

Nepisiguit Falls Generating Station Life Extension Project: 2021 Terrestrial Environment Report

Bathurst Mines, New Brunswick

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Table of Contents

1	Introduction	1
1.1	About the Nepisiguit Falls Generating Station.....	1
1.2	Project Overview	2
1.3	Purpose and Scope of this Technical Report.....	2
2	Scope of Work	4
2.1	Overview of Regulatory Framework	6
2.2	Spatial Focus of Studies	7
2.3	Project Setting	8
3	Vegetation and Wetlands	10
3.1	Desktop Review.....	10
3.1.1	Habitat Conditions	10
3.1.2	Important Habitat Features	13
3.2	Vegetation and Wetland Field Survey Methodologies.....	14
3.3	Vegetation and Wetland Survey Results	14
3.4	Wetlands.....	16
3.5	Special Habitat Features and Critical Habitat	16
4	Birds.....	18
4.1	Bird Survey Methodologies.....	18
4.1.1	Owl Surveys	18
4.1.2	Diurnal Bird Surveys	18
4.1.3	Nightjar Surveys	19
4.1.4	Chimney Swift Presence/Absence Surveys	20
4.2	Bird Survey Results	20
4.2.1	Historical Records of Bird Species of Conservation Concern (SOCC) and Species at Risk (SAR).....	20

4.2.2	SOCC and SAR with Potential or Confirmed Presence within the Sampling Extent.....	25
4.2.3	Bird Field Survey Results	29
5	Bats	33
5.1	Bat Survey Methodology	33
5.1.1	Acoustic Surveys.....	33
5.1.2	Powerhouse Emergence Survey.....	36
5.2	Bat Survey Results	36
6	Other Wildlife Observations	37
7	Summary and Discussion	38
7.1	Vegetation and Wetlands	38
7.2	Birds.....	39
7.3	Bats	39
7.4	Other Wildlife.....	40
8	Closure	41
9	References.....	42
9.1	Literature Cited	42
9.2	Personal Communications	45

FIGURES

Figure 1:	Local Assessment Area (LAA) and Sampling Extent for Wildlife, Vegetation, and Wetlands	9
Figure 2:	Habitat Types Present within the Sampling Extent.....	11
Figure 3:	Map of Known SOCC Plant Locations in or near the LAA.....	17
Figure 4:	Known Locations of Bird SAR and SOCC in the Sampling Extent	24
Figure 5:	Location of Acoustic Monitoring Stations for Bats	35

TABLES

Table 1: Summary of Habitat Types by Area and Percent Cover within the Sampling Extent..... 12

Table 2: Plant SOCC found within the LAA..... 15

Table 3: Bird Species of Special Conservation Concern Reported by the AC CDC as Having Been
Historically Observed within 5 km of the LAA 22

Table 4: Summary of Bird Species Recorded During the June and July 2021 Breeding Bird Surveys..... 30

Table 5: Bat Calls Recorded by Species Group 36

APPENDICES

Appendix A: Atlantic Canada Conservation Data Centre (AC CDC) Report

Appendix B: Representative Habitat Photographs

Appendix C: Plant List

Appendix D: Rare Plant Photographs

Appendix E: Breeding Bird Survey Raw Data

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1 Introduction

This document is a supplementary technical report that is intended to support the Environmental Impact Assessment (EIA) Registration document and other environmental permitting applications for the Nepisiguit Falls Generating Station Life Extension Project (the Project) proposed by the New Brunswick Power Corporation (NB Power) in Bathurst Mines, Gloucester County, New Brunswick, Canada. The Nepisiguit Falls Generating Station (the Station) is a 10.8 megawatt (MW) hydroelectric generating station located on the Nepisiguit River.

Subject to regulatory approval, NB Power is undertaking a multi-faceted life extension project at the Station to extend its service life by approximately 50 years. The Project consists of various components aimed at modernizing, repairing, and/or replacing various components at the Station in phased approach between 2022 and approximately 2030. The Project is an “undertaking” under items (b) and (i) of Schedule A of the New Brunswick *Environmental Impact Assessment Regulation – Clean Environment Act* (EIA Regulation).

1.1 About the Nepisiguit Falls Generating Station

The Project will be carried out at the Nepisiguit Falls Generating Station located in the community of Bathurst Mines, in Bathurst Parish, Gloucester County, New Brunswick. The Station is comprised of the following existing facilities located on the Nepisiguit River:

- Powerhouse and related equipment;
- Forebay spillway dam;
- Submerged gates;
- A multi-span bridge across the forebay;
- Control Building;
- Main Dam and Sluiceway; and
- Impoundment.

The Station consists of two concrete dams built at the crest of a naturally-occurring waterfall overlooking a deeply incised gorge. The concrete dams are equipped with inflatable rubber bladders (known as the forebay bladder and the sluiceway bladder) that sit atop the concrete dam structures. These two dams/bladders control the water level in the impoundment area. The forebay bladder consists of a 1.2 m (4 foot) diameter inflatable rubber bladder that is used to increase water elevations in the forebay beyond those that would occur with the concrete dam alone. The sluiceway bladder consists of a 4.8 m (15 foot) bladder that is situated within the sluiceway and is used to retain water in the impoundment during normal operation or for spilling water during periods of maintenance of flood conditions. Behind the forebay dam, water flows into the powerhouse structure via the penstocks that are integrated into the powerhouse concrete structure. The penstock for each unit passes water through to the associated

turbine-generator unit to generate electricity. From the turbine-generator units, the water then travels through the draft tubes, and discharges via the tailrace into a narrow gorge at the base of the Station. The total head of the facility is approximately 30 m (100 feet) and the average annual generation is approximately 52 million kilowatt-hours (kWh).

The Station relies on the run of the river to generate power and so the impoundment above the dam has a small capacity beyond the natural flow. The impoundment extends as far as three kilometres upstream (west) of the dam, although the difference between the impounded water elevation and the natural flow elevation is most pronounced near the dam where the water reaches depths of up to 8.25 m (Dillon 2021).

1.2 Project Overview

The proposed Project described in the EIA Registration document (Dillon 2021) includes the replacement of up to three turbine-generator units, conducting repairs to or replacing the forebay bridge, replacement of the sluiceway bladder and forebay bladder, and structural repairs to the powerhouse, forebay, and tailrace concrete structures, as well as the ongoing operation of the refurbished Station for a further 50 years (up to approximately 2075). During work on some of the water control components (particularly the bladder replacements), there will be a temporary dewatering of the impoundment down to lower-than-normal levels for a few months while certain Project components are being repaired or replaced. Although there will be temporary dewatering of the impoundment and the construction of cofferdams to allow for repairs or replacement activities to be conducted under dry conditions, there is no anticipated permanent loss of forested or aquatic habitat associated with the Project. The potential for effects on terrestrial valued components (VCs) lies in the temporary lowering of the impoundment water level while the sluiceway bladder and forebay bladder are replaced. The maximum temporary lowering of the water level will be approximately 2.4 metres (J. Doucet, pers. comm., 2021). The Project and its potential effects on the environment are described in detail in the EIA Registration document for this Project (Dillon 2021).

1.3 Purpose and Scope of this Technical Report

Dillon Consulting Limited (Dillon) was retained by NB Power to complete natural environment surveys in support of a provincial EIA registration and other environmental permitting requirements for the Project. Boreal Environmental Inc. (Boreal) was engaged by Dillon to conduct certain elements of the study including conducting field work and associated data analysis and reporting to characterize the conditions for certain valued components (VCs) of the Project environment, namely vegetation (plants), wetlands, birds, bats, and other wildlife.

Valued components are those components of the biophysical and socioeconomic environments that are of value or interest to regulatory agencies, the public, other stakeholders, and Indigenous peoples. VCs are selected for assessment on the basis of: regulatory issues, scientific concern, legislation, guidelines, policies, and requirements; input arising from consultation with regulatory agencies, the public, stakeholder groups, and First Nations; field reconnaissance; and professional judgment.

While many VCs were included in the scope of the EIA, the scope of this study is limited to the suites of terrestrial plants, animals, and habitats that may interact with the Project and are either protected by laws and regulations, or have populations considered to be vulnerable to human activities and development. For this Project, it was determined that the Terrestrial Environment VCs would include:

- Plants;
- Wetlands; and
- Wildlife, with a focus on:
 - Birds: birds are found in a wide range of habitats such as those found in the vicinity of the Station and most are protected under the *Migratory Birds Convention Act* or the *New Brunswick Fish and Wildlife Act*;
 - Bats: Three of the four resident, overwintering bat species have been listed as species at risk (SAR). The listed species may forage over water, and some are known to form maternity colonies in buildings; and
 - Other wildlife species at risk or species of conservation concern (SOCC) that might be present in the area.

This technical report provides a summary of field studies of these VCs conducted around the Station and includes a description of the regulatory framework; survey scope and methodology; a summary of the results; and a discussion of the findings. The assessment of residual effects (including potential interactions and mitigation) of the Project on wildlife is addressed within the main body of the Project's EIA Registration document (Dillon 2021).

Field surveys in support of other VCs are summarized in separate technical reports that are also intended to support the EIA registration and other environmental permits.

2 Scope of Work

The New Brunswick “Guide to Environmental Impact Assessment in New Brunswick” (EIA Guide; NBDELG 2018) as well as other environmental permitting in Canada requires that physical and natural features be described and assessed to support assessment of environmental effects and permitting including, where appropriate, the collection of field data during appropriate seasonal windows. This information typically includes the following:

- The type, extent, and significance of any wildlife populations and/or habitat;
- Presence of, or potential for, wildlife and plant species of conservation concern (SOCC) and species at risk (SAR) or their habitat; and
- The type and extent of wetland habitat.

The presence of other environmentally significant areas, including National Wildlife Areas, Migratory Bird Sanctuaries, game reserves, Important Bird Areas (IBAs), Western Hemisphere Shorebird Reserve Network (WHSHRN) sites, Protected Natural Areas (PNAs), and designated Critical Habitats for species at risk.

Boreal’s terrestrial ecologists conducted field surveys for plants and wildlife (terrestrial surveys) for the Project in the summer of 2021. The scope of work for terrestrial surveys for this Project is based upon an understanding of the nature of the Project, the extent of the area of anticipated changes to the environment, as well as Dillon’s and Boreal’s experience in assessing similar landscapes/natural systems. For the purposes of this report in supporting the EIA registration for the Project, the scope of assessment considers the potential for effects on species that may be associated with the riparian habitat in this area and are either protected by legislation or have populations that are sensitive to localized changes in habitat. Aquatic species and their habitat are addressed separately in the fish and fish habitat technical report (Dillon 2022). Because some elements of the vegetated and wildlife environments are more sensitive to human caused disturbance, and/or are protected by specific regulations that were developed in response to their vulnerability to human activities, the terrestrial VCs focus on certain specific elements. Those elements and the regulatory framework that protects them are as follows:

- **Birds** – All migratory birds and their eggs are protected from harm under the *Migratory Birds Convention Act* (MBCA), and many non-migratory birds are protected under the *New Brunswick Fish and Wildlife Act*. Among birds, special attention will be given to species of conservation concern and species at risk. We define “species at risk” (abbreviated SAR) as those species that are listed as “Extirpated”, “Endangered”, “Threatened”, or “Special Concern” on Schedule 1 of the federal *Species at Risk Act* (SARA) or in the *New Brunswick Species at Risk Act* (NB SARA). We also define “species of conservation concern” (SOCC) as those species that are not SAR but are listed in other parts of SARA, NB SARA, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or are regionally rare or endangered by the Atlantic Canada Conservation Data Centre

(AC CDC) (i.e., those species with AC CDC S-ranks of “extremely rare” [S1], “rare” [S2], or “uncommon” [S3]);

- **Bats** – According to the above definitions, all bats that occur in New Brunswick are considered SOCC or SAR. Three resident overwintering species of bats; northern long-eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*) have been designated as Endangered under SARA due the population declines from white-nose-syndrome (WNS). Little brown bat and tri-colored bat are known to roost in buildings or trees and forage over water, and therefore may occur near the Station;
- **Wetlands** – Wetlands are defined under the New Brunswick *Clean Water Act* as “land that (a) either periodically or permanently, has a water table at, near or above the land’s surface or that is saturated with water, and (b) sustains aquatic processes as indicated by the presence of hydric soils, hydrophytic vegetation and biological activities adapted to wet conditions”;
- **Plant Species of Conservation Concern and Species at Risk** – This study focusses on plant species of whose local or regional populations may be at risk of extirpation due to human activities. As per the above definitions, the focus is on SAR and SOCC; and
- **Critical or sensitive vegetation communities and wildlife habitats** – These would include:
 - habitats designated as protected Critical Habitat as defined under Section 2 of SARA;
 - any Environmentally Significant Areas (ESAs) noted for the support of certain wildlife and plant species or groups such as birds (Tims and Craig 1995);
 - provincially designated Protected Natural Areas (PNAs);
 - other vegetation communities with a high concentration and diversity of plant SOCC; and
 - habitats identified as protected or managed for wildlife by federal and provincial authorities or non-governmental organizations (e.g., Nature Trust of New Brunswick).

Each terrestrial study category (i.e., birds, bats, plants, and wetlands) will be addressed in separate sections of this report. For each section, the survey methods will be described and a summary of the results provided. A discussion of the status of these categories will follow, including a summary of the general importance of the site for these sensitive/protected species and habitats and important considerations for local populations of these species when considering potential Project interactions.

The scope of the wildlife VC is limited to non-aquatic animal species. Aquatic species are described in the document titled “2021 Fish and Fish Habitat Technical Report – Nepisiguit Falls Generating Station Life Extension Project, Bathurst Mines, New Brunswick” (Dillon 2022). Plants assessed in the report can be terrestrial or aquatic, although due to the depth of the impoundment, the extensive annual ice scour, and the rockiness of the shoreline in many areas, there were few aquatic plant communities, and only along the margins of the water in some areas, these could be adequately and safely assessed from the shoreline. No effects on wildlife or vegetation are anticipated in the gorge and tailrace below the dam, and the downstream riparian area was restricted to access due to safety considerations; as such, terrestrial surveys discussed in this report were focused on the impoundment area.

2.1 Overview of Regulatory Framework

This section outlines the provincial and federal Acts and Regulations that may apply to a development project of this nature.

The New Brunswick *Environmental Impact Assessment Regulation – Clean Environment Act*, administered by the New Brunswick Department of Environment and Local Government (NBDELG), establishes the EIA process in New Brunswick. The EIA Regulation requires that all “undertakings” listed on Schedule A of the EIA Regulation (including their proposed construction, operation, modification, extension, abandonment, demolition, or rehabilitation) require registration. The following items under Schedule “A” of the EIA regulation applies to the Project: “(b) all electric power generating facilities with a production rating of three megawatts or more” (for the physical life extension work including replacement and repairs associated with the Station) and item “(i) all causeways and multiple-span bridges”.

The federal *Migratory Birds Convention Act* (MBCA) provides overarching protection for individual and populations of birds and their nests against harm or destruction. The MBCA and associated regulations are administered by Environment and Climate Change Canada (ECCC) through its Canadian Wildlife Service (CWS). Species groups protected by the MBCA include: songbirds, waterfowl, and seabirds; however, grouse, hawks, eagles, owls, blackbirds, or jays are not afforded protection under the MBCA but are rather protected under the New Brunswick *Fish and Wildlife Act*.

The New Brunswick *Fish and Wildlife Act* enables the provincial government to create wildlife refuges and wildlife management areas; it regulates hunting, fishing, possession, and sale of wildlife in the province; and it establishes the provincial Wildlife Fund.

Wetlands are protected by the New Brunswick *Watercourse and Wetland Alteration Regulation – Clean Water Act* under the mandate set by the New Brunswick Wetlands Conservation Policy (NBDNR and NBDELG 1991). Any proposed alterations within a wetland, or within their 30 m regulated buffer, requires permitting and potential compensation through the NBDELG’s Watercourse and Wetland Alteration (WAWA) Program.

The federal *Species at Risk Act* (SARA) was created to provide additional protection for plant and wildlife species against extirpation, extinction, or endangerment from human activities. Currently, only the species listed as “Extirpated”, “Endangered”, or “Threatened” on Schedule 1 of SARA have federal protection. Provisions to protect and recover a species come into effect once it has been listed on Schedule 1 of SARA. Additionally, in this report and in the EIA Registration document, we also consider species listed as “Special Concern” on Schedule 1 of SARA to be SAR even though they have no specific legal protection under SARA. Several bird species including those with potential to occur near the Station are listed under Schedule 1 of SARA. In 2014, three of the four New Brunswick resident overwintering bat species were listed as Endangered under the federal SARA due to the decimation of local populations by an introduced infectious disease known as white nose syndrome (WNS) that spreads in the damp conditions of natural winter hibernacula. These protected species are the tri-colored bat (*Perimyotis*

subflavus), the little brown bat (also known as the little myotis, *Myotis lucifugus*), and the northern myotis (also known as the northern long-eared bat, *Myotis septentrionalis*).

The New Brunswick *Species at Risk Act* (NB SARA) provides legislative protection for species listed in Schedule 1 of the Act. The NB SARA includes four listed migratory bird species: Peregrine Falcon (*Falco peregrinus anatum*), Bald Eagle (*Haliaeetus leucocephalus*), Piping Plover (*Charadrius melodus melodus*), and Harlequin Duck (*Histrionicus histrionicus*).

2.2 Spatial Focus of Studies

The spatial parameters for the terrestrial field studies were designed around the conditions at the site, the nature of the Project and anticipated disturbance/alterations, the ecological setting of the Project, and the regulatory framework that protects sensitive elements of the terrestrial biome.

The Project involves several stages involving the replacement or refurbishment of several components of the Station but none of these involve the permanent loss of forested habitat or aquatic habitat. There are no substantial changes to the environment (temporary or permanent) anticipated downstream of the Station that would adversely affect wildlife or the vegetated/wetland environment. The greatest potential for effects on wildlife, plants, or wetlands that were identified were associated with the temporary dewatering of the impoundment for the replacement of the forebay and sluiceway bladders. There was also a small likelihood of interactions with protected wildlife species being affected directly if species such as bats, swallows, or swifts were found to be using the powerhouse itself as nesting habitat.

To assess the potential effects of the anticipated activities and changes to the environment that are anticipated from the Project of the terrestrial environment, multiple spatial scales were defined at which sampling and assessments would occur. The smallest scale for the assessment is the **Project Site**.

The **Project Site** is defined in the EIA Registration document as the area of physical disturbance (or physical footprint) associated with the Project (Dillion 2021). Although the total land area of the properties associated with the Station property is approximately 40.2 ha, the entirety of that area will not be disturbed by the Project, with only the areas of these properties that will be physically used to accomplish the Project. Therefore, the Project Site on land consists of an area of approximately 40.2 ha upon which Project activities will be carried out, which includes all the Station-related facilities as well as areas to be used as laydown/ temporary storage for the construction activities.

Encompassing and extending beyond the Project Site is a larger area where interactions between the proposed Project and the terrestrial VCs could be reasonably expected to occur. The extent of the studies is referred to as the **Local Assessment Area (LAA)**. The **LAA** (Figure 1) is defined as the spatial limits around the Project where Project-environmental interactions with VCs 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 VC). While there are no substantial direct effects anticipated on the natural terrestrial habitats around the facility, wildlife and plants that are closely associated with the impoundment area (mainly for foraging) may be affected by the temporary dewatering of the impoundment. As a result, the LAA was designed to

encompass the direct effects of the Project Site as well as the portion of the impoundment where the dewatering could result in the most significant change to the area of open water upstream of the dam. The LAA extends approximately 500 m upstream of the Station and is approximately 7.3 ha in size, including both the open water of the impoundment and adjacent land and facilities.

At a slightly larger scale than the LAA, the **Sampling Extent** encompasses the LAA, but may extend beyond where sampling radius extended beyond the boundary of the LAA due to the nature of the surveys conducted for vegetation and wildlife. Because birding surveys are conducted using sound and sight, birds are heard and recorded up to 100 m away from the birder. Also, to understand the use of the local terrestrial habitat by the birds recorded at the site, the characterization of the vegetated habitat types encompassed the Sampling Extent for birds. The Sampling Extent is approximately 30.9 ha in size and extends approximately 650 m of the impoundment upstream (west) of the dam and on each side of the impoundment, approximately 100 m beyond the LAA.

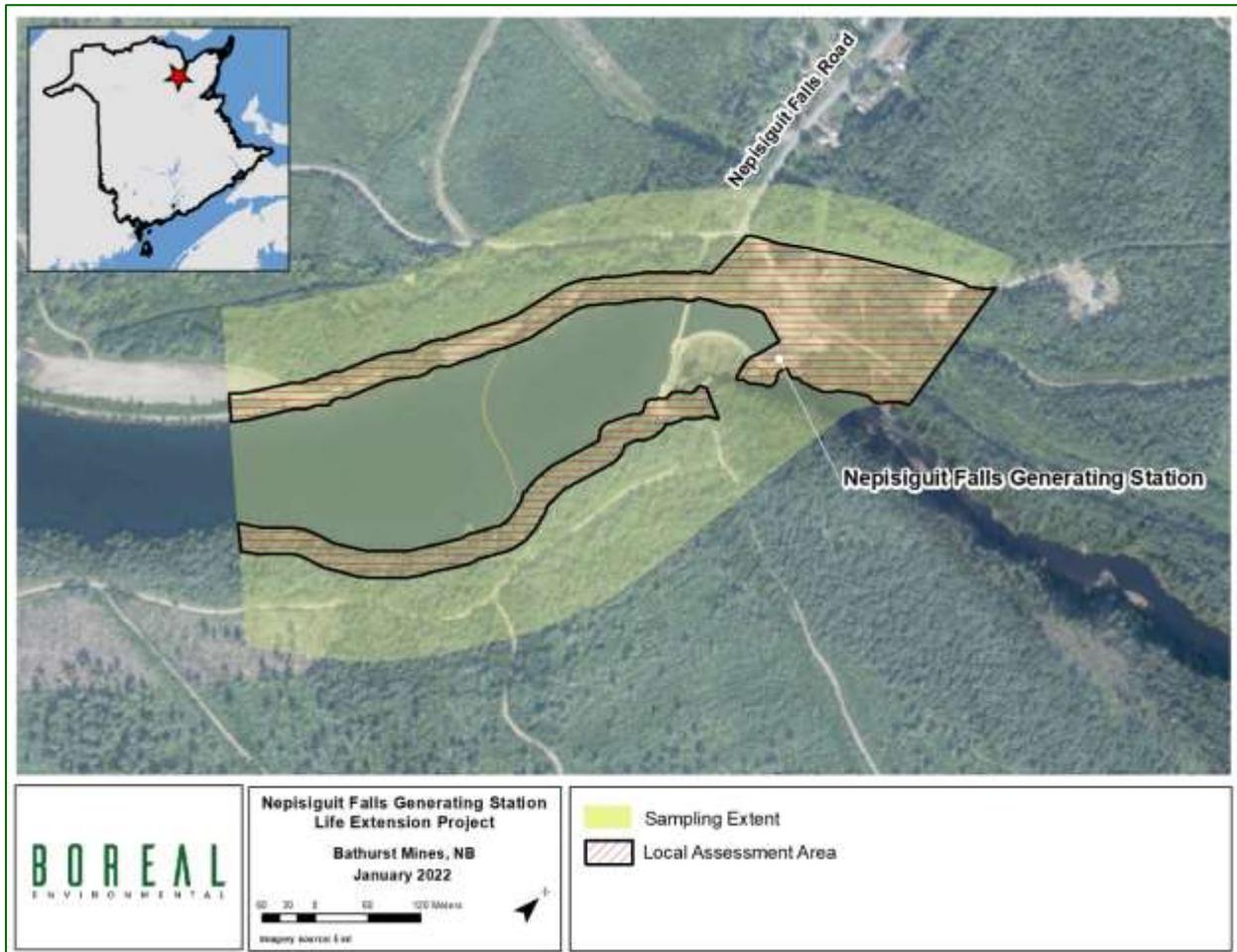
2.3 Project Setting

The Station is located within the Northern Uplands ecoregion and, more specifically, near the southern tip of the Tjigog ecodistrict, which sits on an undulating plateau that extends from the North Charlo River down to the Nepisiguit River. North-easterly flowing watercourses along bedrock faulting characterize this area (Zelazny 2007).

The Tjigog ecodistrict itself is a transitional area between the higher elevations of the Tetagouche ecodistrict to the southwest and the Nicolas-Denys ecodistrict to the northeast, with elevations ranging from 300 m to 100 m above mean sea level (m amsl). Compact, medium-textured soils, originally from metasedimentary and igneous rocks, dominate the southern reach along the Nepisiguit River (Zelazny 2007). Within this ecoregion, tolerant hardwood stands dominated by American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and yellow birch (*Betula alleghaniensis*) on well-buffered soils and along lower elevations. On the more inland and higher elevations, coniferous trees become more prevalent, especially balsam fir (*Abies balsamea*), black spruce (*Picea mariana*) and white spruce (*Picea glauca*), red pine (*Pinus resinosa*), and white pine (*Pinus strobus*). In the river valleys of this region, trembling aspens (*Populus tremuloides*) are particularly common (Zelazny 2007).

The position of the LAA near the southern end of the Tjigog ecodistrict places it on a major ecological transition between the Eastern Lowlands and the Northern Uplands ecodistricts. The LAA shows evidence of being a transitional zone between northern, more boreal conditions, and the Acadian forest of Southern New Brunswick. Tree species that are not typical of the Tjigog ecodistrict and that are near their northern range limit in this area (e.g., red spruce, red oak, and beech) were found to be abundant in the Sampling Extent. This transition between ecological zones may also indicate that other plant species may be present at both the southern range limits and northern range limits may be present. Many of the plant species found in Northern New Brunswick that are considered rare by the AC CDC are at their southern range limit and tend to be much more common further north.

FIGURE 1: LOCAL ASSESSMENT AREA (LAA) AND SAMPLING EXTENT FOR WILDLIFE, VEGETATION, AND WETLANDS



3 Vegetation and Wetlands

This section presents the results of a desktop review of available information on vegetation and wetlands for the Project, followed by the methods and results of field surveys conducted in 2021 for vegetation and wetlands in the Sampling Extent.

3.1 Desktop Review

Sources of readily available information from reputable sources on the ecological setting of the Nepisiguit Falls area were consulted in advance of field surveys to identify habitat types present within the LAA. These information sources included:

- Known locations of previous records of plant SOCC and SAR, and sensitive habitats such as ESAs from the AC CDC (AC CDC 2021), included in Appendix A; and
- Aerial imagery and provincial wetland mapping available on the online provincial geographic information gateway: GeoNB, hosted by Service New Brunswick.

3.1.1 Habitat Conditions

To characterize the vegetation communities and habitats for the Project, the Sampling Extent (Figure 1) for the bird studies was used as the extent of the assessment to provide context for the presence of the recorded bird species, as well as other plant and wildlife species observed. The total size of the Sampling Extent was approximately 30.9 ha and consists of dense young shade intolerant hardwood, mature mixed deciduous forest, mature coniferous forest, disturbed or anthropogenic habitats, and aquatic habitats. Between the disturbed areas, the gravel roads, and the river corridor, forested edge habitat is abundant and interior forest is lacking. The total area within the Sampling Extent is roughly divided between open, largely unvegetated habitats (i.e., aquatic and disturbed areas), and mature, mainly conifer-dominated forest communities. The surrounding landscape (i.e., outside of the Sampling Extent) consists forest in various stages of development, decommissioned mines, and low-density residential development. Each vegetation community type present within the LAA and Sampling Extent is described below and shown on Figure 2.

FIGURE 2: HABITAT TYPES PRESENT WITHIN THE SAMPLING EXTENT

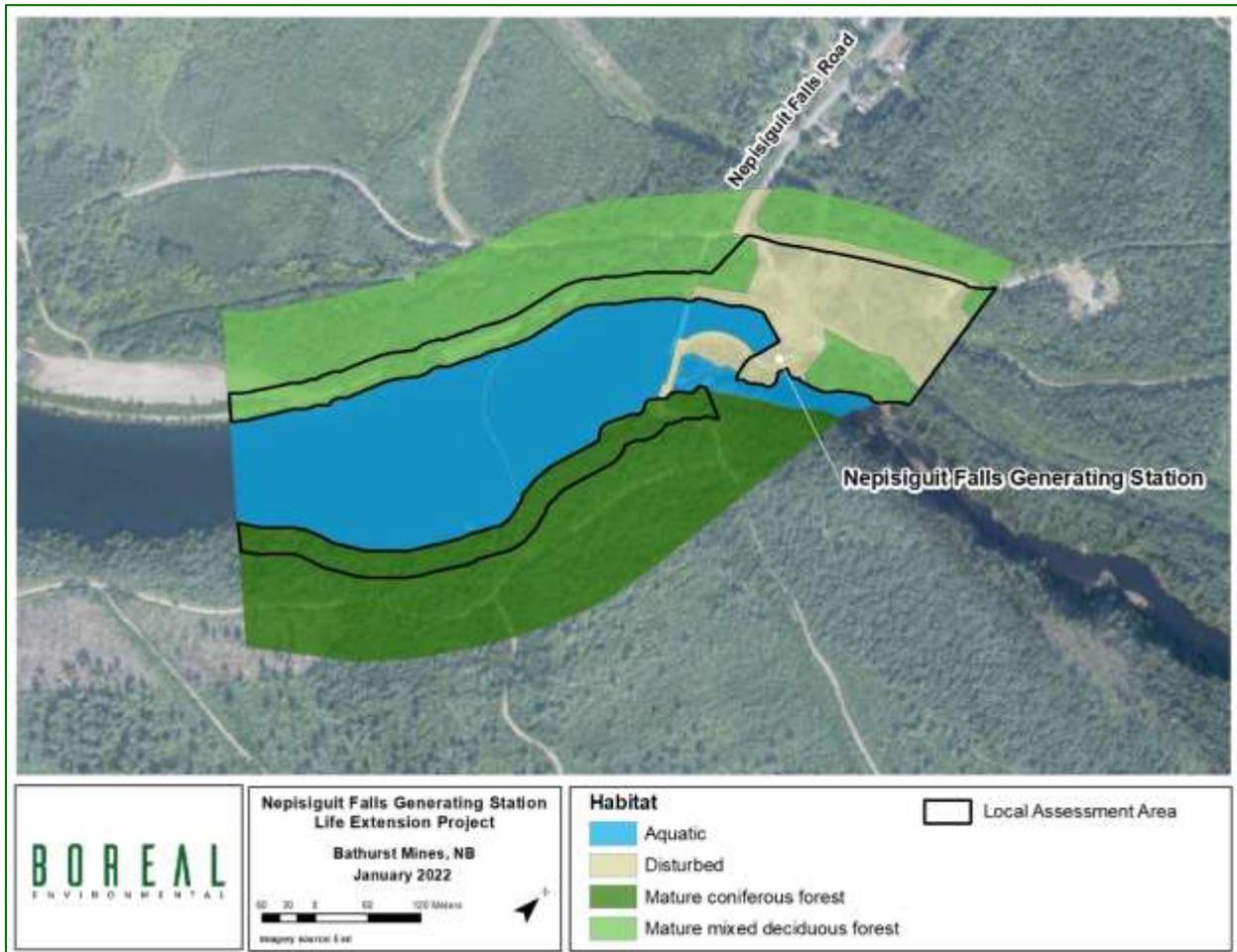


Table 1 provides a summary of habitat types by area and percentage of the Sampling Extent occupied by each type, according to the New Brunswick Department of Natural Resources and Energy Development (NBDNRED) forest inventory. Habitat types identified in the NBDNRED forest inventory were verified in the field during the field surveys and adjusted accordingly where the forest inventory differed from the field survey or recent aerial photography. Detailed descriptions of each habitat type are provided below, and representative photographs can be viewed in Appendix B.

TABLE 1: SUMMARY OF HABITAT TYPES BY AREA AND PERCENT COVER WITHIN THE SAMPLING EXTENT.

Stand Type	Area (ha)	Percent of Sampling Extent (%)
Disturbed/Anthropogenic (DIST)	3.61	11.7
Aquatic (AQ)	9.07	29.4
Mature mixed deciduous forest (MMDF)	9.05	29.3
Mature coniferous forest (MCF)	9.14	29.6
Total	30.9	100

Disturbed/Anthropogenic (3.1 ha)

Disturbed (DIST) habitat in the Sampling Extent consists of gravel roads and parking areas, generating station buildings, and associated infrastructure. This habitat type is generally unvegetated or covered with mowed grass or non-native species-dominated grass and forb communities. It is generally considered to have lower potential to support rare plants and wildlife, although building rooftops and open disturbed ground can provide nesting habitat to certain bird species (e.g., common nighthawks or killdeer), although most of the disturbed habitat in the Sampling Extent is subject to regular human traffic and is less suitable for breeding birds.

Aquatic (9.07 ha)

Aquatic (AQ) habitat within the Sampling Extent is characterized by lotic aquatic habitat (i.e., Nepisiguit River dam impoundment) situated above Nepisiguit Falls. Water depths within the impoundment during the July 2021 field program for the fish and fish habitat generally ranged from 5.25 m to 8.25 m (Dillon 2022). The depth tended to increase rapidly with increasing distance from the shoreline so that there was only a small amount of transitional habitat between land and the water and very little aquatic vegetation. This habitat was anticipated to represent an important habitat feature for aerial insectivores such as bats, certain bird species that forage on insects over water (such as swallows), and piscivorous birds (such as Belted Kingfishers and Bald Eagles). The habitat located below the falls includes steep sided bedrock cliffs and rocky, scoured shoreline mostly lying outside of the Sampling Extent.

Mature Mixed Deciduous forest (9.05 ha)

Mature mixed deciduous forest (MMDF) is approximately 60 years old. The overstory tree stratum is dominated by tall emergent trembling aspen (*Populus tremuloides*), large-toothed aspen (*Populus grandidentata*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), and white birch (*Betula papyrifera*). American beech (*Fagus grandifolia*) is abundant in the tree stratum but tends to be stunted due to beech bark disease, and forest insect (*Cryptococcus fagisuga*), and disease (*Neonectria faginata*) complexes found in New Brunswick. The understory and shrub layer are well developed, with shrub sized American beech and sugar maple, beaked hazelnut (*Corylus cornuta*), and striped maple (*Acer pensylvanicum*). The herbaceous layer is well developed along the edge of the river/impoundment, where water and sunlight availability are high, and becomes less developed and patchy further inland from the river's edge.

Mature Coniferous Forest (9.14 ha)

Mature coniferous forest (MCF) lies entirely on the southern side of the impoundment. This area is characterized by rocky outcrops and ledges and very little shoreline habitat. The tree strata was dominated by a combination of red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), red maple, black spruce, and scattered white birch; however, drier microsites within this habitat type were dominated by black spruce (*Picea mariana*), and white pine (*Pinus strobus*) and large-tooth aspen (*Populus grandidentata*) that were scattered throughout the stand. The understory was well developed with regenerating red/black spruce, balsam fir and bracken fern (*Pteridium aquilinum*) where there were small openings in the canopy. The shrub layer of drier sites was not well developed; however, there were scattered black spruce and white pine saplings scattered throughout these sites. Ground cover and herbaceous layer consisted of bracken fern, lowbush blueberry (*Vaccinium angustifolium*), and a continuous layer of Schreber's moss (*Pleurozium schreberi*), reindeer moss (*Cladonia rangiferina*), and caribou moss (*Cladonia rangiferina*).

3.1.2 Important Habitat Features

The AC CDC report (AC CDC 2021; Appendix A) identifies one Environmentally Significant Area (ESA) for birds within 5 km of the LAA - Doctor Bells Meadow Ducks Unlimited Site (ESA #267). This area is a pure inland sedge meadow, a rare habitat type in Northern New Brunswick. Although the ESA is designated because of the type of wetland, it is excellent breeding habitat for Black and Ring-necked Ducks. This habitat type does not occur within the Sampling Extent.

The nearest Important Bird Area (IBA) is Pokeshaw Rock (NB005) located over 57 km from the Station along the northern coastline of the Baie des Chaleurs between Bathurst and Caraquet, New Brunswick. Pokeshaw Rock is a small barren sea stack important as a nesting colony for Double-crested Cormorants (Bird Studies Canada 2022).

3.2 Vegetation and Wetland Field Survey Methodologies

Vegetation and wetland surveys were conducted during the 2021 field season over the full extent of the LAA (see Figure 1). The survey dates were spread out over the length of the growing season in order to capture the optimal survey periods for various species with differing rates of development. Early surveys were conducted on June 8 and 9, 2021 with additional surveys conducted on July 6, 7, 8, and 9, 2021.

Terrestrial surveys were conducted in a random meandering fashion focusing on areas where there were historical AC CDC records of rare plants and high potential micro-site habitats within the LAA. Access to shoreline habitat on the north side of the impoundment was restricted by NB Power; therefore, Boreal staff surveyed these areas with a DJI mini 2 drone capable of capturing video at 4K resolution and still images at 12 megapixels. Specimens were collected for species that could not be identified in the field for more in-depth examination and identification. During the surveys, all vascular plant species encountered were recorded and specific location data were recorded for each SOCC and/or SAR location. Information on major plant community types and their extent and location were recorded.

During these surveys, any wetlands encountered would be delineated in accordance with the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and the Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (USACE 2008).

3.3 Vegetation and Wetland Survey Results

Derrick Mitchell of Boreal Environmental surveyed the LAA on June 8 and 9, and July 6, 7, 8, and 9, 2021 by traversing the entire LAA, but with special attention to shoreline areas where rare plant potential was considered to be highest. Surveys downstream of the dam were limited to the area around the facility and the tailrace road area due to safety restrictions and the lack of planned disturbance (and related anticipated effects) from the Project in that area.

The AC CDC data report (AC CDC 2021; Appendix A) shows a total of 368 records of 35 different species of vascular plant SOCC having been historically observed within a 5 km radius of the LAA. The AC CDC records of plant SOCC and SAR within 5 km show a particular concentration of rare plants along the Nepisiguit River for several kilometres upstream and downstream of the dam. However, except for the single record of Drummond's rockcress (*Boechea stricta*), there were no other SOCC/SAR records within the LAA itself. Many of the AC CDC records are for species that are adapted to riverine systems where the ice scours shorelines during spring freshet, and wide fluctuations in water levels create unique habitat conditions along the exposed rocky shorelines for plant species that are uniquely adapted to those conditions. Along the forested shorelines of the slower moving and stable waters of the impoundment, the conditions are not as suitable for such species, and so their scarcity within the LAA is not unexpected.

Many of the AC CDC SOCC plant records are species with northern affinities that are at or near their southern range limit in Northern New Brunswick. These species may have limited distributions in the

province but can be locally abundant in their limited range where the conditions are favorable. The Project setting lies at the transition between more temperate southern biomes and the Northern Uplands ecoregion, where many species that are common in most of the province become scarcer (such as red spruce, beech, and red oak).

Among the AC CDC records within 5 km of the LAA are 14 records of black ash (*Fraxinus nigra*), a SAR which is listed as Threatened under SARA. This assessment was recently made because of the threat posed by the introduction of the invasive the Emerald Ash Borer (*Agilus planipennis*) into Canada, which is anticipated to decimate native ash species throughout much of their North American range. None of the known records of black ash in the AC CDC report are within the LAA, and none were found during field surveys.

During the course of the field work, a total of 196 plant species were recorded within the LAA. Of these, 28 species were not native to New Brunswick. A complete list of plant species encountered within the LAA is presented in Appendix C. Only two plant SOCC were found within the LAA: Drummond’s rockcress (AC CDC S-rank: S2) and cut-leaved anemone (AC CDC S-rank: S2) (see Table 2). There were no plant SAR found during the field surveys.

TABLE 2: PLANT SOCC FOUND WITHIN THE LAA

Scientific Name	Common Name	SARA Status	NB SARA Status	AC CDC S-Rank	NBDNRED Status	Number Observed
<i>Boechea stricta</i>	Drummond's rockcress	NA	NA	S2	Sensitive	31
<i>Anemone multifida</i>	Cut-leaved anemone	NA	NA	S2	Sensitive	2

AC CDC S-Ranks as follows: S1: extremely rare in province; S2: rare in province; S3: uncommon in province; S4: widespread, common and apparently secure in province; S5: widespread, abundant and demonstrably secure in province S#S# = a numeric range rank used to indicate any range of uncertainty about the status of the species or community; SNA: Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities. B= Breeding, N = Nonbreeding, M = Migrant, U = Unrankable. NA – not applicable. (AC CDC 2021).

The Drummond’s rockcress is ranked S2 by the AC CDC and Sensitive provincially as it is only found in a small number of locations in the province. Their locations as determined by the field surveys are shown on Figure 3, and photos of these plants are in Appendix D. Its provincial distribution is scattered, with occurrences across the province, typically occurring on rocky shorelines of larger rivers and waterbodies, but occasionally occurring away from water. Within the LAA, 31 individual Drummond’s rockcress plants were found in a small area along the road leading to the tailrace of the Station, below the falls. More specifically, it was concentrated on the south facing rock cut and near the tailrace platform. The location suggests that this plant requires bare rock substrate and high humidity from the falls to proliferate.

Two cut-leaved anemone plants were found at one location at the top of the tailrace road. This plant is ranked S2 by the AC CDC and its provincial population is considered Sensitive. This plant had been

damaged by the recent application of herbicide in the area surrounding the Station. At the time of the survey, the leaves of one of the plants were yellowing, indicating that it had been impacted by herbicide. Areas immediately adjacent to the cut-leaved anemone had obviously been directly impacted by the application of herbicide. Given its rarity, NB Power should use caution when using herbicides so as to not adversely affect these sensitive populations.

While there were several plant species identified within the LAA that are known to have traditional medicinal use or have edible qualities, they were not present in abundant quantities.

3.4 Wetlands

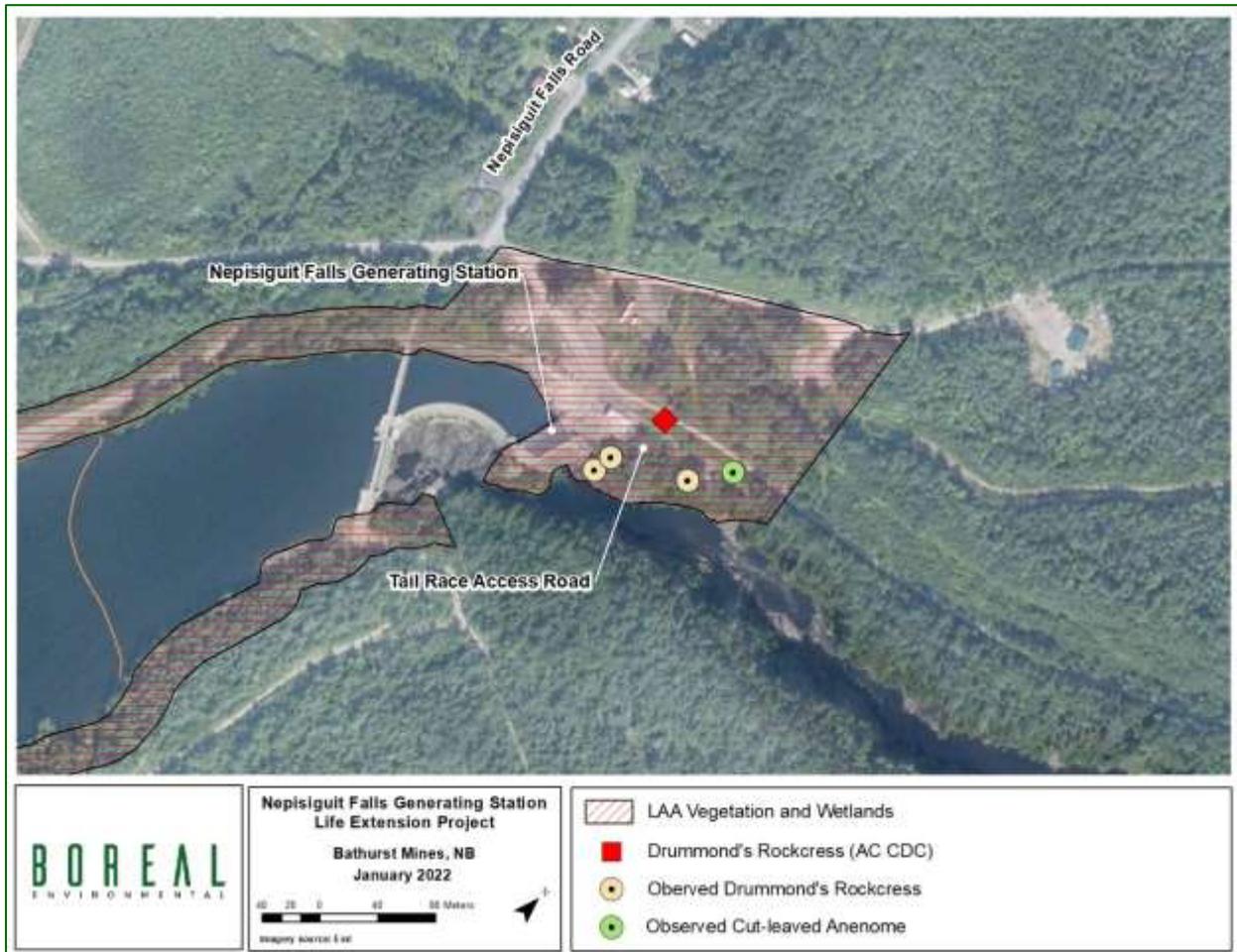
A desktop review of provincial wetland mapping indicated that no suspected wetlands were present in the LAA.

During fieldwork, no wetlands were encountered within the LAA (Figure 1). Throughout the LAA, the banks of the Nepisiguit River tend to be steep, with an abrupt transition between upland and the impoundment such that conditions were not favourable to the formation of riparian wetlands.

3.5 Special Habitat Features and Critical Habitat

Other than the Doctor Bells Meadow Ducks Unlimited Site ESA (ESA #267) mentioned in Section 3.1.2 above, the AC CDC data report (AC CDC 2021; Appendix A) indicates that there are no protected or special habitat features (including Critical Habitat, Protected Natural Areas (PNAs), and Important Birds Areas (IBAs) within 5 km of the LAA.

FIGURE 3: MAP OF KNOWN SOCC PLANT LOCATIONS IN OR NEAR THE LAA



4 Birds

This section presents the methods and results of field surveys conducted in 2021 for birds in the Sampling Extent.

4.1 Bird Survey Methodologies

Breeding bird surveys were conducted within the Sampling Extent shown on Figure 1 using the methods outlined in the Maritime Breeding Bird Atlas (MBBA) for breeding bird survey meandering transects (i.e., area searches) (Maritime Breeding Bird Atlas 2022). The LAA represents the extent of anticipated changes to bird habitat that may result from the Project. To identify the types of bird habitat conditions present within the Sampling Extent, the NBDNRED forest inventory data were compared with the most recent aerial imagery. These habitat types and extents were adjusted as needed based on field surveys if inaccuracies were found. Forest habitat attributes were verified during field surveys.

4.1.1 Owl Surveys

Owl surveys were conducted at two locations on the evening of April 28, 2021. One survey location was selected in LAA and is shown on Figure 4. An additional control point was also surveyed for common nighthawk and owl activity on the same evening of April 28, 2021, at a location along Nepisiguit Falls Road, approximately 2.6 km north-northwest of the LAA. The survey point was located 50 m into the forest from a forest access road and was used to determine if owls were present outside the LAA. This control point was used to provide more regional context in case this species was also detected within the Sampling Extent.

At each location, an owl playback recording was broadcast using a vehicle audio sound system to elicit a response from owls. The first of four, 12-minute surveys began at the LAA survey location at 8:14 p.m. (30 minutes after sunset) and the last survey ended at 10:31 p.m. at the control location. Weather parameters (i.e., wind speed/direction, sky condition and temperature) were recorded. During this time, the bearing and estimated distance from survey location of owls, if detected, was recorded.

Surveys were conducted using a playback and listening method based on the Nova Scotia Nocturnal Owl Survey protocol (Bird Studies Canada 2007). The playback protocol consists of Boreal and Barred owl calls interspersed with silent listening periods.

4.1.2 Diurnal Bird Surveys

Area searches were conducted within the LAA shown on Figure 1 on June 9 and July 6, 2021 for a duration of approximately 3 hours on each day. Birds were detected by sight and sound so that birds as far as approximately 100 m away from the surveyor's position. Area searches started no later than 1 hour after sunrise and continued for approximately 3 hours. Surveys were conducted on days when the weather conditions were favourable (i.e., light winds and no precipitation). The location of each bird detected

within the Sampling Extent was recorded. Evidence of breeding birds such as nests, territorial displays, alarm calling, individuals flushed, mating, and aggressive defending of territories was recorded.

Species observed or heard singing in suitable nesting habitat were classified as possible breeders. Species exhibiting the following behaviours were also recorded as probable breeders:

- courtship behaviour between a male and female;
- birds visiting a probable nest site;
- birds displaying agitated behaviour; and
- male and female observed together in suitable nesting habitat.

Species were confirmed as breeding if any of the following items or activities were observed:

- nest building or adults carrying nesting material;
- distraction display or injury feigning;
- recently fledged young;
- occupied nest located; and
- adult observed carrying food or fecal sac for young.

4.1.3 Nightjar Surveys

Common Nighthawks (*Chordeiles minor*) typically nest on open ground (e.g., bare earth, recent clearcuts, flat rooftops, bogs, or gravel) and actively forage for flying insects for a period starting shortly after sunset. While listed as Threatened under SARA and NB SARA, Common Nighthawks tend to be widespread in the province and are detectable in most forested landscapes. They can be heard from long distances by their distinctive nasal “peent” calls and/or their “booming” display flight maneuvers as they forage at heights from 1 m up to 80 m above ground level.

A survey was conducted in suitable nesting habitat within the LAA on June 8, 2021 between 8:36 p.m. and 10:06 p.m. in calm clear weather. An offsite control point (described in Section 4.1.1.) was also surveyed on June 8, 2021. As with the owl survey, the control point was used to provide more regional context in case this species was also detected within the Sampling Extent. The two survey locations were established in areas where foraging nighthawks could be easily seen (Figure 4). All species, including non-target species that were detected during the survey, were recorded.

The survey followed the methodology outlined in the Canadian Wildlife Service (CWS) protocol for conducting nightjar surveys (Wild Research 2018). Surveys started no earlier than 1 hour before sunset and ended no later than 2 hours after sunset. Weather parameters including wind speed (Beaufort scale), temperature, and percent cloud cover/sky illumination were collected at the beginning of each survey. Each survey began with 1 minute of silence followed by 6 minutes of passive listening broken into 1-minute recording intervals. Common Nighthawk calls were broadcast through the field vehicle audio system for 2 minutes, followed by a final 2-minute listening period which concluded the survey.

4.1.4 Chimney Swift Presence/Absence Surveys

Presence/absence surveys for Chimney Swifts were conducted concurrently with bat emergence and nightjar surveys on June 8 and July 9, 2021, with casual observations conducted during diurnal breeding breed surveys and vegetation surveys on June 8 and 9, 2021 and between July 6 to July 9, 2021. The Station was the focus of both the bat emergence and Chimney Swift presence/absence surveys. The protocol for bat emergence and Chimney Swift roosting and/or nesting surveys is similar with regard to timing, beginning 30 minutes before sunset and continuing for 60 minutes watching for bats/Chimney Swift entering or exiting the Station. Evening surveys and casual daytime observations were conducted in low and cloud cover conditions as per the Chimney Swift protocol (Birds Canada 2021).

Additionally, a drone was used to survey the Station (shown on Figure 4) in early July 2021 to determine if chimneys or any other apertures were present that could be used for roosting and/or nesting. Upon review of the video footage, no visible structures, voids, openings, etc. were present. Drone video footage is available for review upon request.

4.2 Bird Survey Results

The following section includes summaries of the records of known occurrences of bird SAR and SOCC within the Sampling Extent, and the results of the field surveys.

4.2.1 Historical Records of Bird Species of Conservation Concern (SOCC) and Species at Risk (SAR)

AC CDC records of historical bird SOCC and SAR occurrences within 5 km of the LAA (AC CDC 2021; Appendix A) and an estimation of their likelihood of breeding within the LAA based on availability of suitable habitat, are presented below in Table 3. Records in bold indicate those that were actually detected within the Sampling Extent during the field surveys for this Project. Although most of the bird species in Table 3 were not detected during the survey, suitable breeding habitat is present for several of them, and therefore their potential use of the area for breeding cannot be ruled out. All but one (Pine Grosbeak shown on Figure 4) of the AC CDC bird SOCC and SAR records within 5 km of the LAA are from the Breeding Bird Atlas (BBA) survey square (20TKT85) that encompasses the LAA. Their mapped locations as shown in the AC CDC report (Appendix A) do not represent their actual recorded locations, but rather the centre point of that BBA atlas square, of which the LAA is located in the southeastern corner. As a result, the record accuracies in the report are presented with +/-7 km of error, so some or all of these records could have been actually recorded outside the 5 km radius from the Project.

The SAR and SOCC that were either recorded during the field surveys, or that have historical AC CDC records within 5 km and have suitable breeding habitat within the Sampling Extent, are described below. A total of twelve SOCC and SAR were historically recorded by the AC CDC within 5 km of the Station (Figure 4 and Table 3), including:

- Bald Eagle;
- Barn Swallow;
- Chimney Swift;
- Olive-sided Flycatcher;
- Evening Grosbeak;
- Common Nighthawk;
- Eastern Wood-pewee;
- Pine Grosbeak;
- Cliff Swallow;
- Pine Siskin;
- Brown-headed Cowbird; and
- Eastern Kingbird.

Of these SOCC/SAR, only Bald Eagle, Common Nighthawk, Eastern Wood-pewee, and Turkey Vulture were observed during the field surveys for this Project (discussed below in Section 4.2.2).

TABLE 3: BIRD SPECIES OF SPECIAL CONSERVATION CONCERN REPORTED BY THE AC CDC AS HAVING BEEN HISTORICALLY OBSERVED WITHIN 5 KM OF THE LAA

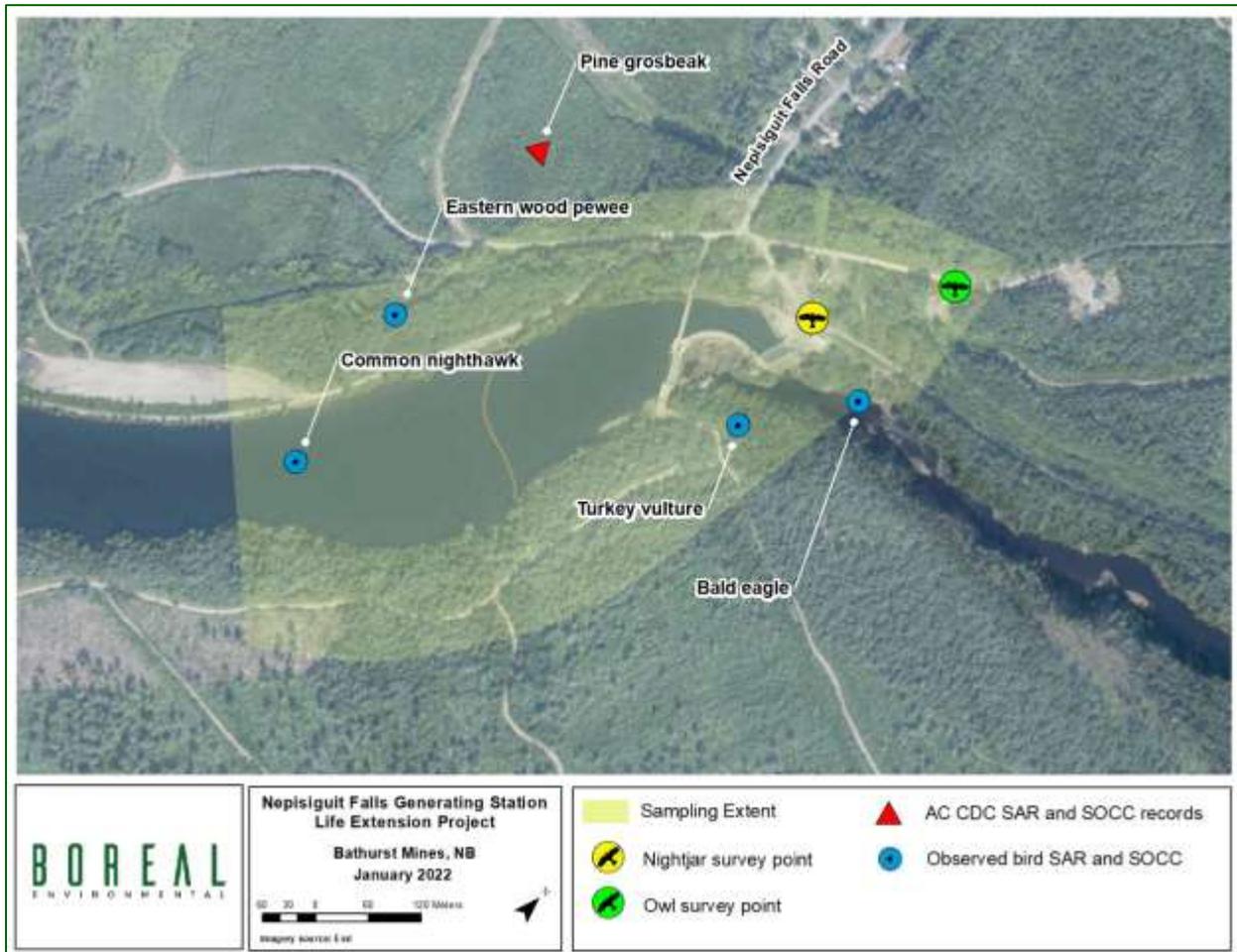
Common Name	Scientific Name	Breeding habitat	Probability of Occurrence	Potential Breeding	SARA/NB SARA Status	AC CDC S-Rank	NBDNRED General Status
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Tall trees adjacent to water bodies.	Confirmed	Low	NA/Endangered	S3S4B	At Risk
Barn Swallow	<i>Hirundo rustica</i>	Nest mostly in caves, holes, crevices and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts (COSEWIC 2011).	Moderate	Moderate	Threatened/NA	S3S4B	At Risk
Brown-headed Cowbird	<i>Molothrus ater</i>	Grasslands with low and scattered trees, forest edges, shrub thickets, fields, pastures, orchards, and residential areas.	Low	Low	NA/NA	S3B, S3M	Secure
Chimney Swift	<i>Chaetura pelagica</i>	Chimneys and on other vertical surfaces in dim, enclosed areas, including air vents, wells, hollow trees and caves (COSEWIC 2018a).	Moderate	Low	Threatened/NA	S2S3B, S2M	At Risk
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Open to semi-open land, farms, cliffs, river bluffs, and lakes.	Moderate	Moderate	NA/NA	S2S3B, S2S3M	Sensitive
Common Nighthawk	<i>Chordeiles minor</i>	Open area habitats, abandon agriculture, disturbed areas, bogs, rock outcrops and gravel roofs (COSEWIC 2018b).	Confirmed	Low	Threatened/NA	S3B	At Risk
Eastern Wood-pewee	<i>Contopus virens</i>	Intermediate to mature mixed or deciduous forest with sparse understory mid-canopy habitats (COSEWIC 2012).	Confirmed	High	Special Concern/NA	S4B	Secure
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Coniferous and mixed forests; often associated with spruce and balsam fir (COSEWIC 2016).	Moderate	Moderate	Special concern/NA	S3B, S3S4N, SUM	Sensitive

Common Name	Scientific Name	Breeding habitat	Probability of Occurrence	Potential Breeding	SARA/NB SARA Status	AC CDC S-Rank	NBDNRED General Status
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Open forest, clearcuts or post fire open forest with residual trees (COSEWIC 2018c).	Low	Low	Threatened/NA	S3B	Sensitive
Pine Grosbeak	<i>Pinicola enucleator</i>	Open evergreen forests with spruce, pine, or balsam fir.	Moderate	Moderate	NA/NA	S2B,S4S5N,S4S5M	Sensitive
Pine Siskin	<i>Carduelis pinus</i>	Mature coniferous and mixed woods, often around edges or clearings; sometimes in deciduous woods, isolated conifer stands.	Moderate	Moderate	NA/NA	S3	Secure
Turkey Vulture	<i>Cathartes aura</i>	Hollow trees, crevices in cliffs, under rocks, caves, inside dense thickets, or in old buildings.	Confirmed	Low	NA/NA	S3B,S3M	Secure

AC CDC S-Ranks as follows: S1: extremely rare in province; S2: rare in province; S3: uncommon in province; S4: widespread, common and apparently secure in province; S5: widespread, abundant and demonstrably secure in province S#S# = a numeric range rank used to indicate any range of uncertainty about the status of the species or community; SNA: Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities. B= Breeding, N = Nonbreeding, M = Migrant, U = Unrankable. NA = Not applicable. (AC CDC 2021).

Bold indicates that the species was observed during field surveys for the Project.

FIGURE 4: KNOWN LOCATIONS OF BIRD SAR AND SOCC IN THE SAMPLING EXTENT



4.2.2 SOCC and SAR with Potential or Confirmed Presence within the Sampling Extent

Further details of the SAR and SOCC observations recorded in the Sampling Extent during field surveys or reported by the AC CDC as having been historically observed within 5 km of the LAA (AC CDC 2021; Appendix A) are provided below.

Bald Eagle (SAR, Listed as Endangered under NB SARA)

New Brunswick has two different Bald Eagle populations. One is a permanent resident and spends its winters here. The other migrates annually to the Southeastern United States. This species was carried over to Schedule A of the New Brunswick *Species at Risk Act* from the former New Brunswick *Endangered Species Act* (now repealed), to which it was added decades ago during a period of steep population declines throughout its range which have been attributed largely to reproductive harm from pesticides. In the decades since, Bald Eagles have made substantial recovery in most areas of their range, including New Brunswick. As a result of the population recovery, the species was removed from Schedule 1 of the federal *Species at Risk Act* after a reassessment, but a provincial reassessment has not yet occurred despite it being fairly common and having a AC CDC ranking of S4 (Widespread) in New Brunswick.

Bald Eagles are often found near open water sources with an abundant source of fish, which are an important food source. It is anticipated that the Nepisiguit River represents a favourable habitat features for bald eagles and that they may be seen at various locations along the river. The Bald Eagle uses sticks and plant material to build its nest in the top of a tall tree, often a large white pine. It usually uses the same nest for several years. The Bald Eagle becomes territorial during breeding season and will defend an area up to two kilometres around its nest. Due to the nests' large size and position high in dominant trees, often along edges, combined with the noise and activity of the large eagles around their active nests, they tend to be readily detectable by experienced observers.

A juvenile Bald Eagle was observed during field surveys, soaring above the river approximately 150 m downstream of the Station on July 6, 2021; however, there were no nests in the found in the Sampling Extent. The AC CDC (2021) report indicates that there were 392 historical observations of Bald Eagle within 1.6 km of the LAA.

Barn Swallow (SAR, Listed as Threatened under SARA)

Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces, and they would have been rare in New Brunswick. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts, and their populations grew significantly (COSEWIC 2011). However, since the use of traditional wooden barns is declining, along with falling aerial insect abundance, Barn Swallows are declining in population in New Brunswick.

Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, islands, wetlands, and subarctic tundra (COSEWIC 2011).

There are three historical AC CDC records of Barn Swallows located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. The Station and associated infrastructure may offer suitable nesting sites; however, Barn Swallows were not observed during the surveys for this Project. Boreal biologists surveyed the powerhouse building and the forebay bridge for Barn Swallow activity and nests, and found no evidence of their presence.

Chimney Swift (SAR, Listed as Threatened under SARA)

Chimney Swifts prefer chimneys and on other vertical surfaces in dim, enclosed areas, including air vents, wells, hollow trees and caves (COSEWIC 2018a). They spend most of the day in flight foraging on insects often travelling long distances from their nesting site. There was one AC CDC historical record of this species located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA.

Boreal biologists recognized that the Station and associated infrastructure may offer suitable nesting sites; consequently, a drone survey of the powerhouse building was conducted to determine if there were hidden apertures (i.e., chimneys or pipes, voids in the walls foundation, etc.) on the building. A review of the drone survey video footage found no evidence of potential nesting habitat. Furthermore, the Station was periodically observed in early June and early July 2021 over several days during diurnal breeding bird surveys and in the evenings during bat emergence surveys. No Chimney Swifts were observed exiting or entering the Station.

Common Nighthawk (SAR, Listed as Threatened under SARA)

Common Nighthawks prefer open area habitats, abandoned agriculture, disturbed areas, bogs, rock outcrops and gravel roofs (COSEWIC 2018b). There were three historical AC CDC records of Common Nighthawk within 2.9 ± 0.0 km of the LAA. One Common Nighthawk was detected foraging over the impoundment during nightjar surveys on June 8, 2021. While there is suitable nesting habitat present for Common Nighthawk, regular human activity and vehicular traffic would deter them from breeding or reduce breeding habitat suitability (Figure 4).

Eastern Wood-pewee (SAR, Listed as Special Concern under SARA)

Eastern Wood-pewee is associated with the mid-canopy layer edges of deciduous and mixed forests. It is most abundant in forest stands of intermediate age and in mature stands with little understory vegetation. It forages from trees and shrubs and occasionally on the ground (COSEWIC 2012).

There are two historical AC CDC records of Eastern Wood-pewee located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. One singing Eastern Wood-pewee was observed during field surveys (Figure 4).

Evening Grosbeak (SAR, Listed as Special Concern under SARA)

Evening Grosbeaks prefer coniferous and mixed forests; but more often associated with spruce and balsam fir forests (COSEWIC 2016). Evening Grosbeaks forage at the tops of shrubs and trees, on the wing for insects, and on the ground for fallen fruits and seeds (Cornell 2022a).

There is one historical AC CDC record of an Evening Grosbeak located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. Evening Grosbeak was not observed during field surveys.

Olive-sided Flycatcher (SAR, Listed as Special Concern under SARA)

This species breeds in boreal forests, wooded borders of bogs, coniferous forests, edges of clearings, and shores of wilderness lakes. According to the second Maritime Breeding Bird Atlas, they are found throughout most of the Maritime Provinces, but in New Brunswick, records are slightly more concentrated in the northern portion of the province. They are almost always seen perched on high, very conspicuous dead branches, even in migration. Nests are typically located high in coniferous trees, on a horizontal branch, far from the trunk. The nest is compact, firmly attached with cobwebs; of twigs, rootlets, lichen, pine needles, most lined with lichen, grass, rootlets (COSEWIC 2018c).

It is currently unknown whether the availability of breeding habitat is a limiting factor in Canada. An important factor in their decline is often cited as a steep reduction in non-breeding habitat elsewhere (e.g., Columbia and Venezuela, south to Peru) and reduced insect availability in certain parts of its range. Breeding bird surveys have indicated a 3.4% annual rate of decline in population (COSEWIC 2018c).

There is one historical AC CDC record of an Olive-sided Flycatcher located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. There were no Olive-sided Flycatchers observed during field surveys.

Brown-headed Cowbird (SOCC, Ranked as S3B, S3M by the AC CDC)

The Brown-headed Cowbird got its name from its tendency to follow grazing animals and feed upon the insects they disturb. The Brown-headed Cowbird is a brood parasite, never building its own nest or rearing its own young, depending on other bird species to do this for them (Audubon 2022a).

Brown-headed Cowbirds prefer grasslands with low and scattered trees, wood edges, shrub thickets, fields, pastures, orchards, and residential areas. Foraging is mostly done by walking on the ground, in pastures, catching insect flushed by grazers (Audubon 2022a).

Although there was one historical AC CDC record of a Brown-headed Cowbird located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA, this habitat is not abundant and is confined to the area on the periphery of disturbed habitat. No Brown-headed Cowbirds were observed during the field surveys.

Cliff Swallow (SOCC, Ranked as S2S3B,S2S3M by the AC CDC)

Cliff Swallows prefer cliffs for nesting; however, in recent years, they have begun to nest on human made structures such as bridges, dams, and buildings of all sizes where they can out compete Barn swallows for the best nesting sites due to their larger size (Manitoba Breeding Bird Atlas 2022). Cliff Swallows are aerial insectivores foraging open areas, floodplain forest, towns, lakes, semi open land, and canyons (Audubon 2022b).

There is one historical AC CDC record of a Cliff Swallow located at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. Given the margin of error listed on the record, this species may or may not occur within 5 km of the LAA. No Cliff Swallows were observed during field surveys; however, there is suitable nesting habitat located in the gorge below the falls, which will not be impacted by the Project. Swallows are highly detectable when present a site due to their high levels of aerial activity and calls. No swallows of any species were noted during field surveys.

Pine Grosbeak (SOCC, Ranked as S2B,S4S5N,S4S5M by the AC CDC)

Pine grosbeaks prefer open evergreen forests with spruce, pine, or balsam fir (Cornell 2022a). This species forages mostly in trees and shrubs (Audubon 2022c).

There are two historical AC CDC records of Pine Grosbeaks located 0.3 ± 7.0 km northwest of the Station. No Pine Grosbeaks were observed during field surveys.

Pine Siskin (SOCC, Ranked as S3 by the AC CDC)

Pine Siskins prefer mature coniferous and mixed woods, often around edges or clearings; sometimes in deciduous woods, isolated conifer stands (Cornell 2022b). Typically forages in forests with open canopies but can be found foraging in flocks on lawns, in gardens, roadsides, weedy fields, meadows, grasslands, and deciduous forests and thickets (Cornell 2022b).

There is one historical AC CDC record of Pine Siskin at the BBS square centre located 4.4 ± 7.0 km northwest of the LAA. There were no Pine Siskins observed during the field surveys.

Turkey Vulture (SOCC, Ranked as S3B,S3M by the AC CDC)

One Turkey Vulture was observed during the July 6, 2021 survey, south the of the Station and the Nepisiguit River gorge (Figure 4). There are no historical AC CDC records of Turkey Vulture within 5 km of

the LAA; however, they have been recorded in the region (R. Blacquièrè, pers. comm., 2022). Turkey Vultures are known to travel long distances from their nesting sites to forage.

4.2.3 Bird Field Survey Results

A total of 138 individual birds among 47 bird species were included, including three SAR: Bald Eagle, Common Nighthawk, and Eastern Wood-Pewee. One additional SOCC (Turkey Vulture) was recorded during the field surveys for this Project. The most frequently recorded species were Red-eyed Vireo, Common Goldeneye, Purple Finch, Northern Parula, and Ovenbird, all commonly found throughout the region. No raptor nests were noted in the LAA.

When birds were visually detected, they were observed for evidence of nesting behavior (e.g., agitation, distraction displays, pairs in suitable habitat, etc.). The most compelling evidence of breeding observed for each species was recorded in Table 4 below. A summary of the breeding bird survey data collected during the survey conducted during the surveys can be viewed in Table 4. Raw data can be viewed in Appendix E.

TABLE 4: SUMMARY OF BIRD SPECIES RECORDED DURING THE JUNE AND JULY 2021 BREEDING BIRD SURVEYS.

Common Name	AC CDC S-Rank	SARA/NB SARA Status	NBDNRED General Status	Habitat Type	Highest Breeding Status	Number of Individuals Observed
Alder Flycatcher	S5B,S5M	NA / NA	Secure	MMDF	PO	1
American Black Duck	S5B,S4N,S5M	NA / NA	Secure	AQ	OB	1
American Redstart	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	2
American Robin	S5B,S5M	NA / NA	Secure	MMDF	PO	2
American Wigeon	S4B,S4S5M	NA / NA	Secure	DIST	OB	2
Bald Eagle	S4	NA / Endangered	At Risk	AQ	OB	1
Belted Kingfisher	S5B,S5M	NA / NA	Secure	AQ	OB	2
Blackburnian Warbler	S5B,S5M	NA / NA	Secure	MCF	PO	3
Black-capped Chickadee	S5	NA / NA	Secure	MCF	PO	1
Black-throated Blue Warbler	S5B,S5M	NA / NA	Secure	MCF	PO	2
Black-throated Green Warbler	S5B,S5M	NA / NA	Secure	MMDF	PO	1
Blue Jay	S5	NA / NA	Secure	MMDF	OB	1
Blue-headed Vireo	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	4
Broad-winged Hawk	S5B,S5M	NA / NA	Secure	AQ, DIST	CO	2
Cedar Waxwing	S5B,S5M	NA / NA	Secure	DIST	PO	1
Chestnut-sided Warbler	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	3
Common Goldeneye	S4B,S5M,S4N	NA / NA	Secure	AQ	OB	21
Common Grackle	S5B,S5M	NA / NA	Secure	AQ	OB	1
Common Loon	S4B,S4M,S4N	NA / NA	Secure	AQ	OB	2

Common Name	AC CDC S-Rank	SARA/NB SARA Status	NBDNRED General Status	Habitat Type	Highest Breeding Status	Number of Individuals Observed
Common Merganser	S5B,S4N,S5M	NA / NA	Secure	AQ	OB	3
Common Nighthawk	S3B,S4M	Threatened / NA	Threatened	AQ	PO	1
Common Yellowthroat	S5B,S5M	NA / NA	Secure	DIST	PO	2
Dark-eyed Junco	S5	NA / NA	Secure	MCF	PR	1
Double-crested Cormorant	S5B,S5M	NA / NA	Secure	AQ	OB	2
Eastern Phoebe	S5B,S5M	NA / NA	Secure	MMDF	PO	1
Eastern Wood-Pewee	S4B,S4M	Special Concern	Secure	MMDF	PO	1
Golden-crowned Kinglet	S5	NA / NA	Secure	MCF	PO	1
Hairy Woodpecker	S5	NA / NA	Secure	MMDF	PO	2
Hermit Thrush	S5B,S5M	NA / NA	Secure	MCF	PO	1
Least Flycatcher	S5B,S5M	NA / NA	Secure	MMDF	PO	3
Mourning Warbler	S4B,S5M	NA / NA	Secure	DIST	PO	1
Nashville Warbler	S5B,S5M	NA / NA	Secure	MCF	PO	1
Northern Flicker	S5B,S5M	NA / NA	Secure	MMDF	OB	1
Northern Parula	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	11
Ovenbird	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	6
Pine Warbler	S5B,S5M	NA / NA	Secure	MCF	PO	1
Purple Finch	S4S5B,SUN,S5M	NA / NA	Secure	DIST, MCF	PO	11
Red-breasted Nuthatch	S5	NA / NA	Secure	MCF, MMDF	PO	4
Red-eyed Vireo	S5B,S5M	NA / NA	Secure	DIST, MCF, MMFD	PO	14

Common Name	AC CDC S-Rank	SARA/NB SARA Status	NBDNRED General Status	Habitat Type	Highest Breeding Status	Number of Individuals Observed
Sharp-shinned Hawk	S4B,S5M	NA / NA	Secure	AQ	OB	1
Song Sparrow	S5B,S5M	NA / NA	Secure	DIST, MMDF	PO	5
Spotted Sandpiper	S3S4B,S5M	NA / NA	Secure	AQ	OB	1
Turkey Vulture	S3B,S3M	NA / NA	Secure	MCF	OB	1
Veery	S4B,S4M	NA / NA	Secure	MMDF	PO	1
White-winged Crossbill	S5	NA / NA	Secure	MCF	OB	1
Yellow-bellied Sapsucker	S5B,S5M	NA / NA	Secure	MCF, MMDF	PR	5
Yellow-rumped Warbler	S5B,S5M	NA / NA	Secure	MCF, MMDF	PO	2
Total						138
Legend:						
Breeding Status Codes:						
OB = observed PO = possible breeder						
PR = probable breeder CO = confirmed breeder						
AC CDC S-Ranks as follows: S1: extremely rare in province; S2: rare in province; S3: uncommon in province;S4: widespread, common and apparently secure in province; S5: widespread, abundant and demonstrably secure in province S#S# = a numeric range rank used to indicate any range of uncertainty about the status of the species or community; SNA: Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities. B= Breeding, N = Nonbreeding, M = Migrant, U = Unrankable. NA = Not applicable. (AC CDC 2021).						
AQ = Aquatic						
DIST = Disturbed/Anthropogenic						
MCF = Mature coniferous forest						
MMDF = Mature mixed deciduous forest						

5 Bats

This section presents the methods and results of field surveys conducted in 2021 for bats in the Sampling Extent.

In New Brunswick, there is evidence of the occurrence of seven different species of bats which include: the hoary bat (*Lasiurus cinereus*), red bat (*L. borealis*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), northern myotis (*M. septentrionalis*), and tri-colored bat (*Perimyotis subflavus*). However, studies in New Brunswick indicate that only two species were common prior to 2014: little brown bat and northern myotis (Broders, Findlay, and Zheng 2004). Of the seven species in the province, four are resident year-round: little brown bat, northern myotis, tri-colored bat, and the big brown bat. The other three species migrate to warmer climates to the south for the colder months (van Zyll De Jong 1985).

In 2014, three of the four New Brunswick resident bat species were listed as Endangered under the federal SARA due to the decimation of local populations by an infectious disease known as white nose syndrome (WNS). The disease is caused by the introduced fungus *Pseudogymnoascus destructans*, which survives in damp, cold cave conditions and infects hibernating bats (Lorch et al. 2011). WNS causes these species to arouse during hibernation, depleting them of resources and leading to death in almost all cases (COSEWIC 2013). Migratory bats occurring in New Brunswick tend not to be affected by the disease as they do not overwinter in caves inoculated with the fungus. It is estimated that populations of the two once-most common species in the province (i.e., little brown bat and northern myotis) were reduced by as much as 99% since 2011 when it was first detected in New Brunswick. The tri-colored bat, which was known to occur in New Brunswick in lower numbers (Broders, Findlay, and Zheng 2004), was also given an Endangered status under SARA. The population of tri-colored bats is believed to have been extirpated from New Brunswick as a result of WNS (CBC 2018).

Due to the fragile existence of New Brunswick's remaining bats and the tendency for some to roost in buildings and forage over water, it was deemed necessary to determine use of the site by bats using acoustic monitoring during the active season for bats. If the site was found to be important for bat SAR, or there was evidence of nearby roosting of little brown or northern myotis, additional investigation or mitigation may be warranted.

5.1 Bat Survey Methodology

5.1.1 Acoustic Surveys

The purpose of the bat study was to determine if bats were using the LAA and the impoundment area specifically for foraging, or the facility for roosting. While all bat species are considered SOCC in New Brunswick, the key focus were the *Myotis spp.* which are SAR. The tri-colored bat (*Perimyotis subflavus*) is also a SAR but is not known to range as far north as the LAA and is thought to have been essentially eradicated from the province by WNS. The acoustic monitoring portion of the survey allowed Boreal to

gather information on general order of magnitude of activity in the LAA and some idea of species diversity and presence/absence of *Myotis spp.*

Two acoustic data recorders were deployed, monitored, and data were collected and processed initially with Kaleidoscope Pro Analysis software (Wildlife Acoustics), the output was then reviewed by Boreal's Derrick Mitchell, R.P.F., who has two decades of experience in acoustic surveys for bats, to ensure that the software correctly identified bat generated ultrasound to species level. Two locations were selected for the recorders, one along the northern side of the forebay impoundment and the second in the middle of the forebay bridge facing upriver (west) as shown in Figure 5. These positions were chosen to capture any activity of bats that might be active near the Station and foraging activity over the water (i.e., impoundment), where insect prey availability tends to be high.

The acoustic data were recorded using two Anabat Swift™ passive bat detectors. The detectors ran continuously between June 8, 2021 and the morning of July 11, 2021. The microphone was pointed downward above a 20 x 20 cm sheet of high-density polyethylene (HDPE) mounted at a 45° angle to deflect sound upward into the microphone. The detectors were programmed to record bat passes from a half hour before sunset to a half hour after sunrise to determine relative activity patterns by species or species groups over time.

The bat call data, which were recorded in zero crossing interface which extracts a basic frequency-time content of the call signal, was processed automatically using Kaleidoscope Pro software. The data were filtered by the software to remove noise (i.e., files that do not have the characteristics of identifiable bat calls), and then each of the remaining calls were identified to species according to a set of characteristic parameters. For quality assurance, a subset of the identified calls were checked visually by an experienced bat call ID person using Anabat Insight™. 1.8.6. software (Titley Electronics, Ballina, NSW, Australia). For each call, the slope, maximum frequency (i.e., the highest frequency), minimum frequency (i.e., the lowest frequency), and duration were noted to determine species. Each variable was then compared with a library of reference calls collected from individual bats that had been identified to species.

Bat species calls are usually distinguishable based on the characteristics of the geometry of the frequency/time graphs in Analook (Jones and Siemers 2010). However, some bats species have considerable overlap with other species in call morphologies, and call recordings sometimes lack sufficient detail to allow species level identification due to factors such as background noise, distance from the detector, weather, and other environmental factors. Two species that are known to have similar call structures are big brown bats (*Eptesicus fuscus*) and silver-haired bats (*Lasionycteris noctavigans*). It is possible for the species to be distinguished with clear call data of sufficient call duration, and Kaleidoscope software does attribute calls to those individual species, but without visual confirmation of the presence of each bat species, it is difficult to assess the accuracy of the identification. The Kaleidoscope software was not considered satisfactorily accurate to distinguish between these species, and so calls attributed to either big brown bats or silver-haired bats were grouped together. Likewise, the northern myotis and little brown myotis species have similar call structures when flying in similar conditions and are often grouped, since calls for these two species are difficult to accurately distinguish in zero-crossing data format. The grouping of these species due to overlap in call morphology is a common practice in acoustic monitoring studies.

FIGURE 5: LOCATION OF ACOUSTIC MONITORING STATIONS FOR BATS



5.1.2 Powerhouse Emergence Survey

To determine if the powerhouse was used by roosting bats, emergence surveys were conducted at the building at dusk on June 8 and 9, 2021 to detect any bats emerging for feeding. The surveys for roosting bats at the powerhouse were conducted concurrently with Chimney Swift and nightjar surveys. The protocol for bat emergence and Chimney Swift roosting and/or nesting surveys is similar with regard to timing, beginning 30 minutes before sunset and continuing for 60 minutes watching for bats/Chimney Swift entering or existing the Station. Two observers were present and situated at different corners of the building to maximize chances of detecting any bats emerging.

5.2 Bat Survey Results

More than 10,000 calls were identified over the month of acoustic recording at the two locations over the impoundment portion of the Sampling Extent. The number of calls record for each species/group are shown in Table 5. The high volume of calls suggests that the Nepisiguit River is a locally important feature for foraging for bats, but the elevated activity levels are not likely to be unique to the Impoundment. The majority of the calls were identified as big brown bat/silver-haired bat calls; while the calls were conservatively grouped into this category, Kaleidoscope software identified the vast majority of these calls as silver-haired bats, which are a migratory species. A random visual inspection of these calls confirmed that the majority of these were consistent with silver-haired bat. The second most common bat species recorded was the hoary bat which is also a migratory species. A very small number of calls were identified as *Myotis spp.* which were visually confirmed as correct during the quality assurance data review. Unidentified bats were calls where bats generated ultrasound but could not be attributed to a single species or group of species.

TABLE 5: BAT CALLS RECORDED BY SPECIES GROUP

Species/Genus	Forebay Bridge	Station	Total
Myotis genus complex	6	1	7
Big brown bat/Silver-haired bat	1,421	1,729	3,150
Hoary bat	1,346	1,228	2,574
Noise	2,177	2,166	4,343
Unidentified	76	62	138
Total	5,026	5,186	10,212

The emergence surveys of the powerhouse did not reveal any use of the building by bats. The predominant species recorded do not tend to use buildings as roost, with the exception of big brown bats which are likely to represent a very small proportion of the activity, if any. If the building were used as a maternity colony, the nearby detector would have likely recorded high volumes of calls by a building roosting species.

6 Other Wildlife Observations

There is one AC CDC historical record of Canada lynx (*Lynx canadensis*, listed as Endangered under NB SARA and with an AC CDC S-Rank of S3) within 4.3 +/- 0.0 km of the LAA; however, the Project is not anticipated to have any impact on this species. No other wildlife SAR or SOCC records were identified within 5 km of the LAA in the AC CDC data report (AC CDC 2021; Appendix A). Other SAR and SOCC wildlife species were not directly observed within the LAA. The closest known historic wood turtle (*Glyptemis insculpta*) (listed as Threatened under the SARA and NB SARA) record in the AC CDC report in Appendix A is approximately 19 km away. This species is not typically associated with rocky, swift flowing streams with little or no associated flood plains and so would not be expected to occur within the LAA. The nearest historical Monarch (*Danaus plexippus*) (listed as Special Concern under the SARA and NB SARA) record is nearly 50 km away.

Direct and indirect (scat and tracks) observations of common wildlife species included white-tail deer (*Odocoileus virginianus*), moose (*Alces alces*), bear (*Ursus americanus*), raccoon (*Procyon lotor*), snowshoe hare (*Lepus americanus*), red-tailed fox (*Vulpes vulpes*), red squirrel (*Tamiasciurus hudsonicus*), and beaver (*Castors canadensis*). Although not observed, it is highly likely that striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), fisher (*Pekania pennanti*), American marten (*Martes americana*), and northern flying squirrel (*Glaucomys sabrinus*) are present, along with several species of rodents (i.e., voles and mice). All of these species are common and would be expected to occur in habitats found in this region.

7 Summary and Discussion

This technical report supports the EIA Registration document and other environmental permitting applications for the Project in Bathurst Mines, New Brunswick, which along with technical reports that summarize existing conditions for the various VCs identified as part of the scope of the EIA. The following sections provides a summary and some context for the study.

For this Project, the VCs that were studied as a part of the Terrestrial Environment were:

- Plants;
- Wetlands; and
- Wildlife, with a focus on birds, bats, and other wildlife species.

7.1 Vegetation and Wetlands

No wetlands were found within the LAA of the Project, but there were four major community types recorded in the Sampling Extent for the Project, as shown on Figure 1. The total size of the Sampling Extent was approximately 30.9 ha and there were major community types including mature mixed deciduous forest, mature coniferous forest, disturbed or anthropogenic habitat, and aquatic habitat. The composition of three community types were somewhat characteristic of the surrounding Tjigog ecodistrict, but showed evidence of being transitional between the Eastern Lowlands Ecoregion to the southeast and the Northern Uplands Ecoregion to the northwest. Several tree species that were at their northern range limit (such as red spruce, red oak, and beech) were present within the LAA. No permanent loss of vegetated habitat type is anticipated as a result of the Project.

During the course of the fieldwork, a total of 196 plant species were recorded within the LAA. Of these, 28 species were not native to New Brunswick (Appendix C). There were two different plant SOCC recorded within the LAA but no plant SAR were found (Table 2).

Only two plant SOCC were found within the LAA: Drummond's rockcress (AC CDC S-rank of S2, Rare) and cut-leaved anemone (AC CDC S-rank of S2, Rare). Within the LAA, 31 individual Drummond's rockcress plants were found in a small area along the road leading to the tailrace. More specifically, it was concentrated on the south facing rock cut and near the tail race platform. The location suggest that this plant requires bare rock substrate and high humidity from the falls to proliferate. Interestingly, this rare plant is also known to occur on the rocky banks below both Mactaquac Generating Station and the Milltown Generating Station, suggesting an affinity to the conditions and humidity levels found near hydroelectric dams.

These plant locations are not anticipated to be displaced by Project activities.

7.2 Birds

There are no important bird habitat features or critical habitat within or near the LAA. A total of 138 individual birds were recorded among 47 species, including three SAR: Bald Eagle, Common Nighthawk, and Eastern Wood-Pewee. One additional SOCC (Turkey Vulture) was recorded during the field surveys for this Project. Bird SAR and SOCC locations are shown on Figure 4. The most frequently recorded species were Red-eyed Vireo, Common Goldeneye, Purple Finch, Northern Parula, and Ovenbird, all commonly found throughout the region. No raptor nests were noted in the LAA. The full list of birds recorded in in Appendix E, and AC CDC historical records of SOCC and SAR within 5 km of the LAA are in Appendix A.

Though one juvenile Bald Eagle was observed during the survey, soaring above the river approximately 150 m downstream of the Station on July 6, 2021; however, no Bald Eagle nests were found within the LAA or Sampling Extent, and the Project is not expected to directly or indirectly affect this species. One Common Nighthawk was recorded foraging over the LAA, but there is no suitable nesting habitat for this species within the LAA. There are some smaller open habitats in the disturbed habitat type, but most are busy with human activity and/or are too small to support Common Nighthawk nesting. There is no nesting habitat loss expected for any other species encountered within the Sampling Extent.

Targeted surveys were conducted for Common Nighthawk, raptors, owls, and Chimney Swifts (at the powerhouse). While Common Nighthawks and a Bald Eagle were observed, no breeding activity within the LAA was found, and there were no essential habitat or nesting structures identified.

7.3 Bats

Prior to WNS, the recording of calls during acoustic surveys from bat species other than the two resident myotis species were relatively rare (Broders and Forbes 2003). The small number of myotis and large number of other bat calls recorded in the LAA demonstrates the reversal of those trends that prompted the emergency SARA listing of the resident myotis species and the less common tri-colored bat. The small number of *Myotis spp.* calls is, unfortunately, reflective of the state of the populations of those species, but their continued persistence recorded in acoustic surveys throughout the province, along with early signs of recovery in Nova Scotia, provide some hope that they may eventually recover.

The large numbers of migratory bats including silver-haired bats and hoary bats within the LAA indicated the drastic changes that have occurred with New Brunswick bat communities since the decimation of Myotis bat species by WNS. Of the recorded calls, the highest number were attributed to big brown bats/silver-haired bats. While these calls were placed in the combined species group, all but a few were identified by Kaleidoscope software as silver-haired bats. Visual inspection of the calls also supported that this identification was likely correct, but not all were definitive. There were a small number of calls for each of the two detectors attributed to big brown bats, but this could not be decisively confirmed. The implication of presence of big brown bats in the LAA would be that this species has extended its range in New Brunswick by double, since the onset of WNS. While this assertion would require more evidence to

confirm, it has been observed that the big brown bat may be increasing in range and numbers by occupying the niches formerly dominated by the myotis species (McAlpine, D., pers. comm., 2019).

Several North American bat species are known to forage over water due to the elevated availability of prey insects such as caddisflies (*Trichoptera*) and mayflies (*Ephemeroptera*) that emerge from the water in large numbers. In New Brunswick, the foraging niches of open fields, edge, and open water were historically dominated by the little brown bat. Since WNS decimated the *Myotis spp.* bat populations, it is likely that other bat species unaffected by the pathogen (such as big brown bat and/or silver-haired bat) have opportunistically increased their use of these highly productive foraging niches (Mayberry et al. 2020). While bat populations in Nova Scotia may be showing signs of a slow recovery (CBC 2021), there is not yet any compelling evidence to that effect in New Brunswick (McAlpine, D., pers. comm., 2019). With decreased competition and improved foraging opportunities, it is also possible that all species unaffected by WNS are increasing in numbers and/or range.

The big brown bat is less susceptible to WNS as it tends to spend winters in larger buildings (McAlpine et al. 2002) where WNS does not tend to flourish. Big brown bats are also known to hibernate in caves, but there is some evidence that they have some resistance to *P. destructans* (Frank et al. 2014). Until recently, the range of the big brown bat was thought to be restricted along the Fundy Coast in Southern New Brunswick (McAlpine et al. 2002). In the last 20 years, subsequent records of the species were found in Fredericton and Woodstock (Quinn, G. pers. comm., 2022), but it has only been since WNS has decimated other resident species that big brown bats have been commonly recorded in Northern New Brunswick.

The large number of hoary bat and probable silver-haired bat calls suggests an increase in their populations in New Brunswick and/or a shift in their foraging behaviour to feeding over water. However, these species are known to forage in a wide range of habitats (Campbell et al. 1996, Mattson et al. 1996, Veilleux et. al. 2009), and they are not likely dependent on the LAA. While the study results did suggest that the Nepisiguit River may be an important foraging feature on the landscape for predominantly migratory bats relative to the surrounding landscape, a temporary alteration to water level in the impoundment is not likely to affect prey availability in a measurable way or reduce the overall feeding opportunities for local bats of the species present.

7.4 Other Wildlife

No other SAR or SOCC wildlife species were recorded during the surveys other than those that commonly occur in habitats found in the region. No amphibian species or monarch butterfly (*Danaus plexippus*) were recorded during surveys.

8 Closure

This report was prepared by Boreal Environmental (Boreal) for Dillon Consulting Limited (Dillon) on behalf of the New Brunswick Power Corporation, in support of the EIA and permitting of the Project. Boreal 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. Neither Boreal nor Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Boreal or Dillon.

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Yours truly,

BOREAL ENVIRONMENTAL for DILLON CONSULTING LIMITED

A handwritten signature in blue ink that reads "Derrick Mitchell". The signature is written in a cursive, flowing style.

Derrick Mitchell, B.Sc.F., R.P.F.
Ecologist, Boreal Environmental

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9.2 Personal Communications

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Doucet, Jennica. Personal communication (email) to Denis Marquis of Dillon Consulting Limited. Engineer in Training, New Brunswick Power Corporation, Fredericton, NB. October 8, 2021.

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Quinn, Gregory. Personal communication (verbal) to Derrick Mitchell of Boreal Environmental Inc. Biologist, New Brunswick Department of Transportation and Infrastructure, Fredericton, NB. January 31, 2022.

Appendix A

Atlantic Canada Conservation Data Centre (AC CDC) Report

DATA REPORT 6801: Nepisiguit, NB

Prepared 21 February 2021
by J. Churchill, Data Manager

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

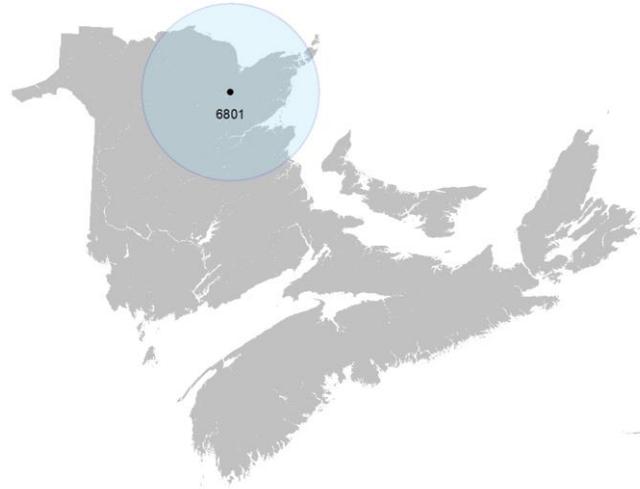
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

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>
NepisiguitNB_6801ob.xls	Rare or legally-protected Flora and Fauna in your study area
NepisiguitNB_6801ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
NepisiguitNB_6801msa.xls	Managed and Biologically Significant Areas in your study area
NepisiguitNB_6801ff_py.xls	Rare Freshwater Fish in your study area (DFO database)

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:

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

Tel: (506) 364-2658

sean.blaney@accdc.ca

Animals (Fauna)

John Klymko, Zoologist

Tel: (506) 364-2660

john.klymko@accdc.ca

Plant Communities

Sarah Robinson, Community Ecologist

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Data Management, GIS

James Churchill, Data Manager

Tel: (902) 679-6146

james.churchill@accdc.ca

Billing

Jean Breau

Tel: (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.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost

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Elizabeth.Walsh@novascotia.ca

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

2.0 RARE AND ENDANGERED SPECIES

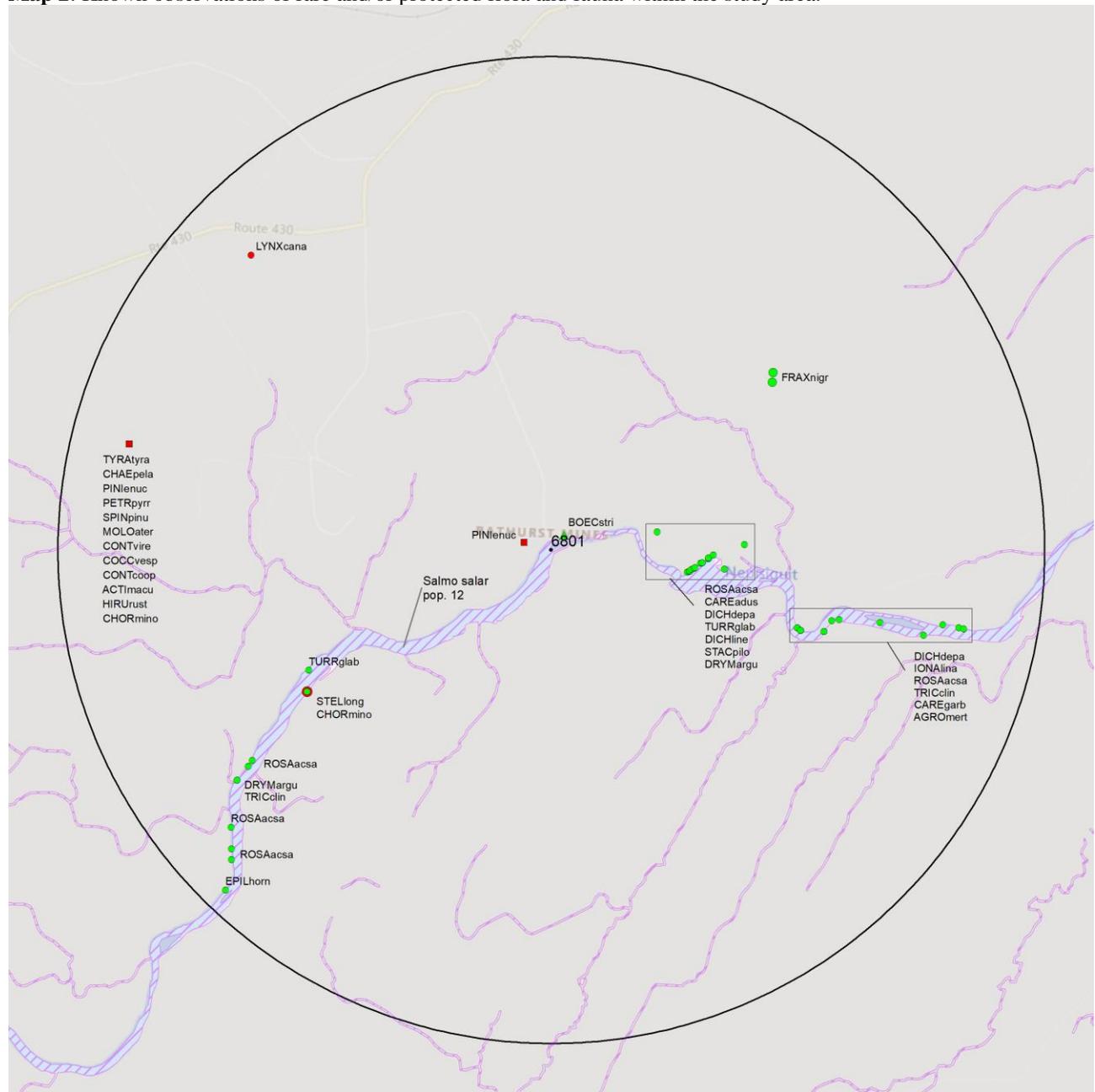
2.1 FLORA

The study area contains 45 records of 15 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 22 records of 13 vertebrate, no records of 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 TAXONII

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

3.0 SPECIAL AREAS

3.1 MANAGED AREAS

The GIS scan identified no managed areas in the vicinity of the study area (Map 3).

3.2 SIGNIFICANT AREAS

The GIS scan identified 1 biologically significant site in the vicinity of the study area (Map 3 and attached file: *msa.xls).

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



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding “location-sensitive” species, section 4.3) within the study area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\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)
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S4S5	2	2.8 \pm 0.0
P	<i>Ionactis linariifolia</i>	Flax-leaved Aster				S2	2	2.6 \pm 0.0
P	<i>Boechea stricta</i>	Drummond's Rockcress				S2	1	0.2 \pm 1.0
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S2	1	2.9 \pm 0.0
P	<i>Rosa acicularis ssp. sayi</i>	Prickly Rose				S2	18	1.1 \pm 0.0
P	<i>Agrostis mertensii</i>	Northern Bent Grass				S2	1	3.9 \pm 0.0
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2	1	1.4 \pm 0.0
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	1	1.6 \pm 0.0
P	<i>Turritis glabra</i>	Tower Mustard				S3	7	1.4 \pm 0.0
P	<i>Epilobium hornemannii</i>	Hornemann's Willowherb				S3	1	4.8 \pm 0.0
P	<i>Carex garberi</i>	Garber's Sedge				S3	1	2.9 \pm 0.0
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush				S3	2	2.9 \pm 0.0
P	<i>Dichanthelium depauperatum</i>	Starved Panic Grass				S3	4	1.4 \pm 0.0
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	1	2.0 \pm 0.0
P	<i>Drymocallis arguta</i>	Tall Wood Beauty				S3S4	2	1.6 \pm 0.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	3	4.4 \pm 7.0
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1	4.4 \pm 7.0
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	1	4.4 \pm 7.0
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	1	4.4 \pm 7.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	3	2.9 \pm 0.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	2	4.4 \pm 7.0
A	<i>Lynx canadensis</i>	Canadian Lynx	Not At Risk		Endangered	S3	1	4.3 \pm 0.0
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5M	2	0.3 \pm 7.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B,S2S3M	1	4.4 \pm 7.0
A	<i>Spinus pinus</i>	Pine Siskin				S3	1	4.4 \pm 7.0
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B,S3M	1	4.4 \pm 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B,S3S4M	1	4.4 \pm 7.0
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S5M	4	4.4 \pm 7.0

4.3 LOCATION SENSITIVE SPECIES

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

New Brunswick

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

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

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the 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
42	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
15	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
6	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
2	Sabine, M. 2016. Black Ash records from the NB DNR Forest Development Survey. New Brunswick Department of Natural Resources.
1	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
1	Dept of Fisheries & Oceans. 2001. Atlantic Salmon Maritime provinces overview for 2000. DFO.
1	Sollows, M.C., 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
1	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 .

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 23444 records of 141 vertebrate and 1027 records of 61 invertebrate fauna; 6999 records of 306 vascular, 676 records of 139 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>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	2	82.3 \pm 1.0	NB
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	2656	29.5 \pm 0.0	NB
A	<i>Dermodochelys coriacea</i> (Atlantic pop.)	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	4	56.7 \pm 1.0	NB
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	25	98.8 \pm 0.0	NB
A	<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered	Endangered	Endangered	S2M	333	28.2 \pm 0.0	NB
A	<i>Pagophila eburnea</i>	Ivory Gull	Endangered	Endangered		SNA	1	77.4 \pm 0.0	NB
A	<i>Empidonax virescens</i>	Acadian Flycatcher	Endangered	Endangered		SNA	1	68.3 \pm 0.0	NB
A	<i>Delphinapterus leucas</i>	Beluga Whale - St Lawrence Estuary pop.	Endangered	Endangered		SNA	2	75.4 \pm 1.0	NB
A	<i>Salmo salar pop. 7</i>	Atlantic Salmon - Outer Bay of Fundy pop.	Endangered		Endangered	SNR	1	86.2 \pm 0.0	NB
A	<i>Rangifer tarandus pop. 2</i>	Woodland Caribou (Atlantic-Gasp /-sie pop.)	Endangered	Endangered	Extirpated	SX	6	51.6 \pm 5.0	NB
A	<i>Leucoraja ocellata pop. 5</i>	Winter Skate - Gulf of St Lawrence pop.	Endangered		Endangered		4	70.4 \pm 0.0	NB
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	4	47.6 \pm 7.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	63.5 \pm 0.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	52	21.5 \pm 7.0	NB
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	42	32.9 \pm 7.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	569	4.4 \pm 7.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B,S2M	672	38.3 \pm 7.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	601	19.1 \pm 0.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	249	4.4 \pm 7.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Threatened	S2S3B,S2S3M	590	10.6 \pm 7.0	NB
A	<i>Cardellina canadensis</i>	Canada Warbler	Threatened	Threatened	Threatened	S3B,S3M	439	5.8 \pm 7.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	490	21.5 \pm 7.0	NB
A	<i>Limosa haemastica</i>	Hudsonian Godwit	Threatened			S3S4M	229	29.5 \pm 0.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4	13	14.4 \pm 0.0	NB
A	<i>Vermivora chrysoptera</i>	Golden-winged Warbler	Threatened	Threatened		SNA	1	68.5 \pm 1.0	NB
A	<i>Coturnicops noveboracensis</i>	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	2	82.4 \pm 0.0	NB
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	10	27.0 \pm 7.0	NB
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	13	34.9 \pm 0.0	NB
A	<i>Bucephala islandica</i> (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	47	24.3 \pm 5.0	NB
A	<i>Salmo salar pop. 12</i>	Atlantic Salmon - Gaspere - Southern Gulf of St Lawrence pop.	Special Concern		Special Concern	S2S3	2106	25.9 \pm 1.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	2	48.7 \pm 0.0	NB
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	177	8.7 \pm 0.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	462	4.4 \pm 7.0	NB
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	434	4.4 \pm 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	339	2.9 \pm 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern	Special Concern		S3M	4	68.5 ± 1.0	NB
A	<i>Phocoena phocoena pop. 1</i>	Harbour Porpoise - Northwest Atlantic pop.	Special Concern		Special Concern	S4	4	62.1 ± 0.0	NB
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern			S4	8	88.1 ± 1.0	NB
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	339	4.4 ± 7.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern	Special Concern	S4N,S4M	3	67.6 ± 3.0	NB
A	<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	Special Concern	Special Concern		SNA	3	57.4 ± 0.0	NB
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	9	56.9 ± 20.0	NB
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	13	24.3 ± 5.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	4	44.5 ± 3.0	NB
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1S2B,S1S2M	7	48.1 ± 0.0	NB
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S1S2B,SUM	12	31.9 ± 7.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk			S2	22	62.4 ± 1.0	NB
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk			S2B,S2M	9	48.1 ± 0.0	NB
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B,S2M	5	90.6 ± 7.0	NB
A	<i>Globicephala melas</i>	Long-finned Pilot Whale	Not At Risk			S2S3	2	53.7 ± 1.0	NB
A	<i>Lynx canadensis</i>	Canadian Lynx	Not At Risk		Endangered	S3	52	4.3 ± 0.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	635	25.4 ± 0.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S3M,S2N	7	47.5 ± 0.0	NB
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4	1	96.8 ± 0.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	392	1.6 ± 0.0	NB
A	<i>Canis lupus</i>	Gray Wolf	Not At Risk		Extirpated	SX	1	93.5 ± 100.0	NB
A	<i>Puma concolor pop. 1</i>	Eastern Cougar	Data Deficient		Endangered	SNA	44	19.2 ± 1.0	NB
A	<i>Morone saxatilis</i>	Striped Bass	E,SC			S3	20	46.2 ± 10.0	NB
A	<i>Odobenus rosmarus pop. 5</i>	Atlantic Walrus - Nova Scotia-Newfoundland-Gulf of St. Lawrence population (DU3)	X			SX	4	61.4 ± 1.0	NB
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1	4	47.3 ± 0.0	NB
A	<i>Salvelinus alpinus</i>	Arctic Char				S1	10	52.8 ± 1.0	NB
A	<i>Synaptomys borealis sphagnicola</i>	Northern Bog Lemming				S1	4	45.0 ± 1.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S5M	716	24.2 ± 0.0	NB
A	<i>Aythya americana</i>	Redhead				S1B,S1M	2	48.1 ± 0.0	NB
A	<i>Antigone canadensis</i>	Sandhill Crane				S1B,S1M	5	62.8 ± 1.0	NB
A	<i>Bartramia longicauda</i>	Upland Sandpiper				S1B,S1M	8	51.0 ± 0.0	NB
A	<i>Phalaropus tricolor</i>	Wilson's Phalarope				S1B,S1M	13	59.3 ± 1.0	NB
A	<i>Leucophaeus atricilla</i>	Laughing Gull				S1B,S1M	2	91.4 ± 0.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B,S1M	4	57.8 ± 7.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	12	54.5 ± 0.0	NB
A	<i>Uria aalge</i>	Common Murre				S1B,S3N,S3M	3	59.2 ± 0.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	48	22.6 ± 24.0	NB
A	<i>Aythya marila</i>	Greater Scaup				S1B,S4M,S2N	20	57.0 ± 1.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	110	36.1 ± 0.0	NB
A	<i>Sterna paradisaea</i>	Arctic Tern				S1B,SUM	36	30.0 ± 0.0	NB
A	<i>Fratercula arctica</i>	Atlantic Puffin				S1B,SUN,SUM	1	55.7 ± 0.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	6	68.5 ± 1.0	NB
A	<i>Branta bernicla</i>	Brant				S1N,S2S3M	81	30.7 ± 10.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B,S1S2M	2	65.7 ± 0.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B,S1S2M	284	11.1 ± 1.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B,S1S2M	14	47.6 ± 7.0	NB
A	<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow				S1S2B,S1S2M	5	25.4 ± 0.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B,S1S2M	6	49.4 ± 0.0	NB
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S1S2B,S4N,S5M	34	50.7 ± 0.0	NB
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	7	57.3 ± 0.0	NB
A	<i>Microtus chrotorrhinus</i>	Rock Vole				S2?	30	76.2 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B,S2M	62	21.8 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2B,S2M	33	29.2 ± 7.0	NB
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2B,S2M	58	34.8 ± 7.0	NB
A	<i>Mareca strepera</i>	Gadwall				S2B,S3M	55	49.1 ± 0.0	NB
A	<i>Alca torda</i>	Razorbill				S2B,S3N,S3M	19	58.2 ± 14.0	NB
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5M	87	0.3 ± 7.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S5M	85	12.8 ± 0.0	NB
A	<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel				S2B,SUM	1	90.5 ± 0.0	NB
A	<i>Anser caerulescens</i>	Snow Goose				S2M	9	49.1 ± 0.0	NB
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2N,S2M	7	26.2 ± 0.0	NB
A	<i>Somateria spectabilis</i>	King Eider				S2N,S2M	2	67.6 ± 1.0	NB
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N,S2M	17	24.3 ± 5.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	17	39.2 ± 1.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S2S3	69	6.5 ± 7.0	NB
A	<i>Spatula clypeata</i>	Northern Shoveler				S2S3B,S2S3M	81	48.0 ± 0.0	NB
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S2S3B,S2S3M	25	29.2 ± 7.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B,S2S3M	266	4.4 ± 7.0	NB
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	53	29.5 ± 0.0	NB
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S2S3N,SUM	8	50.8 ± 0.0	NB
A	<i>Cephus grylle</i>	Black Guillemot				S3	72	42.7 ± 0.0	NB
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	89	27.1 ± 0.0	NB
A	<i>Spinus pinus</i>	Pine Siskin				S3	294	4.4 ± 7.0	NB
A	<i>Prosopium cylindraceum</i>	Round Whitefish				S3	2	86.2 ± 0.0	NB
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	5	80.8 ± 0.0	NB
A	<i>Sorex maritimensis</i>	Maritime Shrew				S3	38	69.4 ± 0.0	NB
A	<i>Cathartes aura</i>	Turkey Vulture				S3B,S3M	18	50.0 ± 0.0	NB
A	<i>Rallus limicola</i>	Virginia Rail				S3B,S3M	14	34.8 ± 7.0	NB
A	<i>Charadrius vociferus</i>	Killdeer				S3B,S3M	724	5.8 ± 7.0	NB
A	<i>Tringa semipalmata</i>	Willet				S3B,S3M	409	24.2 ± 0.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B,S3M	62	21.8 ± 7.0	NB
A	<i>Vireo gilvus</i>	Warbling Vireo				S3B,S3M	60	21.8 ± 7.0	NB
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B,S3M	67	26.3 ± 7.0	NB
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B,S3M	19	38.0 ± 7.0	NB
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B,S3M	135	4.4 ± 7.0	NB
A	<i>Icterus galbula</i>	Baltimore Oriole				S3B,S3M	74	21.8 ± 7.0	NB
A	<i>Somateria mollissima</i>	Common Eider				S3B,S4M,S3N	185	25.4 ± 0.0	NB
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,S4S5M	230	10.4 ± 0.0	NB
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	192	27.6 ± 1.0	NB
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S5M,S4S5N	268	7.7 ± 0.0	NB
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	673	28.2 ± 0.0	NB
A	<i>Phalaropus fulicarius</i>	Red Phalarope				S3M	5	57.4 ± 0.0	NB
A	<i>Melanitta americana</i>	Black Scoter				S3M,S1S2N	154	24.3 ± 5.0	NB
A	<i>Bucephala albeola</i>	Bufflehead				S3M,S2N	33	24.3 ± 5.0	NB
A	<i>Calidris maritima</i>	Purple Sandpiper				S3M,S3N	20	29.5 ± 0.0	NB
A	<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3S4	11	69.4 ± 0.0	NB
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B,S3S4M	229	4.4 ± 7.0	NB
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S5M	1130	4.4 ± 7.0	NB
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	334	5.8 ± 7.0	NB
A	<i>Larus delawarensis</i>	Ring-billed Gull				S3S4B,S5M	444	24.3 ± 5.0	NB
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B,S5M	765	15.2 ± 7.0	NB
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3S4M	512	28.1 ± 1.0	NB
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3S4M	817	24.2 ± 0.0	NB
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3S4M	76	49.2 ± 0.0	NB
A	<i>Calidris alba</i>	Sanderling				S3S4M,S1N	476	24.2 ± 0.0	NB
A	<i>Morus bassanus</i>	Northern Gannet				SHB,S5M	208	24.3 ± 5.0	NB
I	<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1	9	91.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	<i>Coenonympha nipisiquit</i>	Maritime Ringlet	Endangered	Endangered	Endangered	S1	103	26.0 ± 5.0	NB
	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	22	47.6 ± 0.0	NB
	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	29	73.5 ± 0.0	NB
	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern	Special Concern	Special Concern	S2	17	66.1 ± 0.0	NB
	<i>Bombus terricola</i>	Yellow-banded Bumblebee	Special Concern	Special Concern		S3?	35	15.0 ± 0.0	NB
	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle	Special Concern			SH	9	24.9 ± 1.0	NB
	<i>Erora laeta</i>	Early Hairstreak				S1	1	90.4 ± 7.0	NB
	<i>Catocala neogama</i>	The Bride				S1	1	63.4 ± 1.0	NB
	<i>Somatochlora septentrionalis</i>	Muskeg Emerald				S1	4	84.0 ± 0.0	NB
	<i>Leucorrhinia patricia</i>	Canada Whiteface				S1	11	52.1 ± 1.0	NB
	<i>Plebejus saepiolus</i>	Greenish Blue				S1S2	25	24.4 ± 2.0	NB
	<i>Cicindela ancocisconensis</i>	Appalachian Tiger Beetle				S2	1	96.0 ± 0.0	NB
	<i>Satyrrium calanus</i>	Banded Hairstreak				S2	1	90.1 ± 7.0	NB
	<i>Strymon melinus</i>	Grey Hairstreak				S2	11	14.2 ± 1.0	NB
	<i>Aeshna juncea</i>	Rush Darner				S2	13	62.9 ± 1.0	NB
	<i>Somatochlora brevicincta</i>	Quebec Emerald				S2	8	90.7 ± 0.0	NB
	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S2	5	24.6 ± 0.0	NB
	<i>Coenagrion interrogatum</i>	Subarctic Bluet				S2	14	12.6 ± 1.0	NB
	<i>Chrysops delicatulus</i>	a Horse Fly				S2S3	1	76.1 ± 1.0	NB
	<i>Callophrys henrici</i>	Henry's Elfin				S2S3	15	27.2 ± 7.0	NB
	<i>Desmocerus palliatus</i>	Elderberry Borer				S3	2	28.1 ± 5.0	NB
	<i>Carabus maeander</i>	a Ground Beetle				S3	1	89.9 ± 1.0	NB
	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	2	91.9 ± 1.0	NB
	<i>Xylotrechus quadrimaculatus</i>	a Longhorned Beetle				S3	1	67.6 ± 1.0	NB
	<i>Xylotrechus undulatus</i>	a Longhorned Beetle				S3	2	68.6 ± 1.0	NB
	<i>Calathus gregarius</i>	a Ground Beetle				S3	1	34.7 ± 1.0	NB
	<i>Hyperaspis disconotata</i>	a Ladybird Beetle				S3	1	49.9 ± 5.0	NB
	<i>Hesperia sassacus</i>	Indian Skipper				S3	10	47.5 ± 0.0	NB
	<i>Euphyes bimacula</i>	Two-spotted Skipper				S3	11	17.9 ± 0.0	NB
	<i>Papilio brevicauda</i>	Short-tailed Swallowtail				S3	1	66.3 ± 0.0	NB
	<i>Papilio brevicauda bretonensis</i>	Short-tailed Swallowtail				S3	104	26.3 ± 7.0	NB
	<i>Lycaena hyllus</i>	Bronze Copper				S3	9	50.0 ± 0.0	NB
	<i>Lycaena dospassosi</i>	Salt Marsh Copper				S3	147	26.0 ± 6.0	NB
	<i>Satyrrium acadica</i>	Acadian Hairstreak				S3	8	26.3 ± 7.0	NB
	<i>Callophrys polios</i>	Hoary Elfin				S3	38	9.8 ± 0.0	NB
	<i>Callophrys eryphon</i>	Western Pine Elfin				S3	25	27.2 ± 7.0	NB
	<i>Plebejus idas</i>	Northern Blue				S3	4	81.5 ± 0.0	NB
	<i>Plebejus idas empetri</i>	Crowberry Blue				S3	41	56.4 ± 7.0	NB
	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	2	24.4 ± 1.0	NB
	<i>Boloria eunomia</i>	Bog Fritillary				S3	17	20.5 ± 0.0	NB
	<i>Boloria bellona</i>	Meadow Fritillary				S3	12	30.3 ± 2.0	NB
	<i>Boloria chariclea</i>	Arctic Fritillary				S3	42	24.4 ± 2.0	NB
	<i>Boloria chariclea grandis</i>	Purple Lesser Fritillary				S3	2	21.3 ± 10.0	NB
	<i>Polygonia satyrus</i>	Satyr Comma				S3	17	25.2 ± 0.0	NB
	<i>Polygonia gracilis</i>	Hoary Comma				S3	49	20.8 ± 0.0	NB
	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	10	46.7 ± 10.0	NB
	<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail				S3	5	48.8 ± 0.0	NB
	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	3	91.1 ± 0.0	NB
	<i>Somatochlora albicincta</i>	Ringed Emerald				S3	32	46.4 ± 1.0	NB
	<i>Somatochlora cingulata</i>	Lake Emerald				S3	26	22.3 ± 1.0	NB
	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3	13	7.7 ± 1.0	NB
	<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S3	3	72.2 ± 0.0	NB
	<i>Lestes eurinus</i>	Amber-Winged Spreadwing				S3	14	22.3 ± 1.0	NB
	<i>Stylurus scudderi</i>	Zebra Clubtail				S3	1	65.2 ± 0.0	NB
	<i>Alasmidonta undulata</i>	Triangle Floater				S3	1	89.7 ± 1.0	NB
	<i>Neohelix albolabris</i>	Whitelip				S3	1	90.5 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B,S3M	2	92.5 ± 0.0	NB
I	<i>Satyrium liparops</i>	Striped Hairstreak				S3S4	23	23.6 ± 0.0	NB
I	<i>Satyrium liparops strigosum</i>	Striped Hairstreak				S3S4	1	87.8 ± 15.0	NB
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3S4	8	38.1 ± 0.0	NB
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	7	50.0 ± 13.0	NB
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S2	144	25.3 ± 0.0	NB
N	<i>Arctoa fulvella</i>	a Moss				S1	2	82.3 ± 1.0	NB
N	<i>Aulacomnium heterostichum</i>	One-sided Groove Moss				S1	1	88.4 ± 0.0	NB
N	<i>Campylostelium saxicola</i>	a Moss				S1	1	86.5 ± 0.0	NB
N	<i>Grimmia donniana</i>	Donn's Grimmia Moss				S1	4	81.8 ± 0.0	NB
N	<i>Grimmia incurva</i>	Black Grimmia				S1	4	81.8 ± 0.0	NB
N	<i>Kiaeria starkei</i>	Starke's Fork Moss				S1	1	82.3 ± 1.0	NB
N	<i>Pseudoleskeella tectorum</i>	Rooftop Leskea Moss				S1	2	69.4 ± 0.0	NB
N	<i>Syntrichia ruralis</i>	a Moss				S1	1	45.9 ± 0.0	NB
N	<i>Zygodon viridissimus var. viridissimus</i>	a Moss				S1	1	86.6 ± 0.0	NB
N	<i>Collema tenax</i>	Soil Tarpaper Lichen				S1	2	69.5 ± 0.0	NB
N	<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S1	1	61.8 ± 13.0	NB
N	<i>Leptogium hirsutum</i>	Jellyskin Lichen				S1	1	46.3 ± 0.0	NB
N	<i>Lathagrium auriforme</i>	a tarpaper lichen				S1	1	45.8 ± 0.0	NB
N	<i>Ephebe hispidula</i>	Dryside Rockshag Lichen				S1	1	69.1 ± 0.0	NB
N	<i>Ephebe perspinulosa</i>	Thread Lichen				S1	2	68.5 ± 0.0	NB
N	<i>Leptogium intermedium</i>	Forty-five Jellyskin Lichen				S1	8	68.6 ± 0.0	NB
N	<i>Leptogium schraderi</i>	Schrader's Jellyskin Lichen				S1	1	69.4 ± 0.0	NB
N	<i>Phaeophyscia decolor</i>	Lesser Eye Shadow Lichen				S1	2	63.6 ± 0.0	NB
N	<i>Phaeophyscia hispidula</i>	Whiskered Shadow Lichen				S1	1	46.2 ± 0.0	NB
N	<i>Cetraria ericetorum ssp. ericetorum</i>	a Lichen				S1	2	81.1 ± 20.0	NB
N	<i>Anastrophyllum saxicola</i>	Curled Notchwort				S1?	1	93.7 ± 0.0	NB
N	<i>Bryum blindii</i>	a Moss				S1?	1	59.0 ± 1.0	NB
N	<i>Cinclidium stygium</i>	Sooty Cupola Moss				S1?	1	42.2 ± 0.0	NB
N	<i>Tortula cernua</i>	Narrow-Leafed Chain-Teeth Moss				S1?	2	59.0 ± 1.0	NB
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss				S1?	2	83.3 ± 1.0	NB
N	<i>Homomallium adnatum</i>	Adnate Hairy-gray Moss				S1?	1	86.8 ± 0.0	NB
N	<i>Paludella squarrosa</i>	Tufted Fen Moss				S1?	1	42.2 ± 0.0	NB
N	<i>Plagiothecium latebricola</i>	Alder Silk Moss				S1?	1	87.0 ± 13.0	NB
N	<i>Seligeria recurvata</i>	a Moss				S1?	5	68.6 ± 0.0	NB
N	<i>Rhizomnium pseudopunctatum</i>	Felted Leafy Moss				S1?	2	86.1 ± 1.0	NB
N	<i>Thermutis velutina</i>	Rockvelvet Lichen				S1?	1	69.5 ± 0.0	NB
N	<i>Ephebe solida</i>	a Rockshag Lichen				S1?	1	63.6 ± 0.0	NB
N	<i>Peltigera venosa</i>	Fan Pelt Lichen				S1?	4	56.6 ± 0.0	NB
N	<i>Cetraria arenaria</i>	Sand-loving Icelandmoss Lichen				S1?	2	53.1 ± 0.0	NB
N	<i>Lophozia heterocolpos</i>	Whip Notchwort				S1S2	2	79.6 ± 0.0	NB
N	<i>Metacalypogeia schusterana</i>	Schuster's Pouchwort				S1S2	1	83.5 ± 0.0	NB
N	<i>Odontoschisma sphagni</i>	Bog-Moss Flapwort				S1S2	1	84.7 ± 0.0	NB
N	<i>Pallavicinia lyellii</i>	Lyell's Ribbonwort				S1S2	1	88.6 ± 1.0	NB
N	<i>Reboulia hemisphaerica</i>	Purple-margined Liverwort				S1S2	2	45.5 ± 0.0	NB
N	<i>Calliergon richardsonii</i>	Richardson's Spear Moss				S1S2	1	86.1 ± 1.0	NB
N	<i>Campyllum radiale</i>	Long-stalked Fine Wet Moss				S1S2	2	63.4 ± 0.0	NB
N	<i>Distichium inclinatum</i>	Inclined Iris Moss				S1S2	2	59.0 ± 1.0	NB
N	<i>Drummondia prorepens</i>	a Moss				S1S2	1	86.8 ± 0.0	NB
N	<i>Hygrohypnum bestii</i>	Best's Brook Moss				S1S2	1	63.6 ± 0.0	NB
N	<i>Platydictya confervoides</i>	a Moss				S1S2	1	68.6 ± 0.0	NB
N	<i>Seligeria brevifolia</i>	a Moss				S1S2	8	69.3 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Timmia norvegica</i> var. <i>excurrens</i>	a moss				S1S2	2	79.6 ± 0.0	NB
N	<i>Cystocoleus ebeneus</i>	Rockgossamer Lichen				S1S2	2	38.0 ± 0.0	NB
N	<i>Leptogium gelatinosum</i>	Rose-petalled Jellyskin Lichen				S1S2	3	69.4 ± 0.0	NB
N	<i>Calypogeia neesiana</i>	Nees' Pouchwort				S1S3	1	60.3 ± 1.0	NB
N	<i>Lophozia badensis</i>	Dwarf Notchwort				S1S3	1	59.0 ± 1.0	NB
N	<i>Lophozia obtusa</i>	Obtuse Notchwort				S1S3	2	89.0 ± 0.0	NB
N	<i>Anomodon viticulosus</i>	a Moss				S2	3	97.1 ± 0.0	NB
N	<i>Didymodon ferrugineus</i>	a moss				S2	1	76.0 ± 0.0	NB
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S2	1	86.3 ± 0.0	NB
N	<i>Isopterygiopsis pulchella</i>	Neat Silk Moss				S2	1	69.4 ± 0.0	NB
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss				S2	1	47.8 ± 10.0	NB
N	<i>Platydictya jungermannioides</i>	False Willow Moss				S2	1	95.2 ± 1.0	NB
N	<i>Pohlia elongata</i>	Long-necked Nodding Moss				S2	4	86.3 ± 0.0	NB
N	<i>Pohlia sphagnicola</i>	a moss				S2	2	76.0 ± 1.0	NB
N	<i>Sphagnum lindbergii</i>	Lindberg's Peat Moss				S2	1	20.7 ± 0.0	NB
N	<i>Sphagnum flexuosum</i>	Flexuous Peatmoss				S2	2	88.6 ± 0.0	NB
N	<i>Tayloria serrata</i>	Serrate Trumpet Moss				S2	1	85.4 ± 0.0	NB
N	<i>Tetradontium brownianum</i>	Little Georgia				S2	5	86.3 ± 0.0	NB
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S2	3	59.0 ± 1.0	NB
N	<i>Anomobryum filiforme</i>	a moss				S2	1	59.0 ± 1.0	NB
N	<i>Nephroma laevigatum</i>	Mustard Kidney Lichen				S2	5	63.6 ± 0.0	NB
N	<i>Peltigera lepidophora</i>	Scaly Pelt Lichen				S2	18	47.2 ± 0.0	NB
N	<i>Barbilophozia lycopodioides</i>	Greater Pawwort				S2?	2	66.1 ± 1.0	NB
N	<i>Anacamptodon splachnoides</i>	a Moss				S2?	2	87.0 ± 13.0	NB
N	<i>Bryum pallescens</i>	Pale Bryum Moss				S2?	1	95.4 ± 100.0	NB
N	<i>Hygrohypnum montanum</i>	a Moss				S2?	2	83.6 ± 0.0	NB
N	<i>Schistostega pennata</i>	Luminous Moss				S2?	2	89.5 ± 0.0	NB
N	<i>Sphagnum angermanicum</i>	a Peatmoss				S2?	1	85.9 ± 0.0	NB
N	<i>Trichodon cylindricus</i>	Cylindric Hairy-teeth Moss				S2?	2	83.8 ± 0.0	NB
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2?	1	91.0 ± 0.0	NB
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2?	1	88.1 ± 0.0	NB
N	<i>Nephroma arcticum</i>	Arctic Kidney Lichen				S2?	6	56.6 ± 0.0	NB
N	<i>Bryum uliginosum</i>	a Moss				S2S3	4	57.8 ± 9.0	NB
N	<i>Campylium polygamum</i>	a Moss				S2S3	2	85.7 ± 0.0	NB
N	<i>Hypnum cupressiforme</i> var. <i>filiforme</i>	a Moss				S2S3	2	63.4 ± 0.0	NB
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss				S2S3	9	50.8 ± 0.0	NB
N	<i>Pohlia prolifera</i>	Cottony Nodding Moss				S2S3	8	86.3 ± 0.0	NB
N	<i>Saelania glaucescens</i>	Blue Dew Moss				S2S3	12	45.5 ± 0.0	NB
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2S3	3	32.1 ± 1.0	NB
N	<i>Sphagnum subfulvum</i>	a Peatmoss				S2S3	3	85.7 ± 0.0	NB
N	<i>Zygodon viridissimus</i>	a Moss				S2S3	1	86.8 ± 0.0	NB
N	<i>Cyrtomnium hymenophylloides</i>	Short-pointed Lantern Moss				S2S3	3	69.4 ± 0.0	NB
N	<i>Cladonia sulphurina</i>	Greater Sulphur-cup Lichen				S2S3	1	51.6 ± 0.0	NB
N	<i>Dendroscopula umhausense</i>	a lichen				S2S3	1	86.2 ± 0.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S3	1	97.9 ± 0.0	NB
N	<i>Schistidium maritimum</i>	a Moss				S3	1	91.2 ± 0.0	NB
N	<i>Hymenostylium recurvirostre</i>	Hymenostylium Moss				S3	5	69.4 ± 0.0	NB
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	5	69.1 ± 0.0	NB
N	<i>Solorina saccata</i>	Woodland Owl Lichen				S3	68	46.0 ± 0.0	NB
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S3	2	91.1 ± 0.0	NB
N	<i>Cladonia strepsilis</i>	Olive Cladonia Lichen				S3	1	99.8 ± 0.0	NB
N	<i>Leptogium lichenooides</i>	Tattered Jellyskin Lichen				S3	12	45.6 ± 0.0	NB

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N	<i>Nephroma resupinatum</i>	a lichen				S3	5	48.9 ± 0.0	NB
N	<i>Peltigera membranacea</i>	Membranous Pelt Lichen				S3	5	51.6 ± 0.0	NB
N	<i>Cladonia deformis</i>	Lesser Sulphur-cup Lichen				S3	1	51.0 ± 0.0	NB
N	<i>Aulacomnium androgynum</i>	Little Groove Moss				S3?	4	88.4 ± 0.0	NB
N	<i>Dicranella rufescens</i>	Red Forklet Moss				S3?	1	62.3 ± 7.0	NB
N	<i>Leptogium subtile</i>	Appressed Jellyskin Lichen				S3?	3	25.3 ± 0.0	NB
N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss				S3S4	1	81.5 ± 8.0	NB
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss				S3S4	1	69.5 ± 0.0	NB
N	<i>Dicranella varia</i>	a Moss				S3S4	2	57.8 ± 9.0	NB
N	<i>Dicranum majus</i>	Greater Broom Moss				S3S4	4	88.6 ± 0.0	NB
N	<i>Dicranum leioneuron</i>	a Dicranum Moss				S3S4	1	80.1 ± 10.0	NB
N	<i>Encalypta ciliata</i>	Fringed Extinguisher Moss				S3S4	5	47.7 ± 0.0	NB
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss				S3S4	5	57.8 ± 9.0	NB
N	<i>Heterocladium dimorphum</i>	Dimorphous Tangle Moss				S3S4	4	58.7 ± 1.0	NB
N	<i>Isopterygiopsis muelleriana</i>	a Moss				S3S4	2	45.5 ± 0.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	9	47.7 ± 0.0	NB
N	<i>Pogonatum dentatum</i>	Mountain Hair Moss				S3S4	2	81.9 ± 0.0	NB
N	<i>Sphagnum compactum</i>	Compact Peat Moss				S3S4	1	86.6 ± 1.0	NB
N	<i>Tetraphis geniculata</i>	Geniculate Four-tooth Moss				S3S4	2	94.6 ± 0.0	NB
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss				S3S4	1	88.4 ± 0.0	NB
N	<i>Abietinella abietina</i>	Wiry Fern Moss				S3S4	5	46.1 ± 0.0	NB
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss				S3S4	1	75.7 ± 0.0	NB
N	<i>Rauvella scita</i>	Smaller Fern Moss				S3S4	1	91.0 ± 0.0	NB
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen				S3S4	5	42.4 ± 0.0	NB
N	<i>Pseudocyphellaria holarctica</i>	Yellow Specklebelly Lichen				S3S4	5	88.1 ± 0.0	NB
N	<i>Leptogium teretiusculum</i>	Beaded Jellyskin Lichen				S3S4	2	69.2 ± 0.0	NB
N	<i>Cladonia terrae-novae</i>	Newfoundland Reindeer Lichen				S3S4	1	63.9 ± 0.0	NB
N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen				S3S4	2	49.6 ± 0.0	NB
N	<i>Vahlia leucophaea</i>	Shelter Shingle Lichen				S3S4	25	45.5 ± 0.0	NB
N	<i>Montanelia panniformis</i>	Shingled Camouflage Lichen				S3S4	1	51.0 ± 0.0	NB
N	<i>Nephroma parile</i>	Powdery Kidney Lichen				S3S4	12	45.6 ± 0.0	NB
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen				S3S4	28	45.5 ± 0.0	NB
N	<i>Fuscopannaria sorediata</i>	a Lichen				S3S4	1	42.4 ± 0.0	NB
N	<i>Stereocaulon paschale</i>	Easter Foam Lichen				S3S4	1	23.8 ± 1.0	NB
N	<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen				S3S4	10	59.9 ± 0.0	NB
N	<i>Dermatocarpon luridum</i>	Brookside Stippleback Lichen				S3S4	43	47.7 ± 0.0	NB
N	<i>Hennediella heimii</i>	Long-Stalked Beardless Moss				SH	1	93.2 ± 10.0	NB
N	<i>Leucodon brachypus</i>	a Moss				SH	9	86.1 ± 0.0	NB
N	<i>Splachnum luteum</i>	Yellow Collar Moss				SH	1	95.4 ± 100.0	NB
P	<i>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	25	85.4 ± 0.0	NB
P	<i>Symphyotrichum laurentianum</i>	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	51	68.5 ± 0.0	NB
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S4S5	421	2.8 ± 0.0	NB
P	<i>Lechea maritima var. subcylindrica</i>	Beach Pinweed	Special Concern	Special Concern	Special Concern	S2	176	62.2 ± 0.0	NB
P	<i>Symphyotrichum anticostense</i>	Anticosti Aster	Special Concern	Special Concern	Endangered	S2S3	13	97.7 ± 0.0	NB
P	<i>Symphyotrichum subulatum (Bathurst pop)</i>	Bathurst Aster - Bathurst pop.	Not At Risk		Endangered	S2	246	23.5 ± 0.0	NB
P	<i>Eriocaulon parkeri</i>	Parker's Pipewort	Not At Risk		Endangered	S2	156	48.6 ± 0.0	NB
P	<i>Pterospora andromedea</i>	Woodland Pinedrops			Endangered	S1	14	48.6 ± 0.0	NB

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P	<i>Cryptotaenia canadensis</i>	Canada Honewort				S1	1	92.1 ± 1.0	NB
P	<i>Arnica lonchophylla</i>	Northern Arnica				S1	11	68.1 ± 0.0	NB
P	<i>Bidens discoidea</i>	Swamp Beggarticks				S1	1	58.1 ± 0.0	NB
P	<i>Bidens eatonii</i>	Eaton's Beggarticks				S1	9	48.2 ± 0.0	NB
P	<i>Pseudognaphalium obtusifolium</i>	Eastern Cudweed				S1	1	63.4 ± 0.0	NB
P	<i>Canadanthus modestus</i>	Great Northern Aster				S1	1	94.6 ± 0.0	NB
P	<i>Betula glandulosa</i>	Glandular Birch				S1	28	41.2 ± 0.0	NB
P	<i>Betula michauxii</i>	Michaux's Dwarf Birch				S1	3	80.3 ± 0.0	NB
P	<i>Andersonglossum boreale</i>	Northern Wild Comfrey				S1	4	21.4 ± 0.0	NB
P	<i>Hackelia deflexa</i> ssp. <i>americana</i>	American Stickseed				S1	3	80.5 ± 10.0	NB
P	<i>Cardamine parviflora</i>	Small-flowered Bittercress				S1	1	6.0 ± 0.0	NB
P	<i>Descurainia incana</i>	Gray Tansy Mustard				S1	4	96.5 ± 0.0	NB
P	<i>Draba arabisans</i>	Rock Whitlow-Grass				S1	2	69.5 ± 0.0	NB
P	<i>Draba glabella</i>	Rock Whitlow-Grass				S1	7	55.7 ± 0.0	NB
P	<i>Draba incana</i>	Twisted Whitlow-grass				S1	2	67.3 ± 0.0	NB
P	<i>Boechea grahamii</i>	Graham's Rockcress				S1	12	81.1 ± 5.0	NB
P	<i>Moehringia macrophylla</i>	Large-Leaved Sandwort				S1	8	46.2 ± 0.0	NB
P	<i>Stellaria crassifolia</i>	Fleshy Stitchwort				S1	2	61.0 ± 10.0	NB
P	<i>Stellaria longipes</i>	Long-stalked Starwort				S1	10	55.8 ± 0.0	NB
P	<i>Blitum capitatum</i>	strawberry-blite				S1	1	82.4 ± 1.0	NB
P	<i>Hypericum virginicum</i>	Virginia St. John's-wort				S1	1	64.8 ± 0.0	NB
P	<i>Vaccinium boreale</i>	Northern Blueberry				S1	18	41.1 ± 0.0	NB
P	<i>Vaccinium uliginosum</i>	Alpine Bilberry				S1	6	41.1 ± 0.0	NB
P	<i>Euphorbia polygonifolia</i>	Seaside Spurge				S1	5	70.4 ± 5.0	NB
P	<i>Bartonia virginica</i>	Yellow Bartonia				S1	3	84.0 ± 0.0	NB
P	<i>Gentiana rubricaulis</i>	Purple-stemmed Gentian				S1	1	97.4 ± 0.0	NB
P	<i>Bistorta vivipara</i>	Alpine Bistort				S1	1	87.4 ± 0.0	NB
P	<i>Coptidium lapponicum</i>	Lapland Buttercup				S1	1	46.0 ± 0.0	NB
P	<i>Ranunculus sceleratus</i>	Cursed Buttercup				S1	12	59.3 ± 0.0	NB
P	<i>Amelanchier fernaldii</i>	Fernald's Serviceberry				S1	1	81.5 ± 0.0	NB
P	<i>Salix serissima</i>	Autumn Willow				S1	4	41.5 ± 0.0	NB
P	<i>Saxifraga paniculata</i> ssp. <i>laestadii</i>	Laestadius' Saxifrage				S1	4	46.9 ± 0.0	NB
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small-flowered Purple False Foxglove				S1	12	57.3 ± 0.0	NB
P	<i>Limosella aquatica</i>	Water Mudwort				S1	18	96.3 ± 0.0	NB
P	<i>Carex backii</i>	Rocky Mountain Sedge				S1	2	85.5 ± 0.0	NB
P	<i>Carex glareosa</i>	Gravel Sedge				S1	6	78.6 ± 1.0	NB
P	<i>Carex media</i>	Intermediate Sedge				S1	1	96.3 ± 0.0	NB
P	<i>Carex rariflora</i>	Loose-flowered Alpine Sedge				S1	1	97.1 ± 0.0	NB
P	<i>Carex viridula</i> var. <i>elatior</i>	Greenish Sedge				S1	14	41.4 ± 0.0	NB
P	<i>Carex saxatilis</i>	Russet Sedge				S1	6	82.2 ± 0.0	NB
P	<i>Carex bigelowii</i>	Bigelow's Sedge				S1	7	53.1 ± 0.0	NB
P	<i>Cyperus diandrus</i>	Low Flatsedge				S1	6	50.1 ± 0.0	NB
P	<i>Cyperus bipartitus</i>	Shining Flatsedge				S1	23	44.9 ± 0.0	NB
P	<i>Eleocharis flavescens</i> var. <i>olivacea</i>	Bright-green Spikerush				S1	8	56.5 ± 0.0	NB
P	<i>Schoenoplectiella smithii</i>	Smith's Bulrush				S1	10	56.5 ± 0.0	NB
P	<i>Schoenoplectiella smithii</i> var. <i>leviseta</i>	Smith's Bulrush				S1	17	56.8 ± 0.0	NB
P	<i>Schoenoplectiella smithii</i> var. <i>leviseta</i>	Smith's Bulrush				S1	33	48.6 ± 0.0	NB
P	<i>Sisyrinchium angustifolium</i>	Narrow-leaved Blue-eyed-grass				S1	1	57.3 ± 0.0	NB
P	<i>Juncus greenii</i>	Greene's Rush				S1	1	51.4 ± 1.0	NB

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P	<i>Juncus stygius</i> ssp. <i>americanus</i>	Moor Rush				S1	1	84.1 ± 0.0	NB
P	<i>Juncus subtilis</i>	Creeping Rush				S1	8	61.3 ± 0.0	NB
P	<i>Oreojuncus trifidus</i>	Highland Rush				S1	9	53.1 ± 0.0	NB
P	<i>Allium canadense</i>	Canada Garlic				S1	1	63.5 ± 1.0	NB
P	<i>Anticlea elegans</i>	Mountain Death Camas				S1	10	55.7 ± 0.0	NB
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	North American White Adder's-mouth				S1	2	41.8 ± 0.0	NB
P	<i>Bromus pubescens</i>	Hairy Wood Brome Grass				S1	2	54.3 ± 0.0	NB
P	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Slim-stemmed Reed Grass				S1	1	92.7 ± 0.0	NB
P	<i>Catabrosa aquatica</i>	Water Whorl Grass				S1	2	83.4 ± 5.0	NB
P	<i>Dichanthelium xanthophyllum</i>	Slender Panic Grass				S1	7	14.6 ± 0.0	NB
P	<i>Elymus hystrix</i>	Spreading Wild Rye				S1	2	95.0 ± 0.0	NB
P	<i>Zizania aquatica</i> var. <i>brevis</i>	St. Lawrence Wild Rice				S1	26	44.9 ± 0.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S1	8	83.2 ± 0.0	NB
P	<i>Potamogeton nodosus</i>	Long-leaved Pondweed				S1	5	56.9 ± 0.0	NB
P	<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern				S1	1	23.8 ± 0.0	NB
P	<i>Gymnocarpium continentale</i>	Nahanni Oak Fern				S1	1	98.5 ± 1.0	NB
P	<i>Gymnocarpium robertianum</i>	Limestone Oak Fern				S1	1	82.9 ± 0.0	NB
P	<i>Polystichum lonchitis</i>	Northern Holly Fern				S1	4	68.1 ± 0.0	NB
P	<i>Huperzia selago</i>	Northern Firmoss				S1	3	53.2 ± 0.0	NB
P	<i>Bidens heterodoxa</i>	Connecticut Beggar-Ticks				S1?	3	87.7 ± 1.0	NB
P	<i>Cuscuta campestris</i>	Field Dodder				S1?	3	63.9 ± 0.0	NB
P	<i>Polygonum aviculare</i> ssp. <i>neglectum</i>	Narrow-leaved Knotweed				S1?	4	56.4 ± 1.0	NB
P	<i>Galium trifidum</i> ssp. <i>subbiflorum</i>	Three-petaled Bedstraw				S1?	2	74.6 ± 0.0	NB
P	<i>Carex laxiflora</i>	Loose-Flowered Sedge				S1?	1	54.8 ± 2.0	NB
P	<i>Poa interior</i>	Inland Bluegrass				S1?	1	71.3 ± 0.0	NB
P	<i>Carex crawei</i>	Crawe's Sedge				S1S2	1	56.7 ± 0.0	NB
P	<i>Coryphopteris simulata</i>	Bog Fern				S1S2	1	61.0 ± 1.0	NB
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S1S3	33	23.5 ± 0.0	NB
P	<i>Spiranthes arcisepala</i>	Appalachian Ladies'-tresses				S1S3	1	78.9 ± 0.0	NB
P	<i>Neottia bifolia</i>	Southern Twayblade			Endangered	S2	29	77.7 ± 0.0	NB
P	<i>Osmorhiza depauperata</i>	Blunt Sweet Cicely				S2	6	25.4 ± 0.0	NB
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2	2	61.1 ± 0.0	NB
P	<i>Solidago racemosa</i>	Racemose Goldenrod				S2	2	68.1 ± 0.0	NB
P	<i>Ionactis linariifolia</i>	Flax-leaved Aster				S2	59	2.6 ± 0.0	NB
P	<i>Symphotrichum subulatum</i>	Annual Saltmarsh Aster				S2	152	32.3 ± 0.0	NB
P	<i>Pseudognaphalium macounii</i>	Macoun's Cudweed				S2	3	57.4 ± 0.0	NB
P	<i>Betula minor</i>	Dwarf White Birch				S2	22	52.8 ± 0.0	NB
P	<i>Boechera stricta</i>	Drummond's Rockcress				S2	5	0.2 ± 1.0	NB
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S2	5	31.5 ± 1.0	NB
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S2	1	2.9 ± 0.0	NB
P	<i>Atriplex glabruscula</i> var. <i>franktonii</i>	Frankton's Saltbush				S2	6	68.7 ± 5.0	NB
P	<i>Oxybasis rubra</i>	Red Goosefoot				S2	11	62.0 ± 0.0	NB
P	<i>Hypericum x dissimulatum</i>	Disguised St. John's-wort				S2	1	82.0 ± 1.0	NB
P	<i>Shepherdia canadensis</i>	Soapberry				S2	2	71.4 ± 1.0	NB
P	<i>Astragalus eucosmus</i>	Elegant Milk-vetch				S2	2	63.4 ± 0.0	NB
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S2	3	9.2 ± 10.0	NB
P	<i>Gentiana linearis</i>	Narrow-Leaved Gentian				S2	19	55.7 ± 0.0	NB
P	<i>Myriophyllum humile</i>	Low Water Milfoil				S2	1	61.3 ± 1.0	NB
P	<i>Nuphar x rubrodisca</i>	Red-disk Yellow Pond-lily				S2	4	47.3 ± 0.0	NB
P	<i>Aphyllon uniflorum</i>	One-flowered Broomrape				S2	2	65.2 ± 10.0	NB

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P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	1	63.4 ± 0.0	NB
P	<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed				S2	9	63.5 ± 1.0	NB
P	<i>Anemone multifida</i>	Cut-leaved Anemone				S2	1	86.2 ± 10.0	NB
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2	4	51.6 ± 0.0	NB
P	<i>Crataegus scabrada</i>	Rough Hawthorn				S2	2	14.5 ± 1.0	NB
P	<i>Rosa acicularis</i> ssp. <i>sayi</i>	Prickly Rose				S2	103	1.1 ± 0.0	NB
P	<i>Galium kamtschaticum</i>	Northern Wild Licorice				S2	9	71.3 ± 5.0	NB
P	<i>Salix candida</i>	Sage Willow				S2	23	28.3 ± 0.0	NB
P	<i>Castilleja septentrionalis</i>	Northeastern Paintbrush				S2	4	79.1 ± 1.0	NB
P	<i>Viola novae-angliae</i>	New England Violet				S2	7	69.4 ± 0.0	NB
P	<i>Sagittaria montevidensis</i> ssp. <i>spongiosa</i>	Spongy Arrowhead				S2	117	44.7 ± 0.0	NB
P	<i>Carex concinna</i>	Beautiful Sedge				S2	24	91.7 ± 0.0	NB
P	<i>Carex granularis</i>	Limestone Meadow Sedge				S2	17	71.8 ± 5.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S2	14	41.4 ± 0.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S2	12	50.0 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge				S2	1	74.1 ± 1.0	NB
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S2	5	27.0 ± 0.0	NB
P	<i>Carex salina</i>	Saltmarsh Sedge				S2	12	27.3 ± 5.0	NB
P	<i>Carex sprengeii</i>	Longbeak Sedge				S2	1	8.2 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge				S2	3	71.8 ± 10.0	NB
P	<i>Carex albicans</i>	White-tinged Sedge				S2	1	71.8 ± 0.0	NB
P	<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge				S2	9	62.1 ± 0.0	NB
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S2	4	68.6 ± 0.0	NB
P	<i>Blysmopsis rufa</i>	Red Bulrush				S2	60	26.6 ± 1.0	NB
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed				S2	2	90.0 ± 0.0	NB
P	<i>Juncus vaseyi</i>	Vasey Rush				S2	30	5.0 ± 0.0	NB
P	<i>Allium tricoccum</i>	Wild Leek				S2	3	53.4 ± 0.0	NB
P	<i>Galearis rotundifolia</i>	Small Round-leaved Orchid				S2	13	41.6 ± 0.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	8	48.9 ± 0.0	NB
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S2	6	44.8 ± 1.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	4	46.3 ± 5.0	NB
P	<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S2	35	25.2 ± 1.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S2	5	63.8 ± 1.0	NB
P	<i>Agrostis mertensii</i>	Northern Bent Grass				S2	115	3.9 ± 0.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2	3	1.4 ± 0.0	NB
P	<i>Piptatheropsis canadensis</i>	Canada Ricegrass				S2	5	14.3 ± 0.0	NB
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2	6	23.7 ± 0.0	NB
P	<i>Puccinellia nutkaensis</i>	Alaska Alkaligrass				S2	7	28.2 ± 1.0	NB
P	<i>Zizania aquatica</i> var. <i>aquatica</i>	Eastern Wild Rice				S2	6	48.8 ± 10.0	NB
P	<i>Piptatheropsis pungens</i>	Slender Ricegrass				S2	10	14.2 ± 1.0	NB
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S2	12	45.7 ± 0.0	NB
P	<i>Anchistea virginica</i>	Virginia chain fern				S2	9	79.0 ± 1.0	NB
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S2	21	51.9 ± 0.0	NB
P	<i>Diphasiastrum sitchense</i>	Sitka Ground-cedar				S2	2	52.9 ± 0.0	NB
P	<i>Botrychium minganense</i>	Mingan Moonwort				S2	6	81.5 ± 0.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S2	16	41.6 ± 0.0	NB
P	<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern Poison Ivy				S2?	2	85.7 ± 0.0	NB
P	<i>Symphyotrichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster				S2?	1	97.8 ± 0.0	NB

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P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop				S2?	3	50.1 ± 0.0	NB
P	<i>Crataegus macrosperma</i>	Big-Fruit Hawthorn				S2?	1	14.5 ± 0.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2?	9	42.6 ± 1.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow				S2?	7	34.4 ± 5.0	NB
P	<i>Carex vacillans</i>	Estuarine Sedge				S2?	4	46.9 ± 10.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S2?	3	11.5 ± 0.0	NB
P	<i>Solidago altissima</i>	Tall Goldenrod				S2S3	4	73.5 ± 0.0	NB
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort				S2S3	13	51.7 ± 0.0	NB
P	<i>Elatine americana</i>	American Waterwort				S2S3	26	45.3 ± 0.0	NB
P	<i>Bartonia paniculata</i> ssp. <i>iodandra</i>	Branched Bartonia				S2S3	2	83.6 ± 0.0	NB
P	<i>Epilobium coloratum</i>	Purple-veined Willowherb				S2S3	3	83.5 ± 0.0	NB
P	<i>Rumex persicarioides</i>	Peach-leaved Dock				S2S3	3	62.2 ± 0.0	NB
P	<i>Rumex pallidus</i>	Seabeach Dock				S2S3	7	23.3 ± 17.0	NB
P	<i>Rumex occidentalis</i>	Western Dock				S2S3	25	21.8 ± 0.0	NB
P	<i>Amelanchier gaspensis</i>	Gasp – Serviceberry				S2S3	2	90.4 ± 0.0	NB
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry				S2S3	1	59.3 ± 2.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S2S3	18	20.5 ± 0.0	NB
P	<i>Valeriana uliginosa</i>	Swamp Valerian				S2S3	10	41.6 ± 0.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	8	1.6 ± 0.0	NB
P	<i>Scirpus atrovirens</i>	Dark-green Bulrush				S2S3	24	83.9 ± 0.0	NB
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S2S3	3	41.6 ± 0.0	NB
P	<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted Coralroot				S2S3	5	45.2 ± 1.0	NB
P	<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot				S2S3	5	49.7 ± 18.0	NB
P	<i>Neottia auriculata</i>	Auricled Twayblade				S2S3	23	20.2 ± 0.0	NB
P	<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses				S2S3	1	86.5 ± 0.0	NB
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S2S3	12	72.3 ± 1.0	NB
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S2S3	5	63.2 ± 0.0	NB
P	<i>Isoetes tuckermanii</i> ssp. <i>acadiensis</i>	Acadian Quillwort				S2S3	1	71.8 ± 0.0	NB
P	<i>Panax trifolius</i>	Dwarf Ginseng				S3	9	19.4 ± 0.0	NB
P	<i>Arnica lanceolata</i>	Lance-leaved Arnica				S3	48	5.8 ± 0.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	6	55.8 ± 0.0	NB
P	<i>Bidens hyperborea</i>	Estuary Beggarticks				S3	200	32.1 ± 0.0	NB
P	<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3	254	23.8 ± 0.0	NB
P	<i>Nabalus racemosus</i>	Glaucous Rattlesnakeroot				S3	2	97.5 ± 0.0	NB
P	<i>Symphotrichum boreale</i>	Boreal Aster				S3	5	15.9 ± 5.0	NB
P	<i>Betula pumila</i>	Bog Birch				S3	112	41.6 ± 0.0	NB
P	<i>Turritis glabra</i>	Tower Mustard				S3	11	1.4 ± 0.0	NB
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S3	18	45.7 ± 0.0	NB
P	<i>Subularia aquatica</i> ssp. <i>americana</i>	American Water Awlwort				S3	1	69.3 ± 1.0	NB
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S3	13	26.5 ± 0.0	NB
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort				S3	1	49.0 ± 0.0	NB
P	<i>Hudsonia tomentosa</i>	Woolly Beach-heath				S3	114	30.8 ± 0.0	NB
P	<i>Crassula aquatica</i>	Water Pygmyweed				S3	82	45.0 ± 0.0	NB
P	<i>Penthorum sedoides</i>	Ditch Stonecrop				S3	5	96.2 ± 0.0	NB
P	<i>Elatine minima</i>	Small Waterwort				S3	5	45.7 ± 1.0	NB
P	<i>Astragalus alpinus</i> var. <i>brunetianus</i>	Alpine Milk-Vetch				S3	3	98.7 ± 1.0	NB
P	<i>Hedysarum americanum</i>	Alpine Hedysarum				S3	8	7.8 ± 0.0	NB
P	<i>Gentianella amarella</i>	Northern Gentian				S3	1	53.4 ± 0.0	NB
P	<i>Gentianella amarella</i> ssp. <i>acuta</i>	Northern Gentian				S3	6	69.7 ± 0.0	NB

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P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill			S3		7	36.9 ± 0.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil			S3		6	40.3 ± 0.0	NB
P	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil			S3		5	45.7 ± 1.0	NB
P	<i>Teucrium canadense</i>	Canada Germander			S3		43	49.4 ± 5.0	NB
P	<i>Nuphar microphylla</i>	Small Yellow Pond-lily			S3		10	40.1 ± 1.0	NB
P	<i>Epilobium hornemannii</i>	Hornemann's Willowherb			S3		32	4.8 ± 0.0	NB
P	<i>Epilobium strictum</i>	Downy Willowherb			S3		3	48.4 ± 0.0	NB
P	<i>Polygala sanguinea</i>	Blood Milkwort			S3		21	81.5 ± 0.0	NB
P	<i>Persicaria arifolia</i>	Halberd-leaved Tearthumb			S3		25	75.6 ± 5.0	NB
P	<i>Persicaria punctata</i>	Dotted Smartweed			S3		72	44.6 ± 0.0	NB
P	<i>Fallopia scandens</i>	Climbing False Buckwheat			S3		48	49.9 ± 0.0	NB
P	<i>Littorella americana</i>	American Shoreweed			S3		1	54.2 ± 1.0	NB
P	<i>Primula mistassinica</i>	Mistassini Primrose			S3		7	62.3 ± 10.0	NB
P	<i>Samolus parviflorus</i>	Seaside Brookweed			S3		129	44.5 ± 0.0	NB
P	<i>Pyrola minor</i>	Lesser Pyrola			S3		23	29.3 ± 0.0	NB
P	<i>Clematis occidentalis</i>	Purple Clematis			S3		17	21.3 ± 1.0	NB
P	<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup			S3		14	42.0 ± 1.0	NB
P	<i>Thalictrum confine</i>	Northern Meadow-rue			S3		5	60.4 ± 0.0	NB
P	<i>Amelanchier canadensis</i>	Canada Serviceberry			S3		4	51.4 ± 7.0	NB
P	<i>Rosa palustris</i>	Swamp Rose			S3		4	51.5 ± 1.0	NB
P	<i>Rubus occidentalis</i>	Black Raspberry			S3		1	54.3 ± 0.0	NB
P	<i>Sanguisorba canadensis</i>	Canada Burnet			S3		47	26.5 ± 5.0	NB
P	<i>Galium boreale</i>	Northern Bedstraw			S3		6	61.5 ± 1.0	NB
P	<i>Salix pedicellaris</i>	Bog Willow			S3		26	64.7 ± 0.0	NB
P	<i>Salix interior</i>	Sandbar Willow			S3		2	56.9 ± 0.0	NB
P	<i>Comandra umbellata</i>	Bastard's Toadflax			S3		58	28.8 ± 1.0	NB
P	<i>Parnassia glauca</i>	Fen Grass-of-Parnassus			S3		43	41.6 ± 0.0	NB
P	<i>Limosella australis</i>	Southern Mudwort			S3		155	23.6 ± 0.0	NB
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle			S3		7	48.2 ± 0.0	NB
P	<i>Pilea pumila</i>	Dwarf Clearweed			S3		16	48.8 ± 0.0	NB
P	<i>Viola adunca</i>	Hooked Violet			S3		9	51.3 ± 0.0	NB
P	<i>Viola nephrophylla</i>	Northern Bog Violet			S3		51	41.6 ± 0.0	NB
P	<i>Carex arcta</i>	Northern Clustered Sedge			S3		8	70.6 ± 0.0	NB
P	<i>Carex capillaris</i>	Hairlike Sedge			S3		169	41.6 ± 0.0	NB
P	<i>Carex chordorrhiza</i>	Creeping Sedge			S3		1	79.5 ± 0.0	NB
P	<i>Carex conoidea</i>	Field Sedge			S3		1	31.7 ± 10.0	NB
P	<i>Carex eburnea</i>	Bristle-leaved Sedge			S3		95	45.5 ± 0.0	NB
P	<i>Carex garberi</i>	Garber's Sedge			S3		31	2.9 ± 0.0	NB
P	<i>Carex haydenii</i>	Hayden's Sedge			S3		7	23.9 ± 0.0	NB
P	<i>Carex michauxiana</i>	Michaux's Sedge			S3		6	55.0 ± 0.0	NB
P	<i>Carex ormostachya</i>	Necklace Spike Sedge			S3		12	21.3 ± 1.0	NB
P	<i>Carex rosea</i>	Rosy Sedge			S3		1	74.0 ± 5.0	NB
P	<i>Carex tenera</i>	Tender Sedge			S3		2	51.6 ± 0.0	NB
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge			S3		16	7.7 ± 0.0	NB
P	<i>Carex vaginata</i>	Sheathed Sedge			S3		15	41.6 ± 0.0	NB
P	<i>Carex wiegandii</i>	Wiegand's Sedge			S3		35	13.2 ± 2.0	NB
P	<i>Carex recta</i>	Estuary Sedge			S3		15	28.2 ± 0.0	NB
P	<i>Carex atratifomis</i>	Scabrous Black Sedge			S3		116	17.6 ± 0.0	NB
P	<i>Cyperus dentatus</i>	Toothed Flatsedge			S3		1	23.2 ± 10.0	NB
P	<i>Cyperus esculentus</i> var. <i>leptostachyus</i>	Perennial Yellow Nutsedge			S3		2	64.7 ± 0.0	NB
P	<i>Eleocharis intermedia</i>	Matted Spikerush			S3		35	44.7 ± 0.0	NB
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush			S3		66	5.2 ± 0.0	NB
P	<i>Rhynchospora fusca</i>	Brown Beakrush			S3		5	57.9 ± 1.0	NB
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush			S3		85	2.9 ± 0.0	NB
P	<i>Schoenoplectus torreyi</i>	Torrey's Bulrush			S3		7	49.0 ± 0.0	NB
P	<i>Lemna trisulca</i>	Star Duckweed			S3		1	70.1 ± 2.0	NB
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel			S3		8	52.4 ± 0.0	NB

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P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	20	41.1 ± 1.0	NB
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3	7	48.4 ± 3.0	NB
P	<i>Platanthera blephariglottis</i>	White Fringed Orchid				S3	147	20.5 ± 0.0	NB
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	17	19.2 ± 0.0	NB
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S3	7	20.9 ± 0.0	NB
P	<i>Dichanthelium depauperatum</i>	Starved Panic Grass				S3	27	1.4 ± 0.0	NB
P	<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed				S3	16	23.9 ± 1.0	NB
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S3	7	53.8 ± 1.0	NB
P	<i>Xyris montana</i>	Northern Yellow-Eyed-Grass				S3	80	62.9 ± 0.0	NB
P	<i>Zannichellia palustris</i>	Horned Pondweed				S3	71	23.2 ± 1.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	2	61.1 ± 0.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S3	81	17.5 ± 0.0	NB
P	<i>Asplenium viride</i>	Green Spleenwort				S3	192	23.7 ± 0.0	NB
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S3	97	38.0 ± 0.0	NB
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S3	38	46.4 ± 0.0	NB
P	<i>Equisetum palustre</i>	Marsh Horsetail				S3	6	51.4 ± 0.0	NB
P	<i>Isoetes tuckermanii</i> ssp. <i>tuckermanii</i>	Tuckerman's Quillwort				S3	5	57.5 ± 0.0	NB
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3	13	41.0 ± 0.0	NB
P	<i>Huperzia appressa</i>	Mountain Firmoss				S3	21	36.9 ± 1.0	NB
P	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Narrow Triangle Moonwort				S3	7	43.3 ± 0.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort				S3	11	46.6 ± 0.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3	1	82.9 ± 1.0	NB
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S3?	1	52.4 ± 1.0	NB
P	<i>Mertensia maritima</i>	Sea Lungwort				S3S4	9	55.4 ± 2.0	NB
P	<i>Lobelia kalmii</i>	Brook Lobelia				S3S4	49	19.4 ± 0.0	NB
P	<i>Suaeda calceoliformis</i>	Horned Sea-blite				S3S4	38	30.0 ± 1.0	NB
P	<i>Myriophyllum sibiricum</i>	Siberian Water Milfoil				S3S4	21	47.6 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	22	2.0 ± 0.0	NB
P	<i>Utricularia gibba</i>	Humped Bladderwort				S3S4	1	77.8 ± 1.0	NB
P	<i>Rumex fueginus</i>	Tierra del Fuego Dock				S3S4	49	62.4 ± 0.0	NB
P	<i>Drymocallis arguta</i>	Tall Wood Beauty				S3S4	7	1.6 ± 0.0	NB
P	<i>Rubus chamaemorus</i>	Cloudberry				S3S4	161	50.1 ± 0.0	NB
P	<i>Geocaulon lividum</i>	Northern Comandra				S3S4	63	21.0 ± 0.0	NB
P	<i>Juniperus horizontalis</i>	Creeping Juniper				S3S4	2	24.3 ± 1.0	NB
P	<i>Cladium mariscoides</i>	Smooth Twigrush				S3S4	2	57.1 ± 0.0	NB
P	<i>Eriophorum russeolum</i>	Russet Cottongrass				S3S4	68	49.8 ± 0.0	NB
P	<i>Triglochin gaspensis</i>	Gasp ← Arrowgrass				S3S4	80	26.2 ± 1.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot				S3S4	17	48.4 ± 0.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S3S4	18	51.7 ± 0.0	NB
P	<i>Distichlis spicata</i>	Salt Grass				S3S4	44	32.3 ± 0.0	NB
P	<i>Potamogeton oakesianus</i>	Oakes' Pondweed				S3S4	8	23.9 ± 0.0	NB
P	<i>Polygonum oxyspermum</i> ssp. <i>raii</i>	Ray's Knotweed				SH	6	27.3 ± 10.0	NB
P	<i>Montia fontana</i>	Water Blinks				SH	2	51.0 ± 1.0	NB
P	<i>Aquilegia canadensis</i>	Red Columbine				SH	1	85.7 ± 10.0	NB
P	<i>Botrychium campestre</i>	Prairie Moonwort				SH	1	55.9 ± 0.0	NB

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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.

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Appendix B

Habitat Photos



Photograph 1. Representative photo of aquatic habitat.



Photograph 2. Representative photo of mature coniferous forest (1/2).



Photograph 3. Representative photo of mature coniferous forest (2/2).



Photograph 4. Representative photo of mature mixed deciduous forest (1/2).



Photograph 5. Representative photo of mature mixed deciduous forest (2/2).



Photograph 6. Representative photo of young intolerant deciduous forest (1/2).



Photograph 7. Representative photo of young intolerant deciduous forest (2/2).



Photograph 8. Oblique aerial photo of disturbed habitat surrounding the Station (1/2).



Photograph 9. Representative photo of disturbed area (2/2).

Appendix C

Plant List

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Abies balsamea</i>	Balsam Fir	S5	Secure	2553262.2	7600379.3	
<i>Acer pensylvanicum</i>	Striped Maple	S5	Secure	2553260.1	7600377.9	
<i>Acer rubrum</i>	Red Maple	S5	Secure	2553260.1	7600377.9	
<i>Acer saccharum</i>	Sugar maple	S5	Secure	2553329.7	7600461.5	
<i>Acer spicatum</i>	Mountain Maple	S5	Secure	2553128.7	7600572.1	
<i>Achillea millefolium</i>	Common Yarrow	SNA	Exotic	2553384.4	7600774.4	
<i>Actaea rubra</i>	Red Baneberry	S5	Secure	2553289.0	7600862.8	
<i>Alnus incana</i>	Speckled Alder	S5	Secure	2553332.0	7600487.5	
<i>Ambrosia artemisiifolia</i>	Common Ragweed	S5	Secure	2553038.1	7600406.6	
<i>Amelanchier bartramiana</i>	Bartram's Serviceberry	S5	Secure	2553308.7	7600875.8	
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5	Secure	2553362.6	7600530.4	
<i>Anemonastrum canadense</i>	Canada Anemone	S5	Secure	2553360.1	7600719.7	
<i>Anemone multifida</i>	Cut-leaved Anemone	S2	Sensitive	2553540.5	7600974.3	2 plants top of tailrace road
<i>Anemone quinquefolia</i>	Wood Anemone	S4	Secure	2553156.2	7600594.4	
<i>Angelica sylvestris</i>	Woodland Angelica	SNA	Exotic	2553361.3	7600543.3	
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	S5	Secure	2553361.8	7600534.5	
<i>Apocynum cannabinum</i>	Hemp Dogbane	S4	Secure	2553363.1	7600698.5	
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure	2553262.2	7600379.3	
<i>Arctium lappa</i>	Great Burdock	SNA	Exotic	2553316.8	7600879.5	
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	S5	Secure	2553128.7	7600517.2	
<i>Athyrium filix-femina</i>	Common Lady Fern	S5	Secure	2553362.7	7600530.5	
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure	2553329.1	7600481.5	
<i>Betula cordifolia</i>	Heart-leaved Birch	S5	Secure	2553262.2	7600379.3	
<i>Betula papyrifera</i>	Paper Birch	S5	Secure	2553260.6	7600838.0	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Bidens frondosa</i>	Devil's Beggarticks	S5	Secure	2553148.5	7600592.1	
<i>Boechera stricta</i>	Drummond's Rockcress	S2	Sensitive	2553522.0	7600948.2	20- Plants observed rock cut leading to tailrace
<i>Boechera stricta</i>	Drummond's Rockcress	S2	Sensitive	2553471.3	7600907.6	2 plants observed rock cut leading to tailrace
<i>Boechera stricta</i>	Drummond's Rockcress	S2	Sensitive	2553473.2	7600921.5	9 plants observed rock cut leading to tailrace
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5	Secure	2553130.2	7600565.9	
<i>Caltha palustris</i>	Yellow Marsh Marigold	S4S5	Secure	2553336.6	7600491.0	
<i>Carex arctata</i>	Black Sedge	S5	Secure	2553160.6	7600601.8	
<i>Carex brunnescens</i>	Brownish Sedge	S5	Secure	2553332.0	7600487.5	
<i>Carex canescens</i>	Silvery Sedge	S5	Secure	2553339.4	7600490.0	
<i>Carex communis</i>	Fibrous-Root Sedge	S5	Secure	2553309.8	7600438.4	
<i>Carex crinita</i>	Fringed Sedge	S5	Secure	2553364.0	7600540.7	
<i>Carex debilis</i>	White-edged Sedge	S5	Secure	2553288.4	7600857.4	
<i>Carex deweyana</i>	Dewey's Sedge	S5	Secure	2553150.5	7600595.2	
<i>Carex echinata</i>	Star Sedge	S5	Secure	2553362.6	7600530.4	
<i>Carex gynandra</i>	Nodding Sedge	S5	Secure	2553356.1	7600499.6	
<i>Carex intumescens</i>	Bladder Sedge	S5	Secure	2553280.8	7600859.8	
<i>Carex lurida</i>	Sallow Sedge	S5	Secure	2553120.6	7600513.7	
<i>Carex pseudocyperus</i>	Cyperuslike Sedge	S5	Secure	2553280.7	7600435.1	
<i>Carex scoparia</i>	Broom Sedge	S5	Secure	2553284.4	7600853.8	
<i>Carex stipata</i>	Awl-fruited Sedge	S5	Secure	2553332.0	7600487.5	
<i>Chamaenerion angustifolium</i>	Fireweed	S5	Secure	2554154.6	7601330.3	
<i>Chelone glabra</i>	White Turtlehead	S5	Secure	2553356.1	7600499.6	
<i>Chimaphila umbellata</i>	Common Pipsissewa	S5	Secure	2553128.6	7600583.6	
<i>Chrysosplenium americanum</i>	American Golden Saxifrage	S5	Secure	2553346.9	7600492.3	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Cicuta bulbifera</i>	Bulbous Water-hemlock	S5	Secure	2553352.0	7600508.6	
<i>Cinna latifolia</i>	Drooping Wood Reed Grass	S5	Secure	2553331.5	7600495.4	
<i>Clematis virginiana</i>	Virginia Clematis	S5	Secure	2553116.6	7600510.9	
<i>Clintonia borealis</i>	Yellow Bluebead Lily	S5	Secure	2553287.1	7600415.2	
<i>Coptis trifolia</i>	Goldthread	S5	Secure	2553346.9	7600492.3	
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S5	Secure	2553309.6	7600876.7	
<i>Cornus canadensis</i>	Bunchberry	S5	Secure	2553262.2	7600379.3	
<i>Corylus cornuta</i>	Beaked Hazel	S5	Secure	2553305.1	7600427.6	
<i>Crataegus spp.</i>	Hawthorn			2554665.4	7601095.0	
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5	Secure	2553357.2	7600501.5	
<i>Cystopteris fragilis</i>	Fragile Fern	S4	Secure	2553488.9	7600935.2	Several plants along rock face
<i>Danthonia spicata</i>	Poverty Oat Grass	S5	Secure	2554504.7	7601119.1	
<i>Dendrolycopodium dendroideum</i>	Round-branched Tree-clubmoss	S5	Secure	2553310.1	7600437.6	
<i>Dichanthelium boreale</i>	Northern Panic Grass	S5	Secure	2554339.8	7601297.8	
<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	S5	Secure	2553310.1	7600437.6	
<i>Drosera rotundifolia</i>	Round-leaved Sundew	S5	Secure	2553779.4	7601199.9	
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	Secure	2553348.0	7600504.6	
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	Secure	2553348.7	7600510.5	
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	Secure	2553330.9	7600477.8	
<i>Eleocharis acicularis</i>	Needle Spikerush	S5	Secure	2553119.5	7600512.2	
<i>Epigaea repens</i>	Trailing Arbutus	S5	Secure	2553374.5	7600608.7	
<i>Epilobium parviflorum</i>	Small-flowered Willowherb	SNA		2553108.3	7600490.8	
<i>Equisetum arvense</i>	Field Horsetail	S5	Secure	2553355.8	7600539.1	
<i>Erigeron strigosus</i>	Rough Fleabane	S5	Secure	2553059.5	7600426.2	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Erythronium americanum</i>	Yellow Trout Lily	S5	Secure	2553267.4	7600848.6	
<i>Eupatorium perfoliatum</i>	Common Boneset	S5	Secure	2553375.1	7600740.5	
<i>Fagus grandifolia</i>	American Beech	S4	Secure	2553137.7	7600605.4	
<i>Fragaria virginiana</i>	Wild Strawberry	S5	Secure	2553362.7	7600530.5	
<i>Frangula alnus</i>	Glossy Buckthorn	SNA	Exotic	2553261.3	7600827.1	
<i>Fraxinus americana</i>	White Ash	S4S5	Secure	2553340.9	7600508.1	
<i>Galium mollugo</i>	Smooth Bedstraw	SNA	Exotic	2553316.8	7600879.5	
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5	Secure	2553119.5	7600500.5	
<i>Galium triflorum</i>	Three-flowered Bedstraw	S5	Secure	2553280.8	7600859.8	
<i>Gaultheria hispidula</i>	Creeping Snowberry	S5	Secure	2553380.1	7600592.6	
<i>Glyceria borealis</i>	Northern Manna Grass	S5	Secure	2553338.6	7600495.2	
<i>Glyceria canadensis</i>	Canada Manna Grass	S5	Secure	2553109.3	7600489.4	
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	SNA	Exotic	2553956.5	7601346.3	
<i>Goodyera repens</i>	Lesser Rattlesnake-plantain	S4	Secure	2553265.0	7600389.5	
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	S5	Secure	2553346.9	7600492.3	
<i>Heracleum maximum</i>	Common Cow Parsnip	S5	Secure	2553117.0	7600511.0	
<i>Hypericum fraseri</i>	Fraser's St. John's-wort	S5	Secure	2553357.5	7600540.9	
<i>Hypopitys monotropa</i>	Pinesap	S4	Secure	2553193.5	7600372.6	
<i>Ilex mucronata</i>	Mountain Holly	S5	Secure	2553341.1	7600508.6	
<i>Impatiens capensis</i>	Spotted Jewelweed	S5	Secure	2553332.0	7600487.5	
<i>Iris versicolor</i>	Harlequin Blue Flag	S5	Secure	2553332.0	7600487.5	
<i>Juncus brevicaudatus</i>	Narrow-Panicked Rush	S5	Secure	2554665.6	7601086.9	
<i>Leersia oryzoides</i>	Rice Cut Grass	S5	Secure	2553119.5	7600512.2	
<i>Lemna turionifera</i>	Turion Duckweed	S5	Secure	2553352.0	7600508.6	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA	Exotic	2553393.6	7600752.5	
<i>Linaria vulgaris</i>	Butter-and-Eggs	SNA	Exotic	2553319.8	7600885.4	
<i>Linnaea borealis</i>	Twinflower	S5	Secure	2553346.9	7600492.3	
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	S5	Secure	2553310.1	7600437.6	
<i>Lonicera villosa</i>	Mountain Fly Honeysuckle	S5	Secure	2553351.1	7600509.8	
<i>Lupinus polyphyllus</i>	Large-Leaved Lupine	SNA	Exotic	2553362.3	7600951.5	
<i>Luzula multiflora</i>	Common Woodrush	S5	Secure	2553367.5	7600523.2	
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5	Secure	2553369.7	7600521.4	
<i>Lycopodium clavatum</i>	Running Clubmoss	S5	Secure	2553257.8	7600381.1	
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5	Secure	2553339.4	7600490.0	
<i>Lysimachia borealis</i>	Northern Starflower	S5	Secure	2553283.0	7600409.5	
<i>Lysimachia ciliata</i>	Fringed Yellow Loosestrife	S5	Secure	2553286.0	7600860.0	
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5	Secure	2553374.9	7600740.8	
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure	2553260.1	7600377.9	
<i>Maianthemum racemosum</i>	Large False Solomon's Seal	S5	Secure	2553129.8	7600607.1	
<i>Matricaria discoidea</i>	Pineapple Weed	SNA	Exotic	2553163.3	7600625.4	
<i>Medeola virginiana</i>	Cucumber Root	S5	Secure	2553332.0	7600487.5	
<i>Melampyrum lineare</i>	American Cow Wheat	S5	Secure	2554508.4	7601117.6	
<i>Melilotus albus</i>	White Sweet-clover	SNA	Exotic	2553212.6	7600731.3	
<i>Mimulus ringens</i>	Square-stemmed Monkeyflower	S5	Secure	2553119.5	7600512.2	
<i>Monotropa uniflora</i>	Convulsion-Root	S5	Secure	2553219.6	7600378.1	
<i>Myrica gale</i>	Sweet Gale	S5	Secure	2553355.8	7600539.1	
<i>Nabalus trifoliolatus</i>	Three-leaved Rattlesnakeroot	S5	Secure	2553267.6	7600849.0	
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5	Secure	2553336.6	7600491.0	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Oenothera biennis</i>	Common Evening Primrose	S5	Secure	2553042.7	7600407.0	
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure	2553119.4	7600524.4	
<i>Osmunda claytoniana</i>	Interrupted Fern	S5	Secure	2553134.9	7600561.4	
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	S5	Secure	2553339.4	7600490.0	
<i>Oxalis montana</i>	Common Wood Sorrel	S5	Secure	2553336.6	7600491.0	
<i>Phalaris arundinacea</i>	Reed Canary Grass	S5	Secure	2553306.0	7600874.2	
<i>Phleum pratense</i>	Common Timothy	SNA	Exotic	2554665.6	7601086.5	
<i>Picea glauca</i>	White Spruce	S5	Secure	2553262.2	7600379.3	
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed	SNA	Exotic	2553383.4	7600774.4	
<i>Pinus strobus</i>	Eastern White Pine	S5	Secure	2553332.0	7600487.5	
<i>Plantago major</i>	Common Plantain	SNA	Exotic	2553322.0	7600881.0	
<i>Poa compressa</i>	Canada Blue Grass	SNA	Exotic	2553283.1	7600852.4	
<i>Poa pratensis</i>	Kentucky Blue Grass	S5	Secure	2553308.3	7600875.7	
<i>Pontederia cordata</i>	Pickernelweed	S5	Secure	2553109.0	7600496.1	
<i>Populus balsamifera</i>	Balsam Poplar	S5	Secure	2553368.1	7600695.9	
<i>Populus grandidentata</i>	Large-toothed Aspen	S5	Secure	2553272.7	7600397.0	
<i>Populus tremuloides</i>	Trembling Aspen	S5	Secure	2553379.0	7600736.6	
<i>Potentilla norvegica</i>	Rough Cinquefoil	S5	Secure	2553399.3	7600757.7	
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5	Secure	2553273.1	7600842.2	
<i>Prunella vulgaris</i>	Common Self-heal	S5	Secure	2553106.3	7600527.7	
<i>Prunus virginiana</i>	Chokecherry	S5	Secure	2553295.6	7600865.7	
<i>Pteridium aquilinum</i>	Bracken Fern	S5	Secure	2553351.1	7600509.8	
<i>Pyrola elliptica</i>	Shinleaf	S5	Secure	2554524.2	7601113.5	
<i>Quercus rubra</i>	Northern Red Oak	S5	Secure	2553387.0	7600615.1	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Ranunculus hispidus</i>	Bristly Buttercup	S4S5	Secure	2553373.5	7600736.4	
<i>Ranunculus repens</i>	Creeping Buttercup	SNA	Exotic	2553361.8	7600534.5	
<i>Rhus typhina</i>	Staghorn Sumac	S5	Secure	2553297.6	7600867.0	
<i>Ribes glandulosum</i>	Skunk Currant	S5	Secure	2553289.0	7600862.8	
<i>Ribes lacustre</i>	Bristly Black Currant	S5	Secure	2553128.3	7600568.0	
<i>Rubus idaeus</i>	Red Raspberry	S5	Secure	2553362.6	7600530.4	
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5	Secure	2553106.2	7600529.1	
<i>Rumex acetosa</i>	Garden Sorrel	SNA	Exotic	2553399.1	7601008.8	
<i>Rumex crispus</i>	Curled Dock	SNA	Exotic	2553380.3	7600741.8	
<i>Salix bebbiana</i>	Bebb's Willow	S5	Secure	2554360.3	7601285.5	
<i>Salix discolor</i>	Pussy Willow	S5	Secure	2553359.3	7600537.5	
<i>Salix lucida</i>	Shining Willow	S5	Secure	2553388.1	7600990.6	
<i>Scirpus atrocinctus</i>	Black-girdled Bulrush	S5	Secure	2553117.5	7600501.0	
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5	Secure	2553182.4	7600633.9	
<i>Scirpus hattorianus</i>	Mosquito Bulrush	S5	Secure	2553353.3	7600837.9	
<i>Scorzonerooides autumnalis</i>	Autumn Hawkbit	SNA	Exotic	2553645.9	7601084.6	
<i>Scutellaria galericulata</i>	Marsh Skullcap	S5	Secure	2553361.4	7600654.8	
<i>Scutellaria lateriflora</i>	Mad-dog Skullcap	S5	Secure	2553375.1	7600740.5	
<i>Silene vulgaris</i>	Bladder Champion	SNA	Exotic	2553119.2	7600512.1	
<i>Sium suave</i>	Common Water Parsnip	S5	Secure	2553109.9	7600493.9	
<i>Solidago juncea</i>	Early Goldenrod	S5	Secure	2553059.7	7600426.5	
<i>Solidago macrophylla</i>	Large-leaved Goldenrod	S4	Secure	2553263.6	7600832.4	
<i>Solidago puberula</i>	Downy Goldenrod	S5	Secure	2554413.7	7601193.3	
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5	Secure	2553362.1	7600534.3	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Sorbus americana</i>	American Mountain Ash	S5	Secure	2553310.1	7600437.6	
<i>Spiraea alba</i>	White Meadowsweet	S5	Secure	2553355.8	7600539.1	
<i>Symphotrichum cordifolium</i>	Heart-leaved Aster	S5	Secure	2553393.6	7600752.5	
<i>Symphotrichum lanceolatum</i>	Lance-leaved Aster	S5	Secure	2553414.6	7600765.1	
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster	S5	Secure	2553356.5	7600538.0	
<i>Taraxacum officinale</i>	Common Dandelion	SNA	Exotic	2553099.5	7600492.7	
<i>Taxus canadensis</i>	Canada Yew	S5	Secure	2553316.1	7600450.6	
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5	Secure	2553332.0	7600487.5	
<i>Thelypteris noveboracensis</i>	New York Fern	S5	Secure	2553367.7	7600526.8	
<i>Thuja occidentalis</i>	Eastern White Cedar	S5	Secure	2553260.3	7600378.2	
<i>Trifolium arvense</i>	Rabbit's-foot Clover	SNA	Exotic	2553389.7	7600770.9	
<i>Trifolium pratense</i>	Red Clover	SNA	Exotic	2553263.6	7600832.4	
<i>Trifolium repens</i>	White Clover	SNA	Exotic	2553393.3	7600766.0	
<i>Trillium erectum</i>	Red Trillium	S5	Secure	2553348.8	7600512.5	
<i>Trillium undulatum</i>	Painted Trillium	S5	Secure	2553267.4	7600848.6	
<i>Tsuga canadensis</i>	Eastern Hemlock	S5	Secure	2553260.1	7600377.9	
<i>Tussilago farfara</i>	Coltsfoot	SNA	Exotic	2553393.4	7600752.6	
<i>Ulmus americana</i>	White Elm	S4	Secure	2553160.6	7600601.8	
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5	Secure	2553283.0	7600409.5	
<i>Verbascum thapsus</i>	Common Mullein	SNA	Exotic	2553390.5	7600770.8	
<i>Veronica americana</i>	American Speedwell	S5	Secure	2553267.6	7600849.0	
<i>Veronica officinalis</i>	Common Speedwell	SNA	Exotic	2554564.9	7601106.3	
<i>Veronica scutellata</i>	Marsh Speedwell	S5	Secure	2553355.3	7600507.4	
<i>Veronica serpyllifolia</i>	Thyme-Leaved Speedwell	SNA	Secure	2553267.4	7600848.6	

Scientific Name	Common Name	AC CDC S Rank	NBDNRED General Status	X Coordinate	Y Coordinate	Comments
<i>Viburnum lantanoides</i>	Hobblebush	S5	Secure	2553309.8	7600438.4	
<i>Viburnum opulus</i>	Highbush Cranberry	S4	Secure	2553107.1	7600528.9	
<i>Vicia cracca</i>	Tufted Vetch	SNA	Exotic	2553356.5	7600538.0	
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure	2553263.0	7600830.2	
<i>Viola macloskeyi</i>	Small White Violet	S5	Secure	2553352.8	7600499.0	
<i>Woodsia ilvensis</i>	Rusty Cliff Fern	S4	Secure	2553520.3	7600947.9	Three clumps on rock cut

AC CDC S-Ranks as follows: S1: extremely rare in province; S2: rare in province; S3: uncommon in province; S4: widespread, common and apparently secure in province; S5: widespread, abundant and demonstrably secure in province S#S# = a numeric range rank used to indicate any range of uncertainty about the status of the species or community; SNA: Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities. B= Breeding, N = Nonbreeding, M = Migrant, U = Unrankable. NA = Not applicable. (AC CDC 2021).

A row in **Bold** denotes a species of conservation concern. No species at risk were observed.

Appendix D

Rare Plant Photographs



Photograph 1. Representative photo of Drummond's rockcress (*Boechea stricta*) (1/2).



Photograph 2. Representative photo of Drummond's rockcress (*Boechea stricta*) (2/2).



Photograph 3. Representative photo of Cut-leaved anemone (*Anemone multifida*) (1/2).



Photograph 4. Representative photo of Cut-leaved anemone (*Anemone multifida*) (2/2).



Photograph 5. Representative photo of habitat on tailrace road where rare plants were found.

Appendix E

Breeding Bird Survey Data

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
09-Jun-21	Area Search	Sunny/clear	14	0	Song Sparrow	<i>Melospiza melodia</i>	1	S	NA/NA	S5B,S5M	2553434.0	7600976.6	
09-Jun-21	Area Search	Sunny/clear	14	0	Mourning Warbler	<i>Oporornis philadelphia</i>	1	S	NA/NA	S4B,S5M	2553393.3	7601013.2	
09-Jun-21	Area Search	Sunny/clear	14	0	Common Yellowthroat	<i>Geothlypis trichas</i>	1	S	NA/NA	S5B,S5M	2553427.9	7600999.6	
09-Jun-21	Area Search	Sunny/clear	14	0	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	1	S	NA/NA	S5B,S5M	2553364.6	7601030.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553359.3	7601034.6	
09-Jun-21	Area Search	Sunny/clear	14	0	Alder Flycatcher	<i>Empidonax alnorum</i>	1	S	NA/NA	S5B,S5M	2553383.6	7601040.4	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553436.6	7601047.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553549.9	7601090.5	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553555.7	7601058.4	
09-Jun-21	Area Search	Sunny/clear	14	0	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	1	S	NA/NA	S5B,S5M	2553556.7	7601100.2	
09-Jun-21	Area Search	Sunny/clear	14	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553500.8	7601118.2	
09-Jun-21	Area Search	Sunny/clear	14	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553512.5	7601135.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553397.6	7600952.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-breasted Nuthatch	<i>Sitta canadensis</i>	1	S	NA/NA	S5	2553333.3	7601029.9	
09-Jun-21	Area Search	Sunny/clear	14	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553419.7	7600772.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553278.3	7600890.7	

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
09-Jun-21	Area Search	Sunny/clear	14	0	Yellow-rumped Warbler	<i>Dendroica coronata</i>	1	S	NA/NA	S5B,S5M	2553278.6	7600909.8	
09-Jun-21	Area Search	Sunny/clear	14	0	American Robin	<i>Turdus migratorius</i>	1	S	NA/NA	S5B,S5M	2553217.2	7600831.1	
09-Jun-21	Area Search	Sunny/clear	14	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553260.3	7600848.4	
09-Jun-21	Area Search	Sunny/clear	14	0	American Redstart	<i>Setophaga ruticilla</i>	1	S	NA/NA	S5B,S5M	2553193.9	7600776.1	
09-Jun-21	Area Search	Sunny/clear	14	0	Song Sparrow	<i>Melospiza melodia</i>	1	S	NA/NA	S5B,S5M	2553217.2	7600715.9	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553212.3	7600776.1	
09-Jun-21	Area Search	Sunny/clear	14	0	Eastern Wood-Pewee	<i>Contopus virens</i>	1	S	Special Concern/NA	S4B,S4M	2553097.9	7600625.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Blue-headed Vireo	<i>Vireo solitarius</i>	1	S	NA/NA	S5B,S5M	2553116.3	7600582.1	
09-Jun-21	Area Search	Sunny/clear	14	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553124.1	7600607.3	
09-Jun-21	Area Search	Sunny/clear	14	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553086.2	7600605.3	
09-Jun-21	Area Search	Sunny/clear	14	0	Black-throated Green Warbler	<i>Dendroica virens</i>	1	S	NA/NA	S5B,S5M	2553127.0	7600638.3	
09-Jun-21	Area Search	Sunny/clear	14	0	Least Flycatcher	<i>Empidonax minimus</i>	1	S	NA/NA	S5B,S5M	2553090.1	7600576.2	
09-Jun-21	Area Search	Sunny/clear	14	0	American Robin	<i>Turdus migratorius</i>	1	X	NA/NA	S5B,S5M	2553110.5	7600527.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Spotted Sandpiper	<i>Actitis macularius</i>	1	X	NA/NA	S3S4B,S5M	2553200.7	7600488.0	Flying low over water
09-Jun-21	Area Search	Sunny/clear	14	0	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	T	NA/NA	S5B,S5M	2553048.4	7600512.2	Drumming
09-Jun-21	Area Search	Sunny/clear	14	0	Least Flycatcher	<i>Empidonax minimus</i>	1	S	NA/NA	S5B,S5M	2553036.4	7600514.1	

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
09-Jun-21	Area Search	Sunny/clear	14	0	Red-breasted Nuthatch	<i>Sitta canadensis</i>	1	S	NA/NA	S5	2553007.4	7600510.8	
09-Jun-21	Area Search	Sunny/clear	14	0	Hairy Woodpecker	<i>Picoides villosus</i>	1	S	NA/NA	S5	2553133.9	7600665.0	
09-Jun-21	Area Search	Sunny/clear	14	0	American Wigeon	<i>Anas americana</i>	2	X	NA/NA	S4B,S4S5M	2553353.4	7600823.5	Flyover
09-Jun-21	Area Search	Sunny/clear	14	0	Common Merganser	<i>Mergus merganser</i>	2	X	NA/NA	S5B,S4N,S5M	2553293.8	7600771.8	Flyover
09-Jun-21	Area Search	Sunny/clear	14	0	Belted Kingfisher	<i>Megaceryle alcyon</i>	1	X	NA/NA	S5B,S5M	2553394.4	7600771.8	Observed at sluice way bridge
09-Jun-21	Area Search	Sunny/clear	14	0	Common Grackle	<i>Quiscalus quiscula</i>	1	X	NA/NA	S5B,S5M	2553370.5	7600774.7	Flyover headpond
09-Jun-21	Area Search	Sunny/clear	14	0	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	1	S	NA/NA	S5B,S5M	2553518.5	7600767.3	
09-Jun-21	Area Search	Sunny/clear	14	0	Nashville Warbler	<i>Vermivora ruficapilla</i>	1	S	NA/NA	S5B,S5M	2553452.5	7600644.5	
09-Jun-21	Area Search	Sunny/clear	14	0	Blackburnian Warbler	<i>Dendroica fusca</i>	1	S	NA/NA	S5B,S5M	2553446.3	7600608.7	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553375.8	7600566.2	
09-Jun-21	Area Search	Sunny/clear	14	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553353.1	7600490.0	
09-Jun-21	Area Search	Sunny/clear	14	0	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	T	NA/NA	S5B,S5M	2553436.2	7600509.3	Drumming
09-Jun-21	Area Search	Sunny/clear	14	0	Blackburnian Warbler	<i>Dendroica fusca</i>	1	S	NA/NA	S5B,S5M	2553352.2	7600456.8	
09-Jun-21	Area Search	Sunny/clear	14	0	Red-breasted Nuthatch	<i>Sitta canadensis</i>	1	S	NA/NA	S5	2553295.3	7600384.1	
09-Jun-21	Area Search	Sunny/clear	14	0	Golden-crowned Kinglet	<i>Regulus satrapa</i>	1	S	NA/NA	S5	2553326.8	7600430.5	
09-Jun-21	Area Search	Sunny/clear	14	0	Blue-headed Vireo	<i>Vireo solitarius</i>	1	S	NA/NA	S5B,S5M	2553279.6	7600399.9	

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
09-Jun-21	Area Search	Sunny/clear	14	0	Blackburnian Warbler	<i>Dendroica fusca</i>	1	S	NA/NA	S5B,S5M	2553249.2	7600347.4	
09-Jun-21	Area Search	Sunny/clear	14	0	Black-capped Chickadee	<i>Poecile atricapilla</i>	1		NA/NA	S5	2553310.9	7600391.0	
09-Jun-21	Area Search	Sunny/clear	14	0	Double-crested Cormorant	<i>Phalacrocorax auritus</i>	1	X	NA/NA	S5B,S5M	2553334.0	7600786.6	
09-Jun-21	Area Search	Sunny/clear	14	0	Eastern Phoebe	<i>Sayornis phoebe</i>	1	S	NA/NA	S5B,S5M	2553314.6	7600957.5	
06-Jul-21	Area Search	Sunny/clear	11	0	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	S	NA/NA	S5B,S5M	2553372.4	7600983.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553477.7	7600957.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Blue Jay	<i>Cyanocitta cristata</i>	1	X	NA/NA	S5	2553272.4	7600836.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553402.7	7600995.5	
06-Jul-21	Area Search	Sunny/clear	11	0	Song Sparrow	<i>Melospiza melodia</i>	1	S	NA/NA	S5B,S5M	2553441.4	7601004.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	T	NA/NA	S5B,S5M	2553338.7	7601007.2	
06-Jul-21	Area Search	Sunny/clear	11	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553410.3	7600739.3	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553412.5	7600780.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Blue-headed Vireo	<i>Vireo solitarius</i>	1	S	NA/NA	S5B,S5M	2553405.8	7600757.8	
06-Jul-21	Area Search	Sunny/clear	11	0	American Redstart	<i>Setophaga ruticilla</i>	1	S	NA/NA	S5B,S5M	2553466.5	7600703.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Hermit Thrush	<i>Catharus guttatus</i>	1	S	NA/NA	S5B,S5M	2553467.9	7600655.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553442.6	7600572.7	

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
06-Jul-21	Area Search	Sunny/clear	11	0	Red-breasted Nuthatch	<i>Sitta canadensis</i>	1	S	NA/NA	S5	2553423.8	7600524.5	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553357.6	7600435.6	
06-Jul-21	Area Search	Sunny/clear	11	0	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	1	S	NA/NA	S5B,S5M	2553279.6	7600320.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Dark-eyed Junco	<i>Junco hyemalis</i>	1	A	NA/NA	S5	2553244.0	7600313.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Yellow-rumped Warbler	<i>Dendroica coronata</i>	1	S	NA/NA	S5B,S5M	2553266.8	7600372.4	
06-Jul-21	Area Search	Sunny/clear	11	0	Purple Finch	<i>Carpodacus purpureus</i>	1	S	NA/NA	S4S5B,SUN,S5M	2553373.4	7600456.3	
06-Jul-21	Area Search	Sunny/clear	11	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553305.3	7600328.9	
06-Jul-21	Area Search	Sunny/clear	11	0	White-winged Crossbill	<i>Loxia leucoptera</i>	1	X	NA/NA	S5	2553357.6	7600382.2	
06-Jul-21	Area Search	Sunny/clear	11	0	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	1	S	NA/NA	S5B,S5M	2553490.5	7600737.7	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553260.3	7600865.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Song Sparrow	<i>Melospiza melodia</i>	1	S	NA/NA	S5B,S5M	2553219.8	7600730.6	
06-Jul-21	Area Search	Sunny/clear	11	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553165.0	7600713.6	
06-Jul-21	Area Search	Sunny/clear	11	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553178.1	7600711.0	
06-Jul-21	Area Search	Sunny/clear	11	0	Common Goldeneye	<i>Bucephala clangula</i>	9	X	NA/NA	S4B,S5M,S4N	2553252.6	7600667.6	Pair of common goldeneye plus seven chicks
06-Jul-21	Area Search	Sunny/clear	11	0	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553167.0	7600686.9	
06-Jul-21	Area Search	Sunny/clear	11	0	Least Flycatcher	<i>Empidonax minimus</i>	1	S	NA/NA	S5B,S5M	2553140.2	7600635.7	

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
06-Jul-21	Area Search	Sunny/clear	11	0	Common Loon	<i>Gavia immer</i>	1	X	NA/NA	S4B,S4M,S4N	2553168.7	7600489.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Hairy Woodpecker	<i>Picoides villosus</i>	1	X	NA/NA	S5	2553165.1	7600614.2	
06-Jul-21	Area Search	Sunny/clear	11	0	Blue-headed Vireo	<i>Vireo solitarius</i>	1	S	NA/NA	S5B,S5M	2553141.6	7600567.9	
06-Jul-21	Area Search	Sunny/clear	11	0	Belted Kingfisher	<i>Megaceryle alcyon</i>	1	X	NA/NA	S5B,S5M	2553135.6	7600543.8	Foraging in headpond
06-Jul-21	Area Search	Sunny/clear	11	0	Veery	<i>Catharus fuscescens</i>	1	X	NA/NA	S4B,S4M	2553093.2	7600566.1	
06-Jul-21	Area Search	Sunny/clear	11	2	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553063.3	7600519.2	
06-Jul-21	Area Search	Sunny/clear	11	2	Song Sparrow	<i>Melospiza melodia</i>	1	S	NA/NA	S5B,S5M	2553058.3	7600431.4	
06-Jul-21	Area Search	Sunny/clear	11	2	Northern Flicker	<i>Colaptes auratus</i>	1	X	NA/NA	S5B,S5M	2553028.4	7600484.3	
06-Jul-21	Area Search	Sunny/clear	11	2	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	X	NA/NA	S5B,S5M	2553221.9	7600856.3	
06-Jul-21	Area Search	Sunny/clear	11	2	Purple Finch	<i>Carpodacus purpureus</i>	10	X	NA/NA	S4S5B,SUN,S5M	2553309.7	7600971.0	Ten observed eating pebbles on road mix
06-Jul-21	Area Search	Sunny/clear	11	2	Common Yellowthroat	<i>Geothlypis trichas</i>	1	S	NA/NA	S5B,S5M	2553346.6	7600963.1	
06-Jul-21	Area Search	Sunny/clear	11	2	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553546.1	7601081.8	
06-Jul-21	Area Search	Sunny/clear	11	2	Northern Parula	<i>Parula americana</i>	1	S	NA/NA	S5B,S5M	2553509.2	7601117.7	
06-Jul-21	Area Search	Sunny/clear	11	0	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S	NA/NA	S5B,S5M	2553520.2	7601124.7	
06-Jul-21	Area Search	Sunny/clear	11	0	Ovenbird	<i>Seiurus aurocapilla</i>	1	S	NA/NA	S5B,S5M	2553492.2	7601131.6	
06-Jul-21	Area Search	Sunny/clear	11	0	Common Merganser	<i>Mergus merganser</i>	1	X	NA/NA	S5B,S4N,S5M	2553404.3	7600889.1	Foraging

Date	Type	Weather	Temp	Beaufort**	Common Name	Scientific Name	Number Observed	Breeding Code	SARA/NBSARA	AC CDC S_Rank	X Coordinate	Y Coordinate	Notes
06-Jul-21	Area Search	Sunny/clear	11	0	Common Goldeneye	<i>Mergus merganser</i>	7	X	NA/NA	S5B,S4N,S5M	2553387.4	7600885.5	Six chicks plus hen sunning on bladder
06-Jul-21	Area Search	Sunny/clear	11	0	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	X	NA/NA	S5B,S5M	2553151.7	7600598.8	
06-Jul-21	Area Search	Sunny/clear	11	0	Turkey Vulture	<i>Cathartes aura</i>	1	X	NA/NA	S3B,S3M	2553460.9	7600811.1	
06-Jul-21	Area Search	Sunny/clear	11	0	Common Goldeneye	<i>Bucephala clangula</i>	5	X	NA/NA	S4B,S5M,S4N	2553408.3	7600911.7	Four chicks plus hen sunning on bladder
06-Jul-21	Area Search	Sunny/clear	11	0	Sharp-shinned Hawk	<i>Accipiter striatus</i>	1	X	NA/NA	S4B,S5M	2553381.6	7600893.4	Fly over facility 100 metres heading west
06-Jul-21	Area Search	Sunny/clear	11	0	American Black Duck	<i>Anas rubripes</i>	1	X	NA/NA	S5B,S4N,S5M	2553399.2	7600891.2	Black duck in head pond.
06-Jul-21	Area Search	Sunny/clear	11	0	Broad-winged Hawk	<i>Buteo platypterus</i>	1	CF	NA/NA	S5B,S5M	2553456.7	7600936.9	Carrying rodent
06-Jul-21	Area Search	Sunny/clear	11	0	Bald Eagle	<i>Haliaeetus leucocephalus</i>	1	X	NA/Endangered	S4	2553538.5	7600927.0	Juvenile observed downstream
06-Jul-21	Area Search	Sunny/clear	11	0	Common Loon	<i>Gavia immer</i>	1	X	NA/NA	S4B,S4M,S4N	2553333.7	7600760.0	Foraging in forbay
06-Jul-21	Area Search	Sunny/clear	11	0	Double-crested Cormorant	<i>Phalacrocorax auritus</i>	1	X	NA/NA	S5B,S5M	2553312.2	7600772.9	
06-Jul-21	Area Search	Sunny/clear	11	0	Broad-winged Hawk	<i>Buteo platypterus</i>	1	X	NA/NA	S5B,S5M	2553313.9	7600790.1	Observed multiple days around facility
06-Jul-21	Area Search	Sunny/clear	11	0	Pine Warbler	<i>Dendroica pinus</i>	1	S	NA/NA	S5B,S5M	2553181.8	7600327.1	