1 – 2021	June 2 and June 24, 2021
Point Count Survey Route 2 – 2021	June 2 and June 24, 2021
Point Count Survey Route 3 – 2021	June 3 and June 29, 2021
Point Count Survey Route 4 – 2021	June 3 and June 25, 2021
Point Count Survey Route 1 – 2022	June 8 and July 14, 2022
Point Count Survey Route 2 – 2022	June 8 and July 14, 2022
Targeted Breeding Nocturnal Owl Survey – 2021	May 10, 2021
Targeted Breeding Nightjar Survey – 2021	June 21, 2021

Targeted Breeding Nocturnal Owl Survey

Targeted Timing: mid-March to mid- May

Occurred: May 10, 2022

Purpose: Nocturnal surveys were conducted to estimate abundance and to identify breeding bird species in the LAA that are not readily detectable during daylight hours.

A breeding nocturnal owl survey was conducted on May 10, 2021 within the recommended survey window of mid-March to mid-May (Takats et al. 2001; Birds Canada 2019). This survey was conducted from eight (8) pre-determined Nocturnal Survey Locations (NSL) within the study area, which are shown on Figure 2. The methods employed for the breeding nocturnal owl survey followed the protocols described in Guidelines for Nocturnal Owl Monitoring in North America (Takats et al. 2001), as well as the Nova Scotia Nocturnal Owl Survey: Guide for Volunteers (Birds Canada 2019) and consist of periods of silent listening and multi-species playback.

Targeted Breeding Nightjar Survey

Targeted Timing: June 1 to June 31

Occurred: June 21, 2021

Purpose: Nocturnal surveys were conducted to estimate abundance and to identify breeding bird species in the LAA that are not readily detectable during daylight hours.

A targeted Breeding Nightjar Survey was conducted on June 21, 2021, with special consideration given to completing this survey within seven days of the June full moon phase when nighthawks are most active and readily detectable. The full moon phase occurred on the night of June 24, 2021. This survey was conducted from the same eight (8) pre-determined Nocturnal Survey Locations (NSL), as shown on Figure 2. The methodology employed for the breeding common nighthawk survey followed the

protocols described in the Canadian Nightjar Survey Protocol (Bird Studies Canada 2019) and consists of periods of silent listening and targeted playback.

Eastern Whip-poor-wills are most vocal during clear nights in June when the moon is at least half full, and can repeat their characteristic “whip-poor-will” call up to 100 times without stopping! They begin calling about 30 minutes after sunset, and call for about 90 minutes each night. Common nighthawks become active approximately 30 minutes before sunset, and remain active until 60 or 90 minutes after sunset.

4.2.2.4 **Fall Migration Survey Program**

During the fall migration period, the same survey methods were used during the Spring Migration Surveys; Migration Stop-Over Point Counts and Diurnal Watch Counts. The former determines the number and species of birds that land in the study area during the fall period of migration, while the latter examines the number, species, altitude and behaviour of birds flying over the study area during the daytime. The general methods for migration point counts and diurnal watch counts are described in the sections below.

Fall Migration Stop-Over Point Count Surveys

Targeted Timing: Fall migration period (August 15 to October 31)

Occurred: between August 24 and Oct. 18, 2021 & between August 16 and October 14, 2022

Purpose: To determine the abundance and species of birds that may land and ‘stop-over’ within the LAA during the fall migratory period.

Counts were conducted at the same locations as the spring Migration Stop-over Point Count Surveys, as determined following a preliminary desktop assessment of the habitat types present within the LAA. Locations were selected to both maximize site coverage, as well as to target habitats similar to where WTGs or other infrastructure will be located. To extend coverage of representative habitats across the LAA, the Point Count locations were grouped into established survey routes, which can be surveyed within one morning period, that were selected to maintain consistency across seasonal surveys. The locations of point counts and the survey route groupings are shown on Figure 3.

Point counts were ten minutes in length during which all birds seen or heard were recorded. Spring Migration Point Counts typically began 30-60 minutes after sunrise, as many birds become active later in the morning in response to the colder dawn temperatures during this season.

For the fall surveys, the Point Count locations were surveyed five times within the targeted migration window in 2021 and four times in 2022. Table 6 summarizes the dates the surveys were conducted in the spring of 2021 and 2022. Eight-point counts were conducted along each of the four survey routes completed in 2021, and 12-point counts were conducted along each of the two survey routes completed in 2022.

Table 6: Fall Migration Survey Dates

Survey	Surveyed Dates
Point Count Survey Route 1 – 2021	August 24, Sept. 13, Sept. 21, Oct. 6, and Oct. 18, 2021
Point Count Survey Route 2 – 2021	August 24, Sept. 13, Sept. 21, Oct. 6, and Oct. 18, 2021
Point Count Survey Route 3 – 2021	August 26, Sept. 11, Sept. 22, Oct. 7, and Oct. 15, 2021
Point Count Survey Route 4 – 2021	August 26, Sept. 11, Sept. 23, Oct. 7, and Oct. 15, 2021
Point Count Survey Route 1 – 2022	August 31, Sept. 9, Sept. 30, and Oct. 14, 2022
Point Count Survey Route 2 - 2022	August 30, Sept. 9, Sept. 30, and Oct. 14, 2022
Diurnal Watch Count Location -2021	August 19, August 26, Sept. 14, Sept. 23, and Oct 6, 2021
Diurnal Watch Count Location -2022	August 3, August 30, Sept. 9, and Sept. 30, 2022

Fall Migration Diurnal Watch Counts

Targeted Timing: Fall migration period (August 15 to October 30)

Occurred: between May 3 and May 21 and between August 3 and September 30, 2022

Purpose: To identify species, number, approximate altitude and behaviour of birds flying over the Study Area during the daytime to determine abundance.

As with the spring migration surveys, Diurnal Watch Counts were also conducted as a part of the fall migration surveys and from the same Diurnal Watch Count location shown in Figure 2. These counts were conducted in order to identify species, approximate altitude and the behaviour of birds flying over the Study Area during the daytime, and to determine species abundance.

Similar to the Spring Diurnal Watch Counts these surveys were often conducted following the completion of Migration Stop-Over Point Counts and therefore typically began during the mid-morning and continued into the early afternoon. However, in contrast to the spring surveys, some of the Fall Diurnal Watch Counts were scheduled for the morning and evening hours of the day.

Diurnal Watch Counts were recorded in 1/2-hour blocks of observations, whereby all birds seen or heard were recorded according to their species, location and altitude relative to the observer (not to the point over which they were flying), flight direction, and number of individuals.

4.3 Bird Species at Risk and Species of Conservation Concern Assessment

The proposed PDA will span several landscapes and include areas that have the potential to provide habitat for some SAR and SoCC populations. Natural Forces is committed to protecting SAR, SoCC, and their habitat as important features and VECs related to the proposed Project. Priority species and habitats for targeted species surveys were identified in consultation with NSDNRR wildlife biologists and a desktop analysis, which includes data obtained from a site-specific report provided by the AC CDC (2022) (Appendix B). Recommendations described in "A Guide to Addressing Wildlife Species and Habitat in an EA Registration Document" (NSE 2009) were consulted when planning field surveys to include the assessment for potential SAR and SoCC within the LAA. Various biophysical surveys were conducted between the months of April to October, 2021 and February to November, 2022 to characterize site-specific environmental conditions for flora and fauna within and around the LAA.

Methods for the priority bird SAR and SoCC are described above in Section 4.3. During field surveys, priority species were targeted and following field surveys, the priority species found within the LAA were assessed for their likelihood to be found throughout the LAA.

5.0

Results

Results from the desktop analysis and field surveys for the assessment of bird and bird habitat within the LAA are presented in the sections below.

5.1











Desktop Forest Habitat Assessment

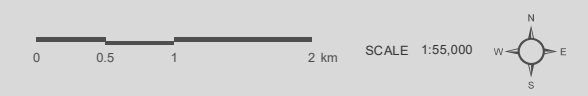
The Project is located within the South Mountain eco-district is generally dominated by Acadian forest tree species. Locally, the site consists of two eco-elements; the Spruce Hemlock Pine Hummocks and Hills eco-element, and the Red and Black Spruce Hummocks eco-element (NSDLF 2019). The majority of the site is covered by the Spruce Hemlock Pine Hummocks and Hills eco-element, which consists of well drained coarse grained soils. This eco-element is dominated by red spruce (*Picea rubens*), eastern hemlock (*Tsuga canadensis*) and eastern white pine (*Pinus strobus*) in areas with slightly moist soils; and by Eastern White Pine, Red Oak (*Quercus rubus*) and Red Pine (*Pinus resinosa*) on the drier hilltops. The remaining portions of the site, which tend to be wetter and consist of imperfectly drained course-grained soils (NSDLF 2019), are characterized by the Red and Black Spruce Hummocks eco-element. This eco-element includes late successional shade-tolerant softwoods, such as Red Spruce and Eastern Hemlock, along with Eastern White Pine (NSDFL 2019).

As part of the desktop review, the locations of mature forest habitat in relation to Project infrastructure were identified within the LAA. Additionally, aligned with the recommendation from Environment and Climate Change Canada's Canadian Wildlife Service (ECCC-CWS), mature forest habitat within the LAA was identified in relation to Project infrastructure. Mature forests typically have larger diameter trees, and were chosen as a habitat indicator for birds as they offer nest sites, perches, and provide sources for cavities that enhance the habitat for many forest birds (Treyger 2019). Mature forest stands were determined based on the NSDNRR forest inventory and diameter at breast height (dbh). Mapped polygons of mature coniferous forest, mature deciduous forest and mature mixed forest with an average diameter at breast height (DBH) 15 cm or more within the LAA were included.

Areas identified as habitat for birds within the LAA are presented on Figure 4. Within the LAA, 920 ha of forested habitats were identified and they generally consisted of a mixture of mature coniferous forest, mature deciduous forest and mature mixed-wood forest.

FORESTS WITHIN THE LAA
FIGURE 4

-  Proposed Turbine Location
-  Proposed Substation Location
-  Local Assessment Area (LAA)
-  Potential Development Area (PDA)
-  Forests with Average Diameter at Breast Height 15-25 cm (1732.2 ha)
-  Forests with Average Diameter at Breast Height >25 cm (29.3 ha)
-  Highway
-  Watercourse
-  Waterbody
-  Wetland

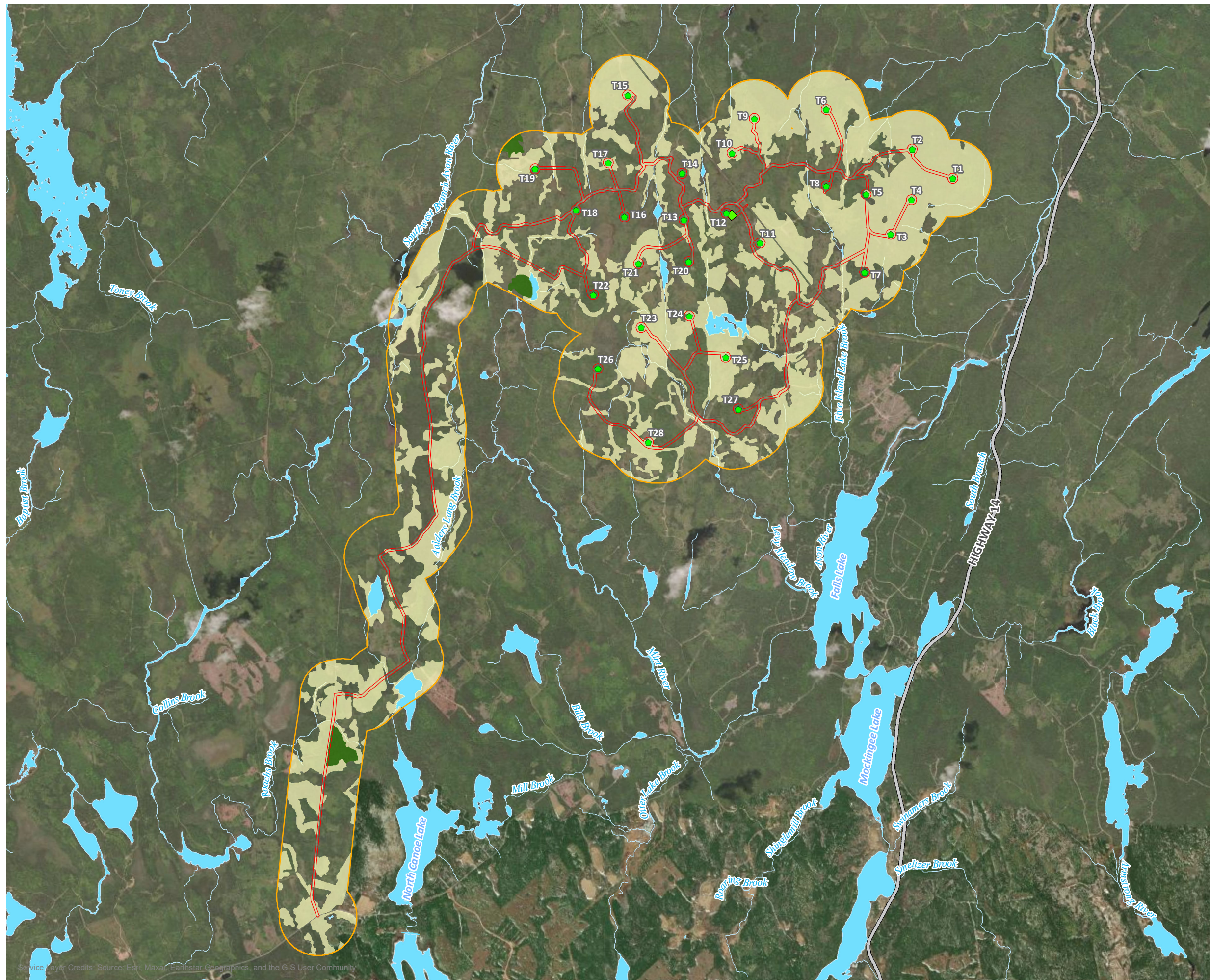


MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: GAM
MAP CHECKED BY: KR
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 22-4064
STATUS: DRAFT
DATE: 2022-12-14



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

5.1.1 Desktop Screening for Priority Species

Site-specific AC CDC reports were generated on May 10, 2021 and September 22, 2022 and included historical observations of SAR and SoCC reported within 5 km of the PDA. Due to the size of the PDA, a search of the ACCDC was requested to include a search radius of 10 km from the PDA centre in 2021 and 2022. Additionally, the AC CDC reports include information on priority species observed within 100 km of the PDA for information purposes, this list included in the 2022 AC CDC report, which supersedes the report presented in 2021 (AC CDC 2022). Based on the most recent AC CDC report, 32 bird species have historical observations within 10 km of the Project (AC CDC 2022). Table 7 summarizes the historical observations of bird SAR and SoCC within 10 km of the PDA, as reported by the AC CDC.

Table 7: Historical Observations of SAR and SoCC within 10 km of the PDA Centre (AC CDC 2021, 2022)

Common Name	Scientific Name	S-rank and Conservation Status	No. of Obs.	Distance from PDA Centre (km)
American Bittern	<i>Botaurus lentiginosus</i>	S3S4B, S4S5M	1	9.0 ± 7.0
American Kestrel	<i>Falco sparverius</i>	S3B,S4S5M	5	5.3 ± 7.0
Baltimore Oriole	<i>Icterus galbula</i>	S2S3B, SUM	1	6.4 ± 7.0
Bank Swallow	<i>Riparia</i>	S2B SARA: T COSEWIC: T NSES: E	3	6.4 ± 7.0
Barn Swallow	<i>Hirundo rustica</i>	S3B SARA: T COSEWIC: SC NSES: E	16	6.4 ± 7.0
Bay-breasted Warbler	<i>Setophaga castanea</i>	S3S4B,S4S5M	7	5.2 ± 0.0
Black-backed Woodpecker	<i>Picoides arcticus</i>	S3S4	3	5.3 ± 7.0
Bobolink	<i>Dolichonyx oryzivorus</i>	S3B SARA: T COSEWIC: SC NSES: V	9	6.4 ± 7.0
Boreal Chickadee	<i>Poecile hudsonicus</i>	S3	7	5.3 ± 7.0
Brown-headed Cowbird	<i>Molothrus ater</i>	S2B	4	6.4 ± 7.0
Canada Jay	<i>Perisoreus canadensis</i>	S3	7	5.3 ± 7.0
Canada Warbler	<i>Cardellina canadensis</i>	S3B SARA: T COSEWIC: SC NSES: E	13	5.2 ± 0.0

Common Name	Scientific Name	S-rank and Conservation Status	No. of Obs.	Distance from PDA Centre (km)
Chimney Swift	Chaetura pelagica	S2S3B,S1M SARA: T COSEWIC: T NSES: E	126	5.0 ± 0.0
Cliff Swallow	Petrochelidon pyrrhonota	S2S3B	2	8.2 ± 7.0
Common Nighthawk	Chordeiles minor	S3B SARA: T COSEWIC: SC NSES: T	9	5.2 ± 0.0
Eastern Kingbird	Tyrannus	S3B	4	5.3 ± 7.0
Eastern Wood-Pewee	Contopus virens	S3S4B SARA: SC COSEWIC: SC NSES: V	45	4.3 ± 0.0
Evening Grosbeak	Coccothraustes vespertinus	S3B,S3N,S3M SARA: SC COSEWIC: SC NSES: V	43	4.6 ± 0.0
Great Cormorant	Phalacrocorax carbo	S2S3B, S2S3N	1	6.8 ± 0.0
Indigo Bunting	Passerina cyanea	S1?B, SUM	1	8.2 ± 7.0
Killdeer	Charadrius vociferus	S3B	6	5.3 ± 7.0
Nelson's Sparrow	Ammodramus nelsoni	S3S4B	1	6.4 ± 7.0
Northern Goshawk	Accipiter gentilis	S3S4	3	5.3 ± 7.0
Olive-sided Flycatcher	Contopus cooperi	S3B SARA: T COSEWIC: SC NSES: T	37	4.5 ± 0.0
Pine Siskin	Spinus pinus	S3	7	5.2 ± 0.0
Red Crossbill	Loxia curvirostra	S3S4	4	4.6 ± 0.0
Rose-breasted Grosbeak	Pheucticus ludovicianus	S3B	5	5.3 ± 7.0
Rusty Blackbird	Euphagus carolinus	S2B SARA: SC COSEWIC: SC NSES: E	6	5.3 ± 7.0
Scarlet Tanager	Piranga olivacea	S2B, SUM	1	6.4 ± 7.0
Spotted Sandpiper	Actitis macularia	S3S4B,S5M	11	5.3 ± 7.0

Common Name	Scientific Name	S-rank and Conservation Status	No. of Obs.	Distance from PDA Centre (km)
Tennessee Warbler	<i>Leiothlypis peregrina</i>	S3S4B,S5M	5	6.8 ± 0.0
Wilson's Snipe	<i>Gallinago delicata</i>	S3B,S5M	9	5.3 ± 7.0

Notes:

S-rank refers to the Sub-national (Provincial) rank provided by the AC CDC and includes the following: S1 Critically Imperiled, S2 Imperiled, S3 Vulnerable, S4 Apparently Secure, S5 Secure and SU Unrankable. Rankings are frequently paired with the following breeding status qualifiers: B Breeding, N Non-breeding and M Migrant. ? indicates that the ranking is uncertain or inexact (AC CDC 2022b)

5.2 Field Assessments

Overall, a total of 103 bird species and approximately 11,700 individual birds were recorded during the course of all bird survey types, and including incidental observations made during other biophysical surveys, during both the 2021 and 2022 field seasons. A complete list of all species detected is presented in Appendix A. Sections 5.2.1 to 5.2.4 provide the results of the bird surveys conducted by season, followed by an assessment and summary of priority bird species and habitat for the LAA (Section 5.3).

5.2.1 Winter Survey Program

The Winter Survey Program consisted of one Winter Resident Survey in 2022. A late-winter resident survey was conducted in 2021 in early April and detected some likely migrant species. An additional survey was completed in February of 2022 to assess true winter conditions. Section 5.2.1.1 below details the results of the Winter Survey Program.

5.2.1.1 Winter Resident Survey

The Winter Survey Program consisted of six Winter Resident Surveys spread widely throughout the LAA (Figure 2). These surveys were conducted as General Area Searches and were completed during the winter months to assess which species may occupy the LAA year-round.

In 2021, a total of 288 individual birds comprised of 29 species were recorded across 4 surveys conducted on April 7, April 9, April 13 and April 14. Based on the available habitat regional characteristics of the LAA, as well as the specific life histories of the bird species observed, seven of the 29 detected species were considered likely to be early migrants and therefore unlikely to be resident species to the LAA.

In 2022, a total of 42 individual birds comprised of 13 species were recorded across two surveys conducted on February 22 and February 26.

A summary of all species detected in the Winter Resident Surveys is presented in Table 8.

Table 8: Total Abundance of Birds Detected during Winter Resident Surveys

Number Detected in 2021 (April)	Number Detected in 2022 (February)	Common Name	Scientific Name	S-Rank and Conservation Status
65	0	Dark-eyed Junco	<i>Junco hyemalis</i>	S4S5
37	0	*American Robin	<i>Turdus migratorius</i>	S3N, S5B
37	18	Black-capped Chickadee	<i>Poecile atricapillus</i>	S5
29	0	Blue Jay	<i>Cyanocitta cristata</i>	S5
20	0	Song Sparrow	<i>Melospiza melodia</i>	S5B
18	0	Common Grackle	<i>Quiscalus quiscula</i>	S5B
15	9	Common Raven	<i>Corvus corax</i>	S5
8	0	American Crow	<i>Corvus brachyrhynchos</i>	S5
8	2	American Goldfinch	<i>Spinus tristis</i>	S5
5	0	Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5
5	0	Mallard	<i>Anas platyrhynchos</i>	S5B, S5N
5	0	Mourning Dove	<i>Zenaida macroura</i>	S5
5	1	Red-breasted Nuthatch	<i>Sitta canadensis</i>	S4S5
3	0	Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5
3	2	*Canada Jay	<i>Perisoreus canadensis</i>	S3
3	0	Hairy Woodpecker	<i>Dryobates villosus</i>	S5
3	0	Northern Flicker	<i>Colaptes auratus</i>	S5B
3	0	Spruce Grouse	<i>Falcapennis canadensis</i>	S4
3	1	White-winged Crossbill	<i>Loxia leucoptera</i>	S4S5
2	0	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3B, S3N, S3M SARA: Special Concern NS ESA: Vulnerable
2	0	Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5
2	0	Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5
1	0	American Black Duck	<i>Anas rubripes</i>	S5B, S5N
1	0	Brown Creeper	<i>Certhia americana</i>	S5
1	0	Hermit Thrush	<i>Catharus guttatus</i>	S5B
1	0	Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B
1	0	Northern Harrier	<i>Circus hudsonius</i>	S4B, S4S5M
1	3	Ruffed Grouse	<i>Bonasa umbellus</i>	S5
1	0	Winter Wren	<i>Troglodytes hiemalis</i>	S5B
0	1	Downy Woodpecker	<i>Dryobates pubescens</i>	S5
0	2	*Pine Siskin	<i>Spinus pinus</i>	S3

Number Detected in 2021 (April)	Number Detected in 2022 (February)	Common Name	Scientific Name	S-Rank and Conservation Status
0	1	Blue Jay	Cyanocitta cristata	S5
0	1	Snow Bunting	Plectrophenax nivalis	S5N
0	1	*Red Crossbill	Loxia curvirostra	S3S4
288	42	Total		

Notes: * denotes SoCC
 Bold denotes SAR
 S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
 Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

Between the Late-Winter 2021 survey and the winter resident survey conducted in February 2022, a total of 34 species and 330 individual birds were detected during the formalized Winter Survey Program and through incidental observations. The results of the Winter Survey Program illustrate that the vast majority of the birds detected within the LAA during the winter months are ranked S4 or S5 by the AC CDC, indicating that they are considered 'Apparently Secure' or 'Secure', respectively. A detailed discussion of detected SOCC and SAR is available in Section 5.3.

5.2.2 Spring Migration Survey Program

The Spring Survey Program consisted of two elements: Spring Migration Stop-Over Point Counts and Spring Migration Diurnal Watch Counts. Both of these survey types were conducted in 2021 and 2022. Sections 5.2.2.1 to 5.2.2.3 below outline the results of these surveys.

5.2.2.1 Spring Migration Stop-Over Point Count Surveys

Migration Stop-Over Point Count surveys provide information on bird diversity and relative abundance of each species, as well as aim to briefly examine seasonality throughout the period of migration. Raw data collected from Spring Migration Point Count surveys and a summary of the weather and site observations is provided in Appendix A.

Between 2021 and 2022, a total of 80 bird species were identified during the Spring Migration Point Count surveys. 73 species of the 80 species were identified in 2021, and 62 species were identified in 2022, noting that 55 of these species were recorded in both 2021 and 2022. A summary of bird species and their abundance recorded during the spring migration surveys conducted in both 2021 and 2022 summarized in Table 9.

Table 9: Total Abundance of Birds Detected During Spring Migration Point Counts

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
388	256	White-throated Sparrow	Zonotrichia albicollis	S5B
273	133	Hermit Thrush	Catharus guttatus	S5B
256	207	Palm Warbler	Setophaga palmarum	S5B
196	119	Common Yellowthroat	Geothlypis trichas	S5B
145	56	Dark-eyed Junco	Junco hyemalis	S4S5
147	113	Yellow-rumped Warbler	Setophaga coronata	S5B
124	56	Blue Jay	Cyanocitta cristata	S5
108	44	Black-capped Chickadee	Poecile atricapillus	S5
106	56	Northern Flicker	Colaptes auratus	S5B
110	58	Mourning Dove	Zenaida macroura	S5
95	86	Ovenbird	Seiurus aurocapilla	S5B
87	69	Black-and-White Warbler	Mniotilta varia	S5B
82	66	American Goldfinch	Spinus tristis	S5
85	58	Magnolia Warbler	Setophaga magnolia	S5B
66	19	Song Sparrow	Melospiza melodia	S5B
59	34	*American Robin	Turdus migratorius	S5B S3N
55	36	Yellow-bellied Sapsucker	Sphyrapicus varius	S4S5B
44	22	Nashville Warbler	Oreothlypis ruficapilla	S4S5B
41	12	Ruffed Grouse	Bonasa umbellus	S5
39	37	Chestnut-sided Warbler	Setophaga pensylvanica	S5B
37	15	*Purple Finch	Haemorhous purpureus	S4S5B S3S4N
32	7	Common Grackle	Quiscalus quiscula	S5B
33	8	Red-breasted Nuthatch	Sitta canadensis	S4S5
31	8	Swamp Sparrow	Melospiza georgiana	S5B
26	7	Hairy Woodpecker	Dryobates villosus	S5
24	25	Black-throated Green Warbler	Setophaga virens	S5B
24	14	Blue-headed Vireo	Vireo solitarius	S5B
18	1	American Crow	Corvus brachyrhynchos	S5
16	3	Olive-sided Flycatcher	Contopus cooperi	S2B SARA: SC NSES: T
16	8	*Canada Jay	Perisoreus canadensis	S3
16	23	Black-throated Blue Warbler	Setophaga caerulea	S5B
15	2	Golden-crowned Kinglet	Regulus satrapa	S5
15	4	Northern Parula	Setophaga americana	S5B
13	12	Alder Flycatcher	Empidonax alnorum	S5B

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
12	3	American Redstart	<i>Setophaga ruticilla</i>	S4S5B
11	13	Canada Goose	<i>Branta canadensis</i>	S4N
10	37	Common Raven	<i>Corvus corax</i>	S5
9	8	Downy Woodpecker	<i>Dryobates pubescens</i>	S5
8	11	*Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S3S4B
8	4	Least Flycatcher	<i>Empidonax minimus</i>	S4S5B
8	8	Winter Wren	<i>Troglodytes hiemalis</i>	S5B
7	4	*American Kestrel	<i>Falco sparverius</i>	S3B
7	0	Double-crested Cormorant	<i>Phalacrocorax auritus</i>	S4B SARA: NAR
6	9	Canada Warbler	<i>Cardellina canadensis</i>	S3B SARA: T NSES: E
6	3	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3S4B S3N SARA: SC NSES: V
5	21	*Ruby-crowned Kinglet	<i>Regulus calendula</i>	S3S4B
5	0	American Black Duck	<i>Anas rubripes</i>	S5
5	5	Lincoln's Sparrow	<i>Melospiza lincolnii</i>	S4B
5	10	Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B
4	1	Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5 SARA: NAR
4	1	Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5
4	1	Tree Swallow	<i>Tachycineta bicolor</i>	S4B
3	1	Northern Waterthrush	<i>Parkesia noveboracensis</i>	S4B
3	1	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4B
2	0	Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5 SARA: NAR
2	0	Brown Creeper	<i>Certhia americana</i>	S5
2	0	Common Loon	<i>Gavia immer</i>	S4B S4N SARA: NAR
1	0	Common Nighthawk	<i>Chordeiles minor</i>	S2B SARA: SC NSES: T
1	0	Eastern Wood-Pewee	<i>Contopus virens</i>	S3S4B SARA: SC NSES: V

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
1	0	*Blackpoll Warbler	Setophaga striata	S3S4B
1	0	*Gray Catbird	Dumetella carolinensis	S3B
1	0	*Northern Harrier	Circus hudsonius	S3S4B SARA: NAR
1	0	*Veery	Catharus fuscescens	S3S4B
1	0	American Woodcock	Scolopax minor	S5B
1	2	Belted Kingfisher	Megaceryle alcyon	S5B
1	0	Blackburnian Warbler	Setophaga fusca	S4B
1	0	Broad-winged Hawk	Buteo platypterus	S5B
1	1	Ruby-throated Hummingbird	Archilochus colubris	S5B
1	0	Sharp-shinned Hawk	Accipiter striatus	S5 SARA: NAR
1	0	Spruce Grouse	Falciennis canadensis	S4
1	2	White-winged Crossbill	Loxia leucoptera	S4S5
1	0	Wood Duck	Aix sponsa	S5B
1	0	Yellow Warbler	Setophaga petechia	S5B
0	2	*Pine Siskin	Spinus pinus	S3
0	14	*Red Crossbill	Loxia curvirostra	S3S4
0	1	Savannah Sparrow	Passerculus sandwichensis	S4S5B,S5M
0	1	Swainson's Thrush	Catharus ustulatus	S4B,S5M
0	1	White-breasted Nuthatch	Sitta carolinensis	S4
0	4	Chimney Swift	Chaetura pelagica	S2S3B,S1M SARA: T NSES: E
0	1	Rusty Blackbird	Euphagus carolinus	S2B SARA: SC NSES: E
2974	1844	Total		

Notes: Bold indicates a species is considered a SAR

* indicates a species is considered a SoCC

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure

Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

The most frequently observed bird in both 2021 and 2022 during the Spring Migration Surveys was the White-throated Sparrow, which is not unexpected given the fragmented and early successional nature of much of the LAA. Overall, the majority of birds detected within the LAA during the Spring Migration Point Counts are ranked S4 or S5 by the AC CDC, indicating that their populations within Nova Scotia are considered 'Apparently Secure' or 'Secure'.

Between both the 2021 and 2022 Spring Migration Stop-Over Point Counts, seven SAR and 12 SoCC were detected, which includes species such as American Robin and Purple Finch which have non-breeding populations in Nova Scotia that are considered vulnerable by the AC CDC. Three of the seven SAR (Olive-sided Flycatcher, Canada Warbler, and Evening Grosbeak) were detected during Spring Migration Stop-Over Point Count surveys conducted in both 2021 and 2022. Two of the seven SAR (common nighthawk and eastern wood-pewee) were only detected during Spring Migration Stop-Over Point Counts conducted in 2021, and a further two SAR (chimney swift and rusty blackbird) were only detected during Spring Migration Stop-Over Point Counts conducted in 2022. A discussion of detected SoCC and SAR is available in Section 5.3.

5.2.2.2 Spring Diurnal Watch Counts

Diurnal Watch Counts provide information on the species and behaviours of birds flying over the study area during daylight hours. Raw data collected from the Spring Diurnal Watch Counts and a summary of the weather and site observations is provided in Appendix A.

A summary of the behaviours observed and the range of estimated pass heights and distances for the 30-bird species that were observed during the Spring Diurnal Watch Counts is presented in Table 10.

Table 10: Summary of Species Observed during the Spring Migration Diurnal Watch Counts (2021-2022)

Common Name	Scientific Name	S-Rank and Conservation Status	Est. Distance(s) (m)	Pass Height(s) (m)	Observed Behaviour(s)
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B	local	n/a	Calling
American Black Duck	<i>Anas rubripes</i>	S5B, S5N	1000	<50	Passing
American Goldfinch	<i>Spinus tristis</i>	S5	0-50	50-100	Passing
*American Kestrel	<i>Falco sparverius</i>	S3B, S4S5M	0-250	50-100	Passing, calling
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5	1000-3000	50-250+	Circling, passing, soaring
Belted Kingfisher	<i>Megasceryle alcyon</i>	S4S5B	100	<50	Calling
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	100	<50	Passing
Blue Jay	<i>Cyanocitta cristata</i>	S5	250-500	<50	Passing
Canada Goose	<i>Branta Canadensis</i>	SUB, S4N, S5M	500	50-100	Passing
*Canada Jay	<i>Perisoreus canadensis</i>	S3	local	n/a	Calling
Common Grackle	<i>Quiscalus quiscula</i>	S5B	1000	50-100	Passing

Common Name	Scientific Name	S-Rank and Conservation Status	Est. Distance(s) (m)	Pass Height(s) (m)	Observed Behaviour(s)
Common Raven	<i>Corvus corax</i>	S5	500-3000	100-250+	Circling, passing, soaring
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	S5B	2000	100-250	Passing
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3B, S3N, S3M SARA: Special Conservation NSESA: Vulnerable	local	100-250	Passing
Hermit Thrush	<i>Catharus guttatus</i>	S5B	100	n/a	Singing
Herring Gull	<i>Larus argentatus</i>	S5	500	100-250	Passing
*Northern Goshawk	<i>Accipiter gentilis</i>	S3S4	1000	100-250	Circling
Northern Harrier	<i>Circus hudsonius</i>	S4B, S4S5M	100	<50-250	Passing
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S3B SARA: Special Concern NSESA: Threatened	250	n/a	Singing
Osprey	<i>Pandion haliaetus</i>	S4S5B, S5M	2000	100-250+	Circling
Purple Finch	<i>Haemorhous purpureus</i>	S4S5B, S3S4N, S5M	0-50	50-250	Passing
*Red Crossbill	<i>Loxia curvirostra</i>	S3S4	local	50-100	Passing
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S4S5	local	n/a	Calling
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	1000-2000	50-250+	Circling, passing, perched, soaring
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4B	0-100	50-100	Passing
Ruffed Grouse	<i>Bonasa umbellus</i>	S5	0	n/a	Drumming
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	250	50	Passing
*Turkey Vulture	<i>Cathartes aura</i>	S2S3B, S4S5M	2000	50-100+	Soaring, passing
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S4S5B, S5M	100	n/a	Singing
Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B	local	<50	Passing

Notes:

Bold indicates a species is considered a SAR

* indicates a species is considered a SoCC

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

Many of the bird species that were observed during the day appeared to be resident species or passing by the site. Birds of prey were observed hunting and scavenging within the LAA during the daylight hours. Several SAR and SoCC were identified during the Diurnal Watch Counts, including American Kestrel (S3B) and Turkey Vulture (S2S3B; i.e., they have breeding populations in Nova Scotia that are considered to be 'Vulnerable' and 'Vulnerable to Imperiled' by the AC CDC, respectively).

5.2.2.3 Spring Survey Summary and Data Assessment

The locations surveyed during the Spring Migration Stop-Over Point Count surveys are the same locations that were surveyed for the Breeding Bird Point Count and the Fall Migration Stop-Over Point Count surveys (discussed in Sections 5.2.3 and 5.2.4). This method was selected in order to provide a consistent seasonal depiction of the bird diversity and relative abundance at the representative habitats that were selected for point count placement within the LAA. The locations were selected to both maximize coverage across the LAA and include locations in a diversity of habitats representative of those within the LAA and near the proposed placement of WTGs or their related infrastructure.

Over the two years of observation, 80 bird species have been identified using habitat within the LAA during spring migratory periods of 2021 and 2022 through incidental observation and the formalized Spring Migration Survey Program. A comparative summary of bird diversity and abundance recorded at the 22-point count locations that were surveyed in both the 2021 and 2022 field season is provided in Table 11.

Table 11: Summary of Bird Diversity and Abundance between 2021 and 2022

Point Count Location		Survey Route #1											
		1	2	3	4	5	6	7	8	9	10	11	12
Diversity	# Species 2021	23	31	34	26	26	25	21	25	17	24	27	24
	# Species 2022	25	27	28	28	25	23	18	21	25	17	21	26
Abundance	# Birds 2021	81	96	103	64	90	82	67	95	44	98	115	94
	# Birds 2022	82	87	93	97	75	65	68	73	83	58	89	76

Point Count Location		Survey Route #2											
		13	14	15	*16	17	*18	19	20	21	22	23	24
Diversity	# Species 2021	24	23	24	n/a	22	n/a	23	20	24	27	27	30
	# Species 2022	26	29	25	11	23	25	18	21	21	28	28	28
Abundance	# Birds 2021	86	93	87	n/a	78	n/a	73	71	74	82	100	98
	# Birds 2022	71	79	61	58	73	66	73	86	69	81	86	101

Note: Point Count locations were surveyed on five occasions in 2021 and four occasions in 2022

* survey location was established in 2022, there was no data collected in 2021 at this location

Total Diversity: 64 in 2021 and 63 in 2022

Total Abundance: 1871 in 2021 and 1726 in 2022

In general, bird diversity and abundance often increase as the spring progresses in Nova Scotia due to more bird species returning from their wintering grounds. Similarly, the results of the Spring Migratory Point Count Surveys indicated that within the LAA, bird diversity was observed to increase throughout the spring migratory period until mid-May and remained consistent between 2021 and 2022, which is illustrated in Figure 5. For comparison, only data from the Point Count locations that were surveyed over two years are displayed on Figure 5.

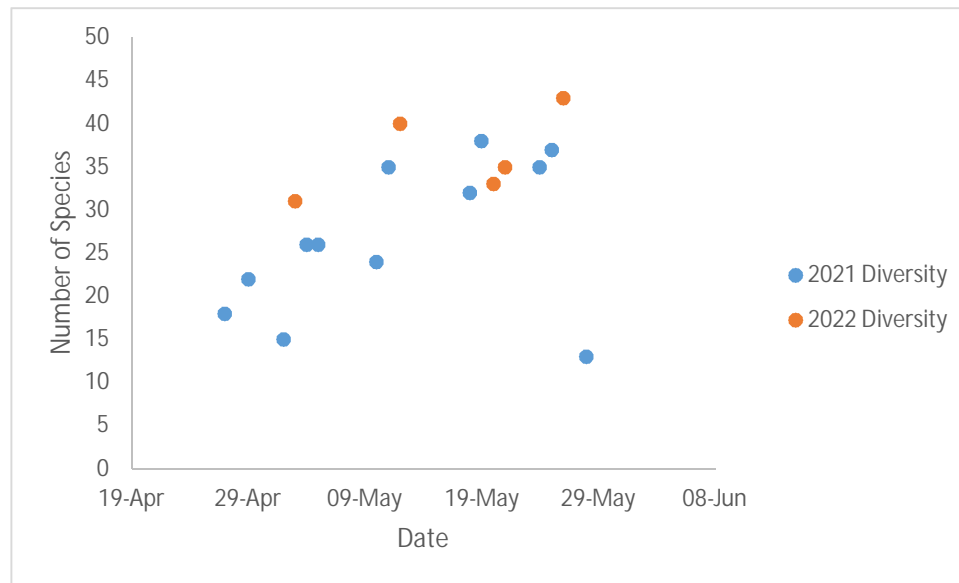


Figure 5: Diversity of Bird Species Detected During the 2021 and 2022 Migratory Point Count Surveys

5.2.3 Breeding Bird Survey Program

The Breeding Bird Survey Program consisted of three elements: Breeding Bird Point Counts, Breeding Nocturnal Owl Survey and Breeding Nightjar Survey. Breeding Bird Point Counts were conducted in both 2021 and 2022; however, the Breeding Nocturnal Owl Survey and Breeding Nightjar Survey were only conducted once, in 2021. Sections 5.2.3.1 to 5.2.3.3 below detail the results of the Breeding Bird Survey Program.

5.2.3.1 Breeding Bird Point Counts Surveys

Breeding Bird Point Count surveys aim to assess bird diversity and relative abundance of each species, as well as to briefly examine seasonality between the earlier and later portion of the peak breeding period. Raw data collected from Breeding Bird Point Count Surveys and a summary of the weather and site observations is provided in Appendix A.

During the Breeding Bird Point Count Surveys completed in 2021 and 2022, over 2000 birds comprised of over 80 species were identified. Of these, approximately 1,400 individual birds comprised of 66 species were recorded during the point counts completed in 2021, and approximately 900 individual birds comprised of 53 species were recorded during the point counts completed in 2022. The bird species detected and their estimated abundance in both years from the Breeding Bird Point Count Surveys is summarized in Table 12.

Table 12: Total Abundance of Birds Detected During Breeding Bird Point Count Survey

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
170	108	Common Yellowthroat	<i>Geothlypis trichas</i>	S5B
140	95	White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B
119	64	Hermit Thrush	<i>Catharus guttatus</i>	S5B
86	37	Magnolia Warbler	<i>Setophaga magnolia</i>	S5B
79	55	Palm Warbler	<i>Setophaga palmarum</i>	S5B
75	39	Ovenbird	<i>Seiurus aurocapilla</i>	S5B
63	21	Alder Flycatcher	<i>Empidonax alnorum</i>	S5B
62	30	Black-and-White Warbler	<i>Mniotilta varia</i>	S5B
47	52	Mourning Dove	<i>Zenaida macroura</i>	S5
46	39	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	S5B
43	25	Dark-eyed Junco	<i>Junco hyemalis</i>	S4S5
40	18	Blue Jay	<i>Cyanocitta cristata</i>	S5
26	24	American Goldfinch	<i>Spinus tristis</i>	S5
26	17	Nashville Warbler	<i>Oreothlypis ruficapilla</i>	S4S5B
26	31	Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B
25	9	Olive-sided Flycatcher	<i>Contopus cooperi</i>	S2B SARA: SC NSES: T
21	32	Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B
20	18	*Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S3S4B
20	7	American Redstart	<i>Setophaga ruticilla</i>	S4S5B
20	25	Black-capped Chickadee	<i>Poecile atricapillus</i>	S5
20	19	Northern Flicker	<i>Colaptes auratus</i>	S5B
20	20	Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B
18	21	*American Robin	<i>Turdus migratorius</i>	S5B S3N
17	11	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S4S5B
16	10	Song Sparrow	<i>Melospiza melodia</i>	S5B
15	2	Canada Warbler	<i>Cardellina canadensis</i>	S3B SARA: T NSES: E

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
15	11	Black-throated Green Warbler	Setophaga virens	S5B
13	11	*Purple Finch	Haemorhous purpureus	S4S5B S3S4N
11	10	Black-throated Blue Warbler	Setophaga caerulescens	S5B
10	4	Blue-headed Vireo	Vireo solitarius	S5B
10	6	Northern Parula	Setophaga americana	S5B
9	9	*Canada Jay	Perisoreus canadensis	S3
9	5	*Red Crossbill	Loxia curvirostra	S3S4
9	10	Red-breasted Nuthatch	Sitta canadensis	S4S5
7	6	Hairy Woodpecker	Dryobates villosus	S5
6	2	Least Flycatcher	Empidonax minimus	S4S5B
6	2	Lincoln's Sparrow	Melospiza lincolni	S4B
5	2	American Crow	Corvus brachyrhynchos	S5
5	2	Common Grackle	Quiscalus quiscula	S5B
5	1	Swamp Sparrow	Melospiza georgiana	S5B
4	0	Golden-crowned Kinglet	Regulus satrapa	S5
3	8	Common Nighthawk	Chordeiles minor	S2B SARA: SC NSES: T
3	0	Evening Grosbeak	Coccothraustes vespertinus	S3S4B S3N SARA: SC NSES: V
3	2	Ruffed Grouse	Bonasa umbellus	S5
3	0	White-winged Crossbill	Loxia leucoptera	S4S5
2	3	*American Kestrel	Falco sparverius	S3B
2	0	*Veery	Catharus fuscescens	S3S4B
2	0	Common Raven	Corvus corax	S5
2	2	Downy Woodpecker	Dryobates pubescens	S5
2	1	Ruby-throated Hummingbird	Archilochus colubris	S5B
2	2	Winter Wren	Troglodytes hiemalis	S5B
1	0	*Gray Catbird	Dumetella carolinensis	S3B
1	1	*Pine Siskin	Spinus pinus	S3
1	0	Swainson's Thrush	Catharus ustulatus	S4B,S5M
1	0	American Woodcock	Scolopax minor	S5B
1	0	Brown Creeper	Certhia americana	S5
1	0	Common Loon	Gavia immer	S4B S4N SARA: NAR
1	0	Eastern Phoebe	Sayornis phoebe	S4B

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
1	0	Mourning Warbler	<i>Geothlypis philadelphia</i>	S4B
1	1	Northern Waterthrush	<i>Parkesia noveboracensis</i>	S4B
1	1	Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5
1	0	Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5 SARA: NAR
1	0	Spruce Grouse	<i>Falcapennis canadensis</i>	S4
1	0	Tree Swallow	<i>Tachycineta bicolor</i>	S4B
1	0	Wood Duck	<i>Aix sponsa</i>	S5B
1	0	Yellow Warbler	<i>Setophaga petechia</i>	S5B
0	4	Chimney Swift	<i>Chaetura pelagica</i>	S2S3B,S1M SARA: T NSESAs: E
0	3	Ruby-crowned Kinglet	<i>Corthylio calendula</i>	S4B,S5M
0	2	Barn Swallow	<i>Hirundo rustica</i>	S3B SARA: T NSESAs: E
0	1	Chipping Sparrow	<i>Spizella passerina</i>	S4B,S5M
1423	941	Total		

Notes: Bold indicates a species is considered a SAR

* indicates a species is considered a SoCC

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

Common Yellowthroat, White-throated Sparrow, and Black-throated Green Warbler were the most abundantly observed birds during the Breeding Bird Point Count surveys conducted in 2021 and 2022. Overall, the majority of the birds detected within the LAA during the Breeding Bird Point Count Surveys are ranked S4 or S5 by the AC CDC indicating that they are considered 'Apparently Secure' or 'Secure', respectively.

Between both the 2021 and 2022 Breeding Bird Point Counts, six SAR and nine SoCC were detected, which includes species such as American Robin and Purple Finch which have non-breeding populations in Nova Scotia that are considered vulnerable by the AC CDC. Three of the six SAR (Olive-sided Flycatcher, Canada Warbler, and Common Nighthawk) were detected during Breeding Bird Point Count Surveys conducted in both 2021 and 2022. One of the six SAR (Evening Grosbeak) was only detected during Breeding Bird Point Counts conducted in 2021, and the remaining two SAR (Chimney Swift and Barn Swallow) were only detected during Breeding Bird Point Counts conducted in 2022. A discussion of detected SoCC and SAR is presented in Section 5.3.

The Breeding Bird Point Count Survey was designed to be completed during both the early and late 'peak breeding season' in order to compare the bird species diversity across this period. Bird species diversity for the 22-point count locations surveyed both years is presented below for the early and late Breeding Bird Point Count Surveys (Figure 6). Each survey location was surveyed twice in each year (2021 and 2022) between June 1 and July 15. Overall, the number of bird species detected during Breeding Bird Point Count Surveys remained similar throughout breeding periods, ranging from 44 to 49 species detected during each period.

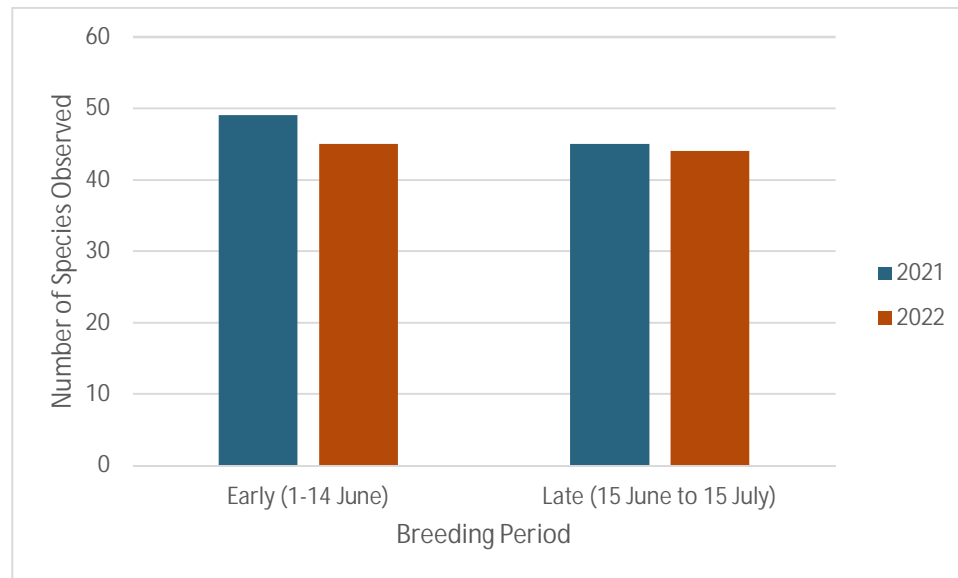


Figure 6: Bird Species Diversity detected during the Early and Late Breeding Bird Surveys in 2021-2022

5.2.3.2 Targeted Nocturnal Breeding Owl Survey

During the Targeted Breeding Nocturnal Owl survey, which was conducted on May 10, 2021, nine individuals consisting of three species were detected. Two species of nocturnal owl were detected (Great Horned Owl and the Northern Saw-whet Owl), as well as another species commonly detected during nocturnal surveys (American Woodcock). No SAR or SoCC bird species were detected during the 2021 nocturnal breeding owl surveys. The results of the targeted Nocturnal Breeding Owl Survey are summarized in Table 13 below.

Table 13: Results of the 2021 Breeding Nocturnal Owl Survey

Survey Location	Number Detected	Common Name	Scientific Name	Estimated Distance (m)	Estimated Direction	S-rank
1	1	American Woodcock	Scolopax minor	n/a	n/a	S5B
2	1	Great Horned Owl	Bubo virginianus	500	S	S4
3	1	Northern Saw-whet Owl	Aegolius acadicus	500	SW	S4B
4	1	Northern Saw-whet Owl	Aegolius acadicus	250	W	S4B
5	1	Northern Saw-whet Owl	Aegolius acadicus	500	SW	S4B
5	1	Great Horned Owl	Bubo virginianus	1000	W	S4
6	1	Northern Saw-whet Owl	Aegolius acadicus	500	N	S4B
7	1	Northern Saw-whet Owl	Aegolius acadicus	100	NNW	S4B
8	1	Northern Saw-whet Owl	Aegolius acadicus	500	SW	S4B

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
 Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

5.2.3.3 Targeted Breeding Nightjar Survey

During the Targeted Breeding Nightjar Survey, which was conducted on June 21, 2021, two individual Common Nighthawks were detected, one each at Nocturnal Survey Locations #6 and #7. The results of the targeted Breeding Nightjar Survey are summarized in Table 14 below. The Common Nighthawk is a SAR and is discussed further in Section 5.3.

Table 14: Results of the Breeding Nightjar Survey

Survey Location	Number Detected	Common Name	Scientific Name	SAR or SoCC	Estimated Distance (m)	Estimated Direction	SARA Status	NS ESA Status	S-rank
1	0	-	-	-	-	-	-	-	-
2	0	-	-	-	-	-	-	-	-
3	0	-	-	-	-	-	-	-	-
4	0	-	-	-	-	-	-	-	-
5	0	-	-	-	-	-	-	-	-
6	1	Common Nighthawk	Chordeiles minor	SAR	500	SW	SC	T	S2B
7	1	Common Nighthawk	Chordeiles minor	SAR	250	E	SC	T	S2B
8	0	-	-	-	-	-	-	-	-

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
 Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

5.2.4 Fall Migration Survey Program

The Fall Migration Survey Program consisted of two elements; Fall Migration Stop-Over Point Counts and Diurnal Watch Counts. Both of these survey types were conducted in 2021 and 2022 and the results are presented in the following Sections 5.2.4.1 and 5.2.4.2, respectively.

5.2.4.1 Fall Migration Stop-Over Point Count Surveys

Fall Migration Stop-Over Point Count surveys provide information on bird diversity and relative abundance of each species, as well as aim to briefly examine seasonality throughout the period of migration. Raw data collected from Fall Migration Stop-Over Point Count surveys and a summary of the weather and site observations is provided in Appendix A.

Between 2021 and 2022 Fall Migration Stop-Over Point Count surveys, a total of 3,550 birds comprised of 69 species were identified. During the fall of 2021, 2,385 birds comprised of 66 species were recorded compared to 1,165 birds comprised of 50 species in fall 2022. It is noted that 43 species were recorded in both 2021 and 2022 Fall Migration Stop-Over Point Count surveys. A summary of bird species and their abundance recorded during the Fall Migration Stop-Over Point Count surveys conducted in both 2021 and 2022 is presented in Table 15.

Table 15: Total Abundance of Birds Detected During Fall Migration Stop-Over Point Count Surveys

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
239	31	American Goldfinch	<i>Spinus tristis</i>	S5
231	134	Blue Jay	<i>Cyanocitta cristata</i>	S5
179	101	Dark-eyed Junco	<i>Junco hyemalis</i>	S4S5
173	119	Palm Warbler	<i>Setophaga palmarum</i>	S5B
142	84	Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B
136	143	Black-capped Chickadee	<i>Poecile atricapillus</i>	S5
134	78	*American Robin	<i>Turdus migratorius</i>	S5B S3N
112	26	*Purple Finch	<i>Haemorhous purpureus</i>	S4S5B S3S4N
103	44	Common Yellowthroat	<i>Geothlypis trichas</i>	S5B
100	51	White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B
80	47	Northern Flicker	<i>Colaptes auratus</i>	S5B
59	8	Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5
53	18	*Canada Jay	<i>Perisoreus canadensis</i>	S3
50	0	White-winged Crossbill	<i>Loxia leucoptera</i>	S4S5
48	49	Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B
46	27	Hermit Thrush	<i>Catharus guttatus</i>	S5B
41	11	Red-breasted Nuthatch	<i>Sitta canadensis</i>	S4S5

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
38	14	Common Raven	<i>Corvus corax</i>	S5
35	5	Swamp Sparrow	<i>Melospiza georgiana</i>	S5B
34	12	Hairy Woodpecker	<i>Dryobates villosus</i>	S5
28	2	American Crow	<i>Corvus brachyrhynchos</i>	S5
23	5	Mourning Dove	<i>Zenaida macroura</i>	S5
22	1	*Pine Siskin	<i>Spinus pinus</i>	S2S3
22	10	*Red Crossbill	<i>Loxia curvirostra</i>	S3S4
21	10	*Ruby-crowned Kinglet	<i>Regulus calendula</i>	S3S4B
21	14	Song Sparrow	<i>Melospiza melodia</i>	S5B
20	16	Downy Woodpecker	<i>Dryobates pubescens</i>	S5
19	17	Black-throated Green Warbler	<i>Setophaga virens</i>	S5B
19	8	Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5
14	12	Black-and-White Warbler	<i>Mniotilta varia</i>	S5B
14	8	Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B
11	3	*American Kestrel	<i>Falco sparverius</i>	S3B
11	5	Ruffed Grouse	<i>Bonasa umbellus</i>	S5
10	10	Blue-headed Vireo	<i>Vireo solitarius</i>	S5B
10	1	Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5 SARA: NAR
8	13	*Blackpoll Warbler	<i>Setophaga striata</i>	S3S4B
8	0	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3S4B S3N SARA: SC NSES: V
7	1	Spruce Grouse	<i>Falcipennis canadensis</i>	S4
6	6	Magnolia Warbler	<i>Setophaga magnolia</i>	S5B
6	5	Nashville Warbler	<i>Oreothlypis ruficapilla</i>	S4S5B
5	0	Chimney Swift	<i>Chaetura pelagica</i>	S2B S1M SARA: T NSES: E
5	1	Northern Parula	<i>Setophaga americana</i>	S5B
5	1	Ovenbird	<i>Seiurus aurocapilla</i>	S5B
4	0	Olive-sided Flycatcher	<i>Contopus cooperi</i>	S2B SARA: SC NSES: T
3	0	Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5 SARA: NAR
3	0	Broad-winged Hawk	<i>Buteo platypterus</i>	S5B

Number Detected in 2021	Number Detected in 2022	Common Name	Scientific Name	S-rank and Conservation Status
3	1	Brown Creeper	<i>Certhia americana</i>	S5
3	0	Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B
2	0	*Gray Catbird	<i>Dumetella carolinensis</i>	S3B
2	0	Lincoln's Sparrow	<i>Melospiza lincolni</i>	S4B
2	1	Merlin	<i>Falco columbarius</i>	S5B SARA: NAR
2	0	Peregrine Falcon - anatum/tundrius	<i>Falco peregrinus</i> pop. 1	S1B SNAM SARA: NAR NSESA: V
2	0	Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B
2	2	Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5 SARA: NAR
1	0	American Redstart	<i>Setophaga ruticilla</i>	S4S5B
1	0	*Bay-breasted Warbler	<i>Setophaga castanea</i>	S3S4B
1	0	*Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S3B
1	0	Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	S5B
1	0	Common Grackle	<i>Quiscalus quiscula</i>	S5B
1	0	*Northern Harrier	<i>Circus hudsonius</i>	S3S4B SARA: NAR
1	0	Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4S5B
1	0	Swainson's Thrush	<i>Catharus ustulatus</i>	S4B, S5M
1	0	Winter Wren	<i>Troglodytes hiemalis</i>	S5B
0	3	Belted Kingfisher	<i>Megasceryle alcyon</i>	S4S5B
0	1	Common Loon	<i>Gavia immer</i>	S4B SARA: NAR
0	3	Canada Goose	<i>Branta canadensis</i>	SUB, S4N, S5M
0	1	Osprey	<i>Pandion haliaetus</i>	S4S5B, S5M
0	1	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4B
0	1	*Solitary Sandpiper	<i>Tringa solitaria</i>	SUB, S3S4M
2385	1165	Total		

Notes: Bold indicates a species is considered a SAR

* indicates a species is considered a SoCC

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

Overall, the majority of the birds detected using habitats within the LAA during the Fall Migration Stop-Over Point Count Surveys are ranked S4 or S5 by the AC CDC, indicating that their populations within Nova Scotia are considered 'Apparently Secure' or 'Secure', respectively.

Between both the 2021 and 2022 Fall Migration Stop-Over Point Count Surveys, four SAR and 13 SoCC were detected, which includes species such as American Robin and Purple Finch which have non-breeding populations in Nova Scotia that are considered vulnerable by the AC CDC. All four SAR (Evening Grosbeak, Chimney Swift, Olive-sided Flycatcher, and Peregrine Falcon) were detected During Fall Migration Stop-Over Point Count surveys completed in 2021, but not in during Fall Migration Stop-Over Point Count Surveys conducted in 2022. A discussion of detected SoCC and SAR is available in Section 5.3.

5.2.4.2 Fall Migration Diurnal Watch Counts

Diurnal Watch Counts provide information on the abundance, species, and behaviour of birds flying over the S3 during daylight hours. Raw data collected from the Fall Migration Diurnal Watch Counts and a summary of the weather and site observations is provided in Appendix A.

A summary of the behaviours and estimated pass heights of the 35-bird species that were observed during the Fall Migration Diurnal Watch Counts is presented in Table 16.

Table 16: Summary of Species Observed during the Fall Migration Diurnal Watch Counts (2021-2022)

Common Name	Scientific Name	S-Rank	Est. Distance (m)	Pass Height (m)	Observed Behaviours
American Goldfinch	<i>Spinus tristis</i>	S5	150-250	<50-100	Passing
*American Kestrel	<i>Falco sparverius</i>	S3B,S4S5M	local, 1000	100	Calling, soaring
*American Robin	<i>Turdus migratorius</i>	S5B,S3N	50-250	<50	Passing
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5	1000-3000	100-250+	Passing, circling
Black-and-White Warbler	<i>Mniotilta varia</i>	S5B	local, 50	n/a	Singing
Blue Jay	<i>Cyanocitta cristata</i>	S5	50	n/a	Calling
Blue-headed Vireo	<i>Vireo solitarius</i>	S5B	local	n/a	Singing
Broad-winged Hawk	<i>Buteo platypterus</i>	S5B	1000-2000	100-250+	Passing
Canada Goose	<i>Branta canadensis</i>	SUB,S4N,S5M	1000-2000	100-250	Passing
*Canada Jay	<i>Perisoreus canadensis</i>	S3	local	n/a	Calling
*Cape May Warbler	<i>Setophaga tigrina</i>	S3B,SUM	50	n/a	Singing
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	0-500	<50-100	Passing, feeding
Chimney Swift	<i>Chaetura pelagica</i>	S2S3B,S1M SARA: Threatened NSES: Engangered	500	<50	Passing
Common Grackle	<i>Quiscalus quiscula</i>	S5B	500	<50	Passing
Common Raven	<i>Corvus corax</i>	S5	500-3000	<50-250+	Passing, circling, soaring, calling
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	local, 50	n/a	Singing
Downy Woodpecker	<i>Dryobates pubescens</i>	S5	50	n/a	Calling

Common Name	Scientific Name	S-Rank	Est. Distance (m)	Pass Height (m)	Observed Behaviours
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3B, S3N, S3M SARA: Special Concern NSESAs: Vulnerable	500	<50	Passing
Hermit Thrush	<i>Catharus guttatus</i>	S5B	50	n/a	Singing
Herring Gull	<i>Larus argentatus</i>	S5	3000	250+	Passing
Mourning Dove	<i>Zenaida macroura</i>	S5	100	50-100	Passing
Northern Flicker	<i>Colaptes auratus</i>	S5B	50-500	<50	Passing
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S3B SARA: Special Concern NSESAs: Threatened	200-250	50-100	Passing
Ovenbird	<i>Seiurus aurocapilla</i>	S5B	250	50+	Singing, passing
Palm Warbler	<i>Setophaga palmarum</i>	S5B	50	n/a	Singing
Peregrine Falcon	<i>Falco peregrinus</i>	S1B,SUM NSESAs: Vulnerable	2000	0-100+	Soaring
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5	100	n/a	Calling
*Purple Finch	<i>Haemorhous purpureus</i>	S4S5B, S3S4N, S5M	0-50	50-100	Passing, singing
*Red Crossbill	<i>Loxia curvirostra</i>	S3S4	0	50	Passing
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S4S5	100	n/a	Singing
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	500-3000	50-250+	Passing, circling, perched, hunting, soaring

Common Name	Scientific Name	S-Rank	Est. Distance (m)	Pass Height (m)	Observed Behaviours
Ruby-crowned Kinglet	<i>Regulus calendula</i>	S4B, S5M	local	n/a	Singing
Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5	0-2000	<50-500	Passing, soaring
*Turkey Vulture	<i>Cathartes aura</i>	S2S3B, S4S5M	2000	50-1000	Passing
Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B	0-50	<50	Passing

Notes: Bold indicates a species is considered a SAR

* indicates a species is considered a SoCC

S-Ranks: status determined by the AC CDC. S1: Critically Imperiled, S2: Imperiled, S3: Vulnerable, S4: Apparently Secure, S5: Secure
Conservation Status: status listed on the Species At Risk Act (SARA) or the Nova Scotia Endangered Species Act (NS ESA).

5.2.4.3

Fall Survey Summary and Data Assessment

The locations surveyed during the Fall Migration Stop-Over Point Count surveys are the same locations that were surveyed for the Breeding Bird Point Counts and the Spring Migration Stop-Over Point Count surveys (Figure 3). This was done to provide a consistent seasonal depiction of the bird diversity and relative abundance at the representative habitats that were selected for point count placement within the LAA. The locations were selected to both maximize coverage across the LAA and include locations in a diversity of habitats representative of those within the LAA and near the placement of WTGs or their related infrastructure.

Over the two years of observation, 70 bird species have been identified using habitat within the LAA during fall migratory period of 2021 and 2022 through incidental observation and the formalized Fall Migration Survey Program. A comparative summary of bird diversity and abundance recorded at the 22-point count locations that were surveyed in both the 2021 and 2022 field season is provided in Table 17.

Table 17: Summary of Bird Diversity and Abundance between 2021 and 2022

Point Count Location		Survey Route #1 - 2022											
		1	2	3	4	5	6	7	8	9	10	11	12
Diversity	# Species 2021	28	23	28	25	22	25	19	22	23	20	19	22
	# Species 2022	11	26	21	12	13	14	21	17	18	21	16	17
Abundance	# Birds 2021	87	69	119	61	47	62	68	56	94	78	57	65
	# Birds 2022	23	62	51	58	40	53	59	63	50	75	45	58

Point Count Location		Survey Route #2 - 2022											
		13	14	15	*16	17	*18	19	20	21	22	23	24
Diversity	# Species 2021	21	19	22	n/a	20	n/a	20	24	18	16	27	23
	# Species 2022	15	17	14	10	21	20	15	16	17	17	15	16
Abundance	# Birds 2021	140	61	84	n/a	80	n/a	48	73	69	37	60	63
	# Birds 2022	36	51	40	32	53	60	50	50	34	38	44	42

Note: Point Count locations were surveyed on five occasions in 2021 and four occasions in 2022
 * survey location was established in 2022, there was no data collected in 2021 at this location
 Total Diversity: 57 in 2021 and 49 in 2022
 Total Abundance: 1578 in 2021 and 1075 in 2022

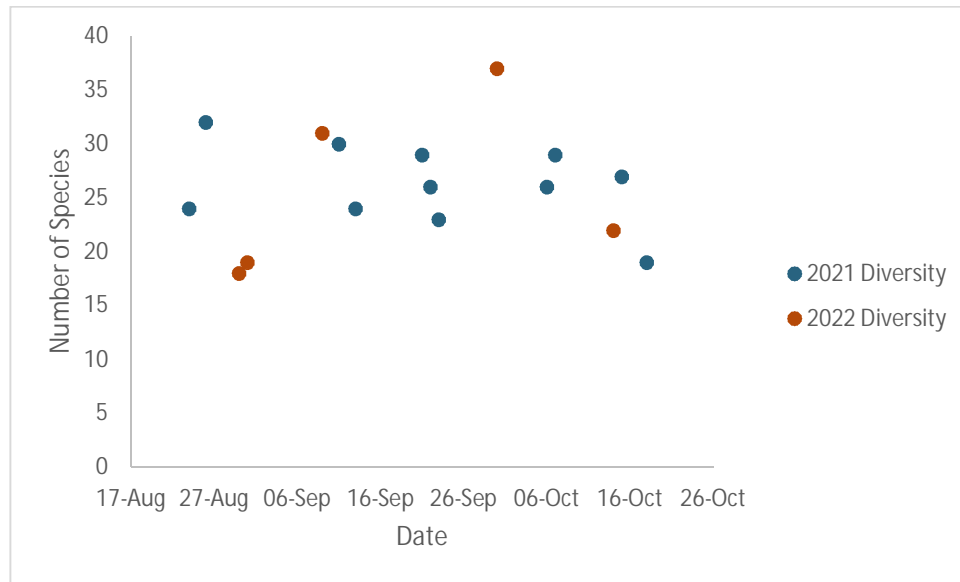


Figure 7: Diversity of Bird Species Detected During the Fall 2021 and 2022 Migratory Point Count Surveys

5.3 Bird SAR and SOCC Assessment

During 2021 and 2022 field seasons various bird surveys were conducted using a range of techniques and timing windows to gather fulsome information regarding birds and their habitats within the LAA for the Project. The survey locations and methods were also selected to target potential SAR and SoCC, using the habitat assessment and desktop SAR and SoCC screening, presented above in Section 5.1.

Priority bird species that were observed during the field surveys included nine SAR and 14 SoCC. A summary of the season(s) that they were identified in and the survey type used is provided below in Table 18 with comments on whether or not the birds detected are likely to be breeding in the LAA. The locations where the priority bird species were detected are shown on Figure 8. Table 19 includes SAR that were observed during the field surveys and SAR that were documented by the AC CDC within 10 km of the PDA centre (AC CDC 2022) as well as a description of whether or not they are likely to occur within the LAA.

Table 18: Bird SAR and SoCC Detected in the LAA

Common Name	Scientific Name	S-rank	COSEWIC Status	SARA Status	NS ESA Status	Survey Type	Winter	Spring	Summer	Fall	Comments
American Kestrel	Falco sparverius	S3B,S4 S5M				PC/DW C/Inc.		X	X	X	Observed during sensitive breeding season
American Robin	Turdus migratorius	S5B,S3 N				PC/DW C	X	X	X	X	Observed during sensitive non-breeding season
Barn Swallow	Hirundo rustica	S3B	SC	T	E	PC			X		Observed during sensitive breeding season
Bay-breasted Warbler	Setophaga castanea	S3S4B, S4S5M				PC				X	Not observed during sensitive breeding season
Black-billed Cuckoo	Coccyzus erythrophthalmus	S3B				PC/Inc.		X		X	Observed during sensitive breeding season
Blackpoll Warbler	Setophaga striata	S3B, S5M				PC		X		X	Not observed during sensitive breeding season
Canada Jay	Perisoreus canadensis	S3				PC/DW C/Inc.	X	X	X	X	Observed in all seasons
Canada Warbler	Cardellina canadensis	S3B	SC	T	E	PC/Inc.		X	X		Observed during sensitive breeding season

Common Name	Scientific Name	S-rank	COSEWIC Status	SARA Status	NS ESA Status	Survey Type	Winter	Spring	Summer	Fall	Comments
Cape May Warbler	Setophaga tigrina	S3B,SU M				DWC				X	Not observed during sensitive breeding season
Chimney Swift	Chaetura pelagica	S2S3B, S1M	T	T	E	PC/DW C/Inc.		X	X	X	Observed during sensitive breeding and migratory seasons
Common Nighthawk	Chordeiles minor	S3B	SC	SC	T	PC/Br. CNHk/I nc.		X	X	X	Observed during sensitive breeding season
Eastern Wood-Pewee	Contopus virens	S3S4B	SC	SC	V	PC		X			Not observed during sensitive breeding season
Evening Grosbeak	Coccothraustes vespertinus	S3B, S3N, S3M	SC	SC	V	PC/DW C/Inc.	X	X	X	X	Observed in all seasons
Northern Goshawk	Accipiter gentilis	S3S4				DWC		X			Observed during breeding season
Olive-sided Flycatcher	Contopus cooperi	S3B	SC	T	T	PC/DW C/Inc.		X	X	X	Observed during sensitive breeding season
Peregrine Falcon	Falco peregrinus	S1B,SU M				DWC				X	Not observed during sensitive breeding season
Peregrine Falcon - anatum/tundrius	Falco peregrinus anatum/tundrius	S1B,SU M	NAR	SC	V	PC				X	Not observed during sensitive breeding season

Common Name	Scientific Name	S-rank	COSEWIC Status	SARA Status	NS ESA Status	Survey Type	Winter	Spring	Summer	Fall	Comments
Pine Siskin	<i>Spinus pinus</i>	S3				PC	X	X	X	X	Observed in all seasons
Purple Finch	<i>Haemorhous purpureus</i>	S4S5B, S3S4N, S5M				PC/DW C/Inc.		X	X	X	Observed during sensitive non-breeding season
Red Crossbill	<i>Loxia curvirostra</i>	S3S4				PC/DW C/Inc.	X	X	X	X	Observed in all seasons
Rusty Blackbird	<i>Euphagus carolinus</i>	S2B	SC	SC	E	PC/Inc.		X	X		Observed during breeding and non-breeding season
Solitary Sandpiper	<i>Tringa solitaria</i>	SUB,S3 S4M				PC				X	Breeding period not available in Maritimes Breeding Bird Atlas
Turkey Vulture	<i>Cathartes aura</i>	S2S3B, S4S5M				DWC		X		X	Observed during sensitive breeding season

Notes:

Survey types include Point Counts (PC), Diurnal Watch Counts (DWC) and incidental observations (Inc.).

Table 19: Bird SAR Observed during Field Studies and Bird SAR Documented by the AC CDC within 100km of the PDA

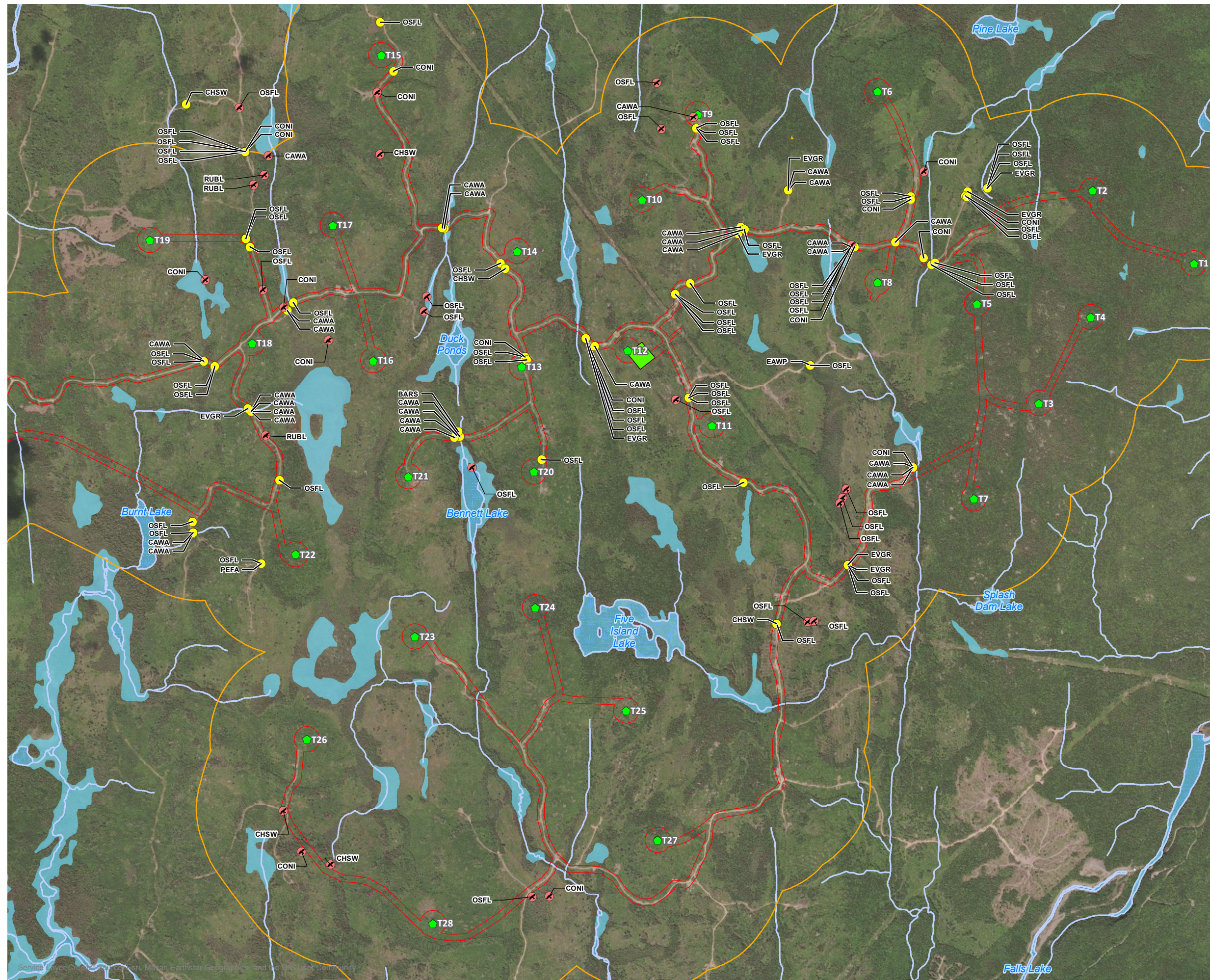
Species	AC CDC Records within 100 km of the PDA Centre	Potential Habitat within the LAA
Bank Swallow <i>Riparia</i>	1993 Observations 6.4 ± 7.0km from the PDA Centre	Species listed as threatened (SARA and COSEWIC), endangered (NSESAs) and ranked by the AC CDC as S2B for imperilled in Nova Scotia for the breeding population. Bank swallows are a colonial breeder that are found across Nova Scotia in lowlands along rivers, streams and ocean coasts and nest around vertical, or near vertical cliffs or banks. These birds are aerial insectivores catching nearly all their prey in flight which requires open areas (ECCC 2022a). Bank Swallows were not detected in either year of surveys. Suitable habitat for bank swallows is limited and they are not expected to occur frequently within the LAA.
Barn Swallow <i>Hirundo rustica</i>	1509 Observations 6.4 ± 7.0 km from the PDA Centre	Species is listed as threatened (SARA) special concern COSEWIC), endangered (NSESAs) and ranked by the AC CDC as S3B for vulnerable in Nova Scotia for the breeding population. Barn Swallows typically inhabit open areas near human settlements and land uses including parks, ball fields, golf courses and agricultural fields where they forage for flying insects. These birds will typically construct their nests on human-made structures, and rarely in more natural locations such as cliffs, caves or hollowed trees (COSEWIC 2021). Suitable habitat for barn swallows is limited and they are not expected to occur frequently within the LAA.
Bobolink <i>Dolichonyx oryzivorus</i>	1685 Observations 6.4 ± 7.0 km from the PDA Centre	Species is listed as threatened (SARA), special concern (COSEWIC), vulnerable (NSESAs) and ranked by the AC CDC within Nova Scotia as S3B for vulnerable for the breeding population. Bobolinks typically occur in grassland habitats (ECCC 2022d). Bobolinks were not detected in either year of surveys. Though there is suitable habitat for Bobolink within the LAA, this habitat is limited, and they were not detected during the 2021 or 2022 surveys; therefore, are not expected to occur frequently within the LAA.
Canada Warbler <i>Cardellina canadensis</i>	1078 Observations 5.2 ± 0.0 km from the PDA Centre	Species is listed as threatened (SARA), special concern (COSEWIC), endangered (NSESAs) and ranked by the AC CDC as S3B for vulnerable in Nova Scotia for the breeding population. Canada Warblers typically breed throughout Maritimes and southeastern Canada. This species prefers wet mixed forests with well-developed shrub layers, as well as regenerating areas (COSEWIC 2020). Canada Warblers were detected within the Project site and suitable nesting habitat does exist within the LAA.

Species	AC CDC Records within 100 km of the PDA Centre	Potential Habitat within the LAA
Chimney Swift <i>Chaetura pelagica</i>	1520 Observations 5.0 ± 0.0 km from the PDA Centre	Species is listed as threatened (SARA and COSEWIC), endangered (NSESAs), and ranked by the AC CDC within Nova Scotia as S2S3B for vulnerable to imperiled for the breeding population and S1M as critically imperiled for the migratory population. Chimney Swifts are aerial foragers and tend to concentrated near water where insects are abundant (ECCC 2022c). Chimney Swifts were detected within the Project site, however suitable nesting habitat was not observed in the study area.
Common Nighthawk <i>Chordeiles minor</i>	547 Observations 5.2 ± 0.0 km from the PDA Centre	Species is listed as Threatened (SARA and NSESAs), Special Concern (COSEWIC) and ranked by the AC CDC as S2S3B for vulnerable to imperiled in Nova Scotia for the breeding population and critically imperiled for the migrating population. They typically nest on the ground in open or sparsely vegetated habitats (ECCC 2016a). This species was detected within the Project site and suitable nesting habitat does exist within the LAA.
Eastern Wood-Pewee <i>Contopus virens</i>	1439 Observations 4.3 ± 0.0 km from the PDA Centre	Species is listed as Special Concern (COSEWIC/SARA) and Vulnerable (NSESAs) and ranked by the AC CDC as S3S4B for vulnerable to apparently secure in Nova Scotia for the breeding population. This species breeds in open woodland of all types in Nova Scotia, but shows a preference for forests with a dominance of deciduous trees. The Eastern wood-pewee forages on flying insects in the middle canopy (COSEWIC 2012). This species was detected within the LAA in 2021 and is likely to use the LAA for foraging and nesting purposes.
Evening Grosbeak <i>Coccothraustes vespertinus</i>	912 Observations 4.6 ± 0.0 km from the PDA Centre	Species is listed as Special Concern (SARA and COSEWIC), Vulnerable (NSESAs) and ranked by the AC CDC as S3B/N/M in Nova Scotia for vulnerable to for the breeding, non-breeding and migratory populations. Evening grosbeaks tend to nest in older growth and second-growth conifer-dominated forests. They primarily prey on insects and their larvae during the breeding season, on a wide variety of seeds and the leaf buds of many deciduous tree and shrub species over winter (ECCC 2022b). Evening grosbeaks were identified during the 2021 and 2022 surveys and suitable breeding habitat within the PDA exists in forested areas with mature trees present on the study area.

Species	AC CDC Records within 100 km of the PDA Centre	Potential Habitat within the LAA
Olive-sided Flycatcher <i>Contopus cooperi</i>	1053 Observations 4.5 ± 0.0 km from the PDA Centre	Species is listed as Threatened (SARA and NSESA), Special Concern (COSEWIC) and ranked by the AC CDC as S3B for vulnerable in Nova Scotia for the breeding population. This species nests in open, forested areas, often with many conspicuous perches (i.e., tall trees or snags alongside open areas) (ECCC 2016b). Olive-sided Flycatchers were detected in the 2021 and 2022 surveys and suitable nesting habitat does exist within the LAA.
Rusty Blackbird <i>Euphagus carolinus</i>	306 Observations 5.3 ± 7.0 km from the PDA Centre	Species is listed as Special Concern (SARA and NSESA), Endangered (NSESA), and ranked by the AC CDC as S2B for Imperiled in Nova Scotia for the breeding population. This species breeds in the boreal forest, in habitat characterized by coniferous-dominated forests adjacent to wetlands (ECCC 2017). Rusty Blackbirds were detected in 2021 and 2022 surveys, and suitable nesting habitat does exist within the LAA.
Peregrine Falcon <i>Falco peregrinus</i>	274 Observations 14.2 ± 7.0 km from the PDA Centre	Species is listed as Special Concern (SARA), Not At Risk (COSEWIC), Vulnerable (NSESA), and ranked by the AC CDC as S1 for Critically Imperiled in Nova Scotia for the breeding population. They typically nest on cliff ledges along coasts, and major rivers and are known to reuse nesting location. This species has been known to nest on tall buildings, apparently finding them suitable replacements for cliffs (ECCC 2007). Although this species was not detected during the breeding season, there are numerous bedrock outcroppings that could provide potential nesting habitat for Peregrine Falcons.

LOCATIONS WHERE BIRD SPECIES AT RISK WERE OBSERVED

FIGURE 8



- Incidental Observations of Species at Risk (SAR)
- Species at Risk (SAR)
- Proposed Turbine Location
- Proposed Substation Location
- Local Assessment Area (LAA)
- Potential Development Area (PDA)
- Watercourse
- Waterbodies
- Wetland

Bird Species	
CAWA	- Canada Warbler
CHSW	- Chimney Swift
CONI	- Common Nighthawk
EVGR	- Evening Grosbeak
OSFL	- Olive-sided Flycatcher
RUBL	- Rusty Blackbird



SCALE 1:22,000
 MAP DRAWING INFORMATION:
 DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: GAM
 MAP CHECKED BY: KR
 MAP PROJECTION: NAD 1983 UTM ZONE 20N

6.0 Effects Assessment and Mitigation Recommendations

The presences of habitat to support a healthy bird community throughout the year was confirmed through a two-year assessment of birds and bird habitats within the LAA. Existing site land uses have likely influenced the bird community dynamics as a result of historic and recent forestry activities within the LAA. As a result, there are existing cleared areas within the LAA which limit shelter to high winds and have likely contributed to the lower bird species diversity and abundance observed during the winter months within the LAA.

To minimize the potential impact of the Project on natural landscapes and undisturbed natural habitat, the proposed locations for the WTGs were selected within areas disturbed through anthropogenic activities when feasible. This section includes the potential impacts of the Project on birds and bird habitat, proposed mitigation measures; as well as potential residual and cumulative impacts to birds.

6.1 Identification of Potential Environmental Effects

The Project is located in an area where bird populations and habitat are present and a key environmental concern associated with wind projects is the potential for effects to birds (e.g., collisions) and their habitat. Birds, including species at risk and species of conservation concern, are considered important features and valued environmental components (VECs) related to the Project. The identification of anticipated potential interactions between the Project and bird and bird habitats are presented below.

6.1.1 Approach to Project Components

The Project has three main distinct phases during each of which the potential interactions with the surrounding environment are considered distinct. Unplanned events are considered separately from the phases. The phases of the Project include:

1. Planning, Site Preparation and Construction;
2. Operation; and,
3. Decommissioning.

The Project interaction matrix in Table 20 is used as an initial screening to assist in determining if it is possible that there could be an interaction between the activities being carried out in each phase of the Project and birds and their habitat.

Table 20: Project Interactions with Environmental Components

Valued Environmental Component	Project Phases			
	Planning, Site Preparation and Construction Phase	Operation Phase	Decommissioning Phase	Unplanned Events
Birds and Bird Habitat	✓	✓	✓	✓

Legend: ✓ = Potential interaction identified

Those Project phases for which a checkmark is provided indicates that the Project may interact with birds, and thus an environmental effects assessment is warranted. In this case, it is possible that interactions could occur during each phase of the Project, as well as due to unplanned events, which are all discussed below.

6.1.2 Identification of Potential Environmental Effects

Without mitigation, the Project has the potential to cause negative impacts to birds and their habitat. The potential impacts of the Project to birds and bird habitat include the following:

- Loss of habitat due to project infrastructure during construction, operation, and decommissioning;
- Temporary disturbance, or displacement from surrounding habitat, during Project construction and decommissioning activities due to increased human presence, noise, lighting and anthropogenic footprint;
- During operation there is a possibility that migrating birds could collide with the wind turbines and Project infrastructure. In addition, birds may alter their migration flyways and/or local flight paths to avoid wind turbines;
- Nocturnal migrant and night-flying seabirds that are most at risk of attraction to lights may be attracted to the operational lighting of the Project; and
- Fog events can impair avian visibility, increasing the likelihood of mortality from collision with wind turbines; and,
- Potential impacts as a result of unplanned events.

During operation, the key potential effect of the Project to birds will be potential impacts to flight paths of migrating birds. The predicted mortality rate of birds due to collision and/or habitat loss cannot be accurately predicted prior to the operational phase. The implementation of robust post- construction biophysical assessments will improve our understanding of the potential interactions between wind projects and wildlife. The post-construction monitoring programs will aid in the identification of potential interactions and determination of when to implement certain mitigation measures (i.e., reporting to CWS or implementing a temporary shutdown) to reduce further impacts. In addition, birds may alter their migration flyways and/or local flight paths to avoid wind turbines. Although the predicted mortality rate of birds due to collision and/or habitat loss cannot be accurately predicted prior

to the operational phase, technology and more robust post- construction biophysical assessments have improved understanding of the potential interactions between wind projects and wildlife.

Through vegetation clearing and the construction of additional access roads and other linear infrastructure, the Project will decrease the availability of bird habitat by vegetation clearing within the required footprint.

During the construction and decommissioning phases interactions are possible as a result of disturbance caused by noise, the loss of habitat within the PDA, and the temporary disruption of nesting habitat (specifically for Common Nighthawks); however, the Project layout was designed with specific effort to minimize the disruption to terrestrial habitats and limit construction as much as feasible to areas that have previously been developed or are undergoing regular disturbance due to forestry or agricultural (i.e., blueberry fields and maple sugary) practices. Though initial loss of habitat will be during the construction phase, loss of habitat will continue throughout the operational phase, in addition to noise disturbances throughout the operational phase. Noise disturbances throughout the operational phase includes from the WTGs and noise from maintenance and post-construction monitoring.

A radar and acoustic monitoring program was completed in 2021 and 2022 and is reported separately (Appendix G of the Addendum). The data from the radar and acoustic monitoring surveys suggest that during the spring season (and to a lesser extent during the fall) when high migration activity occurred, a subset of those nights showed relatively higher densities of migration within the Rotor Swept Area (RSA). However, there were other high-migration nights when the relative density of migration was greater above the RSA.

A more exhaustive summary of potential interactions of the Project with birds and bird habitat and the proposed mitigation measures are summarized below in Table 21 in Section 6.1.3.

6.1.3 Standard Mitigation of Potential Environmental Effects

Standard mitigation has been identified for the anticipated interaction and/or effect in relation to bird and bird habitat in an attempt to prevent the interaction from occurring if possible, or to reduce the magnitude, geographic extent, frequency, duration, reversibility, or ecological/socioeconomic context of the interaction. Best management practices (based on industry guidelines and regulatory guidance documents) have been proposed as mitigation measures. In addition, several acts, codes, regulations and guidelines may require appropriate actions be conducted as mitigation measures prior to or during the interaction.

The federal and provincial legislation and codes that could apply to the Project include (but may not be limited to):

- *Migratory Bird Convention Act (ECCC 1994);*
- *Canadian Environmental Protection Act and regulations (ECC 1999);*
- *Species at Risk Act (ECCC 2002);*
- *Transportation of Dangerous Goods Act, and regulations (TC 1992);*
- *Nova Scotia Environment Act and regulations (NSG 1994-95);*
- *Nova Scotia Water Resources Protection Act, and regulations (NSG 2000);*
- *Nova Scotia Endangered Species Act, and regulations (NSG 1998a);*
- *Nova Scotia Wilderness Areas Protection Act, and regulations (NSG 1998b); and,*
- *Contingency Planning Guidelines (NSECC 2021).*

To further reduce the likelihood of interactions between any phase of the Project and birds and bird habitat, the mitigation measures, summarized below in Table 21 will be followed.

Table 21: Potential Interactions and Proposed Mitigation for Birds

Potential Interactions with Wildlife	Proposed Mitigation Measures
<p>Temporary disturbance of foraging fauna and loss of breeding and foraging habitat during Project activities due to increased human presence, noise and Project footprint.</p>	<ol style="list-style-type: none"> 1. Vegetation will be retained to the extent possible to maintain bird habitat and glyphosate pesticides will not be used; 2. The Project footprint will be limited to only that which is necessary to enable the Project to be carried out; 3. Existing roads and trails will be utilized to limit disturbance outside the Project footprint and minimize the interactions with wildlife and wildlife habitat; 4. Tree and vegetation clearing will not be undertaken during the breeding bird season (Early April to Late August), to the extent possible. Should clearing be required during the breeding bird season the proponent will consult with CWS for appropriate mitigation measures, including but not limited to nesting surveys; 5. Should clearing and grubbing be required during the region's breeding bird season, the Project area will be visually checked on a daily basis for nesting migratory birds. Should a nesting migratory bird be identified within the work area, ECCC/ Canadian Wildlife Service will be notified and an appropriate no-work buffer zone (in consultation with ECCC/CWS) will be applied around the nest until the nest has been fledged. No flagging of the nest will occur to minimize chances of predation; 6. Workers will be familiarized with the SAR and SOCC that were identified at the site during the biophysical assessments prior to work commencing; 7. Stockpiling of fill and excavated materials will be minimized to deter the potential for nesting by bank swallows or other ground nesting species (e.g., common nighthawk); 8. Fill/excavation material piles will be at low angles, if left standing for long durations; 9. All workers will adhere to the Migratory Birds Convention Act, 1994 and the Migratory Birds Regulations;

Potential Interactions with Wildlife

Proposed Mitigation Measures

	<p>10. All workers will adhere to the provincial Nova Scotia Endangered Species Act and federal Species at Risk Acts;</p> <p>11. Reduced speeds will be employed in the vicinity of wildlife;</p> <p style="text-align: center;"><u>Mitigation Measures for Unplanned Events</u></p> <ol style="list-style-type: none"> 1. Equipment shall be kept in good working order and maintained so as to reduce risk of spills/leaks and to avoid water contamination; 2. Spill response kits must be readily available for each piece of equipment, on site workers are required be knowledgeable on emergency spill response protocols and initiate corrective measures immediately to minimize any impacts to the surrounding environment; 3. Where applicable, secondary containment and limited quantities of chemicals and fuels required to be store on site shall be in an area away from the surrounding terrestrial environment, or direct pathways (i.e., ditches) to the surrounding environment, all chemicals and fuels will be stored in appropriate containers designed for the reduction of potential spills or leaks; 4. Refueling, oiling, and maintenance of equipment will be completed in specifically designated areas located at least 30 m away from any watercourse, wetland, or well to minimize potential effects that could arise in the event of a spill; and 5. If contaminated soil is encountered, it will be reported to NSECC and managed utilizing the Nova Scotia Contaminated Site Regulations.
<p>Construction lighting may alter the behavior of birds.</p>	<ol style="list-style-type: none"> 1. To minimize disruptions with wildlife activity at night, the Project construction activities will be limited to daylight hours when possible; 2. Necessary construction lighting will be pointed downwards; <ol style="list-style-type: none"> 3. Lighting will be shielded downward; and, 4. Instruction will be given to maintenance staff to ensure all work lights are turned off upon leaving the site particularly during foul weather events.

Potential Interactions with Wildlife	Proposed Mitigation Measures
<p>During operation, there is a possibility that migrating birds could collide with the wind turbines and Project infrastructure.</p>	<ol style="list-style-type: none"> 1. A comprehensive Adaptive Management Plan will be developed and implemented in consultation with CWS and NSDNRR. This includes the development of a follow-up avian mortality survey that will be conducted after the Project commissioning; 2. During the first year, post construction monitoring events will be targeted to capture the morning following nights with favourable tail wind conditions. 3. Blade feathering will be employed as required, and remote shutdown will be employed when appropriate. 4. Should unexpected negative impact to migration flyways occur, appropriate actions will be taken in consultation with CWS and NSDNRR and following the Adaptive Management Plan; and 5. Non-operational towers shall be dismantled if not expected to be put back into operation.
<p>Birds may alter their migration flyways and/or local flight paths to avoid wind turbines.</p>	<ol style="list-style-type: none"> 1. A comprehensive Adaptive Management Plan will be developed and implemented in consultation with CWS and NSDNRR. This includes the development of a follow-up avian mortality survey that will be conducted after the Project commissioning; 2. Should unexpected negative impact to migration flyways occur, appropriate actions will be taken in consultation with CWS and NSDNRR and following the Adaptive Management Plan; and 3. Non-operational towers shall be dismantled if not expected to be put back into operation;
<p>Lighting on turbines can result in adverse impacts on birds. The Proponent recognizes that nocturnal migrant and night-flying seabirds are the birds most at risk of attraction to lights.</p>	<ol style="list-style-type: none"> 1. Lighting requirements will meet, but not exceed, Transport Canada standards to minimize the potential impacts to migratory birds; 2. Only the required amount of pilot warning and obstruction avoidance lighting will be used; 3. Only lights with short flash durations and the ability to emit no light during the 'off phase' of the flash (i.e. as allowed by strobes and modern LED lights) will be installed on tall structures; 4. Lights will operate at the minimum intensity and minimum number of flashes per minute (longest duration between flashes) allowable by Transport Canada; 5. Instruction will be given to wind farm maintenance staff to ensure all work lights are turned off upon leaving the site particularly during extreme weather events; and 6. A follow up avian mortality survey will be conducted after the wind farm commissioning, and appropriate actions will be taken in consultation with CWS and NSDNRR.
<p>Fog events can impair avian visibility, increasing the likelihood of mortality from collision with wind turbines.</p>	<ol style="list-style-type: none"> 1. Instructions will be given to wind farm maintenance staff to ensure all work lights are turned off upon leaving the site particularly during foul weather events.

A post-construction avian mortality survey will be conducted during the operation phase and appropriate actions will be taken in consultation with CWS and NSDNRR. Post-construction monitoring will include targeted events to capture the morning following favourable tail wind conditions.

6.2 Residual Environmental Effects

The Project will be developed in such a way as to minimize the area of disturbance within the Project site and revegetation of the site will be promoted at the earliest opportunity. The final Project layout will take into account appropriate buffers for any identified SAR/SOCC.

The predicted mortality rate of birds due to collision and/or habitat loss cannot be accurately predicted prior to the operation of the Project as there is little correlation between pre-construction activity levels and operational mortality, however, it is anticipated that the mortality rate of birds from collision or habitat loss during Project operation, if at all, will be low. Mabee et al. (2006) reported that migration altitudes averaged 410 m above ground level (a.g.l) within the ground to 1.5 km altitude range, and nightly averages ranged from 214 to 769 m. It is important to note that the percent of targets detected in that study was relatively uniform between 0 and 500 m a.g.l., which would indicate that there is not a greater risk of avian collision if turbine heights were increased to 200 m.

A comprehensive Adaptive Management Plan will be developed and implemented in consultation with CWS and NSDNRR. This includes the development of a follow-up avian mortality survey that will be conducted after the Project commissioning. With the proposed mitigation measures employed, the significance of residual effects on migratory and breeding birds is predicted to be minor and limited to the Project site. Should the post- construction surveys indicate something different, the Proponent will follow the Adaptive Management Plan and engage regulatory authorities in applying additional mitigation measures.

6.3 Cumulative Environmental Effects

Cumulative effects are changes to the environment that are caused by an action in combination with other past, present and future human actions (GoC 2022). Specific to the nature of the undertaking, cumulative effects are combined impacts that may occur when wind power projects or other types of projects are located in the same region (NSECC 2021). Nearby wind energy projects to the proposed project include the South Canoe Lake Wind Energy Project, the Martock Ridge Wind Project and the Ellershouse Wind Project.

The South Canoe Lake Wind Energy Project is a 34-turbine project located approximately 8 km south-southwest of the Project. The Martock Ridge Wind Project (3 turbines) and the Ellershouse Wind Project (10 turbines) are located 8.6 km and 16 km east-northeast of the Project, respectively. The distances between these projects and the Project (i.e. outside of the LAAs for all VECs) suggests the potential for interaction between the residual effects of the combined projects is low. Regional effects due to the individual residual effects of each project could occur; however, population level impacts are unlikely, provided that highly sensitive or rare habitats, as well as concentration areas for species at risk, have been minimized by this Project.

In order to further mitigate risk to bats during the Project phases, there will be a concerted effort to use existing corridors found on-site, to limit over story removal, and vegetation management.

Additional anthropogenic activities and developments near the Project include, but are not limited to:

- Historic and ongoing forestry activities within and adjacent to the Project area;
- Historic operation of pits and quarries within and adjacent to the Project area;
- Existing major transmission line corridor adjacent to the Project area;
- Existing telecommunication towers and associated infrastructure, including overhead power lines and access roads;
- Existing local roads, provincial roads, and Trans-Canada highway;
- Hunting activities within and adjacent to the Project area; and,
- Operation of motorized vehicles (heavy equipment, passenger vehicles, and recreational vehicles including All Terrain Vehicles and snowmobiles) within and adjacent to the Project area.

The anticipated cumulative effects on birds and bird habitats are anticipated to be very low. By following the Adaptive Management Plan and through engagement of regulatory authorities regional population-wide effects due to the cumulative residual effects of each existing land uses are considered unlikely. In order to further mitigate the very low risk to bird habitat during the Project phases, there will be a concerted effort to use existing corridors found on site, to limit over story removal, and vegetation management.

7.0

Summary and Conclusion

The information provided in this document is based on the current available design/planning information and existing environment information obtained during focused field surveys conducted throughout 2021 and 2022. Based on the results of the desktop and field surveys for birds and proposed mitigation measures, it was concluded that the potential for impact on birds within the Project Developmental Area is low. In order to further mitigate risk to birds during the Project phases, there will be a concerted effort to use existing corridors found on site, to limit over story removal, and apply industry best practices and stringent mitigation measures and monitoring.

This report has been prepared as part of the provincial Environmental Assessment and associated Addendum of the Benjamins Mill Wind Project. The Project is expected to provide renewable electricity to Nova Scotia and support Nova Scotia Power in attaining their future renewable energy targets.

8.0

Closure

This report was prepared by Dillon Consulting Limited (Dillon) for Natural Forces Developments Limited Partnership (the Proponent) on behalf of the Benjamins Mill Wind Limited Partnership, in support of the Benjamins Mill Wind Project Addendum (2022). Dillon has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Dillon.

The material in the report reflects Dillon's best judgment in light of the information available to Dillon at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

9.0

References

- AC CDC (Atlantic Canada Conservation Data CentreAC CDC). 2021. Data Report 6931: Benjamins Mill, NS. Prepared 10 May 2021.
- AC CDC (Atlantic Canada Conservation Data CentreAC CDC). 2022a. Data Report 7431: Benjamins Mill, NS. Prepared 22 September 2022.
- AC CDC (Atlantic Canada Conservation Data CentreAC CDC). 2022b. Understanding Ranks. Retrieved from: <http://www.AC CDC.com/en/rank-definitions.html>.
- Birds Canada. 2022a. Important Bird and Biodiversity Areas in Canada. Retrieved from: <https://www.ibacanada.com/index.jsp?lang=en>. Accessed November 2022.
- Birds Canada. 2022b. IBA Site Summary: Southern Bight, Minas Basin – Bay of Fundy (near Wolfville), Nova Scotia. Retrieved from: <https://www.ibacanada.com/site.jsp?siteID=NS020>. Accessed November 2022.
- BSC (Bird Studies Canada). 2007. Nova Scotia Nocturnal Owl Survey. Environment Canada – Canadian Wildlife Service. Bird Studies Canada – Atlantic Division, Sackville, NB.
- BSC (Bird Studies Canada). 2019. Canadian Nightjar Survey Protocol. 21 pp.
- CWHC (Canadian Wildlife Health Cooperative). 2021. Guide for Bat Monitoring in Atlantic Canada.
- Davis, D.S. and Browne, S. 1996. The natural history of Nova Scotia. Produced by the Nova Scotia Museum and the Nova Scotia Department of Education and Culture. Available at: <https://ojs.library.dal.ca/NSM/article/view/3775>.
- Dillon (Dillon Consulting Limited). 2022. Environmental Impact Assessment Registration Document Addendum, dated December 2022. Prepared by Dillon Consulting Limited on behalf of Natural Forces.
- EC (Environment Canada). 1999. Canadian Environmental Protection Act (S.C. 1999, c. 33) Available at: <https://laws-lois.justice.gc.ca/eng/acts/c-15.31/#:~:text=Canadian%20Environmental%20Protection%20Act%2C%201999>

- EC-CWS (Environment Canada - Canadian Wildlife Service). 2007a. Wind Turbines and Birds: A Guidance Document for Environmental Assessment. Report by Canadian Wildlife Service. pp 46.
- EC-CWS (Environment Canada - Canadian Wildlife Service). (2007b). Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. Report by Canadian Wildlife Service and Environment Canada. pp 33.
- ECCC (Environment and Climate Change Canada). 2018. North American Breeding Bird Survey Instructions and Safety Guidelines. Available at: <https://ec.gc.ca/reom-mbs/default.asp?lang=En&n=416B57CA-1>. Accessed on March 2, 2018.
- ECCC (Environment and Climate Change Canada). 2019. Guidelines to reduce risk to migratory birds: Establishing buffer zones and setback distances. Accessed March 2021. Available at: <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html#toc5>
- ECCC (Environment and Climate Change Canada). 2022. Species at risk public registry. Available from: <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>.
- Erickson WP, M.M. Wolfe, K.J. Bay, D.H. Johnson, and J.L. Gehring. 2014. A Comprehensive Analysis of Small-Passerine Fatalities from Collision with Turbines at Wind Energy Facilities. PLoS ONE 9(9): e107491. <https://doi.org/10.1371/journal.pone.0107491>.
- Horton, K.G., B.M. Van Doren, P.M. Stepanian, A. Farnsworth, and J.F. Kelly. 2016. Where in the air? Aerial habitat use of nocturnally migrating birds Published: 01 November 2016. Retrieved from: <https://doi.org/10.1098/rsbl.2016.0591>. Accessed February 2022.
- Mabee, T.J., B.A. Cooper, J.H. Plissner, and D.P. Young. 2006. Nocturnal bird migration over an Appalachian ridge at a proposed wind power project. Wildlife Society Bulletin 34:682–690.
- Natural Forces. 2022. Benjamins Mill Wind Project. Retrieved from: <https://www.naturalforces.ca/benjamins-mills-wind-project.html>. Accessed November 2022.
- NSDNR (Nova Scotia Department of Natural Resources). 2022. Species At Risk - Recovery Update. Available at: <https://novasco.ca/natr/wildlife/species-at-risk/>
- NSG (Nova Scotia Government). 1994-95. Environment Act (c. 1, s. 1). Available at: <https://nslegislature.ca/sites/default/files/legc/statutes/environment.pdf>

- NSG (Nova Scotia Government). 1998a. Endangered Species Act.
Available at: https://nslegislature.ca/legc/bills/57th_1st/3rd_read/b065.htm
- NSG (Nova Scotia Government). 1998b. Wilderness Area Protection Act (c. 27). Available at:
<https://nslegislature.ca/sites/default/files/legc/statutes/wilderness%20areas%20protection.pdf>
- NSG (Nova Scotia Government). 2000. Water Resources Protection Act (c. 10, s. 1). Available at:
<https://nslegislature.ca/sites/default/files/legc/statutes/waterres.htm>
- NSDNRR (Nova Scotia Department of Natural Resources and Renewables). 2021. Nova Scotia Interpreted Forest Inventory - Current Forest Data (Web Version-2021). Available from:
<https://novascotia.ca/natr/forestry/gis/forest-inventory.asp>.
- NSE (Nova Scotia Environment). 2009. Guide to Addressing Wildlife Species and Habitat in an EA Registration Document. November 2005, Revised September 2009. Available from:
<https://novascotia.ca/nse/ea/docs/EA.Guide-AddressingWildSpecies.pdf>
- NSEAB (Nova Scotia Environmental Assessment Branch). 2021. Guide to Preparing an EA Registration Document for Wind Power Projects in Nova Scotia. Available from:
<https://www.novascotia.ca/nse/ea/docs/EA.Guide-Proponents-WindPowerProjects.pdf>. Accessed December 2021.
- Stewart, R. L. M., K. A. Bredin, A. R. Couturier, A. G. Horn, D. Lepage, S. Makepeace, P. D. Taylor, M.-A. Villard, and R. M. Whittam (eds). 2015. Second Atlas of Breeding Birds of the Maritime Provinces. Bird Studies Canada, Environment Canada, Natural History Society of Prince Edward Island, Nature New Brunswick, New Brunswick Department of Natural Resources, Nova Scotia Bird Society, Nova Scotia Department of Natural Resources, and Prince Edward Island Department of Agriculture and Forestry, Sackville, 528 + 28 pp.
- Takats, D. L., C. M. Francis, G. L. Holroyd, J. R. Duncan, K. M. Mazur, R. J. Cannings, W. Harris, D. Holt. 2001. Guidelines for Nocturnal Owl Monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada, Edmonton, Alberta. 32 pp.
- TC (Transport Canada). 1992. Transportation of Dangerous Goods Act (S.C. 1992, c. 34). Available at:
<https://lois-laws.justice.gc.ca/eng/acts/T-19.01>
- Treyger, S.M. 2019. Managing Forests for Birds: A Landowner's Guide. Audubon New York. Available at:
https://ny.audubon.org/sites/default/files/free_guide_landowners_manage_forest_for_birds_new_york.pdf

Appendix A

Master Bird List and Survey Data

Common Name	Scientific Name	S-rank	COSEWIC Status	SARA Status	NS ESA Status	Survey Type	2021 Winter	2021 Spring	2021 Summer	2021 Fall	2022 Winter	2022 Spring	2022 Summer	2022 Fall
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B				PC/DWC		X	X			X	X	
American Black Duck	<i>Anas rubripes</i>	S5B,S5N				PC/DWC	X	X						
American Crow	<i>Corvus brachyrhynchos</i>	S5				PC	X	X	X	X		X	X	X
American Goldfinch	<i>Spinus tristis</i>	S5				PC/DWC	X		X	X	X	X	X	X
American Kestrel	<i>Falco sparverius</i>	S3B,S4S5M				PC/DWC/Inc.		X	X	X		X	X	X
American Redstart	<i>Setophaga ruticilla</i>	S5B				Pt Count		X	X	X		X	X	
American Robin	<i>Turdus migratorius</i>	S5B,S3N				PC/DWC	X	X	X	X		X	X	X
American Woodcock	<i>Scolopax minor</i>	S5B				PC/Br. Noc. Owl/Inc.		X	X					X
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S5	NAR			PC/DWC	X	X		X		X		
Barn Swallow	<i>Hirundo rustica</i>	S3B	SC	T	E	PC							X	
Barred Owl	<i>Strix varia</i>	S5				Inc.			X					
Bay-breasted Warbler	<i>Setophaga castanea</i>	S3S4B,S4S5M				PC				X				
Belted Kingfisher	<i>Megaceryle alcyon</i>	S4S5B				PC/DWC		X				X		X
Black-and-White Warbler	<i>Mniotilta varia</i>	S5B				PC/DWC		X	X	X		X	X	X
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S3B				PC/Inc.		X		X				
Blackburnian Warbler	<i>Setophaga fusca</i>	S4B,S5M				PC		X						
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5				PC/DWC	X		X	X	X	X	X	X
Blackpoll Warbler	<i>Setophaga striata</i>	S3B, S5M				PC		X		X				X
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	S5B				PC		X	X	X		X	X	
Black-throated Green Warbler	<i>Setophaga virens</i>	S5B				PC		X	X	X		X	X	X
Blue Jay	<i>Cyanocitta cristata</i>	S5				PC/DWC	X	X	X	X	X	X	X	X
Blue-headed Vireo	<i>Vireo solitarius</i>	S5B				PC/DWC		X	X	X		X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	S5B				PC/DWC/Inc.		X				X		
Brown Creeper	<i>Certhia americana</i>	S5				PC				X				X
Canada Goose	<i>Branta canadensis</i>	SUB,S4N,S5M Exotic Breeding				PC/DWC		X		X		X		X
Canada Jay	<i>Perisoreus canadensis</i>	S3				PC/DWC/Inc.	X	X	X	X	X	X	X	X
Canada Warbler	<i>Cardellina canadensis</i>	S3B	SC	T	E	PC/Inc.		X	X			X	X	
Cape May Warbler	<i>Setophaga tigrina</i>	S3B,SUM				DWC				X				
Cedar Waxwing	<i>Bombicilla cedrorum</i>	S5B				PC/DWC			X	X			X	X
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	S5B				PC		X	X			X	X	
Chimney Swift	<i>Chaetura pelagica</i>	S2S3B,S1M	T	T	E	PC/DWC/Inc.		X		X		X	X	
Chipping Sparrow	<i>Spizella passerina</i>	S4B,S5M				PC							X	
Common Grackle	<i>Quiscalus quiscula</i>	S5B				PC/DWC		X	X	X		X	X	
Common Loon	<i>Gavia immer</i>	S4B	NAR			PC		X	X					X
Common Nighthawk	<i>Chordeiles minor</i>	S2B	SC	SC	T	PC/Br.CNHk/Inc.		X	X	X			X	X
Common Raven	<i>Corvus corax</i>	S5				PC/DWC	X	X	X	X	X	X	X	X
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B				PC/DWC		X	X	X		X	X	X
Dark-eyed Junco	<i>Junco hyemalis</i>	S4S5				PC	X	X	X	X		X	X	X
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	S5B	NAR			PC/DWC		X						
Downy Woodpecker	<i>Dryobates pubescens</i>	S5				PC/DWC	X	X	X	X	X	X	X	X
Eastern Phoebe	<i>Sayornis phoebe</i>	S4S5B,S4M				PC			X					
Eastern Wood-Pewee	<i>Contopus virens</i>	S3S4B	SC	SC	V	PC		X						
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S3B, S3N, S3M	SC	SC	V	PC/DWC/Inc.	X	X	X	X		X		X
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5				PC	X	X	X	X		X		X
Gray Catbird	<i>Dumetella carolinensis</i>	S4B				PC		X	X	X				
Great Horned Owl	<i>Bubo virginianus</i>	S4				Br.Noc.Owl		X						
Hairy Woodpecker	<i>Dryobates villosus</i>	S5				PC	X	X	X	X	X	X	X	X
Hermit Thrush	<i>Catharus guttatus</i>	S5B				PC/DWC	X	X	X	X		X	X	X
Herring Gull	<i>Larus argentatus</i>	S5				DWC		X						
Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B				PC				X				
Least Flycatcher	<i>Empidonax minimus</i>	S4S5B, S5M				PC		X	X			X	X	
Lincoln's Sparrow	<i>Melospiza lincolni</i>	S4B, S5M				PC		X	X	X		X	X	
Magnolia Warbler	<i>Setophaga magnolia</i>	S5B				PC		X	X	x		X	X	X
Mallard	<i>Anas platyrhynchos</i>	S5B,S5N				PC/Inc.	X					X		
Merlin	<i>Falco columbarius</i>	S5B	NAR			PC				X				X
Mourning Dove	<i>Zenaida macroura</i>	S5				PC/DWC	X	X	X	X		X	X	X

Common Name	Scientific Name	S-rank	COSEWIC Status	SARA Status	NS ESA Status	Survey Type	2021 Winter	2021 Spring	2021 Summer	2021 Fall	2022 Winter	2022 Spring	2022 Summer	2022 Fall
Mourning Warbler	<i>Geothlypis philadelphia</i>	S4B, S5M				PC			X					
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	S4B, S5M				PC/Inc.		X	X	X		X	X	X
Northern Flicker	<i>Colaptes auratus</i>	S5B				PC/DWC	X	X	X	X		X	X	X
Northern Goshawk	<i>Accipiter gentilis</i>	S3S4				DWC		X						
Northern Harrier	<i>Circus hudsonius</i>	S4B,S4S5M	NAR			PC/DWC/Inc.	X	X	X	X				X
Northern Parula	<i>Setophaga americana</i>	S5B				PC		X	X	X		X	X	X
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	S4B,SUM				Br.Noc.Owl		X						
Northern Waterthrush	<i>Parkesia noveboracensis</i>	S4B, S5M				PC		X	X			X	X	
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S3B	SC	T	T	PC/DWC/Inc.		X	X	X		X	X	X
Osprey	<i>Pandion haliaetus</i>	S4S5B, S5M				PC/DWC		X						X
Ovenbird	<i>Seiurus aurocapilla</i>	S5B				PC/DWC		X	X	X		X	X	X
Palm Warbler	<i>Setophaga palmarum</i>	S5B				PC/DWC		X	X	X		X	X	X
Peregrine Falcon	<i>Falco peregrinus</i>	S1B,SUM				DWC								X
Peregrine Falcon - anatum/tundr	<i>Falco peregrinus anatum/tundrius</i>	S1B,SUM	NAR	SC	V	PC				X				
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5				PC/DWC	X	X	X	X		X	X	X
Pine Siskin	<i>Spinus pinus</i>	S3				PC	X		X	X	X	X	X	X
Purple Finch	<i>Haemorhous purpureus</i>	S4S5B, S3S4N, S5M				PC/DWC/Inc.		X	X	X		X	X	X
Red Crossbill	<i>Loxia curvirostra</i>	S3S4				PC/DWC/Inc.	X	X	X	X	X	X	X	X
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S4S5				PC/DWC/Inc.	X	X	X	X	X	X	X	X
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B				PC		X	X	X		X	X	X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5				PC/DWC/Inc.	X	X	X	X		X		X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4B				PC/DWC		X				X		X
Ruby-crowned Kinglet	<i>Regulus calendula</i>	S4B, S5M				PC/DWC/Inc.		X		X		X	X	X
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B				PC		X	X	X		X	X	
Ruffed Grouse	<i>Bonasa umbellus</i>	S5				PC/DWC	X	X	X	X	X	X	X	X
Rusty Blackbird	<i>Euphagus carolinus</i>	S2B	SC	SC	E	PC/Inc.		X				X	X	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4S5B, S5M				PC			X			X		
Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5	NAR	NAR		PC/DWC		X		X				X
Snow Bunting	<i>Plectrophenax nivalis</i>	S5N				PC	X				X			
Solitary Sandpiper	<i>Tringa solitaria</i>	SUB,S3S4M				PC								X
Song Sparrow	<i>Melospiza melodia</i>	S5B				PC	X	X	X	X		X	X	X
Spruce Grouse	<i>Falcapennis canadensis</i>	S4				PC/Inc.	X	X	X	X		X	X	X
Swainson's Thrush	<i>Catharus ustulatus</i>	S4B,S5M				PC			X	X		X		
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B				PC		X	X	X		X	X	X
Tree Swallow	<i>Tachycineta bicolor</i>	S4B				PC/DWC		X	X			X		
Turkey Vulture	<i>Cathartes aura</i>	S2S3B,S4S5M				DWC				X		X		X
Veery	<i>Catharus fuscescens</i>	S4B				PC		X	X					
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S4				PC						X		
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S4S5B, S5M				PC/DWC		X	X	X		X	X	X
White-winged Crossbill	<i>Loxia leucoptera</i>	S4S5				PC	X	X	X	X	X	X		
Winter Wren	<i>Troglodytes hiemalis</i>	S5B				PC	X	X	X	X		X	X	
Wood Duck	<i>Aix sponsa</i>	S5B				PC		X	X					
Yellow Warbler	<i>Setophaga petechia</i>	S5B				PC		X	X					
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S4B,S5M				PC/Inc.		X	X			X	X	
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B				PC		X	X			X	X	
Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B				PC/DWC		X	X	X		X	X	X

Notes:

S-rank refers to the Sub-national (Provincial) rank provided by the ACCDC and includes the following: S1 Critically Imperiled, S2 Imperiled, S3 Vulnerable, S4 Apparently Secure, S5 Secure and SU Unrankable. Rankings are frequently paired with the following breeding status qualifiers: B Breeding, N Non-breeding and M Migrant. ? indicates that the ranking is uncertain or inexact (ACCDC 2022b)

Bold indicates a species is considered a SAR

Survey types include Point Counts (PC), Diurnal Watch Counts (DWC) and incidental observations (Inc.).

Date	Diurnal Watch Location #	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass Height (m)	Pass Direction	Comments
4-May-21	1	9:20	0	Northern Harrier	1	local		100		<50		wind changing
	1			American Kestrel	1	passing		100	south	50-100	sw	
	1			Evening Grosbeak	2	passing		50	south	100-250	nw	
	1			warbler spp.	1	passing		100	se	<50	north	
	1	9:50	30	blackbird spp.	1	passing		0	west	100-250	east	
	1			Red-tailed Hawk	1	circling		1000	east			
	1	10:20	60	Red-tailed Hawk	1	passing		2000	sw	50-100	north	
	1	10:50	90	buteo spp.	2	circling		2000	se	100-250	south	riding thermals 100 to 300 meters high. slowly made way south
	1			American Kestrel	1	passing		0	south	50-100	north	
	1	11:20	120	Bald Eagle	1	circling		3000	ne	100-250	nw	circling, slowly making way nw
	1	11:50	150	Bald Eagle	1	circling		2000	ne	100-250	east	
	1	12:20	180	Belted Kingfisher	1	local	calling					
	1			Common Raven	2	circling		500	south	100-250	north	circling high, slowly making way north
	1	12:50	210	Northern Goshawk	1	circling		1000	ne	100-250	east	riding thermals 100 to 500 meters high, slowly making way east
	1			Bald Eagle	1	circling		2000	north	100-250		
	1	13:20	240	SURVEY END								
7-May-21	1	6:15	0	Evening Grosbeak	7	passing		0	east	100-250	nw	
	1			Red-breasted Nuthatch	1	calling						
	1			Yellow-rumped Warbler	1	passing		0	south	50-100	ne	
	1			Canada Goose	2	passing		500	nw	50-100	se	
	1	6:45	30	American Kestrel	2	local	calling	250	east			pair in tree
	1			Red-winged Blackbird	1	passing		100	south	50-100	north	
	1	7:15	60	American Goldfinch	1	passing		0	west	50-100	se	
	1			Double-crested Cormorant	8	passing		2000	se	100-250	north	flying towards basin, looked close to t6
	1			Canada Jay	1	calling						
	1	7:45	90	Red-winged Blackbird	1	passing		0	south	50-100	north	
	1			American Kestrel	2	local	calling	100	ne			pair calling from large tree in cut
	1	8:15	120	Common Grackle	1	passing		1000	sw	50-100	nw	
	1			Northern Harrier	1	passing		2000	se	100-250	west	male

Date	Diurnal Watch Location #	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass Height (m)	Pass Direction	Comments
	1			Bald Eagle	1	circling		2000	se	100-250		
	1			Common Raven	1	passing		2000	se	250+	ne	
	1	8:45	150	Purple Finch	1	passing		0	ne	50-100	sw	
	1			passerine spp.	2	passing		250	sw	50-100	east	
	1	9:15	180	Common Raven	1	passing		2000	west	250+	south	
	1			Bald Eagle	2	circling		2000	se	100-250	north	flew close to t6
	1			Bald Eagle	1	circling		3000	se	250+	stationary	different bird, circling high above other 2
	1			Common Raven	1	circling		3000	se	250+	stationary	harassing eagle
	1	9:45	210	passerine spp.	1	passing		500	se	50-100	north	
	1			Purple Finch	1	passing		40	sw	100-250	north	
	1			Bald Eagle	2	passing		1000	se	100-250		
	1	10:15	240	Red-tailed Hawk	1	circling		2000	sw	100-250	stationary	
	1			Common Raven	1	passing		1000	east	100-250	north	
	1			American Kestrel	2	local	calling					pair still present
	1			Red-tailed Hawk	1	passing		1000	east	50-100	north	carrying snake or stick for nesting
	1	10:45	270	Red Crossbill	2	passing		0	north	50-100	sw	
	1			Bald Eagle	6	circling		2000	ne	100-250	stationary	
	1			Bald Eagle	2	circling		2000	se	100-250	stationary	different birds
	1			Bald Eagle	1	circling		3000	north	100-250	stationary	different birds
	1	11:15	300	Herring Gull	?	local	calling	500	se	?	north?	heard only, sounded high overhead, sounded like moving north but couldn't confirm
	1			Red-tailed Hawk	1	circling		2000	ne	50-100	stationary	circling low over valley
	1			American Kestrel	1	local	calling	250	north			pair still present, calling from partially dead hardwoods
	1			American Goldfinch	1	passing		0	nw	50-100	se	
	1	11:45	330	raptor spp.	1	passing		3000	se	250+	north	carried by updraft over 1000 high, slowly made way north
	1			Bald Eagle	2	circling		1000	sw	100-250	east	slowly making way east
	1			Bald Eagle	2	circling		1000	east	100-250	stationary	possibly same pair last recorded
	1	12:15	360	Bald Eagle	1	passing		3000	east	100-250	north	
	1	12:45	390	Bald Eagle	1	circling		3000	se	100-250	stationary	

Date	Diurnal Watch Location #	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass Height (m)	Pass Direction	Comments
	1			Red-tailed Hawk	1	hunting		1000	south	50-100	stationary	
	1			raptor spp.	3	circling		3000	se	100-250	stationary	3 raptors kettling se, could only follow one. climbed to 1000m +, then headed sw, looked like buteos, haze too bad to make out species
	1	13:15	420	Bald Eagle	1	circling		3000	se	100-250	stationary	
	1			Bald Eagle	2	passing		2000	east	100-250	north	
	1	13:45	450	Bald Eagle	1	circling		2000	east	100-250	north	slowly making way north
	1			Bald Eagle	1	passing		500	sw	100-250	north	
	1	14:15	480	SURVEY END								
21-May-21	1	5:45	0	Red-tailed Hawk	1	perched		2000	se			Some fog in morning. Sky hazy most of day, visibility poor.
	1	6:15	30	Red-tailed Hawk	1	perched		2000	se			same bird
	1			warbler spp.	1	passing		100	east	<50	se	
	1			warbler spp.	1	passing		250	east	<50	se	
	1			American Kestrel	1	local	calling	100	north			
	1	6:45	60	Olive-sided Flycatcher	1	local	singing	250	south			
	1			Blue Jay	1	passing		250	south	<50	west	
	1	7:15	90	Alder Flycatcher	1	calling						
	1			American Black Duck	1	passing		1000	ne	<50	west	
	1	7:45	120	American Kestrel	2	local	calling	100	ne			pair
	1	8:15	150	Common Raven	1	passing		2000	sw	<50	nw	
	1	8:45	180	Blue Jay	1	passing		250	east	<50	south	
	1	9:15	210	Osprey	2	circling		2000	sw	100-250		
	1	9:45	240	Olive-sided Flycatcher	1	local	singing	250	sw			
	1	10:15	270	*no birds detected*								
	1	10:45	300	Common Raven	1	passing		1000	se	50-100	north	
	1	11:15	330	raptor species	1	passing		2000	sw	50-100	east	
	1	11:45	360	*no birds detected*								
	1	12:15	390	American Goldfinch	1	passing		50	nw	50-100	se	
	1	12:45	420	Common Grackle	1	passing		500	south	50-100	nw	
	1	13:15	450	Bald Eagle	1	circling		2000	west	100-250	ne	slowly making its way ne
	1	13:45	480	American Kestrel	1	local	calling	100	east			

Date	Diurnal Watch Location #	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass Height (m)	Pass Direction	Comments
	1	14:15	510	Common Grackle	3	passing		1000	se	50-100	west	
	1	14:45	540	SURVEY END								

TOTAL: 121

Date	Diurnal Watch Location	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass. Height (m)	Pass Direction	Comments
19-Aug-21	1	8:00	0	Black-and-White Warbler	1	local	singing	50	east			
				Palm Warbler	1	local	singing	50	se			
				Blue Jay	2	local	calling	50	east			
	1	8:30	30	Red-tailed Hawk	1	passing		500	se	50-100	south	gliding above canopy in valley below
				Cedar Waxwing	3	passing		100	east	<50	south	
	1	9:00	60	American Robin	1	passing		50	east	<50	west	
				Common Yellowthroat	1	local	singing	50	se			
	1	9:30	90	American Robin	2	passing		250	ne	<50	sw	
	1	10:00	120	warbler spp.	1	passing		500	ne	<50	sw	
	1	10:30	150	Red-tailed Hawk	1	circling		1000	north	250+		gaining altitude
				American Goldfinch	2	passing		150	west	<50	east	
				Red-tailed Hawk	1	passing		500	south	50-100	se	
				Cedar Waxwing	4	passing		250	ne	50-100	sw	
	1	11:00	180	Northern Flicker	1	passing		500	ne	<50	west	
				American Goldfinch	4	passing		250	east	50-100	sw	
	1	11:30	210	Mourning Dove	1	passing		100	north	50-100	west	
				Red-tailed Hawk	1	perched		3000	ne			perched at distance
				Olive-sided Flycatcher	1	local	singing	200	west			
	1			American Goldfinch	1	passing		250	ne	50-100	south	
	1	12:00	240	SURVEY END								
26-Aug-21	1	11:05	0	American Robin	2	passing		100	east	<50	east	
	1			Purple Finch	1	passing		50	west	50-100	ne	
	1			American Goldfinch	1	passing		0	west	<50	se	
	1	11:35	30	Olive-sided Flycatcher	1	passing		250	south			
	1			Cedar Waxwing	1	passing		250	ne	<50	sw	
	1	12:05	60	Common Raven	1	passing		500	south	<50	ne	
	1			Pileated Woodpecker	1	local	calling					
	1	12:35	90	American Goldfinch	1	passing		100	nw	<50	se	
	1			Cedar Waxwing	1	passing		100	nw	<50	se	
	1			Olive-sided Flycatcher	1	passing		250	sw			
	1	13:05	120	Olive-sided Flycatcher	1	local		250	ne			young bird foraging
	1			warbler spp.	1	passing		100	se	<50	south	

Date	Diurnal Watch Location	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass. Height (m)	Pass Direction	Comments
	1			Chimney Swift	3	passing		500	sw	<50	west	
	1	13:35	150	Ovenbird	1	local	singing					singing
	1	14:05	180	American Goldfinch	1	passing		50	nw	<50	south	
	1			American Goldfinch	1	passing		0	se	<50	west	
	1	14:35	210	*no birds detected*								
	1	15:05	240	Cedar Waxwing	2	passing		0	north	<50	se	
	1	15:35	270	Cedar Waxwing	2	passing		0	north	<50	south	
	1	16:05	300	American Kestrel	1	local	calling					
	1	16:35	330	SURVEY END								
14-Sep-21	1	14:25	0	warbler spp.	1	passing		250	north	<50	west	
	1			Red-tailed Hawk	1	passing		3000	se	100-250	sw	
	1	14:55	30	Common Raven	1	passing		500	nw	100-250		
	1			raptor spp.	1	passing		5000	nw	250+	west	
	1			Cedar Waxwing	2	passing		100	ne	<50	nw	
	1	15:25	60	Broad-winged Hawk	1	passing		1000	north	100-250	sw	
	1			Red-tailed Hawk	1	passing		2000	east	100-250	south	
	1	15:55	90	Cape May Warbler	1	local	singing	50				
	1			Turkey Vulture	1	passing		2000	ne	250+	south	
	1	16:25	120	Broad-winged Hawk	1	passing		2000	ne	250+	se	
	1	16:55	150	Hermit Thrush	1	local	singing	50				
	1			Red-breasted Nuthatch	1	local	singing	100				
	1			Broad-winged Hawk	4	passing		2000	east	250+	west	all in one group.
	1	17:25	180	Bald Eagle	1	passing		2000	west	250+	west	
	1	17:55	210	Herring Gull	2	passing		3000	ne	250+	west	
	1			Herring Gull	6	passing		3000	ne	250+	south	Lost them behind trees did not see if they flew through site
	1	18:25	240	Cedar Waxwing	2	passing		250	ne	<50	west	
	1			Northern Flicker	1	passing		500	east	<50	west	
	1	18:55	270	Cedar Waxwing	16	passing		500	north	<50	east	
	1	19:25	300	SURVEY END								
23-Sep-21	1	10:20	0	Purple Finch	1	local	singing					
	1	10:50	30	Red-tailed Hawk	1	circling		1000	north	100-250	circling	

Date	Diurnal Watch Location	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass. Height (m)	Pass Direction	Comments
	1			Common Grackle	2	passing		500	north	<50	east	
	1	11:20	60	Bald Eagle	2	passing		2000	sw	100-250	east	
	1	11:50	90	American Goldfinch	2	passing		0	west	<50	east	
	1			raptor spp.	1	circling		2000	ne	100-250	circling	
	1	12:20	120	Evening Grosbeak	6	passing		500	east	<50	north	
	1			Red-tailed Hawk	1	passing		500	west	100-250	west	hunting
	1			raptor spp.	1	passing		3000	west	250+	west	
	1			Ruby-crowned Kinglet	1	local	singing					
	1			Hermit Thrush	1	local	singing					
	1	12:50	150	Bald Eagle	4	circling		1000	east	100-250	east	circling, eventually moved east
	1	13:20	180	Bald Eagle	1	circling		3000	ne	100-250	circling	
	1			Common Raven	1	passing		3000	east	250+	east	
	1	13:50	210	Cedar Waxwing	11	local	feeding					
	1			Ruby-crowned Kinglet	1	local	singing					
	1	14:20	240	Blue-headed Vireo	1	local	singing					
	1			Bald Eagle	1	passing		2000	west	100-250	south	
	1			Ruby-crowned Kinglet	1	local	singing					
	1	14:50	270	SURVEY END								
6-Oct-21	1	10:55	0	Sharp-shinned Hawk	2	passing		0	south	<50	south	
	1			Yellow-rumped Warbler	1	passing		0	north	<50	south	
	1	11:25	30	Common Grackle	1	passing		500	south	<50	west	
	1			Common Raven	2	circling		3000	sw	250+	circling	
	1	11:55	60	Bald Eagle	1	circling		3000	south	250+	circling	circling, looked to be slowly moving east
	1			Common Raven	1	circling		3000	south	250+	circling	
	1			Canada Goose	1	passing						
	1			raptor spp.	1	passing		3000	nw	100-250	west	was circling high above trees, stooped westward into woods
	1	12:25	90	Cedar Waxwing	1	passing		0	south	<50	north	
	1			Broad-winged Hawk	1	passing		1000	ne	100-250	west	
	1	12:55	120	Bald Eagle	1	circling		1000	north	250+	soaring	
	1			Common Raven	18	circling		3000	north	100-250	south	circling, slowly made way south

Date	Diurnal Watch Location	Survey Time	Total survey time (mins)	Common name	Number Detected	Seen	Heard	Est. Distance	Est. Bearing	Pass. Height (m)	Pass Direction	Comments
	1	13:25	150	Bald Eagle	1	circling		3000	se	100-250	soaring	
	1	13:55	180	Red-tailed Hawk	1	passing		2000	ne	100-250	hunting	actively hunting, slowly moving se
	1			Bald Eagle	1	circling		2000	se	100-250	soaring	
	1	14:25	210	raptor spp.	1	circling		2000	se	100-250	soaring	
	1	14:55	240	SURVEY END								

TOTAL 174

Date	Diurnal Watch Location	Survey Time	Total survey time (mins)	Common Name	Number detected	Seen?	Heard?	Est. Distance	Est. Bearing	Est. Pass Height (m)	Est. Pass Direction	Comments
3-May-22		10:15	0	Common Raven	2	soaring		1000	se	50+		
				Bald Eagle	1	soaring		1000	se	50+		
				Blue Jay	1	passing		500	nw	-50	south	local
		10:45	30	Tree Swallow	1	passing		250	se	-50	north	
				Black-capped Chickadee		passing		100				
				White-throated Sparrow	1		singing	100				
				Ruffed Grouse	1		drumming	0				
				Hermit Thrush	2		singing	100				
				Bald Eagle	2	passing		2000	west	100+	north	
				Red-tailed Hawk	2	soaring		1000	west	50+		behaving like a pair
				American Kestrel	1		calling	100	sw			
		11:15	60	Unidentified passerine	2	passing		250	west	50+	west	
				Turkey Vulture	4	soaring		2000	east	50 to 100+	north	
				Bald Eagle	3	soaring		1000	se	100+		
				Common Raven	1	soaring		1000	sw	100+		
				Turkey Vulture	3	passing		500	west	100+	west	possibly birds from line 14
		11:45	90	American Kestrel	1		calling	100	ne			
				Unidentified accipiter	1	soaring		1000	se	100+	sw	too hazy to id
		12:15	120	Red-tailed Hawk	1	soaring		250	ne	100+		
				Bald Eagle	3	soaring		500	north	50+	south	
				Common Raven	2	passing		50	north	50+	south	
		12:45	150	Bald Eagle	1	soaring		1000	north	50+		
		1:15	180	Bald Eagle	1	passing		1000	ne	50+	nw	
				Red-tailed Hawk	1	soaring		1000	ne	50+	ne	
		1:45	210	Common Raven	1	soaring		1000	se			
				American Kestrel	1		calling	100				
		2:15	240	SURVEY END								
12-May-22		10:07	0	Common Raven	1	passing		250	west	-50	sw	
				Bald Eagle	1	soaring		1000	ne	50+	ne	
				Unidentified raptor	1	passing		0	ne	250+	south	Large, likley an immature BAEA
				Bald Eagle	1	soaring		3000	east	100+		
		10:37	30	Bald Eagle	1	passing		2000	east	50+	north	juv

Date	Diurnal Watch Location	Survey time	Total survey time (mins)	Common name	Number detected	Seen?	Heard?	Est. Distance	Est. Bearing	Est. Pass Height (m)	Est. Pass Direction	Comments
03-Aug-22		12:15	0	Cedar Waxwing	2			50	NE		SW	local
				Downy Woodpecker	1			50	NE		SE	local
		12:45	30	Cedar Waxwing	1			50	SE		NW	local
				Purple Finch	1			50	SE		NW	local
				Cedar Waxwing	2			50	E		W	local
				American Goldfinch	1			50	SE		NW	local
		13:15	60	American Goldfinch	1			50	NE		S	local
				American Goldfinch	2			50	SE		NW	local
				Cedar Waxwing	3			50	S		N	local
		13:45	90	American Goldfinch	4			50	SE		W	local
				Turkey Vulture	1			50-150	SE	1000		gaining altitude over opposite ridge, lost sight, heading NE
		14:15	120	Blue Jay	1			50	NE		SW	local
		14:45	150	Cedar Waxwing	2			50	N		E	local
				Cedar Waxwing	1			50	NE		E	local
		15:15	180	Blue Jay	3			50	N		E	local
				Cedar Waxwing	1			50	SE		SW	local
		15:45	210	Yellow-rumped Warbler	2			50	NW		SE	local
				American Robin	1			50-150	NE		SE	local
				Blue Jay	1			50	E		S	local
				Cedar Waxwing	1			50	S		N	local
		16:15	240	SURVEY END								
30-Aug		11:15	0	Ovenbird	2	passing		250	sw	50+	east	
				Unidentified finches	4	passing		100	sw	50+	se	
		11:45	30	Ovenbird	1	passing		250	south	-50	west	
		12:15	60	Cedar Waxwing	1	passing		100	ne	-50	south	
				Cedar Waxwing	2	passing		50	se	-50	north	
		12:45	90	*No birds detected*								
		1:15	120	Cedar Waxwing	4	passing		100	ne	-50	sw	
		1:45	150	Purple Finch	1	passing		0	ne	50+	south	
		2:15	180	*No birds detected*								
		2:45	210	*No birds detected*								

Date	Diurnal Watch Location	Survey time	Total survey time (mins)	Common name	Number detected	Seen?	Heard?	Est. Distance	Est. Bearing	Est. Pass Height (m)	Est. Pass Direction	Comments
		3:15	240	SURVEY END								
09-Sep-22		11:30	0	Red Crossbill	3	passing		0	south	-50	north	
		12:00	30	Northern Flicker	1	passing		50	north			
				Red-tailed Hawk	1	soaring		2000	sw	50+		
				Gray Jay	2		calling		yes			
				Common Raven	4	passing		1000	sw	100+	north	
		12:30	60	Sharp-shinned Hawk	1	passing		1000	sw	100+	west	
				Peregrine Falcon	1	soaring		2000	sw	0 to 100+	west?	changing direction, stooped out of site
		1:00	90	Common Raven	2	soaring		2000	sw	50+		
		1:30	120	Common Raven	1	passing		2000	se	-50	west	
		2:00	150	*No birds detected*	1							
		2:30	180	Turkey Vulture	1	passing		2000	se	50+	north	
				Sharp-shinned Hawk	1	passing		2000	se	50 to 100+	se	looked like shadowing tuvu, possible coha
		3:00	210	Turkey Vulture	1	passing		1000	se	50+	nw	
				Turkey Vulture	1	passing		1000	se	50+	north	over 10 mins between sightings. same bird?
		3:30	240	SURVEY END								
30-Sep-22		12:02	0	Unidentified species	2	soaring		3000	ne	250	east	large bird, likley a raptor spp.
				Common Raven	2	soaring		2000	north	100	east	
				Red-tailed Hawk	2	soaring		2000	se	250		
				Sharp-shinned Hawk	1	soaring		2000	se	500		
				Red-tailed Hawk	1	passing		1000	nw	50+	sw	
				Sharp-shinned Hawk	1	passing		2000	se	250	sw	
		12:32	30	passerine species	3	passing		250	sw	100	nw	
				Red-tailed Hawk	1	passing		2000	nw	250	west	
				Sharp-shinned Hawk	2	passing		500	sw	500	west	
		1:02	60	Red-tailed Hawk	1	soaring		1000	nw	100	ne	
				Sharp-shinned Hawk	1	soaring		1000	north	100	west	
				Bald Eagle	1	soaring		1000	nw	250	east	
				American Kestrel	1	soaring		1000	nw	100	se	
		1:32	90	American Kestrel	1	passing		1000	north	100	west	

Nocturnal Owl Survey 2021 Data and Weather Observations

Survey Location	Number Detected	Common Name	Scientific Name	Estimated Distance (m)	Estimated Direction	S-rank
1	1	American Woodcock	<i>Scolopax minor</i>	N/A	N/A	S5B
2	1	Great Horned Owl	<i>Bubo virginianus</i>	500	S	S4
3	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	500	SW	S4B
4	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	250	W	S4B
5	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	500	SW	S4B
5	1	Great Horned Owl	<i>Bubo virginianus</i>	1000	W	S4
6	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	500	N	S4B
7	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	100	NNW	S4B
8	1	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	500	SW	S4B

Date	10-May-21
Start Temp. (°C)	4°C
End Temp. (°C)	11°C
Avg. Wind Speed (km/hr)	4
Gust Wind Speed (km/hr)	6
Avg. Wind Direction	W
Avg. Cloud Cover (%)	30%
Precipitation	none
Background Noise	none
Visibility (km)	>1000m
Comments	Sun w/ clouds

Breeding Nightjar Survey 2021 Data and Weather Observations

Survey Location	Number Detected	Common Name	Scientific Name	SAR or SoCC	Estimated Distance (m)	Estimated Direction	SARA Status	NS ESA Status	S-rank
1	0	-	-	-	-	-	-	-	-
2	0	-	-	-	-	-	-	-	-
3	0	-	-	-	-	-	-	-	-
4	0	-	-	-	-	-	-	-	-
5	0	-	-	-	-	-	-	-	-
6	1	Common Nighthawk	<i>Chordeiles minor</i>	SAR	500	SW	SC	T	S2B
7	1	Common Nighthawk	<i>Chordeiles minor</i>	SAR	250	E	SC	T	S2B
8	0	-	-	-	-	-	-	-	-

Date	21-Jun-21
Start Temp. (°C)	23
End Temp. (°C)	19
Ceiling Start (m)	10000
Ceiling End (m)	10000
Avg. Wind Speed (km/hr)	19
Gust Wind Speed (km/hr)	29
Avg. Wind Direction	S
Avg. Cloud Cover (%)	50
Precipitation	none
Background Noise	none
Visibility (km)	16
Comments	Clear, but clouded over

Bird Survey Weather Observations 2021

Date	27-Apr-21	29-Apr-21	02-May-21	04-May-21	05-May-21	10-May-21	11-May-21	18-May-21	19-May-21
Areas Surveyed	T1	T2, T3	T4	T1, T2	T3, T4	T1, T2	T3, T4	T1, T2	T3, T4
Start Temp. (°C)	2°C	3°C	3°C	7°C	4°C	4°C	5°C	6°C	8°C
End Temp.(°C)	4°C	12°C	7°C	13°C	11°C	11°C	12°C	8°C	10°C
Avg. Wind Speed (km/hr)	8	3	8	3	5	4	5	8	8
Gust Wind Speed (km/hr)	11	5	15	5	9	6	7	13	15
Avg. Wind Direction	NE	NE	NE	NE	N	W	NW	NW	N
Avg. Cloud Cover (%)	100%	20%	100%	40%	40%	30%	50%	50%	30%
Precipitation	light drizzle	none	none	none	none	none	none	none	none
Background Noise	none	none	none	none	none	none	none	none	none
Visibility (m)	>1000m	>1000m	>1000m	26 km	>1000m	>1000m	>1000m	>1000m	>1000m
Comments	on/off drizzle,	clear and sunny	overcast	mostly sunny	Sun w/ clouds	Sun w/ clouds	Sun w/ clouds	Sun w/ clouds	Sun w/ clouds
Date	24-May-21	25-May-21	28-May-21	02-Jun-21	03-Jun-21	24-Jun-21	25-Jun-21	29-Jun-21	24-Aug-21
Areas Surveyed	T1	T3, T4	T2	T1, T2	T3, T4	T1, T2	T4	T3	T1, T2
Start Temp. (°C)	1°C	6°C	5°C	11°C	12°C	15°C	17°C	20°C	21°C
End Temp.(°C)	6°C	11°C	9°C	16°C	16°C	16°C	20°C	24°C	22°C
Avg. Wind Speed (km/hr)	5	12	11	7	7	15	6	4	17
Gust Wind Speed (km/hr)	9	18	22	11	12	*	*	6	26
Avg. Wind Direction	N	SW	NW	SW	SW	SW	SW	S	S
Avg. Cloud Cover (%)	0%	40%	10%	20%	20%	100%	*	30%	40%
Precipitation	none	none	none	none	none	light drizzle	none	none	none
Background Noise	none	none	none	none	none	none	none	none	none
Visibility (m)	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m
Comments	Cold	Partly cloudy	Clear	sunny and clear	sunny and clear			Sunny and clear, gusty	Partly cloudy, humid

* the weather condition did not inhibit bird surveys on that day

Bird Survey Weather Observations 2021

Date	26-Aug-21	11-Sep-21	13-Sep-21	21-Sep-21	22-Sep-21	23-Sep-21	06-Oct-21	07-Oct-21	15-Oct-21	18-Oct-21
Areas Surveyed	T3, T4	T3, T4	T1, T2	T1, T2	T3	T4	T1,T2	T3,T4	T3, T4	T1, T2
Start Temp. (°C)	18°C	15°C	14°C	8°C	11°C	13°C	5°C	9°C	10°C	11°C
End Temp.(°C)	23°C	15°C	17°C	14°C	16°C	18°C	13°C	14°C	12°C	13°C
Avg. Wind Speed (km/hr)	3	14	8	5	12	7	4	2	7	7
Gust Wind Speed (km/hr)	5	24	12	8	16	14	8	8	9	10
Avg. Wind Direction	SW	WSW	SW	SW	S	SW	NW	W	N	SW
Avg. Cloud Cover (%)	40%	20%	30%	10%	0%	30%	20%	10%	20%	50%
Precipitation	none	none	none	none	none	none	none	none	none	none
Background Noise	none	none	none	none	none	none	none	none	none	none
Visibility (m)	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m	>1000m
Comments	partly cloudy, humid	mostly clear, scattered clouds	Foggy in morning, but cleared	Clear, sunny	Clear, sunny	Scattered clouds, sunny	clear, sunny	clear, sunny	clear and sunny	partly cloudy

* the weather condition did not inhibit bird surveys on that day

Bird Survey Weather Observations 2021

Date	04-May-21	07-May-21	21-May-21	21-Jun-21	19-Aug-21	26-Aug-21	14-Sep-21	23-Sep-21	06-Oct-21
Start Time	9:20	6:15	5:45		8:00	11:05	14:25	10:20	10:55
End Time	13:20	14:15	14:45		12:00	16:35	19:25	14:50	14:55
Total Time (hours)	4	8	9		4	5.5	5	4.5	4
Areas Surveyed	Skywatch 1 (PC7)	Skywatch 1 (PC7)	Skywatch 1 (PC7)	CONI Survey	Skywatch 1 (PC7)	Skywatch 1 (PC7)	Skywatch 1 (PC7)	Skywatch 1 (PC7)	Skywatch 1 (PC7)
Start Temp. (°C)	7°C	2°C	3°C	23°C	18°C	26°C	19°C	18°C	14°C
End Temp.(°C)	13°C	10°C	22°C	19°C	21°C	32°C	16°C	25°C	20°C
Ceiling Start (m)	n/a	600m	9100m	10,000m	800m	9100m	9100m	9100m	9100m
Ceiling End (m)	n/a	9100m	9100m	10,000m	500m	500m	9100m	9100m	9100m
Avg. Wind Speed (km/hr)	3	10	7	19	9	7	13	6	10
Gust Wind Speed (km/hr)	5	16	11	29	15	12	29	9	18
Avg. Wind Direction	NE	NW	S	S	SW	S	NW	SW	NW
Avg. Cloud Cover (%)	40%	30%	20%	50%	90%	10%	30%	20%	30%
Precipitation	none	none	none	none	none	none	none	none	none
Background Noise	none	none	none	none	none	none	none	none	none
Visibility	26km	23km	22km	16km	9km	45km	34km	23km	35km
Comments	mostly sunny	mostly sunny, partially cloudy	foggy in the early morning	Clear, but clouded over	foggy in the early morning	clear, humid	clear		clear and sunny

Low tide
High Tide

	438 (1.8m)	1030 (1.0m)	1317 (3.5m)	0907 (2.07m)
	1041 (12.7m)	1630 (13.9m)	1935 (13.7m)	1517 (14.85m)
Burntcoat Head	Burntcoat Head	Tides (Ray0.4)	Tides (Ray0.4)	

* the weather condition did not inhibit bird surveys on that day

Bird Survey Weather Observations 2022

Date	03-May-22	12-May-22	20-May-22	21-May-22	26-May-22	01-Jun-22	08-Jun-22	14-Jul-22
Areas Surveyed	Avian Transect 1 & 2	Avian Transect 1 & 2	Avian Transect 2	Avian Transect 1	Avian Transect 1 & 2	Nest sweeps	Avian Transect #1 & #2	Avian Transect #1 & #2
Surveyor(s)	CK & CP	CP & DC	DC	CP	CK & DC	CK	CK & DC	CP & DC
-Start Time	6:00	5:30	5:45	5:30	5:30	5:30	5:15	5:00
-End Time	10:00	9:30	11:00	9:30	10:00	9:30	10:15	10:30
Start Temp. (°C)	0 (-1)	6 (6)	8 (7)	7 (6)	8 (8)	6 (4)	11 (10)	16 (16)
Start Conditions	Clear	Mostly cloudy	Mostly cloudy	Clear	Mostly clear, few clouds	Partly cloudy	Partly cloudy	Clear
Start Cloud Cover (%)	0%	70%	80%	10%	10%	30%	30%	0%
Start Wind Speed (km/hr)	3	2	5	6	6	10	8	3
Start Gust Speed (km/hr)	4	3	7	8	9	15	12	5
Start Wind Direction	S	S	N	S	S	NW	SW	E
End Temp. (°C)	5 (4)	16 (16)	13 (13)	11 (9)	16 (16)	9 (8)	18 (18)	23 (28)
End Conditions	Clear, Sunny	Sun and cloud	mostly sunny	clear and sunny	Partly cloudy	Partly cloudy	Mostly cloudy	Mostly cloudy
End Cloud Cover (%)	0%	30%	30%	10%	30%	30%	70%	60%
End Wind Speed (km/hr)	7	10	3	17	9	13	10	4
End Gust Speed (km/hr)	10	14	5	25	13	20	15	6
End Wind Direction	NE	NW	N	S	W	NW	SW	SE
Precipitation	none	none	none	none	none	none	none	none
Background Noise	none	none	none	none	none	none	none	none
Other notes	Warming all morning, hardly a cloud		CK performed Nest Sweeps at 2 proposed MET locations			Nest sweeps at 3 proposed MET locations		

* the weather condition did not inhibit bird surveys on that day

Bird Survey Weather Observations 2022

Date	16-Aug-22	30-Aug-22	31-Aug-22	09-Sep-22	30-Sep-22	14-Oct-22
Areas Surveyed	Nest Sweep	Avian Transect #2	Avian Transect #1	Avian Transect #1 & #2	Avian Transect #1 & #2	Avian Transect #1 & #2
Surveyor(s)	CK	CP	CK & TS	CK & CP	CP & DC	CK & CP
-Start Time	7:00	6:30	7:00	6:45		8:00
-End Time		10:30	11:30	11:45		
Start Temp. (°C)	15 (15)	20 (22)	21 (25)	14 (14)	5	12 (11)
Start Conditions	Mostly cloudy	Partly cloudy	Mostly cloudy	partly cloudy	*	Clear
Start Cloud Cover (%)	70%	20%	80%	20%	*	10%
Start Wind Speed (km/hr)	4	10	16	4	5	11
Start Gust Speed (km/hr)	6	15	24	5	*	17
Start Wind Direction	NE	S	S	N	S	SE
End Temp. (°C)	23	22 (26)	24 (30)	19 (20)	14	17 (16)
End Conditions	*	Partly cloudy	Mostly cloudy	mostly sun	*	partly cloudy
End Cloud Cover (%)	*	20%	70%	10%	*	30%
End Wind Speed (km/hr)	11	12	22	3	9	17
End Gust Speed (km/hr)	*	19	33	5	*	25
End Wind Direction	NE	SW	S	N	NW	SE
Precipitation	none	none	none	none	none	none
Background Noise	none	none	none	none	none	none
Other notes	Nest Sweep at PC#6		gusty - depressed bird			

* the weather condition did not inhibit bird surveys on that day

Bird Survey Weather Observations 2022

Diurnal Watch Weather

Date	03-May-22	12-May-22		21-May-22	03-Aug-22	30-Aug-22	09-Sep-22	30-Sep-22
Surveyor(s)	CP	CP & DC		CP	CK	CP	CP	CP & DC
Start Time	10:15	10:00		10:00	12:15	11:00	11:30	12:00
End Time	14:15	14:00		13:00	16:15	15:00	15:30	15:00
Total Time (hours)	4h (8 blocks)	4h (8 blocks)		3h (6 blocks)	4h (8 blocks)	4h (8 blocks)	4h (8 blocks)	3h (6 blocks)
Areas Surveyed	Watch #1 (PC#6)	Watch #1 (PC#6)		Watch #1 (PC#6)	Watch #1 (PC#6)	Watch #1 (PC#6)	Watch #1 (PC#6)	Watch #1 (PC#6)
Start Temp. (°C)	6 (5)	17 (17)		13 (12)	26 (32)	22 (26)	19 (20)	15
Start Conditions	Clear, sunny	Sun and cloud		few clouds, sunny	partly cloudy	partly cloudy	mostly sun	*
Start Cloud Cover (%)	0%	30%		20%	40%	20%	10%	*
Start Wind Speed (km/hr)	6	10		19	7	12	3	10
Start Gust Speed (km/hr)	10	15		29	10	19	5	*
Start Wind Direction	NE	NW		S	W	SW	N	NW
Start Visibility (km)	28.0km	35.0km		28.0km	31.0km	18.0km	24.0km	*
Ceiling Start (m)	no ceiling	no ceiling		no ceiling	no ceiling	300m	no ceiling	no ceiling
End Temp. (°C)	12 (12)	25 (25)		17 (16)	29 (34)	28 (36)	24 (26)	17
End Conditions	mostly sunny	mostly sunny		few clouds, sunny	few clouds, mostly sunny	partly cloudy	partly cloudy	*
End Cloud Cover (%)	20%	20%		20%	20%	20%	20%	*
End Wind Speed (km/hr)	7	5		25	11	17	13	9
End Gust Speed (km/hr)	10	8		37	16	25	19	*
End Wind Direction	NE	NE		S	W	SW	N	W
End Visibility (km)	38.0km	28.0km		34.0km	38.0km	30.0km	34.0km	*
Ceiling End (m)	no ceiling	no ceiling		no ceiling	no ceiling	no ceiling	no ceiling	no ceiling
Precipitation	none	none		none	none	none	none	none
Background Noise	none	none		none	none	none	occ. distant orchard blasts	none
Comments								

* the weather condition did not inhibit bird surveys on that day

Appendix B

AC CDC Report (2022)

DATA REPORT 7431: Benjamins Mill, NS

Prepared 22 September 2022
by C. Robicheau, Conservation Data
Analyst

CONTENTS OF REPORT

1.0 Preface

- 1.1 Data List
- 1.2 Restrictions
- 1.3 Additional Information
- Map 1: Buffered Study Area

2.0 Rare and Endangered Species

- 2.1 Flora
- 2.2 Fauna
- Map 2: Flora and Fauna

3.0 Special Areas

- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora
- 4.3 Location Sensitive Species
- 4.4 Source Bibliography

5.0 Rare Species within 100 km

- 5.1 Source Bibliography



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) 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 AC CDC 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 AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC 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 AC CDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

<u>Filename</u>	<u>Contents</u>
BenjaminsMilNS_7431ob.xls	Rare or legally-protected Flora and Fauna in your study area
BenjaminsMilNS_7431ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
BenjaminsMilNS_7431msa.xls	Managed and Biologically Significant Areas in your study area

1.2 RESTRICTIONS

The AC CDC 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 AC CDC data, recipients assent to the following limits of use:

- 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.
- Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- The AC CDC 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.
- AC CDC data responses are restricted to the data in our Data System at the time of the data request.
- 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.
- AC CDC data responses are not to be construed as exhaustive inventories of taxa in an area.
- The absence of a taxon cannot be inferred by its absence in an AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries	Sean Blaney	Senior Scientist / Executive Director	(506) 364-2658	sean.blaney@accdc.ca
Animals (Fauna)	John Klymko	Zoologist	(506) 364-2660	john.klymko@accdc.ca
Data Management, GIS	James Churchill	Conservation Data Analyst / Field Biologist		james.churchill@accdc.ca
Billing	Jean Breau	Financial Manager / Executive Assistant	(506) 364-2657	jean.breau@accdc.ca

Questions on the biology of Federal Species at Risk can be directed to AC CDC: (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.

New Brunswick. For information about rare taxa, protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

Nova Scotia. For information about Species at Risk or general questions about Nova Scotia location-sensitive species please contact the Biodiversity Program at biodiversity@novascotia.ca. For questions about protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site please contact a Regional Biologist:

DIGB, ANNA, KING	Emma Vost	(902) 670-8187	Emma.Vost@novascotia.ca
SHEL, YARM	Sian Wilson	(902) 930-2978	Sian.Wilson@novascotia.ca
QUEE, LUNE	Peter Kydd	(902) 523-0969	Peter.Kydd@novascotia.ca
HALI, HANT	Shavonne Meyer	(902) 893-0816	Shavonne.Meyer@novascotia.ca
Central Region	Jolene Laverty	(902) 324-8953	Jolene.Laverty@novascotia.ca
COLC, CUMB	Kimberly George	(902) 890-1046	Kimberly.George@novascotia.ca
ANTI, GUYS	Harrison Moore	(902) 497-4119	Harrison.Moore@novascotia.ca
INVE, VICT	Maureen Cameron-MacMillan	(902) 295-2554	Maureen.Cameron-MacMillan@novascotia.ca
CAPE, RICH, PICT	Elizabeth Walsh	(902) 563-3370	Elizabeth.Walsh@novascotia.ca

Prince Edward Island. For information about rare taxa, protected areas, game animals, fish habitat etc., please contact Garry Gregory, PEI Department of Environment, Energy and Climate Action: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

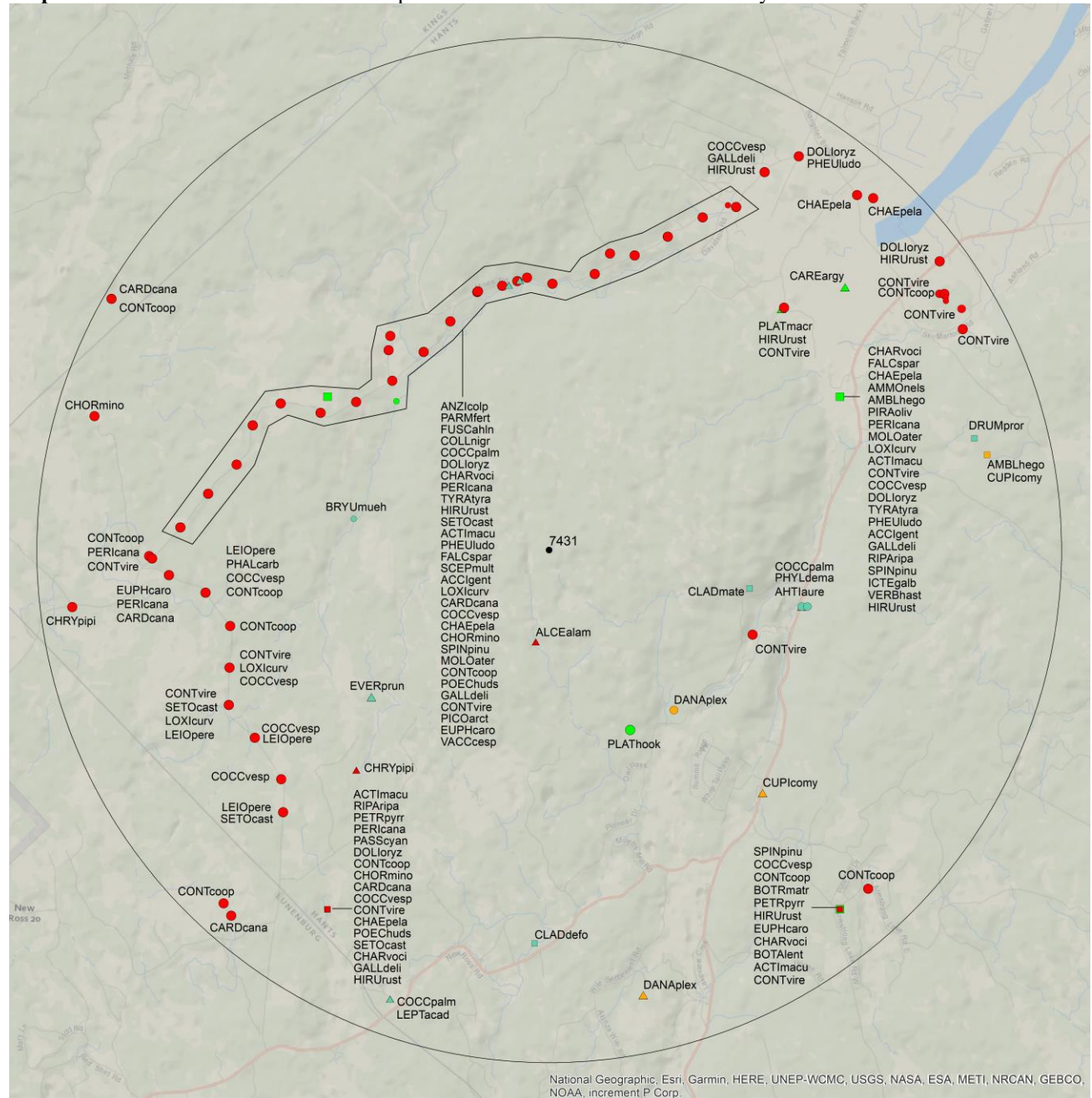
2.1 FLORA

The study area contains 7 records of 7 vascular and 17 records of 13 nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 405 records of 34 vertebrate and 6 records of 3 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.



RESOLUTION

- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- △ 3.0 within kilometers
- △ 2.7 within 500s of meters
- 2.0 within 100s of meters
- ◇ 1.7 within 10s of meters

HIGHER TAXON

- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

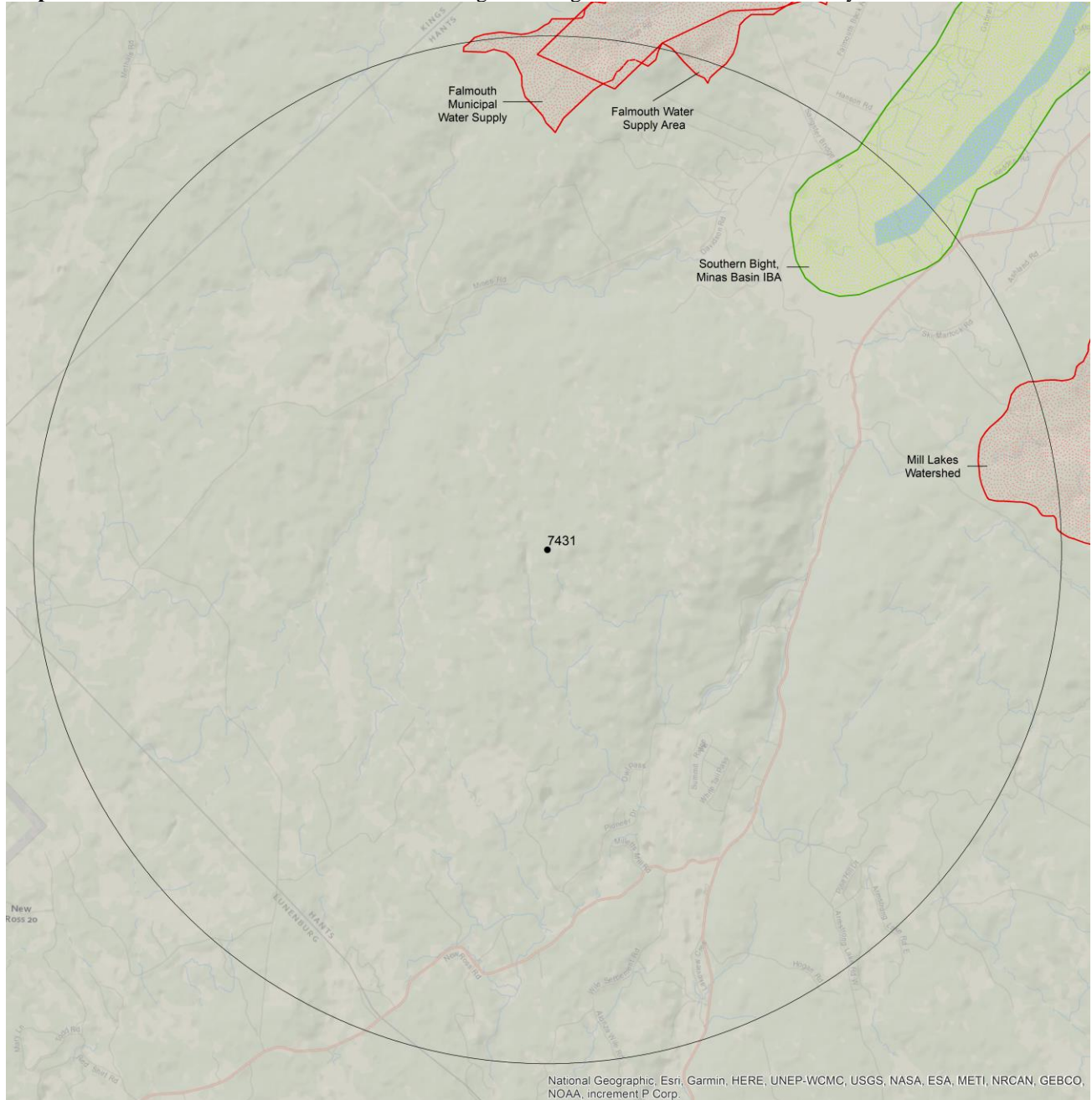
3.1 MANAGED AREAS

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

3.2 SIGNIFICANT AREAS

The GIS scan identified one biologically significant site 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.



 Managed Area  Significant 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 (\pm 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	# recs	Distance (km)
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened	Threatened	Threatened	S3	1	5.3 \pm 0.0
N	<i>Imbricium muehlenbeckii</i>	Muehlenbeck's Bryum Moss				S1?	2	3.9 \pm 0.0
N	<i>Phylliscum demangeonii</i>	Black Rock-wafer Lichen				S2?	1	5.2 \pm 0.0
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S2S3	1	5.1 \pm 2.0
N	<i>Cladonia mateocyatha</i>	Mixed-up Pixie-cup				S2S3	1	4.0 \pm 6.0
N	<i>Parmelia fertilis</i>	Fertile Shield Lichen				S2S3	1	5.3 \pm 0.0
N	<i>Cladonia deformis</i>	Lesser Sulphur-cup Lichen				S2S3	1	7.7 \pm 4.0
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	2	5.3 \pm 0.0
N	<i>Fuscopannaria ahlneri</i>	Corrugated Shingles Lichen				S3	1	5.3 \pm 0.0
N	<i>Drummondia prorepens</i>	a Moss				S3?	1	8.6 \pm 5.0
N	<i>Leptogium acadense</i>	Acadian Jellyskin Lichen				S3S4	1	9.3 \pm 0.0
N	<i>Coccocarpia palmicola</i>	Salted Shell Lichen				S3S4	3	5.1 \pm 0.0
N	<i>Evernia prunastri</i>	Valley Oakmoss Lichen				S3S4	1	4.5 \pm 2.0
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S2	1	6.5 \pm 1.0
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3	1	3.9 \pm 0.0
P	<i>Vaccinium cespitosum</i>	Dwarf Bilberry				S3S4	1	4.2 \pm 0.0
P	<i>Verbena hastata</i>	Blue Vervain				S3S4	1	6.4 \pm 7.0
P	<i>Carex argyrantha</i>	Silvery-flowered Sedge				S3S4	1	7.7 \pm 1.0
P	<i>Sceptridium multifidum</i>	Leathery Moonwort				S3S4	1	5.3 \pm 10.0
P	<i>Botrychium matricariifolium</i>	Daisy-leaved Moonwort				S3S4	1	9.0 \pm 10.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Endangered	S2B	3	6.4 \pm 7.0
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	126	5.0 \pm 0.0
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	6	5.3 \pm 7.0
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Endangered	S3B	16	6.4 \pm 7.0
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Endangered	S3B	13	5.2 \pm 0.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	9	5.2 \pm 0.0
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	37	4.5 \pm 0.0
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Vulnerable	S3B	9	6.4 \pm 7.0
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	43	4.6 \pm 0.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	45	4.3 \pm 0.0
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern	Special Concern		S4	2	5.7 \pm 0.0
A	<i>Accipiter gentilis</i>	Northern Goshawk	Not At Risk			S3S4	3	5.3 \pm 7.0
A	<i>Ammodramus nelsoni</i>	Nelson's Sparrow	Not At Risk			S3S4B	1	6.4 \pm 7.0
A	<i>Alces alces americana</i>	Moose			Endangered	S1	1	1.8 \pm 0.0
A	<i>Passerina cyanea</i>	Indigo Bunting				S1?B,SUM	1	8.2 \pm 7.0
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2B	4	6.4 \pm 7.0
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B,SUM	1	6.4 \pm 7.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B	2	8.2 \pm 7.0
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2S3B,S2S3N	1	6.8 \pm 0.0
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B,SUM	1	6.4 \pm 7.0
A	<i>Perisoreus canadensis</i>	Canada Jay				S3	7	5.3 \pm 7.0

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3	7	5.3 ± 7.0
A	<i>Spinus pinus</i>	Pine Siskin				S3	7	5.2 ± 0.0
A	<i>Charadrius vociferus</i>	Killdeer				S3B	6	5.3 ± 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3B	4	5.3 ± 7.0
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	5	5.3 ± 7.0
A	<i>Falco sparverius</i>	American Kestrel				S3B,S4S5M	5	5.3 ± 7.0
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3B,S5M	9	5.3 ± 7.0
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3S4	3	5.3 ± 7.0
A	<i>Loxia curvirostra</i>	Red Crossbill				S3S4	4	4.6 ± 0.0
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B,S4S5M	1	9.0 ± 7.0
A	<i>Setophaga castanea</i>	Bay-breasted Warbler				S3S4B,S4S5M	7	5.2 ± 0.0
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B,S5M	11	5.3 ± 7.0
A	<i>Leiothlypis peregrina</i>	Tennessee Warbler				S3S4B,S5M	5	6.8 ± 0.0
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	2	4.0 ± 0.0
I	<i>Amblyscirtes hegon</i>	Pepper and Salt Skipper				S3S4	2	6.4 ± 7.0
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3S4	2	6.3 ± 3.0

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”.

Nova Scotia

Scientific Name	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
<i>Fraxinus nigra</i>	Black Ash		Threatened	No
<i>Emydoidea blandingii</i>	Blanding's Turtle - Nova Scotia pop.	Endangered	Vulnerable	No
<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	No
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat hibernaculum or bat species occurrence		[Endangered]¹	[Endangered]¹	YES

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 NS Endangered Species Act.

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
126	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
123	Pardieck, K.L., Ziolkowski Jr., D.J., Lutmerding, M., Aponte, V.I., and Hudson, M-A.R. 2020. North American Breeding Bird Survey Dataset 1966 - 2019: U.S. Geological Survey data release, https://doi.org/10.5066/P9J6QUF6
92	SwiftWatch. 2022. Total Chimney Swift counts from roost watches for the duration of the SwiftWatch program (2011-2021). Birds Canada.
38	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
16	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
8	Clayden, S. Digitization of Wolfgang Maass Nova Scotia forest lichen collections, 1964-2004. New Brunswick Museum. 2018.
5	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
4	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
3	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
3	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
2	Belliveau, A.G. 2020. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2019, 2020. E.C. Smith Herbarium.
2	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
2	Nova Scotia Dept Natural Resources, Forestry Branch. 2007. Restricted & Limited Use Land Database (RLUL). , http://www.gov.ns.ca/natr/FORESTRY/r lul/downloadr lul.htm .

# recs	CITATION
2	Staicer, C. 2021. Additional compiled Nova Scotia Species at Risk bird records, 2005-2020. Dalhousie University.
1	Amirault, D.L. 1995. Atlantic Canada Conservation Area Database (ARCAD). Canadian Wildlife Service, Sackville.
1	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
1	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
1	Bird Studies Canada. 2020. Important Bird and Biodiversity Areas in Canada database (Retrieved: 28 July, 2020 from https://www.ibacanada.com/explore.jsp?lang=EN). IBA Program.
1	Brazner, J. 2016. Nova Scotia Forested Wetland Bird Surveys. Nova Scotia Department of Lands and Forestry.
1	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
1	Hubley, Nicole. 2022. Monarch (<i>Danaus plexippus</i>) records submitted to MTRI from the 2021 field season. Mersey Tobetic Research Institute.
1	Mersey Tobetic Research Institute. 2021. 2020 Monarch records from the MTRI monitoring program. Mersey Tobetic Research Institute, 72 records.
1	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
1	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database [as of 2018-03]. Mersey Tobetic Research Institute.
1	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/ . 582 recs.
1	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
1	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 65209 records of 152 vertebrate and 1997 records of 72 invertebrate fauna; 15825 records of 314 vascular and 3241 records of 224 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 (including “location-sensitive” species). 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 (\pm the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Coregonus huntsmani</i>	Atlantic Whitefish	Endangered	Endangered	Endangered	S1	147	41.8 \pm 1.0	NS
A	<i>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	694	9.2 \pm 0.0	NS
A	<i>Myotis septentrionalis</i>	Northern Myotis	Endangered	Endangered	Endangered	S1	84	17.8 \pm 0.0	NS
A	<i>Perimyotis subflavus</i>	Tricolored Bat	Endangered	Endangered	Endangered	S1	200	17.8 \pm 0.0	NS
A	<i>Emydoidea blandingii</i>	Blanding's Turtle	Endangered	Endangered	Endangered	S1	10054	52.3 \pm 0.0	NS
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered		S1	46	14.4 \pm 0.0	NS
A	<i>Salmo salar pop. 6</i>	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered			S1	24	23.6 \pm 0.0	NS
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	1060	46.8 \pm 0.0	NS
A	<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	S1B	62	40.6 \pm 0.0	NS
A	<i>Dermochelys coriacea pop. 2</i>	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered		S1S2N	3	34.4 \pm 5.0	NS
A	<i>Morone saxatilis pop. 2</i>	Striped Bass - Bay of Fundy population	Endangered			S2S3B,S2S3N	5	20.1 \pm 1.0	NS
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	16	15.9 \pm 7.0	NS
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Endangered	S1B	5	69.1 \pm 7.0	NS
A	<i>Asio flammeus</i>	Short-eared Owl	Threatened	Special Concern		S1B	19	23.4 \pm 7.0	NS
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2	1727	15.2 \pm 5.0	NS
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Endangered	S2B	1993	6.4 \pm 7.0	NS
A	<i>Thamnophis saurita</i>	Eastern Ribbonsnake	Threatened	Threatened	Threatened	S2S3	2034	57.2 \pm 0.0	NS
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	1520	5.0 \pm 0.0	NS
A	<i>Limosa haemastica</i>	Hudsonian Godwit	Threatened			S2S3M	162	16.3 \pm 0.0	NS
A	<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Threatened			S2S3N	7	20.1 \pm 0.0	NS
A	<i>Hydrobates leucorhous</i>	Leach's Storm-Petrel	Threatened			S3B	23	42.1 \pm 0.0	NS
A	<i>Tringa flavipes</i>	Lesser Yellowlegs	Threatened			S3M	1228	16.3 \pm 0.0	NS
A	<i>Anguilla rostrata</i>	American Eel	Threatened			S3N	253	19.8 \pm 0.0	NS
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened		SHB	6	23.7 \pm 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened		SUB	6	97.4 ± 0.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened		SUB	45	13.7 ± 7.0	NS
A	<i>Salmo salar pop. 12</i>	Atlantic Salmon - Gaspé - Southern Gulf of St. Lawrence population	Special Concern			S1	5	87.5 ± 0.0	NS
A	<i>Passerculus sandwichensis princeps</i>	Ipswich Sparrow	Special Concern	Special Concern		S1B	4	71.5 ± 0.0	NS
A	<i>Bucephala islandica</i>	Barrow's Goldeneye	Special Concern	Special Concern		S1N,SUM	3	22.9 ± 2.0	NS
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	306	5.3 ± 7.0	NS
A	<i>Balaenoptera physalus</i>	Fin Whale	Special Concern	Special Concern		S2S3	2	57.7 ± 0.0	NS
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern	Special Concern		S2S3M	11	70.6 ± 0.0	NS
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S2S3N,SUM	38	51.1 ± 0.0	NS
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	525	10.3 ± 0.0	NS
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Endangered	S3B	1509	6.4 ± 7.0	NS
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Endangered	S3B	1078	5.2 ± 0.0	NS
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	547	5.2 ± 0.0	NS
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	1053	4.5 ± 0.0	NS
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Special Concern	Threatened	Vulnerable	S3B	1685	6.4 ± 7.0	NS
A	<i>Coccythraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	912	4.6 ± 0.0	NS
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern		S3N,SUM	11	34.8 ± 0.0	NS
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	1439	4.3 ± 0.0	NS
A	<i>Phocoena phocoena</i>	Harbour Porpoise	Special Concern			S4	7	24.9 ± 1.0	NS
A	<i>Chrysemys picta</i>	Painted Turtle	Special Concern	Special Concern		S4	2	66.0 ± 0.0	NS
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern	Special Concern		S4	746	5.7 ± 0.0	NS
A	<i>Anarhichas lupus</i>	Atlantic Wolffish	Special Concern	Special Concern	Special Concern	SNR	1	66.6 ± 0.0	NS
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1?B,SUN,SUM	4	47.2 ± 0.0	NS
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1B	22	49.6 ± 0.0	NS
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S1B	6	95.9 ± 0.0	NB
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SUM	274	14.2 ± 7.0	NS
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk			S2	2	38.3 ± 0.0	NS
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S2?B,SUM	4	64.7 ± 7.0	NS
A	<i>Lynx canadensis</i>	Canada Lynx	Not At Risk		Endangered	S2S3	7	70.1 ± 1.0	NS
A	<i>Globicephala melas</i>	Long-finned Pilot Whale	Not At Risk			S2S3	1	73.3 ± 0.0	NS
A	<i>Hemidactylium scutatum</i>	Four-toed Salamander	Not At Risk			S3	47	18.0 ± 0.0	NS
A	<i>Megaptera novaeangliae</i>	Humpback Whale	Not At Risk			S3	3	35.2 ± 0.0	NS
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B	233	30.8 ± 7.0	NS
A	<i>Sialia sialis</i>	Eastern Bluebird	Not At Risk			S3B	119	19.3 ± 7.0	NS
A	<i>Buteo lagopus</i>	Rough-legged Hawk	Not At Risk			S3N	6	72.9 ± 0.0	NS
A	<i>Accipiter gentilis</i>	Northern Goshawk	Not At Risk			S3S4	151	5.3 ± 7.0	NS
A	<i>Glaucomys volans</i>	Southern Flying Squirrel	Not At Risk			S3S4	10	11.7 ± 0.0	NS
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4	5	36.9 ± 0.0	NS
A	<i>Ammospiza nelsoni</i>	Nelson's Sparrow	Not At Risk			S3S4B	204	6.4 ± 7.0	NS
A	<i>Calidris canutus rufa</i>	Red Knot rufa subspecies - Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	973	16.3 ± 0.0	NS
A	<i>Morone saxatilis</i>	Striped Bass	E,SC			S2S3B,S2S3N	9	16.3 ± 0.0	NS
A	<i>Gadus morhua</i>	Atlantic Cod	E,SC,DD			SNR	2	52.8 ± 0.0	NS
A	<i>Odobenus rosmarus pop. 5</i>	Atlantic Walrus - Nova Scotia - Newfoundland - Gulf of St Lawrence population	X			SX	1	99.7 ± 5.0	NS
A	<i>Alces alces americana</i>	Moose			Endangered	S1	40	1.8 ± 0.0	NS
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S1?	2	96.5 ± 11.0	NB
A	<i>Uria aalge</i>	Common Murre				S1?B	1	76.7 ± 0.0	NS
A	<i>Passerina cyanea</i>	Indigo Bunting				S1?B,SUM	43	8.2 ± 7.0	NS
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B	9	68.6 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Gallinula galeata</i>	Common Gallinule				S1B	15	14.6 ± 7.0	NS
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S1B	43	13.7 ± 7.0	NS
A	<i>Cistothorus palustris</i>	Marsh Wren				S1B	14	67.1 ± 7.0	NS
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S1B	65	14.2 ± 7.0	NS
A	<i>Toxostoma rufum</i>	Brown Thrasher				S1B	25	27.1 ± 7.0	NS
A	<i>Charadrius semipalmatus</i>	Semipalmated Plover				S1B,S4M	2583	15.8 ± 0.0	NS
A	<i>Calidris minutilla</i>	Least Sandpiper				S1B,S4M	1959	15.8 ± 0.0	NS
A	<i>Anas acuta</i>	Northern Pintail				S1B,SUM	50	17.9 ± 7.0	NS
A	<i>Vireo gilvus</i>	Warbling Vireo				S1B,SUM	22	21.9 ± 0.0	NS
A	<i>Vespertilionidae sp.</i>	bat species				S1S2	420	6.7 ± 0.0	NS
A	<i>Poocetes gramineus</i>	Vesper Sparrow				S1S2B,SUM	65	23.7 ± 7.0	NS
A	<i>Vireo philadelphicus</i>	Philadelphia Vireo				S2?B,SUM	79	49.4 ± 0.0	NS
A	<i>Alca torda</i>	Razorbill				S2B	17	59.1 ± 7.0	NS
A	<i>Fratercula arctica</i>	Atlantic Puffin				S2B	22	51.0 ± 0.0	NS
A	<i>Empidonax traillii</i>	Willow Flycatcher				S2B	69	19.9 ± 0.0	NS
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2B	241	6.4 ± 7.0	NS
A	<i>Spatula clypeata</i>	Northern Shoveler				S2B,SUM	116	16.3 ± 0.0	NS
A	<i>Mareca strepera</i>	Gadwall				S2B,SUM	142	14.6 ± 7.0	NS
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B,SUM	57	6.4 ± 7.0	NS
A	<i>Calidris alba</i>	Sanderling				S2N,S3M	2284	15.8 ± 0.0	NS
A	<i>Martes americana</i>	American Marten			Endangered	S2S3	16	74.3 ± 0.0	NS
A	<i>Asio otus</i>	Long-eared Owl				S2S3	27	23.4 ± 7.0	NS
A	<i>Rallus limicola</i>	Virginia Rail				S2S3B	62	25.3 ± 7.0	NS
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S2S3B	9	59.1 ± 7.0	NS
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B	351	8.2 ± 7.0	NS
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2S3B,S2S3N	39	6.8 ± 0.0	NS
A	<i>Cathartes aura</i>	Turkey Vulture				S2S3B,S4S5M	132	20.5 ± 0.0	NS
A	<i>Setophaga pinus</i>	Pine Warbler				S2S3B,S4S5M	38	22.1 ± 0.0	NS
A	<i>Bucephala clangula</i>	Common Goldeneye				S2S3B,S5N,S5M	128	20.7 ± 11.0	NS
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B,SUM	103	6.4 ± 7.0	NS
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	326	15.8 ± 0.0	NS
A	<i>Numenius phaeopus hudsonicus</i>	Whimbrel				S2S3M	363	24.6 ± 0.0	NS
A	<i>Phalaropus fulicarius</i>	Red Phalarope				S2S3M	6	72.6 ± 0.0	NS
A	<i>Perisoreus canadensis</i>	Canada Jay				S3	564	5.3 ± 7.0	NS
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3	504	5.3 ± 7.0	NS
A	<i>Spinus pinus</i>	Pine Siskin				S3	589	5.2 ± 0.0	NS
A	<i>Salvelinus fontinalis</i>	Brook Trout				S3	67	11.8 ± 0.0	NS
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	1	75.2 ± 0.0	NS
A	<i>Sorex maritimensis</i>	Maritime Shrew				S3	1	89.5 ± 0.0	NS
A	<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3	9	38.3 ± 0.0	NS
A	<i>Pekania pennanti</i>	Fisher				S3	12	13.1 ± 0.0	NS
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S3?N,SUM	3	58.5 ± 0.0	NS
A	<i>Spatula discors</i>	Blue-winged Teal				S3B	230	14.2 ± 7.0	NS
A	<i>Charadrius vociferus</i>	Killdeer				S3B	775	5.3 ± 7.0	NS
A	<i>Tringa semipalmata</i>	Willet				S3B	1676	15.6 ± 0.0	NS
A	<i>Sterna paradisaea</i>	Arctic Tern				S3B	53	37.3 ± 7.0	NS
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	72	19.7 ± 0.0	NS
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3B	335	5.3 ± 7.0	NS
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	566	5.3 ± 7.0	NS
A	<i>Alosa pseudoharengus</i>	Alewife				S3B	18	20.0 ± 0.0	NS
A	<i>Somateria mollissima</i>	Common Eider				S3B,S3M,S3N	521	24.1 ± 0.0	NS
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S3B,S4M	2507	15.6 ± 0.0	NS
A	<i>Falco sparverius</i>	American Kestrel				S3B,S4S5M	345	5.3 ± 7.0	NS
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3B,S5M	754	5.3 ± 7.0	NS
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3B,S5M	109	12.8 ± 0.0	NS
A	<i>Cardellina pusilla</i>	Wilson's Warbler				S3B,S5M	111	17.9 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S3B,S5N,S5M	138	12.9 ± 0.0	NS
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,SUM	159	13.7 ± 7.0	NS
A	<i>Branta bernicla</i>	Brant				S3M	13	23.3 ± 0.0	NS
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3M	2753	15.8 ± 0.0	NS
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	1022	16.3 ± 0.0	NS
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	2526	15.8 ± 0.0	NS
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3M	418	16.3 ± 0.0	NS
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	1767	15.8 ± 0.0	NS
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S3N	7	69.7 ± 0.0	NS
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3S4	126	5.3 ± 7.0	NS
A	<i>Loxia curvirostra</i>	Red Crossbill				S3S4	278	4.6 ± 0.0	NS
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B,S4S5M	395	9.0 ± 7.0	NS
A	<i>Setophaga castanea</i>	Bay-breasted Warbler				S3S4B,S4S5M	443	5.2 ± 0.0	NS
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S5M	984	5.3 ± 7.0	NS
A	<i>Leiothlypis peregrina</i>	Tennessee Warbler				S3S4B,S5M	413	6.8 ± 0.0	NS
A	<i>Passerella iliaca</i>	Fox Sparrow				S3S4B,S5M	86	23.3 ± 0.0	NS
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3S4B,S5M,S5N	150	20.4 ± 7.0	NS
A	<i>Calidris maritima</i>	Purple Sandpiper				S3S4N	235	19.3 ± 10.0	NS
A	<i>Lanius borealis</i>	Northern Shrike				S3S4N	35	60.4 ± 0.0	NS
A	<i>Morus bassanus</i>	Northern Gannet				SHB	28	46.9 ± 0.0	NS
A	<i>Aythya americana</i>	Redhead				SHB	2	62.0 ± 0.0	NS
A	<i>Leucophaeus atricilla</i>	Laughing Gull				SHB	10	34.9 ± 0.0	NS
A	<i>Progne subis</i>	Purple Martin				SHB	8	54.9 ± 7.0	NS
A	<i>Eremophila alpestris</i>	Horned Lark				SHB,S4S5N,S5M	18	25.4 ± 0.0	NS
I	<i>Bombus bohemicus</i>	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	32	25.7 ± 5.0	NS
I	<i>Epeoloides pilosulus</i>	Macropis Cuckoo Bee	Endangered	Endangered	Endangered	S1	2	62.8 ± 5.0	NS
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	723	4.0 ± 0.0	NS
I	<i>Danaus plexippus plexippus</i>	Monarch	Endangered	Special Concern		S2?B,S3M	2	21.7 ± 0.0	NS
I	<i>Barnea truncata</i>	Atlantic Mud-piddock	Threatened	Threatened		S1	1	68.2 ± 1.0	NS
I	<i>Bombus suckleyi</i>	Suckley's Cuckoo Bumble Bee	Threatened			SH	2	70.1 ± 5.0	NS
I	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern	Special Concern	Threatened	S3	6	55.6 ± 0.0	NS
I	<i>Bombus terricola</i>	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	154	11.0 ± 5.0	NS
I	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle	Special Concern		Endangered	SH	4	14.2 ± 2.0	NS
I	<i>Gomphurus ventricosus</i>	Skillet Clubtail	Special Concern	Endangered		SH	2	32.2 ± 1.0	NS
I	<i>Cicindela formosa</i>	Big Sand Tiger Beetle				S1	1	24.7 ± 1.0	NS
I	<i>Erora laeta</i>	Early Hairstreak				S1	1	57.6 ± 1.0	NS
I	<i>Ophiogomphus anomalus</i>	Extra-Striped Snaketail				S1	8	84.1 ± 0.0	NS
I	<i>Pachydiplax longipennis</i>	Blue Dasher				S1	4	58.9 ± 0.0	NS
I	<i>Atlanticoncha ochracea</i>	Tidewater Mucket				S1	11	69.0 ± 1.0	NS
I	<i>Polygonia comma</i>	Eastern Comma				S1?	20	18.5 ± 0.0	NS
I	<i>Polygonia satyrus</i>	Satyr Comma				S1?	7	14.9 ± 2.0	NS
I	<i>Boloria chariclea</i>	Arctic Fritillary				S1S2	2	54.7 ± 2.0	NS
I	<i>Somatochlora brevicincta</i>	Quebec Emerald				S1S2	2	78.2 ± 0.0	NS
I	<i>Satyrrium acadica</i>	Acadian Hairstreak				S2	5	76.6 ± 2.0	NS
I	<i>Coenagrion resolutum</i>	Taiga Bluet				S2	9	54.3 ± 1.0	NS
I	<i>Margaritifera margaritifera</i>	Eastern Pearlshell				S2	97	54.3 ± 0.0	NS
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S2?B	9	61.7 ± 1.0	NS
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S2S3	22	34.8 ± 2.0	NS
I	<i>Aglais milberti</i>	Milbert's Tortoiseshell				S2S3	21	32.2 ± 1.0	NS
I	<i>Aglais milberti milberti</i>	Milbert's Tortoise Shell				S2S3	1	97.9 ± 0.0	NB
I	<i>Somatochlora kennedyi</i>	Kennedy's Emerald				S2S3	8	32.2 ± 1.0	NS
I	<i>Somatochlora williamsoni</i>	Williamson's Emerald				S2S3	2	94.2 ± 0.0	NB
I	<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S2S3	4	84.0 ± 0.0	NS
I	<i>Enallagma geminatum</i>	Skimming Bluet				S2S3	4	53.7 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
I	<i>Stylurus scudderii</i>	Zebra Clubtail				S2S3	28	31.6 ± 0.0	NS
I	<i>Alasmidonta undulata</i>	Triangle Floater				S2S3	31	39.9 ± 1.0	NS
I	<i>Strophiona nitens</i>	Chestnut Bark Long-horned Beetle				S3	2	49.4 ± 0.0	NS
I	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	3	50.9 ± 0.0	NS
I	<i>Naemia seriata</i>	Seaside Lady Beetle				S3	26	23.1 ± 0.0	NS
I	<i>Chilocorus stigma</i>	Twice-stabbed Lady Beetle				S3	10	36.6 ± 0.0	NS
I	<i>Myzia pullata</i>	Streaked Lady Beetle				S3	1	94.5 ± 0.0	NB
I	<i>Trachysida aspera</i>	Rough Flower Longhorn Beetle				S3	2	60.5 ± 0.0	NS
I	<i>Dicerca tenebrosa</i>	Dark Jewel Beetle				S3	2	75.0 ± 0.0	NS
I	<i>Astylopsis sexguttata</i>	Six-speckled Long-horned Beetle				S3	1	52.6 ± 0.0	NS
I	<i>Satyrrium calanus</i>	Banded Hairstreak				S3	67	22.9 ± 0.0	NS
I	<i>Callophrys lanoraieensis</i>	Bog Elfin				S3	19	12.6 ± 0.0	NS
I	<i>Strymon melinus</i>	Gray Hairstreak				S3	16	12.6 ± 0.0	NS
I	<i>Phanogomphus descriptus</i>	Harpoon Clubtail				S3	3	95.4 ± 0.0	NS
I	<i>Ophiogomphus aspersus</i>	Brook Snaketail				S3	6	21.5 ± 0.0	NS
I	<i>Ophiogomphus mainensis</i>	Maine Snaketail				S3	11	57.9 ± 0.0	NS
I	<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail				S3	32	21.5 ± 0.0	NS
I	<i>Epithea princeps</i>	Prince Baskettail				S3	23	46.2 ± 1.0	NS
I	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3	8	36.7 ± 1.0	NS
I	<i>Enallagma vernale</i>	Vernal Bluet				S3	5	28.9 ± 1.0	NS
I	<i>Strophitus undulatus</i>	Creeper				S3	6	96.0 ± 0.0	NS
I	<i>Polygonia interrogationis</i>	Question Mark				S3B	206	15.7 ± 0.0	NS
I	<i>Cecropterus pylades</i>	Northern Cloudywing				S3S4	5	78.7 ± 2.0	NS
I	<i>Amblyscirtes hegon</i>	Pepper and Salt Skipper				S3S4	25	6.4 ± 7.0	NS
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3S4	27	6.3 ± 3.0	NS
I	<i>Argynnis aphrodite</i>	Aphrodite Fritillary				S3S4	49	17.5 ± 1.0	NS
I	<i>Polygonia faunus</i>	Green Comma				S3S4	19	35.2 ± 2.0	NS
I	<i>Oeneis jutta</i>	Jutta Arctic				S3S4	23	32.3 ± 2.0	NS
I	<i>Aeshna clepsydra</i>	Mottled Darner				S3S4	29	47.2 ± 1.0	NS
I	<i>Aeshna constricta</i>	Lance-Tipped Darner				S3S4	28	20.3 ± 1.0	NS
I	<i>Boyeria grafiana</i>	Ocellated Darner				S3S4	16	27.0 ± 1.0	NS
I	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3S4	34	20.3 ± 0.0	NS
I	<i>Somatochlora franklini</i>	Delicate Emerald				S3S4	5	32.2 ± 1.0	NS
I	<i>Erythrodiplax berenice</i>	Seaside Dragonlet				S3S4	3	48.5 ± 0.0	NS
I	<i>Nannothemis bella</i>	Elfin Skimmer				S3S4	32	13.2 ± 0.0	NS
I	<i>Sympetrum danae</i>	Black Meadowhawk				S3S4	1	90.7 ± 0.0	NS
I	<i>Enallagma vesperum</i>	Vesper Bluet				S3S4	17	46.2 ± 1.0	NS
I	<i>Amphiagrion saucium</i>	Eastern Red Damsel				S3S4	3	93.1 ± 1.0	NS
I	<i>Sphaerophoria pyrrhina</i>	Violaceous Globetail				SH	1	94.1 ± 5.0	NS
I	<i>Icaricia saepiolus</i>	Greenish Blue				SH	1	57.6 ± 2.0	NS
I	<i>Chlosyne nycteis</i>	Silvery Checkerspot				SH	4	96.3 ± 2.0	NS
I	<i>Polygonia gracilis</i>	Hoary Comma				SH	1	95.1 ± 2.0	NS
N	<i>Erioderma mollissimum</i>	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1	10	42.3 ± 0.0	NS
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	62	31.0 ± 0.0	NS
N	<i>Peltigera hydrothyria</i>	Eastern Waterfan	Threatened	Threatened	Threatened	S1	523	63.7 ± 3.0	NS
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	182	10.7 ± 0.0	NS
N	<i>Pannaria lurida</i> ssp. <i>russellii</i>	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	1	93.5 ± 0.0	NS
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened	Threatened	Threatened	S3	104	5.3 ± 0.0	NS
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S3	32	25.7 ± 6.0	NS
N	<i>Pectenia plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	125	21.2 ± 0.0	NS
N	<i>Sclerophora peronella</i> (Atlantic pop.)	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S3S4	16	21.9 ± 0.0	NS
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	27	40.3 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Fissidens exilis</i>	Pygmy Pocket Moss	Not At Risk			S3	15	17.5 ± 0.0	NS
N	<i>Aloina brevirostris</i>	Short-Beaked Rigid Screw Moss				S1	1	20.5 ± 2.0	NS
N	<i>Orthotrichum pallens</i>	Pale Bristle Moss				S1	1	93.0 ± 0.0	NS
N	<i>Sematophyllum demissum</i>	a Moss				S1	2	51.8 ± 1.0	NS
N	<i>Tetradontium brownianum</i>	Little Georgia				S1	6	93.1 ± 0.0	NB
N	<i>Cyrto-hypnum minutulum</i>	Tiny Cedar Moss				S1	1	93.1 ± 0.0	NS
N	<i>Blennothallia crispa</i>	Crinkled Jelly Lichen				S1	1	39.2 ± 0.0	NS
N	<i>Umbilicaria vellea</i>	Grizzled Rocktripe Lichen				S1	2	39.1 ± 5.0	NS
N	<i>Usnea perplexans</i>	Powdered Beard Lichen				S1	1	30.1 ± 0.0	NS
N	<i>Scytinium dactylinum</i>	Brown-buttoned Jellyskin Lichen				S1	2	40.7 ± 0.0	NS
N	<i>Flavoparmelia baltimorensis</i>	Rock Greenshield Lichen				S1	1	97.3 ± 0.0	NS
N	<i>Lathagrium cristatum</i>	Fingered Jelly Lichen				S1	6	20.6 ± 0.0	NS
N	<i>Ephebe hispidula</i>	Dryside Rockshag Lichen				S1	1	72.8 ± 0.0	NS
N	<i>Ephebe perspinulosa</i>	Thread Lichen				S1	2	40.5 ± 1.0	NS
N	<i>Fuscopannaria praetermissa</i>	Moss Shingles Lichen				S1	1	16.0 ± 0.0	NS
N	<i>Scytinium schraderi</i>	Wrinkled Jellyskin Lichen				S1	1	70.5 ± 0.0	NS
N	<i>Lichina confinis</i>	Marine Seaweed Lichen				S1	2	73.7 ± 1.0	NS
N	<i>Parmotrema perforatum</i>	Perforated Ruffle Lichen				S1	42	81.6 ± 0.0	NS
N	<i>Polychidium muscicola</i>	Eyed Mossthorns				S1	5	56.5 ± 0.0	NS
N	<i>Pseudevernia consocians</i>	Woollybear Lichen				S1	1	63.4 ± 0.0	NS
N	<i>Spilonema revertens</i>	Common Antler Lichen				S1	4	79.4 ± 0.0	NS
N	<i>Sticta limbata</i>	Rock Hairball Lichen				S1	12	36.5 ± 0.0	NS
N	<i>Lathagrium fuscovirens</i>	Powdered Moon Lichen				S1	1	76.1 ± 0.0	NS
N	<i>Dermatocarpon miniatum</i>	Crumpled Rock Tarpaper Lichen				S1	1	76.1 ± 0.0	NS
N	<i>Dermatocarpon miniatum</i>	Common Stippleback Lichen				S1	1	93.3 ± 1.0	NB
N	<i>Peltigera lepidophora</i>	Scaly Pelt Lichen				S1	5	17.1 ± 0.0	NS
N	<i>Bryoria nitidula</i>	Tundra Horsehair Lichen				S1	2	73.5 ± 0.0	NS
N	<i>Hypogymnia hultenii</i>	Powdered Honeycomb Lichen				S1	7	49.1 ± 0.0	NS
N	<i>Calypogeia neogaea</i>	Common Pouchwort				S1?	1	45.9 ± 0.0	NS
N	<i>Aloina rigida</i>	Aloe-Like Rigid Screw Moss				S1?	5	19.4 ± 0.0	NS
N	<i>Imbricium muehlenbeckii</i>	Muehlenbeck's Bryum Moss				S1?	2	3.9 ± 0.0	NS
N	<i>Conardia compacta</i>	Coast Creeping Moss				S1?	2	52.5 ± 2.0	NS
N	<i>Tortula obtusifolia</i>	a Moss				S1?	2	94.2 ± 1.0	NS
N	<i>Didymodon tophaceus</i>	Olive Beard Moss				S1?	1	39.1 ± 0.0	NS
N	<i>Grimmia anodon</i>	Toothless Grimmiid Moss				S1?	2	95.3 ± 3.0	NS
N	<i>Homomallium adnatum</i>	Adnate Hairy-gray Moss				S1?	1	95.9 ± 5.0	NS
N	<i>Paludella squarrosa</i>	Tufted Fen Moss				S1?	3	27.5 ± 0.0	NS
N	<i>Physcomitrium immersum</i>	a Moss				S1?	1	30.4 ± 0.0	NS
N	<i>Schistostega pennata</i>	Luminous Moss				S1?	1	35.6 ± 0.0	NS
N	<i>Timmia norvegica</i>	a moss				S1?	2	92.8 ± 0.0	NB
N	<i>Trichodon cylindricus</i>	Cylindric Hairy-teeth Moss				S1?	1	49.1 ± 3.0	NS
N	<i>Plagiomnium ellipticum</i>	Marsh Leafy Moss				S1?	1	54.9 ± 0.0	NS
N	<i>Syntrichia ruralis</i>	a Moss				S1?	1	56.7 ± 0.0	NS
N	<i>Euopsis granatina</i>	Lesser Rockbud Lichen				S1?	1	75.6 ± 1.0	NS
N	<i>Melanelia culbersonii</i>	Appalachian Camouflage Lichen				S1?	1	40.7 ± 0.0	NS
N	<i>Peltigera malacea</i>	Veinless Pelt Lichen				S1?	1	99.4 ± 1.0	NB
N	<i>Porella pinnata</i>	Pinnate Scalewort				S1S2	1	79.6 ± 0.0	NS
N	<i>Arrhenopterum heterostichum</i>	One-sided Groove Moss				S1S2	3	20.5 ± 2.0	NS
N	<i>Brachythecium turgidum</i>	Thick Ragged Moss				S1S2	3	49.1 ± 3.0	NS
N	<i>Dicranoweisia crispula</i>	Mountain Thatch Moss				S1S2	1	96.7 ± 0.0	NB
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss				S1S2	10	90.1 ± 0.0	NS
N	<i>Didymodon ferrugineus</i>	Rusty Beard Moss				S1S2	1	93.0 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S1S2	1	33.9 ± 3.0	NS
N	<i>Mnium thomsonii</i>	Thomson's Leafy Moss				S1S2	1	17.6 ± 2.0	NS
N	<i>Tortula acaulon</i>	Cuspidate Earth Moss				S1S2	1	35.5 ± 2.0	NS
N	<i>Plagiothecium latebricola</i>	Alder Silk Moss				S1S2	3	36.9 ± 5.0	NS
N	<i>Platydictya confervoides</i>	a Moss				S1S2	1	17.1 ± 0.0	NS
N	<i>Seligeria donniana</i>	Donian Beardless Moss				S1S2	1	99.2 ± 3.0	NS
N	<i>Sematophyllum marylandicum</i>	a Moss				S1S2	3	53.0 ± 3.0	NS
N	<i>Timmia megapolitana</i>	Metropolitan Timmia Moss				S1S2	3	57.7 ± 1.0	NS
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S1S2	2	42.9 ± 3.0	NS
N	<i>Pseudotaxiphyllum distichaceum</i>	a Moss				S1S2	2	74.9 ± 0.0	NS
N	<i>Haplocladium microphyllum</i>	Tiny-leaved Haplocladium Moss				S1S2	2	77.1 ± 5.0	NS
N	<i>Enchylium bachmanianum</i>	Bachman's Jelly Lichen				S1S2	1	20.6 ± 0.0	NS
N	<i>Peltigera ponojensis</i>	Pale-bellied Pelt Lichen				S1S2	2	93.8 ± 1.0	NB
N	<i>Pilophorus cereolus</i>	Powdered Matchstick Lichen				S1S2	1	65.6 ± 3.0	NS
N	<i>Rhizoplaca subdiscrepans</i>	Scattered Rock-posy Lichen				S1S2	1	41.7 ± 1.0	NS
N	<i>Parmotrema reticulatum</i>	Netted Ruffle Lichen				S1S2	9	48.8 ± 0.0	NS
N	<i>Parmeliella parvula</i>	Poor-man's Shingles Lichen				S1S2	2	49.2 ± 0.0	NS
N	<i>Umbilicaria polyrhiza</i>	Ballpoint Rocktripe Lichen				S1S3	1	78.5 ± 0.0	NS
N	<i>Lecanora polytropa</i>	a lichen				S1S3	8	69.6 ± 1.0	NS
N	<i>Heterodermia galactophylla</i>	Branching Fringe Lichen				S1S3	1	42.3 ± 0.0	NS
N	<i>Xylopsora friesii</i>	a Lichen				S1S3	3	61.1 ± 0.0	NS
N	<i>Peltigera neckeri</i>	Black-saddle Pelt Lichen				S1S3	1	97.3 ± 0.0	NS
N	<i>Usnea chaetophora</i>	Articulated Beard Lichen				S1S3	1	70.1 ± 0.0	NS
N	<i>Stereocaulon grande</i>	Grand Foam Lichen				S1S3	1	89.3 ± 0.0	NS
N	<i>Stereocaulon intermedium</i>	Pacific Brain Foam Lichen				S1S3	8	49.9 ± 0.0	NS
N	<i>Anacamptodon splachnoides</i>	a Moss				S2	3	59.1 ± 30.0	NS
N	<i>Sphagnum platyphyllum</i>	Flat-leaved Peat Moss				S2	3	56.0 ± 3.0	NS
N	<i>Sphagnum subnitens</i>	Lustrous Peat Moss				S2	4	98.8 ± 0.0	NS
N	<i>Usnea flavocardia</i>	Blood-splattered Beard Lichen				S2	1	48.2 ± 4.0	NS
N	<i>Cystocoleus ebeneus</i>	Rockgossamer Lichen				S2	4	50.7 ± 0.0	NS
N	<i>Hypotrachyna catawbiensis</i>	Powder-tipped Antler Lichen				S2	20	40.8 ± 0.0	NS
N	<i>Scytinium imbricatum</i>	Scaly Jellyskin Lichen				S2	2	73.4 ± 0.0	NS
N	<i>Nephroma arcticum</i>	Arctic Kidney Lichen				S2	2	67.0 ± 0.0	NS
N	<i>Nephroma resupinatum</i>	a lichen				S2	12	19.4 ± 0.0	NS
N	<i>Placynthium flabelliforme</i>	Scaly Ink Lichen				S2	2	56.5 ± 0.0	NS
N	<i>Riccardia multifida</i>	Delicate Germanderwort				S2?	1	99.5 ± 0.0	NS
N	<i>Weissia muhlenbergiana</i>	a Moss				S2?	5	15.6 ± 5.0	NS
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss				S2?	7	73.3 ± 5.0	NS
N	<i>Ptychostomum pendulum</i>	Drooping Bryum				S2?	1	20.5 ± 2.0	NS
N	<i>Drepanocladus polygamus</i>	Polygamous Hook Moss				S2?	4	39.2 ± 0.0	NS
N	<i>Pseudocampyllum radicale</i>	Long-stalked Fine Wet Moss				S2?	3	33.9 ± 3.0	NS
N	<i>Climacium americanum</i>	American Tree Moss				S2?	9	90.1 ± 0.0	NS
N	<i>Dicranum condensatum</i>	Condensed Broom Moss				S2?	5	33.9 ± 3.0	NS
N	<i>Ditrichum rhynchostegium</i>	a Moss				S2?	6	50.9 ± 1.0	NS
N	<i>Fissidens bushii</i>	Bush's Pocket Moss				S2?	5	64.5 ± 0.0	NS
N	<i>Fontinalis hypnoides</i>	a moss				S2?	1	93.5 ± 0.0	NS
N	<i>Fontinalis sullivantii</i>	Sullivant's Water Moss				S2?	3	84.9 ± 0.0	NS
N	<i>Grimmia olneyi</i>	a Moss				S2?	10	90.0 ± 0.0	NS
N	<i>Grimmia anomala</i>	Mountain Forest Grimmia				S2?	1	37.0 ± 1.0	NS
N	<i>Hygrohypnum bestii</i>	Best's Brook Moss				S2?	2	65.5 ± 0.0	NS
N	<i>Kiaeria starkei</i>	Starke's Fork Moss				S2?	1	96.1 ± 10.0	NS
N	<i>Orthotrichum anomalum</i>	Anomalous Bristle Moss				S2?	5	11.5 ± 2.0	NS
N	<i>Philonotis marchica</i>	a Moss				S2?	1	90.1 ± 0.0	NS
N	<i>Physcomitrium</i>	a Moss				S2?	1	49.1 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	<i>collenchymatum</i>								
N	<i>Platydictya jungermannioides</i>	False Willow Moss				S2?	3	73.5 ± 0.0	NS
N	<i>Rhytidium rugosum</i>	Wrinkle-leaved Moss				S2?	1	92.8 ± 1.0	NB
N	<i>Saelania glaucescens</i>	Blue Dew Moss				S2?	2	96.7 ± 0.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S2?	1	92.8 ± 0.0	NB
N	<i>Anomobryum julaceum</i>	Slender Silver Moss				S2?	3	92.9 ± 1.0	NB
N	<i>Rauielella scita</i>	Smaller Fern Moss				S2?	16	90.1 ± 0.0	NS
N	<i>Cyrtomnium hymenophylloides</i>	Short-pointed Lantern Moss				S2?	3	60.4 ± 5.0	NS
N	<i>Platylomella lescurii</i>	a Moss				S2?	9	29.9 ± 1.0	NS
N	<i>Phylliscum demangeonii</i>	Black Rock-wafer Lichen				S2?	5	5.2 ± 0.0	NS
N	<i>Oxyrrhynchium hians</i>	Light Beaked Moss				S2S3	7	20.5 ± 0.0	NS
N	<i>Platydictya subtilis</i>	Bark Willow Moss				S2S3	4	50.2 ± 0.0	NS
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2S3	8	48.2 ± 2.0	NS
N	<i>Scorpidium revolvens</i>	Limprichtia Moss				S2S3	2	27.5 ± 0.0	NS
N	<i>Moelleropsis nebulosa</i>	Blue-gray Moss Shingle Lichen				S2S3	23	25.8 ± 0.0	NS
N	<i>Moelleropsis nebulosa</i> ssp. <i>frullaniae</i>	Blue-gray Moss Shingle Lichen				S2S3	2	75.6 ± 0.0	NS
N	<i>Ramalina thrausta</i>	Angelhair Ramalina Lichen				S2S3	7	71.8 ± 1.0	NS
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2S3	66	10.6 ± 0.0	NS
N	<i>Usnea ceratina</i>	Warty Beard Lichen				S2S3	3	59.1 ± 0.0	NS
N	<i>Usnea hirta</i>	Bristly Beard Lichen				S2S3	4	61.1 ± 0.0	NS
N	<i>Usnea rubicunda</i>	Red Beard Lichen				S2S3	5	30.1 ± 0.0	NS
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S2S3	22	5.1 ± 2.0	NS
N	<i>Usnocetraria oakesiana</i>	Yellow Band Lichen				S2S3	18	19.5 ± 0.0	NS
N	<i>Cladonia incrassata</i>	Powder-foot British Soldiers Lichen				S2S3	1	96.8 ± 3.0	NS
N	<i>Cladonia mateocyatha</i>	Mixed-up Pixie-cup				S2S3	4	4.0 ± 6.0	NS
N	<i>Cladonia parasitica</i>	Fence-rail Lichen				S2S3	3	42.3 ± 0.0	NS
N	<i>Chaenotheca gracilentia</i>	a lichen				S2S3	1	62.3 ± 0.0	NS
N	<i>Scytinium tenuissimum</i>	Birdnest Jellyskin Lichen				S2S3	7	17.1 ± 0.0	NS
N	<i>Melanohalea septentrionalis</i>	Northern Camouflage Lichen				S2S3	3	30.5 ± 0.0	NS
N	<i>Myelochroa aurulenta</i>	Powdery Axil-bristle Lichen				S2S3	7	20.5 ± 2.0	NS
N	<i>Parmelia fertilis</i>	Fertile Shield Lichen				S2S3	5	5.3 ± 0.0	NS
N	<i>Hypotrachyna minarum</i>	Hairless-spined Shield Lichen				S2S3	6	61.1 ± 0.0	NS
N	<i>Parmeliopsis ambigua</i>	Green Starburst Lichen				S2S3	3	20.7 ± 2.0	NS
N	<i>Racodium rupestre</i>	Rockhair Lichen				S2S3	3	45.5 ± 1.0	NS
N	<i>Umbilicaria polyphylla</i>	Petalled Rocktripe Lichen				S2S3	1	20.7 ± 2.0	NS
N	<i>Usnea cavernosa</i>	Pitted Beard Lichen				S2S3	2	29.8 ± 2.0	NS
N	<i>Usnea mutabilis</i>	Bloody Beard Lichen				S2S3	1	30.0 ± 0.0	NS
N	<i>Fuscopannaria sorediata</i>	a Lichen				S2S3	4	42.7 ± 0.0	NS
N	<i>Stereocaulon condensatum</i>	Granular Soil Foam Lichen				S2S3	3	41.0 ± 0.0	NS
N	<i>Stereocaulon subcoralloides</i>	Coralloid Foam Lichen				S2S3	1	93.1 ± 1.0	NB
N	<i>Physcia subtilis</i>	Slender Rosette Lichen				S2S3	1	88.6 ± 0.0	NS
N	<i>Dimelaena oreina</i>	Golden Moonglow Lichen				S2S3	2	67.5 ± 0.0	NS
N	<i>Hypotrachyna revoluta</i>	Granulating Loop Lichen				S2S3	1	70.6 ± 2.0	NS
N	<i>Cetraria arenaria</i>	Sand-loving Icelandmoss Lichen				S2S3	20	50.2 ± 0.0	NS
N	<i>Cladonia coccifera</i>	Eastern Boreal Pixie-cup Lichen				S2S3	3	49.9 ± 0.0	NS
N	<i>Cladonia deformis</i>	Lesser Sulphur-cup Lichen				S2S3	6	7.7 ± 4.0	NS
N	<i>Cladonia phyllophora</i>	Felt Lichen				S2S3	2	30.3 ± 4.0	NS
N	<i>Hypotrachyna afrorevoluta</i>	Pustulate Revolute Loop Lichen				S2S3	3	70.1 ± 1.0	NS
N	<i>Usnea flammae</i>	Coastal Bushy Beard Lichen				S2S3	2	73.7 ± 1.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Ephemerum serratum</i>	a Moss				S3	5	15.6 ± 5.0	NS
N	<i>Fissidens taxifolius</i>	Yew-leaved Pocket Moss				S3	8	15.6 ± 5.0	NS
N	<i>Anomodon tristis</i>	a Moss				S3	13	41.0 ± 0.0	NS
N	<i>Sphagnum contortum</i>	Twisted Peat Moss				S3	4	45.2 ± 0.0	NS
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss				S3	3	65.7 ± 0.0	NS
N	<i>Rostania occultata</i>	Crusted Tarpaper Lichen				S3	7	38.5 ± 0.0	NS
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	30	5.3 ± 0.0	NS
N	<i>Solorina saccata</i>	Woodland Owl Lichen				S3	16	20.4 ± 0.0	NS
N	<i>Fuscopannaria ahlneri</i>	Corrugated Shingles Lichen				S3	58	5.3 ± 0.0	NS
N	<i>Heterodermia squamulosa</i>	Scaly Fringe Lichen				S3	91	46.8 ± 3.0	NS
N	<i>Scytinium lichenoides</i>	Tattered Jellyskin Lichen				S3	35	17.1 ± 0.0	NS
N	<i>Leptogium milligranum</i>	Stretched Jellyskin Lichen				S3	18	17.9 ± 0.0	NS
N	<i>Nephroma bellum</i>	Naked Kidney Lichen				S3	10	41.9 ± 0.0	NS
N	<i>Placynthium nigrum</i>	Common Ink Lichen				S3	1	93.3 ± 1.0	NB
N	<i>Punctelia appalachensis</i>	Appalachian Speckleback Lichen				S3	143	39.5 ± 0.0	NS
N	<i>Viridothelium virens</i>					S3	3	38.3 ± 0.0	NS
N	<i>Epebe lanata</i>	Waterside Rockshag Lichen				S3	3	82.2 ± 17.0	NS
N	<i>Phaeophyscia adlastola</i>	Powder-tipped Shadow Lichen				S3	19	61.3 ± 0.0	NS
N	<i>Phaeophyscia pusilloides</i>	Pompom-tipped Shadow Lichen				S3	11	19.6 ± 1.0	NS
N	<i>Peltigera collina</i>	Tree Pelt Lichen				S3	8	22.1 ± 2.0	NS
N	<i>Metzgeria conjugata</i>	Rock Veilwort				S3?	2	65.0 ± 0.0	NS
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss				S3?	3	17.1 ± 0.0	NS
N	<i>Calliergon giganteum</i>	Giant Spear Moss				S3?	3	24.9 ± 3.0	NS
N	<i>Drummondia prorepens</i>	a Moss				S3?	5	8.6 ± 5.0	NS
N	<i>Elodium blandowii</i>	Blandow's Bog Moss				S3?	6	15.5 ± 3.0	NS
N	<i>Mnium stellare</i>	Star Leafy Moss				S3?	3	21.6 ± 0.0	NS
N	<i>Sphagnum riparium</i>	Streamside Peat Moss				S3?	2	63.8 ± 1.0	NS
N	<i>Cladonia stygia</i>	Black-footed Reindeer Lichen				S3?	7	35.6 ± 0.0	NS
N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss				S3S4	9	41.0 ± 0.0	NS
N	<i>Dichelyma capillaceum</i>	Hairlike Dichelyma Moss				S3S4	9	23.8 ± 3.0	NS
N	<i>Dicranum leioneuron</i>	a Dicranum Moss				S3S4	1	54.2 ± 0.0	NS
N	<i>Encalypta ciliata</i>	Fringed Extinguisher Moss				S3S4	3	42.9 ± 3.0	NS
N	<i>Encalypta procera</i>	Slender Extinguisher Moss				S3S4	6	92.8 ± 0.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	3	79.4 ± 0.0	NS
N	<i>Splachnum ampullaceum</i>	Cruet Dung Moss				S3S4	3	74.1 ± 0.0	NS
N	<i>Thamnobryum alleghaniense</i>	a Moss				S3S4	16	22.8 ± 4.0	NS
N	<i>Tomentophnum nitens</i>	Golden Fuzzy Fen Moss				S3S4	1	27.5 ± 0.0	NS
N	<i>Schistidium agassizii</i>	Elf Bloom Moss				S3S4	3	37.0 ± 1.0	NS
N	<i>Hylocomiastrum pyrenaicum</i>	a Feather Moss				S3S4	5	61.2 ± 0.0	NS
N	<i>Enchylium tenax</i>	Soil Tarpaper Lichen				S3S4	8	20.7 ± 0.0	NS
N	<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S3S4	55	31.8 ± 0.0	NS
N	<i>Arctoparmelia incurva</i>	Finger Ring Lichen				S3S4	72	43.2 ± 0.0	NS
N	<i>Scytinium teretiusculum</i>	Curly Jellyskin Lichen				S3S4	18	11.5 ± 0.0	NS
N	<i>Leptogium acadense</i>	Acadian Jellyskin Lichen				S3S4	31	9.3 ± 0.0	NS
N	<i>Scytinium subtile</i>	Appressed Jellyskin Lichen				S3S4	20	17.1 ± 0.0	NS
N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen				S3S4	3	13.4 ± 0.0	NS
N	<i>Vahliaella leucophaea</i>	Shelter Shingle Lichen				S3S4	12	56.4 ± 0.0	NS
N	<i>Heterodermia speciosa</i>	Powdered Fringe Lichen				S3S4	65	11.5 ± 0.0	NS
N	<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S3S4	99	11.4 ± 0.0	NS
N	<i>Melanohalea olivacea</i>	Spotted Camouflage Lichen				S3S4	8	30.1 ± 0.0	NS
N	<i>Parmeliopsis hyperopta</i>	Gray Starburst Lichen				S3S4	3	73.4 ± 0.0	NS
N	<i>Parmotrema perlatum</i>	Powdered Ruffle Lichen				S3S4	35	48.8 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Peltigera hymenina</i>	Cloudy Pelt Lichen				S3S4	2	73.8 ± 2.0	NS
N	<i>Sphaerophorus fragilis</i>	Fragile Coral Lichen				S3S4	7	53.0 ± 3.0	NS
N	<i>Sclerophora peronella</i>	Frosted Glass-whiskers Lichen				S3S4	1	98.2 ± 0.0	NS
N	<i>Coccocarpia palmicola</i>	Salted Shell Lichen				S3S4	140	5.1 ± 0.0	NS
N	<i>Physcia caesia</i>	Blue-gray Rosette Lichen				S3S4	3	41.7 ± 0.0	NS
N	<i>Physcia tenella</i>	Fringed Rosette Lichen				S3S4	6	57.5 ± 0.0	NS
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen				S3S4	168	12.0 ± 0.0	NS
N	<i>Evernia prunastri</i>	Valley Oakmoss Lichen				S3S4	36	4.5 ± 2.0	NS
N	<i>Heterodermia neglecta</i>	Fringe Lichen				S3S4	124	15.5 ± 0.0	NS
P	<i>Rhynchospora macrostachya</i>	Tall Beakrush	Endangered	Endangered	Endangered	S1	57	71.8 ± 0.0	NS
P	<i>Clethra alnifolia</i>	Coast Pepper-Bush	Endangered	Threatened	Vulnerable	S2	174	66.7 ± 0.0	NS
P	<i>Fraxinus nigra</i>	Black Ash	Threatened		Threatened	S1S2	443	16.7 ± 0.0	NS
P	<i>Hydrocotyle umbellata</i>	Water Pennywort	Special Concern	Special Concern	Endangered	S2	71	93.3 ± 0.0	NS
P	<i>Eleocharis tuberculosa</i>	Tuberclcd Spike-rush	Special Concern	Special Concern	Vulnerable	S2	1	95.1 ± 0.0	NS
P	<i>Lachnanthes caroliniana</i>	Redroot	Special Concern	Special Concern	Vulnerable	S2	1472	71.2 ± 0.0	NS
P	<i>Lophiola aurea</i>	Goldencrest	Special Concern	Special Concern	Vulnerable	S2	788	61.9 ± 0.0	NS
P	<i>Lilaeopsis chinensis</i>	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S3	150	60.1 ± 0.0	NS
P	<i>Scirpus longii</i>	Long's Bulrush	Special Concern		Vulnerable	S3	498	61.8 ± 0.0	NS
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S3	17	72.5 ± 0.0	NS
P	<i>Floerkea proserpinacoides</i>	False Mermaidweed	Not At Risk			S2S3	36	31.3 ± 0.0	NS
P	<i>Acer saccharinum</i>	Silver Maple				S1	11	28.8 ± 0.0	NS
P	<i>Toxicodendron vernix</i>	Poison Sumac				S1	41	89.3 ± 0.0	NS
P	<i>Osmorhiza depauperata</i>	Blunt Sweet Cicely				S1	1	22.7 ± 5.0	NS
P	<i>Antennaria rosea ssp. arida</i>	Rosy Pussytoes				S1	1	59.1 ± 0.0	NS
P	<i>Andersonglossum boreale</i>	Northern Wild Comfrey				S1	5	20.9 ± 1.0	NS
P	<i>Turritis glabra</i>	Tower Mustard				S1	2	31.4 ± 0.0	NS
P	<i>Lobelia spicata</i>	Pale-Spiked Lobelia				S1	8	33.3 ± 7.0	NS
P	<i>Silene antirrhina</i>	Sleepy Catchfly				S1	5	50.3 ± 0.0	NS
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort				S1	2	97.9 ± 0.0	NB
P	<i>Astragalus robbinsii var. minor</i>	Robbins' Milkvetch				S1	31	59.1 ± 0.0	NS
P	<i>Ribes americanum</i>	Wild Black Currant				S1	6	15.2 ± 1.0	NS
P	<i>Trichostema dichotomum</i>	Forked Bluecurls				S1	5	67.6 ± 0.0	NS
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S1	12	27.5 ± 0.0	NS
P	<i>Polygonum achoreum</i>	Leathery Knotweed				S1	1	84.6 ± 10.0	NS
P	<i>Persicaria careyi</i>	Carey's Smartweed				S1	1	88.8 ± 3.0	NS
P	<i>Phytolacca americana</i>	Common Pokeweed				S1	1	57.2 ± 0.0	NS
P	<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed				S1	4	51.5 ± 0.0	NS
P	<i>Montia fontana</i>	Water Blinks				S1	3	61.1 ± 1.0	NS
P	<i>Lysimachia minima</i>	Chaffweed				S1	1	92.5 ± 0.0	NS
P	<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife				S1	1	35.7 ± 0.0	NS
P	<i>Clematis occidentalis</i>	Purple Clematis				S1	8	92.9 ± 0.0	NB
P	<i>Ranunculus pennsylvanicus</i>	Pennsylvania Buttercup				S1	23	94.4 ± 0.0	NS
P	<i>Amelanchier nantucketensis</i>	Nantucket Serviceberry				S1	1	59.4 ± 1.0	NS
P	<i>Salix myrtilifolia</i>	Blueberry Willow				S1	1	87.0 ± 0.0	NS
P	<i>Salix serissima</i>	Autumn Willow				S1	2	87.1 ± 0.0	NS
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S1	2	47.4 ± 1.0	NS
P	<i>Carex digitalis</i>	Slender Wood Sedge				S1	4	77.1 ± 0.0	NS
P	<i>Carex laxiflora</i>	Loose-Flowered Sedge				S1	6	36.7 ± 7.0	NS
P	<i>Carex ormostachya</i>	Necklace Spike Sedge				S1	7	36.1 ± 5.0	NS
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S1	4	93.5 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge				S1	2	33.5 ± 1.0	NS
P	<i>Carex tinctoria</i>	Tinged Sedge				S1	2	94.4 ± 0.0	NB
P	<i>Carex viridula var. saxillitoralis</i>	Greenish Sedge				S1	1	41.7 ± 0.0	NS
P	<i>Fimbristylis autumnalis</i>	Slender Fimbry				S1	3	96.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Scirpus atrovirens</i>	Dark-green Bulrush				S1	4	22.7 ± 0.0	NS
P	<i>Schoenoplectus torreyi</i>	Torrey's Bulrush				S1	8	63.5 ± 0.0	NS
P	<i>Iris prismatica</i>	Slender Blue Flag				S1	1	28.0 ± 100.0	NS
P	<i>Sisyrinchium fuscatum</i>	Coastal Plain Blue-eyed-grass				S1	5	53.6 ± 0.0	NS
P	<i>Juncus secundus</i>	Secund Rush				S1	3	33.4 ± 0.0	NS
P	<i>Juncus vaseyi</i>	Vasey Rush				S1	1	82.4 ± 0.0	NS
P	<i>Trillium grandiflorum</i>	White Trillium				S1	3	33.4 ± 1.0	NS
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	North American White Adder's-mouth				S1	6	33.3 ± 10.0	NS
P	<i>Spiranthes casei</i> var. <i>casei</i>	Case's Ladies'-Tresses				S1	2	11.4 ± 0.0	NS
P	<i>Dichanthelium xanthophyllum</i>	Slender Panic Grass				S1	9	55.6 ± 0.0	NS
P	<i>Elymus hystrix</i>	Spreading Wild Rye				S1	11	23.5 ± 0.0	NS
P	<i>Torreyochloa pallida</i> var. <i>pallida</i>	Pale False Manna Grass				S1	2	49.9 ± 1.0	NS
P	<i>Graphephorum melicoides</i>	Purple False Oats				S1	1	94.2 ± 0.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S1	14	16.0 ± 10.0	NS
P	<i>Dryopteris goldieana</i>	Goldie's Woodfern				S1	1	50.3 ± 1.0	NS
P	<i>Equisetum palustre</i>	Marsh Horsetail				S1	1	26.9 ± 5.0	NS
P	<i>Botrychium lunaria</i>	Common Moonwort				S1	8	76.6 ± 0.0	NS
P	<i>Selaginella rupestris</i>	Rock Spikemoss				S1	1	21.3 ± 0.0	NS
P	<i>Solidago hispida</i>	Hairy Goldenrod				S1?	1	61.9 ± 7.0	NS
P	<i>Suaeda rolandii</i>	Roland's Sea-Blite				S1?	8	15.6 ± 0.0	NS
P	<i>Carex pensylvanica</i>	Pennsylvania Sedge				S1?	3	59.1 ± 0.0	NS
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S1?	1	44.5 ± 0.0	NS
P	<i>Bolboschoenus robustus</i>	Sturdy Bulrush				S1?	1	95.1 ± 5.0	NS
P	<i>Juncus antheratus</i>	Greater Poverty Rush				S1?	1	61.8 ± 0.0	NS
P	<i>Allium schoenoprasum</i>	Wild Chives				S1?	5	22.4 ± 0.0	NS
P	<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	Wild Chives				S1?	1	92.4 ± 7.0	NS
P	<i>Panicum dichotomiflorum</i> ssp. <i>puritanorum</i>	Spreading Panicgrass				S1?	5	84.1 ± 0.0	NS
P	<i>Huperzia selago</i>	Northern Firmoss				S1?	1	69.6 ± 1.0	NS
P	<i>Crocanthemum canadense</i>	Long-branched Frostweed			Endangered	S1S2	135	44.8 ± 1.0	NS
P	<i>Cypripedium arietinum</i>	Ram's-Head Lady's-Slipper			Endangered	S1S2	281	16.8 ± 0.0	NS
P	<i>Sanicula odorata</i>	Clustered Sanicle				S1S2	10	23.6 ± 0.0	NS
P	<i>Ageratina altissima</i>	White Snakeroot				S1S2	34	60.0 ± 0.0	NS
P	<i>Draba glabella</i>	Rock Whitlow-Grass				S1S2	8	43.7 ± 0.0	NS
P	<i>Proserpinaca intermedia</i>	Intermediate Mermaidweed				S1S2	5	26.7 ± 2.0	NS
P	<i>Anemone virginiana</i> var. <i>alba</i>	Virginia Anemone				S1S2	1	92.4 ± 7.0	NS
P	<i>Carex haydenii</i>	Hayden's Sedge				S1S2	4	28.5 ± 1.0	NS
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S1S2	3	28.8 ± 10.0	NS
P	<i>Calamagrostis stricta</i> ssp. <i>stricta</i>	Slim-stemmed Reed Grass				S1S2	3	73.2 ± 7.0	NS
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S1S2	2	97.7 ± 0.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S1S2	3	92.9 ± 0.0	NB
P	<i>Euphrasia farlowii</i>	Farlow's Eyebright				S1S3	2	78.3 ± 0.0	NS
P	<i>Zizia aurea</i>	Golden Alexanders				S2	4	43.3 ± 0.0	NS
P	<i>Antennaria parlinii</i> ssp. <i>fallax</i>	Parlin's Pussytoes				S2	25	17.2 ± 0.0	NS
P	<i>Rudbeckia laciniata</i>	Cut-Leaved Coneflower				S2	16	16.8 ± 0.0	NS
P	<i>Rudbeckia laciniata</i> var. <i>laciniata</i>	Cut-Leaved Coneflower				S2	9	16.8 ± 3.0	NS
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S2	2	56.4 ± 0.0	NS
P	<i>Cardamine maxima</i>	Large Toothwort				S2	20	49.6 ± 0.0	NS
P	<i>Hudsonia ericoides</i>	Pinebarren Golden Heather				S2	220	30.2 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Desmodium canadense</i>	Canada Tick-trefoil				S2	9	19.3 ± 7.0	NS
P	<i>Hylodesmum glutinosum</i>	Large Tick-trefoil				S2	39	19.8 ± 1.0	NS
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S2	26	59.1 ± 0.0	NS
P	<i>Conopholis americana</i>	American Cancer-root				S2	59	26.1 ± 1.0	NS
P	<i>Anemonastrum canadense</i>	Canada Anemone				S2	14	22.4 ± 1.0	NS
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2	71	13.4 ± 13.0	NS
P	<i>Ranunculus sceleratus</i>	Cursed Buttercup				S2	24	52.7 ± 0.0	NS
P	<i>Galium boreale</i>	Northern Bedstraw				S2	11	33.3 ± 7.0	NS
P	<i>Gratiola neglecta</i>	Clammy Hedge-Hyssop				S2	4	87.9 ± 2.0	NS
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2	66	20.1 ± 0.0	NS
P	<i>Carex chordorrhiza</i>	Creeping Sedge				S2	2	96.2 ± 0.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S2	2	87.1 ± 0.0	NS
P	<i>Carex livida</i>	Livid Sedge				S2	2	14.9 ± 10.0	NS
P	<i>Juncus greenii</i>	Greene's Rush				S2	5	33.8 ± 0.0	NS
P	<i>Allium tricoccum</i>	Wild Leek				S2	74	31.9 ± 0.0	NS
P	<i>Lilium canadense</i>	Canada Lily				S2	62	16.0 ± 7.0	NS
P	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Yellow Lady's-slipper				S2	22	16.9 ± 0.0	NS
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	13	14.3 ± 7.0	NS
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S2	45	26.3 ± 0.0	NS
P	<i>Platanthera flava</i> var. <i>flava</i>	Southern Rein Orchid				S2	19	23.4 ± 7.0	NS
P	<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid				S2	25	20.2 ± 1.0	NS
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S2	8	6.5 ± 1.0	NS
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S2	6	97.6 ± 0.0	NS
P	<i>Cinna arundinacea</i>	Sweet Wood Reed Grass				S2	37	30.6 ± 0.0	NS
P	<i>Elymus wiegandii</i>	Wiegand's Wild Rye				S2	6	61.9 ± 7.0	NS
P	<i>Festuca subverticillata</i>	Nodding Fescue				S2	15	23.4 ± 7.0	NS
P	<i>Piptatheropsis pungens</i>	Slender Ricegrass				S2	11	50.5 ± 0.0	NS
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S2	3	14.8 ± 0.0	NS
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2?	2	34.8 ± 0.0	NS
P	<i>Rumex persicarioides</i>	Peach-leaved Dock				S2?	1	35.8 ± 0.0	NS
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S2?	5	20.6 ± 1.0	NS
P	<i>Carex peckii</i>	White-Tinged Sedge				S2?	4	24.1 ± 5.0	NS
P	<i>Thuja occidentalis</i>	Eastern White Cedar			Vulnerable	S2S3	187	17.0 ± 0.0	NS
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2S3	20	19.2 ± 0.0	NS
P	<i>Erigeron philadelphicus</i>	Philadelphia Fleabane				S2S3	2	69.7 ± 0.0	NS
P	<i>Eutrochium dubium</i>	Coastal Plain Joe Pye Weed				S2S3	2	80.7 ± 0.0	NS
P	<i>Lactuca hirsuta</i>	Hairy Lettuce				S2S3	6	17.5 ± 1.0	NS
P	<i>Impatiens pallida</i>	Pale Jewelweed				S2S3	11	33.5 ± 7.0	NS
P	<i>Caulophyllum thalictroides</i>	Blue Cohosh				S2S3	64	17.2 ± 7.0	NS
P	<i>Draba arabisans</i>	Rock Whitlow-Grass				S2S3	38	38.5 ± 1.0	NS
P	<i>Boechera stricta</i>	Drummond's Rockcress				S2S3	12	38.5 ± 1.0	NS
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S2S3	15	56.4 ± 1.0	NS
P	<i>Hypericum majus</i>	Large St John's-wort				S2S3	8	35.0 ± 10.0	NS
P	<i>Hypericum x dissimulatum</i>	Disguised St. John's-wort				S2S3	6	51.5 ± 0.0	NS
P	<i>Empetrum atropurpureum</i>	Purple Crowberry				S2S3	5	44.9 ± 7.0	NS
P	<i>Euphorbia polygonifolia</i>	Seaside Spurge				S2S3	11	48.4 ± 3.0	NS
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S2S3	10	19.5 ± 0.0	NS
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	18	21.4 ± 1.0	NS
P	<i>Oenothera fruticosa</i> ssp. <i>tetragona</i>	Narrow-leaved Evening Primrose				S2S3	7	16.0 ± 7.0	NS
P	<i>Polygala polygama</i>	Racemed Milkwort				S2S3	12	48.1 ± 0.0	NS
P	<i>Polygonum aviculare</i> ssp. <i>buxiforme</i>	Box Knotweed				S2S3	9	16.2 ± 0.0	NS
P	<i>Polygonum oxyspermum</i>	Ray's Knotweed				S2S3	5	36.6 ± 1.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>ssp. raii</i>								
P	<i>Polygonum oxyspermum</i>	Sharp-fruit Knotweed				S2S3	1	46.9 ± 0.0	NS
P	<i>Rumex triangulivalvis</i>	Triangular-valve Dock				S2S3	11	11.1 ± 5.0	NS
P	<i>Primula mistassinica</i>	Mistassini Primrose				S2S3	1	92.4 ± 7.0	NS
P	<i>Anemone quinquefolia</i>	Wood Anemone				S2S3	47	58.7 ± 0.0	NS
P	<i>Caltha palustris</i>	Yellow Marsh Marigold				S2S3	8	21.9 ± 5.0	NS
P	<i>Amelanchier fernaldii</i>	Fernald's Serviceberry				S2S3	1	52.9 ± 7.0	NS
P	<i>Potentilla canadensis</i>	Canada Cinquefoil				S2S3	10	42.3 ± 0.0	NS
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2S3	8	60.8 ± 0.0	NS
P	<i>Salix pellita</i>	Satiny Willow				S2S3	9	63.5 ± 7.0	NS
P	<i>Tiarella cordifolia</i>	Heart-leaved Foamflower				S2S3	28	41.7 ± 0.0	NS
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle				S2S3	50	52.4 ± 0.0	NS
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	9	58.6 ± 5.0	NS
P	<i>Carex capillaris</i>	Hairlike Sedge				S2S3	10	59.2 ± 0.0	NS
P	<i>Carex comosa</i>	Bearded Sedge				S2S3	9	11.5 ± 5.0	NS
P	<i>Carex houghtoniana</i>	Houghton's Sedge				S2S3	11	79.6 ± 0.0	NS
P	<i>Carex hystericina</i>	Porcupine Sedge				S2S3	8	32.8 ± 0.0	NS
P	<i>Eleocharis ovata</i>	Ovate Spikerush				S2S3	8	19.6 ± 0.0	NS
P	<i>Scirpus pedicellatus</i>	Stalked Bulrush				S2S3	4	67.2 ± 0.0	NS
P	<i>Vallisneria americana</i>	Wild Celery				S2S3	15	53.7 ± 0.0	NS
P	<i>Najas gracillima</i>	Thread-Like Naiad				S2S3	22	28.1 ± 0.0	NS
P	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S2S3	75	18.9 ± 0.0	NS
P	<i>Spiranthes casei</i>	Case's Ladies'-Tresses				S2S3	1	75.5 ± 0.0	NS
P	<i>Spiranthes casei</i> var. <i>novaescotiae</i>	Case's Ladies'-Tresses				S2S3	1	60.3 ± 0.0	NS
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S2S3	11	14.8 ± 1.0	NS
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S2S3	4	96.0 ± 2.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S2S3	11	28.4 ± 1.0	NS
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S2S3	21	64.5 ± 1.0	NS
P	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Narrow Triangle Moonwort				S2S3	11	24.7 ± 0.0	NS
P	<i>Botrychium simplex</i>	Least Moonwort				S2S3	7	14.8 ± 1.0	NS
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S2S3	8	15.9 ± 7.0	NS
P	<i>Potamogeton pulcher</i>	Spotted Pondweed			Vulnerable	S3	27	58.2 ± 0.0	NS
P	<i>Conioselinum chinense</i>	Chinese Hemlock-parsley				S3	11	51.8 ± 0.0	NS
P	<i>Hieracium robinsonii</i>	Robinson's Hawkweed				S3	7	94.1 ± 1.0	NS
P	<i>Iva frutescens</i>	Big-leaved Marsh-elder				S3	35	15.5 ± 1.0	NS
P	<i>Senecio pseudoarnica</i>	Seabeach Ragwort				S3	11	58.6 ± 0.0	NS
P	<i>Symphotrichum boreale</i>	Boreal Aster				S3	8	53.3 ± 5.0	NS
P	<i>Symphotrichum undulatum</i>	Wavy-leaved Aster				S3	140	21.3 ± 0.0	NS
P	<i>Symphotrichum ciliolatum</i>	Fringed Blue Aster				S3	22	29.1 ± 0.0	NS
P	<i>Alnus serrulata</i>	Smooth Alder				S3	697	53.7 ± 0.0	NS
P	<i>Betula pumila</i> var. <i>pumila</i>	Bog Birch				S3	1	85.2 ± 1.0	NS
P	<i>Betula michauxii</i>	Michaux's Dwarf Birch				S3	59	41.3 ± 0.0	NS
P	<i>Betula pumila</i>	Bog Birch				S3	3	85.3 ± 0.0	NS
P	<i>Cardamine parviflora</i>	Small-flowered Bittercress				S3	17	13.7 ± 7.0	NS
P	<i>Palustricodon aparinoides</i>	Marsh Bellflower				S3	18	32.0 ± 1.0	NS
P	<i>Mononeuria groenlandica</i>	Greenland Stitchwort				S3	147	41.3 ± 0.0	NS
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S3	48	52.2 ± 0.0	NS
P	<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort				S3	3	66.1 ± 0.0	NS
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S3	7	65.2 ± 0.0	NS
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort				S3	14	28.4 ± 3.0	NS
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S3	31	22.7 ± 0.0	NS
P	<i>Viburnum edule</i>	Squashberry				S3	5	97.8 ± 1.0	NB
P	<i>Crassula aquatica</i>	Water Pygmyweed				S3	1	52.9 ± 0.0	NS
P	<i>Empetrum eamesii</i>	Pink Crowberry				S3	93	33.8 ± 0.0	NS
P	<i>Vaccinium uliginosum</i>	Alpine Bilberry				S3	3	72.3 ± 1.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Halenia deflexa</i>	Spurred Gentian				S3	3	58.3 ± 0.0	NS
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	23	14.2 ± 3.0	NS
P	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil				S3	6	32.1 ± 3.0	NS
P	<i>Utricularia resupinata</i>	Inverted Bladderwort				S3	12	62.3 ± 0.0	NS
P	<i>Epilobium strictum</i>	Downy Willowherb				S3	12	21.3 ± 0.0	NS
P	<i>Polygala sanguinea</i>	Blood Milkwort				S3	20	33.8 ± 0.0	NS
P	<i>Persicaria arifolia</i>	Halberd-leaved Tearthumb				S3	21	28.3 ± 1.0	NS
P	<i>Plantago rugelii</i>	Rugel's Plantain				S3	13	22.0 ± 3.0	NS
P	<i>Primula laurentiana</i>	Laurentian Primrose				S3	65	27.1 ± 7.0	NS
P	<i>Samolus parviflorus</i>	Seaside Brookweed				S3	47	55.9 ± 1.0	NS
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	3	33.5 ± 7.0	NS
P	<i>Anemone virginiana</i>	Virginia Anemone				S3	13	20.5 ± 0.0	NS
P	<i>Cephalanthus occidentalis</i>	Common Buttonbush				S3	1947	60.8 ± 0.0	NS
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S3	59	83.8 ± 0.0	NS
P	<i>Salix pedicellaris</i>	Bog Willow				S3	104	33.7 ± 0.0	NS
P	<i>Salix sericea</i>	Silky Willow				S3	136	52.5 ± 0.0	NS
P	<i>Saxifraga paniculata</i> ssp. <i>laestadii</i>	Laestadius' Saxifrage				S3	23	33.3 ± 7.0	NS
P	<i>Lindernia dubia</i>	Yellow-seeded False Pimperel				S3	20	20.5 ± 0.0	NS
P	<i>Laportea canadensis</i>	Canada Wood Nettle				S3	46	21.2 ± 2.0	NS
P	<i>Pilea pumila</i>	Dwarf Clearweed				S3	6	23.2 ± 0.0	NS
P	<i>Viola nephrophylla</i>	Northern Bog Violet				S3	5	18.0 ± 1.0	NS
P	<i>Carex bebbii</i>	Bebb's Sedge				S3	20	16.6 ± 0.0	NS
P	<i>Carex castanea</i>	Chestnut Sedge				S3	26	39.3 ± 0.0	NS
P	<i>Carex cryptolepis</i>	Hidden-scaled Sedge				S3	15	17.0 ± 0.0	NS
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3	11	70.2 ± 0.0	NS
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S3	25	23.6 ± 0.0	NS
P	<i>Carex lupulina</i>	Hop Sedge				S3	61	11.5 ± 1.0	NS
P	<i>Carex rosea</i>	Rosy Sedge				S3	42	20.3 ± 1.0	NS
P	<i>Carex swanii</i>	Swan's Sedge				S3	18	49.3 ± 0.0	NS
P	<i>Carex tenera</i>	Tender Sedge				S3	8	30.7 ± 0.0	NS
P	<i>Carex tribuloides</i>	Blunt Broom Sedge				S3	17	13.8 ± 3.0	NS
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge				S3	37	18.1 ± 0.0	NS
P	<i>Carex atratiformis</i>	Scabrous Black Sedge				S3	3	59.8 ± 0.0	NS
P	<i>Eleocharis nitida</i>	Quill Spikerush				S3	21	23.4 ± 1.0	NS
P	<i>Eleocharis flavescens</i> var. <i>olivacea</i>	Bright-green Spikerush				S3	14	59.1 ± 0.0	NS
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S3	9	17.9 ± 1.0	NS
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S3	13	13.6 ± 1.0	NS
P	<i>Cypripedium parviflorum</i>	Yellow Lady's-slipper				S3	549	12.6 ± 0.0	NS
P	<i>Neottia bifolia</i>	Southern Twayblade				S3	126	12.3 ± 0.0	NS
P	<i>Platanthera flava</i>	Southern Rein-Orchid				S3	37	52.2 ± 0.0	NS
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	47	15.0 ± 1.0	NS
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3	26	3.9 ± 0.0	NS
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S3	15	20.4 ± 7.0	NS
P	<i>Piptatheropsis canadensis</i>	Canada Ricegrass				S3	20	39.0 ± 0.0	NS
P	<i>Poa glauca</i>	Glaucous Blue Grass				S3	24	30.6 ± 1.0	NS
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S3	1	98.1 ± 7.0	NS
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S3	3	26.4 ± 1.0	NS
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S3	7	28.8 ± 1.0	NS
P	<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed				S3	13	28.8 ± 1.0	NS
P	<i>Asplenium viride</i>	Green Spleenwort				S3	13	55.3 ± 7.0	NS
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S3	47	48.3 ± 0.0	NS
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	7	49.9 ± 0.0	NS
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3	33	20.1 ± 0.0	NS
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S3?	29	17.4 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S3?	38	16.8 ± 1.0	NS
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3?	14	62.6 ± 0.0	NS
P	<i>Bidens vulgata</i>	Tall Beggarticks				S3S4	6	24.9 ± 0.0	NS
P	<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3S4	45	16.0 ± 7.0	NS
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed				S3S4	35	14.4 ± 11.0	NS
P	<i>Bidens beckii</i>	Water Beggarticks				S3S4	29	52.8 ± 0.0	NS
P	<i>Packera paupercula</i>	Balsam Groundsel				S3S4	87	16.9 ± 0.0	NS
P	<i>Packera paupercula</i> var. <i>paupercula</i>	Balsam Groundsel				S3S4	1	21.7 ± 0.0	NS
P	<i>Atriplex glabriuscula</i> var. <i>franktonii</i>	Frankton's Saltbush				S3S4	15	15.6 ± 0.0	NS
P	<i>Shepherdia canadensis</i>	Soapberry				S3S4	101	16.6 ± 0.0	NS
P	<i>Vaccinium boreale</i>	Northern Blueberry				S3S4	3	70.0 ± 0.0	NS
P	<i>Vaccinium cespitosum</i>	Dwarf Bilberry				S3S4	61	4.2 ± 0.0	NS
P	<i>Vaccinium corymbosum</i>	Highbush Blueberry				S3S4	6	52.6 ± 0.0	NS
P	<i>Fagus grandifolia</i>	American Beech				S3S4	458	11.7 ± 0.0	NS
P	<i>Bartonia virginica</i>	Yellow Bartonia				S3S4	44	49.7 ± 0.0	NS
P	<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S3S4	67	40.3 ± 3.0	NS
P	<i>Decodon verticillatus</i>	Swamp Loosestrife				S3S4	97	71.8 ± 7.0	NS
P	<i>Nuphar microphylla</i>	Small Yellow Pond-lily				S3S4	3	20.5 ± 0.0	NS
P	<i>Persicaria pensylvanica</i>	Pennsylvania Smartweed				S3S4	30	13.9 ± 1.0	NS
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3S4	17	25.8 ± 2.0	NS
P	<i>Rumex pallidus</i>	Seabeach Dock				S3S4	2	77.1 ± 0.0	NS
P	<i>Pyrola asarifolia</i>	Pink Pyrola				S3S4	11	42.6 ± 0.0	NS
P	<i>Endotropis alnifolia</i>	alder-leaved buckthorn				S3S4	157	22.0 ± 1.0	NS
P	<i>Amelanchier spicata</i>	Running Serviceberry				S3S4	64	20.3 ± 2.0	NS
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn				S3S4	1	53.4 ± 0.0	NS
P	<i>Fragaria vesca</i> ssp. <i>americana</i>	Woodland Strawberry				S3S4	62	22.5 ± 0.0	NS
P	<i>Fragaria vesca</i>	Woodland Strawberry				S3S4	2	95.4 ± 0.0	NB
P	<i>Galium aparine</i>	Common Bedstraw				S3S4	23	20.2 ± 2.0	NS
P	<i>Geocaulon lividum</i>	Northern Comandra				S3S4	6	38.5 ± 0.0	NS
P	<i>Limosella australis</i>	Southern Mudwort				S3S4	11	60.3 ± 0.0	NS
P	<i>Ulmus americana</i>	White Elm				S3S4	75	18.1 ± 0.0	NS
P	<i>Verbena hastata</i>	Blue Vervain				S3S4	134	6.4 ± 7.0	NS
P	<i>Viola sagittata</i> var. <i>ovata</i>	Arrow-Leaved Violet				S3S4	55	21.0 ± 5.0	NS
P	<i>Viola selkirkii</i>	Great-Spurred Violet				S3S4	10	31.5 ± 4.0	NS
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage				S3S4	3	60.8 ± 0.0	NS
P	<i>Carex argyrantha</i>	Silvery-flowered Sedge				S3S4	27	7.7 ± 1.0	NS
P	<i>Sisyrinchium atlanticum</i>	Eastern Blue-Eyed-Grass				S3S4	113	48.6 ± 0.0	NS
P	<i>Triglochin gaspensis</i>	Gasp Arrowgrass				S3S4	14	58.3 ± 0.0	NS
P	<i>Juncus acuminatus</i>	Sharp-Fruit Rush				S3S4	16	11.9 ± 0.0	NS
P	<i>Juncus subcaudatus</i>	Woods-Rush				S3S4	25	12.3 ± 1.0	NS
P	<i>Luzula parviflora</i> ssp. <i>melanocarpa</i>	Black-fruited Woodrush				S3S4	10	59.0 ± 7.0	NS
P	<i>Goodyera repens</i>	Lesser Rattlesnake-plantain				S3S4	26	18.6 ± 1.0	NS
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	10	21.2 ± 5.0	NS
P	<i>Platanthera obtusata</i>	Blunt-leaved Orchid				S3S4	12	19.3 ± 10.0	NS
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3S4	54	31.5 ± 4.0	NS
P	<i>Alopecurus aequalis</i>	Short-awned Foxtail				S3S4	16	44.1 ± 1.0	NS
P	<i>Dichanthelium clandestinum</i>	Deer-tongue Panic Grass				S3S4	291	20.1 ± 10.0	NS
P	<i>Coleataenia longifolia</i>	Long-leaved Panicgrass				S3S4	1592	62.3 ± 0.0	NS
P	<i>Panicum philadelphicum</i>	Philadelphia Panicgrass				S3S4	27	30.7 ± 0.0	NS
P	<i>Koeleria spicata</i>	Narrow False Oats				S3S4	19	21.5 ± 0.0	NS
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3S4	23	19.2 ± 0.0	NS
P	<i>Lorinseria areolata</i>	Netted Chain Fern				S3S4	1	92.9 ± 7.0	NS
P	<i>Equisetum pratense</i>	Meadow Horsetail				S3S4	14	20.0 ± 0.0	NS
P	<i>Diphasiastrum complanatum</i>	Northern Ground-cedar				S3S4	17	17.6 ± 2.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Diphasiastrum sitchense</i>	Sitka Ground-cedar				S3S4	2	23.0 ± 1.0	NS
P	<i>Huperzia appressa</i>	Mountain Firmoss				S3S4	21	41.3 ± 1.0	NS
P	<i>Sceptridium multifidum</i>	Leathery Moonwort				S3S4	14	5.3 ± 10.0	NS
P	<i>Botrychium matricariifolium</i>	Daisy-leaved Moonwort				S3S4	6	9.0 ± 10.0	NS
P	<i>Bidens discoides</i>	Swamp Beggarticks				SH	1	99.3 ± 0.0	NS
P	<i>Viola canadensis</i>	Canada Violet				SH	1	21.8 ± 0.0	NS
P	<i>Greeneochloa coarctata</i>	Small Reedgrass				SH	1	57.8 ± 6.0	NS

5.1 SOURCE BIBLIOGRAPHY (100 km)

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

# recs	CITATION
19461	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
8098	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
7508	McNeil, J.A. 2010. Blandings Turtle (<i>Emydoidea blandingii</i>) sightings, 1946-2009. Parks Canada, 12,871 recs of 597+ individuals.
3951	Pardieck, K.L., Ziolkowski Jr., D.J., Lutmerding, M., Aponte, V.I., and Hudson, M-A.R. 2020. North American Breeding Bird Survey Dataset 1966 - 2019: U.S. Geological Survey data release, https://doi.org/10.5066/P9J6QUF6
3854	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
3171	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
2642	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
1609	McNeil, J.A. 2010. Ribbonsnake (<i>Thamophis sauritus</i>) sightings, 1900-2009. Parks Canada, 2521 recs of 716+ individuals.
1403	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
1296	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
1175	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
1122	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
1018	Phinney, Lori. 2020. Pre- and post White-nose Syndrome bat acoustic monitoring, NS. Mersey Tobeatic Research Institute, 1279 recs.
1009	Belliveau, A. 2012. 2012 Atlantic Coastal Plain Flora observations. Mersey Tobeatic Research Institute, 1543.
952	Eaton, S. 2014. Nova Scotia Wood Turtle Database. Environment and Climate Change Canada, 4843 recs.
934	Paquet, Julie. 2019. Atlantic Canada Shorebird Survey ACSS database for 2019. Environment Canada, Canadian Wildlife Service.
899	SwiftWatch. 2022. Total Chimney Swift counts from roost watches for the duration of the SwiftWatch program (2011-2021). Birds Canada.
845	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
824	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
763	McNeil, J.A. 2016. Blandings Turtle (<i>Emydoidea blandingii</i>), Eastern Ribbonsnake (<i>Thamnophis sauritus</i>), Wood Turtle (<i>Glyptemys insculpta</i>), and Snapping Turtle (<i>Chelydra serpentina</i>) sightings, 2016. Mersey Tobeatic Research Institute, 774 records.
734	Toms, Brad. 2012. Atlantic Coastal Plain Flora records, 2011. Mersey-Tobiatic Research Institute, 1109 recs.
672	Belliveau, A.G. 2020. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2019, 2020. E.C. Smith Herbarium.
623	Cameron, E. 2008. Canadian Gypsum Co. survey 2007-08. Conestoga-Rovers & Assoc., 623 recs.
584	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre, 907 recs.
578	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
536	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
519	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
514	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
452	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/ . 582 recs.
442	McNeil, J.A. 2019. Blanding's Turtle records, 2017. Mersey Tobeatic Research Institute, 372 recs.
414	Clayden, S. Digitization of Wolfgang Maass Nova Scotia forest lichen collections, 1964-2004. New Brunswick Museum. 2018.
393	Benjamin, L.K. (compiler). 2012. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 4965 recs.
372	McNeil, J.A. 2018. Blanding's Turtle records, 2018. Mersey Tobeatic Research Institute, 372 recs.
366	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre, 2318 recs.
365	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
365	Churchill, J.L. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
327	Staicer, C. 2021. Additional compiled Nova Scotia Species at Risk bird records, 2005-2020. Dalhousie University.
326	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
316	Toms, Brad. 2011. Atlantic Coastal Plain Flora records 2010. Mersey-Tobiatic Research Institute, 1074 recs.
311	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).

# recs	CITATION
307	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
306	McNeil, J.A. 2015. Blandings Turtle (<i>Emydoidea blandingii</i>), Eastern Ribbonsnake (<i>Thamnophis sauritus</i>), and Snapping Turtle (<i>Chelydra serpentina</i>) sightings, 2015. Mersey Tobeatic Research Institute.
300	McNeil, Jeffie. 2022. Wood Turtle GPS Tracking data, 2021. Mersey Tobeatic Research Institute.
299	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
286	Amirault, D.L. & Stewart, J. 2007. Piping Plover Database 1894-2006. Canadian Wildlife Service, Sackville, 3344 recs, 1228 new.
265	Hill, N.M. 1994. Status report on the Long's bulrush <i>Scirpus longii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
261	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
256	Toms, B. 2018. Bat Species data from www.batconservation.ca for Nova Scotia. Mersey Tobeatic Research Institute, 547 Records.
243	Belliveau, A.G. 2021. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2021. E.C. Smith Herbarium.
240	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
233	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
233	McNeil, Jeffie. 2022. 2021 Turtle Records. Mersey Tobeatic Research Institute.
229	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
225	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
222	Chapman-Lam, C.J. 2021. Atlantic Canada Conservation Data Centre 2020 botanical fieldwork. Atlantic Canada Conservation Data Centre, 17309 recs.
218	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
209	Brazner, J. 2016. Nova Scotia Forested Wetland Bird Surveys. Nova Scotia Department of Lands and Forestry.
202	Blaney, C.S. & Mazerolle, D.M. 2011. 2011 botanical surveys in Kejimikujik National Park. Atlantic Canada Conservation Data Centre, 820 recs.
199	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
195	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
195	Smith, D. 2013. Personal communication concerning <i>Anguilla rostrata</i> trapping results in Kejimikujik NP, NS. Winter 2013. Pers. comm.
195	Westwood, A., Staicer, C. 2016. Nova Scotia landbird Species at Risk observations. Dalhousie University.
192	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
190	McNeil, J.A. 2019. Blanding's Turtle records, 2019. Mersey Tobeatic Research Institute.
190	McNeil, J.A. 2019. Eastern Painted Turtle trapping records, 2019. Mersey Tobeatic Research Institute.
185	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database [as of 2018-03]. Mersey Tobeatic Research Institute.
171	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
168	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
160	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
154	Blaney, C.S.; Mazerolle, D.M.; Hill, N.M. 2011. Nova Scotia Crown Share Land Legacy Trust Fieldwork. Atlantic Canada Conservation Data Centre, 5022 recs.
152	McNeil, J.A. 2014. Blandings Turtle (<i>Emydoidea blandingii</i>) and Snapping Turtle (<i>Chelydra serpentina</i>) sightings, 2014. Mersey Tobeatic Research Institute.
146	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larivee, Sambo Zhang (ed.) e-butterfly.org.
144	Bryson, I.C. 2020. Nova Scotia flora and lichen observations 2020. Nova Scotia Environment, 139 recs.
144	McNeil, J.A. 2011. Ribbonsnake (<i>Thamnophis sauritus</i>) sightings, 2010. Parks Canada, 148 recs of 70+ individuals.
131	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.
130	Keddy, C.J. 1989. Habitat securement for redroot, golden crest and Long's bulrush in Ponhook Lake, NS. World Wildlife Fund (Canada), 131 recs.
127	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
126	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
124	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
122	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick and Central Nova Scotia. Atlantic Canada Conservation Data Centre, Sackville, 58 recs.
120	McNeil, J.A. 2018. Wood Turtle records, 2018. Mersey Tobeatic Research Institute, 68 recs.
115	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
113	e-Butterfly. 2019. Export of Maritimes records and photos. McFarland, K. (ed.) e-butterfly.org.
110	Hublely, Nicole. 2022. Monarch (<i>Danaus plexippus</i>) records submitted to MTRI from the 2021 field season. Mersey Tobeatic Research Institute.
108	McNeil, J.A. 2020. Blanding's Turtle records, 2020. Mersey Tobeatic Research Institute.
107	Pepper, C. 2013. 2013 rare bird and plant observations in Nova Scotia. , 181 records.
106	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
105	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
104	Richardson, Leif. 2018. Maritimes Bombus records from various sources. Richardson, Leif.
100	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
98	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
95	Breen, A. 2019. 2019 Atlantic Whitefish observations. Coastal Action, 95 recs.
95	McNeil, J.A. 2019. Eastern Painted Turtle trapping records, 2017. Mersey Tobeatic Research Institute.
92	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
90	Churchill, J.L. 2021. Atlantic Canada Conservation Data Centre Fieldwork 2021. Atlantic Canada Conservation Data Centre.
89	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.
88	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
88	McNeil, J.A. 2020. Snapping Turtle and Eastern Painted Turtle records, 2020. Mersey Tobeatic Research Institute.
85	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.

# recs	CITATION
83	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
83	Blaney, C.S. 2020. Sean Blaney 2020 field data. Atlantic Canada Conservation Data Centre, 4407 records.
83	Cameron, R.P. 2009. Cyanolichen database. Nova Scotia Environment & Labour, 1724 recs.
83	Parks Canada. 2010. Specimens in or near National Parks in Atlantic Canada. Canadian National Museum, 3925 recs.
74	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records. 296 recs.
73	Bryson, I. 2020. Nova Scotia and Newfoundland rare species observations, 2018-2020. Nova Scotia Environment.
73	Herman, T.B. & Power, T.D., Eaton, B. 1995. Population status of Blanding's Turtle (<i>Emydoidea blandingii</i>) in Nova Scotia. <i>Can. Field-Nat.</i> , 109: 182-191. 79 recs.
71	Parks Canada. 2021. Species at Risk observations from 2019-2020 in Kejimikujik National Park and Historic Site. Parks Canada, 76 records.
70	McNeil, J.A. 2019. Snapping Turtle records, 2019. Mersey Tobeatic Research Institute.
69	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
68	McNeil, J.A. 2017. Updates to Blanding's Turtle database, 1984-2014. Mersey Tobeatic Research Institute.
64	Klymko, John. 2022. Atlantic Canada Conservation Data Centre zoological fieldwork 2021. Atlantic Canada Conservation Data Centre.
62	McNeil, J.A. 2013. Ribbonsnake (<i>Thamnophis sauritus</i>) sightings, 2012. Parks Canada, 63 records of 26+ individuals.
60	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
56	Mersey Tobeatic Research Institute. 2021. 2020 Monarch records from the MTRI monitoring program. Mersey Tobeatic Research Institute, 72 records.
55	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
53	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
53	Churchill, J.L. 2020. Atlantic Canada Conservation Data Centre Fieldwork 2020. Atlantic Canada Conservation Data Centre, 1083 recs.
52	Belliveau, A.G., Churchill, J.L. 2019. Compilation of flora and fauna observation records from Isle Haute, Nova Scotia. Acadia University; Atlantic Canada Conservation Data Centre, 522 recs.
51	Roland, A.E. 1976. The Coastal Plain Flora of Kejimikujik National Park. Parks Canada Report, 238 pp.
50	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
50	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
48	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
47	MacDonald, E.C. 2018. Piping Plover nest records from 2010-2017. Canadian Wildlife Service.
46	LaPaix, Rich. 2022. Rare species observations, 2018-2022. Nova Scotia Nature Trust.
46	Richardson, D., Anderson, F., Cameron, R., McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (<i>Anzia colpodes</i>). COSEWIC.
45	Bayne, D.M. 2007. Atlantic Coastal Plain Flora record, 2004-06. Nova Scotia Nature Trust. Pers. comm. to C.S. Blaney, 57 recs.
44	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
44	McLean, K. 2019. Wood Turtle observations. Clean Annapolis River Project.
42	Blaney, C.S. & Spicer, C.D.; Popma, T.M.; Basquill, S.P. 2003. Vascular Plant Surveys of Northumberland Strait Rivers & Amherst Area Peatlands. Nova Scotia Museum Research Grant, 501 recs.
40	Cameron, E. 2007. Canadian Gypsum Co. survey 2005-07. Dillon Consulting Ltd, 40 recs.
40	McLean, K. 2020. Species occurrence records from Clean Annapolis River Project fieldwork in 2020. Clean Annapolis River Project, 206 records.
39	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
38	Atlantic Canada Conservation Data Centre. 2020. Cape LaHave Island observations from August 2020. Atlantic Canada Conservation Data Centre, 605 records.
38	Hall, R.A. 2001. S. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
38	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
37	Newell, R.E. 2019. <i>Crocantthemum canadense</i> records compiled for provincial status report. pers. comm. from Ruth Newell to AC CDC.
37	Tsehtik, M.; Leblanc, M.; Creaser, T. 2020. Coastal Action: 2020 Species at Risk Data. Coastal Action, 40 records.
36	Churchill, J.L.; Klymko, J.D. 2015. Chignecto and Tintamarre National Wildlife Area Bird Surveys 2015. Atlantic Canada Conservation Data Centre, 2238 recs.
36	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
36	McNeil, J.A. 2017. Eastern Ribbonsnake (<i>Thamnophis sauritus</i>) sightings, 2017. Mersey Tobeatic Research Institute, 36 recs.
35	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
35	East Coast Aquatics Inc. 2021. Species at Risk records from Spicer North Mountain Quarry Expansion Environmental Assessment. East Coast Aquatics, 44 records.
35	Neily, T.H. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobeatic Research Institute, 1301 records.
35	Neily, T.H. 2017. Nova Scotia lichen records. Mersey Tobeatic Research Institute.
35	Porter, Caitlin. 2021. Field data for 2020 in various locations across the Maritimes. Atlantic Canada Conservation Data Centre, 3977 records.
34	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
33	Ferguson, D.C. 1954. The Lepidoptera of Nova Scotia. Part I, macrolepidoptera. <i>Proceedings of the Nova Scotian Institute of Science</i> , 23(3), 161-375.
33	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
33	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
33	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
32	Frittation, C. 2012. NSNT 2012 Field Observations. Nova Scotia Nature Trust, Pers comm. to S. Blaney Feb. 7, 34 recs.
31	Jobin, C. & Clow, A., Van Dijk, J. 2019. Eastern Waterfan data, Mount Allison Fundy Field Camp 2019. Chapman, C.J. (ed.) Fundy National Park and Mount Allison University, 31 recs.
31	MacDonald, E.C. 2018. CWS Piping Plover Census, 2010-2017. Canadian Wildlife Service, 672 recs.
30	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.
29	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
29	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
29	Roland, A.E. 1980. Checklist of Vascular Plants of Kejimikujik National Park in Lichens, Liverworts, Mosses and Flowering Plants of Kejimikujik National Park. Roland, A.E. (ed.) Parks Canada Report, pp. 52-140, 160 pp.

# recs	CITATION
29	Wallace, S. 2020. Stewardship Department species occurrence data on NTNB preserves. Nature Trust of New Brunswick.
27	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
26	Cameron, R.P. 2018. <i>Degelia plumbea</i> records. Nova Scotia Environment.
26	McLean, K. 2020. Wood Turtle observations . Clean Annapolis River Project.
26	Neily, T.H. 2013. Email communication to Sean Blaney regarding <i>Listera australis</i> observations made from 2007 to 2011 in Nova Scotia. , 50.
25	Burnie, B. 2013. 2013 <i>Scirpus longii</i> field data. Mount Saint Vincent University, 51 recs.
25	McNeil, J.A. 2019. Snapping Turtle records, 2017. Mersey Tobeatic Research Institute.
25	Richardson, D., Anderson, F., Cameron, R, Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (<i>Pannaria lurida</i>). COSEWIC.
24	Belliveau, A.G. 2021. New Black ash site records near Kentville, NS. Acadia University, 47 records.
24	Broders, H.G. 2006. Unpublished data. , 24 recs.
24	Bryson, I. 2013. Nova Scotia rare plant records. CBCL Ltd., 180 records.
24	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
23	NS DNR. 2017. Black Ash records from NS DNR Permanent Sample Plots (PSPs), 1965-2016. NS Dept of Natural Resources.
23	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
23	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
23	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. https://doi.org/10.1037/arc0000014 .
22	Breen, A. 2018. 2018 Atlantic Whitefish observations. Coastal Action.
22	McLean, K. 2019. Species At Risk observations. Clean Annapolis River Project.
22	Nelly, T.H. 2006. <i>Cyrtopodium arietinum</i> in Hants Co. Pers. comm. to C.S. Blaney. 22 recs, 22 recs.
21	MacKinnon, D.S. & O'Brien, M.K.H.; Cameron, R.P. 2002. Fieldwork 2000. Dept of Environment & Labour, Protected Areas Branch, 252 recs.
21	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
20	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
20	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
20	O'Grady, Sally. 2010. Water Pennywort in Kejimikujik National Park, 2010. Parks Canada, 20 shapefiles.
20	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
19	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
19	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
18	Basquill, S.; Sam, D. 2019. <i>Crocianthemum canadense</i> observations near Greenwood, NS, 2015-2019. pers. commun. from Nova Scotia Department of Lands and Forestry to AC CDC, 18 recs.
18	Cameron, R.P. 2009. <i>Erioderma pedicellatum</i> database, 1979-2008. Dept Environment & Labour, 103 recs.
18	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
18	Sollows, M.C., 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
17	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of <i>C. insculpta</i> sightings. Acadia University, Wolfville NS, 88 recs.
17	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
17	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
16	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
16	Holder, M. 2003. Assessment and update status report on the Eastern <i>Lilaeopsis</i> (<i>Lilaeopsis chinensis</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 16 recs.
16	Hunsinger, J. 2021. Species at Risk records from Medway Community Forest Cooperative monitoring plots and baited game cameras, 2019-2020. Medway Community Forest Cooperative, 16 records.
15	Basquill, S.P. 2011 vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
15	Klymko, J.J.D. 2012. Odonata specimens & observations, 2010. Atlantic Canada Conservation Data Centre, 425 recs.
15	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
15	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-05-25]. Mersey Tobeatic Research Institute, 668 recs.
15	Powell, B.C. 1967. Female sexual cycles of <i>Chrysemy spicta</i> & <i>Clemmys insculpta</i> in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.
14	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
14	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
14	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
14	e-Butterfly. 2018. Selected Maritimes butterfly records from 2016 and 2017. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
14	McNeil, J.A. 2018. Snapping Turtle records, 2018. Mersey Tobeatic Research Institute.
13	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (<i>Isoetes prototypus</i>). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
13	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
13	MacKinnon, D.S. 1998. Ponhook Lake survey map & notes. Dept of Environment and Labour, Protected Areas Branch, 13 recs.
13	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
13	Nova Scotia Nature Trust. 2014. Ladyslipper records from Saint Croix Nova Scotia, JLC Ed. Nova Scotia Nature Trust.
12	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
12	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
12	Cameron, R.P. 2013. 2013 rare species field data. Nova Scotia Department of Environment, 71 recs.
12	Hill, N.M. 2021. Observation of <i>Carex haydenii</i> and black ash near Marshy Hope and Ponhook Lake. pers. comm.
11	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (<i>Riparia riparia</i>) in Nova Scotia: inventory and assessment of colonies. Merset Tobeiatc Research Institute, 25 recs.
11	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
11	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.

# recs	CITATION
11	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (<i>Pseudevernia cladonia</i>). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
11	Haughian, S.R. 2018. Description of <i>Fuscopannaria leucosticta</i> field work in 2017. New Brunswick Museum, 314 recs.
10	Belliveau, A.G. & Vail, Cole; King, Katie. 2020. New <i>Allium tricoccum</i> locations, Cornwallis River. Chapman, C.J. (ed.) Acadia University.
10	Bredin, K.A. 2002. NS Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centre, 30 recs.
10	Churchill, J.L.; Walker, J. 2017. Species at Risk Surveys at Correctional Services Canada Properties in Nova Scotia and New Brunswick. Atlantic Canada Conservation Data Centre.
10	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
10	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
10	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
10	Parker, M.S.R. 2011. Hampton Wind Farm 2010: significant floral/faunal observations. , 13 recs.
10	Phinney, L. 2019. Little Brown Myotis maternal colony counts and birdSAR, 2019. Mersey Tobeatic Research Institute.
9	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
9	Basquill, S.P. 2009. 2009 field observations. Nova Scotia Dept of Natural Resources.
9	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
9	Blaxley, Megan; Vinson, Neil. 2020. <i>Peltigera hydrothyrta</i> records from a tributary of Lake Brook, Fundy National Park. Chapman-Lam, Colin J. (ed.) Fundy National Park, 9.
9	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
9	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
9	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
9	Toms, Brad. 2011. Species at Risk data from 2011 field surveys. Mersey Tobeatic Research Institute, 17 recs.
8	Caissie, A. Herbarium Records. Fundy National Park, Alma NB. 1961-1993.
8	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
8	Holder, M.L.; Kingsley, A.L. 2000. Kingsley and Holder observations from 2000 field work.
8	King, Katie; Jean, Samuel. 2021. Black ash observations near Booklyn, NS. E.C. Smith Herbarium.
8	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
8	Klymko, J. Butterfly records at the Nova Scotia Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2017.
8	Neily, T.H. & Anderson, F. 2011. Lichen observations from NRC site at Sandy Cove. , 97.
8	Neily, T.H. 2010. <i>Erioderma pedicellatum</i> records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
8	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
8	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
8	White, S. 2019. Notable species sightings, 2018. East Coast Aquatics.
7	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
7	Cameron, B. 2006. <i>Hepatica americana</i> Survey at Scotia Mine Site in Gays River, and Discovery of Three Yellow-listed Species. Conestoga-Rovers and Associates, (a consulting firm), october 25. 7 recs.
7	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
7	Kennedy, B.; Cron, C. 2019. observations of Poison Sumac and Buttonbush, Nova Scotia. pers. commun to AC CDC.
6	Benjamin, L.K. 2006. <i>Cyrtopodium arietinum</i> . Pers. comm. to D. Mazerolle. 9 recs, 9 recs.
6	Brazner, J.; Hill, N. 2018. Plant observations along the Cornwallis River, Nova Scotia. Nova Scotia Department of Lands and Forestry.
6	Catling, P.M. 1981. Taxonomy of autumn-flowering <i>Spiranthes</i> species of southern Nova Scotia in Can. J. Bot. , 59:1250-1273. 30 recs.
6	Chapman, C.N. (Cody). 2020. Nova Scotia Black Ash (<i>Fraxinus nigra</i>) field observations by Confederacy of Mainland Mi'kmaq. Forestry Program, Confederacy of Mainland Mi'kmaq.
6	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
6	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2009. New Brunswick Dept Natural Resources, 19 recs (14 active).
6	Matthew Smith. 2010. Field trip report from Avon Caving Club outlining the discovery of <i>Cyrtopodium arietinum</i> and <i>Hepatica nobilis</i> populations. Public Works and Government Services Canada.
6	McKendry, Karen. 2016. Rare species observations, 2016. Nova Scotia Nature Trust, 19 recs.
6	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.
6	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
6	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
6	Wissink, R. 2000. Rare Plants of Fundy: maps. Parks Canada, 20 recs.
5	Blaney, C.S.; Mazerolle, D.M.; Klymko, J.; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
5	Cameron, R.P. 2006. <i>Erioderma pedicellatum</i> 2006 field data. NS Dept of Environment, 9 recs.
5	Carter, Jeff; Churchill, J.; Churchill, L. 2020. Bank Swallow colony Scots Bay, NS. Atlantic Canada Conservation Data Centre.
5	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
5	Majka, C.G. & McCorquodale, D.B. 2006. The <i>Coccinellidae</i> (Coleoptera) of the Maritime Provinces of Canada: new records, biogeographic notes, and conservation concerns. <i>Zootaxa</i> . <i>Zootaxa</i> , 1154: 49–68. 7 recs.
5	McMullin, Troy. 2021. <i>Anzia colpodes</i> observations near Kejimikujik National Park. Canadian Museum of Nature.
5	Pepper, C. 2021. Rare bird, plant and mammal observations in Nova Scotia, 2017-2021.
5	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
5	Porter, K. 2013. 2013 rare and non-rare vascular plant field data. St. Mary's University, 57 recs.
5	Tingley, S. (compiler). 2001. Butterflies of New Brunswick. , Web site: www.geocities.com/Yosemite/8425/buttrfly . 142 recs.
5	Towell, C. 2014. 2014 Northern Goshawk and Common Nighthawk email reports, NS. NS Department of Natural Resources.
5	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
5	Wissink, R. 2006. Fundy National Park Digital Database. Parks Canada, 41 recs.
4	Cameron, R.P. 2009. Nova Scotia nonvascular plant observations, 1995-2007. Nova Scotia Dept Natural Resources, 27 recs.

# recs	CITATION
4	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
4	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
4	Cody, W.J. 2003. Nova Scotia specimens of <i>Equisetum pratense</i> at the DAO herbarium in Ottawa. , Pers. comm. to C.S. Blaney. 4 recs.
4	Forsythe, B. 2006. <i>Cypripedium arietinum</i> at Meadow Pond, Hants Co. Pers. comm. to C.S. Blaney. 4 recs, 4 recs.
4	Klymko, J. 2021. Atlantic Canada Conservation Data Centre zoological fieldwork 2020. Atlantic Canada Conservation Data Centre.
4	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
4	Klymko, J.J.D. 2011. Insect fieldwork & submissions, 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 742 recs.
4	Mills, Pamela. 2007. <i>Iva frutescens</i> records. Nova Scotia Dept of Natural Resources, Wildlife Div. Pers. comm. to S. Basquill, 4 recs.
4	Newell, R. & Neily, T.; Toms, B.; Proulx, G. et al. 2011. NCC Properties Fieldwork in NS: August-September 2010. Nature Conservancy Canada, 106 recs.
4	Toms, B. 2015. <i>Lophiola aurea</i> (Goldencrest) records from Molega Lake. Mersey Tobeatic Research Institute, 4 records.
4	Toms, B. 2016. Email list of four GPS locations of Golden Crest (<i>Lophiola aurea</i>) from the previously documented site on Molega Lake, NS. Mersey Tobeatic Research Institute, 4 records.
3	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
3	Blaney, C.S. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre.
3	Bradford, R. 2004. <i>Coregonus huntsmani</i> locations. Dept of Fisheries & Oceans, Atlantic Region, Pers. comm. to K. Bredin. 4 recs.
3	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
3	Doubt, J. 2013. Email to Sean Blaney with Nova Scotia records of <i>Fissidens exilis</i> at Canadian Museum of Nature. pers. comm., 3 records.
3	Hill, N. and D. Patriquin. 2013. 2013 rare plant observations in Williams Lake Backlands area. Fern Hill Institute of Plant Conservation, Berwick, Nova Scotia, 3 records.
3	Hill, N.M., Myra, M. 2017. Email to Sean Blaney regarding rich intervale flora on Nictaux River. Fern Hill Institute, 3 records.
3	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
3	Mills, Pamela. 2008. <i>Clethra alnifolia</i> at Mudflat Lake. Nova Scotia Dept of Natural Resources, Wildlife Div. Pers. comm. to D.M. Mazerolle, 4 recs.
3	Nature Trust of New Brunswick. 2021. Nature Trust of New Brunswick site inventory data submitted in April 2021. Nature Trust of New Brunswick, 2189 records.
3	Neily, T.H. & Pepper, C.; Toms, B. 2015. Nova Scotia lichen location database [as of 2015-02-15]. Mersey Tobeatic Research Institute, 1691 records.
3	Nova Scotia Department of Lands and Forestry. 2018. Wood Turtle observations in, or near, the cornwallis River watershed. NS DLF, pers. comm. to AC CDC.
3	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.
3	Sabine, M. 2016. NB DNR staff incidental Black Ash observations. New Brunswick Department of Natural Resources.
3	Sollows, M.C., 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
3	Staicer, C. 2013. Personal communication concerning <i>Hirundo rustica</i> nesting in and around Kejimikujik NP, NS. Pers. comm.
3	Thompson, R. 2018. Williamsdale Quarry Expansion Project, NS, Environmental Assessment Report. Dexter Construction Company Limited.
3	White, S. 2018. Notable species sightings, 2016-2017. East Coast Aquatics.
2	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
2	Anon. 2017. Export of Maritimes Butterfly records. Global Biodiversity Information Facility (GBIF).
2	Basquill, S.P. 2011. Field observations & specimen collections, 2010. Nova Scotia Department of Natural Resources, Pers. comm. , 8 Recs.
2	Basquill, S.P. 2018. Various specimens, NS DNR field work. NS Department of Natural Resources, 10.
2	Belliveau, A. 2013. email to Sean Blaney regarding <i>Listera australis</i> observations in SW Nova Scotia. Mersey Tobeatic Research Institute, 8.
2	Belliveau, A.G. E.C. Smith Herbarium Specimen Database 2019. E.C. Smith Herbarium, Acadia University. 2019.
2	Blaney, C.S. 1999. Fieldwork 1999. Atlantic Canada Conservation Data Centre. Sackville NB, 292 recs.
2	Chapman-Lam, C.J. 2022. Atlantic Canada Conservation Data Centre 2021 botanical fieldwork. Atlantic Canada Conservation Data Centre, 15099 recs.
2	Chapman, Cody. Unreported Species at Risk Records across Nova Scotia. Chapman, Cody, 5 records.
2	COSEWIC (Committee on the Status of Wildlife in Canada). 2013. COSEWIC Assessment and Status Report on the Eastern Waterfowl <i>Peltigera hydrothyria</i> in Canada. COSEWIC, 46 pp.
2	Gilhen, J., Jones, A., McNeil, J., Tanner, A.W. 2012. A Significant Range Extension for the Eastern Ribbonsnake, <i>Thamnophis sauritus</i> , in Nova Scotia, Canada. The Canadian Field-Naturalist, 126(3): 231-233.
2	Goltz, J.P. 2012. Field Notes, 1989-2005. , 1091 recs.
2	Hicklin, P.W. 1995. The Maritime Shorebird Survey Newsletter. <i>Calidris</i> , No. 3. 6 recs.
2	Hill, N.M. 2013. email communications to Sean Blaney and David Mazerolle regarding the discovery of <i>Listera australis</i> populations at Black River Lake and Middlewood. , 2.
2	Hill, N.M. 2019. Observation of <i>Crocianthemum canadense</i> near Auburn, Annapolis Co. NS on May 29, 2019. Fern Hill Institute, 2 recs.
2	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
2	Honeyman, K. 2019. Unique Areas Database, 2018. J.D. Irving Ltd.
2	Kennedy, B. & Cron, C.; Patriquin, D. 2018. Email to Sean Blaney on observations of <i>Trichostema dichotomum</i> at Shingle Lake, Nova Scotia. , 2 records.
2	Klymko, J.J.D. 2010. Miscellaneous observations reported to ACCDC (zoology). Pers. comm. from various persons, 3 recs.
2	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2011. Atlantic Canada Conservation Data Centre. Sackville NB, 760 recs.
2	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
2	LaPaix, R.; Parker, M. 2013. email to Sean Blaney regarding <i>Listera australis</i> observations near Kearney Lake. East Coast Aquatics, 2.
2	Lock, A.R., Brown, R.G.B. & Gerriets, S.H. 1994. Gazetteer of Marine Birds in Atlantic Canada. Canadian Wildlife Service, Atlantic Region, 137 pp.
2	Manning, I. 2020. Peregrine Falcon nest site observations. pers. comm. to J. Churchill.
2	Mazerolle, David. 2021. Botanical fieldwork 2019-20200. Parks Canada.
2	McAlpine, D.F. 1983. Status & Conservation of Solution Caves in New Brunswick. New Brunswick Museum, Publications in Natural Science, no. 1, 28pp.
2	Mills, P. 2016. Email communication to S. Blaney, re: <i>Scirpus longii</i> at Upper Great Brook, Queens Co. NS. NS DNR, 2 recs.
2	Munro, M. 2003. <i>Caulophyllum thalictroides</i> & <i>Carex hirtifolia</i> at Herbert River, Brooklyn, NS. , Pers. comm. to C.S. Blaney. 2 recs.
2	Munro, M. 2003. <i>Dirca palustris</i> & <i>Hepatica nobilis</i> var. <i>obtusa</i> at Cogmagun River, NS. , Pers. comm. to C.S. Blaney . 2 recs.
2	NatureServe Canada. 2018. iNaturalist Butterfly Data Export . iNaturalist.org and iNaturalist.ca.

# recs	CITATION
2	Neily, T.H.; Smith, C.; Whitman, E. 2011. NCC Logging Lake (Halifax Co. NS) properties baseline survey data. Nature Conservancy of Canada, 2 recs.
2	Newell, R. E., MacKinnon, C. M. & Kennedy, A. C. 2006. Botanical Survey of Boot Island National Wildlife Area, Nova Scotia, 2004. Canadian Wildlife Service, Atlantic Region, Technical Report Series Number 450. 3 recs.
2	Newell, R.E. 2006. Rare plant observations in Digby Neck. Pers. comm. to S. Blaney, 6 recs.
2	Parker, M. 2016. Wood turtle (<i>Glyptemys insculpta</i>) Visual Surveys at Black, Wallace, Musquodobit and Sackville Rivers, Nova Scotia. East Coast Aquatics Inc., 3 records.
2	Parker, M. 2018. East Coast Aquatics ACCDC 2018 Report. East Coast Aquatics, 12 records.
2	Shafer, A.B.A., D.T. Stewart. 2006. A Disjunct Population of <i>Sorex dispar</i> (Long-Tailed Shrew) in Nova Scotia. Northeastern Naturalist, 13(4): 603-608.
2	Sheffield, C.S. 2004. The Rare Cleptoparasitic Bee <i>Epeoloides pilosula</i> (Hymenoptera: Apoidea: Apidae) Discovered in Nova Scotia, Canada, with Distributional Notes
2	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
2	Standley, L.A. 2002. <i>Carex haydenii</i> in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
2	Webster, R.P. 2004. Lepidopteran Records for National Wildlife Areas in New Brunswick. Webster, 1101 recs.
1	Allan Smith. 2011. Cedar stand location at South Williamston. Abitibi Bowater, 1 Rec.
1	Amirault, D.L. 2003. 2003 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
1	Amirault, D.L. 2005. 2005 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 27 recs.
1	Amiro, Peter G. 1998. Atlantic Salmon: Southern Nova Scotia SFA 21. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-11. 1 rec.
1	Anon. Dataset of butterfly records for the Maritime provinces. Museum of Comparative Zoology, Harvard University. 2017.
1	Austin-Smith, P. 2014. 2014 Common Nighthawk personal communication report, NS. NS Department of Natural Resources.
1	Basquill, S. P. 2008. Nova Scotia Dept of Natural Resources.
1	Basquill, S.P. 2004. <i>C. americana</i> and <i>Sedum</i> sp records, 2002. Pers. comm. to C.S. Blaney. 2 recs, 2 recs.
1	Basquill, S.P. 2012. 2012 Bryophyte specimen data. Nova Scotia Department of Natural Resources, 37 recs.
1	Basquill, S.P.; Quigley, E. 2006. New <i>Minuartia groenlandica</i> record for NS. Pers. comm. to C.S. Blaney, Oct 6, 1 rec.
1	Basset, I.J. & Crompton, C.W. 1978. The Genus <i>Suaeda</i> (Chenopodiaceae) in Canada. Canadian Journal of Botany, 56: 581-591.
1	Belliveau, A. & Toms, B. 2012. Email regarding <i>Lophiola aurea</i> (Goldencrest) location on Molega Lake, NS. Mersey Tobeatic Research Institute, 3 records.
1	Belliveau, A.G. 2020. Email to Colin Chapman on new NS locations for <i>Allium tricoccum</i> . Chapman, C.J. (ed.) Acadia University.
1	Benjamin, L.K. 2003. <i>Cypripedium arietinum</i> in Cogmagun River NS. Pers. comm. to S. Blaney, 1 rec.
1	Berg, L. 2020. Canada Warbler observations, Birch Lake, NS. pers. comm. to J. Churchill.
1	Bernard, Laurel. 2013. Email to Sean Blaney regarding <i>Listera australis</i> at Lake Rossignol. Nature Conservancy of Canada, 1.
1	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
1	Brach, A.R. 2019. Correspondence to Sean Blaney regarding <i>Calamagrostis cinnoides</i> specimen from Halifax NS. pers. comm., Harvard University Herbaria, 1 record.
1	Bredin, K.A. 2000. NB & NS Bog Project, fieldwork. Atlantic Canada Conservation Data Centre, Sackville, 1 rec.
1	Breen, A. 2017. 2017 Atlantic Whitefish observation. Coastal Action.
1	Bruce, J. 2014. 2014 Wood Turtle email report, Nine Mile River, NS. NS Department of Natural Resources.
1	Cameron, R.P. 2005. <i>Erioderma pedicellatum</i> unpublished data. NS Dept of Environment, 9 recs.
1	Clayden, S.R. 2020. Email to Sean Blaney regarding <i>Pilophorus cereus</i> and <i>P. fibula</i> at Fidele Lake area, Charlotte County, NB. pers. comm., 2 records.
1	Cook, K. 2016. Wood Turtle record. Pers comm. to Nova Scotia Department of Lands and Forestry.
1	Crowell, A. 2004. <i>Cypripedium arietinum</i> in Weir Brook, Hants Co. Pers. comm. to S. Blaney, 1 rec.
1	Crowell, M. 2013. email to Sean Blaney regarding <i>Listera australis</i> at Bear Head and Mill Cove Canadian Forces Station. Jacques Whitford Environmental Ltd., 2.
1	Crowell, M.J. Plant specimens from Nictaux, NS sent to Sean Blaney for identification. Jacques Whitford Limited. 2005.
1	deGooyer, K. 2018. <i>Chelydra serpentina</i> observation record. Nova Scotia Environment.
1	deGooyer, K. 2019. Snapping Turtle and Eastern White Cedar observations. Nova Scotia Environment.
1	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
1	Eastman, A. 2019. Snapping Turtle observation at Brookfield, Colchester Co. NS. Halifax Field Naturalists Nova Scotia Nature Archive Facebook Page, 1 record.
1	Edge, Thomas A. 1984. Status report on the Atlantic Whitefish (<i>Coregonus huntsmani</i>). Committee on the Status of Endangered Wildlife in Canada.
1	Golder Associates Ltd. 2021. Black Ash location from Goff's Quarry Expansion Environment Assessment, 2017. Golder Associates Ltd., 1 record.
1	Goltz, J.P. 2001. Botany Ramblings April 29-June 30, 2001. N.B. Naturalist, 28 (2): 51-2. 8 recs.
1	Haugthian, S. 2019. <i>Pannaria lurida</i> observations in Nova Scotia and New Brunswick. Nova Scotia Museum.
1	Hill, N. 2014. 2014 Monarch email report, Bridgetown, NS. Fern Hill Institute for Plant Conservation.
1	Hill, N.; Manning, I. 2020. Wild Leek observation, Cornwallis River, NS, floodplain. pers. comm. to J. Churchill.
1	Hill, N.M. 2016. Email communications to Sean Blaney and Alain Belliveau regarding the discovery of <i>Fimbristylis autumnalis</i> on the shores of Loon Lake, Kejimikujik National Park. Pers. comm., 1 rec.
1	Hinds, H.R. 2000. Rare plants of Fundy in Rare Plants of Fundy: maps. Wissink, R. (ed.) Parks Canada, 2 recs.
1	Hope, P. 2002. Field survey of <i>Goodyera pubescens</i> population at Kejimikujik National Park. Kejimikujik National Park, 3 recs.
1	Hope, P. 2007. Water-pennywort (<i>Hydrocotyle umbellata</i>) on Ell Island. Parks Canada, Kejimikujik NP, 1 record.
1	Jacques Whitford Ltd. 2003. Canada Lily location. Pers. Comm. to S. Blaney. 2pp, 1 rec, 1 rec.
1	Johnstone, D.; Churchill J. 2014. 2014 Chimney Swift observation, Kejimikujik NP, NS. Atlantic Canada Conservation Data Centre.
1	Kennedy, B. 2019. observations of <i>Crocianthemum canadense</i> at Bangs Falls, Nova Scotia. iNaturalist.ca.
1	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2010. New Brunswick Dept Natural Resources, 16 recs (11 active).
1	Klymko, J.J.D. 2012. Insect field work & submissions. Atlantic Canada Conservation Data Centre, 852 recs.
1	Lautenschlager, R.A. 2010. Miscellaneous observations reported to ACCDC (zoology). Pers. comm. from various persons, 2 recs.
1	MacKinnon, D.; Wright, P.; Smith, D. 2014. 2014 Common Tern email report, Eastern Passage, NS. NS Department of Environment.

# recs	CITATION
1	MacKinnon, D.S. 2002. Fieldwork 2002. Dept of Environment & Labour, Protected Areas Branch, 1 rec.
1	MacKinnon, D.S. 2012. <i>Goodyera pubescens</i> observation, photo. Pers. comm. to S. Blaney, Sep 18, 1 rec.
1	Manning, I. 2020. Peregrine Falcon observation. Pers. comm. to J.L. Churchill.
1	McAlpine, D.F. 1983. Species Record Cards. Fundy National Park, Library, 1 rec.
1	NatureServe Canada. 2018. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
1	Neily, P.D. Plant Specimens. Nova Scotia Dept Natural Resources, Truro. 2006.
1	Neily, T.H. & Pepper, C. 2020. Nova Scotia SMP lichen surveys 2020. Mersey Tobeatic Research Institute.
1	Neily, T.H. 2004. <i>Hepatica nobilis</i> var. <i>obtusata</i> record for Falmouth NS. Pers. comm. to C.S. Blaney, 1 rec.
1	Newell, R.E. 2004. <i>Hepatica nobilis</i> var. <i>obtusata</i> record. Pers. comm. to S. Blaney, 1 rec.
1	Niel, K. & Majka, C. 2008. New Records of Tiger Beetles (Coleoptera: Carabidae: Cicindelinae) in Nova Scotia. Journal of the Acadian Entomological Society, 4: 3-6.
1	O'Neil, S. 1998. Atlantic Salmon: Eastern Shore Nova Scotia SFA 20. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-10. 4 recs.
1	O'Neil, S. 1998. Atlantic Salmon: Northumberland Strait Nova Scotia part of SFA 18. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-08. 9 recs.
1	Payzant, P. 2018. Satyr Comma record from Bible Hill, NS. https://novascotiabutterflies.ca .
1	Phillips, B. 2017. Emails to John Klymko regarding Eastern Waterfan (<i>Peltigera hydrothyria</i>) occurrences in Fundy National Park. Fundy Biosphere Reserve, 3 recs.
1	Riley, J. 2019. Digby County lichen observations. Pers. comm. to J.L. Churchill, 50 recs.
1	Robicheau, C. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
1	Scott, F.W. 1988. Status Report on the Southern Flying Squirrel (<i>Glaucomys volans</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 2 recs.
1	Shortt, R. UNB specimen data for various tracked species formerly considered secure. Connell Memorial Herbarium, UNB, Fredericton NB. 2019.
1	Skevington, Jeffrey H. 2020. Syrphid records used for the Field Guide to the Flower Flies of Northeastern North America. Canadian National Collection of Insects.
1	Smith, M. 2016. Email regarding additional location of <i>Fimbristylis autumnalis</i> on shores of Loon Lake, Kejimikujik National Park. pers. comm., 1 record.
1	Sollows, M.C.. 2009. NBM Science Collections databases: Coccinellid & Cerambycid Beetles. New Brunswick Museum, Saint John NB, download Feb. 2009, 569 recs.
1	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
1	Spicer, C.D. & Harries, H. 2001. Mount Allison Herbarium Specimens. Mount Allison University, 128 recs.
1	Stewart, P. 2013. email to Sean Blaney regarding the discovery of a <i>Listera australis</i> population at Blockhouse. Envirosphere Consultants Limited, 1.
1	Timmons, M. 2019. Telephone report of <i>Polygala polygama</i> at Aylesford Mountain, Kings Co., NS by Megan Timmons to C.S. Blaney. , 1 record.
1	Toms, Brad. 2009. New <i>Scirpus longii</i> record on Lake Rossignol. Mersey Tobeatic Research Institute.
1	Vinson, N. 2018. Email to S. Blaney regarding new occurrence of <i>Saxifraga paniculata</i> on Point Wolfe River. Parks Canada, 1 record.
1	Vinson, Neil. 2016. Emails to Sean Blaney regarding yellow flower (<i>Primula veris</i>) and coastal habitat leaf rosettes (<i>Primula laurentiana</i>) in Fundy National Park. pers. comm., 2 rec.
1	Vinson, Neil. 2020. Email - additional <i>Peltigera hydrothyria</i> records, Fundy National Park. Chapman-Lam, Colin J. (ed.) Fundy National Park, 2.
1	Weatherby, C.A. 1942. Two weeks in southwestern Nova Scotia. <i>Rhodora</i> , 44: 229-236.
1	Williams, M. Cape Breton University Digital Herbarium. Cape Breton University Digital Herbarium. 2013.
1	Wilson, G. 2013. 2013 Snapping Turtle email report, Wentworth, NS. Pers. comm.
1	Wissink, R. 2000. Four-toed Salamander Survey results, 2000. Fundy National Park, Internal Documents, 1 rec.