December 6, 2022

Habitat for Humanity
81 Wright Avenue, Unit H,
Dartmouth, NS
B3B 1H4

Re: Drysdale Road (PID's 00334102 and 40311896), Spryfield, NS: Wetland Evaluation

1 INTRODUCTION

In July 2017, Habitat for Humanity Nova Scotia (HH) received Approval from Nova Scotia Environment and Climate Change (NSECC) to alter a wetland located on undeveloped land adjacent to Drysdale Road in Spryfield, NS (Figure 1, Appendix A). At the time of the initial Approval (NSECC Approval # 2017-102812), the wetland in question was situated across six properties owned by HH (PIDs 40311896, 00334102, 41432113, 41432121, 41420803, and 41420811). The wetland approval was obtained in support of a low-income housing development.

Subsequent to receiving Approval, the proposed development was put on hold and has not occurred. HH are currently planning for development of the Project. Current activities being performed to support the planning process include obtaining relevant municipal development permits and updating the design for the development. Since 2017 some of the properties originally part of the development area have been sold and consolidated for the purposes of residential development along Drysdale Road. As such, just two properties now exist (PID's# 00334102 and 40311896) and is referred to as the "Study Area" within this document.

The existing Wetland Alteration Approval doesn't expire until July 1, 2027. However, in order to ensure biophysical conditions across the subject wetland are consistent with those observed during 2016 and that up-to-date environmental standards and practices have been used to assess the wetland, HH retained McCallum Environmental Ltd. (MEL) to re-evaluate wetland conditions.

MEL (who completed the initial 2016 wetland evaluation) completed the following tasks in support of the re-evaluation task.

- Desktop Review: obtain and review up-to date databases and rare species information for the Study Area and surrounding lands. This includes obtaining an Atlantic Canada Conservation Data Centre (ACCDC) report of known rare species records.
- Field Assessment: MEL completed a site visit to validate the following:
    - Rare species presence or habitat to support rare species identified in the desktop review.
    - General review of wetland conditions/characteristics.
    - Completion of a Wetland Ecosystem Services Protocol (WESP) wetland functional assessment (to replace the NovaWet method used in 2016).

Methodology and results of this work is presented in this report.

1.1 Project Property Information

The wetland proposed for alteration (Wetland 1) is present within PID 00334102 located in-between Drysdale Road and River Road, Spryfield, Nova Scotia. The wetland proposed for alteration is on private property owned by HH; property details are provided in Table 1**.** below.

Table 1: Property Details

PID	Owner	Civic Address
00334102	Habitat for Humanity Nova Scotia	River Road, Halifax, Nova Scotia
40311896	Habitat for Humanity Nova Scotia	Drysdale Road, Halifax, Block HH (Portion of)

1.2 Project Team

A Study Team was assembled for the completion of the wetland re-evaluation. The team was selected based on level of proficiency in their respective roles. The team members and their individual roles are presented in Table 2.

Table 2: Project Team

Team Member	Role
Andy Walter	Senior Review, Reporting, Functional Assessment
Mark MacDonald	Wetland re-evaluation, Reporting, SAR Survey, Functional Assessment
Brayden Thomas	Desktop Review, GIS, Reporting

Curriculum Vitae for the above-mentioned team members are provided in Appendix B.

2 METHODS

This section outlines the methodologies followed for desktop research and field surveys to support the wetland re-evaluation.

2.1 Research

A priority species list was created in 2016 to support the assessment of priority species use of the wetland proposed for alteration. The purpose of the priority species list is to identify a broad list of species that have the potential to be present within the wetland proposed for alteration and to inform field programs. The priority species list was updated in October 2022 to ensure up-to-date conditions were reviewed.

Development of a priority list of species for birds, mammals, herpetofauna, fish, and vascular plants was completed based on a compilation of listed species from the following sources:

1. Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Federal Species-at Risk Act (SARA, 2003). All species listed as Endangered, Threatened, or of Special Concern;

2. Nova Scotia Endangered Species Act (NSESA, 1999). All species listed as Endangered, Threatened, or Vulnerable; and,
3. Conservation Rank: All Species designated as S1, S2, or S3 as defined by Atlantic Canada Conservation Data Center (ACCDC, 2021).

Additionally, non-vascular plants and invertebrates listed under NSESA and SARA as described above, were also included in the development of the priority species list.

Collectively, this group of species is known as priority species. This umbrella grouping includes Species of Conservation Interest (SOCI) that are not listed species under provincial or federal legislation (i.e., COSEWIC species and/or ACCDC S1, S2 and S3 species or any combination thereof (i.e., S3S4 is considered a SOCI)), and SAR which are listed on SARA or NSESA.

The priority list of species was first narrowed by broad geographic area and then further narrowed by identifying specific habitat requirements for each species. For example, if a listed species on the NSESA required open water lake habitat and no open water lake habitat is present inside the wetland proposed for alteration, this species was not carried forward to the final list of priority species.

Data was requested from the ACCDC in September 2022 to obtain records of rare species existing or historically found within the general location of the Study Area. The results of the database search were also reviewed to identify priority species that could be potentially located within the Study Area (based on recorded sightings within or in close proximity to the Study Area, and general geographic and habitat requirements).

A background information review of wetlands and watercourses was completed prior to the site visit using the Nova Scotia Topographic Database (NSTDB) watercourse layer (version dated December 18, 2020), the Nova Scotia Environment and Climate Change (NSECC) Wetlands Inventory Database (NSECC, June 2020). In addition, the NSECC "Wetlands of Special Significance" (WSS) database was reviewed as part of this process (NSECC, June 2020).

The Provincial Landscape Viewer (https://nsgi.novascotia.ca/plv/) was also reviewed to determine whether the proposed wetland alteration is within, or adjacent to special features. To ensure the Study Area is not located within any ecologically sensitive regions, the following databases were also checked:

- Protected areas;
- Atlantic Coastal Plain Flora buffers;
- Mainland Moose Core Habitat Areas;
- Nova Scotia Lands and Forestry Significant Habitat and Species Polygon;
- Lichen databases, included those provided by the Mersey Tobeatic Research Institute (MTRI; assessed to identify potential for priority lichen species including vole ears (*Erioderma mollissimum*) and boreal felt lichen (*Erioderma pedicellatum)*;
- Provincial government records of abandoned mine openings (AMOs, uncapped and unflooded AMOs may provide bat hibernacula);
- RAMSAR sites;
- Maritime Breeding Bird Atlas (MBBA);
- Canada Wildlife Service Migratory Bird Sanctuary (MBS);
- Canada Important Bird Area (IBA);
- SARA Critical Habitat layers;
- SARA Recovery Strategies; and

- Special Management Practice layers (wood turtle, vole ears, mainland moose, etc.).

The final list of priority species was used to guide the field evaluation and is attached in Appendix C. The ACCDC report is also included in Appendix C.

2.1.1 Wetland of Special Significance

The *Wetland Conservation Policy* was developed by NSECC, previously known as Nova Scotia Environment (NSE, 2011). Its mandate is to provide a framework for the conservation of wetlands. Furthermore, it provides a framework for the identification of WSS. According to this document (2011, p.11-12), the following criteria define WSS:

- All salt marshes;
- Wetlands that are within or partially within a designated RAMSAR site, Provincial Wildlife Management Area (Crown and Provincial lands only), Provincial Park, Nature Reserve, Wilderness Area or lands owned or legally protected by non-government charitable conservation land trusts;
- Intact or restored wetlands that are project sites under the North American Waterfowl Management Plan and secured for conservation through the NS-EHJV;
- Wetlands known to support at-risk species as designated under the federal Species at Risk Act or the Nova Scotia Endangered Species Act; and,
- Wetlands in designated protected water areas as described within Section 106 of the Environment Act.

Furthermore, the *Wetland Conservation Policy* states that Government is in the process of developing a system for classifying additional wetlands or wetland types as WSS (NSE, 2011). Among the wetland characteristics, functions, and services to be considered during the process are whether the area:

- Supports a significant species or species assemblages (e.g., coastal plain flora);
- Supports high wildlife biodiversity;
- Has significant hydrologic value, or;
- Has high social or cultural importance.

A province-wide framework for determination of WSS using Wetland Ecosystem Services Protocol - Atlantic Canada (WESP-AC) has recently been developed (see Section 4.0 for results). Additionally, NSECC developed a WSS predictive GIS layer, which overlays mapped wetlands with protected area layers, and rare species observations from ACCDC, among other attributes. This predictive layer was consulted during the desktop evaluation for wetlands. This predictive layer incorporates all rare species observations, regardless of the species' ranking, accuracy of the data points, observation date, and mobility of species. As such, it is used as a predictive tool to support WSS determination, only.

2.2 Field Assessment

MEL wetland specialists, Mark MacDonald and Andy Walter re-evaluated WL1 within the Study Area on September 29, 2022, and completed functional assessments, species at risk surveys, and wetland boundary determination forms. The following definitions were used to confirm the presence of wetlands and watercourses:

> Wetlands are:
> *Land referred to as a marsh, swamp, fen, or bog that either periodically or permanently has water table at, near, or above the land surface or that is saturated with water, and sustains aquatic processes as indicated by the presence of poorly drained soils, hydrophytic vegetation, and biological activities adapted to wet conditions.*

Watercourses are:
The bed and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and all groundwater.

Wetland boundaries identified in 2016 were confirmed using methodologies described by the Army Corps of Engineers, adapted for the Northcentral and Northeast Regions of the US (US Army Corp of Engineers, 2012) based on topography, soil, hydrology properties, and vegetation.

In keeping with the Army Corps of Engineers methodologies for wetland delineation, three criteria are required in order for a wetland determination to be made:

- Presence of hydrophytic vegetation;
- Presence of hydrologic conditions that result in periods of flooding, ponding, or saturation during the growing season; and
- Presence of hydric soils.

The 2016 wetland boundary was walked to confirm its accuracy and any inlet and outlet streams/features were marked. Observations were made on wetland types, water flow path, dominant vegetation communities, presence of SAR/SOCI or SAR/SOCI habitat potential, fish habitat potential and characterizations, and wetland functions. A wetland determination data form was completed at a similar location as completed in 2016; data forms are provided in Appendix C.

2.2.1 Wetland Functional Assessment

The wetland functional assessment was completed using the WESP-AC wetland evaluation technique. The WESP-AC process involves the completion of three forms; a desktop review portion that examines the landscape level aerial conditions to which the wetland is situated, and two field forms identifying biophysical characteristics of the wetland (field form) and stressors within the wetland (stressors form). The process serves as a rapid method for assessing individual wetland functions and values. WESP-AC addresses 17 specific functions wetlands may provide (Table 3).

The specific wetland functions are individually allocated into grouped wetland functions and measured for "functional" and "benefit" scores. Wetland function relates to what a wetland does naturally (i.e., water storage), whereas wetland benefits are benefits of the function, whether it is ecological, social, or economic. The highest functioning wetlands are those that have both high 'function' and 'benefit' scores for a given function. WESP-AC enables a comparison to be made between individual wetlands within a province to gain a sense of the importance each has in providing ecosystem services.

Table 3: WESP-AC Wetland Function Parameters

Grouped Wetland Function	Specific Wetland Functions
Hydrologic Function	Surface Water Storage
Aquatic Support	Aquatic Invertebrate Habitat
	Stream Flow Support
	Organic Nutrient Export

Grouped Wetland Function	Specific Wetland Functions
	Water Cooling
Water Quality	Sediment Retention & Stabilization
	Phosphorus Retention
	Nitrate Removal & Retention
	Carbon Sequestration
Aquatic Habitat	Anadromous Fish Habitat
	Resident Fish Habitat
	Waterbird Feeding Habitat
	Waterbird Nesting Habitat
	Amphibian and Turtle Habitat
Terrestrial Habitat	Songbird, Raptor, & Mammal Habitat
	Pollinator Habitat
	Native Plant Habitat

In addition to the grouped wetland functions above, WESP-AC also measures the following groups, however, these are only evaluated by their benefit scores:

- Wetland Condition; and
- Wetland Risk.

The following individual functions are assessed to determine the benefit scores associated with each wetland:

- Public Use & Recognition;
- Wetland Sensitivity;
- Wetland Ecological Condition; and
- Wetland Stressors.

For the wetland evaluated, the WESP-AC process calculates the overall score for the seven grouped wetland functions and the 17 specific wetland functions listed in Table 3 above. One score each is provided for function and benefit. Scores are ranked as 'Lower', 'Moderate', or 'Higher', allowing for analysis of the wetland as compared to baseline wetland scores in Nova Scotia. A 'Higher' WESP-AC score means that wetland has a greater capacity to support those processes as compared to other wetlands in the province. A 'Higher' WESP-AC score in both the function and benefits category means the wetland supports the natural ecosystem functions and provides services potentially important to society.

2.2.2 Priority Species Field Assessment

Priority species were assessed during the wetland re-evaluation. Using the guidance resulting from desktop review and creation of the priority species list, the surveyor searched for priority species and any available, appropriate specific dwelling areas including nests, nest shelters, hibernacula, and dens, across all wetland habitat via a non-standardized meandering search methodology. If a mobile priority species was observed, habitat within the wetland was assessed to ascertain the potential life stages that each wetland could support for the species.

2.2.3 Watercourse and Fish Habitat Field Assessment

MEL defines watercourses based on guidance from NSECC (NSE, 2015). The following parameters were used to define watercourses:

- Presence of a mineral soil channel;
- Presence of sand, gravel and/or cobbles evident in a continuous pattern over a continuous length with little to no vegetation;
- Indication that water has flowed in a path or channel for a length of time and rate sufficient to erode a channel or pathway;
- Presence of pools, riffles or rapids;
- Presence of aquatic animals, insects or fish; and,
- Presence of aquatic plants.

According to the guidance provided by NSECC, any surface feature that meets two of the criteria above meets the definition of a regulated watercourse.

No watercourses (or fish habitat) were identified during the 2016 assessment. As such, no fish habitat assessment was required during the September 2022 assessment.

3 RESULTS

This section outlines the results of the desktop research and field surveys completed to support the re-evaluation of WL1.

3.1 Research Results

This section outlines the results of the desktop research completed to support the re-evaluation of WL1.

3.1.1 Wetlands and Watercourses Research Results

The Study Area is within the McIntosh Run Secondary Watershed (1EJ-6). There are no mapped tertiary watersheds within the McIntosh Secondary Watershed. A review of the NSECC Wetlands Inventory Database identified no NSECC mapped wetlands or NSTDB mapped watercourses in the Study Area. Desktop results are presented on Figure 2 (Appendix A).

3.1.2 Priority Species and Special Areas Research Results

The Study Area does not contain nor is it contained within any of the following: Atlantic Coastal Plain Flora buffers, wood turtle SMP buffers, moose core habitat, boreal felt lichen predictive layers, vole ears lichen predictive layers, critical SAR habitats, significant habitat, protected water areas, parks and protected areas, RAMSAR sites, IBAs, or CWS migratory bird sanctuaries.

A review of the ACCDC report confirms the presence of several priority species in proximity to the Study Area. The ACCDC identified the following records of SAR, SOCI and Special Areas within 5 km (none of these are contained within the Study Area):

- 6 managed areas (Halifax II Municipal Water Supply, Halifax Citadel National Historic Site, Point Pleasant Park, Purcells Cove Conservation Lands, Captain Amell Conservation Lands, and York Redoubt National Historic Site)
- 2 Biologically Significant sites (Kidston Lake IBP)
- 91 records of 36 vertebrate fauna;
- 144 records of 17 invertebrate fauna;

- 224 records of 20 vascular flora; and
- 60 records of 13 nonvascular flora.

Of those identified records, five SAR were identified within 5km of the Study Area by the ACCDC and were determined to have suitable habitat within the wetland proposed for alteration in the priority species list. These five species are listed below. None of the below listed species were observed during field surveys:

1. Chimney Swift *(Chaetura pelagica)*
2. Canada Warbler *(Cordellina Canadensis)*
3. Common Nighthawk *(Chordeiles minor)*
4. Eastern Wood-Peewee *(Contopus virens)*
5. Monarch *(Danaus plexippus)*

The NSDNRR considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in an ACCDC report. The ACCDC report identified a bat hibernaculum (or species occurrence), wood turtle and peregrine falcon within 5 km of the Study Area; none of these species were observed during field surveys nor were any bat hibernacula observed within the Study Area. Sarah Spencer, NSDNRR, confirmed that neither individual bats nor any known hibernacula are present within the Study Area (personal communication, October 7, 2022). Sarah Spencer also confirmed that no known wood turtles are present within the Study Area, and the nearest known occurrence of wood turtle is approximately 4 km to the northeast. Despite repeated efforts, the regional biologist was unable to find the peregrine falcon occurrence listed in the data report.

The ACCDC report is provided in Appendix C along with the priority species list and a copy of the communications with Ms. Sarah Spencer.

3.2 Field Assessment Results

The re-evaluation of WL1 in September 2022 confirmed the presence of Wetland 1 (WL1) within the Study Area, (Figure 3 Appendix A).

3.2.1 Wetlands

The re-evaluation of WL1 confirmed that it is an isolated mixed wood treed swamp that comprises some areas of graminoid dominant vegetation. Wetland type classifications are guided by the Canadian Wetland Classification System (National Wetlands Working Group, 1997).

WL1 encompasses a total area of 5,684 m^2 in size, a portion of which extends onto adjacent privately owned properties (Figure 3, Appendix A).

A wetland determination point was conducted within WL1. The result of the wetland data point is presented in Table 4**.** below. Original field forms are provided in Appendix C.

Table 4: Data Point Results

Data Point	Hydric Soil Indicator	Indicators of Wetland Hydrology	Hydrophytic Vegetation Present / Prevalence Index[1]	Positive Test for Wetland Habitat
WL1 (Treed Swamp)	Histosol – A1	High Water Table – A2 Saturation – A3 Water Marks – B1	Yes; 2.71	Yes

[1] *Prevalence indices equal to or less than 3.0 indicate hydrophytic vegetation.*

Table 5 below provides an overview of wetland characteristics for WL1.

Table 5: Wetland Characteristics

WL ID	Size (m^2)	Wetland Type	Landscape Position	Landform	Water Flow	Dominant Vegetation	Potential for Fish Presence
WL1	5,404	Treed Swamp	Terrene	Basin	Isolated	*Picea mariana* *Acer rubrum* *Abies balsamea* *Vaccinium angustifolium* *Glyceria canadensis* *Thelypteris noveboracensis*	No

Observations during September 2022 were consistent with those made during 2016. WL1 is situated in-between existing development; abutted by Drysdale Road at the outflow end of the wetland, residential development adjacent south and east (River Road), and a school adjacent north. WL1 intercepts piped stormwater at the eastern extent of the Study Area and drains through the wetland northwesterly, where it outflows via additional stormwater infrastructure beneath Drysdale Road toward McIntosh Run. By nature of the basin formation of the wetland, water predominantly flows through the wetland in the lowest lying areas closer to the southern wetland boundary. Conditions are drier closer to the wetland boundaries as topography rises.

In wetter portions of WL1 graminoid vegetation dominated *Glyceriua canadensis* prevails. In the northeastern extent of the wetland where stormwater initiates the wetland is dominated by the invasive species *Phragmites australis*. The invasive *Rosa multiflora* was also observed throughout the wetland. Remaining portions of WL1 that are forested are dominated by low shrubs such as *Vaccinium angustifolium*, herbaceous species such as *Cornus Canadensis* and *Trientalis borealis*, and the fern species *Thelypteris noveboracensis* and *Osmunda cinnomomea* as reported in 2017.

Hydrology indicators are also consistent with 2016 where small pockets of standing water were identified (especially in the lower areas where stormwater flow is more concentrated), but in general, WL1 comprises saturated surfaces and a high-water table (i.e., within 30cm of the surface). During periods of high flow stormwater inflows into the wetland likely increase the extent of temporary standing water within the wetland.

Soils within WL1 were observed to hydric organic (histosol), with depths typically ranging between 20cm-40cm upon restrictive rock.

3.3 Watercourses

As reported in 2016 there are no watercourses were identified within WL1. Water drains through a stormwater outlet beneath Drysdale Road for approximately 200 metres before outputting near McIntosh Run northwest of the Study Area.

3.4 Supporting Survey Results

The following sections provide the results of additional assessments conducted within the Study Area.

3.4.1 Priority Species in Wetland

No SAR/SOCI species were observed within the Study Area during the September 2022 re-evaluation.

Three location sensitive species, bat hibernaculum or bat occurrence; wood turtle; and peregrine falcon were identified within 5 km of the Study Area in the ACCDC report. It was confirmed with NSDNRR that there are no observations of bat occurrences or hibernacula, and no observations of wood turtle within the Study Area. The closest known bat occurrence on record is 1 km away and the closest known wood turtle occurrence is approximately 3 km away (personal communication, October 3, 2022). Two peregrine falcon occurrences were listed approximately 3.5 km from the Study Area.

No nests, nest shelters, hibernaculum, depredated nests or dens of endangered or threatened species were observed within the Study Area.

Furthermore, MEL paid particular attention to potential wood turtle habitat within WL1. No evidence of wood turtles was identified within WL1 during the September 2022 field evaluation and the habitat conditions do not provide habitat for important life stage requirements for this species (i.e., riverbanks and river bottoms for hibernation, sandy/gravelly substrates, riverbanks and beaches in open sunny areas for nesting).

3.4.2 Fish Habitat in Wetland

WL1 is isolated from a fisheries resource and therefore does not have the potential to support a resident population of fish.

3.4.3 Wetland of Special Significance

The wetland identified within the Study Area is not designated as WSS according to the identification framework laid out by NSECC in the *Wetland Conservation Policy* (2011).

4 WESP-AC INTERPRETATION TOOL RESULS

WESP-AC scores are provided in Appendix D. The interpretation tool was used to determine the function-benefits score and category for WL1 as well as the WSS status. The results of this tool are outlined in Table 6 below.

Table 6: WESP Function-Benefit Products Summary

Function-Benefit Products (FBP)	WL1	
	FBP SCORE	FBP SCORE CATEGORY
SUP - HYDROLOGIC	28.91472292	Low
SUP - WATER QUALITY SUPPORT	23.12498985	Low
SUP - AQUATIC SUPPORT	40.38290351	Low
HAB - AQUATIC HABITAT	12.97430675	Low
HAB - TRANSITION HABITAT[1]	33.22427502	Low

Functional WSS Rule Definitions:

Habitat Rule: Two 'High' Scores -OR- One 'High' and one 'Moderate' score

Support Rule: Three 'High' scores -OR- Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: One 'High' HAB score -AND- Two or three 'High' SUP Scores

Functional WSS Determination:	(YES/NO)
Habitat Rule Satisfied	NO
Support Rule Satisfied	NO
Habitat/Support Hybrid Rule Satisfied	NO
CONCLUSION	Site is not a WSS

[1] *NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.*

The wetland does not satisfy the Habitat, Support, or Habitat/Support Hybrid rules that may support the determination of a Wetlands of Special Significance (WSS), as per the WESP-AC tool. All raw WESP-AC scores can be found in Appendix D.

5 SUMMARY

The re-evaluation of WL1 in September 2022 confirmed that wetland conditions were representative of those observed in 2016. MEL re-evaluated potential Priority Species presence using desktop database review and completion of a Priority Species field survey during the September 2022 field assessment. No Priority Species or important habitat to support Priority Species were identified.

Wetland 1 does not classify as a Wetland of Special Significance according to the identification framework laid out by NSECC in the *Wetland Conservation Policy* (2011) or results of the WESP functional assessment tool.

Please do not hesitate to contact the undersigned with any questions you might have.

Sincerely,

Original Signed

Andy Walter, BSc.
Senior Project Manager
McCallum Environmental Ltd.
(902) 441-2639
andy@mccallumenvironmental.com

APPENDIX A: *Figures*

Prepared For:

Habitat for Humanity

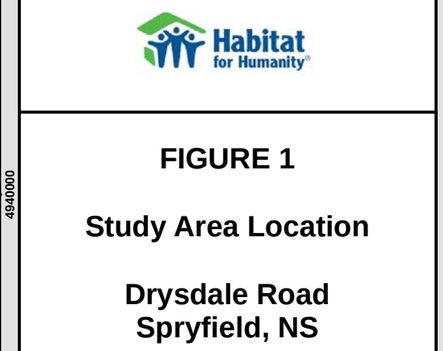
FIGURE 1

Study Area Location

Drysdale Road
Spryfield, NS

Project # 16-123

Study Area



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 50 100 200 m

1:6,000 Scale when printed @ 11" x 17"

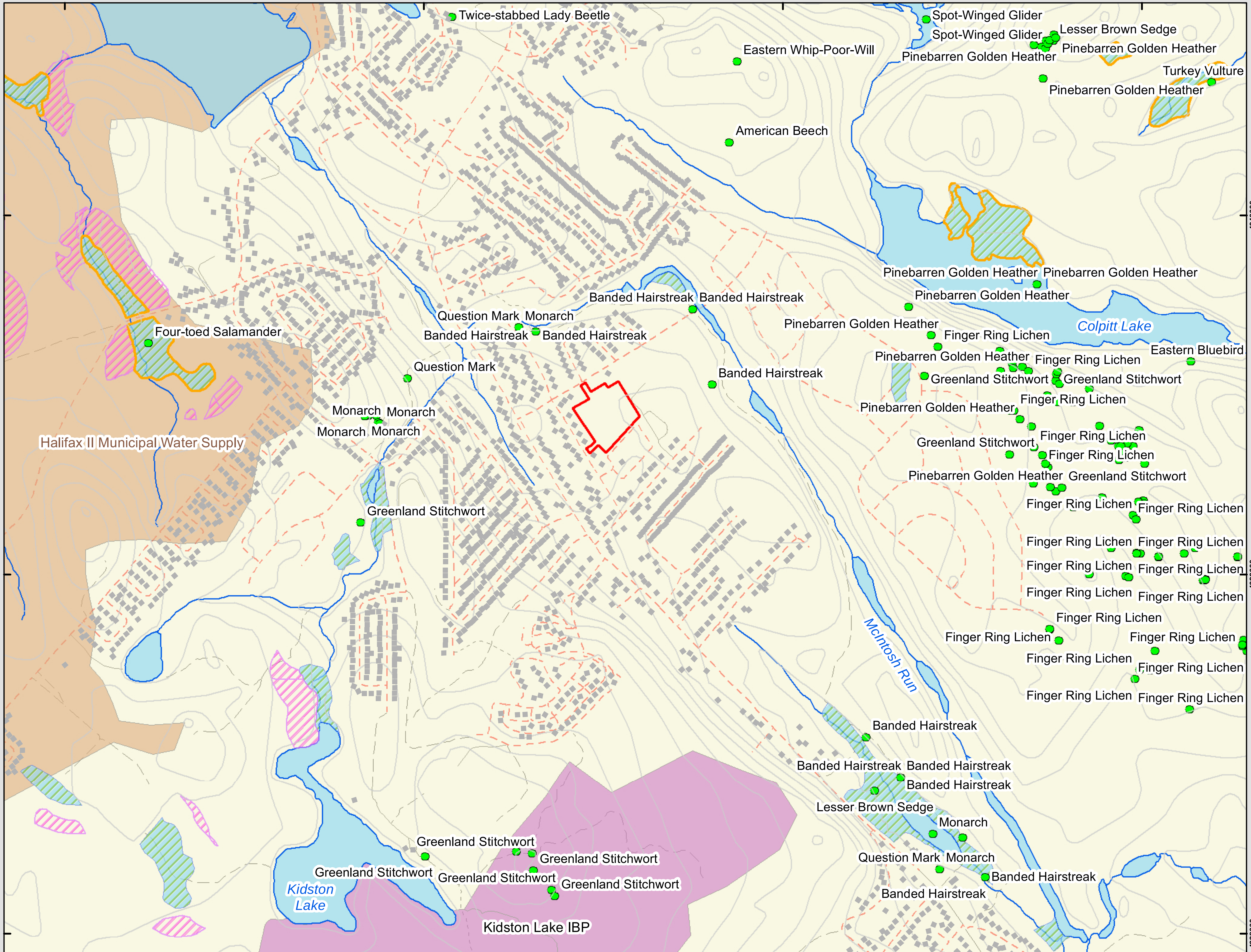
Drawn By: MD
Reviewed By: Date: 2022-12-05

McCallum Environmental Ltd.

Document Name: 221027_Fig1_ProjectLocator

450500 451000 451500 452000 452500

4940000 4939500 4939000



Prepared For:

Habitat for Humanity

FIGURE 2

Desktop Review

Drysdale Road
Spryfield, NS

Project # 16-123

- ACCDC Observation
- Building
- Mapped Watercourse (NSTDB)
- NSE Wetland of Special Significance
- Boreal Felt Lichen Predictive Habitat Polygon
- Mapped Wetland (NSTDB)
- Mapped Lake (NSTDB)
- Moose Concentration Area
- Halifax II Municipal Water Supply
- Kidston Lake IBP - Protected Area
- Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 75 150 300 m

1:10,000 Scale when printed @ 11" x 17"

Drawn By: MD
Reviewed By: Date: 2022-12-05

McCallum Environmental Ltd.

Document Name: 221027_Fig2_DesktopReview

Prepared For:

Habitat for Humanity

FIGURE 3

Field Delineation Results

Drysdale Road
Spryfield, NS

Project # 16-123

Data Points

- Up 1
- Wet 1
- Field Delineated Wetland
- Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 12.5 25 50 m

1:1,000 Scale when printed @ 11" x 17"

Drawn By: MD
Reviewed By:
Date: 2022-12-05

McCallum Environmental Ltd.

Document Name: 221027_Fig3_DelineationResults

APPENDIX B: *CV's*

Andy Walter, BSc. (Hort)
andy@mccallumenvironmental.com
Senior Project Manager

Years in Practice
14 years

Certifications
Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships
Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education
- BSc. (Horticulture), Essex University (UK), 2003-2005

Training
- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2010;
- Water Management and Wetland Restoration Training Course, 2014;
- Identifying and Delineating Wetlands for Nova Scotia, 2009
- Watercourse Alteration Certification (Nova Scotia Environment) (2008)
- Wetland Ecosystem Services Protocols (Freshwater, Tidal) – Nova Scotia / New Brunswick, 2016
- Saint John Ambulance Emergency First Aid, AED, CPR(C). 2016

Summary
Mr. Walter is a trained biologist and wetland specialist, and has extensive experience managing technical biophysical projects within Atlantic Canada. Mr. Walter is knowledgeable in federal, provincial, and municipal environmental regulations and guidelines applicable to Atlantic Canada, and works closely with all necessary regulatory agencies to facilitate project implementation. As senior project manager, Mr. Walter ensures biophysical field programs are tailored to the needs of the client and project, while meeting regulatory standards. Mr. Walter has provided environmental support to the planning process in a wide range of project types including residential development, industrial projects (mining, pit and quarry), transmission line and hydro dam infrastructure and highway construction to name a few. Mr. Walter has managed the environmental processes associated with multiple wind energy developments in Nova Scotia, including compilation of provincial environmental assessment (EA) documents, public and First Nation engagement and consultation and implementation of associated EA biophysical field surveys required to support regulatory permitting.

As a trained field biologist, Mr. Walter utilizes his extensive experience completing technical field programs to lead a team of biologists in support of his ongoing project portfolio. Mr. Walter's previous technical experience includes completion of terrestrial and aquatic habitat assessments including desktop reviews and characterization of biophysical environments. Mr. Walter also completes numerous fish habitat/watercourse assessments for effects monitoring, watercourse alteration, and HADD authorization projects. As a qualified wetland delineator and wetland function evaluator for Atlantic Canada, Andy has completed delineation of hundreds of wetlands. Projects often involve the completion of species at risk assessments, functions assessments, and detailed wetland characterization in support of provincial wetland alteration applications. Mr. Walter has designed and implemented multiple large and small-scale wetland monitoring programs throughout Atlantic Canada.

Mr. Walter is a wetland restoration professional and manages the identification and implementation of wetland restoration, enhancement, expansion and creation projects. This includes reviewing of databases, mapping, and aerial imagery, ground truthing and consultation with local environmental groups and government to identify potential restoration opportunities. Mr. Walter engages with landowners to secure land for restoration projects and manages the construction and monitoring of these initiatives to meet regulatory requirements.

Project Experience
- Management and implementation of wetland restoration projects including a 20 hectare and 12-hectare agricultural wetland restoration project in NS.
- Planning and feasibility studies for a floodplain and a shrub/treed swamp wetland restoration project in NS (2020-ongoing).
- Managing, and currently in the process of implementing a new wetland functional assessment tool for use in Nova Scotia. This Project included the collection of baseline wetland information across Nova Scotia by completing 125 wetland functional assessments using the Wetland Ecosystem Services Protocol (WESP). This project was completed in collaboration with Nova scotia Environment and Dr. Paul Adamus (developer of the WESP-AC).
- Managing four Provincial Environmental Assessments (baseline surveys, effects assessment and mitigation) for quarry expansion projects, NS (2018 - 2020).

McCallum Environmental Ltd.

Andy Walter, BSc. (Hort)
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Senior Project Manager

- Managing a Provincial Environmental Assessment (baseline surveys, effects assessment and mitigation) for new quarry development in Coclchester County, NS (2019-ongoing).
- Design and implementation of extensive wetland post-construction monitoring projects associated with mine and highway development (2016-ongoing).
- Managing environmental CEAA screening and associated wetland and watercourse alteration permits for the Paqtnkek Interchange Project for NSTIR (2014-2018).
- Managing a Provincial Environmental Impact Assessment for a proposed 20MW wind Project in New Brunswick.
- Managing an environmental screening and associated wetland and watercourse alteration permits for the NSTIR Highway 102/103 Interchange project (2016-2018.
- Management and completion of terrestrial habitat mapping, wetland delineation and vegetation surveys in support of EA and regulatory permitting for the South Canoe Wind Project (80MW wind Project in Nova Scotia) 2011-2014.
- Management of a multi-faceted avian study in support of a provincial EA at Aulds Cove, NS.
- Project management, regulatory consultation and associated environmental considerations related to multiple proposed development projects throughout NS.
- Completion of six provincial environmental assessments and baseline surveys for community wind projects in Nova Scotia in 2012-2014.
- Terrestrial habitat mapping, wetland delineation and vegetation surveys in support of a 65km distribution transmission line in central Nova Scotia.
- Utilization of the WESP-AC wetland functional assessment tool in > 100 wetlands across Nova Scotia in support of regulatory wetland alteration permitting, provincial and federal environmental assessment and wetland monitoring. (2016 – 2021).
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed quarry in Nova Scotia. Subsequent facilitation of wetland alteration permit to alter in excess of 20 hectares of wetland.
- Implemented the passive wetland restoration strategy at a disturbed wetland on NSDNR property. Completed regular monitoring of vegetation, soil, and hydrology conditions and developed project recommendations accordingly (2009-2011).
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed 22km railway line and shipping container terminal in eastern Nova Scotia (2012-2014).
- Completion of wetland delineation and watercourse identification and associated regulatory permitting at multiple developments in Nova Scotia (2009-2016)

McCallum Environmental Ltd.

Andy Walter, BSc. (Hort)
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Senior Project Manager

Work Experience

Strum Environmental Services Ltd., Nova Scotia 2008-2015

Environmental Specialist/Project Manager- provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial, residential and wind power developments, wetland and watercourse alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, avian studies, and regulatory consultation.

Brayden Thomas, B.Sc.
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Years in Practice
<1 Year

Education
Bachelor of Science with Major in Environmental Science, *Dalhousie University,* 2022

Training
- Emergency First Aid
- CCAC Wildlife Care and Use Certification

Experience

Recently entering the consultant profession, Mr. Brayden Thomas is working to broaden his professional field skills, aiming to be introduced and familiar with various aspects of field environmental sciences and biology.

During his time with McCallum Environmental Ltd., Mr. Thomas has been involved with tasks ranging from watercourse and wetland delineation and habitat assessments, fish and turtle surveys, and participating in long term wetland monitoring programs. Mr. Thomas also has experience in office based tasks – Wetland Alteration Applications and Project Proposals.

McCallum Environmental Ltd., Halifax, NS
Junior Environmental Scientist
May 2022 - Present
- Determined physical boundaries for wetland and watercourses for the purposes of wetland alteration permitting
- Performed wetland determination and wetland ecosystem services protocol (WESP) assessments
- Participated in long term wetland monitoring programs – setup and installation of Solinst LevelLoggers, Soil and Vegetation monitoring
- Conducted species at risk surveys
- Participated in the writing of wetland alteration applications
- Prepared project proposals for submission to clients
- Produced figures via ArcGIS and QGIS
- Wildlife surveys (Wood Turtle, Marine)

APPENDIX C: *Supplemental Data*

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
			Plants			
Fagus grandifolia	American Beech				S3S4	Found in forested areas.
Viola sagittata	Arrow-Leaved Violet				S3S4	Sterile woods, clearing and fields, common from Yarmouth to Halifax and Hants Counties.
Viola sagittata var. ovata	Arrow-Leaved Violet				S3S4	Open woods and thickets, disturbed ground, roadsides, powerline rights-of-way. Flowers April – June.
Salix serissima	Autumn Willow				S1	Fens (calcium-rich wetlands), meadows and fields, swamps
Fraxinus nigra	Black Ash		T	T	S1S2	Typical habitat includes poorly drained soils and swampy woods
Persicaria careyia	Carey's Smartweed				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes.
Humulus lupulus var. lupuloides	Common Hop				S1?	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, shrublands or thickets.
Botrychium lunaria	Common Moonwort				S1	Open slopes. Sand or gravel; shores and meadows. Basic soils. Known from Conrad's Beach, Halifax County and from New Campbellton and Indian Brook in northern Cape Breton.
Ranunculus sceleratus	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
Ranunculus sceleratus var. sceleratus	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
Goodyera pubescens	Downy Rattlesnake-Plantain				S2S3	Forms large colonies in woodlands and thickets
Pilea pumila	Dwarf Clearweed				S1	Usually grows in cool shady habitats as found on forested slopes of maple-beech, in the centre of the Province. So far, only known from West Branch, Pictou Co.; Little River, near Brookfield, Halifax Co.; and along the Herbert River, Hants Co. at Woodville.
Pilea pumila var. pumila	Dwarf Clearweed				S1	Usually grows in cool shady habitats as found on forested slopes of maple-beech, in the centre of the

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						Province. So far, only known from West Branch, Pictou Co.; Little River, near Brookfield, Halifax Co.; and along the Herbert River, Hants Co. at Woodville.
Thuja occidentalis	Eastern White Cedar	SC	SC	V	S2S3	Found in riparian areas along streams, in swamps, along lakeshores, in woodland forests and in old pastures. It is shade-tolerant and typically occurs in cool, moist habitats that are nutrient rich. It does best in moderate drainage conditions that are neither too wet nor dry. Eastern White Cedar is typically observed in cool, moist shaded areas.
Crataegus succulenta	Fleshy Hawthorn				S3S4	Forest edges, forests, meadows and fields. Also found in abandoned farmland, along streams and in forest openings.
Crataegus succulenta var. succulenta	Fleshy Hawthorn				S3S4	Forest edges, forests, meadows and fields. Also found in abandoned farmland, along streams and in forest openings.
Carex alopecoidea	Foxtail Sedge				S1	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, marshes.
Zizia aurea	Golden Alexanders				S1	Meadows, shores, thickets and even wooded swamps. Occasionally reported: Pomquet and South River, Antigonish Co., Upper Musquodoboit, Halifax Co.
Mononeuria groenlandica	Greenland Stitchwort				S3	Peak flowering time of two weeks in the middle of July, although it does flower anywhere between June to August. isolated and elevated areas. Thin coarse soil or in cracks of acidic rock on open rocky alpine and sub-alpine areas. Sometimes forming large masses in the appropriate habitat
Persicaria arifolia	Halberd-leaved Tearthumb				S3	Found in shaded swamps, ponds, tidal marshes along rivers, wet ravine in forests. Flowers July - October (Flora of North America, nd)
Carex lupulina	Hop Sedge				S3	Found in muck soils, in forests, swamps, swales and intervales.

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Platanthera grandiflora	Large Purple Fringed Orchid				S3	Favours wet meadows and riparian habitats - More often found in north-central Nova Scotia. Infrequent in southwestern NS.
Hypericum majus	Large St John's-wort				S2S3	Wet or dry open soil. Widely scattered locations. Until recently, only known from Halifax area and Big Baddeck, Victoria County, and thought to be historic.
Goodyera repens	Lesser Rattlesnake-plantain				S3S4	Shady, moist, coniferous or mixed woods, on mossy or humus-covered ground. Sometimes it is found in bogs or cedar swamps.
Equisetum palustre	Marsh Horsetail				S1	Of wetlands, marshes and swamps. A single collection each from Kings County and Halifax Co.
Equisetum pratense	Meadow Horsetail				S3S4	Known to be in several streams in Hants, Colchester and Cumberland counties, in addition to Victoria and Inverness Counties. Uncommon and limited to alluvial thickets, pastures and treed streamsides, including gravelly bars.
Botrychium lunaria var. lunaria	Moonwort Grapefern				S1	Known from Conrad's Beach, Halifax County and from New Campbellton and Indian Brook in northern Cape Breton. Found on open slopes, sand or gravel; shores and meadows. Basic soils. Anthropogenic habitats (man-made or disturbed habitats), fields and edges of wetlands.
Amelanchier nantucketensis	Nantucket Serviceberry				S1	Found in disturbed habitats such as roadsides, fields, sandplains, riparian meadows and barrens. Its NS distribution is limited to Cumberland, Shelburne and Halifax counties.
Lorinseria areolate	Netted Chain Fern				S3S4	Bogs, meadows and fields, swamps, wetland margins (edges of wetlands).
Ophiogolossum pusillum	Northern Adder's-Tongue				S2S3	Known from Yarmouth and Digby Counties; scattered east to Halifax and Amherst; a single Cape Breton record from George River. Found in sterile soils, swamps and sandy or cobbly lakeshores.

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						Anthropogenic habitats (man-made or disturbed habitats), marshes, meadows, fields and edges of wetland margins.
Andersonglossum boreale	Northern Wild Comfrey				S1	A generalist. along the borders of woods and thickets, along trails and pathways through woods, and within upland deciduous woods. It appears to prefer circumneutral or even calcareous areas.
Vaccinium ovalifolium	Oval-leaved Bilberry				S2	Sterile and dry soils in barrens, thickets and coniferous woods
Platanthera flava var. herbiola	Pale Green Orchid				S2	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forest edges, forests, fresh tidal marshes or flats, grassland, meadows and fields, riverine (in rivers or streams), shrublands or thickets, swamps, wetland margins (edges of wetlands), woodlands.
Hieracium paniculatum	Panicled Hawkweed				S3S4	Mixed forest on dryish soils, especially oak. Occasional from Yarmouth east to Kings and Halifax counties. Common about Kentville and at Keji.
Ranunculus pensylvanicus	Pennsylvania Buttercup				S1	Found in wet fields, ditches, marshes, along shores.
Hudsonia ericoides	Pinebarren Golden Heather				S2	Late May to early in July. Sand barrens and other areas where the soil is dry and rocky, as at Jack Pine barrens at Williams Lake, Halifax Co. Ranges from Shelburne to Halifax counties along the Atlantic shore and known from several localities through the centre of the Annapolis Valley.
Veronica catenate	Pink Water-Speedwell				S1	Shores of rivers or lakes, wetland margins (edges of wetlands)
Toxicodendron vernix	Poison Sumac				S1	Usually found in swampy or marshy habitats.
Angelica atropurpurea	Purple-stemmed Angelica				S3	Grows in swamps, meadows, in ditches and along streams.

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Epilobium coloratum	Purple-veined Willowherb				S4	Scattered from Digby to Guysborough counties - Found in low grounds and seepy soils.
Crataegus submollis	Quebec Hawthorn				S2?	Anthropogenic (man-made or disturbed habitats), forest edges, meadows and fields, shrublands or thickets.
Eleocharis erythropoda	Red-stemmed Spikerush				S1	Fens (calcium-rich wetlands), marshes, shores of rivers or lakes, wetland margins (edges of wetlands).
Plantago rugelii	Rugel's Plantain				S2S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
Plantago rugelii var. rugelii	Rugel's Plantain				S2S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
Cypripedium reginae	Showy Lady's-Slipper				S2	bog, swamp. Widely scattered localities in province
Eriophorum gracile	Slender Cottongrass				S3	wet peat and inundated shores. Scattered eastward from Annapolis and Halifax counties.
Eriophorum gracile var. gracile	Slender Cottongrass				S3	wet peat and inundated shores. Scattered eastward from Annapolis and Halifax counties.
Listera australis	Southern Twayblade				S3	Bog, mixed wood forest, swamps. Scattered from Shelburne, to Halifax, to Kings to Cape Breton counties
Equisetum variegatum	Variegated Horsetail				S4	wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
Equisetum variegatum var. variegatum	Variegated Horsetail				S4	wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
Equisetum variegatum var. variegatum	Variegated Horsetail				S4	wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
Symphyotrichum undulatum	Wavy-leaved Aster				S3	edges of fields and forests. Lunenburg Co. Queens, Hants, Kings and Halifax counties

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Lysimachia quadrifolia	Whorled Yellow Loosestrife				S1	Disturbed habitat, grassland, woodlands
Juncus subcaudatus	Woods-Rush				S3S4	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County
Juncus subcaudatus var. planisepalus	Woods-Rush				S3S4	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County
Mammals						
Lasiurus borealis	Eastern Red Bat				S1	The red bat lives in forests, forest edges and hedgerows. It roosts among foliage, usually in deciduous trees, but it will sometimes roost in coniferous trees.
Lasiurus cinereus	Hoary Bat				S1	Hoary bats are thought to be rare in Nova Scotia. Insectivorous, migratory. Poorly known. Authorities disagree as to the bat's preference for coniferous versus broadleaf trees. Hoary bats are thought to prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks.
Myotis lucifugus	Little Brown Myotis	E	E	E	S1	For Myotis lucifugus, the maternity colonies often exist in warm sites that facilitate pup growth rates, such as attics of buildings and under bridges, in rock crevices, or in cavities of canopy trees in forests. Males roost during daytime in a wide variety of structures, including buildings and bridges (mainly M. lucifugus), rock crevices, behind flaking bark, and within tree cavities, often at many different sites during the summer. Myotis species generally roost in tall, large-diameter snags that are in the early to middle stages of

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						decay and located in open areas within mature-overmature forest.Myotis lucifugus congregates in caves and abandoned mines used for hibernation through the winter. About 16 hibernation sites are known in Nova Scotia.
Sorex dispar	Long-tailed Shrew		NAR		S2	Mountainous, forested areas (deciduous or evergreen) with loose talus. Rocky damp areas with deep crevices covered by leaf mold and roots are preferred. May occur along small mountain streams. Will use artificial talus created by road construction and pit mines. Trapping results reported by Richmond and Grimm suggest that Long-tailed Shrews spend most of their time in the labyrinth of spaces between rocks about a foot beneath the surface. Nest sites are usually associated with natural subterranean tunnels among boulder crevices. Range Map: http://maps.iucnredlist.org/map.html?id=41394
Sorex maritimensis	Maritime Shrew				S3	The maritime shrew is most often found in marshes and wet meadows. It is only found in two provinces in Canada: New Brunswick and Nova Scotia.
Alces americanus	Moose			E	S1	Moose are herbivores who live in boreal and mixed-wood forests. They are often found where there is an abundance of food (twigs, stems, and foliage of young deciduous trees and shrubs). In spring, islands and peninsulas are often used by cows when giving birth. In summer, access to wetlands (and aquatic vegetation) is important.
Myotis septentrionalis	Northern Long-eared Myotis	E	E	E	S1	The Northern Long-eared Bat (Myotis septentrionalis) is found in many regions of Canada. Although there are numerous records of its presence in eastern Canada and the United States, it has only been recorded sporadically in the west. This particular type of bat has two habitats: a winter hibernation habitat as well as a summer roosting and foraging habitat. The Northern

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						Long-eared Bat hibernates in caves or abandoned mines during the cold winter months. During the summer months the Bats commonly use crevices behind peeling bark or cavities in partially-decayed trees as summer day roosts. Within thick forests, summer activity may be focused along watercourses and small ponds
Birds						
Botaurus lentiginosus	American Bittern				S3S4B,S4S5M	Found in marshes and reedy lakes. Breeds in freshwater marshes, mainly large, shallow wetlands with a large amount of tall marsh vegetation (cattails, grasses and sedges) and areas of open shallow water. Sometimes feeds in dry grassy fields. They are rarely seen out in the open, prefers vegeation cover.
Turdus migratorius	American Robin				S5B,S3N	Common in most of Nova Scotia as a year-round resident and for breeding in the very Northern part of the province (mainly Cape Breton). This species occupies many habitat types, such as lawns, farmland, fields and city parks, as well as in more wild places like woodlands, forests, mountains up to near treeline, recently burned forests and tundra. During winter many robins move to moist woods where berry-producing trees and shrubs are common. Males arrive first in the breeding season. Nests where there are trees and mud for nest-making material.
Picoides arcticus	Black-backed Woodpecker				S3S4	In the Maritimes, the black-backed woodpecker is widely but thinly distributed in conifer forests throughout, becoming more common farther north. The black-backed woodpecker is very local in southwest Nova Scotia. These birds forage on trees damaged by forest insects, especially bark beetles, and their characteristic flaking-off of bark fragments in search of food can be an aid in detecting them. Nests here are often in quite open situations, such as cut-

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						over areas, open jack pine stands, and the edges of woodland gardens.
Coccyzus erythropthalmus	Black-billed Cuckoo				S3B	In the northern parts of its range, the black-billed cuckoo's numbers vary greatly from year to year in response to outbreaks of both the forest and orchard species of tent caterpillars, on which it feeds. It is associated with open woodland and forest edge and nests in small trees and tall shrubs.
Choricocephalus ribibundus	Black-headed Gull				S3N	Most of this species in Nova Scotia likely comes from Iceland (followed by a sudden growth of the Icelandic nesting population in the 1930s). In winter, found primarily along seacoasts, estuaries and protected bays (generally rare on fresh waters well inland). Breeds along lakes, rivers, bogs, moors, grasslands, swamps and coastal marshes. Usually nests in colonies, sometimes in isolated pairs.
Dendroica striata	Blackpoll Warbler				S3B,S5M	In the Maritimes, the blackpoll warbler breeds mainly in cool, damp spruce forests. During spring and fall migration, it uses a variety of habitats, although often partial to spruces, even when they are only a small component of the habitat.
Poecile hudsonica	Boreal Chickadee				S3	The Boreal chickadee prefers conifer, and especially spruce, forests all across the northern regions of Canada. Boreal Chickadees are found in all parts of the Maritimes. Most are residents, but some wander after breeding season.
Perisoerus canadensis	Canada Jay				S3	Year-round resident throughout Nova Scotia and commonly referred to as the Gray Jay. No regular migration. On rare occasions, small invasions of Canada Jays will move a short distance out of boreal forest in winter. Prefers boreal and subalpine forests across northern North America, usually where black or white spruce trees are common (also aspen, white birch, balsam fir, sugar maple, jack pine, red spruce,

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						eastern white cedar, etc.). Found in various kinds of coniferous and mixed forest, but rarely occurs where there are no spruce trees. Mated pairs stay together all year and defend permanent territories. Breeding and nesting for this species begins very early, during late winter, with breeding grounds still snow-covered.
Cardellina Canadensis	Canada Warbler	T	SC	E	S3B	Forest undergrowth, shady thickets. Breeds in mature mixed hardwoods of extensive forests and streamside thickets. Prefers to nest in moist habitat: in luxuriant undergrowth, near swamps, on stream banks, in rhododendron thickets, in deep, rocky ravines and in moist deciduous second-growth.
Chaetura pelagica	Chimney Swift	T	T	E	S2S3B,S1M	The chimney swift is most often seen on the wing and while entering their nesting places; these are often in chimneys or old cabins in the forest, but most swifts originally nested, and still nest in hollow trees.
Chordeiles minor	Common Nighthawk	T	SC	T	S3B	Common nighthawks nest on sparsely vegetated or bare ground in open "wastelands" such as pine barrens, forest cut-overs, or burns, and secondarily on flat roofs of buildings.
Accipiter cooperii	Cooper's Hawk		NAR		S1?B	The Cooper's hawk is a bird of broad-leafed and mixed woodlands, often hunting along wood-edges in settled areas.
Sialia sialis	Eastern Bluebird		NAR		S3B	The Eastern bluebird nests in woodpecker holes, as well as nest-boxes. They forage in open areas of low vegetation with scattered trees for nesting.
Tyrannus tyrannus	Eastern Kingbird				S3B	In its breeding range, the eastern kingbird uses open environments; usually breeds in fields with scattered shrubs and trees, orchards, along shelterbelts, and especially along woodland edges in forested regions. A “savannah species”, but given suitable nest sites and perches, will nest in many other habitats—e.g., desert riparian, quaking aspen (Populus tremuloides) parkland, recently burned forest, beaver ponds, golf

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						courses and forested river valleys, and urban environments with tall trees and scattered open spaces. Also appears drawn to water; often nests densely in trees that overhang water or in dead, standing snags surrounded by water.
Contopus virens	Eastern Wood-Pewee	SC	SC	V	S3S4B	The eastern wood-peewee is a bird of openings and edges more than of closed forest, in the Maritimes, and they readily use well-spaced shade trees in rural and urban settlements. Associated with broad-leafed trees.
Passerella iliaca	Fox Sparrow				S3S4B,S5M	The fox sparrow is often associated with dense damp shrubbery of alders and other small broad-leafed trees in its inland range. On Nova Scotia's outer coasts, they will also frequent stunted spruces and shrubby bogs.
Myiarchus crinitus	Great Crested Flycatcher				S1B	A bird of the eastern broad-leafed region. Nests in tree cavities and nest boxes. Sparse breeding records in southwestern Nova Scotia.
Passerina cyanea	Indigo Bunting				S1B	The indigo bunting breeds through much of the eastern temperate broad-leafed forest region. This is a bird of forest-edges, thickets, and shrubbery rather than woodland. A few breeding records exist in southwest Nova Scotia.
Cardinalis cardinalis	Northern Cardinal				S4	Throughout it's range, the Northern cardinal can be found in areas with shrubs and/or small trees, including forest edges and interior, shrubby areas in logged and second-growth forests, marsh edges, grasslands with shrubs, successional fields, hedgerows in agricultural fields, and plantings around buildings. Needs woody plants with dense foliage for nesting, and conspicuous locations for song perches.
Anas clypeata	Northern Shoveler				S2B	Within its breeding range, the Northern shoveler prefers margins of open, shallow wetlands, usually with submergent vegetation in tall-grass and short-grass prairie, sagebrush, and aspen (Populus) parkland,

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						with nearby grasslands or rangelands for nesting. During spring and fall migration, uses small wetlands, especially palustrine mud wetlands. Large, shallow ponds often used during migration and staging, as well.
Contopus cooperi	Olive-sided Flycatcher	T	SC	T	S3B	Olive-sided Flycatcher has been widely observed in open coniferous or mixed coniferous forests, often located near water or wetlands with the presence of tall snags or trees from which the species sallies for prey and advertises its territory. Mature conifer stands within patchy landscapes influenced by natural disturbance (e.g., recent burns) support the highest densities of Olive-sided Flycatcher.
Falco peregrinus	Peregrine Falcon			V	S1B	Found in an array of open habitats such as wetlands, sea coasts, and meadows. Foraging areas are diverse and include urban landscapes, but are typically associated with coastal habitats with an abundance of bird prey. They nest on the steep cliff ledges along the Bay of Fundy. Peregrine Falcons are often observed in the summer soaring along shore lines near the Bay of Fundy (August at Evangeline beach). They are rarely observed during the winter.
Pinicola enucleator	Pine Grosbesk				S3B,S5N,S5M	Found throughout the province year-round. Pine grosbeaks can be found in conifers; in winter, other trees. Breeds in open coniferous forest, especially of spruce and fir. In winter often found in deciduous trees (especially fruiting trees), also in groves of pines and other conifers.
Haemorhous purpureus	Purple Finch				S4S5B,S3S4N,S5M	Found throughout the entire province year-round. Purple finches can be found in woods, groves, suburbs. Breeds mostly in coniferous and mixed woods, both in forest interior and along edges. In migration and winter, found in a wide variety of wooded and semi-open areas, including forest, suburbs, swamps, and overgrown fields.

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Mergus serrator	Red-breasted Merganser				S3S4B,S5M,S5N	Common in Nova Scotia throughout the year in lakes and open water. During the winter, mainly found along the coast in open waters or in coastal bays and estuaries. Red-breasted Mergansers breed in the boreal forest on fresh, brackish and saltwater wetlands (typically close to the coast). They tend to use saltwater, including estuaries and bays, more often than the Common Merganser.
Loxia curvirostra	Red Crossbill				S3S4	Found throughout the entire province year-round. Red Crossbills can be found in conifer forests and groves, and breeds in pines (predominately), spruce, hemlock, Douglas-fir, or other evergreens.
Pheucticus ludovicianus	Rose-breasted Grosbeak				S3B	Look for these birds in forest edges and woodlands. Rose-breasted Grosbeaks breed in moist deciduous forests, deciduous-coniferous forests, thickets, and semiopen habitats. They gravitate toward second-growth woods, suburban areas, parks, gardens, and orchards, as well as shrubby forest edges next to streams, ponds, marshes, roads, or pastures. They favor edges or openings with combination of shrubs and tall trees, rather than unbroken forest.
Tringa solitaria	Solitary Sandpiper				S3S4M	Common migrant in Nova Scotia. A long-distance migrant that mostly migrates alone and at night. They are rarely seen on mudflats or saltmarshes with other shorebirds and will frequent areas with little water in almost any setting, from inner city to forest interior (e.g. fields, ditches, swamps, wooded wetlands at

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						higher elevation, etc.). This bird often stops at lakes, ponds, or streams similar to their nesting habitat (areas with bog habitat and spruce trees), especially where there are extensive muddy margins.
Oreothylpis peregrina	Tennessee Warbler				S3S4B,S5M	Found in deciduous and mixed forests; in migration, groves, brush. Breeds in bogs, swamps, and forests. Prefers openings in second growth balsam-tamarack bogs, or aspen and pine woods, or edges of dense spruce forest, but can be found in many types of wooded habitats in eastern North America. Nests near slight depressions of boggy ground.
Cathartes aura	Turkey Vulture				S2S3B,S4S5M	In past was not surveyed/very rare to see Turkey Vultures in Nova Scotia, but as the climate warms they are now sighted across the province (MBBA and Nova Scotia Bird Society). Look for Turkey Vultures as they soar high over open areas. They are particularly noticeable along roadsides and at landfills. At night, they roost in trees, on rocks and other high secluded spots.
Catharus fuscesens	Veery				S4B	Breeds across Nova Scotia, but more common on the mainland (especially Southern Nova Scotia). Migrates mostly at night. During spring and fall migration, they favour mainly deciduous forest edges and second-growth woodlands. Males tend to arrive on breeding grounds first. Veeries breed in dense, damp, mostly deciduous woodlands, often near rivers, streams and swampy areas (trees include oak, maple, cherry, aspen, birch, alder, spruce and fir, among other trees and shrubs). Veeries gravitate toward disturbed forests, where dense understory provides protected nest sites (but generally along streams and other openings).

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Viero gilbus	Warbling Vireo				S1B	Occurs in deciduous and mixed woods, aspen groves, poplars, shade trees. Breeds in open deciduous or mixed woodland; also in orchards, shade trees of towns.
Gallinago delicata	Wilson's Snipe				S3B,S5M	Common across Nova Scotia during breeding and also known as a permanet resident in the southern areas of the province. Wilson's Snipes can be found in all types of wet, marshy settings, including wet fields, bogs, fens, swamps, wet meadows and along muddy edges of rivers and ponds. They avoid areas with tall, dense vegetation, but need patches of cover to hide in and to provide a safe lookout for predators. During the breeding season they are mainly found around fresh marshes and bogs, shrubby streamsides and northern tundra.
Empidonax flaviventris	Yellow-bellied Flycatcher				S4B,S5M	Common breeder throughout Nova Scotia. Yellow-bellied Flycatchers breed in boreal coniferous forests, bogs, swamps, and peatlands with a thick cover of moss and an understory of shrubs and saplings (e.g. muskegs). In Canada they frequent stands of black spruce with heath, blueberries, laurel and Labrador tea in the understory, but they also use wet boreal forests and deciduous patches near streams. During migration they use deciduous forests, thickets and forest edges. Spring migration is notably late, with most northbound migrants passing through in mid to late May. Almost all migration is through the east.
Herpetofauna						
Hemidactylium scutatum	Four-Toed Salamander				S3	Four-toed salamanders have specialized habitat requirements which require suitable breeding wetlands within or adjacent to mature forests. They prefer mature, mesic forests with dense canopy cover to preserve body moisture, an abundance of downed

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						woody debris for cover and foraging opportunities, and vernal pools, ponds, bogs, shallow marshes, or other fishless bodies of water for nesting and larval success. Wooded wetlands such as seepage swamps or cedar swamps with many moss mats are ideal. Male adults can be located under leaves, bark, and logs in the upland forest, while females are most often found during the breeding season nesting in moss mats which overhang pools of water.
Glyptemys insculpta	Wood Turtle	T	T	T	S2	Wood Turtles are strongly associated with meandering, shallow rivers with sand, gravel, and/or cobble bottoms; these rivers are typically clear, with moderate current and frequent oxbows. Wood Turtles hibernate aquatically in streams and rivers (October to April, depending on location). Overwintering sites are usually on the bottom of deep pools, often with fallen debris that provides structure and prevents dislodging during high flow events. Found throughought the Province with concentrations in Guysborough and Annapolis Counties. Local plants include alders, chokecherry, hawthorn and mixed wood stands of deciduous and coniferous trees.
Lichen						
Pectenia Plumbea	Blue Felt Lichen	E	SC	V	S3	The Blue Felt Lichen is usually found on the trunks of old broad-leaved trees growing in moist habitats or close to streams and lake margins. This lichen occurs in coastal suboceanic areas but also some distance inland in damp valleys. It prefers cool, humid woodlands that may be mixed coniferous/hardwood or dominated by deciduous trees. The Blue Felt Lichen seems to prefer mature deciduous trees, particularly maple, ash and yellow birch.

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
Erioderma pedicellatum	Boreal Felt Lichen	E	E	E	S1	The existing boreal felt lichen occurs within 25 km of the sea coast at an elevation of up to 300 m above sea level and they are found in forested habitats with low open crown closure. Boreal Felt Lichens are typically found in balsam fir stands, on north-facing trunks of mature and overmature trees. Habitat preference for boreal felt lichen is cool and moist and remains relatively constant throughout the year. They are often located on or at the base of slopes with northern or northeastern exposure.
Pannaria lurida	Wrinkled Shingle Lichen	T	T	T	S2S3	The Wrinkled Shingle Lichen colonizes mature deciduous trees, most often Red Maple that grow near, but not usually within, imperfectly drained habitats. Hence, this lichen is found on trees close to the edge of treed swamps or floodplains. The Wrinkled Shingle Lichen most frequently inhabits sites near imperfectly drained, humid habitats dominated by deciduous trees. Such sites are close to the edge of treed swamps or riparian floodplains, or are at the base of moderate to steep slopes. A few occurrences are known from upland hardwood stands at the tops of slopes that are less than 100m in elevation. Only two occurrences are within a few kilometres of the coast. Canopy density is moderately open. The lichen grows on the rough bark of mature trees, mainly on the more sun-exposed sides. Red maple is the main host species, with poplar the second most frequent species. It is also known from Black and White Ash, Sugar Maple, Red Oak and American Beech.
Pannaria lurida ssp. Russellii	Wrinkled Shingle Lichen	T	T	T	S2S3	The Wrinkled Shingle Lichen colonizes mature deciduous trees, most often Red Maple that grow near, but not usually within, imperfectly drained habitats. Hence, this lichen is found on trees close to the edge of treed swamps or floodplains. The Wrinkled Shingle Lichen most frequently inhabits sites near

Scientific Name	Common Name	SARA[i]	COSEWIC[ii]	NSESA[iii]	SRank[iv]	Habitat Requirements
						imperfectly drained, humid habitats dominated by deciduous trees. Such sites are close to the edge of treed swamps or riparian floodplains, or are at the base of moderate to steep slopes. A few occurrences are known from upland hardwood stands at the tops of slopes that are less than 100m in elevation. Only two occurrences are within a few kilometres of the coast. Canopy density is moderately open. The lichen grows on the rough bark of mature trees, mainly on the more sun-exposed sides. Red maple is the main host species, with poplar the second most frequent species. It is also known from Black and White Ash, Sugar Maple, Red Oak and American Beech.
Invertebrates						
Danaus plexippus	Monarch	SC	E	E	S2?B,S3M	The breeding habitat of the Eastern and Western populations in Canada is confined to where milkweeds grow, since leaves of these plants are the sole food of the caterpillars. The different species of milkweeds grow in a variety of environments, including meadows in farmlands, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairie, river banks, irrigation ditches, arid valleys, and south-facing hillsides. Milkweeds are also often planted in gardens. The Monarch is known to breed on native milkweeds within their natural ranges. The most commonly used other sources of nectar are goldenrods (Solidago spp.), asters (Doellingeria, Eurybia, Oclemena, Symphyotrichum and Virgulus), the introduced Purple Loosestrife (Lythrum salicaria), and various clovers (Trifolium spp. and Melilotus spp.)

[i] Government of Canada. 2015. Species at Risk Public Registry. Accessed online, 25 October 2022. https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1

[ii] Government of Canada. 2015. Committee on the Status of Endangered Wildlife in Canada. Accessed online, 25 October 2022. http://www.cosewic.gc.ca/eng/sct5/index_e.cfm

[iii] Province of Nova Scotia. 2015. Categorized List of Species at Risk made under Section 12 of the *Endangered Species Act* S.N.S. 1998, c. 11, N.S. Reg. 21/2015 (March 26, 2013). Accessed online, 25 October 2022. https://www.novascotia.ca/just/regulations/regs/eslist.htm

[iv] Atlantic Canada Conservation Data Centre. 2019. Status Ranks. Accessed online, 25 October 2022. http://accdc.com/en/ranks.html

From: Spencer, Sarah
To: Andy Walter
Cc: BIODIVERSITY; Meyer, Shavonne J
Subject: FW: Location Sensitive Species Confirmation
Date: Monday, October 3, 2022 6:04:42 PM
Attachments: image001.png
report_DrysdaleRdNS_7439.pdf
Drysdale Wetland.dbf
Drysdale Wetland.prj
Drysdale Wetland.sbn
Drysdale Wetland.sbx
Drysdale Wetland.shp
Drysdale Wetland.shx
Drysdale PID Boundary approximate.dbf
Drysdale PID Boundary approximate.prj
Drysdale PID Boundary approximate.sbn
Drysdale PID Boundary approximate.sbx
Drysdale PID Boundary approximate.shp
Drysdale PID Boundary approximate.shx

Hi Andy,

I have reviewed the project site.

There is a wood turtle sighting approximately 3 km to the North of the project site. There is no Critical Habitat within 5 Km of the project site.

There are some bat occurrences one that is 1 km to the NW and 2 more that within 4 kms to the NE. There is no Critical Habitat within 5 km of the project site.

There are 2 Peregrine Falcon sightings approximately 3.5 km to the N of the project site.

If you have any questions let me know,

Sarah Spencer
Species at Risk Biologist
Natural Resources and Renewables
Wildlife Division
136 Exhibition Street
Kentville, N.S.
B4N 4E5
902-541-0081

From: Andy Walter <Andy@mccallumenvironmental.com>
Sent: September 28, 2022 9:51 AM
To: BIODIVERSITY <BIODIVERSITY@novascotia.ca>
Cc: Meyer, Shavonne J <Shavonne.Meyer@novascotia.ca>
Subject: Location Sensitive Species Confirmation

Good morning,

I've received an ACCDC report associated with a wetland alteration application I am preparing, that states to contact you regarding location sensitive species at risk. The ACCDC report lists that Wood Turtle observation, Peregrine Falcon and a bat hibernacula or occurrence is listed within 5 km of my Study Area. Could you please confirm whether these observations are within the Study Area attached?

Thank you,

Andy.

Andy Walter, BSc
SENIOR PROJECT MANAGER
(902) 441-2639

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

DATA REPORT 7439: Drysdale Road, NS

Prepared 20 September 2022
by J. Pender, Data Manager

CONTENTS OF REPORT

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:

Filename	Contents
DrysdaleRdNS_7439ob.xls	Rare or legally-protected Flora and Fauna in your study area
DrysdaleRdNS_7439ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
DrysdaleRdNS_7439msa.xls	Managed and Biologically Significant Areas in your study area

1.2 RESTRICTIONS

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

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	(506) 364-2658	sean.blaney@accdc.ca
Animals (Fauna)	John Klymko	Zoologist	(506) 364-2660	john.klymko@accdc.ca
Data Management, GIS	James Churchill	Conservation Data Analyst / Field Biologist		james.churchill@accdc.ca
Billing	Jean Breau	Financial Manager / Executive Assistant	(506) 364-2657	jean.breau@accdc.ca

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

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

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

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

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

2.0 RARE AND ENDANGERED SPECIES

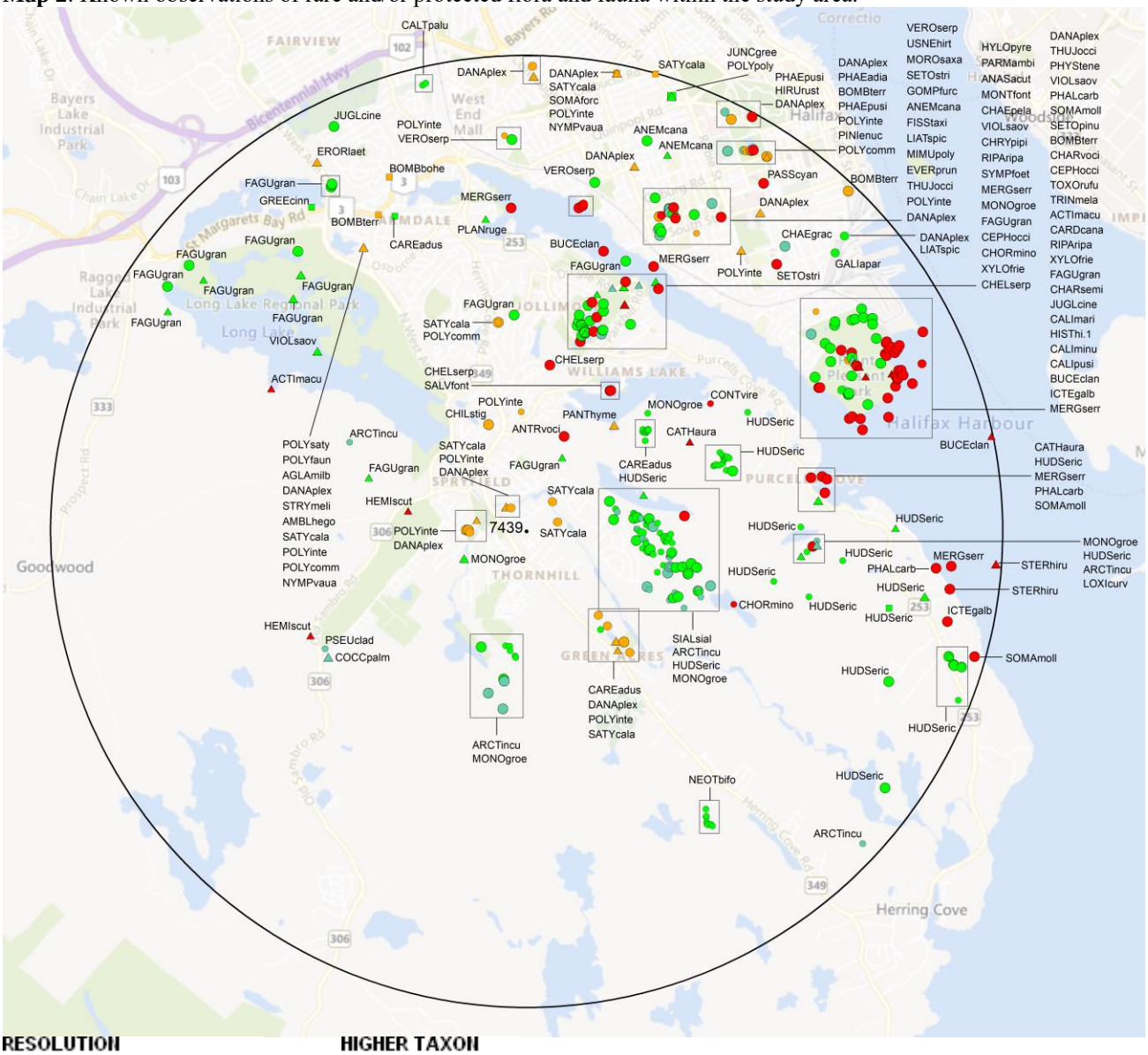
2.1 FLORA

The study area contains 224 records of 20 vascular, 60 records of 13 nonvascular flora (Map 2 and attached: *ob.xls), excluding 'location-sensitive' species.

2.2 FAUNA

The study area contains 91 records of 36 vertebrate, 144 records of 17 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List), excluding 'location-sensitive' species. Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

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



3.0 SPECIAL AREAS

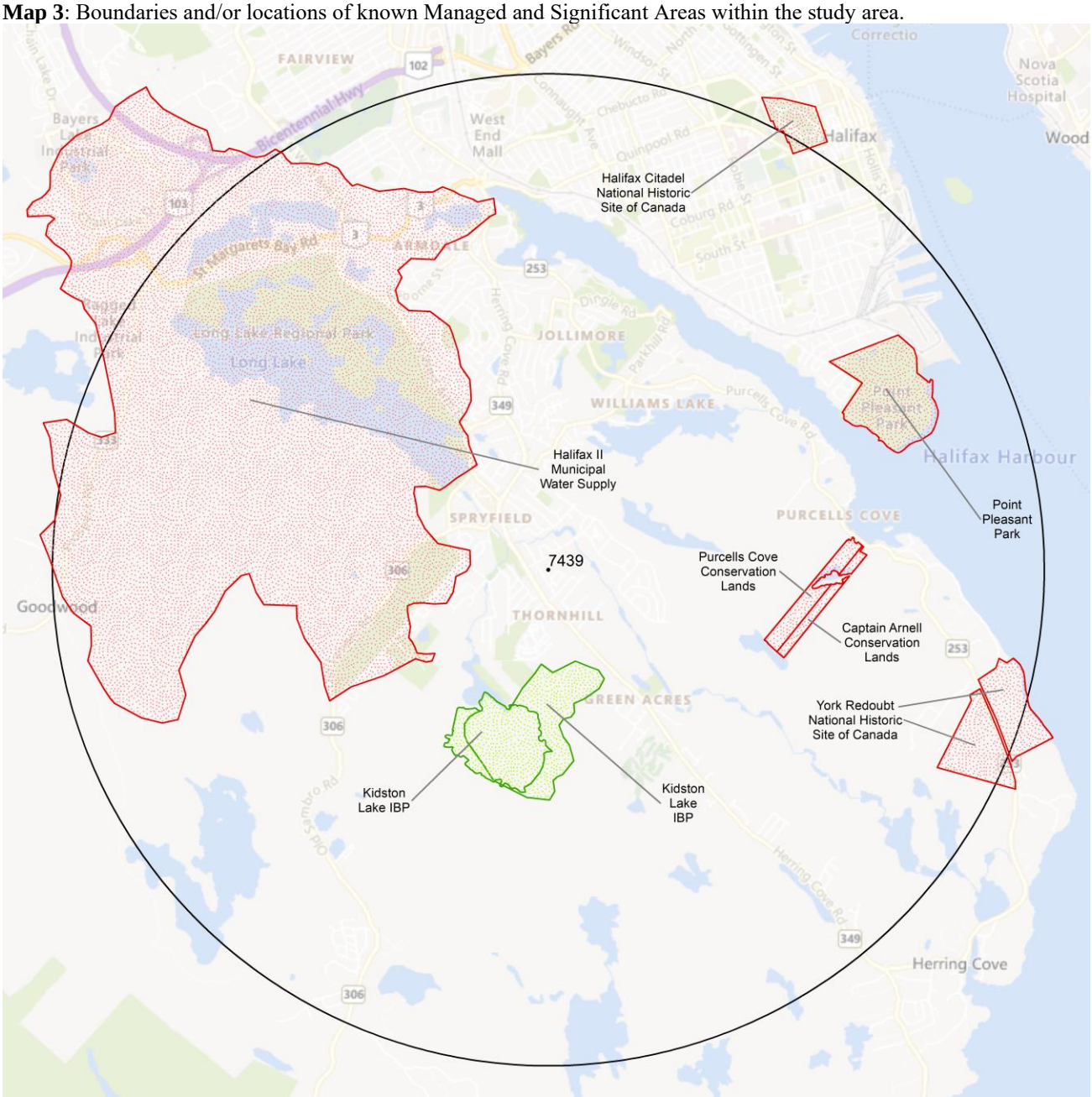
3.1 MANAGED AREAS

The GIS scan identified 6 managed areas in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified 2 biologically significant sites 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 (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	2	2.4 ± 0.0
N	*Xylopsora friesii*	a Lichen				S1S3	2	2.2 ± 0.0
N	*Usnea hirta*	Bristly Beard Lichen				S2S3	2	3.7 ± 0.0
N	*Chaenotheca gracilenta*	a lichen				S2S3	1	4.0 ± 0.0
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	1	2.7 ± 0.0
N	*Fissidens taxifolius*	Yew-leaved Pocket Moss				S3	1	3.7 ± 0.0
N	*Phaeophyscia adiastola*	Powder-tipped Shadow Lichen				S3	1	4.5 ± 0.0
N	*Phaeophyscia pusilloides*	Pompom-tipped Shadow Lichen				S3	3	4.6 ± 0.0
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S3S4	1	2.8 ± 0.0
N	*Arctoparmelia incurva*	Finger Ring Lichen				S3S4	41	1.0 ± 0.0
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	1	2.5 ± 0.0
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	1	3.6 ± 0.0
N	*Evernia prunastri*	Valley Oakmoss Lichen				S3S4	3	3.4 ± 0.0
P	*Juglans cinerea*	Butternut	Endangered	Endangered		SNA	3	3.8 ± 0.0
P	*Liatris spicata*	Dense Blazing Star	Threatened	Threatened		SNA	2	3.5 ± 0.0
P	*Montia fontana*	Water Blinks				S1	1	2.8 ± 1.0
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	100	0.9 ± 0.0
P	*Anemonastrum canadense*	Canada Anemone				S2	4	3.8 ± 0.0
P	*Juncus greenei*	Greene's Rush				S2	1	4.8 ± 10.0
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S2S3	14	3.5 ± 0.0
P	*Polygala polygama*	Racemed Milkwort				S2S3	1	4.8 ± 1.0
P	*Caltha palustris*	Yellow Marsh Marigold				S2S3	2	4.8 ± 0.0
P	*Carex adusta*	Lesser Brown Sedge				S2S3	3	1.3 ± 0.0
P	*Mononeuria groenlandica*	Greenland Stitchwort				S3	29	0.7 ± 1.0
P	*Plantago rugelii*	Rugel's Plantain				S3	1	3.3 ± 0.0
P	*Cephalanthus occidentalis*	Common Buttonbush				S3	6	2.3 ± 0.0
P	*Neottia bifolia*	Southern Twayblade				S3	9	3.5 ± 0.0
P	*Fagus grandifolia*	American Beech				S3S4	36	0.9 ± 0.0
P	*Galium aparine*	Common Bedstraw				S3S4	1	4.4 ± 0.0
P	*Veronica serpyllifolia*	Thyme-Leaved Speedwell				S3S4	3	3.7 ± 0.0
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S3S4	4	2.9 ± 1.0
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3S4	3	2.1 ± 0.0
P	*Greeneochloa coarctata*	Small Reedgrass				SH	1	4.1 ± 6.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1	1.1 ± 0.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2B	4	2.6 ± 1.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	1	2.5 ± 0.0
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S2S3N,SUM	1	4.3 ± 0.0
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	3	1.7 ± 0.0
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Endangered	S3B	1	5.0 ± 0.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Endangered	S3B	1	3.9 ± 0.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	2	2.2 ± 0.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	1	2.4 ± 0.0
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	1	2.4 ± 0.0
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	2	1.3 ± 0.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	2	4.5 ± 0.0
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	1	1.7 ± 0.0
A	*Morone saxatilis*	Striped Bass	E,SC			S2S3B,S2S3N	1	3.6 ± 0.0
A	*Passerina cyanea*	Indigo Bunting				S1?B,SUM	1	4.4 ± 0.0
A	*Mimus polyglottos*	Northern Mockingbird				S1B	1	3.6 ± 0.0
A	*Toxostoma rufum*	Brown Thrasher				S1B	1	3.8 ± 0.0
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S4M	2	3.9 ± 0.0
A	*Calidris minutilla*	Least Sandpiper				S1B,S4M	2	3.9 ± 0.0
A	*Anas acuta*	Northern Pintail				S1B,SUM	1	2.8 ± 0.0
A	*Phalacrocorax carbo*	Great Cormorant				S2S3B,S2S3N	4	3.2 ± 0.0
A	*Cathartes aura*	Turkey Vulture				S2S3B,S4S5M	2	2.0 ± 0.0
A	*Setophaga pinus*	Pine Warbler				S2S3B,S4S5M	1	3.9 ± 0.0
A	*Bucephala clangula*	Common Goldeneye				S2S3B,S5N,S5M	4	3.1 ± 0.0
A	*Icterus galbula*	Baltimore Oriole				S2S3B,SUM	3	3.4 ± 0.0
A	*Salvelinus fontinalis*	Brook Trout				S3	2	1.7 ± 0.0
A	*Charadrius vociferus*	Killdeer				S3B	1	4.2 ± 0.0
A	*Somateria mollissima*	Common Eider				S3B,S3M,S3N	7	3.2 ± 0.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S4M	1	4.2 ± 0.0
A	*Setophaga striata*	Blackpoll Warbler				S3B,S5M	4	3.7 ± 0.0
A	*Pinicola enucleator*	Pine Grosbeak				S3B,S5N,S5M	1	4.7 ± 0.0
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	2	4.2 ± 0.0
A	*Loxia curvirostra*	Red Crossbill				S3S4	1	3.0 ± 0.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	2	3.1 ± 0.0
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5M,S5N	19	2.9 ± 0.0
A	*Calidris maritima*	Purple Sandpiper				S3S4N	7	4.0 ± 0.0
I	*Bombus bohemicus*	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	1	4.0 ± 5.0
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	33	0.3 ± 1.0
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	7	3.7 ± 5.0
I	*Erora laeta*	Early Hairstreak				S1	1	4.5 ± 1.0
I	*Polygonia comma*	Eastern Comma				S1?	7	2.2 ± 0.0
I	*Polygonia satyrus*	Satyr Comma				S1?	4	3.4 ± 1.0
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	2	1.4 ± 1.0
I	*Nymphalis l-album*	Compton Tortoiseshell				S2S3	6	3.4 ± 1.0
I	*Aglais milberti*	Milbert's Tortoiseshell				S2S3	2	3.4 ± 1.0
I	*Chilocorus stigma*	Twice-stabbed Lady Beetle				S3	1	1.2 ± 0.0
I	*Satyrium calanus*	Banded Hairstreak				S3	18	0.3 ± 0.0
I	*Strymon melinus*	Gray Hairstreak				S3	1	3.4 ± 1.0
I	*Somatochlora forcipata*	Forcipate Emerald				S3	2	4.9 ± 1.0
I	*Polygonia interrogationis*	Question Mark				S3B	50	0.3 ± 1.0
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S3S4	6	3.4 ± 1.0
I	*Polygonia faunus*	Green Comma				S3S4	2	3.4 ± 2.0
I	*Gomphaeschna furcillata*	Harlequin Darner				S3S4	1	3.6 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

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

Nova Scotia

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

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

4.4 SOURCE BIBLIOGRAPHY

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

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5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 36948 records of 152 vertebrate and 1232 records of 60 invertebrate fauna; 7855 records of 281 vascular, 2216 records of 178 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 (± 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	*Coregonus huntsmani*	Atlantic Whitefish	Endangered	Endangered	Endangered	S1	147	79.4 ± 1.0	NS
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	292	9.2 ± 0.0	NS
A	*Myotis septentrionalis*	Northern Myotis	Endangered	Endangered	Endangered	S1	26	44.0 ± 0.0	NS
A	*Perimyotis subflavus*	Tricolored Bat	Endangered	Endangered	Endangered	S1	31	44.0 ± 0.0	NS
A	*Emydoidea blandingii*	Blanding's Turtle	Endangered	Endangered	Endangered	S1	1543	91.1 ± 0.0	NS
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered		S1	34	27.5 ± 0.0	NS
A	*Salmo salar pop. 6*	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered			S1	30	12.5 ± 1.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	1057	6.7 ± 0.0	NS
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	66	19.0 ± 0.0	NS
A	*Dermochelys coriacea pop. 2*	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered		S1S2N	3	33.6 ± 5.0	NS
A	*Morone saxatilis pop. 2*	Striped Bass - Bay of Fundy population	Endangered			S2S3B,S2S3N	4	37.9 ± 0.0	NS
A	*Melanerpes erythrocephalus*	Red-headed Woodpecker	Endangered	Threatened		SNA	1	89.9 ± 0.0	NS
A	*Protonotaria citrea*	Prothonotary Warbler	Endangered	Endangered		SNA	1	15.9 ± 0.0	NS
A	*Icteria virens*	Yellow-Breasted Chat	Endangered	Endangered		SNA	5	10.5 ± 0.0	NS
A	*Colinus virginianus*	Northern Bobwhite	Endangered	Endangered			7	26.0 ± 0.0	NS
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	12	1.1 ± 0.0	NS
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern		S1B	10	6.6 ± 7.0	NS
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	831	3.1 ± 0.0	NS
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2B	1396	2.6 ± 1.0	NS
A	*Thamnophis saurita*	Eastern Ribbonsnake	Threatened	Threatened	Threatened	S2S3	384	83.2 ± 0.0	NS
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	812	2.5 ± 0.0	NS
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S2S3M	96	13.0 ± 0.0	NS
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened			S2S3N	7	46.1 ± 0.0	NS
A	*Hydrobates leucorhous*	Leach's Storm-Petrel	Threatened			S3B	29	26.4 ± 0.0	NS
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	891	13.0 ± 0.0	NS
A	*Anguilla rostrata*	American Eel	Threatened			S3N	49	9.4 ± 0.0	NS
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened		SHB	2	39.2 ± 7.0	NS
A	*Melanerpes lewis*	Lewis's Woodpecker	Threatened	Threatened		SNA	1	13.7 ± 0.0	NS
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened		SUB	28	42.6 ± 7.0	NS
A	*Passerculus sandwichensis princeps*	Ipswich Sparrow	Special Concern	Special Concern		S1B	5	12.9 ± 0.0	NS
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern		S1N,SUM	2	80.0 ± 2.0	NS
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	208	5.7 ± 7.0	NS
A	*Balaenoptera physalus*	Fin Whale	Special Concern	Special Concern		S2S3	1	61.3 ± 0.0	NS
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S2S3M	8	13.0 ± 0.0	NS
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S2S3N,SUM	38	4.3 ± 0.0	NS
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	248	1.7 ± 0.0	NS
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Endangered	S3B	970	5.0 ± 0.0	NS
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Endangered	S3B	812	3.9 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	408	2.2 ± 0.0	NS
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	638	7.8 ± 7.0	NS
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Vulnerable	S3B	566	9.4 ± 0.0	NS
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	509	5.7 ± 7.0	NS
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern		S3N,SUM	6	26.3 ± 0.0	NS
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	756	2.4 ± 0.0	NS
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern			S4	5	6.0 ± 0.0	NS
A	*Chrysemys picta*	Painted Turtle	Special Concern	Special Concern		S4	2	83.2 ± 0.0	NS
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	367	2.4 ± 0.0	NS
A	*Calidris subruficollis*	Buff-breasted Sandpiper	Special Concern	Special Concern		SNA	47	13.0 ± 0.0	NS
A	*Zonotrichia querula*	Harris's Sparrow	Special Concern			SNA	1	7.4 ± 0.0	NS
A	*Anarhichas lupus*	Atlantic Wolffish	Special Concern	Special Concern	Special Concern	SNR	1	49.2 ± 0.0	NS
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B,SUN,SUM	3	9.2 ± 0.0	NS
A	*Fulica americana*	American Coot	Not At Risk			S1B	10	8.2 ± 0.0	NS
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SUM	36	3.6 ± 0.0	NS
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	2	92.4 ± 0.0	NS
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S2?B,SUM	4	48.9 ± 7.0	NS
A	*Lynx canadensis*	Canada Lynx	Not At Risk		Endangered	S2S3	2	71.0 ± 1.0	NS
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3	2	16.1 ± 0.0	NS
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	29	1.3 ± 0.0	NS
A	*Megaptera novaeangliae*	Humpback Whale	Not At Risk			S3	1	85.4 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	237	4.5 ± 0.0	NS
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	48	1.7 ± 0.0	NS
A	*Buteo lagopus*	Rough-legged Hawk	Not At Risk			S3N	1	12.5 ± 0.0	NS
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	107	5.7 ± 7.0	NS
A	*Glaucomys volans*	Southern Flying Squirrel	Not At Risk			S3S4	6	73.1 ± 0.0	NS
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	5	13.0 ± 2.0	NS
A	*Ammospiza nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	118	5.7 ± 7.0	NS
A	*Calidris canutus rufa*	Red Knot rufa subspecies - Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	644	13.0 ± 0.0	NS
A	*Morone saxatilis*	Striped Bass	E,SC			S2S3B,S2S3N	8	3.6 ± 0.0	NS
A	*Gadus morhua*	Atlantic Cod	E,SC,DD			SNR	2	19.3 ± 0.0	NS
A	*Alces alces americana*	Moose			Endangered	S1	26	9.2 ± 0.0	NS
A	*Uria aalge*	Common Murre				S1?B	1	19.4 ± 0.0	NS
A	*Passerina cyanea*	Indigo Bunting				S1?B,SUM	15	4.4 ± 0.0	NS
A	*Oxyura jamaicensis*	Ruddy Duck				S1B	1	12.5 ± 0.0	NS
A	*Gallinula galeata*	Common Gallinule				S1B	2	58.4 ± 7.0	NS
A	*Myiarchus crinitus*	Great Crested Flycatcher				S1B	26	6.6 ± 7.0	NS
A	*Cistothorus palustris*	Marsh Wren				S1B	2	63.6 ± 0.0	NS
A	*Mimus polyglottos*	Northern Mockingbird				S1B	40	3.6 ± 0.0	NS
A	*Toxostoma rufum*	Brown Thrasher				S1B	12	3.8 ± 0.0	NS
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S4M	1770	3.9 ± 0.0	NS
A	*Calidris minutilla*	Least Sandpiper				S1B,S4M	1290	3.9 ± 0.0	NS
A	*Anas acuta*	Northern Pintail				S1B,SUM	24	2.8 ± 0.0	NS
A	*Vireo gilvus*	Warbling Vireo				S1B,SUM	18	5.7 ± 0.0	NS
A	*Vespertilionidae sp.*	bat species				S1S2	217	1.1 ± 0.0	NS
A	*Pooecetes gramineus*	Vesper Sparrow				S1S2B,SUM	18	25.8 ± 7.0	NS
A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B,SUM	33	10.5 ± 0.0	NS
A	*Alca torda*	Razorbill				S2B	17	42.7 ± 0.0	NS
A	*Fratercula arctica*	Atlantic Puffin				S2B	20	42.6 ± 0.0	NS
A	*Empidonax traillii*	Willow Flycatcher				S2B	27	6.6 ± 7.0	NS
A	*Molothrus ater*	Brown-headed Cowbird				S2B	142	6.6 ± 7.0	NS
A	*Spatula clypeata*	Northern Shoveler				S2B,SUM	11	11.0 ± 0.0	NS
A	*Mareca strepera*	Gadwall				S2B,SUM	25	6.6 ± 7.0	NS
A	*Piranga olivacea*	Scarlet Tanager				S2B,SUM	40	5.7 ± 7.0	NS
A	*Calidris alba*	Sanderling				S2N,S3M	1380	9.4 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Martes americana*	American Marten			Endangered	S2S3	1	95.6 ± 0.0	NS
A	*Asio otus*	Long-eared Owl				S2S3	20	8.5 ± 7.0	NS
A	*Rallus limicola*	Virginia Rail				S2S3B	17	24.1 ± 0.0	NS
A	*Rissa tridactyla*	Black-legged Kittiwake				S2S3B	7	42.7 ± 0.0	NS
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B	223	7.8 ± 7.0	NS
A	*Phalacrocorax carbo*	Great Cormorant				S2S3B,S2S3N	49	3.2 ± 0.0	NS
A	*Cathartes aura*	Turkey Vulture				S2S3B,S4S5M	25	2.0 ± 0.0	NS
A	*Setophaga pinus*	Pine Warbler				S2S3B,S4S5M	14	3.9 ± 0.0	NS
A	*Bucephala clangula*	Common Goldeneye				S2S3B,S5N,S5M	125	3.1 ± 0.0	NS
A	*Icterus galbula*	Baltimore Oriole				S2S3B,SUM	56	3.4 ± 0.0	NS
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	256	13.0 ± 0.0	NS
A	*Numenius phaeopus hudsonicus*	Whimbrel				S2S3M	255	13.0 ± 0.0	NS
A	*Phalaropus fulicarius*	Red Phalarope				S2S3M	4	13.0 ± 0.0	NS
A	*Perisoreus canadensis*	Canada Jay				S3	451	5.7 ± 7.0	NS
A	*Poecile hudsonicus*	Boreal Chickadee				S3	468	5.7 ± 7.0	NS
A	*Spinus pinus*	Pine Siskin				S3	413	5.7 ± 7.0	NS
A	*Salvelinus fontinalis*	Brook Trout				S3	52	1.7 ± 0.0	NS
A	*Salvelinus namaycush*	Lake Trout				S3	2	41.4 ± 0.0	NS
A	*Synaptomys cooperi*	Southern Bog Lemming				S3	1	92.4 ± 0.0	NS
A	*Pekania pennanti*	Fisher				S3	4	67.6 ± 5.0	NS
A	*Calcarius lapponicus*	Lapland Longspur				S3?N,SUM	3	9.4 ± 0.0	NS
A	*Spatula discors*	Blue-winged Teal				S3B	53	6.6 ± 7.0	NS
A	*Charadrius vociferus*	Killdeer				S3B	513	4.2 ± 0.0	NS
A	*Tringa semipalmata*	Willet				S3B	1662	5.7 ± 7.0	NS
A	*Sterna paradisaea*	Arctic Tern				S3B	63	19.2 ± 0.0	NS
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	42	5.7 ± 7.0	NS
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	169	6.6 ± 7.0	NS
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	316	5.7 ± 7.0	NS
A	*Alosa pseudoharengus*	Alewife				S3B	21	16.1 ± 0.0	NS
A	*Somateria mollissima*	Common Eider				S3B,S3M,S3N	502	3.2 ± 0.0	NS
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S4M	1901	4.2 ± 0.0	NS
A	*Falco sparverius*	American Kestrel				S3B,S4S5M	213	5.7 ± 7.0	NS
A	*Gallinago delicata*	Wilson's Snipe				S3B,S5M	532	5.7 ± 7.0	NS
A	*Setophaga striata*	Blackpoll Warbler				S3B,S5M	107	3.7 ± 0.0	NS
A	*Cardellina pusilla*	Wilson's Warbler				S3B,S5M	69	5.7 ± 7.0	NS
A	*Pinicola enucleator*	Pine Grosbeak				S3B,S5N,S5M	119	4.7 ± 0.0	NS
A	*Setophaga tigrina*	Cape May Warbler				S3B,SUM	129	6.6 ± 0.0	NS
A	*Branta bernicla*	Brant				S3M	2	78.9 ± 0.0	NS
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	1965	9.4 ± 0.0	NS
A	*Arenaria interpres*	Ruddy Turnstone				S3M	771	6.1 ± 1.0	NS
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	1616	4.2 ± 0.0	NS
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	338	13.0 ± 0.0	NS
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	1263	13.0 ± 0.0	NS
A	*Chroicocephalus ridibundus*	Black-headed Gull				S3N	7	9.4 ± 0.0	NS
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	137	5.7 ± 7.0	NS
A	*Loxia curvirostra*	Red Crossbill				S3S4	201	3.0 ± 0.0	NS
A	*Botaurus lentiginosus*	American Bittern				S3S4B,S4S5M	168	6.6 ± 7.0	NS
A	*Setophaga castanea*	Bay-breasted Warbler				S3S4B,S4S5M	318	6.6 ± 7.0	NS
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	705	3.1 ± 0.0	NS
A	*Leiothlypis peregrina*	Tennessee Warbler				S3S4B,S5M	361	5.7 ± 7.0	NS
A	*Passerella iliaca*	Fox Sparrow				S3S4B,S5M	80	5.7 ± 7.0	NS
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5M,S5N	121	2.9 ± 0.0	NS
A	*Calidris maritima*	Purple Sandpiper				S3S4N	180	4.0 ± 0.0	NS
A	*Lanius borealis*	Northern Shrike				S3S4N	1	31.1 ± 0.0	NS
A	*Morus bassanus*	Northern Gannet				SHB	19	5.7 ± 0.0	NS
A	*Aythya americana*	Redhead				SHB	2	7.6 ± 0.0	NS
A	*Leucophaeus atricilla*	Laughing Gull				SHB	11	9.4 ± 0.0	NS

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A	*Progne subis*	Purple Martin				SHB	1	19.3 ± 0.0	NS
A	*Eremophila alpestris*	Horned Lark				SHB,S4S5N,S5M	9	16.7 ± 0.0	NS
I	*Bombus bohemicus*	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	24	4.0 ± 5.0	NS
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	444	0.3 ± 1.0	NS
I	*Danaus plexippus plexippus*	Monarch	Endangered	Special Concern		S2?B,S3M	1	51.5 ± 0.0	NS
I	*Barnea truncata*	Atlantic Mud-piddock	Threatened	Threatened		S1	1	89.2 ± 1.0	NS
I	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Threatened			SH	2	70.9 ± 5.0	NS
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Threatened	S3	5	50.4 ± 0.0	NS
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	81	3.7 ± 5.0	NS
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern		Endangered	SH	3	46.7 ± 2.0	NS
I	*Gomphurus ventricosus*	Skillet Clubtail	Special Concern	Endangered		SH	2	36.6 ± 0.0	NS
I	*Cicindela formosa*	Big Sand Tiger Beetle				S1	1	85.3 ± 1.0	NS
I	*Erora laeta*	Early Hairstreak				S1	1	4.5 ± 1.0	NS
I	*Ophiogomphus anomalus*	Extra-Striped Snaketail				S1	3	97.6 ± 0.0	NS
I	*Pachydiplax longipennis*	Blue Dasher				S1	4	9.7 ± 0.0	NS
I	*Polygonia comma*	Eastern Comma				S1?	19	2.2 ± 0.0	NS
I	*Polygonia satyrus*	Satyr Comma				S1?	7	3.4 ± 2.0	NS
I	*Somatochlora brevicincta*	Quebec Emerald				S1S2	1	27.0 ± 0.0	NS
I	*Satyrium acadica*	Acadian Hairstreak				S2	4	92.5 ± 2.0	NS
I	*Coenagrion resolutum*	Taiga Bluet				S2	2	21.7 ± 1.0	NS
I	*Margaritifera margaritifera*	Eastern Pearlshell				S2	61	41.6 ± 0.0	NS
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	6	1.4 ± 1.0	NS
I	*Nymphalis l-album*	Compton Tortoiseshell				S2S3	17	3.4 ± 1.0	NS
I	*Aglais milberti*	Milbert's Tortoiseshell				S2S3	20	3.4 ± 2.0	NS
I	*Somatochlora kennedyi*	Kennedy's Emerald				S2S3	3	9.2 ± 1.0	NS
I	*Enallagma geminatum*	Skimming Bluet				S2S3	2	82.0 ± 0.0	NS
I	*Stylurus scudderi*	Zebra Clubtail				S2S3	6	36.6 ± 0.0	NS
I	*Alasmidonta undulata*	Triangle Floater				S2S3	21	9.2 ± 0.0	NS
I	*Strophiona nitens*	Chestnut Bark Long-horned Beetle				S3	2	9.5 ± 0.0	NS
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	2	8.5 ± 0.0	NS
I	*Naemia seriata*	Seaside Lady Beetle				S3	13	15.0 ± 0.0	NS
I	*Chilocorus stigma*	Twice-stabbed Lady Beetle				S3	3	1.2 ± 0.0	NS
I	*Trachysida aspera*	Rough Flower Longhorn Beetle				S3	1	12.0 ± 0.0	NS
I	*Astylopsis sexguttata*	Six-speckled Long-horned Beetle				S3	1	22.1 ± 0.0	NS
I	*Satyrium calanus*	Banded Hairstreak				S3	63	0.3 ± 0.0	NS
I	*Callophrys lanoraieensis*	Bog Elfin				S3	20	19.7 ± 2.0	NS
I	*Strymon melinus*	Gray Hairstreak				S3	12	3.4 ± 1.0	NS
I	*Ophiogomphus aspersus*	Brook Snaketail				S3	2	29.4 ± 0.0	NS
I	*Ophiogomphus mainensis*	Maine Snaketail				S3	6	81.7 ± 0.0	NS
I	*Ophiogomphus rupinsulensis*	Rusty Snaketail				S3	23	36.6 ± 0.0	NS
I	*Epitheca princeps*	Prince Baskettail				S3	13	19.7 ± 0.0	NS
I	*Somatochlora forcipata*	Forcipate Emerald				S3	4	4.9 ± 1.0	NS
I	*Enallagma vernale*	Vernal Bluet				S3	5	15.6 ± 1.0	NS
I	*Polygonia interrogationis*	Question Mark				S3B	152	0.3 ± 1.0	NS
I	*Cecropterus pylades*	Northern Cloudywing				S3S4	5	90.0 ± 2.0	NS
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S3S4	25	3.4 ± 2.0	NS
I	*Cupido comyntas*	Eastern Tailed Blue				S3S4	20	30.1 ± 1.0	NS
I	*Argynnis aphrodite*	Aphrodite Fritillary				S3S4	33	13.8 ± 0.0	NS
I	*Polygonia faunus*	Green Comma				S3S4	13	3.4 ± 2.0	NS
I	*Oeneis jutta*	Jutta Arctic				S3S4	4	38.3 ± 2.0	NS
I	*Aeshna clepsydra*	Mottled Darner				S3S4	11	6.4 ± 0.0	NS
I	*Aeshna constricta*	Lance-Tipped Darner				S3S4	17	6.6 ± 1.0	NS
I	*Boyeria grafiana*	Ocellated Darner				S3S4	3	52.0 ± 1.0	NS

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I	*Gomphaeschna furcillata*	Harlequin Darner				S3S4	9	3.6 ± 0.0	NS
I	*Somatochlora franklini*	Delicate Emerald				S3S4	1	38.3 ± 1.0	NS
I	*Erythrodiplax berenice*	Seaside Dragonlet				S3S4	3	58.8 ± 0.0	NS
I	*Nannothemis bella*	Elfin Skimmer				S3S4	17	5.5 ± 1.0	NS
I	*Enallagma vesperum*	Vesper Bluet				S3S4	3	72.8 ± 1.0	NS
I	*Amphiagrion saucium*	Eastern Red Damsel				S3S4	2	88.3 ± 1.0	NS
I	*Sphaerophoria pyrrhina*	Violaceous Globetail				SH	1	86.9 ± 5.0	NS
I	*Icaricia saepiolus*	Greenish Blue				SH	1	5.1 ± 2.0	NS
I	*Polygonia gracilis*	Hoary Comma				SH	1	88.7 ± 2.0	NS
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1	16	38.8 ± 0.0	NS
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	252	7.5 ± 0.0	NS
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened	Threatened	Threatened	S1	8	66.8 ± 0.0	NS
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	139	26.1 ± 1.0	NS
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened	Threatened	S3	43	26.3 ± 0.0	NS
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S3	19	11.7 ± 0.0	NS
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	169	7.1 ± 0.0	NS
N	*Sclerophora peronella (Atlantic pop.)*	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S3S4	23	11.8 ± 0.0	NS
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	16	2.4 ± 0.0	NS
N	*Fissidens exilis*	Pygmy Pocket Moss	Not At Risk			S3	13	54.5 ± 1.0	NS
N	*Chaenotheca servitii*	Flexuous Golden Stubble	Data Deficient			S1	1	99.9 ± 1.0	NS
N	*Aloina brevirostris*	Short-Beaked Rigid Screw Moss				S1	1	51.8 ± 2.0	NS
N	*Sematophyllum demissum*	a Moss				S1	2	23.5 ± 2.0	NS
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				S1	1	99.9 ± 0.0	NS
N	*Blennothallia crispa*	Crinkled Jelly Lichen				S1	1	74.6 ± 0.0	NS
N	*Umbilicaria vellea*	Grizzled Rocktripe Lichen				S1	1	22.5 ± 5.0	NS
N	*Usnea perplexans*	Powdered Beard Lichen				S1	1	75.1 ± 0.0	NS
N	*Scytinium dactylinum*	Brown-buttoned Jellyskin Lichen				S1	1	99.8 ± 0.0	NS
N	*Lathagrium cristatum*	Fingered Jelly Lichen				S1	3	59.4 ± 0.0	NS
N	*Ephebe perspinulosa*	Thread Lichen				S1	1	99.7 ± 1.0	NS
N	*Fuscopannaria praetermissa*	Moss Shingles Lichen				S1	1	56.4 ± 0.0	NS
N	*Scytinium schraderi*	Wrinkled Jellyskin Lichen				S1	1	71.1 ± 0.0	NS
N	*Lichina confinis*	Marine Seaweed Lichen				S1	4	15.7 ± 0.0	NS
N	*Polychidium muscicola*	Eyed Mossthorns Woollybear Lichen				S1	1	83.8 ± 0.0	NS
N	*Pseudevernia consocians*	Common Antler Lichen				S1	1	70.9 ± 0.0	NS
N	*Sticta limbata*	Powdered Moon Lichen				S1	4	36.1 ± 3.0	NS
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S1	5	55.1 ± 0.0	NS
N	*Bryoria nitidula*	Tundra Horsehair Lichen				S1	2	13.2 ± 0.0	NS
N	*Hypogymnia hultenii*	Powdered Honeycomb Lichen				S1	14	26.7 ± 1.0	NS
N	*Calypogeia neogaea*	Common Pouchwort				S1?	1	73.7 ± 0.0	NS
N	*Aloina rigida*	Aloe-Like Rigid Screw Moss				S1?	3	51.8 ± 2.0	NS
N	*Imbribryum muehlenbeckii*	Muehlenbeck's Bryum Moss				S1?	2	65.1 ± 0.0	NS
N	*Conardia compacta*	Coast Creeping Moss				S1?	1	27.0 ± 2.0	NS
N	*Tortula obtusifolia*	a Moss				S1?	3	78.9 ± 0.0	NS
N	*Didymodon tophaceus*	Olive Beard Moss				S1?	1	74.5 ± 0.0	NS
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	3	53.2 ± 0.0	NS
N	*Physcomitrium immersum*	a Moss				S1?	1	87.4 ± 0.0	NS
N	*Schistostega pennata*	Luminous Moss				S1?	1	50.4 ± 0.0	NS
N	*Syntrichia ruralis*	a Moss				S1?	1	18.5 ± 0.0	NS
N	*Melanelia culbersonii*	Appalachain Camouflage Lichen				S1?	1	38.7 ± 0.0	NS
N	*Arrhenopterum*	One-sided Groove Moss				S1S2	3	51.8 ± 2.0	NS

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	heterostichum								
N	*Hypnum pratense*	Meadow Plait Moss				S1S2	1	95.4 ± 3.0	NS
N	*Mnium thomsonii*	Thomson's Leafy Moss				S1S2	1	57.3 ± 2.0	NS
N	*Tortula acaulon*	Cuspidate Earth Moss				S1S2	1	96.8 ± 2.0	NS
N	*Plagiothecium latebricola*	Alder Silk Moss				S1S2	1	48.7 ± 5.0	NS
N	*Platydictya confervoides*	a Moss				S1S2	1	55.2 ± 0.0	NS
N	*Sematophyllum marylandicum*	a Moss				S1S2	2	23.8 ± 3.0	NS
N	*Timmia megapolitana*	Metropolitan Timmia Moss				S1S2	2	92.9 ± 1.0	NS
N	*Tortula mucronifolia*	Mucronate Screw Moss				S1S2	1	93.6 ± 3.0	NS
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	1	66.4 ± 0.0	NS
N	*Haplocladium microphyllum*	Tiny-leaved Haplocladium Moss				S1S2	1	79.6 ± 5.0	NS
N	*Enchylium bachmanianum*	Bachman's Jelly Lichen				S1S2	1	59.6 ± 0.0	NS
N	*Placidium squamulosum*	Limy Soil Stipplescale Lichen				S1S2	1	78.0 ± 6.0	NS
N	*Pilophorus cereolus*	Powdered Matchstick Lichen				S1S2	1	94.2 ± 3.0	NS
N	*Rhizoplaca subdiscrepans*	Scattered Rock-posy Lichen				S1S2	1	39.8 ± 1.0	NS
N	*Parmotrema reticulatum*	Netted Ruffle Lichen				S1S2	1	69.3 ± 0.0	NS
N	*Parmeliella parvula*	Poor-man's Shingles Lichen				S1S2	9	40.3 ± 0.0	NS
N	*Umbilicaria polyrhiza*	Ballpoint Rocktripe Lichen				S1S3	1	77.5 ± 0.0	NS
N	*Lecanora polytropa*	a lichen				S1S3	1	15.6 ± 1.0	NS
N	*Heterodermia galactophylla*	Branching Fringe Lichen				S1S3	1	39.8 ± 0.0	NS
N	*Xylopsora friesii*	a Lichen				S1S3	2	2.2 ± 0.0	NS
N	*Stereocaulon intermedium*	Pacific Brain Foam Lichen				S1S3	2	10.4 ± 0.0	NS
N	*Anacamptodon splachnoides*	a Moss				S2	1	5.3 ± 30.0	NS
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S2	2	26.8 ± 3.0	NS
N	*Sphagnum subnitens*	Lustrous Peat Moss				S2	1	58.7 ± 2.0	NS
N	*Usnea flavocardia*	Blood-splattered Beard Lichen				S2	1	14.1 ± 4.0	NS
N	*Cystocoleus ebeneus*	Rockgossamer Lichen				S2	3	11.8 ± 0.0	NS
N	*Hypotrachyna catawbiensis*	Powder-tipped Antler Lichen				S2	3	39.9 ± 0.0	NS
N	*Scytinium imbricatum*	Scaly Jellyskin Lichen				S2	1	67.2 ± 0.0	NS
N	*Nephroma arcticum*	Arctic Kidney Lichen				S2	1	7.5 ± 1.0	NS
N	*Nephroma resupinatum*	a lichen				S2	11	21.1 ± 0.0	NS
N	*Placynthium flabellosum*	Scaly Ink Lichen				S2	1	46.4 ± 17.0	NS
N	*Riccardia multifida*	Delicate Germanderwort				S2?	1	60.8 ± 0.0	NS
N	*Weissia muhlenbergiana*	a Moss				S2?	5	57.3 ± 1.0	NS
N	*Atrichum angustatum*	Lesser Smoothcap Moss				S2?	2	94.9 ± 5.0	NS
N	*Ptychostomum pendulum*	Drooping Bryum				S2?	1	51.8 ± 2.0	NS
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2?	3	23.5 ± 2.0	NS
N	*Pseudocampylium radicale*	Long-stalked Fine Wet Moss				S2?	1	95.4 ± 3.0	NS
N	*Dicranum condensatum*	Condensed Broom Moss				S2?	3	25.5 ± 0.0	NS
N	*Ditrichum rhynchostegium*	a Moss				S2?	1	11.8 ± 1.0	NS
N	*Grimmia anomala*	Mountain Forest Grimmia				S2?	1	59.1 ± 1.0	NS
N	*Kiaeria starkei*	Starke's Fork Moss				S2?	1	46.9 ± 10.0	NS
N	*Orthotrichum anomalum*	Anomalous Bristle Moss				S2?	1	58.0 ± 2.0	NS
N	*Philonotis marchica*	a Moss				S2?	2	94.8 ± 0.0	NS
N	*Platydictya jungermannioides*	False Willow Moss				S2?	1	52.1 ± 0.0	NS
N	*Cyrtomnium hymenophylloides*	Short-pointed Lantern Moss				S2?	1	7.7 ± 5.0	NS
N	*Platylomella lescurii*	a Moss				S2?	5	37.7 ± 0.0	NS
N	*Phylliscum demangeonii*	Black Rock-wafer Lichen				S2?	4	56.7 ± 0.0	NS
N	*Oxyrrhynchium hians*	Light Beaked Moss				S2S3	4	19.4 ± 5.0	NS
N	*Scorpidium revolvens*	Limprichtia Moss				S2S3	2	27.2 ± 2.0	NS
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle				S2S3	48	5.9 ± 0.0	NS

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N	*Moelleropsis nebulosa ssp. frullaniae*	Blue-gray Moss Shingle Lichen				S2S3	3	58.2 ± 0.0	NS
N	*Ramalina thrausta*	Angelhair Ramalina Lichen				S2S3	11	18.3 ± 5.0	NS
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2S3	63	12.8 ± 1.0	NS
N	*Usnea ceratina*	Warty Beard Lichen				S2S3	2	70.8 ± 0.0	NS
N	*Usnea hirta*	Bristly Beard Lichen				S2S3	2	3.7 ± 0.0	NS
N	*Usnea rubicunda*	Red Beard Lichen				S2S3	5	47.9 ± 0.0	NS
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S2S3	16	18.0 ± 0.0	NS
N	*Usnocetraria oakesiana*	Yellow Band Lichen				S2S3	10	15.6 ± 0.0	NS
N	*Cladonia mateocyatha*	Mixed-up Pixie-cup				S2S3	4	9.3 ± 5.0	NS
N	*Cladonia parasitica*	Fence-rail Lichen				S2S3	2	25.6 ± 0.0	NS
N	*Chaenotheca gracilenta*	a lichen				S2S3	1	4.0 ± 0.0	NS
N	*Scytinium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	6	11.7 ± 0.0	NS
N	*Melanohalea septentrionalis*	Northern Camouflage Lichen				S2S3	1	75.2 ± 0.0	NS
N	*Myelochroa aurulenta*	Powdery Axil-bristle Lichen				S2S3	2	79.8 ± 2.0	NS
N	*Parmelia fertilis*	Fertile Shield Lichen				S2S3	5	64.9 ± 0.0	NS
N	*Hypotrachyna minarum*	Hairless-spined Shield Lichen				S2S3	2	51.7 ± 0.0	NS
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	2	2.7 ± 0.0	NS
N	*Racodium rupestre*	Rockhair Lichen				S2S3	3	20.9 ± 1.0	NS
N	*Umbilicaria polyphylla*	Petalled Rocktripe Lichen				S2S3	1	80.4 ± 2.0	NS
N	*Usnea cavernosa*	Pitted Beard Lichen				S2S3	2	75.1 ± 0.0	NS
N	*Usnea mutabilis*	Bloody Beard Lichen				S2S3	1	75.1 ± 0.0	NS
N	*Fuscopannaria sorediata*	a Lichen				S2S3	4	18.3 ± 0.0	NS
N	*Physcia subtilis*	Slender Rosette Lichen				S2S3	1	49.1 ± 0.0	NS
N	*Dimelaena oreina*	Golden Moonglow Lichen				S2S3	2	6.0 ± 0.0	NS
N	*Cetraria arenaria*	Sand-loving Icelandmoss Lichen				S2S3	1	55.5 ± 0.0	NS
N	*Cladonia coccifera*	Eastern Boreal Pixie-cup Lichen				S2S3	3	13.6 ± 2.0	NS
N	*Cladonia deformis*	Lesser Sulphur-cup Lichen				S2S3	2	58.0 ± 4.0	NS
N	*Cladonia phyllophora*	Felt Lichen				S2S3	2	91.4 ± 4.0	NS
N	*Usnea flammea*	Coastal Bushy Beard Lichen				S2S3	1	15.6 ± 1.0	NS
N	*Ephemerum serratum*	a Moss				S3	3	58.9 ± 5.0	NS
N	*Fissidens taxifolius*	Yew-leaved Pocket Moss				S3	8	3.7 ± 0.0	NS
N	*Anomodon tristis*	a Moss				S3	3	55.7 ± 15.0	NS
N	*Sphagnum contortum*	Twisted Peat Moss				S3	3	73.8 ± 0.0	NS
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3	3	58.7 ± 2.0	NS
N	*Rostania occultata*	Crusted Tarpaper Lichen				S3	1	99.3 ± 0.0	NS
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	23	27.7 ± 0.0	NS
N	*Solorina saccata*	Woodland Owl Lichen				S3	10	51.3 ± 2.0	NS
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	77	9.2 ± 0.0	NS
N	*Heterodermia squamulosa*	Scaly Fringe Lichen				S3	14	57.7 ± 0.0	NS
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	28	5.9 ± 0.0	NS
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S3	9	53.0 ± 0.0	NS
N	*Nephroma bellum*	Naked Kidney Lichen				S3	6	14.1 ± 4.0	NS
N	*Placynthium nigrum*	Common Ink Lichen				S3	1	78.9 ± 0.0	NS
N	*Platismatia norvegica*	Oldgrowth Rag Lichen				S3	1	59.5 ± 0.0	NS
N	*Punctelia appalachensis*	Appalachian Speckleback Lichen				S3	16	93.2 ± 0.0	NS
N	*Viridothelium virens*					S3	3	25.0 ± 2.0	NS
N	*Ephebe lanata*	Waterside Rockshag Lichen				S3	2	46.4 ± 17.0	NS
N	*Phaeophyscia adiastola*	Powder-tipped Shadow Lichen				S3	1	4.5 ± 0.0	NS
N	*Phaeophyscia pusilloides*	Pompom-tipped Shadow Lichen				S3	9	4.6 ± 0.0	NS

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N	*Peltigera collina*	Tree Pelt Lichen				S3	7	12.2 ± 0.0	NS
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3?	2	55.1 ± 0.0	NS
N	*Calliergon giganteum*	Giant Spear Moss				S3?	2	49.3 ± 3.0	NS
N	*Drummondia prorepens*	a Moss				S3?	1	56.0 ± 5.0	NS
N	*Elodium blandowii*	Blandow's Bog Moss				S3?	5	10.9 ± 7.0	NS
N	*Mnium stellare*	Star Leafy Moss				S3?	3	52.7 ± 0.0	NS
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S3?	1	72.4 ± 0.0	NS
N	*Sphagnum riparium*	Streamside Peat Moss				S3?	2	49.2 ± 0.0	NS
N	*Cladonia stygia*	Black-footed Reindeer Lichen				S3?	4	41.6 ± 0.0	NS
N	*Anomodon rugelii*	Rugel's Anomodon Moss				S3S4	1	93.2 ± 0.0	NS
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S3S4	3	20.1 ± 3.0	NS
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	1	25.6 ± 0.0	NS
N	*Encalypta ciliata*	Fringed Extinguisher Moss				S3S4	1	93.6 ± 3.0	NS
N	*Splachnum ampullaceum*	Cruet Dung Moss				S3S4	1	48.4 ± 0.0	NS
N	*Thamnobryum alleghaniense*	a Moss				S3S4	4	83.0 ± 4.0	NS
N	*Tomentypnum nitens*	Golden Fuzzy Fen Moss				S3S4	2	53.2 ± 0.0	NS
N	*Schistidium agassizii*	Elf Bloom Moss				S3S4	3	59.1 ± 1.0	NS
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S3S4	1	2.8 ± 0.0	NS
N	*Enchylium tenax*	Soil Tarpaper Lichen				S3S4	7	51.1 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3S4	63	11.6 ± 0.0	NS
N	*Arctoparmelia incurva*	Finger Ring Lichen				S3S4	70	1.0 ± 0.0	NS
N	*Scytinium teretiusculum*	Curly Jellyskin Lichen				S3S4	8	27.9 ± 0.0	NS
N	*Leptogium acadiense*	Acadian Jellyskin Lichen				S3S4	24	24.0 ± 0.0	NS
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3S4	16	27.9 ± 0.0	NS
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	3	13.6 ± 0.0	NS
N	*Heterodermia speciosa*	Powdered Fringe Lichen				S3S4	32	53.5 ± 0.0	NS
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S3S4	75	18.3 ± 0.0	NS
N	*Melanohalea olivacea*	Spotted Camouflage Lichen				S3S4	1	75.1 ± 0.0	NS
N	*Parmeliopsis hyperopta*	Gray Starburst Lichen				S3S4	1	99.4 ± 0.0	NS
N	*Parmotrema perlatum*	Powdered Ruffle Lichen				S3S4	6	21.1 ± 0.0	NS
N	*Peltigera hymenina*	Cloudy Pelt Lichen				S3S4	2	13.6 ± 2.0	NS
N	*Sphaerophorus fragilis*	Fragile Coral Lichen				S3S4	7	13.6 ± 2.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	373	2.5 ± 0.0	NS
N	*Physcia caesia*	Blue-gray Rosette Lichen				S3S4	2	15.6 ± 1.0	NS
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	5	3.6 ± 0.0	NS
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	63	13.1 ± 0.0	NS
N	*Evernia prunastri*	Valley Oakmoss Lichen				S3S4	31	3.4 ± 0.0	NS
N	*Heterodermia neglecta*	Fringe Lichen				S3S4	92	5.9 ± 0.0	NS
P	*Rhynchospora macrostachya*	Tall Beakrush	Endangered	Endangered	Endangered	S1	7	98.3 ± 0.0	NS
P	*Clethra alnifolia*	Coast Pepper-Bush	Endangered	Threatened	Vulnerable	S2	2	6.5 ± 0.0	NS
P	*Juglans cinerea*	Butternut	Endangered	Endangered		SNA	12	3.8 ± 0.0	NS
P	*Fraxinus nigra*	Black Ash	Threatened		Threatened	S1S2	308	12.9 ± 0.0	NS
P	*Liatris spicata*	Dense Blazing Star	Threatened	Threatened		SNA	3	3.5 ± 0.0	NS
P	*Bartonia paniculata ssp. paniculata*	Branched Bartonia	Threatened	Threatened		SNA	1	91.3 ± 10.0	NS
P	*Lachnanthes caroliniana*	Redroot	Special Concern	Special Concern	Vulnerable	S2	239	97.2 ± 0.0	NS
P	*Lophiola aurea*	Goldencrest	Special Concern	Special Concern	Vulnerable	S2	435	80.1 ± 1.0	NS
P	*Lilaeopsis chinensis*	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S3	150	71.2 ± 0.0	NS
P	*Scirpus longii*	Long's Bulrush	Special Concern		Vulnerable	S3	109	92.8 ± 0.0	NS
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S3	4	98.5 ± 0.0	NS
P	*Floerkea proserpinacoides*	False Mermaidweed	Not At Risk			S2S3	37	91.9 ± 7.0	NS
P	*Acer saccharinum*	Silver Maple				S1	11	89.6 ± 0.0	NS
P	*Osmorhiza depauperata*	Blunt Sweet Cicely				S1	1	80.2 ± 5.0	NS
P	*Andersonglossum boreale*	Northern Wild Comfrey				S1	5	55.0 ± 1.0	NS
P	*Turritis glabra*	Tower Mustard				S1	1	79.4 ± 0.0	NS

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P	*Lobelia spicata*	Pale-Spiked Lobelia				S1	6	85.6 ± 7.0	NS
P	*Ribes americanum*	Wild Black Currant				S1	4	54.5 ± 3.0	NS
P	*Trichostema dichotomum*	Forked Bluecurls				S1	5	97.4 ± 0.0	NS
P	*Fraxinus pennsylvanica*	Red Ash				S1	12	36.4 ± 5.0	NS
P	*Persicaria careyi*	Carey's Smartweed				S1	1	70.6 ± 3.0	NS
P	*Phytolacca americana*	Common Pokeweed				S1	1	10.8 ± 0.0	NS
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S1	4	85.0 ± 0.0	NS
P	*Montia fontana*	Water Blinks				S1	1	2.8 ± 1.0	NS
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	1	26.0 ± 0.0	NS
P	*Salix myrtillifolia*	Blueberry Willow				S1	1	55.6 ± 0.0	NS
P	*Salix serissima*	Autumn Willow				S1	2	55.3 ± 0.0	NS
P	*Carex garberi*	Garber's Sedge				S1	3	95.8 ± 0.0	NS
P	*Carex laxiflora*	Loose-Flowered Sedge				S1	2	92.4 ± 1.0	NS
P	*Carex ormostachya*	Necklace Spike Sedge				S1	1	97.2 ± 5.0	NS
P	*Carex plantaginea*	Plantain-Leaved Sedge				S1	4	91.7 ± 0.0	NS
P	*Carex prairea*	Prairie Sedge				S1	2	93.4 ± 1.0	NS
P	*Carex viridula var. saxilittoralis*	Greenish Sedge				S1	5	72.4 ± 2.0	NS
P	*Scirpus atrovirens*	Dark-green Bulrush				S1	4	50.5 ± 0.0	NS
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S1	6	96.2 ± 0.0	NS
P	*Iris prismatica*	Slender Blue Flag				S1	1	89.4 ± 100.0	NS
P	*Sisyrinchium fuscatum*	Coastal Plain Blue-eyed-grass				S1	1	82.1 ± 0.0	NS
P	*Juncus secundus*	Secund Rush				S1	1	94.9 ± 0.0	NS
P	*Juncus vaseyi*	Vasey Rush				S1	1	96.2 ± 0.0	NS
P	*Trillium grandiflorum*	White Trillium				S1	3	93.4 ± 1.0	NS
P	*Malaxis monophyllos var. brachypoda*	North American White Adder's-mouth				S1	4	86.5 ± 10.0	NS
P	*Spiranthes casei var. casei*	Case's Ladies'-Tresses				S1	1	71.7 ± 0.0	NS
P	*Dichanthelium xanthophysum*	Slender Panic Grass				S1	9	77.3 ± 1.0	NS
P	*Elymus hystrix*	Spreading Wild Rye				S1	11	52.3 ± 0.0	NS
P	*Adiantum pedatum*	Northern Maidenhair Fern				S1	14	44.9 ± 1.0	NS
P	*Dryopteris goldieana*	Goldie's Woodfern				S1	1	63.7 ± 1.0	NS
P	*Equisetum palustre*	Marsh Horsetail				S1	1	87.5 ± 5.0	NS
P	*Botrychium lunaria*	Common Moonwort				S1	8	19.4 ± 0.0	NS
P	*Selaginella rupestris*	Rock Spikemoss				S1	1	54.2 ± 0.0	NS
P	*Solidago hispida*	Hairy Goldenrod				S1?	1	6.6 ± 7.0	NS
P	*Suaeda rolandii*	Roland's Sea-Blite				S1?	5	55.3 ± 2.0	NS
P	*Carex pensylvanica*	Pennsylvania Sedge				S1?	3	30.0 ± 0.0	NS
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S1?	1	17.2 ± 0.0	NS
P	*Allium schoenoprasum*	Wild Chives				S1?	4	79.7 ± 0.0	NS
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S1?	1	88.7 ± 7.0	NS
P	*Crocanthemum canadense*	Long-branched Frostweed			Endangered	S1S2	10	17.0 ± 1.0	NS
P	*Cypripedium arietinum*	Ram's-Head Lady's-Slipper			Endangered	S1S2	281	50.0 ± 0.0	NS
P	*Sanicula odorata*	Clustered Sanicle				S1S2	10	52.5 ± 0.0	NS
P	*Draba glabella*	Rock Whitlow-Grass				S1S2	1	94.4 ± 0.0	NS
P	*Proserpinaca intermedia*	Intermediate Mermaidweed				S1S2	5	50.0 ± 0.0	NS
P	*Anemone virginiana var. alba*	Virginia Anemone				S1S2	5	88.7 ± 7.0	NS
P	*Carex haydenii*	Hayden's Sedge				S1S2	4	86.8 ± 1.0	NS
P	*Platanthera huronensis*	Fragrant Green Orchid				S1S2	1	52.7 ± 10.0	NS
P	*Euphrasia farlowii*	Farlow's Eyebright				S1S3	2	74.1 ± 0.0	NS
P	*Carex vacillans*	Estuarine Sedge				S1S3	1	62.4 ± 0.0	NS
P	*Zizia aurea*	Golden Alexanders				S2	37	74.9 ± 0.0	NS
P	*Antennaria parlinii ssp. fallax*	Parlin's Pussytoes				S2	23	51.7 ± 0.0	NS

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P	*Rudbeckia laciniata*	Cut-Leaved Coneflower				S2	11	36.8 ± 7.0	NS
P	*Rudbeckia laciniata var. laciniata*	Cut-Leaved Coneflower				S2	9	77.5 ± 3.0	NS
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S2	1	94.1 ± 0.0	NS
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	136	0.9 ± 0.0	NS
P	*Desmodium canadense*	Canada Tick-trefoil				S2	12	80.5 ± 1.0	NS
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S2	20	55.1 ± 0.0	NS
P	*Conopholis americana*	American Cancer-root				S2	15	74.9 ± 7.0	NS
P	*Anemonastrum canadense*	Canada Anemone				S2	13	3.8 ± 0.0	NS
P	*Hepatica americana*	Round-lobed Hepatica				S2	67	49.6 ± 0.0	NS
P	*Ranunculus sceleratus*	Cursed Buttercup				S2	24	6.9 ± 2.0	NS
P	*Galium boreale*	Northern Bedstraw				S2	5	86.5 ± 7.0	NS
P	*Gratiola neglecta*	Clammy Hedge-Hyssop				S2	4	76.5 ± 2.0	NS
P	*Dirca palustris*	Eastern Leatherwood				S2	66	44.9 ± 1.0	NS
P	*Carex gynocrates*	Northern Bog Sedge				S2	2	55.6 ± 0.0	NS
P	*Carex pellita*	Woolly Sedge				S2	2	77.2 ± 10.0	NS
P	*Carex livida*	Livid Sedge				S2	13	17.6 ± 0.0	NS
P	*Juncus greenei*	Greene's Rush				S2	5	4.8 ± 10.0	NS
P	*Allium tricoccum*	Wild Leek				S2	54	90.9 ± 5.0	NS
P	*Lilium canadense*	Canada Lily				S2	60	42.7 ± 0.0	NS
P	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper				S2	21	26.4 ± 7.0	NS
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	11	52.3 ± 0.0	NS
P	*Cypripedium reginae*	Showy Lady's-Slipper				S2	48	47.7 ± 0.0	NS
P	*Platanthera flava var. flava*	Southern Rein Orchid				S2	10	77.0 ± 0.0	NS
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S2	9	77.8 ± 1.0	NS
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S2	2	60.5 ± 1.0	NS
P	*Bromus latiglumis*	Broad-Glumed Brome				S2	28	78.3 ± 0.0	NS
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S2	55	77.0 ± 0.0	NS
P	*Elymus wiegandii*	Wiegand's Wild Rye				S2	6	6.6 ± 7.0	NS
P	*Festuca subverticillata*	Nodding Fescue				S2	9	66.5 ± 7.0	NS
P	*Piptatheropsis pungens*	Slender Ricegrass				S2	7	63.4 ± 10.0	NS
P	*Cryptogramma stelleri*	Steller's Rockbrake				S2	3	59.3 ± 0.0	NS
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2?	1	33.3 ± 0.0	NS
P	*Rumex persicarioides*	Peach-leaved Dock				S2?	1	48.1 ± 0.0	NS
P	*Crataegus submollis*	Quebec Hawthorn				S2?	5	36.7 ± 7.0	NS
P	*Carex peckii*	White-Tinged Sedge				S2?	4	51.9 ± 0.0	NS
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S2S3	35	3.5 ± 0.0	NS
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2S3	16	55.4 ± 0.0	NS
P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2S3	2	78.5 ± 1.0	NS
P	*Lactuca hirsuta*	Hairy Lettuce				S2S3	3	28.2 ± 7.0	NS
P	*Impatiens pallida*	Pale Jewelweed				S2S3	3	75.9 ± 0.0	NS
P	*Caulophyllum thalictroides*	Blue Cohosh				S2S3	59	44.5 ± 7.0	NS
P	*Draba arabisans*	Rock Whitlow-Grass				S2S3	10	92.4 ± 1.0	NS
P	*Boechera stricta*	Drummond's Rockcress				S2S3	9	92.4 ± 1.0	NS
P	*Stellaria humifusa*	Saltmarsh Starwort				S2S3	4	62.1 ± 0.0	NS
P	*Oxybasis rubra*	Red Goosefoot				S2S3	2	72.4 ± 2.0	NS
P	*Hypericum majus*	Large St John's-wort				S2S3	4	6.6 ± 7.0	NS
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2S3	4	11.7 ± 10.0	NS
P	*Empetrum atropurpureum*	Purple Crowberry				S2S3	5	6.8 ± 7.0	NS
P	*Euphorbia polygonifolia*	Seaside Spurge				S2S3	11	58.2 ± 3.0	NS
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S2S3	9	37.4 ± 1.0	NS
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	14	20.7 ± 5.0	NS
P	*Oenothera fruticosa ssp. tetragona*	Narrow-leaved Evening Primrose				S2S3	7	7.8 ± 7.0	NS
P	*Polygala polygama*	Racemed Milkwort				S2S3	1	4.8 ± 1.0	NS

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P	*Polygonum aviculare ssp. buxiforme*	Box Knotweed				S2S3	8	46.7 ± 7.0	NS
P	*Polygonum oxyspermum ssp. raii*	Ray's Knotweed				S2S3	5	44.3 ± 1.0	NS
P	*Polygonum oxyspermum*	Sharp-fruit Knotweed				S2S3	1	19.3 ± 0.0	NS
P	*Rumex triangulivalvis*	Triangular-valve Dock				S2S3	9	36.9 ± 0.0	NS
P	*Primula mistassinica*	Mistassini Primrose				S2S3	16	83.8 ± 1.0	NS
P	*Anemone quinquefolia*	Wood Anemone				S2S3	13	60.5 ± 0.0	NS
P	*Caltha palustris*	Yellow Marsh Marigold				S2S3	7	4.8 ± 0.0	NS
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S2S3	1	77.8 ± 7.0	NS
P	*Potentilla canadensis*	Canada Cinquefoil				S2S3	7	13.3 ± 0.0	NS
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2S3	1	95.6 ± 0.0	NS
P	*Salix pellita*	Satiny Willow				S2S3	3	65.5 ± 4.0	NS
P	*Tiarella cordifolia*	Heart-leaved Foamflower				S2S3	6	50.9 ± 0.0	NS
P	*Boehmeria cylindrica*	Small-spike False-nettle				S2S3	49	45.3 ± 0.0	NS
P	*Carex adusta*	Lesser Brown Sedge				S2S3	6	1.3 ± 0.0	NS
P	*Carex comosa*	Bearded Sedge				S2S3	4	57.8 ± 5.0	NS
P	*Carex houghtoniana*	Houghton's Sedge				S2S3	1	69.3 ± 1.0	NS
P	*Carex hystericina*	Porcupine Sedge				S2S3	7	88.8 ± 0.0	NS
P	*Eleocharis ovata*	Ovate Spikerush				S2S3	4	29.5 ± 0.0	NS
P	*Scirpus pedicellatus*	Stalked Bulrush				S2S3	7	46.0 ± 0.0	NS
P	*Vallisneria americana*	Wild Celery				S2S3	11	40.0 ± 1.0	NS
P	*Najas gracillima*	Thread-Like Naiad				S2S3	2	44.2 ± 0.0	NS
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S2S3	16	48.6 ± 1.0	NS
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2S3	13	50.6 ± 1.0	NS
P	*Potamogeton friesii*	Fries' Pondweed				S2S3	10	87.0 ± 1.0	NS
P	*Woodsia glabella*	Smooth Cliff Fern				S2S3	1	98.6 ± 1.0	NS
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S2S3	4	66.3 ± 5.0	NS
P	*Botrychium simplex*	Least Moonwort				S2S3	7	39.7 ± 0.0	NS
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	5	5.0 ± 50.0	NS
P	*Potamogeton pulcher*	Spotted Pondweed			Vulnerable	S3	18	72.7 ± 0.0	NS
P	*Angelica atropurpurea*	Purple-stemmed Angelica				S3	1	80.4 ± 0.0	NS
P	*Conioselinum chinense*	Chinese Hemlock-parsley				S3	1	62.7 ± 0.0	NS
P	*Hieracium robinsonii*	Robinson's Hawkweed				S3	2	87.2 ± 1.0	NS
P	*Iva frutescens*	Big-leaved Marsh-elder				S3	35	54.1 ± 0.0	NS
P	*Senecio pseudoarnica*	Seabeach Ragwort				S3	23	13.7 ± 1.0	NS
P	*Symphyotrichum boreale*	Boreal Aster				S3	5	33.7 ± 5.0	NS
P	*Symphyotrichum undulatum*	Wavy-leaved Aster				S3	111	16.9 ± 1.0	NS
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S3	17	55.0 ± 0.0	NS
P	*Alnus serrulata*	Smooth Alder				S3	108	79.5 ± 0.0	NS
P	*Betula michauxii*	Michaux's Dwarf Birch				S3	63	26.9 ± 0.0	NS
P	*Betula pumila*	Bog Birch				S3	3	52.9 ± 0.0	NS
P	*Cardamine parviflora*	Small-flowered Bittercress				S3	14	25.9 ± 1.0	NS
P	*Palustricodon aparinoides*	Marsh Bellflower				S3	14	58.6 ± 1.0	NS
P	*Mononeuria groenlandica*	Greenland Stitchwort				S3	138	0.7 ± 1.0	NS
P	*Sagina nodosa*	Knotted Pearlwort				S3	54	7.7 ± 0.0	NS
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S3	10	17.5 ± 0.0	NS
P	*Stellaria longifolia*	Long-leaved Starwort				S3	10	41.9 ± 5.0	NS
P	*Ceratophyllum echinatum*	Prickly Hornwort				S3	7	77.6 ± 0.0	NS
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S3	35	50.2 ± 0.0	NS
P	*Crassula aquatica*	Water Pygmyweed				S3	1	27.5 ± 0.0	NS
P	*Empetrum eamesii*	Pink Crowberry				S3	93	5.7 ± 1.0	NS
P	*Vaccinium uliginosum*	Alpine Bilberry				S3	3	11.9 ± 1.0	NS
P	*Halenia deflexa*	Spurred Gentian				S3	3	21.3 ± 0.0	NS
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	15	59.2 ± 3.0	NS
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	3	58.0 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Utricularia resupinata*	Inverted Bladderwort				S3	2	93.5 ± 0.0	NS
P	*Epilobium strictum*	Downy Willowherb				S3	9	59.6 ± 0.0	NS
P	*Polygala sanguinea*	Blood Milkwort				S3	13	6.6 ± 7.0	NS
P	*Persicaria arifolia*	Halberd-leaved Tearthumb				S3	9	52.7 ± 0.0	NS
P	*Plantago rugelii*	Rugel's Plantain				S3	7	3.3 ± 0.0	NS
P	*Primula laurentiana*	Laurentian Primrose				S3	10	86.6 ± 7.0	NS
P	*Samolus parviflorus*	Seaside Brookweed				S3	47	6.6 ± 5.0	NS
P	*Pyrola minor*	Lesser Pyrola				S3	2	8.6 ± 0.0	NS
P	*Anemone virginiana*	Virginia Anemone				S3	17	52.5 ± 5.0	NS
P	*Cephalanthus occidentalis*	Common Buttonbush				S3	380	2.3 ± 0.0	NS
P	*Galium labradoricum*	Labrador Bedstraw				S3	79	52.6 ± 0.0	NS
P	*Salix pedicellaris*	Bog Willow				S3	122	41.8 ± 0.0	NS
P	*Salix sericea*	Silky Willow				S3	122	35.7 ± 1.0	NS
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S3	2	86.5 ± 7.0	NS
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3	8	54.5 ± 0.0	NS
P	*Laportea canadensis*	Canada Wood Nettle				S3	43	44.7 ± 0.0	NS
P	*Pilea pumila*	Dwarf Clearweed				S3	6	16.3 ± 0.0	NS
P	*Viola nephrophylla*	Northern Bog Violet				S3	5	65.1 ± 1.0	NS
P	*Carex bebbii*	Bebb's Sedge				S3	24	52.3 ± 0.0	NS
P	*Carex castanea*	Chestnut Sedge				S3	26	52.6 ± 0.0	NS
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3	12	34.6 ± 6.0	NS
P	*Carex eburnea*	Bristle-leaved Sedge				S3	10	70.9 ± 1.0	NS
P	*Carex hirtifolia*	Pubescent Sedge				S3	29	52.4 ± 2.0	NS
P	*Carex lupulina*	Hop Sedge				S3	52	26.4 ± 1.0	NS
P	*Carex rosea*	Rosy Sedge				S3	33	51.7 ± 2.0	NS
P	*Carex swanii*	Swan's Sedge				S3	4	9.4 ± 0.0	NS
P	*Carex tenera*	Tender Sedge				S3	4	54.5 ± 0.0	NS
P	*Carex tribuloides*	Blunt Broom Sedge				S3	13	54.1 ± 0.0	NS
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	27	52.6 ± 2.0	NS
P	*Eleocharis nitida*	Quill Spikerush				S3	7	52.1 ± 5.0	NS
P	*Eleocharis flavescens var. olivacea*	Bright-green Spikerush				S3	8	15.6 ± 0.0	NS
P	*Eriophorum gracile*	Slender Cottongrass				S3	6	24.0 ± 1.0	NS
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S3	3	74.3 ± 1.0	NS
P	*Cypripedium parviflorum*	Yellow Lady's-slipper				S3	545	49.4 ± 1.0	NS
P	*Neottia bifolia*	Southern Twayblade				S3	114	3.5 ± 0.0	NS
P	*Platanthera flava*	Southern Rein-Orchid				S3	33	77.1 ± 0.0	NS
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	39	5.5 ± 0.0	NS
P	*Platanthera hookeri*	Hooker's Orchid				S3	16	54.3 ± 1.0	NS
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S3	8	58.4 ± 7.0	NS
P	*Piptatheropsis canadensis*	Canada Ricegrass				S3	17	28.4 ± 7.0	NS
P	*Poa glauca*	Glaucous Blue Grass				S3	2	55.2 ± 1.0	NS
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	2	76.6 ± 5.0	NS
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	7	62.6 ± 0.0	NS
P	*Potamogeton zosteriformis*	Flat-stemmed Pondweed				S3	15	42.2 ± 5.0	NS
P	*Asplenium viride*	Green Spleenwort				S3	4	93.0 ± 7.0	NS
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3	1	99.1 ± 1.0	NS
P	*Sceptridium dissectum*	Dissected Moonwort				S3	2	74.2 ± 0.0	NS
P	*Polypodium appalachianum*	Appalachian Polypody				S3	17	53.0 ± 0.0	NS
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S3?	20	46.0 ± 0.0	NS
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S3?	26	15.0 ± 0.0	NS
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3?	1	89.0 ± 0.0	NS
P	*Bidens vulgata*	Tall Beggarticks				S3S4	6	6.6 ± 0.0	NS
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3S4	24	50.9 ± 7.0	NS
P	*Hieracium paniculatum*	Panicled Hawkweed				S3S4	22	48.1 ± 11.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Bidens beckii*	Water Beggarticks				S3S4	8	41.3 ± 0.0	NS
P	*Packera paupercula*	Balsam Groundsel				S3S4	90	49.9 ± 0.0	NS
P	*Packera paupercula var. paupercula*	Balsam Groundsel				S3S4	1	51.5 ± 0.0	NS
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S3S4	13	60.2 ± 0.0	NS
P	*Shepherdia canadensis*	Soapberry				S3S4	101	44.3 ± 7.0	NS
P	*Vaccinium boreale*	Northern Blueberry				S3S4	2	52.3 ± 0.0	NS
P	*Vaccinium cespitosum*	Dwarf Bilberry				S3S4	55	15.3 ± 0.0	NS
P	*Vaccinium corymbosum*	Highbush Blueberry				S3S4	2	9.3 ± 5.0	NS
P	*Fagus grandifolia*	American Beech				S3S4	246	0.9 ± 0.0	NS
P	*Bartonia virginica*	Yellow Bartonia				S3S4	31	14.9 ± 7.0	NS
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S3S4	28	11.7 ± 1.0	NS
P	*Nuphar microphylla*	Small Yellow Pond-lily				S3S4	1	41.7 ± 0.0	NS
P	*Persicaria pensylvanica*	Pennsylvania Smartweed				S3S4	23	45.7 ± 7.0	NS
P	*Fallopia scandens*	Climbing False Buckwheat				S3S4	15	11.5 ± 0.0	NS
P	*Rumex pallidus*	Seabeach Dock				S3S4	1	41.0 ± 0.0	NS
P	*Pyrola asarifolia*	Pink Pyrola				S3S4	9	42.7 ± 50.0	NS
P	*Endotropis alnifolia*	alder-leaved buckthorn				S3S4	162	45.0 ± 0.0	NS
P	*Amelanchier spicata*	Running Serviceberry				S3S4	43	17.0 ± 0.0	NS
P	*Crataegus succulenta*	Fleshy Hawthorn				S3S4	1	15.5 ± 0.0	NS
P	*Fragaria vesca ssp. americana*	Woodland Strawberry				S3S4	65	45.3 ± 0.0	NS
P	*Galium aparine*	Common Bedstraw				S3S4	33	4.4 ± 0.0	NS
P	*Geocaulon lividum*	Northern Comandra				S3S4	3	64.7 ± 0.0	NS
P	*Limosella australis*	Southern Mudwort				S3S4	10	8.9 ± 3.0	NS
P	*Veronica serpyllifolia*	Thyme-Leaved Speedwell				S3S4	52	3.7 ± 0.0	NS
P	*Ulmus americana*	White Elm				S3S4	57	5.3 ± 0.0	NS
P	*Verbena hastata*	Blue Vervain				S3S4	121	14.6 ± 7.0	NS
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S3S4	21	2.9 ± 1.0	NS
P	*Viola selkirkii*	Great-Spurred Violet				S3S4	3	49.5 ± 4.0	NS
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3S4	3	2.1 ± 0.0	NS
P	*Carex argyrantha*	Silvery-flowered Sedge				S3S4	9	50.3 ± 1.0	NS
P	*Sisyrinchium atlanticum*	Eastern Blue-Eyed-Grass				S3S4	18	61.8 ± 0.0	NS
P	*Triglochin gaspensis*	Gasp ├ Arrowgrass				S3S4	28	21.3 ± 0.0	NS
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	5	15.8 ± 0.0	NS
P	*Juncus subcaudatus*	Woods-Rush				S3S4	24	18.2 ± 0.0	NS
P	*Luzula parviflora ssp. melanocarpa*	Black-fruited Woodrush				S3S4	2	91.3 ± 0.0	NS
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3S4	5	66.0 ± 0.0	NS
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	7	25.7 ± 0.0	NS
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	7	6.6 ± 10.0	NS
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3S4	5	49.5 ± 4.0	NS
P	*Alopecurus aequalis*	Short-awned Foxtail				S3S4	7	49.6 ± 0.0	NS
P	*Dichanthelium clandestinum*	Deer-tongue Panic Grass				S3S4	286	15.9 ± 0.0	NS
P	*Coleataenia longifolia*	Long-leaved Panicgrass				S3S4	317	92.2 ± 0.0	NS
P	*Panicum philadelphicum*	Philadelphia Panicgrass				S3S4	8	54.5 ± 0.0	NS
P	*Koeleria spicata*	Narrow False Oats				S3S4	11	51.8 ± 0.0	NS
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3S4	14	75.3 ± 0.0	NS
P	*Equisetum pratense*	Meadow Horsetail				S3S4	15	52.4 ± 0.0	NS
P	*Diphasiastrum complanatum*	Northern Ground-cedar				S3S4	11	7.4 ± 1.0	NS
P	*Diphasiastrum sitchense*	Sitka Ground-cedar				S3S4	2	80.2 ± 1.0	NS
P	*Huperzia appressa*	Mountain Firmoss				S3S4	7	75.7 ± 7.0	NS
P	*Sceptridium multifidum*	Leathery Moonwort				S3S4	8	66.7 ± 10.0	NS
P	*Botrychium matricariifolium*	Daisy-leaved Moonwort				S3S4	4	19.5 ± 0.0	NS
P	*Viola canadensis*	Canada Violet				SH	2	58.7 ± 0.0	NS
P	*Greeneochloa coarctata*	Small Reedgrass				SH	1	4.1 ± 6.0	NS

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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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59	Hill, N.M. 1994. Status report on the Long's bulrush Scirpus longii in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
59	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
58	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
55	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
55	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
55	McNeil, J.A. 2019. Blanding's Turtle records, 2019. Mersey Tobeatic Research Institute.
53	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
53	Churchill, J.L. 2020. Atlantic Canada Conservation Data Centre Fieldwork 2020. Atlantic Canada Conservation Data Centre, 1083 recs.
53	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.
52	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
45	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
45	MacDonald, E.C. 2018. Piping Plover nest records from 2010-2017. Canadian Wildlife Service.
44	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
41	Chapman-Lam, C.J. 2021. Atlantic Canada Conservation Data Centre 2020 botanical fieldwork. Atlantic Canada Conservation Data Centre, 17309 recs.
40	Cameron, E. 2007. Canadian Gypsum Co. survey 2005-07. Dillon Consulting Ltd, 40 recs.
39	Mersey Tobetic Research Institute. 2021. 2020 Monarch records from the MTRI monitoring program. Mersey Tobetic Research Institute, 72 records.
39	Toms, Brad. 2011. Atlantic Coastal Plain Flora records 2010. Mersey-Tobiatic Research Institute, 1074 recs.
38	Atlantic Canada Conservation Data Centre. 2020. Cape LaHave Island observations from August 2020. Atlantic Canada Conservation Data Centre, 605 records.
38	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
38	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
37	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
37	Tsehtik, M.; Leblanc, M.; Creaser, T. 2020. Coastal Action: 2020 Species at Risk Data. Coastal Action, 40 records.
36	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
36	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre, 2318 recs.
33	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
33	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
33	McNeil, J.A. 2019. Snapping Turtle records, 2019. Mersey Tobeatic Research Institute.
32	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
32	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
32	Westwood, A., Staicer, C. 2016. Nova Scotia landbird Species at Risk observations. Dalhousie University.
31	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
30	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
30	Cameron, R.P. 2018. Degelia plumbea records. Nova Scotia Environment.
30	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
30	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
30	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.

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28	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
27	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records. 296 recs.
26	Ferguson, D.C. 1954. The Lepidoptera of Nova Scotia. Part I, macrolepidoptera. Proceedings of the Nova Scotian Institute of Science, 23(3), 161-375.
26	Neily, T.H. 2013. Email communication to Sean Blaney regarding Listera australis observations made from 2007 to 2011 in Nova Scotia. , 50.
25	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
24	Belliveau, A.G. 2021. New Black ash site records near Kentville, NS. Acadia University, 47 records.
24	LaPaix, Rich. 2022. Rare species observations, 2018-2022. Nova Scotia Nature Trust.
24	Neily, T.H. & Pepper, C.; Toms, B. 2015. Nova Scotia lichen location database [as of 2015-02-15]. Mersey Tobeatic Research Institute, 1691 records.
24	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
23	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
22	Breen, A. 2018. 2018 Atlantic Whitefish observations. Coastal Action.
22	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
22	Nelly, T.H. 2006. Cypripedium arietinum in Hants Co. Pers. comm. to C.S. Blaney. 22 recs, 22 recs.
19	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
18	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
18	Hall, R.A. 2001. S.. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
18	NS DNR. 2017. Black Ash records from NS DNR Permanent Sample Plots (PSPs), 1965-2016. NS Dept of Natural Resources.
18	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
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17	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
17	Richardson, D., Anderson, F., Cameron, R, Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (Pannaria lurida). COSEWIC.
16	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
16	Holder, M. 2003. Assessment and update status report on the Eastern Lilaeopsis (Lilaeopsis chinensis) in Canada. Committee on the Status of Endangered Wildlife in Canada, 16 recs.
15	Basquill, S.P. 2011 vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
15	Bayne, D.M. 2007. Atlantic Coastal Plain Flora record, 2004-06. Nova Scotia Nature Trust. Pers. comm. to C.S. Blaney, 57 recs.
15	Pepper, C. 2021. Rare bird, plant and mammal observations in Nova Scotia, 2017-2021.
14	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
14	e-Butterfly. 2018. Selected Maritimes butterfly records from 2016 and 2017. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
14	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
13	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
13	Keddy, C.J. 1989. Habitat securement for redroot, golden crest and Long's bulrush in Ponhook Lake, NS. World Wildlife Fund (Canada), 131 recs.
13	Nova Scotia Nature Trust. 2014. Ladyslipper records from Saint Croix Nova Scotia, JLC Ed. Nova Scotia Nature Trust.
13	Powell, B.C. 1967. Female sexual cycles of Chrysemy spicta & Clemmys insculpta in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.
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13	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
12	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
12	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick, 2002-09. Canadian Wildlife Service, Sackville, 58 recs.
11	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
11	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
10	Belliveau, A.G. & Vail, Cole; King, Katie. 2020. New Allium tricoccum locations, Cornwallis River. Chapman, C.J. (ed.) Acadia University.
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10	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
10	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
9	Cameron, R.P. 2006. Erioderma pedicellatum 2006 field data. NS Dept of Environment, 9 recs.
9	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
9	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
9	Haughian, S.R. 2018. Description of Fuscopannaria leucosticta field work in 2017. New Brunswick Museum, 314 recs.
9	Klymko, J.J.D. 2012. Odonata specimens & observations, 2010. Atlantic Canada Conservation Data Centre, 425 recs.
9	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
9	McNeil, J.A. 2014. Blandings Turtle (Emydoidea blandingii) and Snapping Turtle (Chelydra serpentina) sightings, 2014. Mersey Tobeatic Research Institute.
9	McNeil, J.A. 2018. Snapping Turtle records, 2018. Mersey Tobeatic Research Institute.
8	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of C. insculpta sightings. Acadia University, Wolfville NS, 88 recs.
8	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
8	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
8	Cameron, R.P. 2005. Erioderma pedicellatum unpublished data. NS Dept of Environment, 9 recs.

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8	Chapman, C.N. (Cody). 2020. Nova Scotia Black Ash (Fraxinus nigra) field observations by Confederacy of Mainland Mi'kmaq. Forestry Program, Confederacy of Mainland Mi'kmaq.
8	King, Katie; Jean, Samuel. 2021. Black ash observations near Booklyn, NS. E.C. Smith Herbarium.
8	Klymko, J. Butterfly records at the Nova Scotia Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2017.
8	Neily, T.H. & Anderson, F. 2011. Lichen observations from NRC site at Sandy Cove. , 97.
8	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (Riparia riparia) in Nova Scotia: inventory and assessment of colonies. Merset Tobeiatc Research Institute, 25 recs.
8	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
8	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
7	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
7	Cameron, B. 2006. Hepatica americana Survey at Scotia Mine Site in Gays River, and Discovery of Three Yellow-listed Species. Conestoga-Rovers and Associates, (a consulting firm), october 25. 7 recs.
7	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
7	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
7	McNeil, J.A. 2011. Ribbonsnake (Thamophis sauritus) sightings, 2010. Parks Canada, 148 recs of 70+ individuals.
7	McNeil, J.A. 2020. Snapping Turtle and Eastern Painted Turtle records, 2020. Mersey Tobeatic Research Institute.
6	Benjamin, L.K. 2006. Cypripedium arietinum. Pers. comm. to D. Mazerolle. 9 recs, 9 recs.
6	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
6	Brazner, J.; Hill, N. 2018. Plant observations along the Cornwallis River, Nova Scotia. Nova Scotia Department of Lands and Forestry.
6	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (Pseudevernia cladonia). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
6	Gallop, John. 2021. Sheet Harbour rare lichen observations. McCallum Environmental.
6	Hall, R. 2008. Rare plant records in old fieldbook notes from Truro area. Pers. comm. to C.S. Blaney. 6 recs, 6 recs.
6	Matthew Smith. 2010. Field trip report from Avon Caving Club outlining the discovery of Cyrpipedium arietinum and Hepatica nobilis populations. Public Works and Government Services Canada.
6	McNeil, J.A. 2019. Snapping Turtle records, 2017. Mersey Tobeatic Research Institute.
6	McNeil, Jeffie. 2022. 2021 Turtle Records. Mersey Tobeatic Research Institute.
6	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.
5	Carter, Jeff; Churchill, J.; Churchill, I.; Churchill, L. 2020. Bank Swallow colony Scots Bay, NS. Atlantic Canada Conservation Data Centre.
5	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
5	Holder, M.L.; Kingsley, A.L. 2000. Kinglsey and Holder observations from 2000 field work.
5	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
5	Porter, K. 2013. 2013 rare and non-rare vascular plant field data. St. Mary's University, 57 recs.
5	Towell, C. 2014. 2014 Northern Goshawk and Common Nighthawk email reports, NS. NS Department of Natural Resources.
5	White, S. 2019. Notable species sightings, 2018. East Coast Aquatics.
5	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
4	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
4	Cameron, R.P. 2009. Nova Scotia nonvascular plant observations, 1995-2007. Nova Scotia Dept Natural Resources, 27 recs.
4	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
4	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
4	Cody, W.J. 2003. Nova Scotia specimens of Equisetum pratense at the DAO herbarium in Ottawa. , Pers. comm. to C.S. Blaney. 4 recs.
4	Forsythe, B. 2006. Cypripedium arietinum at Meadow Pond, Hants Co. Pers. comm. to C.S. Blaney. 4 recs, 4 recs.
4	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
4	McKendry, Karen. 2016. Rare species observations, 2016. Nova Scotia Nature Trust, 19 recs.
4	McNeil, J.A. 2015. Blandings Turtle (Emydoidea blandingii), Eastern Ribbonsnake (Thamnophis sauritus), and Snapping Turtle (Chelydra serpentina) sightings, 2015. Mersey Tobeatic Research Institute.
4	McNeil, J.A. 2017. Eastern Ribbonsnake (Thamnophis sauritus) sightings, 2017. Mersey Tobeatic Research Institute, 36 recs.
4	Mills, Pamela. 2007. Iva frutescens records. Nova Scotia Dept of Natural Resources, Wildlife Div. Pers. comm. to S. Basquil, 4 recs.
4	Neily, T.H. & Pepper, C. 2020. Nova Scotia SMP lichen surveys 2020. Mersey Tobeatic Research Institute.
4	Newell, R. & Neily, T.; Toms, B.; Proulx, G. et al. 2011. NCC Properties Fieldwork in NS: August-September 2010. Nature Conservancy Canada, 106 recs.
4	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
3	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
3	Basquill, S.P. 2009. 2009 field observations. Nova Scotia Dept of Natural Resources.
3	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
3	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
3	Bradford, R. 2004. Coregonus huntsmani locations. Dept of Fisheries & Oceans, Atlantic Region, Pers. comm. to K. Bredin. 4 recs.
3	Chapman, Cody. Unreported Species at Risk Records across Nova Scotia. Chapman, Cody, 5 records.
3	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
3	Doubt, J. 2013. Email to Sean Blaney with Nova Scotia records of Fissidens exilis at Canadian Museum of Nature. pers. comm., 3 records.
3	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
3	Hill, N. and D. Patriquin. 2013. 2013 rare plant observations in Williams Lake Backlands area. Fern Hill Institute of Plant Conservation, Berwick, Nova Scotia, 3 records.
3	Nova Scotia Department of Lands and Forestry. 2018. Wood Turtle observations in, or near, the cornwallis River watershed. NS DLF, pers. comm. to AC CDC.
3	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
3	Sabine, M. 2016. NB DNR staff incidental Black Ash observations. New Brunswick Department of Natural Resources.

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2	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
2	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
2	Basquill, S.P. 2011. Field observations & specimen collections, 2010. Nova Scotia Department of Natural Resources, Pers. comm. , 8 Recs.
2	Cameron, B. 2005. C. palmicola, E. pedicellatum records from Sixth Lake. Pers. comm. to C.S. Blaney. 3 recs, 3 recs.
2	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
2	Frittaion, C. 2012. NSNT 2012 Field Observations. Nova Scotia Nature Trust, Pers comm. to S. Blaney Feb. 7, 34 recs.
2	Gilhen, J., Jones, A., McNeil, J., Tanner, A.W. 2012. A Significant Range Extension for the Eastern Ribbonsnake, Thamnophis sauritus, in Nova Scotia, Canada. The Canadian Field-Naturalist, 126(3): 231-233.
2	Hill, N.M. 2013. email communications to Sean Blaney and David Mazerolle regarding the discovery of Listera australis populations at Black River Lake and Middlewood. , 2.
2	Kennedy, B. & Cron, C.; Patriquin, D. 2018. Email to Sean Blaney on observations of Trichostema dichotomum at Shingle Lake, Nova Scotia. , 2 records.
2	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
2	Klymko, J.J.D. 2011. Insect fieldwork & submissions, 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 742 recs.
2	LaPaix, R.; Parker, M. 2013. email to Sean Blaney regarding Listera australis observations near Kearney Lake. East Coast Aquatics, 2.
2	Lock, A.R., Brown, R.G.B. & Gerriets, S.H. 1994. Gazetteer of Marine Birds in Atlantic Canada. Canadian Wildlife Service, Atlantic Region, 137 pp.
2	Mazerolle, David. 2021. Botanical fieldwork 2019-20200. Parks Canada.
2	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
2	McLean, K. 2019. Species At Risk observations. Clean Annapolis River Project.
2	McLean, K. 2020. Species occurrence records from Clean Annapolis River Project fieldwork in 2020. Clean Annapolis River Project, 206 records.
2	Munro, M. 2003. Caulophyllum thalictroides & Carex hirtifolia at Herbert River, Brooklyn, NS. , Pers. comm. to C.S. Blaney. 2 recs.
2	Munro, M. 2003. Dirca palustris & Hepatica nobilis var. obtusa at Cogmagun River, NS. , Pers. comm. to C.S. Blaney . 2 recs.
2	Neily, T.H.; Smith, C.; Whitman, E. 2011. NCC Logging Lake (Halifax Co. NS) properties baseline survey data. Nature Conservancy of Canada, 2 recs.
2	Newell, R. E., MacKinnon, C. M. & Kennedy, A. C. 2006. Botanical Survey of Boot Island National Wildlife Area, Nova Scotia, 2004. Canadian Wildlife Service, Atlantic Region, Technical Report Series Number 450. 3 recs.
2	Newell, R.E. 2006. Rare plant observations in Digby Neck. Pers. comm. to S. Blaney, 6 recs.
2	O'Neil, S. 1998. Atlantic Salmon: Eastern Shore Nova Scotia SFA 20. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-10. 4 recs.
2	Porter, Caitlin. 2021. Field data for 2020 in various locations across the Maritimes. Atlantic Canada Conservation Data Centre, 3977 records.
2	Shafer, A.B.A., D.T. Stewart. 2006. A Disjunct Population of Sorex dispar (Long-Tailed Shrew) in Nova Scotia. Northeastern Naturalist, 13(4): 603-608.
2	Standley, L.A. 2002. Carex haydenii in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
2	White, S. 2018. Notable species sightings, 2016-2017. East Coast Aquatics.
1	Amirault, D.L. 2003. 2003 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
1	Amirault, D.L. 2005. 2005 Peregrine Falcon Survey. Canadian Wildlife Service, Sackville, unpublished data. 27 recs.
1	Amiro, Peter G. 1998. Atlantic Salmon: Southern Nova Scotia SFA 21. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-11. 1 rec.
1	Anon. Dataset of butterfly records for the Maritime provinces. Museum of Comparative Zoology, Harvard University. 2017.
1	Austin-Smith, P. 2014. 2014 Common Nighthawk personal communication report, NS. NS Department of Natural Resources.
1	Basquill, S. P. 2008. Nova Scotia Dept of Natural Resources.
1	Basquill, S.P. 2004. C. americana and Sedum sp records, 2002. Pers. comm. to C.S. Blaney. 2 recs, 2 recs.
1	Basquill, S.P. 2012. 2012 Bryophyte specimen data. Nova Scotia Department of Natural Resources, 37 recs.
1	Basquill, S.P.; Quigley, E. 2006. New Minuartia groenlandica record for NS. Pers. comm. to C.S. Blaney, Oct 6, 1 rec.
1	Basset, I.J. & Crompton, C.W. 1978. The Genus Suaeda (Chenopodiaceae) in Canada. Canadian Journal of Botany, 56: 581-591.
1	Belliveau, A.G. E.C. Smith Herbarium Specimen Database 2019. E.C. Smith Herbarium, Acadia University. 2019.
1	Benjamin, L.K. 2003. Cypripedium arietinum in Cogmagun River NS. Pers. comm. to S. Blaney, 1 rec.
1	Blaney, C.S. 1999. Fieldwork 1999. Atlantic Canada Conservation Data Centre. Sackville NB, 292 recs.
1	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
1	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
1	Brach, A.R. 2019. Correspondence to Sean Blaney regarding Calamagrostis cinnoides specimen from Halifax NS. pers. comm., Harvard University Herbaria, 1 record.
1	Breen, A. 2017. 2017 Atlantic Whitefish observation. Coastal Action.
1	Bruce, J. 2014. 2014 Wood Turtle email report, Nine Mile River, NS. NS Department of Natural Resources.
1	Clayden, S.R. 2006. Pseudevernia cladonia records. NB Museum. Pers. comm. to S. Blaney, Dec, 4 recs.
1	Clayden, S.R. 2020. Email to Sean Blaney regarding Pilophorus cereus and P. fibula at Fidele Lake area, Charlotte County, NB. pers. comm., 2 records.
1	Crowell, A. 2004. Cypripedium arietinum in Weir Brook, Hants Co. Pers. comm. to S. Blaney, 1 rec.
1	Crowell, M. 2013. email to Sean Blaney regarding Listera australis at Bear Head and Mill Cove Canadian Forces Station. Jacques Whitford Environmental Ltd., 2.
1	deGooyer, K. 2019. Snapping Turtle and Eastern White Cedar observations. Nova Scotia Environment.
1	Eastman, A. 2019. Snapping Turtle observation at Brookfield, Colchester Co. NS. Halifax Field Naturalists Nova Scotia Nature Archive Facebook Page, 1 record.
1	Edge, Thomas A. 1984. Status report on the Atlantic Whitefish (Coregonus huntsmani). Committee on the Status of Endangered Wildlife in Canada.
1	Golder Associates Ltd. 2021. Black Ash location from Goff's Quarry Expansion Environment Assessment, 2017. Golder Associates Ltd., 1 record.
1	Haughian, S. 2019. Pannaria lurida observations in Nova Scotia and New Brunswick. Nova Scotia Museum.
1	Hill, N.; Manning, I. 2020. Wild Leek observation, Cornwallis River, NS, floodplain. pers. comm. to J. Churchill.
1	Jacques Whitford Ltd. 2003. Cananda Lily location. Pers. Comm. to S. Blaney. 2pp, 1 rec, 1 rec.
1	Klymko, J.J.D. 2010. Miscellaneous observations reported to ACCDC (zoology). Pers. comm. from various persons, 3 recs.
1	Klymko, J.J.D. 2012. Insect field work & submissions. Atlantic Canada Conservation Data Centre, 852 recs.

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WETLAND DETERMINATION DATA FORM – NOVA SCOTIA

Project/Site: Drysdale Rd Municipality/County: HRM Sampling Date: Sept 29
Applicant/Owner: Habitat for Humanity Sampling Point: WL 1
Investigator(s): MM Affiliation: MEL
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave
Slope (%): Lat: Long: Datum:
Soil Map Unit Name/Type: Wetland Type: Swamp
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ___
Hydric Soil Present? Yes ✓ No ___
Wetland Hydrology Present? Yes ✓ No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___
If yes, optional Wetland Site ID: WL 1

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m²)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	15	✓	FAC
2. Abies balsamea	10	✓	FAC
3. Larix laricina	10		FAC
4. Pinus strobus	5		FAC
5. Picea glauca	2		FAC
	42	= Total Cover	

Sapling/Shrub Stratum (Plot size: 5m²)			
1. Rose Sp.	3		–
2. Ilex verticillata	2		FACW
3. Betula populifolia	5		FAC
4. Vaccinium angustifolium	3		FAC
5.			
	13	= Total Cover	

Herb Stratum (Plot size: 1m²)			
1. Carex trisperma	8		OBL
2. Vaccinum Sp.	1		–
3. Thelypteris noveboracensis	8		FAC
4. Rubus hispidus	2		FACW
5. Carex Sp.	60	✓	–
6. Doellingeria umbellata	1		FAC
7.			
8.			
9.			
10.			
	80	= Total Cover	

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	8	x 1 =	8
FACW species	4	x 2 =	8
FAC species	59	x 3 =	177
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	71 (A)		193 (B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:
___ Rapid Test for Hydrophytic Vegetation
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-35cm								Organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ✓ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Depleted Dark Surface (F7)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (TF2)

Indicators for Problematic Hydric Soils[3]:

- ___ Sandy Gleyed Matrix (S4)
- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Remarks:

Hydric Soil Present? Yes ✓ No ___

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 3cm

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – NOVA SCOTIA

Project/Site: Drysdale Rd Municipality/County: HRM Sampling Date: Sept 29

Applicant/Owner: Habitat for Humanity Sampling Point: UP1

Investigator(s): MM Affiliation: MEL

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): None

Slope (%): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name/Type: _____ Wetland Type: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m²)	Absolute % Cover	Dominant Species?	Indicator Status
1. Larix laricina	10	✓	FAC
2. Picea mariana	10	✓	FACW
3. Betula papyrifera	5		FACU
4. Acer rubrum	10	✓	FAC
5. Abies balsamea	5		FAC
	40	= Total Cover	

Sapling/Shrub Stratum (Plot size: 5m²)			
1. Morella pensylvanica	8		FAC
2.			
3.			
4.			
5.			
	8	= Total Cover	

Herb Stratum (Plot size: 1m²)			
1. Maianthemum canadense	5		FAC
2. Pteridium aquilinum	3		FACU
3. Cornus canadensis	2		FAC
4. Acer rubrum	2		FAC
5. Vaccinium angustifolium	5		FAC
6. Vaccinium myrtilloides	100	✓	FAC
7. Betula populifolia	2		FAC
8. Chimaphila umbellata	1		UPL
9. Aster sp.	1		–
10.			
	121	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	149	x 3 =	447
FACU species	8	x 4 =	32
UPL species	1	x 5 =	5
Column Totals:	168 (A)		504 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ✓ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: _____

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10							Fibric	Upland organic
10-18	7.5YR 3/2							Silty Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Depleted Dark Surface (F7)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Polyvalue Below Surface (S8)
- ___ Thin Dark Surface (S9)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (TF2)

Indicators for Problematic Hydric Soils[3]:

- ___ Sandy Gleyed Matrix (S4)
- ___ Coast Prairie Redox (A16)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No redox observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0-10cm

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIXD: *WESP Results*

Assessment Area (AA) Results:

Wetland ID: WL1 , Drysdale Rd, Spryfield

Date: Sep 29, 2022

Observer: M. MacDonald and A. Walter

Latitude & Longitude (decimal degrees): 44.606553°-63.611401°

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	2.89	Lower	10.00	Higher	4.10	10.00
Stream Flow Support (SFS)	2.31	Moderate	10.00	Higher	1.86	6.94
Water Cooling (WC)	5.79	Higher	2.30	Moderate	3.86	1.25
Sediment Retention & Stabilisation (SR)	2.63	Lower	3.55	Higher	4.25	1.74
Phosphorus Retention (PR)	2.04	Lower	4.29	Higher	5.02	3.33
Nitrate Removal & Retention (NR)	3.98	Moderate	8.00	Higher	5.65	8.00
Carbon Sequestration (CS)	3.28	Moderate			6.75	
Organic Nutrient Export (OE)	6.02	Moderate			3.94	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower	0.00	0.00
Aquatic Invertebrate Habitat (INV)	3.81	Moderate	3.83	Moderate	5.05	3.31
Amphibian & Turtle Habitat (AM)	5.23	Moderate	3.84	Moderate	5.86	4.93
Waterbird Feeding Habitat (WBF)	5.82	Moderate	3.33	Moderate	4.43	3.33
Waterbird Nesting Habitat (WBN)	3.49	Moderate	3.33	Moderate	2.53	3.33
Songbird, Raptor, & Mammal Habitat (SBM)	8.07	Higher	3.33	Moderate	7.02	3.33
Pollinator Habitat (POL)	7.99	Higher	3.33	Moderate	6.62	3.33
Native Plant Habitat (PH)	0.57	Lower	5.66	Moderate	4.13	5.66
Public Use & Recognition (PU)			2.25	Moderate		1.84
Wetland Sensitivity (Sens)			9.59	Higher		4.90
Wetland Ecological Condition (EC)			1.88	Lower		6.11
Wetland Stressors (STR) (higher score means more stress)			10.00	Higher		6.67
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	2.89	Lower	10.00	Higher	4.10	10.00
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	3.48	Moderate	6.64	Moderate	6.08	6.18
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	5.25	Moderate	7.69	Higher	4.36	5.39
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	4.36	Moderate	2.97	Moderate	4.21	3.62
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	6.80	Higher	4.88	Lower	6.47	4.88
WETLAND CONDITION (EC)			1.88	Lower		6.11
WETLAND RISK (average of Sensitivity & Stressors)			9.79	Higher		5.79

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

Nova Scotia Normalization Reference Values

	Min	Max	Range	F_JenksLo	F_JenksHigh	Min	Max	Range	B_JenksLo	B_JenksHigh
	1.95	9.41	7.46	3.73	7.63	0.00	4.43	4.43	3.76	6.58
	0.00	8.06	8.06	1.51	4.62	0.00	6.65	6.65	0.00	7.78
	0.00	6.67	6.67	2.04	5.29	0.00	5.42	5.42	1.98	5.97
	2.20	10.00	7.80	3.54	6.44	0.00	4.90	4.90	1.13	3.13
	3.75	10.00	6.25	3.00	5.98	0.00	7.78	7.78	1.07	2.59
	2.77	10.00	7.23	2.76	4.69	0.00	10.00	10.00	3.50	6.83
	5.19	9.93	4.74	3.22	6.36					
	0.00	6.54	6.54	0.00	7.46					
	0.00	6.55	6.55	0.96	2.87	0.00	6.34	6.34	1.25	4.35
	0.00	5.43	5.43	1.30	5.14	0.00	6.24	6.24	1.37	4.58
	3.49	7.57	4.08	3.42	5.43	1.24	6.63	5.39	1.13	6.02
	3.12	8.36	5.24	3.56	6.67	1.76	10.00	8.24	2.63	5.46
	0.00	7.61	7.61	0.00	6.43	0.00	10.00	10.00	2.50	6.67
	0.00	7.25	7.25	2.36	6.55	0.00	10.00	10.00	0.00	5.00
	0.00	8.70	8.70	0.00	7.52	0.00	10.00	10.00	3.33	6.67
	0.00	8.29	8.29	0.00	7.95	0.00	10.00	10.00	0.00	6.67
	3.90	7.89	3.99	3.57	6.23	0.00	10.00	10.00	5.31	7.70
						0.30	7.16	6.87	1.41	4.42
						2.17	5.02	2.85	4.62	7.20
						5.21	10.00	4.79	3.91	6.52
						0.20	4.98	4.78	2.91	6.05
				3.73	7.63	0.00	4.43	4.43	3.76	6.58
				2.43	5.31	0.00	8.65	8.65	3.15	6.77
				2.92	5.53	0.83	6.07	5.24	4.06	7.68
				2.94	6.28	1.44	8.75	7.31	1.78	4.95
				2.16	6.75	0.00	10.00	10.00	5.52	8.31
						5.21	10.00	4.79	3.91	6.52
						1.18	4.54	3.36	4.38	6.69

NOVA SCOTIA - Functional WSS Interpretation Tool

1. General Description of Tool:

This interpretive tool automatically determines whether the subject wetland will be regulated as a Wetland of Special Significance (WSS). This determination is made based on the WESP-AC functional results, per the Nova Scotia *Wetland Conservation Policy* .

A 'Function-Benefit Product' (FBP) is calculated based upon the Grouped Functions, and has a theoretical maximum of 100. Threshold values for the FBP are applied, in order to categorize the FBP scores into 'Low', 'Moderate' or 'High' scores. Thresholds are determined based upon the statistical distribution of WESP-AC scores compiled from various sites across the Province (N=442). These categories are subsequently used to apply various 'Functional WSS Rules', as described below.

For the purpose of defining and applying the Functional WSS rules, two supergroups are defined based on grouped functions, as follows: **(1) Support Supergroup** - includes Hydrologic, Water Quality Support, and Aquatic Support grouped functions. **(2) Habitat Supergroup** - includes Aquatic Habitat and Transition Habitat grouped functions.

2. Functional WSS Rule Definitions:

Habitat Rule: In consideration of the Habitat Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(HAB 1) Two 'High Scores' OR

(HAB 2) One 'High' and one 'Moderate' score

Support Rule: In consideration of the Support Supergroup, the subject wetland is a WSS if either of the following sub-rules are satisfied:

(SUP 1) Three 'High' scores OR

(SUP 2) Two 'High' and one 'Moderate' score

Habitat/Support Hybrid Rule: In consideration of both the Habitat and Support Supergroups, the subject wetland is a WSS if the following is satisfied:

(HYB 1) One 'High' Habitat score **AND** Two or three 'High' Support scores

3. Functional WSS Interpretation Results

Function-Benefit Product (FBP)	FBP SCORE	FBP SCORE CATEGORY
SUPPORT SUPERGROUP - HYDROLOGIC	28.91472292	Low
SUPPORT SUPERGROUP - WATER QUALITY SUPPORT	23.12498985	Low
SUPPORT SUPERGROUP - AQUATIC SUPPORT	40.38290351	Low
HABITAT SUPERGROUP - AQUATIC HABITAT	12.97430675	Low
HABITAT SUPERGROUP - TRANSITION HABITAT	33.22427502	Low

3a. Functional WSS Determination: Automatic Method

Habitat Rule Satisfied?	NO
Support Rule Satisfied?	NO
Habitat/Support Hybrid Rule Satisfied?	NO
CONCLUSION:	**Site is not a WSS**

3b. Functional WSS Determination - Manual Method Using Dichotomous Key

1a. (HAB) - One or more 'High' scores for AH or TH.....**2**
2a. (HAB) - Two 'High' scores.....**WSS**
2b. (HAB) - One 'High' score.....**3**
3a. (HAB) - Any combination of 'High' and 'Moderate' scores.....**WSS**
3b. (HAB) - Any combination of 'High' and 'Low' scores.....**4**
4a. (SUP) One or more 'High' Scores for HYD, WQS, or AS.....**5**
5a. (SUP) Two or Three 'High' scores.....**WSS**
5b. (SUP) One 'High' score.....**6**
6a. (SUP) Any combo of one 'High', two 'Mod' scores.....**WSS**
6b. (SUP) One 'High', plus any other combo of scores.....**not WSS**
4b. (SUP) Zero 'High' Scores for HYD, WQS, or AS.....**7**
7a. (SUP) Three 'Moderate' scores.....**WSS**
7b. (SUP) Any other combination of scores.....**not WSS**
1b. (HAB) - Zero 'High' Scores for AH or TH.....**8**
8a. (SUP) Three 'High' Scores.....**WSS**
8b. (SUP) Less than three 'High' scores.....**9**
9a. (SUP) Two 'High' and one 'Moderate' score.....**WSS**
9b. (SUP) - Any other combination of scores.....**not WSS**

1. CONVERSION OF FBP CATEGORIES TO SITE SCORES

	FBP LOW	FBP HIGH	SITE SCORE
HYD	35	57.24	0
WQS	64.01	87.91	0
AS	76.47	94.34	0
AH	52.59	68.05	0
TH	76.3	87.08	0

NOTE:
FBP 'High' category assigned a site score of 10
Moderate' category assigned a site score of 1
FBP 'Low' category assigned a site score of 0

2. DEFINITION OF RULES FOR WSS

		# of HAB FBP Scores		# of SUP FBP Scores			
RULE	KEY REF	HIGH	MOD	HIGH	MOD	SumScore Req. for WSS	
HAB 1	2a	Two				20	
HAB 2	3a	One	One			11	
HYB 1	5a	One		Two/Three		HAB >=10 and	SUP >=20
SUP 1	8a			Three		30	
SUP 2	9a			Two	One	21	

3. DETERMINATION OF WSS FOR EACH RULE

HAB 1	non-WSS
HAB 2	non-WSS
HYB 1	non-WSS
SUP 1	non-WSS
SUP 2	non-WSS