

**ENVIRONMENTAL ASSESSMENT
REALIGNMENT OF MARINE DRIVE
HIGHWAY 316
ENVIRONMENTAL ASSESSMENT REGISTRATION**

Goldboro LNG Project
Pieridae Energy (Canada) Limited
MARCH 2021

**APPENDICES
VOLUME 3 OF 4**



**GOLDBORO
LNG**



**ENVIRONMENTAL ASSESSMENT
REALIGNMENT OF MARINE DRIVE (HIGHWAY 316)**

**Environmental Assessment Registration
Appendices**

Submitted to:

Nova Scotia Environment
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Halifax, Nova Scotia, B3J 2P8

Submitted by:

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Halifax, Nova Scotia, B3J 3N6

Prepared by:

Wood Environment & Infrastructure Solutions
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March 2021

TE201007

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GOLDBORO LNG ROAD
RE-ALIGNMENT
PART 2



GOLDBORO
LNG


APPENDIX A. FIGURES

Prepared For:



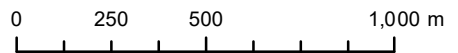
FIGURE 1

**Study Area Location
Goldboro, NS**

 Study Area



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



1:20,000 Scale when printed @ 11" x 17"

Drawn By: JRG Date: 2020-10-15



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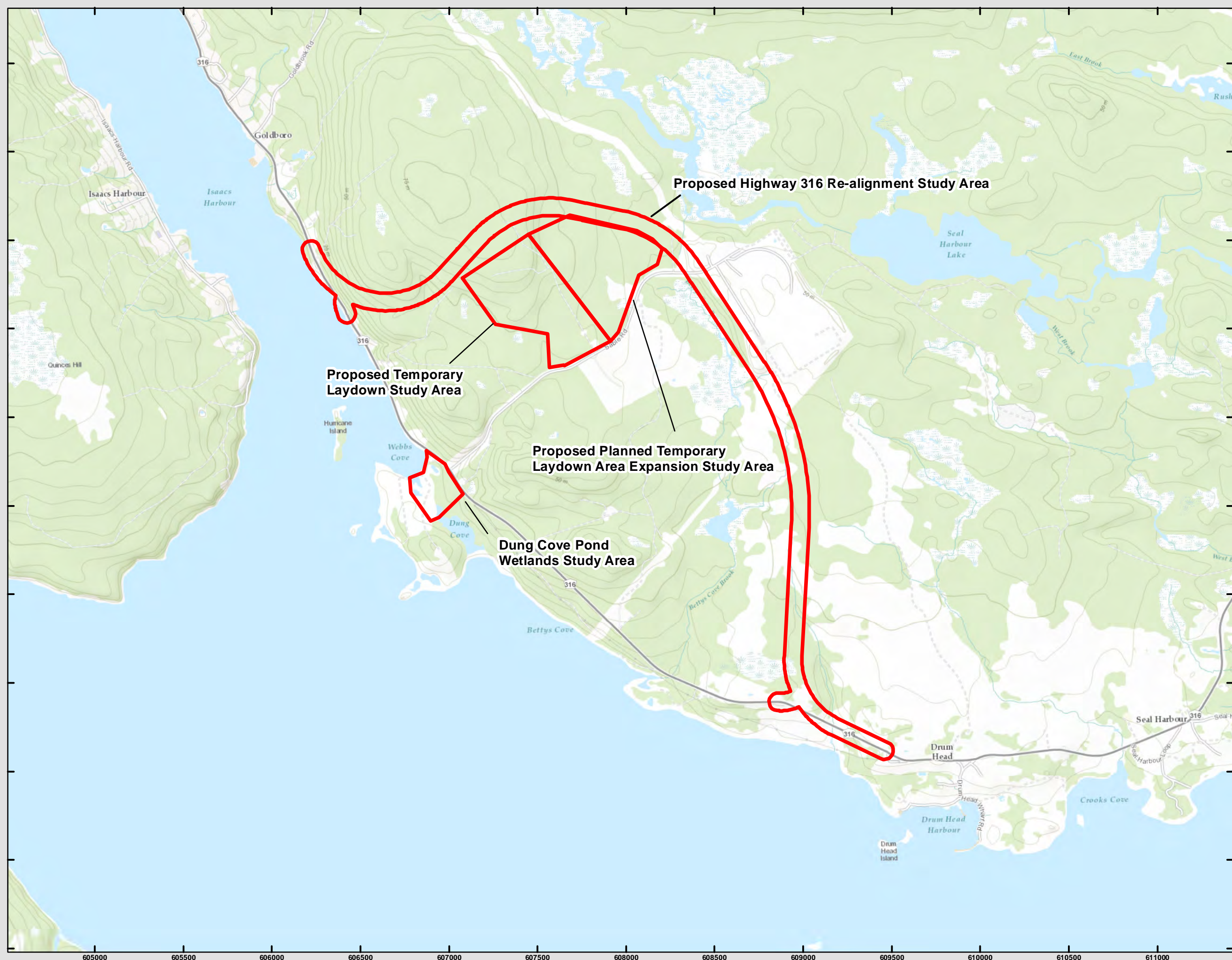



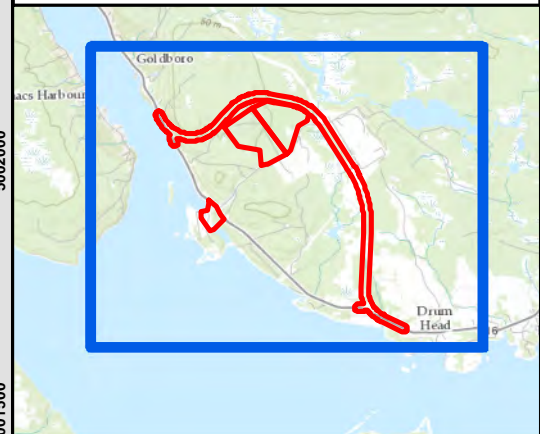


FIGURE 2

**Vegetation Community
Types Overview**

-  Vegetation Types
-  Field Delineated Wetlands
-  Study Area



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



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Date: 2020-10-09



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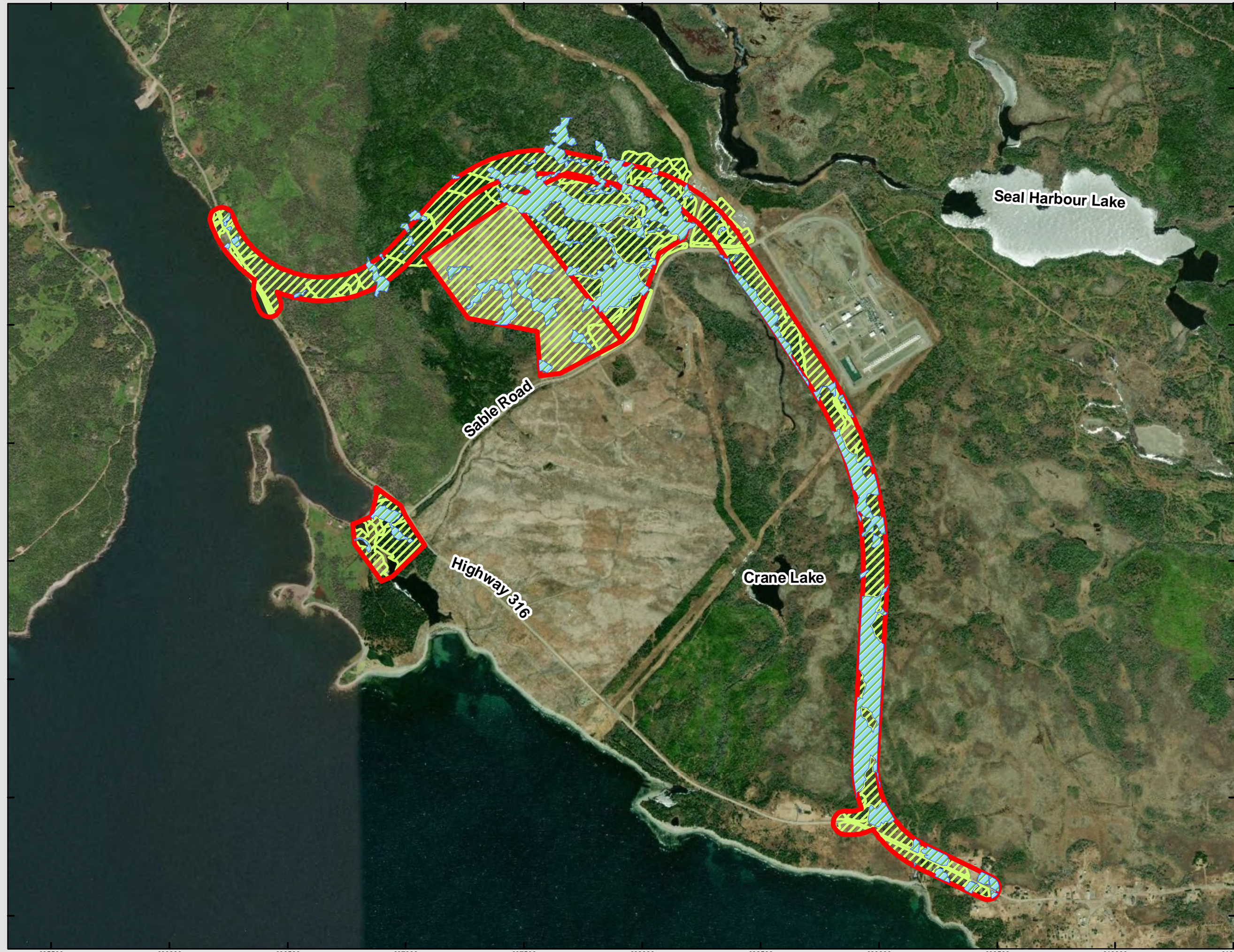
















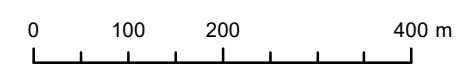
FIGURE 2a

Vegetation Community Types Results

-  Wetland of Special Significance
-  Field Delineated Watercourses
-  Field Delineated Wetlands
- Vegetation Types**
-  CO1 - Black spruce - Balsam fir / Foxberry / Plume moss Forest
-  CO1 - Black spruce - Balsam fir / Foxberry / Plume moss Forest (Regen and Matur)
-  CO1 - Black spruce - Balsam fir / Foxberry / Plume moss Forest (Regenerative)
-  CO4 - Balsam fir / Foxberry - Twinflower Forest
-  CO4 - Balsam fir / Foxberry - Twinflower Forest (Regenerative)
-  Cut-over (upland)
-  OF1 - White spruce / Aster - Goldenrod / Shaggy moss Forest
-  OF5a - Largetooth aspen - Gery birch / Rough goldenrod - Strawberry
-  SL1 - Alder Shrubland
-  SL2 - Mountain Ash - Wild Raisin Shrubland
-  Study Area



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

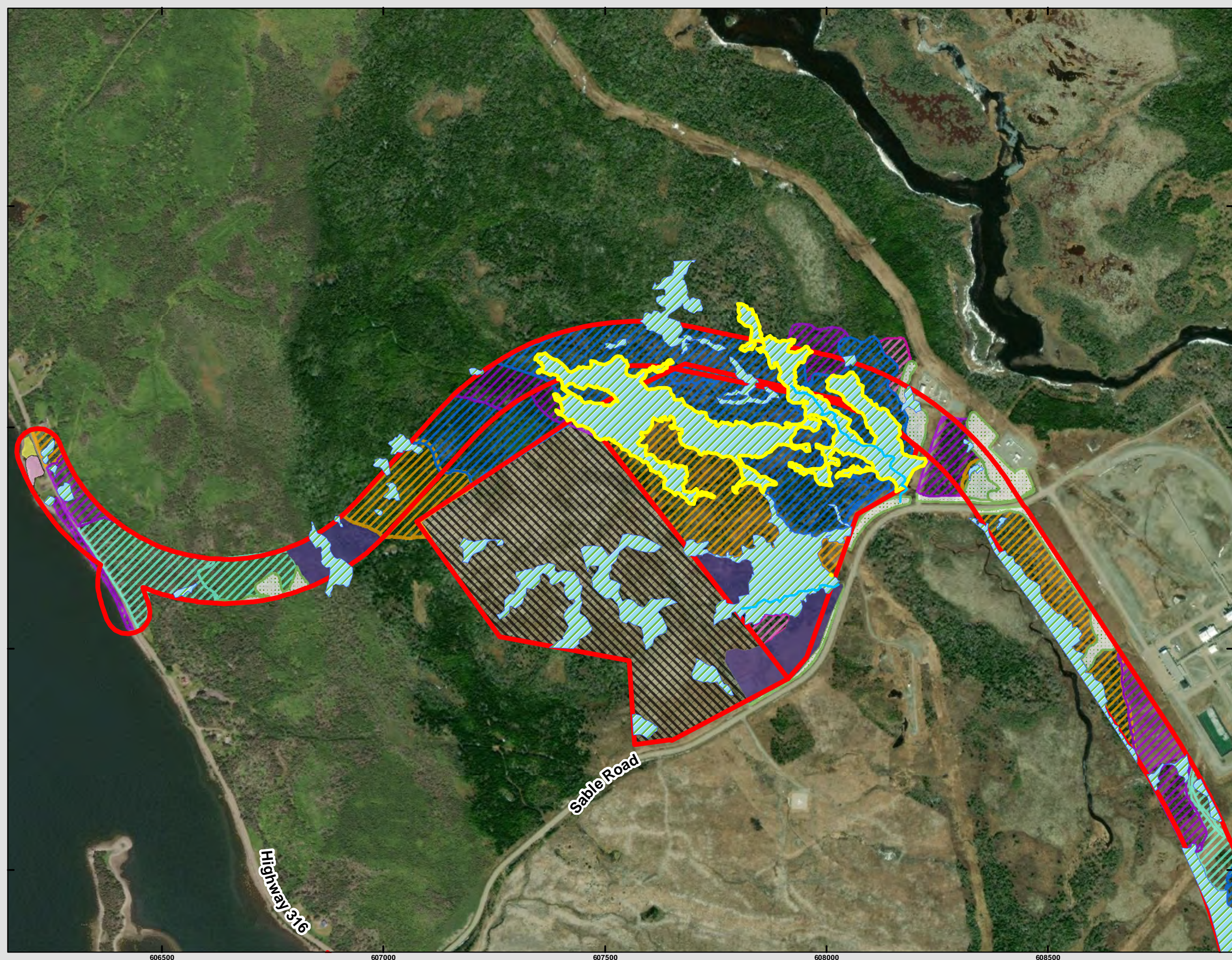


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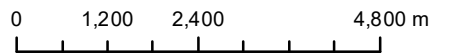
FIGURE 2b

Vegetation Community Types Results

-  Field Delineated Wetlands
- Vegetation Types**
-  CB1 – Common Juniper – Black Crowberry wet Coastal Shrubland Barren
-  CO1 – Black spruce – Balsam fir / Foxberry / Plume moss Forest
-  CO1 – Black spruce – Balsam fir / Foxberry / Plume moss Forest (Regen and Matur
-  CO1 – Black spruce – Balsam fir / Foxberry / Plume moss Forest (Regenerative)
-  CO4 - Balsam fir / Foxberry - Twinflower Forest
-  CO4 – Balsam fir / Foxberry – Twinflower Forest (Regenerative)
-  Cut-over (upland)
-  SL1 - Alder Shrubland
-  SL2 - Mountain Ash - Wild Raisin Shrubland
-  Study Area



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



1:100,000 Scale when printed @ 11" x 17"









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FIGURE 2c

Vegetation Community Types Results

-  Field Delineated Wetlands
- Vegetation Types**
-  CO4 - Balsam fir / Foxberry - Twinflower Forest
-  Cut-over (upland)
-  OF1 - White spruce / Aster - Goldenrod / Shaggy moss Forest
-  OF1 - White spruce / Aster - Goldenrod / Shaggy moss Forest / Abandoned Field
-  SL1 - Alder Shrubland
-  SL2 - Mountain Ash - Wild Raisin Shrubland
-  Study Area



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



0 1,200 2,400 4,800 m

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5002500
5002000
5001500
5001000

FIGURE 3

Field Results:
Methodology

- Avifauna Point Count Locations
- Lichen and Vascular Flora Survey Transects
- NSE Watercourse
- Field Delineated Watercourse
- Field Delineated Wetland
- Study Area
- Predictive Boreal Felt Lichen Habitat Polygons (NSL&F)



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



0 160 320 640 m

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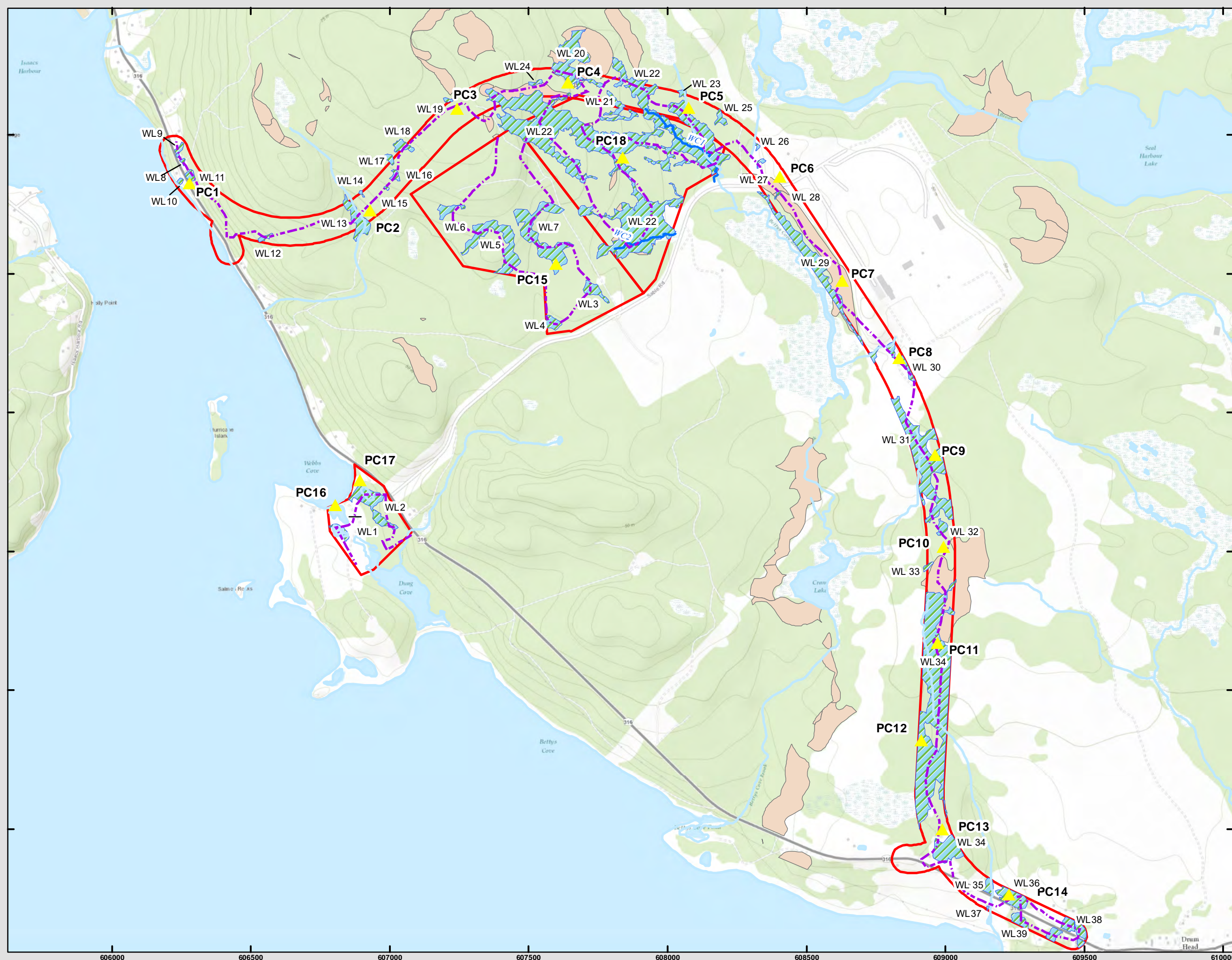


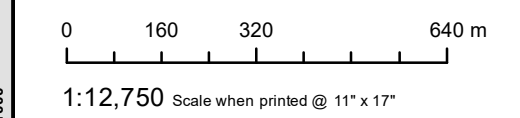
FIGURE 4

Field Results:
SAR & SOCI

- ▲ Avifauna Point Counts
 - NSE Watercourse
 - Field Delineated Watercourse
 - ▨ Field Delineated Wetland
 - ▭ Study Area
- SAR/SOCI Incidental Observations**
- Blue felt lichen (SAR/COSEWIC SC, NSESA V, S3)
 - American kestrel (S3B)
 - Boreal chickadee (S3)
 - Finger ring lichen (S3S4)
 - Gray jay (S3)
 - Greater yellowlegs (S3B, S3S4M)
 - Northern harrier (S3S4B)
 - Nova Scotia agalinis (S3S4)
 - Red-breasted nuthatch (S3)
 - Fuscopannaria soreidiata (S3)



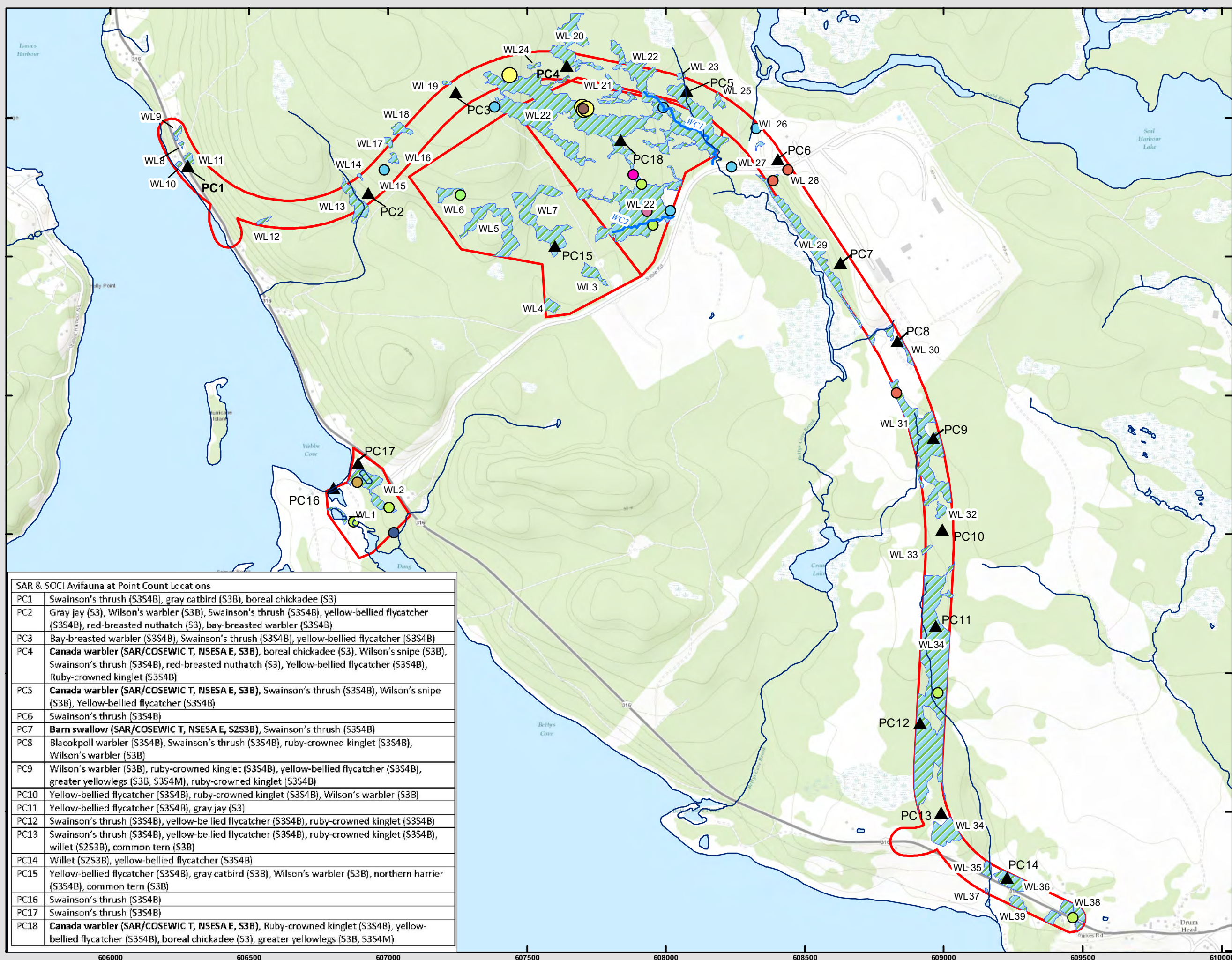
Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter



Drawn By: EP Date: 2020-09-28



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SAR & SOCI Avifauna at Point Count Locations	
PC1	Swainson's thrush (S3S4B), gray catbird (S3B), boreal chickadee (S3)
PC2	Gray jay (S3), Wilson's warbler (S3B), Swainson's thrush (S3S4B), yellow-bellied flycatcher (S3S4B), red-breasted nuthatch (S3), bay-breasted warbler (S3S4B)
PC3	Bay-breasted warbler (S3S4B), Swainson's thrush (S3S4B), yellow-bellied flycatcher (S3S4B)
PC4	Canada warbler (SAR/COSEWIC T, NSESA E, S3B), boreal chickadee (S3), Wilson's snipe (S3B), Swainson's thrush (S3S4B), red-breasted nuthatch (S3), Yellow-bellied flycatcher (S3S4B), Ruby-crowned kinglet (S3S4B)
PC5	Canada warbler (SAR/COSEWIC T, NSESA E, S3B), Swainson's thrush (S3S4B), Wilson's snipe (S3B), Yellow-bellied flycatcher (S3S4B)
PC6	Swainson's thrush (S3S4B)
PC7	Barn swallow (SAR/COSEWIC T, NSESA E, S2S3B), Swainson's thrush (S3S4B)
PC8	Blackpoll warbler (S3S4B), Swainson's thrush (S3S4B), ruby-crowned kinglet (S3S4B), Wilson's warbler (S3B)
PC9	Wilson's warbler (S3B), ruby-crowned kinglet (S3S4B), yellow-bellied flycatcher (S3S4B), greater yellowlegs (S3B, S3S4M), ruby-crowned kinglet (S3S4B)
PC10	Yellow-bellied flycatcher (S3S4B), ruby-crowned kinglet (S3S4B), Wilson's warbler (S3B)
PC11	Yellow-bellied flycatcher (S3S4B), gray jay (S3)
PC12	Swainson's thrush (S3S4B), yellow-bellied flycatcher (S3S4B), ruby-crowned kinglet (S3S4B)
PC13	Swainson's thrush (S3S4B), yellow-bellied flycatcher (S3S4B), ruby-crowned kinglet (S3S4B), willet (S2S3B), common tern (S3B)
PC14	Willet (S2S3B), yellow-bellied flycatcher (S3S4B)
PC15	Yellow-bellied flycatcher (S3S4B), gray catbird (S3B), Wilson's warbler (S3B), northern harrier (S3S4B), common tern (S3B)
PC16	Swainson's thrush (S3S4B)
PC17	Swainson's thrush (S3S4B)
PC18	Canada warbler (SAR/COSEWIC T, NSESA E, S3B), Ruby-crowned kinglet (S3S4B), yellow-bellied flycatcher (S3S4B), boreal chickadee (S3), greater yellowlegs (S3B, S3S4M)

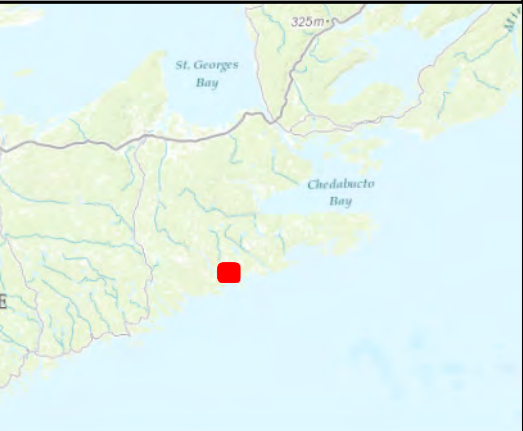
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FIGURE 5

**Field Results:
Wetlands & Watercourses**

-  NSE Watercourse
-  Field Delineated Watercourse
-  Wetland of Special Significance
-  Field Delineated Wetland
-  Study Area



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



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Date: 2020-10-15



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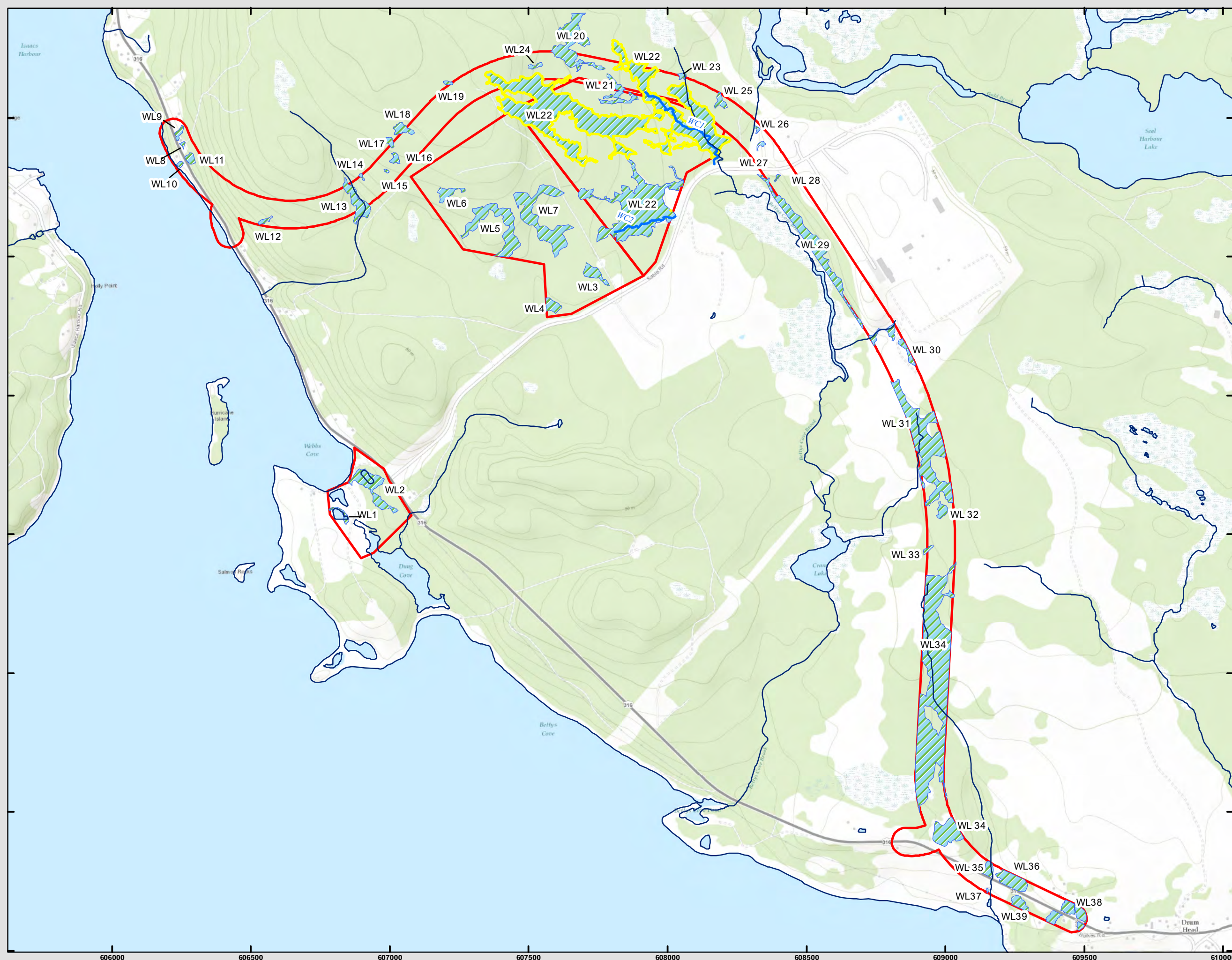


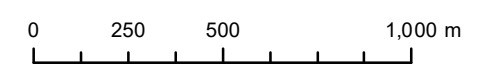
FIGURE 6

Desktop Review

- ACCDC Observations
- Watercourses (NSTDB)
- ▭ Study Area
- ▨ NSE Wetland Inventory



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

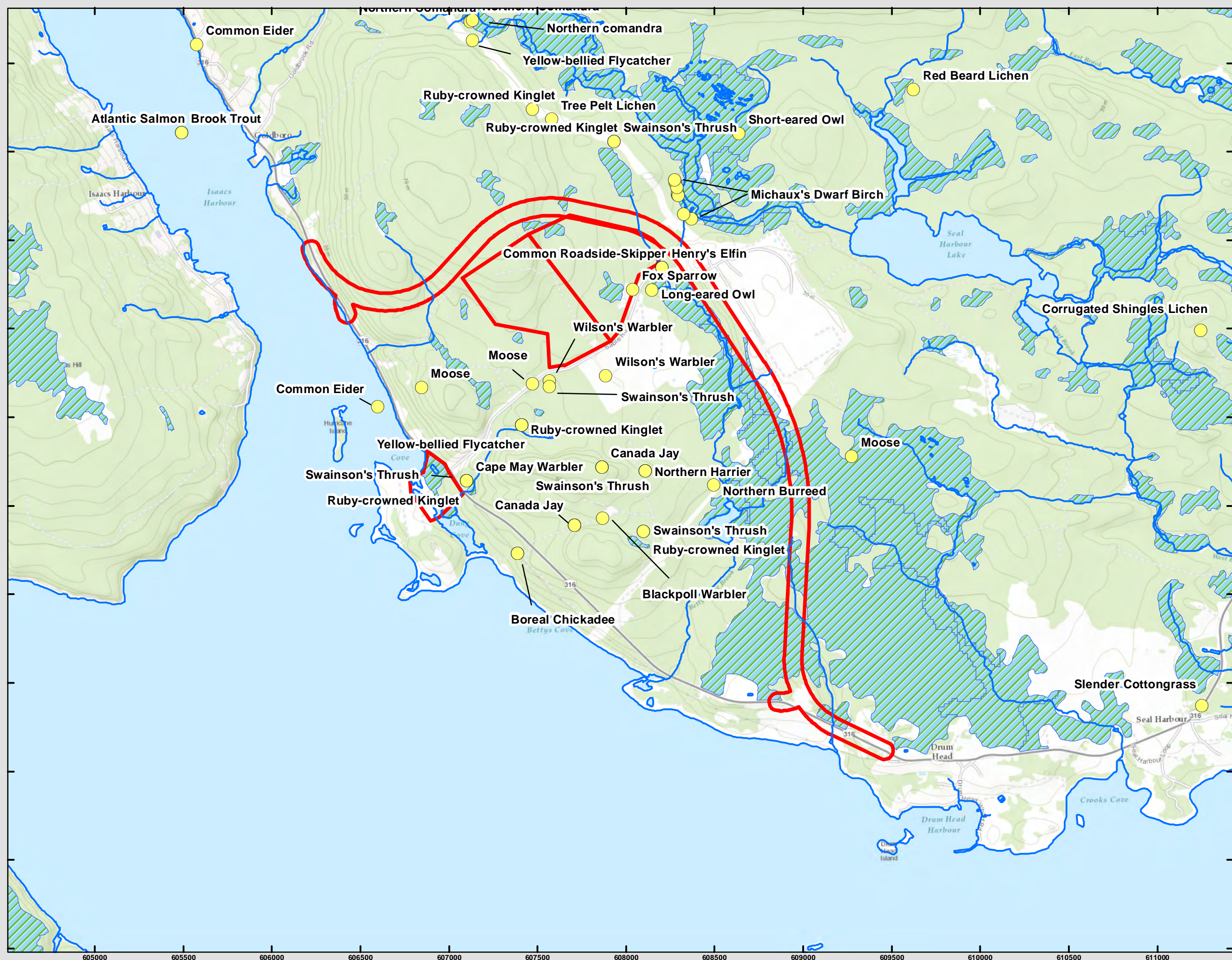


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McCallum Environmental Ltd.



APPENDIX B. CVS

Years in Practice
15

Certifications

Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships

Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education

- Master in Environmental Studies (MES), York University, Toronto, Ontario, 1997-1999
- BSc. (Biology), Dalhousie University, 1992-1997
- BA (Political Science), Honours, Dalhousie University, 1992-1997

Training

- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2009;
- Water Management and Wetland Restoration Training Course, 2009;
- Identifying and Delineating Wetlands for Nova Scotia, 2008
- Saint John Ambulance Standard First Aid, AED, CPR(C). 2013

Summary

Ms. Milloy oversees, manages, and executes environmental and biophysical projects. She completes environmental baseline surveys for environmental assessment, habitat surveys, species at risk and wildlife surveys, botany and bird surveys, wetland and watercourse delineations, characterizations and functional assessment, fish habitat evaluation and bat hibernacula identification. Ms. Milloy also completes watershed evaluations, and guides clients through the environmental and permitting stages of mining, industrial and development projects. Ms. Milloy guides clients through provincial and federal environmental assessment requirements and has completed several Federal and Provincial environmental assessment registration documents in the past two years.

Ms. Milloy has worked on five mining projects and six quarry projects providing project management and regulatory consultation relating to all biophysical components and field surveys to support permitting and regulatory requirements.

Ms. Milloy regularly completes applications for wetland and watercourse alteration and development across Atlantic Canada, and has developed and implemented wetland compensation programs and wetland restoration projects. Ms. Milloy is a trained wetland evaluator, biologist, and restoration professional.

Project Experience

- Provision of biophysical project management and coordination of field surveys to support the Canadian Environmental Assessment Act (CEAA) environmental assessment process for 2 proposed mining projects in Nova Scotia (2014-current).
- Completion of biophysical field surveys to support expansion efforts for a mine in Nova Scotia (2014) to meet requirements under the provincial environmental assessment process.
- Completion of environmental baseline surveys for the provincial environmental assessment process for a proposed re-development of a gold mine in eastern Nova Scotia in 2013.
- Completion of two provincial environmental assessments for community wind projects in Nova Scotia in 2013.
- Completion of environmental baseline surveys for three Nova Scotian quarry expansion projects in 2012-2013.
- Watershed evaluation for wetlands and watercourses at a 500 hectares golf and residential development and associated wetland alteration permitting, compensation planning, wetland restoration activities, and enhancement of several wetlands to increase functionality.
- Surface water assessment and functional assessment, wetland permitting, watercourse permitting, and compensation planning and implementation at an 18 hole golf course and residential development along the south shore of Nova Scotia in 2014. Provision of environmental project management and regulatory lead role for the Project.
- Completed the Provincial Environmental Assessment for the 80 MW Glen Dhu South Wind Power Project, Nova Scotia, for Shear Wind Inc. The

Project received Ministerial approval on March 16, 2012.

- Project Management of regulatory permitting and environmental assessments for a 50 MW Wind Power Project in Nova Scotia for Sprott Power Corp.
- Evaluation of the Musquodoboit River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Evaluation of the Sackville River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Completion of 35-45 projects involving watershed evaluation, land use classification, wetland delineation and alteration and infill, and compensation planning for numerous residential and commercial large-scale developments across Nova Scotia and New Brunswick.
- Completion of wetland delineation and watercourse identification for three large scale developments (450 ha, 200 ha, 300 ha and 400 ha) from 2012 to 2014.

Work Experience

McCallum Environmental Ltd., Nova Scotia, 2010-Present

Vice President/Senior Project Manager - Provides project management expertise for site and/or route selection, constraints mapping, regulatory consultation, environmental assessments, environmental baseline surveys, wetland alteration and restoration planning, environmental protection plan development, regulatory applications, construction monitoring, and reclamation for small and large scale industrial projects. Other responsibilities include marketing, budget management, report preparation and client service.

Strum Environmental Services Ltd., Nova Scotia 2000-2010

Project Manager- From 2000- 2010, provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial and residential developments, wetland alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, phased site assessments, and risk assessment and management.

Environmental Sciences Group, Kingston, ON 1998

Environmental Scientist- in 1998, provided contaminant and project management expertise to Department of National Defense in the Canadian Arctic in support of remediation of several remote military sites. Identified areas required for remediation and completed associated boundary soil and sediment confirmatory sampling and analysis.

Years in Practice

6

Education

B.Sc. (Honours, Biology),
Waterloo University,
2008-2011.

Designations

A professional
Biologist (P.Biol) with
the Alberta Society of
Professional Biologists
(ASPB)

Training

- ◆ Common Lichens of
North East North
America
- ◆ Alberta Wetlands: From
Classification to Policy
by Aquality
Environmental
Consulting
- ◆ Saint John Ambulance
Standard First Aid,
AED, CPR(C), 2018

Summary

Mr. Gallop has been in the environmental consulting profession since 2014. He has worked on both project related and research related field assessments in Nova Scotia, Alberta and Saskatchewan and is a proficient wetland and flora (vascular plants and lichens) surveyor.

Mr. Gallop is responsible for completing biophysical assessments, including flora (vascular plants and lichens) and fauna surveys, aquatic surveys (wetlands, watercourses and fish surveys), avian surveys, and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Mr. Gallop has been responsible for the implementation of several environmental baseline programs for mining, quarry development and energy sector development projects in Nova Scotia and Saskatchewan in advance of environmental assessment registration.

Mr. Gallop is the leading lichenologist for McCallum Environmental and has been conducting rare lichen and biodiversity surveys for 3 years around the Atlantic provinces. He is also the founder and administrator of the *Lichens of Atlantic Canada* citizen science project which documents lichen diversity and distribution throughout the Atlantic provinces.

Selected Project Experience

- Three years experience surveying rare lichens and lichen diversity for industry and not for profit organizations.
- Four years of experience delineating wetlands throughout Atlantic Canada and Western Canada.
- Completed in field assessments and training with Melanie MacDonald and Dr. Nick Hill (Instructor and founder of the Wetland Delineation Course by Fern Hills Institute) on wetland delineation.
- Completion of migratory bird surveys for a large scale renewable energy project.
- Completion of ungulate and other wildlife surveys for a variety of Natural Resource projects.
- Completion of environmental baseline surveys for the federal environmental assessment process for proposed development of several gold mine projects in eastern Nova Scotia in 2016 - 2018 in Nova Scotia
 - Lichen surveys
 - Rare plant surveys
 - Wetland delineation and functional assessment
 - Fish habitat surveys and electrofishing
 - Wildlife surveys

- Avian surveys
- Completion of wetland delineation, watercourse identification and vegetation assessments of several large-scale developments (wind and mining) in Saskatchewan and Nova Scotia in 2015 - present.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Scientist:

April 2016-Present

- Completing biophysical assessments, including flora (vascular plants and lichens) and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.

Basin Environmental LTD., - Edmonton, Alberta.

Environmental Technologist

September 2014 – February 2016.

- Utilized the Alberta Wetland Classification system to assess wetlands and the Wetland Rapid Evaluation Tool to determine compensation required for impacts to classified wetlands.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Conducted pre-disturbance assessments for oil and gas activities, road improvements and residential developments, including: watercourses/waterbodies, soil profiling, vegetation, wildlife, eco-sites and timber volumes.
- Prepared reports for a variety of assessments, including: wetlands, pre-disturbance, bio-physicals, fish habitats for access road watercourse crossings, EAP/EFR supplements and applications.
- Monitored the water quality of horizontal directional drilling on fish bearing permanent watercourses.
- Assisted surveyors and construction engineers on-site in the design of oil and gas well leases and facilities, pipelines and access roads to ensure compliance with EAP Standards and Guidelines.

Publications

- Troy McMullin, Frances Anderson, Harold Clapp, Jacqueline Edwards, John Gallop, Tom Neily, Chris Pepper, Matthew Smith, Brad Toms and Niels van Miltenberg. *Results from a rare Lichen Survey at Kejimikujik Seaside National Park in Nova Scotia, Canada*. 2019. Parks Canada.

Affiliations

- Administrator and founder of the *Lichens of Atlantic Canada* INaturalist citizen science project. This project entails over 30 observers who share their lichen findings across Atlantic Canada. Professional ecologists, lichenologists and enthusiasts alike, peer review findings and offer advice on identifying and expanding the understanding on lichen diversity and distribution throughout Atlantic Canada.
- Administrator and founder of the *Grasses of Atlantic Canada* citizen science project. This project entails over 50 observers who share their findings throughout Atlantic Canada. The purpose of this project is to document grass species throughout Atlantic Canada and where professionals and enthusiasts can discuss identification techniques. The goal is to hopefully increase interests in this often intimidating taxa.

Project Work

- *Fifteen Mile Stream Gold Mine* – Rare lichen and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments, EIS reporting;
- *Beaver Dam Haul Road* - Rare lichen and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments, spring migration;
- *Cochrane Hill Mine Site* - Rare lichen and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments, spring migration, EIS reporting;
- *Gillis Quarry Expansion Project* – Rare lichen (including Boreal Felt Lichen ('BFL') surveys) and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments, spring migration;
- *Scozinc Mine Site* – Rare lichen and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments, breeding bird surveys;

John R Gallop, B.Sc. P. Biol

john@mccallumenvironmental.com

- *Wellington Connector Road* - Rare lichen (includes BFL surveys) and vascular flora surveys, wetland delineation/ functional assessments, watercourse assessments;
- *Kejimikujik Seaside National Park Surveys* – Rare lichen surveys with Dr. Troy McMullin at the Kejimikujik Seaside National Park
- *Round Bay Rare Lichen Surveys* -Rare Lichen surveys with Frances Anderson and Tom Neily (local lichen experts) on an NCC property in Shelburne County.
- *Golden South Wind Energy Facility* – Bird migration and breeding surveys, wetland and watercourse assessments, specifies specific surveys (Species at Risk focused), amphibian surveys for a proposed wind turbine project (50 turbines)

Years in Practice

3

Education

B.Sc. (Geography),
University of Victoria,
2005-2009.

M.Sc. (Environmental
Science), Memorial
University of
Newfoundland and
Labrador, 2010-2013.

Training

- ◆ Saint John Ambulance
Standard First Aid,
AED, CPR(C), 2017
- ◆ Wildlife Awareness
training – 2015
- ◆ W.H.M.I.S – 2015
- ◆ Geographic Information
System (GIS) Training,
ESRI – 2013
- ◆ Facilitation Skills for
Technical
Professionals,
Dalhousie University –
2017

Summary

Ms. Posluns has been in the environmental consulting profession since 2015. She has worked on both project related and research related field assessments in Nova Scotia.

Ms. Posluns is responsible for completing biophysical assessments, including flora and fauna surveys, avian surveys, aquatic surveys, wetland monitoring and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Ms. Posluns has been responsible for the management of field data for multiple, large-scale initiatives in Nova Scotia, including a provincial infrastructure project and a mining development.

Selected Project Experience

- Conducted migratory bird surveys for a provincial infrastructure project.
- Completed ungulate and other wildlife surveys for a variety of Natural Resource projects.
- Surveyed environmental baseline data for the federal environmental assessment process for a proposed development of a gold mine in eastern Nova Scotia in 2017.
- Delineated wetlands, completed watercourse identification and vegetation assessments for two large-scale developments in Nova Scotia in 2016 and 2017.
- Collaborated with communities, local resource users, and First Nations to implement solutions.
- Coordinated spatial data organization, performed GIS analysis, and created dynamic maps for a variety of projects.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Scientist:

June 2017-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating data management and Geographical Information Systems (GIS). Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications. Preparing Phase 1 Environmental Site Assessments.

CBCL LTD., Halifax, Nova Scotia

Environmental Scientist

September 2015 – April 2017.

- Created GIS maps for over 20 projects, including six 100-page map books, effectively visualizing contaminated sites, ecologically sensitive habitats, and urban development.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Prepared reports for a variety of assessments, including permit applications and Environmental Management Plans.
- Assisted with marine water quality sampling.

OceanCanada Partnership, Halifax, Nova Scotia

Environmental Scientist

September 2015 – April 2017.

- Facilitated community meetings and provided expertise to help a group with local area development planning.
- Conducted interviews and community-wide surveys of a rural fishing village to create a database of local assets.
- Summarized findings of community assets into an accessible written document.
- Lead a marine-monitoring program in an ecologically sensitive bay, coordinating 15 volunteers in fieldwork, identifying and assessing eelgrass health and distribution, sample collection, and data entry.
- Investigated social, ecological, and economic changes within coastal communities to make suggestions on future development.

Saint Mary's University, Halifax, Nova Scotia

Professor of Geography

August 2015 – April 2016.

- Explained technical environmental information clearly and concisely to Canadian and International students, ensuring all students had a supportive learning atmosphere.
- Designed new course material that engaged students and enhanced their learning experience.
- Worked with students one-on-one to solve conflicts.

Regional District of North Okanagan, Vernon, British Columbia

Water Sustainability Coordinator

2013 – 2014.

- Worked under the BC Water Act, and maintained a comprehensive understanding of provincial and local policy, regulations, and bylaws.
- Compiled and analysed large datasets, assessing trends, and informing local policy.
- Determined drought risk using environmental indicators, and communicated with team members to decide on the necessary restriction required for meeting seasonal water level targets.

Years in Practice

12

Volunteer Roles

Nova Scotia Nature Trust.

Maritime Nocturnal Owl Surveys – 2009-present.

Maritime Breeding Bird Atlas – 2009-2010.

Mersey Tobeatic Research Center – 2009-present.

Provincial Coordinator for Nova Scotia Migration Count – 2010-present.

Director for Nova Scotia Bird Society – 2009-present.

Training

- ◆ Wetland Delineation Certification, 2012
- ◆ Wetland Plant Identification, 2012
- ◆ 1000 hours of rare Lichen surveys under direction of Lichen specialist Tom Neily

Summary

Mr. Pepper is a highly experienced ornithologist, botanist and wetland evaluator. He has been completing avian surveys throughout Atlantic Canada since 2005 to support the collection of baseline environmental conditions for various development projects, as well as to collect valuable data for the Mersey Tobeatic Research Centre and various volunteer groups.

For the Nova Scotia Nature Trust, Mr. Pepper completed avian, botanical and lichen surveys at the 100 Wild Islands Project. The completion of Tern and Shorebird surveys were an integral part of this study.

Mr. Pepper has completed multiple avian and botanical studies in support of wind power development in Atlantic Canada and Alberta, including post construction analysis of potential effect to avian populations, and avian behavior. In 2014 and 2015, Mr. Pepper completed a detailed study at the Canso Causeway, NS to determine land and shorebird activity throughout various seasons of the year, and analyzed interaction between avian flight pathways, and causeway and transmission line infrastructure.

As part of his role with the Mersey Tobeatic Research institute, Mr. Pepper has completed extensive monitoring programs to determine presence and extent of Boreal Felt Lichen (BFL) and other lichens throughout the province. In addition, he has completed in excess of 2000 hours completing BFL surveys for various private organizations in support of baseline data collection. As a result of his extensive experiences in this regard, Mr. Pepper is considered a regional expert at identifying lichens in Nova Scotia.

Mr. Pepper has also completed various field studies for the Canadian Wildlife Service (Environment Canada), including wood turtle surveys along various rivers in Nova Scotia.

Mr. Pepper is a wetland evaluator and ecologist, and has completed many baseline surveys to evaluate the presence of rare species in various habitat across the Nova Scotia landscape.

APPENDIX C. PRIORITY SPECIES LIST

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
Birds						
<i>Botaurus lentiginosus</i>	American Bittern				S3S4B	Preferred habitats of the American bittern include freshwater wetlands with tall emergent vegetation. In Nova Scotia, it occurs widely in most regions, but is scarce on the Atlantic slope and Cape Breton Island, where marshes are few and relatively infertile.
<i>Turdus migratorius</i>	American Robin				S5B, S3N	American Robins are common across the continent in gardens, parks, yards, golf courses, fields, pastures, tundra, as well as deciduous woodlands, pine forests, shrublands, and forests regenerating after fires or logging.
<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	The Baltimore oriole is an adaptable species (found breeding in diverse habitats), but typically favors woodland edge (especially riparian) and open areas with scattered trees; strong preference for deciduous over coniferous trees. During spring and fall migration, it is found in variety of habitats, but generally favors open woodlands, woodland margins, hedgerows, and urban parks.
<i>Riparia riparia</i>	Bank Swallow	Th	Th	Endangered	S2S3B	The Bank Swallow breeds wherever suitable nesting sites in banks and cliffs are available. Nesting colonies are usually found near open areas, and often close to water. Bank Swallows will also nest in artificial banks, such as road cuttings and gravel pits. Found in all regions of the Maritimes, but scarce in many inland forested areas.
<i>Hirundo rustica</i>	Barn Swallow	Th	Th	Endangered	S2S3B	In the Maritimes the Barn Swallow breeds everywhere there are buildings and other structures that provide sheltered, dry nest-sites, even nesting on isolated cabins in deep woodland and on fishing shacks on offshore islands. A recent innovation, in remote logging areas with no alternatives, has been their basing nests on bolt-heads low in the sides of large corrugated metal culverts. However, nests in natural situations, in caves or under overhanging cliffs, usually close to water, are very rare.
<i>Dendroica castanea</i>	Bay-breasted Warbler				S3S4B	The Bay-breasted is one of the less widespread warblers, breeding in a narrow band across the closed boreal forests from northeast British Columbia to western Newfoundland,

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						and south just into the U.S.A. Although during migrations and while foraging it is often seen in mixed stands, this bird nests only in conifers. Reaching highest densities in balsam fir forest infested with spruce budworm.
<i>Picoides arcticus</i>	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-over areas, open jack pine stands, and the edges of woodland gardens.
<i>Coccyzus erythrophthalmus</i>	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.
<i>Dendroica striata</i>	Blackpoll Warbler				S3S4B	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.
<i>Poecile hudsonica</i>	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.
<i>Wilsonia canadensis</i>	Canada Warbler	Th	Th	Endangered	S3B	In Nova Scotia, the Canada warbler has only been found sparsely on Cape Breton Island and in the extreme southwest of the province. They are less predictable from habitat than most warblers, they are usually found in dense understory vegetation of mature to mid-aged mixed forest, most closely associated with broad-leafed trees and shrubs, but with conifers usually present too.

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Dendroica tigrina</i>	Cape May Warbler				S2B	In summer, the Cape May warbler is found in northern conifer forests. One of several warbler species that attain high densities during spruce budworm outbreaks, but is more usual in mature spruces than in balsam fir stands. Activity is mostly at the tops of tall spruces. Rarely observed in the southwest of Nova Scotia due to unsuitable habitat.
<i>Chaetura pelagica</i>	Chimney Swift	Th	Th	Endangered	S2B, 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.
<i>Chordeiles minor</i>	Common Nighthawk	Th	Th	Threatened	S2B	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.
<i>Sialia sialis</i>	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.
<i>Tyrannus tyrannus</i>	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 (<i>Populus tremuloides</i>) parkland, recently burned forest, beaver ponds, golf 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.
<i>Contopus virens</i>	Eastern Wood-Pewee	SC	SC	Vulnerable	S3S4B	The Eastern Wood-pewee 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.
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	No Status	SC	Vulnerable	S3S4B, S3N	Evening Grosbeaks breed in mature and second-growth coniferous forests of northern North America and the Rocky Mountains, including spruce-fir, pine-oak, pinyon-juniper,

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						and aspen forests. Less commonly, they nest in deciduous woodlands, parks, and orchards. They breed as far south as Mexico at 5,000–10,000 feet of elevation in pine and pine-oak woodlands. In winter Evening Grosbeaks live in coniferous forest and deciduous forest as well as in urban and suburban areas. When wintering in urban environments they are most abundant in small woodlots near bird feeders
<i>Dumetella carolinensis</i>	Gray Catbird				S3B	The Gray Catbird inhabits shrubbery in both upland and river-edge situations, mostly in areas where tree cover is of broad-leafed species. The Maritimes are at the northeast edge of its range, and catbirds are nearly absent in upland areas of northern New Brunswick, in Prince Edward Island and Cape Breton Island, as well as in regions with extensive conifer forest cover.
<i>Perisoreus canadensis</i>	Gray Jay				S3	The Gray Jay breeds in boreal regions and occurs year-round in the conifer forests. These birds are found all over the Maritimes except where extensive conifer forests are lacking. They seldom leave the spruce and fir forests where they nest.
<i>Tringa melanoleuca</i>	Greater Yellowlegs				S3B, S3S4M	During migration, the greater yellowlegs is a familiar sight in salt marshes and around ponds and rivers, but their breeding habitat is very different. Yellowlegs breed in wooded bogs and muskegs access the boreal forest from northern British Columbia and Mackenzie to Labrador, Newfoundland and eastern Nova Scotia.
<i>Charadrius vociferus</i>	Killdeer				S3B	The killdeer is found throughout Nova Scotia, but scarce on the Atlantic slope and on Cape Breton Island. Breed in farmlands, gravel pits, forest clear-cut areas, and open lands along the coast.
<i>Tringa flavipes</i>	Lesser Yellowlegs				S3M	Breeds in open boreal forest with scattered shallow wetlands. Winters in wide variety of shallow fresh and saltwater habitats.
<i>Asio otus</i>	Long-eared Owl				S2S3	The long-eared owl frequents woodlands large or small, dense or open, conifer or broad-leafed, at all seasons, but it also forages over open areas.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Accipiter gentilis</i>	Northern Goshawk		NAR		S3S4	Though it is more generally found in the boreal forest region, likely because less often disturbed there, the Northern goshawk is also widespread in more temperate habitats. It nests in most forest types found throughout its geographic range. In eastern deciduous forests, Goshawks prefer nesting in mature, mixed hardwood–hemlock stands of birch (<i>Betula sp.</i>), beech (<i>Fagus sp.</i>), maple (<i>Acer sp.</i>), and eastern hemlock. Found scattered throughout the forests of the Maritimes. Hunts in diverse habitats ranging from open-sage steppes to dense forests, including riparian areas.
<i>Mimus polyglottos</i>	Northern Mockingbird				S1B	The Northern mockingbird uses open habitats with scattered shrubs and small trees. In the East, typical habitats are parkland, cultivated lands, and early successional habitat at low elevations. Throughout its range found in suburban and urban habitats such as gardens and cemeteries, especially favoring mowed lawns adjacent to bare areas (e.g. concrete, asphalt, and sidewalks) with access to shrubs or hedges for cover and nesting. Absent from the interior of all forested habitat but frequents forest edge. Found in the same habitat year-round.
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Th	Th	Threatened	S2B	The olive-sided flycatcher is found in open woodlands and other places where scattered trees remain after cutting or fire in forested regions. Found throughout the Maritimes, but not abundantly.
<i>Vireo philadelphicus</i>	Philadelphia Vireo				S2?B	This Philadelphia vireo is found mainly in broad-leaved trees, in pure or mixed woods, but it sings and forages more often in young stands and in the sub-canopy. Breeding has never been proven in Nova Scotia.
<i>Pinicola enucleator</i>	Pine Grosbeak				S2S3B, SN5	In the Maritimes, the pine grosbeak approaches the southern limit of its range, they are found generally in Nova Scotia. In general, they avoid warmer, hardwood-dominated regions.
<i>Carduelis pinus</i>	Pine Siskin				S2S3	The pine siskin is primarily found in open coniferous forests. Also breeds in ornamental conifers in parks, cemeteries, and the like, and in mixed coniferous-deciduous and even

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						deciduous tree associations. May forage in trees, shrubs, and grassy areas.
<i>Setophaga pinus</i>	Pine Warbler				S1B	Pine Warblers spend most of their time in pine trees. This can be in pine forests or in deciduous woods with pine mixed in. They are found in similar habitats in winter, but also visit backyards and come to bird feeders to eat seeds and suet.
<i>Haemorhous purpureus</i>	Purple Finch				S4S5B, S3S4N	Purple finches are mostly found in moist, cool conifer forests. They are also found in mixed forests along streams and in tree-lined suburbs.
<i>Loxia curvirostra</i>	Red Crossbill				S3S4	Red Crossbills are found in mature coniferous forests.
<i>Sitta canadensis</i>	Red-breasted Nuthatch				S3	Red-breasted nuthatches live mainly in deciduous woods and in coniferous forests.
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S2S3B	Rose-breasted grosbeaks use a wide variety of habitats, including deciduous and mixed wooded uplands and lowlands; often at shrubby ecotones at the edge of woods at streams, ponds, marshes, roads, or pastures. Also commonly uses second-growth woodlands and well-vegetated suburban areas, parks, gardens, and orchards. Exhibits a preference for mesic woodlands, swamp forests, riparian corridors; avoids dry oak (<i>Quercus</i> spp.) woodlands. Uses a wide variety of habitats during spring and fall migration.
<i>Regulus calendula</i>	Ruby-crowned Kinglet				S3S4B	Ruby-crowned Kinglets prefer spruce-fir forests, however, they also live in mixed wood forests, isolated trees in meadows, coniferous and deciduous forests, mountain-shrub habitat, and floodplain forests of oak, pine, spruce or aspen.
<i>Euphagus carolinus</i>	Rusty Blackbird	SC	SC	Endangered	S2B	Rusty blackbirds use wet coniferous and mixed forests from northern edge of tundra southward to beginning of deciduous forests and grasslands. Frequents fens, alder (<i>Alnus</i>)–willow (<i>Salix</i>) bogs, muskegs, beaver ponds, and other openings in the forest such as swampy shores along lakes and streams. Exceptionally, on Cape Breton Island, Nova Scotia, drier sites such as pasture edges are used. During spring and fall migration, it forages in stubble, pasture, plowed fields, and edges of swamps. Fall migrants also frequent wooded

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						areas, particularly for roosting. Occasionally roosts on the ground in open fields.
<i>Asio flammeus</i>	Short-eared Owl	SC	SC		S1S2B	In the Maritimes, the short-eared owl has bred in dyked wet meadows and marshes, and in coastal bogs and grasslands. Also known to nest in agricultural areas. They are associated with open country supporting cyclic small mammals (i.e. voles and lemmings).
<i>Catharus ustulatus</i>	Swainson's Thrush				S3S4B	Swainson's Thrush are predominantly found in closed-canopy forests. Breeding habitat includes deciduous and coniferous forests.
<i>Vermivora peregrina</i>	Tennessee Warbler				S3S4B	In its breeding range, the Tennessee warbler is associated with Boreal zone in deciduous, mixed, and coniferous forests from near sea level to 450 m. Associated with open areas that contain grasses, dense shrubs, and scattered clumps of young deciduous trees.
<i>Catharus fuscescens</i>	Veery				S3S4B	Veeries breed in rich deciduous woodland and forest with well-developed understory across northern North America.
<i>Vireo gilvus</i>	Warbling Vireo				S1B	Throughout range, shows a strong association with mature mixed deciduous woodlands especially along streams, ponds, marshes, and lakes but sometimes in upland areas away from water. Also found in young deciduous stands that emerge after a clear-cut. Other habitats include urban parks and gardens, orchards, farm fencerows, campgrounds, deciduous patches in pine forests, mixed hardwood forests, and, rarely, pure coniferous forests. During spring and fall migration, it appears to use a wide variety of forested (similar to breeding) and shrubby habitats and can be found in trees of urban areas.
<i>Empidonax traillii</i>	Willow Flycatcher				S2B	In general, the willow flycatcher prefers moist, shrubby areas, often with standing or running water. During spring and fall migration, it uses areas similar to its breeding habitat.
<i>Gallinago delicata</i>	Wilson's Snipe				S3B	The Wilson's snipe breeds in sedge bogs, fens, willow (<i>Salix</i> spp.) and alder (<i>Alnus</i> spp.) swamps, and marshy edges of ponds, rivers, and brooks. Requires soft organic soil rich in food organisms just below surface, with clumps of vegetation offering both cover and good view of approaching predators.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						Avoids marshes with tall, dense vegetation (cattails [<i>Typha</i>], reeds [<i>Phragmites</i>], etc.). In Canada, they use four primary types of breeding habitat: sedge bogs, fens, swamps, and pond and river edges. During spring and fall migration, they use marshes (including cattails), swamps, wet meadows, wet pastures, wet fallow fields, and marshy edges of streams and ditches. As during the breeding season, they require wet organic soils rich in food with clumps of cover.
<i>Wilsonia pusilla</i>	Wilson's Warbler				S3B	Western montane, northern, and northeastern populations of Wilson's warbler are restricted to mesic shrub thickets of riparian habitats, edges of beaver ponds, lakes, bogs, and overgrown clear-cuts of montane and boreal zone; may reach into alpine zone. During spring and fall migration, occurs in most deciduous shrub habitats, but primarily riparian shrub understory. Also found in most other woodlands, suburban habitats, agricultural areas, desert scrub, and montane forests.
<i>Hylocichla mustelina</i>	Wood Thrush	Th	Th		SUB	The wood thrush breeds in the interior and edges of deciduous and mixed forests, especially well-developed, upland, mesic ones. Key elements of breeding sites include trees >16 m in height, high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter. Habitat use during spring and fall migration is poorly documented, in fall probably uses second-growth and forest-edge habitats with fruit. No data for spring transients to suggest deviation from breeding season habitats.
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher				S3S4B	The yellow-bellied flycatcher is a characteristic breeding bird of Canadian boreal conifer forests and peatlands. It nests in typically cool, moist conifer or mixed forests, bogs, swamps, and muskegs; landscapes often flat or poorly drained. Breeding habitat is usually well stratified, with open canopy, saplings and seedlings, shrubs, and abundant, thick moss cover. Shade is provided by conifer trees and saplings, as well as layers of shrubs, ferns, and herbs; undergrowth is usually dense.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
Other Vertebrates						
<i>Perimyotis subflavus</i>	Tri-colored Bat (formerly known as Eastern Pipistrelle)	E	E	Endangered	S1	Prefers partly open country with large trees and woodland edges. Avoids deep woods and open fields. Probably roosts in the summer in tree foliage and occasionally in buildings; may use cave as night roost between foraging forays. Usually hibernates in caves and mines with high humidity. Generally, maternity colonies utilize manmade structures or tree cavities; often in open sites that would not be tolerated by most other bats
<i>Lasiurus borealis</i>	Eastern Red Bat				S1S2B, S1M	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.
<i>Hemidactylum scutatum</i>	Four-toed Salamander				S3	The habitat of the four-toed salamander is moist mossy woods, particularly in peat moss. Peat bogs or mossy areas bordering streams are good breeding sites. Adults lay eggs deep between the moss plants. The little larvae live in the water for a short while, then move to live on land. The four-toed salamander is the least common salamander species in Nova Scotia, and most reports are from the south-central part of the province.
<i>Pekania pennants</i>	Fisher				S3	Fishers inhabit upland and lowland forests, including coniferous, mixed, and deciduous forests. They occur primarily in dense coniferous or mixed forests, including early successional forest with dense overhead cover. Fishers commonly use hardwood stands in summer but prefer coniferous or mixed forests in winter. They generally avoid areas with little forest cover or significant human disturbance.
<i>Lasiurus cinereus</i>	Hoary Bat				S1S2B, S1M	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.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Myotis lucifugus</i>	Little Brown Myotis	E	E	Endangered	S1	For <i>Myotis lucifugus</i> , 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 <i>M. lucifugus</i>), 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 decay and located in open areas within mature-over mature forest. <i>Myotis lucifugus</i> congregates in caves and abandoned mines used for hibernation through the winter. About 16 hibernation sites are known in Nova Scotia.
<i>Sorex maritimensis</i>	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.
<i>Alces americana</i>	Moose			Endangered	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.
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	E	E	Endangered	S1	The Northern Long-eared Bat (<i>Myotis septentrionalis</i>) 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 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

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Microtus chrotorrhinus</i>	Rock Vole				S2	Optimal habitat for the rock vole is ferns/mossy debris near flowing water in coniferous forests. It also occupies deciduous forest/spruce clear cuts (mainly recent cuts), forest ecotones, grassy balds near forest, and sterile-looking rocky road fills. Occupies shallow burrows and runways. Nests probably are placed under logs or in similar protected sites. They are made of moss with a lining of grass and have multiple entrance tunnels. Breeding season is from March to mid-October.
<i>Lasionycteris noctivagans</i>	Silver-haired Bat				SUB, S1M	Scarce in eastern Canada. During the summer months, silver-haired bats are found in forested habitats, particularly coniferous woodlands, adjacent to aquatic habitats like ponds, lakes and streams. Both sexes fly south between the middle of August and early October.
<i>Chelydra serpentina</i>	Snapping Turtle	SC	SC	Vulnerable	S3	southern New Brunswick and parts of mainland Nova Scotia in ponds, lakes, slow-moving streams and sometimes in brackish water if these water bodies have soft mud bottoms and abundant aquatic vegetation
<i>Glyptemys insculpta</i>	Wood Turtle	T	T	Threatened	S2	Habitat destruction and fragmentation due to intense development and accompanying stream alterations are serious problems in the southeastern portion of the Wood Turtle's range. protection of wooded stream corridors, nesting, feeding, basking, and overwintering sites, and an upland buffer would be necessary to include in preserve design Lives along permanent streams during much of each year, but in summer may roam widely overland and can be found in a variety of terrestrial habitats adjacent to streams, from deciduous woods, cultivated fields, and woodland bogs, to marshy pastures. Use of woodland bogs and marshy fields is most common in the northern part of the range
Vascular Plants						
<i>Isoetes acadensis</i>	Acadian Quillwort				S3	In water up to depth of 1m, bordering lakes, ponds or along rivers, infrequent but scattered through province.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn				S3	Grows in wooded swamps or bogs, meadows or alluvial soils in the alkaline regions, in Hants, Cumberland and Inverness Counties.
<i>Vaccinium uliginosum</i>	Alpine Bilberry				S3	Wide tolerance of moisture and fertility, but generally acidic soils in Halifax, Digby & Cape Breton
<i>Viola sagittata</i>	Arrow-Leaved Violet				S3S4	Sterile woods, clearing and fields, common from Yarmouth to Halifax and Hants Counties.
<i>Viola sagittata var. ovata</i>	Arrow-Leaved Violet				S3S4	Sterile woods, clearing and fields, common from Yarmouth to Halifax and Hants Counties
<i>Salix serissima</i>	Autumn Willow				S1	Fens (calcium-rich wetlands), meadows and fields, swamps
<i>Fraxinus nigra</i>	Black Ash			Threatened	S1S2	Typical habitat includes poorly drained soils and swampy woods
<i>Verbena hastata var. hastata</i>	Blue Vervain				S3	Limited to mucky fertile soils, as along floodplains.
<i>Carex tribuloides var. tribuloides</i>	Blunt Broom Sedge				S3	Found in wet forest soils and swales.
<i>Galium obtusum ssp. obtusum</i>	Blunt-leaved Bedstraw				S2S3	swamps, swampy grounds, wet areas of prairies, wet woods and thickets, roadside ditches.
<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed				S3	Ponds, pools, lakes and sluggish streams often over deep mucky substrate. Northern from Cumberland Co., to northern Cape Breton.
<i>Betula pumila var. renifolia</i>	Bog Birch				S1?	Bogs and meadows amongst alders
<i>Betula pumila var. pumila</i>	Bog Birch				S3	Bogs and meadows amongst alders
<i>Salix pedicellaris</i>	Bog Willow				S2	Grows in acidic substrate as in bogs; nutrient-rich marshes and in sphagnum lacustrine habitats.
<i>Bromus latiglumis</i>	Broad-Glumed Brome				S1	Floodplain (river or stream floodplains), forests, shores of rivers or lakes.
<i>Lilium canadense ssp. canadense</i>	Canada Lily				S2	Meadows, floodplains and streamsides.
<i>Polygonum careyi</i>	Carey's Smartweed				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes.

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Galium aparine</i>	Common Bedstraw				S2S3	Pastures, fields, ditches and streamsides. Very common throughout.
<i>Pinguicula vulgaris</i>	Common Butterwort				S1	Grows in moist habitats as on rock ledges and streamsides, especially of basic rocks.
<i>Humulus lupulus</i> <i>var. lupuloides</i>	Common Hop				S1?	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, shrublands or thickets.
<i>Equisetum hyemale</i>	Common Scouring-rush				S3S4	Grows in sandy, gravelly soil, on banks or in low areas; often in calcareous regions. Scattered, mostly from Digby County, through the Annapolis Valley, northward to Cape Breton.
<i>Equisetum hyemale</i> <i>var. affine</i>	Common Scouring-rush				S3S4	Grows in sandy, gravelly soil, on banks or in low areas; often in calcareous regions. Scattered, mostly from Digby County, through the Annapolis Valley, northward to Cape Breton.
<i>Cardamine pratensis</i> <i>var. angustifolia</i>	Cuckoo Flower				S1	Moist soil as in meadows, damp fields and other low ground. Scattered in the province, frequent along the Annapolis River and even spreading into roadsides ditches, north to Cape Breton.
<i>Rudbeckia laciniata</i>	Cut-Leaved Coneflower				S1S2	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps, wetland margins (edges of wetlands).
<i>Rudbeckia laciniata</i> <i>var. gaspereaensis</i>	Cut-Leaved Coneflower				S1S2	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps, wetland margins (edges of wetlands).
<i>Epilobium strictum</i>	Downy Willowherb				S3	Bogs and other peatlands; Scattered throughout Cape Breton, infrequent elsewhere.
<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S2	Forms large colonies in woodlands and thickets; Only recently discovered in Nova Scotia (1963) and so far, known from Queens, Kings, Annapolis, Hants and Halifax counties.
<i>Solidago latissimifolia</i>	Elliott's Goldenrod				S3S4	Clearings, thickets and bogs, swales and lakeshores. Common in Yarmouth Co., east to Halifax Co.
<i>Stellaira crassifolia</i> <i>and var. crassifolia</i>	Fleshy Stitchwort				S1	Frequents pond edges and wet seepy slopes.
<i>Panicum dichotomiflorum</i> <i>var. puritanorum</i>	Fall Panic Grass				S1?	Anthropogenic (man-made or disturbed habitats), shores of rivers or lakes.

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed				S3	Lacustrine (in lakes or ponds), riverine (in rivers or streams).
<i>Carex alopecoidea</i>	Foxtail Sedge				S1	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, marshes.
<i>Zizia aurea</i>	Golden Alexanders				S1	Meadows, shores, thickets and even wooded swamps. Occasionally reported: Pomquet and South River, Antigonish Co., Upper Musquodoboit, Halifax Co.
<i>Lycopodium sabinifolium</i>	Ground-Fir				S3?	Alpine or subalpine zones, anthropogenic (man-made or disturbed habitats), meadows and fields.
<i>Carex haydenii</i>	Hayden's Sedge				S1	Marshes, meadows and fields, shores of rivers or lakes
<i>Platanthera hookeri</i>	Hooker's Orchid				S3	Grows in open dry forests of mixed conifers. Scattered in most of the province, local in the southwestern counties. So far absent from the eastern shore.
<i>Carex grisea</i>	Inflated Narrow-leaved Sedge				S1	Floodplain (river or stream floodplains), forests.
<i>Botrychium lanceolatum</i> var. <i>angustisegmentum</i>	Lance-Leaf Grape-Fern				S2S3	Fertile soils on woodland hillsides.
<i>Carex lapponica</i>	Lapland Sedge				S1?	Sphagnum bogs, wet, nutrient-poor areas, mostly lowlands
<i>Hypericum majus</i>	Large St John's-wort				S2	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.
<i>Carex granularis</i>	Limestone Meadow Sedge				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes, wetland margins (edges of wetlands).
<i>Schizaea pusilla</i>	Little Curlygrass Fern				S3S4	Sphagnum wet areas, upper peaty lakeshores and undrained depressions. Scattered throughout the Atlantic counties and frequent in the northern plateau of Cape Breton.
<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	Anthropogenic (man-made or disturbed habitats), fens (calcium-rich wetlands), lacustrine (in lakes or ponds), meadows and fields, shores of rivers or lakes.
<i>Equisetum palustre</i>	Marsh Horsetail				S1	Of wetlands, marshes and swamps. A single collection each from Kings County and Halifax Co.

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Hordeum brachyantherum</i>	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
<i>Hordeum brachyantherum</i> <i>ssp. brachyantherum</i>	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
<i>Allium burdickii</i>	Narrow-Leaved Wild Leek				S1?	rich deciduous woodlands, wooded bluffs, wooded areas along rivers and streams, and cemetery prairies
<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S2S3	Sterile soils, swamps and sandy or cobbly lakeshores. Known from Yarmouth and Digby Counties; scattered east to Halifax and Amherst; a single Cape Breton record from George River.
<i>Betula borealis</i>	Northern Birch				S2	Bogs and wooded swamps.
<i>Viola nephrophylla</i>	Northern Bog Violet				S2	Cool, mossy sites: bogs, streamsides and wet woods. Rare in Shelburne Co., Colchester and Cumberland counties northward. Generally, a northern ranging species within NS.
<i>Geocaulon lividum</i>	Northern Comandra				S3	Damp sands and other sterile soils, especially in acid or peaty sites. Disjunct sites in Halifax, Kings and Cumberland counties; widespread but local in Cape Breton.
<i>Spiraea septentrionalis</i>	Northern Meadowsweet				S1?	open, moist areas
<i>Eleocharis ovata</i>	Ovate Spikerush				S2?	Grows on muddy streamsides, streambeds and lakeshores, often in subsiding water.
<i>Torreyochloa pallida</i> var. <i>pallida</i>	Pale False Manna Grass				S1	Lacustrine (in lakes or ponds), riverine (in rivers or streams), swamps.
<i>Platanthera flava</i> var. <i>herbiola</i>	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.
<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S1	Forests
<i>Carex wiegandii</i>	Wiegand's Sedge				S3	Treed bogs, bogs, conifer and alder thickets

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex argyrantha</i>	Silvery Flowered Sedge				S3S4	Sandy soils in thickets and clearings. Dryish forests
<i>Lachnanthes caroliniana</i>	Redroot		SC	Vulnerable	S2	Shores of rivers or lakes.
<i>Eleocharis erythropoda</i>	Red-stemmed Spikerush				S1	Fens (calcium-rich wetlands), marshes, shores of rivers or lakes, wetland margins (edges of wetlands).
<i>Antennaria rosea</i> and <i>ssp. arida</i>	Rosy Pussytoes				S1	Dry, open places, meadows, and open woods. It has very recently been confirmed at Cape d'Or.
<i>Eriophorum gracile</i>	Slender Cottongrass				S2S3	wet peat and inundated shores. Scattered eastward from Annapolis and Halifax counties.
<i>Eriophorum gracile</i> var. <i>gracile</i>	Slender Cottongrass				S2S3	wet peat and inundated shores. Scattered eastward from Annapolis and Halifax counties.
<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S2	bog, swamp. Widely scattered localities in province
<i>Silene antirrhina</i>	Sleepy Catchfly				S1	roadsides, railways, pastures, fields wastegrounds, alluvial woods. Recently found in CFB Greenwood.
<i>Agalinis paupercula</i>	Small-flowered Agalinis				S1	meadows and fields, shores of rivers or lakes, wetland margins
<i>Neottia bifolia</i>	Southern Twayblade				S3	Bog, mixed wood forest, swamps. Scattered from Shelburne, to Halifax, to Kings to Cape Breton counties
<i>Halenia deflexa</i> ssp. <i>brentoniana</i>	Spurred Gentian				S1?	forest edge, forests, meadows and fields
<i>Potamogeton pulcher</i>	Spotted Pondweed			Vulnerable	S2S3	aquatic perennial herb that grows in standing water. Yarmouth, Queens and Halifax Counties, reported in Digby Co.
<i>Panicum tuckermanii</i>	Tuckerman's Panic Grass				S3S4	meadows and fields, shores of rivers and lakes
<i>Equisetum variegatum</i>	Variegated Horsetail				S3	wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
<i>Equisetum variegatum</i> var. <i>variegatum</i>	Variegated Horsetail				S3	wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex peckii</i>	White-Tinged Sedge				S2?	Dry or mesic slopes, mixed deciduous forests, rocky outcrops, old quarries. King's Co., Rhodes Co., Lunenburg Co. Halifax and the Pennants area.
<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife				S1	Disturbed habitat, grassland, woodlands
<i>Vallisneria americana</i>	Wild Celery				S2	Ponds, lakes, and quiet streams at depths of 1 to 4 m. Colchester Co., Halifax Co., Cumberland Co., Reported from Northern Cape Breton
<i>Allium schoenoprasum</i>	Wild Chives				S2	disturbed habitats, floodplain, meadows and fields, ridges or ledges, shores of rivers and lakes.
<i>Allium schoenoprasum var. sibiricum</i>	Wild Chives				S2	disturbed habitats, floodplain, meadows and fields, ridges or ledges, shores of rivers and lakes.
<i>Allium tricoccum</i>	Wild Leek				S1	hardwood forest, intervale
<i>Juncus subcaudatus</i>	Woods-Rush				S3	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County
<i>Juncus subcaudatus var. planisepalus</i>	Woods-Rush				S3	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County
<i>Bartonia virginica</i>	Yellow Bartonia				S3	Dry barrens, sandy or peaty soils, bogs, lakeshores. Common in southwestern counties becoming scarcer east to Annapolis and Halifax; St. Peter's area of Cape Breton
Lichens						
<i>Anzia colpodes</i>	Black-foam Lichen	No Status	Th	Threatened	S3	This species occurs on the bark of hardwoods, and more rarely conifers, in humid forested habitats throughout temperate eastern North America.
<i>Cladina stygia</i>	Black-footed Reindeer Lichen				S3?	Most frequent in peatlands, particularly treeless bogs
<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S3	This lichen species is widespread and grows on the bases of hardwoods and occasionally on rocks in moist woods.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Collema furfuraceum</i>	Blistered Tarpaper Lichen				S3	On bark of hardwood and sometimes coniferous trees, especially in old forests.
<i>Degelia plumbea</i>	Blue Felt Lichen	SC	SC	Vulnerable	S3	Mature forests within varying moisture regimes. Typically located in hardwood stands, with Red maple, Sugar maple, or Yellow Birch.
<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	E	E	Endangered	S1	Mature to over mature Balsam Fir trees in open softwood forests with little to no regenerating understory. Typically, though not necessarily found in or near wetlands or wetland margins
<i>Physconia detersa</i>	Bottlebrush Frost Lichen				S3S4	On bark and wood; occasionally on rock.
<i>Pseudevernia consocians</i>	Common Antler Lichen				S1?	Grows on conifers in forest.
<i>Sclerophora peronella</i> (Nova Scotia pop.)	Frosted Glass-whiskers Lichen - Nova Scotia pop.	SC	SC		S1?	Tiny lichen stubble lichen, wood and bark of older trees in old growth forests. Stable humidity, minimal temperature fluctuations, and intermediate light.
<i>Erioderma mollissimum</i>	Graceful Felt Lichen (Vole Ears Lichen)	E	E	Endangered	S1S2	Mature to over mature Balsam Fir trees in open softwood forests with little to no regenerating understory. Typically, though not necessarily found in or near wetlands or wetland margins
<i>Psoroma hypnorum</i>	Green moss-shingle Lichen				S1	Among mosses on soil, wood, peat, rock and sometimes bark.
<i>Parmeliopsis ambigua</i>	Green Starburst Lichen				S2S3	Grows on conifer stumps, logs and bark in full sun.
<i>Fuscopannaria praetermissa</i>	Moss Shingles Lichen				S1	On mossy tree bases, occasionally on moist soil or damp rocks
<i>Nephroma bellum</i>	Naked Kidney Lichen				S3	On branches and twigs of trees especially conifers, and also on mossy rocks in humid forests.
<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S3	Grows on mossy bark
<i>Sticta limbata</i>	Powdered Moon Lichen				S1S2	Grows on bark or over mosses on trees. Grows on Fagus in high-elevation deciduous forests; also rare at lower elevations
<i>Everniastrum catawbiense</i>	Powder-tipped Antler Lichen				S2S3	Found on branches and twigs of deciduous shrubs and conifer trees

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Fuscopannaria leucosticta</i>	Rimmed Shingles Lichen				S2S3	Found on bark or occasionally rocks often among mosses
<i>Massalongia carnosa</i>	Rockmoss Rosette Lichen				S1S2	Grows on mosses or mossy rocks.
<i>Heterodermia squamulosa</i>	Scaly Fringe Lichen				S3	Found on trees, especially mossy tree bases in hardwood forests
<i>Leptogium lichenoides</i>	Tattered Jellyskin Lichen				S3	Grows on mossy rock
<i>Peltigera collina</i>	Tree Pelt Lichen				S2?	Most common on tree trunks and branches, especially among mosses, less frequently on mossy rocks, rarely on soil.
<i>Pannaria lurida</i>	Veined Shingle Lichen (Wrinkled Shingle Lichen)	No Status	Th	Threatened	S1S2	May be found on bark and the bases of trees in the open woods and roadsides
Invertebrates						
<i>Euphydrias phaeton & Euphydrias phaeton phaeton</i>	Baltimore Checkerspot				S2S3	Found in fresh-water marshes, wet roadsides and meadows. Larvae found feeding on Turtlehead (<i>Chelone glabra</i>) and has been reported to feed on beardtongue (<i>Penstemon digitalis</i>).
<i>Neurocordulia michaeli</i>	Broadtailed Shadowdragon				S1	Clean medium to large forested rivers.
<i>Alasmidonta varicosa</i>	Brook Floater	SC	SC	Threatened	S1S2	Flowing rivers of creeks with stable sand or gravel substrate. Confirmed in the following watersheds: Salmon (Guysborough County), St. Marys, Wallace, French River (Mattatall Lake), Gays, Annapolis and LaHave Rivers.
<i>Ophiogomphus aspersus</i>	Brook Snaketail				S2S3	Brook Snaketails need undisturbed fields and wooded uplands adjacent to breeding waters. It is here that critical foraging and breeding occurs. This species inhabits clean, relatively quiet or slow-moving streams with an abundance of sandy sediments.
<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S3	River- breeding dragonfly.
<i>Amblyscirtes vialis</i>	Common Roadside-Skipper				S3S4	Found in trails, roads in wooded areas and often near streams. Larvae are found feeding off of a variety of grass species.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Strophitus undulatus</i>	Creeper				S1	This species is a habitat generalist, with a wide distribution. It is usually found in streams and rivers in a range of flow conditions (rarely in high-gradient streams of mountainous regions) but can tolerate lakes and ponds, particularly in outlets.
<i>Lampsilis radiata</i>	Eastern Lampmussel				S3S4	This species inhabits a variety of aquatic habitats, including small streams, large rivers, ponds, and lakes. It is found on a wide variety of substrate types but prefers sand or gravel.
<i>Margaritifera margaritifera</i>	Eastern Pearlshell				S2	Found in streams and small rivers that support trout or salmon populations and exists in a variety of substrate. Wallace River, Salmon River (Guysborough County), North and East Branch St. Mary's River.
<i>Erora laeta</i>	Early Hairstreak				S1	Habitats are always in hardwood forests or hardwood-northern conifer mixed forests, although like most hairstreaks a few adults sometimes turn up on flowers away from the woods--at least southward. Beech-maple forests seem most typical, but more mixed types can also have populations. Most habitats contain a lot of beech, but collections have been reported where beech was not present in the immediate area (Sullivan, 1971, Allen, 1997), often single individuals on flowers. Nearly all records are from hilly or mountainous regions.
<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S2	Lentic. Habitat is bogs and fens. The microhabitat (sub-EO) is water-suspended or water-saturated Sphagnum ("quaking bog" and "moss lawn") whether or not associated with open water.
<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	Pond breeding
<i>Gomphus desertus</i>	Harpoon Clubtail				S2S3	River breeding
<i>Polygonia gracilis</i>	Hoary Comma				SU	A boreal forest species. Eastward most likely where currants (<i>Ribes</i>) are common and not south of (or below) regions where spruce and fir are common. Westward apparently

Goldboro LNG Priority Species List

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						mostly montane coniferous forests often near streams. At least in the west, adults wander to other habitats.
<i>Ophiogomphus mainensis</i>	Maine Snaketail				S2S3	Streams and small rivers.
<i>Danaus plexippus</i>	Monarch	SC	Endangered	Endangered	S2B	Almost anywhere during the spring (northward) migration; near the larval foodplants during the breeding season; in the fall commonly near the coast, often in large numbers, all heading south. Larvae are found feeding on the following Milkweed species: Common Milkweed (<i>Asclepias syriaca</i>) and Swamp Milkweed (<i>A. incarnata</i>), neither of which are abundant plants in Nova Scotia. Butterfly surveys for monarchs should be conducted in areas with potential to support milkweed species in mid to late summer and should be conducted by someone familiar with milkweed species.
<i>Somatochlora septentrionalis</i>	Muskeg Emerald				S2	Pond breeding.
<i>Thorybes pylades</i>	Northern Cloudywing				S2S3	A variety of brushy or wooded habitats with legumes, including some non-native ones. Not as limited to dry sites as <i>T. bathyllus</i> but they often co-occur
<i>Lanthus parvulus</i>	Northern Pygmy Clubtail				S3S4	Lotic. Overall habitat is clear streams and brooks with strong current over clean gravel, cobbles or bedrock, on comparatively unproductive soils ("trout stream"). Landform required to promote a strong current in small running waters generally has moderate to considerable relief, from hills to mountains. The microhabitat (sub-EO) is areas proximal to surface-breaking structure such as cobbles, boulders or deadwood in full current and proximal to sun-lit marginal vegetation.
<i>Boyeria grafiana</i>	Ocellated Darner				S3	Prefers swiftly flowing rocky forest streams and rivers; also rocky-shored lakes.
<i>Amblyscirtes hegon</i>	Pepper and Salt Skipper				S2S3	Found on the edges of forests and streams. Larvae found feeding on a variety of grass species.
<i>Epitheca princeps</i>	Prince Baskettail				S2	Pond breeding
<i>Somatochlora brevicincta</i>	Quebec Emerald				S1	Pools in sphagnum bogs.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Polygonia interrogationis</i>	Question Mark				S3B	Usually found near woodland linear disturbances such as trail and roads as well as in wood city parks. Larvae found feeding off of Nettles (<i>Urtica sp.</i>), Elms and Hops (<i>Humulus sp.</i>).
<i>Somatochlora albicincta</i>	Ringed Emerald				S2S3	Pond breeding.
<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail				S1S2	Inhabits flowing clear streams and rivers in the northeastern third of the U.S., and parts of southeast Canada.
<i>Polygonia satyrus</i>	Satyr Comma				S1?	Apparently much like <i>P.comma</i> generally near trees but probably can breed in almost any setting with nettles. It is primarily a boreal forest and woodland species often near streams
<i>Gomphus ventricosus</i>	Skillet Clubtail	E	E		S1	In the Northeast, the larvae inhabit large rivers where they burrow in the soft mud of deep pools
<i>Satyrium liparops and var. strigosum</i>	Striped Hairstreak				S2S3	Found in deciduous forest edges, gardens and roadsides. Larvae found feeding off of members of the Rosaceae family such as plum and cherries (<i>Prunus spp.</i>). Occurrences with Oak (<i>Quercus spp.</i>), Willow (<i>Salix spp.</i>) and Blueberry (<i>Vaccinium spp.</i>).
<i>Alasmidonta undulata</i>	Triangle Floater				S2S3	Frequently found in stream and rivers in sand and gravel substrates.
<i>Somatochlora williamsoni</i>	Williamson's Emerald				S2	Pond breeding.
<i>Stylurus scudderi</i>	Zebra Clubtail				S1S2	Clean rivers and streams with sand or sand and cobble bottoms and moderate current in wooded landscape; usually much gravel and at least scattered rocks.

APPENDIX D. PLANT AND LICHEN LIST

Goldboro LNG Road Re-alignment
Observed Plant List – Appendix D



Scientific Name	Common Name	SRank
<i>Agalinis neoscotica</i>	Nova Scotia Agalinis	S3S4
<i>Abies balsamea</i>	Balsam Fir	S5
<i>Acer rubrum</i>	Red Maple	S5
<i>Achillea millefolium</i>	Common Yarrow	S5
<i>Agrostis scabra</i>	Rough Bent Grass	S5
<i>Agrostis stolonifera</i>	Creeping Bent Grass	S5
<i>Alnus incana</i>	Speckled Alder	S5
<i>Alnus viridis</i>	Green Alder	S5
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5
<i>Andromeda polifolia</i>	Bog Rosemary	S5
<i>Aralia hispida</i>	Bristly Sarsaparilla	S5
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5
<i>Arethusa bulbosa</i>	Arethusa	S4
<i>Athyrium filix-femina</i>	Common Lady Fern	S5
<i>Bartonia paniculate</i>	Branched Bartonia	S4S5
<i>Betula cordifolia</i>	Heart-leaved Birch	S5
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5
<i>Calamagrostis pickeringii</i>	Pickering's Reed Grass	S4S5
<i>Carex arctata</i>	Black Sedge	S5
<i>Carex atlantica</i>	Atlantic Sedge	S4
<i>Carex bilingsii</i>	Billings' Sedge	S4
<i>Carex communis</i>	Fibrous-Root Sedge	S5
<i>Carex echinate</i>	Star Sedge	S5
<i>Carex exilis</i>	Coastal Sedge	S4
<i>Carex folliculata</i>	Northern Long Sedge	S5
<i>Carex gynandra</i>	Nodding Sedge	S5
<i>Carex lurida</i>	Sallow Sedge	S5
<i>Carex magellanica</i>	Boreal Bog Sedge	S5
<i>Carex novae-angliae</i>	New England Sedge	S5
<i>Carex pauciflora</i>	Few-Flowered Sedge	S4S5
<i>Carex scoparia</i>	Broom Sedge	S5
<i>Carex silicea</i>	Seabeach Sedge	S4
<i>Carex stricta</i>	Tussock Sedge	S5
<i>Centaurea nigra</i>	Black Knapweed	SNA
<i>Chamaedaphne calyculata</i>	Leatherleaf	S5
<i>Chelone glabra</i>	White Turtlehead	S5
<i>Cirsium vulgare</i>	Bull Thistle	SNA
<i>Clintonia borealis</i>	Yellow Bluebead Lily	S5
<i>Comarum palustre</i>	Marsh Cinquefoil	S5
<i>Coptis trifolia</i>	Goldthread	S5
<i>Corylus cornuta</i>	Beaked Hazel	S5
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5
<i>Dactylis glomerata</i>	Orchard Grass	SNA
<i>Danthonia spicata</i>	Poverty Oat Grass	S5
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	S5
<i>Deschampsia flexuosa</i>	Wavy Hair Grass	S5
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5

Goldboro LNG Road Re-alignment
Observed Plant List – Appendix D



Scientific Name	Common Name	SRank
<i>Drosera intermedia</i>	Spoon-Leaved Sundew	S5
<i>Drosera rotundifolia</i>	Round-leaved Sundew	S5
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5
<i>Dryopteris cristata</i>	Crested Wood Fern	S5
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5
<i>Epigaea repens</i>	Trailing Arbutus	S5
<i>Epilobium ciliatum</i>	Northern Willowherb	S5
<i>Equisetum arvense</i>	Field Horsetail	S5
<i>Equisetum fluviatile</i>	Water Horsetail	S5
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5
<i>Eriophorum tenellum</i>	Rough Cottongrass	S4S5
<i>Eriophorum vaginatum</i>	Tussock Cottongrass	S5
<i>Eriophorum virginicum</i>	Tawny Cottongrass	S5
<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed	S5
<i>Euphrasia nemorosa</i>	Common Eyebright	S5
<i>Eurybia radula</i>	Low Rough Aster	S5
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5
<i>Festuca filiformis</i>	Hair Fescue	SNA
<i>Galium palustre</i>	Common Marsh Bedstraw	S5
<i>Gaultheria hispidula</i>	Creeping Snowberry	S5
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry	S5
<i>Glyceria canadensis</i>	Canada Manna Grass	S5
<i>Glyceria grandis</i>	Common Tall Manna Grass	S4S5
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	SNA
<i>Hieracium pilosella</i>	Mouse-ear Hawkweed	SNA
<i>Hippuris vulgaris</i>	Common Mare's-Tail	S4
<i>Hypericum boreale</i>	Northern St John's-Wort	S5
<i>Hypericum canadense</i>	Canada St John's-wort	S5
<i>Hypericum perforatum</i>	Common St. John's-wort	SNA
<i>Iris versicolor</i>	Harlequin Blue Flag	S5
<i>Juncus balticus</i>	Baltic Rush	S5
<i>Juncus brevicaudatus</i>	Narrow-Panicled Rush	S5
<i>Juncus canadensis</i>	Canada Rush	S5
<i>Juncus effusus</i>	Soft Rush	S5
<i>Juncus pelocarpus</i>	Brown-Fruited Rush	S5
<i>Juncus tenuis</i>	Slender Rush	S5
<i>Juniperus communis</i>	Common Juniper	S5
<i>Kalmia polifolia</i>	Pale Bog Laurel	S5
<i>Larix laricina</i>	Tamarack	S5
<i>Lathyrus japonicus</i>	Beach Pea	S5
<i>Ledum groenlandicum</i>	Common Labrador Tea	S5
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA
<i>Linnaea borealis</i>	Twinflower	S5
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	SNA
<i>Lupinus nootkatensis</i>	Nootka Lupine	SNA
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5

Goldboro LNG Road Re-alignment
Observed Plant List – Appendix D



Scientific Name	Common Name	SRank
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5
<i>Maianthemum trifolium</i>	Three-leaved False Solomon's Seal	S5
<i>Malus pumila</i>	Common Apple	SNA
<i>Matricaria discoidea</i>	Pineapple Weed	SNA
<i>Mitchella repens</i>	Partridgeberry	S5
<i>Moneses uniflora</i>	One-flowered Wintergreen	S4S5
<i>Monotropa uniflora</i>	Indian Pipe	S5
<i>Morella pensylvanica</i>	Northern Bayberry	S5
<i>Muhlenbergia uniflora</i>	Bog Muhly	S5
<i>Myrica gale</i>	Sweet Gale	S5
<i>Nuphar variegata</i>	Variegated Pond-lily	S5
<i>Nuttallanthus canadensis</i>	Canada Toadflax	SNA
<i>Nymphaea odorata</i>	Fragrant Water-lily	S5
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5
<i>Oclemena nemoralis</i>	Bog Aster	S5
<i>Oenobien biennis</i>	Common Evening Primrose	S5
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5
<i>Osmunda claytoniana</i>	Interrupted Fern	S5
<i>Osmunda regalis</i>	Royal Fern	S5
<i>Oxalis stricta</i>	European Wood Sorrel	S5
<i>Persicaria maculosa</i>	Spotted Lady's-thumb	SNA
<i>Persicaria sagittata</i>	Arrow-leaved Smartweed	S5
<i>Phegopteris connectilis</i>	Northern Beech Fern	S5
<i>Phleum pratense</i>	Common Timothy	SNA
<i>Photinia floribunda</i>	Purple Chokeberry	S5
<i>Picea glauca</i>	White Spruce	S5
<i>Picea mariana</i>	Black Spruce	S5
<i>Picea rubens</i>	Red Spruce	S5
<i>Plantago major</i>	Common Plantain	SNA
<i>Plantago maritima</i>	Seaside Plantain	S5
<i>Platanthera clavellata</i>	Club Spur Orchid	S5
<i>Platanthera psycodes</i>	Small Purple Fringed Orchid	S4
<i>Poa annua</i>	Annual Blue Grass	SNA
<i>Polygonum cilinode</i>	Fringed Black Bindweed	S5
<i>Populus alba</i>	White Poplar	SNA
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5
<i>Prenanthes altissima</i>	Tall Rattlesnakeroot	S5
<i>Prenanthes trifoliolata</i>	Three-leaved Rattlesnakeroot	S5
<i>Prunella vulgaris</i>	Common Self-heal	S5
<i>Prunus serotina</i>	Black Cherry	S5
<i>Pteridium aquilinum</i>	Bracken Fern	S5
<i>Radiola linoides</i>	Tiny Allseed	SNA
<i>Ranunculus repens</i>	Creeping Buttercup	SNA
<i>Rhinanthus minor</i>	Little Yellow Rattle	SNA
<i>Rhododendron canadense</i>	Rhodora	S5

Goldboro LNG Road Re-alignment
Observed Plant List – Appendix D



McCallum Environmental Ltd.

Scientific Name	Common Name	SRank
<i>Rhynchospora alba</i>	White Beakrush	S5
<i>Ribes glandulosum</i>	Skunk Currant	S5
<i>Rosa nitida</i>	Shining Rose	S4S5
<i>Rubus allegheniensis</i>	Alleghaney Blackberry	S5
<i>Rubus chamaemorus</i>	Cloudberry	S4
<i>Rubus idaeus</i>	Red Raspberry	S5
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5
<i>Rumex crispus</i>	Curled Dock	SNA
<i>Sarracenia purpurea</i>	Northern Pitcher Plant	S5
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	S5
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5
<i>Solidago bicolor</i>	White Goldenrod	S5
<i>Solidago puberula</i>	Downy Goldenrod	S5
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5
<i>Solidago sempervirens</i>	Seaside Goldenrod	S5
<i>Sorbus americana</i>	American Mountain Ash	S5
<i>Spiraea alba</i>	White Meadowsweet	S5
<i>Spiraea tomentosa</i>	Steeplebush	S5
<i>Spiranthes cernua</i>	Nodding Ladies' -Tresses	S5
<i>Symphyotrichum lateriflorum</i>	Calico Aster	S5
<i>Symphyotrichum novae-angliae</i>	New England Aster	SNA
<i>Symphyotrichum novi-belgii</i>	New York Aster	S5
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5
<i>Thelypteris noveboracensis</i>	New York Fern	S5
<i>Thelypteris palustris</i>	Eastern Marsh Fern	S5
<i>Triadenum virginicum</i>	Virginia St John's-wort	S5
<i>Tricophorum cespitosum</i>	Tufted Clubrush	S5
<i>Trientalis borealis</i>	Northern Starflower	S5
<i>Trifolium arvense</i>	Rabbit's-foot Clover	SNA
<i>Trifolium campestre</i>	Low Hop Clover	SNA
<i>Trifolium pratense</i>	Red Clover	SNA
<i>Triglochin maritima</i>	Seaside Arrowgrass	S5
<i>Utricularia cornuta</i>	Horned Bladderwort	S5
<i>Utricularia geminiscapa</i>	Twin-stemmed Bladderwort	S4
<i>Utricularia macrorhiza</i>	Greater Bladderwort	S5
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	S5
<i>Vaccinium macrocarpon</i>	Large Cranberry	S5
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5
<i>Vaccinium oxycoccos</i>	Small Cranberry	S5
<i>Vaccinium vitis-idaea</i>	Mountain Cranberry	S5
<i>Veronica officinalis</i>	Common Speedwell	S5
<i>Viburnum nudum</i>	Northern Wild Raisin	S5
<i>Viola cucullata</i>	Marsh Blue Violet	S5

Lichen List

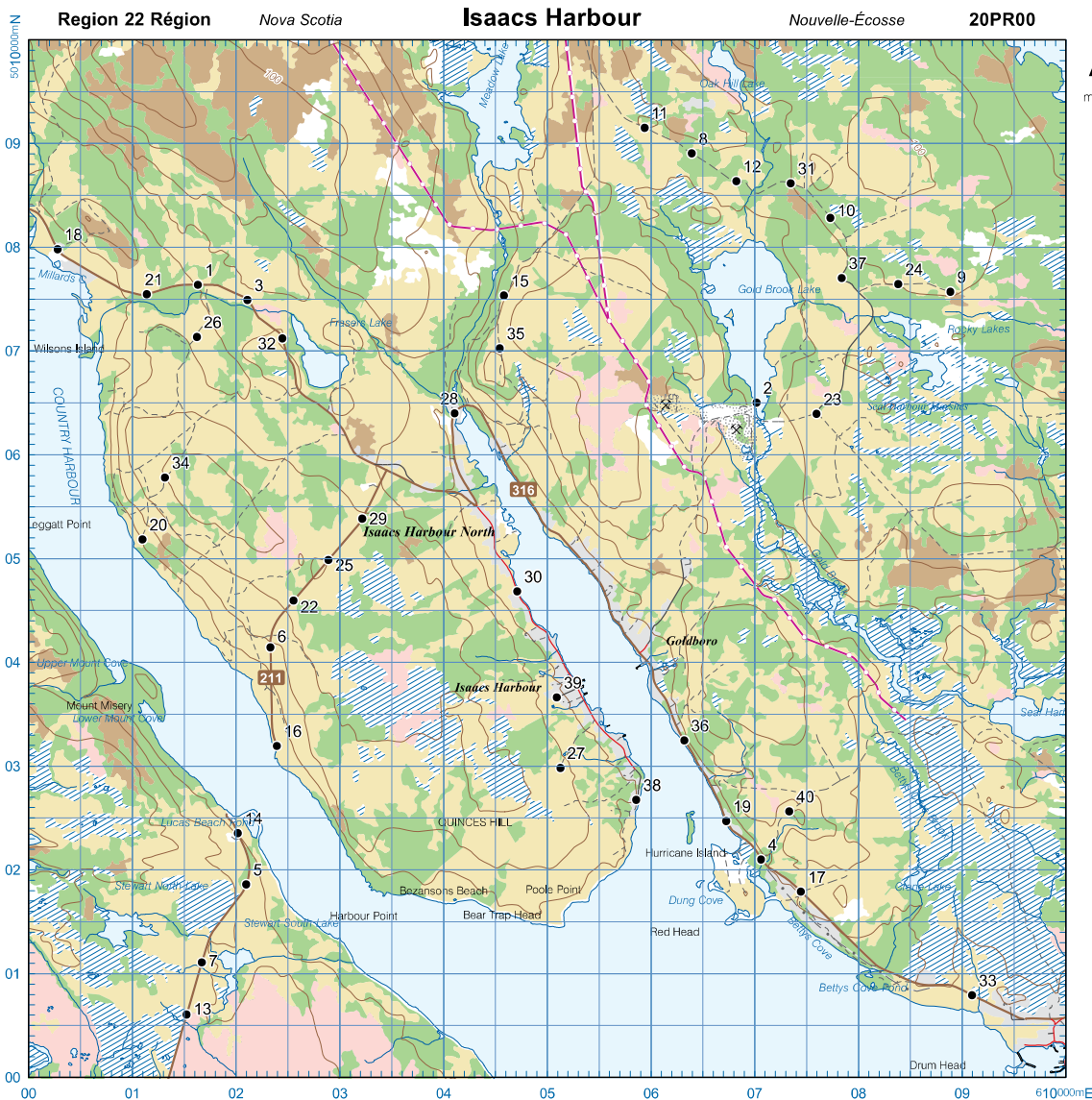
Scientific Name	Common Name	SARA	COSEWIC	NSESA	ACCDC	Study Area Location
<i>Degelia plumbea</i>	Blue Felt Lichen	SC	SC	V	S3	Corridor road and Proposed Planned Temporary Laydown Area Expansion
<i>Fuscopannaria sorediata</i>	Lichen	-	-	-	S3	Proposed Planned Temporary Laydown Area Expansion
<i>Arctoparmelia incurva</i>	Finger Ring Lichen	-	-	-	S3S4	Dung Cove Pond
<i>Chaenotheca balsamconensis</i>	n/a	-	-	-	n/a	-
<i>Cladina rangiferina</i>	Gray Reindeer Lichen	-	-	-	S5	-
<i>Cladina stellaris</i>	Star-tipped Reindeer Lichen	-	-	-	S5	-
<i>Cladonia boryi</i>	Fishnet Lichen	-	-	-	S5	-
<i>Cladonia cistatella</i>	Organpipe Lichen	-	-	-	S5	-
<i>Cladonia maxima</i>	Giant Cladonia Lichen	-	-	-	S5	-
<i>Cladonia multiformis</i>	Sieve Lichen	-	-	-	S5	-
<i>Collema subflaccidum</i>	Tree Tarpaper Lichen	-	-	-	S5	-
<i>Flavoparmelia caperata</i>	Granulated Greenshield Lichen	-	-	-	S5	-
<i>Hypogymnia incurvodes</i>	Lattice Tube Lichen	-	-	-	S4S5	-
<i>Hypogymnia physodes</i>	Monk's Hood Lichen	-	-	-	S3S4	-
<i>Hypogymnia tubulosa</i>	Powder-headed Tube Lichen	-	-	-	S5	-
<i>Imshaugia aleurites</i>	Salted Starburst Lichen	-	-	-	S4	-
<i>Leptogium cyanescens</i>	Blue Jellyskin Lichen	-	-	-	S5	-
<i>Lobaria pulmonaria</i>	Lungwort Lichen	-	-	-	S5	-
<i>Lobaria scrobiculata</i>	Textured Lungwort Lichen	-	-	-	S5	-
<i>Montanelia sorediata</i>	Powdered Brown Shield Lichen	-	-	-	SU	-
<i>Mycoblastus sanguineroideus</i>	n/a	-	-	-	n/a	-
<i>Nephroma helveticum</i>	Fringed Kidney Lichen	-	-	-	S4S5	-
<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen	-	-	-	S4	-

Scientific Name	Common Name	SARA	COSEWIC	NSESA	ACCDC	Study Area Location
<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen	-	-	-	S4	-
<i>Parmelia saxatilis</i>	Salted Shield Lichen	-	-	-	S5	-
<i>Parmelia sulcate</i>	Hammered Shield Lichen	-	-	-	S5	-
<i>Parmeliella triptophylla</i>	Black-bordered Shingles Lichen	-	-	-	S5	-
<i>Platismatia glauca</i>	Varied Rag Lichen	-	-	-	S5	-
<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen	-	-	-	S5	-
<i>Ramalina roesleri</i>	Frayed Ramalina Lichen	-	-	-	S5	-
<i>Umbilicaria mammulata</i>	Smooth Rocktripe Lichen	-	-	-	S5	-

Bolded species are those that have legal protection.

“-“ indicates no entry.

APPENDIX E. MBBA RESULTS AND BIRD OBSERVATIONS PER POINT COUNT



**Maritime Breeding Bird Atlas
2006 - 2010**
Atlas des oiseaux nicheurs des Maritimes



6° Universal Transverse Mercator (UTM) Projection, Zone 20,
North American Datum (NAD) 1983.
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6° Projection universel transverse de Mercator (UTM), Zone 20,
Système de référence nord-américain de 1983.
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Disclaimer The Province of Nova Scotia accepts no liability for any errors, deficiencies, or faults on this map.

Avis La Province de la Nouvelle-Écosse ne peut être tenu responsable pour des erreurs, déficiences ou anomalies dans la présente carte.

Cartographic production by the
Nova Scotia Department of Natural Resources, 2006.
Production cartographique de la Province de la Nouvelle-Écosse,
Ministère des Ressources naturelles, 2006.

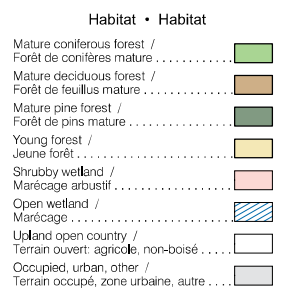
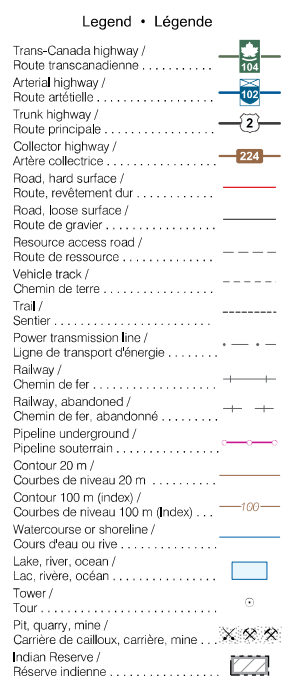
Roadside Point Count Coordinates
Coordonnées de points d'écoute de bordure de route

#	Easting	Northing	#	Easting	Northing
	Abcisse	Ordonnée		Abcisse	Ordonnée
01	601,634	5,007,640	21	601,140	5,007,548
02	607,018	5,006,503	22	602,554	5,004,595
03	602,110	5,007,492	23	607,599	5,006,395
04	607,064	5,002,100	24	608,386	5,007,646
05	602,099	5,001,861	25	602,890	5,004,987
06	602,332	5,004,145	26	601,623	5,007,137
07	601,670	5,001,109	27	605,127	5,002,982
08	606,395	5,008,905	28	604,107	5,006,400
09	608,888	5,007,573	29	603,216	5,005,386
10	607,731	5,008,284	30	604,712	5,004,685
11	605,942	5,009,152	31	607,350	5,008,617
12	606,825	5,008,638	32	602,449	5,007,122
13	601,524	5,000,606	33	609,097	5,000,792
14	602,017	5,002,354	34	601,314	5,005,781
15	604,563	5,007,536	35	604,544	5,007,027
16	602,395	5,003,195	36	606,322	5,003,248
17	607,447	5,001,789	37	607,841	5,007,704
18	600,279	5,007,981	38	605,860	5,002,676
19	606,727	5,002,470	39	605,094	5,003,663
20	601,097	5,005,186	40	607,336	5,002,563

Map is for Maritime Breeding Atlas work only.
L'usage de cette carte est limité aux activités de l'Atlas des oiseaux nicheurs des Maritimes seulement.



Apr 13, 2006



Square Summary (20PR00)

#species (1st atlas)		#species (2nd atlas)		#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total
1	1	1	3	44	16	21	81
				2	13.2	0	0

Region summary (#22: Guysborough)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
54	44	49	129	149	227	202

Target number of point counts in this square: 12 road side, 3 off road (1 in Mature coniferous, 1 in Mature deciduous, 1 in Open wetlands). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose		FY	4	57	Killdeer			11	2	Black-back Woodpecker			18	26
Wood Duck			6	22	Spotted Sandpiper		T	47	55	Northern Flicker		P	59	83
American Black Duck	H	H	43	71	Greater Yellowlegs †		H	0	2	Pileated Woodpecker			13	32
Mallard			9	20	Least Sandpiper †			2	0	American Kestrel			18	30
Blue-winged Teal ‡			2	8	Wilson's Snipe			20	26	Merlin		H	9	28
Green-winged Teal			11	18	American Woodcock		S	22	34	Olive-sided Flycatcher †		S	29	48
Ring-necked Duck			29	40	Ring-billed Gull ‡§			0	0	Eastern Wood-Pewee			18	26
Common Eider §		FY	47	42	Herring Gull §			54	36	Yellow-bellied Flycatcher		S	34	85
Common Merganser		P	13	53	Great Black-backed Gull §			56	38	Alder Flycatcher		CF	52	85
Red-breast Merganser ‡		P	4	36	Roseate Tern ‡§			9	2	Least Flycatcher		S	25	55
Ring-necked Pheasant ‡			2	20	Common Tern §			11	36	Eastern Phoebe ‡			2	8
Ruffed Grouse		FY	34	53	Arctic Tern ‡§			18	14	Eastern Kingbird			20	12
Spruce Grouse			22	32	Black Guillemot ‡§			11	16	Blue-headed Vireo		CF	47	75
Common Loon	P	S	47	71	Rock Pigeon			15	26	Red-eyed Vireo		T	47	77
Leach's Storm-Petrel ‡§			22	8	Mourning Dove		FY	15	73	<u>Gray Jay</u>			40	65
Double-crest Cormorant §			43	26	Great Horned Owl			15	20	Blue Jay		P	52	77
Great Cormorant ‡§			9	6	Northern Hawk Owl †			0	0	American Crow		CF	61	85
American Bittern ‡			4	12	Barred Owl			18	40	Common Raven		FY	59	83
Great Blue Heron §			47	30	Long-eared Owl †		S	0	2	Tree Swallow		AE	54	83
Turkey Vulture ‡ ^a			2	0	Short-eared Owl †		H	0	2	Bank Swallow §		AE	40	14
Osprey		P	54	51	North Saw-whet Owl			2	24	Cliff Swallow §			20	6
Bald Eagle ^a		P	34	55	Common Nighthawk †		S	15	28	Barn Swallow		H	54	59
Northern Harrier			27	24	Chimney Swift †			18	8	Black-capp Chickadee		S	54	91
Sharp-shinned Hawk			9	16	Ruby-thr Hummingbird		H	34	61	Boreal Chickadee		S	63	85
Northern Goshawk			11	8	Belted Kingfisher		H	43	73	Red-breast Nuthatch		FY	61	79
Broad-winged Hawk ‡		H	4	22	Yellow-bellied Sapsucker			13	26	White-breast Nuthatch ‡			2	12
Red-tailed Hawk			22	42	Downy Woodpecker		S	34	55	Brown Creeper			6	30
Golden Eagle ‡			2	0	Hairy Woodpecker		P	36	71	Winter Wren		S	34	83
Piping Plover †			4	2	Am Three-toed Woodpecker †			0	2	Golden-crown Kinglet		S	56	91

Maritimes Breeding Bird Atlas - Summary Sheet for Square 20PR00 (page 2 of 2)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd		
Ruby-crown Kinglet	T		61	89	Pine Warbler †			0	2	Evening Grosbeak	H		34	30
Eastern Bluebird †			2	2	Yellow-rumped Warbler	CF		61	93	House Sparrow			27	4
Veery	S		11	18	Black-thr Green Warbler	CF		56	91					
Swainson's Thrush	P		56	91	Canada Warbler †	S		38	34					
Hermit Thrush	CF		63	91	Wilson's Warbler	S		31	34					
American Robin	CF		65	91	Chipping Sparrow	S		34	26					
Gray Catbird	S		22	38	Savannah Sparrow	S		34	46					
Northern Mockingbird †			4	0	Ipswich Sparrow †			2	0					
European Starling	CF		47	71	Nelson's Sh.-tail Sparrow			9	18					
Cedar Waxwing	S		43	83	Fox Sparrow	S		29	38					
Ovenbird	S		20	61	Song Sparrow	CF		68	87					
North Waterthrush	S		18	42	Lincoln's Sparrow	S		47	73					
Black-white Warbler	P		54	91	Swamp Sparrow	S		43	81					
Tennessee Warbler	S		50	44	White-throat Sparrow	FY		59	93					
Nashville Warbler	S		45	81	Dark-eyed Junco	AY	CF	68	93					
Mourning Warbler	S		43	55	Scarlet Tanager †			0	0					
Common Yellowthroat	P		63	95	Rose-breast Grosbeak			22	4					
Hooded Warbler ‡			0	0	Bobolink			25	0					
American Redstart	T		56	87	Red-wing Blackbird	S		29	40					
Cape May Warbler			20	12	Eastern Meadowlark †			0	2					
Northern Parula	S		45	67	Rusty Blackbird †			18	14					
Magnolia Warbler	S		61	91	Common Grackle	CF		43	79					
Bay-breasted Warbler	S		34	55	Brown-head Cowbird			22	2					
Blackburnian Warbler	S		36	44	Pine Grosbeak			34	18					
Yellow Warbler	T		43	73	Purple Finch	S		52	79					
Chestn-sided Warbler	S		22	42	Red Crossbill †			9	22					
Blackpoll Warbler	FY		27	32	White-winged Crossbill			38	36					
Black-thr Blue Warbler			11	10	Pine Siskin			43	32					
Palm Warbler	S		50	83	American Goldfinch	P		56	85					

This list includes all species found during the Maritimes Breeding Bird Atlas (1st atlas: 1986-1990, 2nd atlas: 2006-2010) in the region #22 (Guysborough). Underlined species are those that you should try to add to this square (20PR00). They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. "Code" is the code for the highest breeding evidence for that species in square 20PR00 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #22). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), † (rare in the Maritimes) or * (rare in the Maritimes, documentation only required for confirmed records). Current as of 2/10/2020. An up-to-date version of this sheet is available from <http://www.mba-aom.ca/jsp/summaryform.jsp?squareID=20PR00?lang=en>

Table 1. Spring Migration

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
American crow							1			1			1				2	
American goldfinch							20										1	
American robin						1		1					1				1	
Black-capped chickadee	3																	
Boreal chickadee	3																	
Common grackle								3										
Common loon																2		
Dark-eyed junco						1			1	1			1				1	2
European starling							4											
Golden-crowned kinglet					5													
Hermit thrush									1									
Herring gull																2		
Nashville warbler									1	1								
Northern flicker	1					1	1	1	1					2				
Osprey						1	2											1
Palm warbler									2	1	1		1					
Purple finch			1				1											
Ruby-crowned kinglet								1	1									
Song sparrow							1							1			1	
Swamp sparrow									1									
Unknown bird	1																	
Total Species	3	0	1	0	1	4	7	4	7	4	1	0	4	2	0	2	5	2
Total Individuals	8	0	1	0	5	4	30	6	8	4	1	0	4	3	0	4	6	3

Table 2. Breeding Bird

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
Alder Flycatcher	20			1		4	2	3	1		3	2	1	3		1	4	
American Crow	3	1				1		4	1			2	2	2	1	1		
American Goldfinch					1	1	2	1										
American Redstart	6	5	2			2	2	3	3						2	3	2	1
American Robin	2				2	1	2	3		2				3		4	2	
Barn Swallow							2											
Bay-breasted Warbler		1	2															
Belted Kingfisher																3	1	
Black-and-white Warbler	3	1	1	2	2	1	2	2	1		3	4	3	1	1	2	2	2
Black-capped Chickadee				2			4		1		2	1				1		
Blackpoll Warbler								3										
Black-throated Green Warbler	2		3	1	1			1									1	1
Blue Jay				1						1								
Blue-headed Vireo	1		2	2	1				1	1	2						1	
Boreal Chickadee				2														1
Canada Warbler				3	1													1
Cedar Waxwing				1	1	1		2			1	1	2		1	1		
Chestnut-sided Warbler							1											
Common Grackle															1			
Common Loon														1				
Common Raven									1									
Common Tern													1		2			1

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
Common Yellowthroat	2	2	1		4	1	1	4	3	2		2	1	3	1	4	1	2
Dark-eyed Junco		2	3			1			1	1	2	3	3		1	3		
Golden-crowned Kinglet		1	2		2	1	1				2			2			3	
Gray Catbird	1														1			
Gray Jay		1									3							
Great Black-backed Gull															1	1		
Greater Yellowlegs									1									1
Hairy Woodpecker		1						2										1
Hermit Thrush	2	1	2	3	1	3		2	3	3	6	1	4	5	2	1	4	
Herring Gull																2	4	
Least Flycatcher		1																
Lincoln's Sparrow		4							1			1	2					
Magnolia Warbler	1		1	2		3	2	3	2	4		2	1	2	1	1	1	2
Mourning Warbler	1																3	
Nashville Warbler		2	1	1	2	2	1	1	1	2	2		3					1
Northern Flicker									1									
Northern Harrier															1			
Northern Parula																1		
Osprey																1		
Palm Warbler			1	2			1		2	1		3	2	1				5
Purple Finch									2				3					
Red-breasted Nuthatch		1		1														
Red-eyed Vireo			1				3	1	1						2	1		1
Ruby-crowned Kinglet				1				1	1	3		3	1					2

	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12	PC13	PC14	PC15	PC16	PC17	PC18
Song Sparrow	4					2	2	2		1			1	2		3	2	
Swainson's Thrush	2	4	1	1	2	4	2	2				1	1			2	3	
Swamp Sparrow									1					3		1		
Tree Swallow						2		2								3	2	
White-throated Sparrow	4	1	2	2	4	7	1	3	2	3	2	1	6	2	1	1	2	2
Willet													1	1				
Wilson's Snipe				1	1													
Wilson's Warbler		1						2	1	2					1			
Winter Wren	2						1											
Yellow Warbler	2					3	2	1	2		2			2		2		
Yellow-bellied Flycatcher		1	1	2	3				1	1	4	1	1	1	1			1
Yellow-rumped Warbler		2		2	1	2	1		1		1	2	1	1	1			1
Total Species	17	19	16	20	16	19	20	22	25	14	14	16	20	17	18	23	17	16
Total Individuals	58	33	26	33	29	42	35	48	36	27	35	30	40	35	22	43	38	25

APPENDIX F. ACCDC RESULTS

DATA REPORT 6683: Goldboro, NS

Prepared 17 August 2020
by C. Robicheau, Data Manager

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- 3.2 Significant Areas
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Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

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

1.1 DATA LIST

Included datasets:

<u>Filename</u>	<u>Contents</u>
GoldboroNS_6683ob.xls	Rare and legally protected Flora and Fauna in your study area
GoldboroNS_6683ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
GoldboroNS_6683ma.xls	Managed Areas in your study area
GoldboroNS_6683sa.xls	Significant Natural Areas in your study area
GoldboroNS_6683ff.xls	Rare and common Freshwater Fish in your study area (DFO database)

1.2 RESTRICTIONS

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

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

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries

Sean Blaney, Senior Scientist, Executive Director

Tel: (506) 364-2658

sean.blaney@accdc.ca

Animals (Fauna)

John Klymko, Zoologist

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Plant Communities

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Data Management, GIS

James Churchill, Data Manager

Tel: (902) 679-6146

james.churchill@accdc.ca

Billing

Jean Breau

Tel: (506) 364-2657

jean.breau@accdc.ca

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

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

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

Western: Emma Vost
(902) 670-8187
Emma.Vost@novascotia.ca

Western: Sarah Spencer
(902) 634-7555
Sarah.Spencer@novascotia.ca

Central: Shavonne Meyer
(902) 893-6350
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
(902) 890-1046
Kimberly.George@novascotia.ca

Eastern: Harrison Moore
(902) 497-4119
Harrison.Moore@novascotia.ca

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

2.0 RARE AND ENDANGERED SPECIES

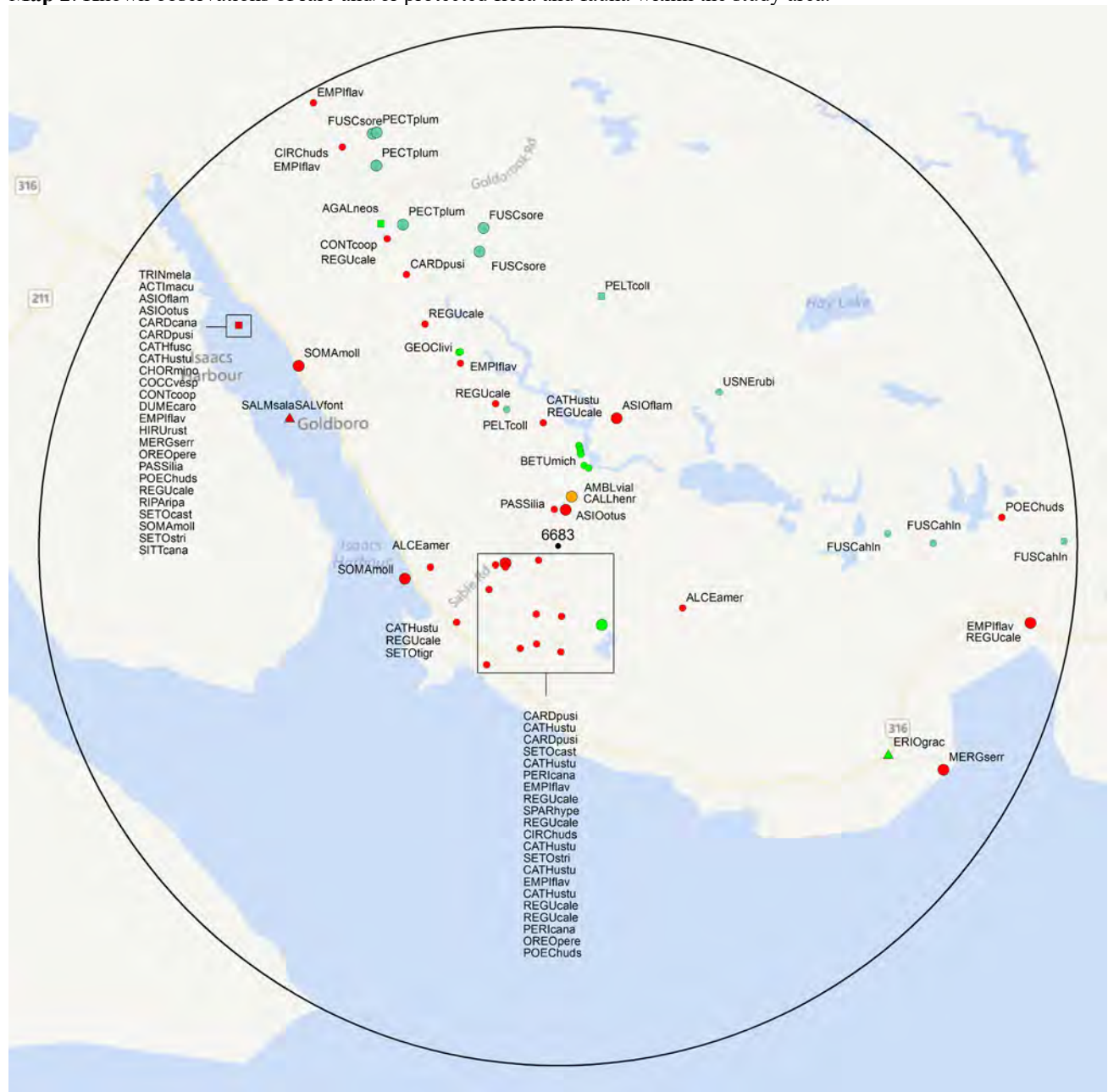
2.1 FLORA

The study area contains 13 records of 5 vascular and 12 records of 5 nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 79 records of 30 vertebrate and 2 records of 2 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if “location-sensitive” species occur near your study site.

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



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

- HIGHER TAXON**
- vertebrate fauna
 - invertebrate fauna
 - vascular flora
 - nonvascular flora

3.0 SPECIAL AREAS

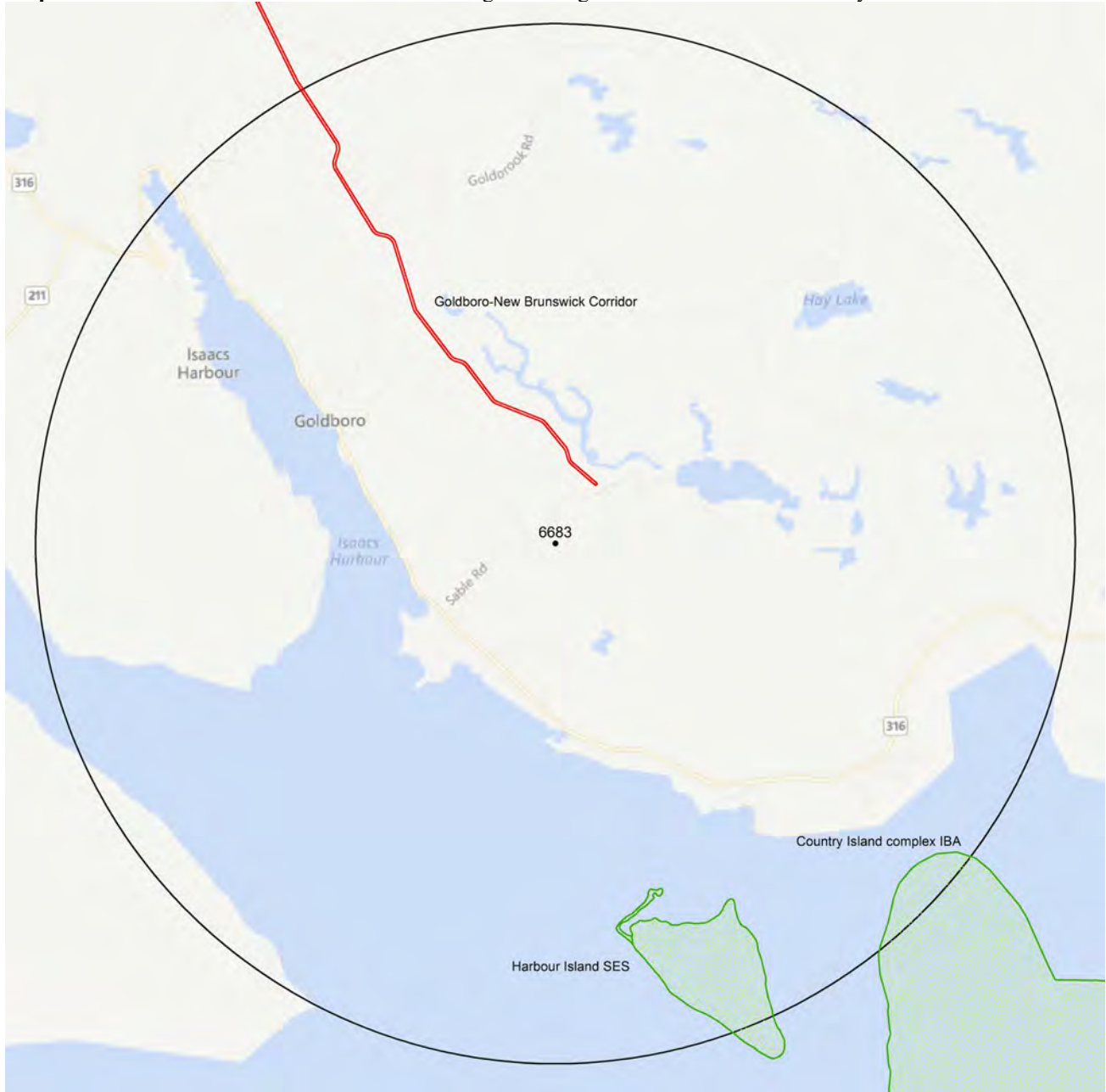
3.1 MANAGED AREAS

The GIS scan identified 1 managed area in the vicinity of the study area (Map 3 and attached file: *ma*.xls).

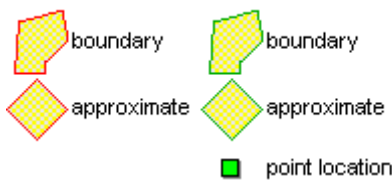
3.2 SIGNIFICANT AREAS

The GIS scan identified 2 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls).

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



MANAGED AREAS SIGNIFIANT AREAS



4.0 RARE SPECIES LISTS

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

4.1 FLORA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
N	<i>Pectenia plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	3	3.4 \pm 0.0
N	<i>Peltigera collina</i>	Tree Pelt Lichen				S2?	3 Sensitive	2	1.4 \pm 0.0
N	<i>Usnea rubicunda</i>	Red Beard Lichen				S2S3	3 Sensitive	1	2.1 \pm 0.0
N	<i>Fuscopannaria ahlneri</i>	Corrugated Shingles Lichen				S3	4 Secure	3	3.2 \pm 0.0
N	<i>Fuscopannaria sorediata</i>	a Lichen				S3		3	2.9 \pm 0.0
P	<i>Sparganium hyperboreum</i>	Northern Burreed				S1S2	3 Sensitive	1	0.9 \pm 0.0
P	<i>Betula michauxii</i>	Michaux's Dwarf Birch				S2S3	3 Sensitive	8	0.8 \pm 0.0
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S2S3	3 Sensitive	1	3.8 \pm 1.0
P	<i>Geocaulon lividum</i>	Northern Comandra				S3	4 Secure	2	2.1 \pm 0.0
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3S4	4 Secure	1	3.5 \pm 4.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Endangered	S2S3B	2 May Be At Risk	1	3.7 \pm 7.0
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Endangered	S2S3B	1 At Risk	1	3.7 \pm 7.0
A	<i>Cardellina canadensis</i>	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	1	3.7 \pm 7.0
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	2	1.4 \pm 0.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S2B	1 At Risk	1	3.7 \pm 7.0
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S2B	1 At Risk	2	3.4 \pm 0.0
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3S4B,S3N	4 Secure	1	3.7 \pm 7.0
A	<i>Circus hudsonius</i>	Northern Harrier	Not At Risk			S3S4B	4 Secure	2	0.7 \pm 0.0
A	<i>Salmo salar</i>	Atlantic Salmon	E,T,SC			S1	2 May Be At Risk	1	2.9 \pm 1.0
A	<i>Alces americanus</i>	Moose			Endangered	S1	1 At Risk	3	0.6 \pm 0.0
A	<i>Setophaga tigrina</i>	Cape May Warbler				S2B	3 Sensitive	1	1.2 \pm 0.0
A	<i>Asio otus</i>	Long-eared Owl				S2S3	2 May Be At Risk	2	0.4 \pm 0.0
A	<i>Perisoreus canadensis</i>	Canada Jay				S3	3 Sensitive	2	0.7 \pm 0.0
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3	3 Sensitive	4	1.3 \pm 0.0
A	<i>Sitta canadensis</i>	Red-breasted Nuthatch				S3	4 Secure	1	3.7 \pm 7.0
A	<i>Salvelinus fontinalis</i>	Brook Trout				S3	3 Sensitive	1	2.9 \pm 1.0
A	<i>Dumetella carolinensis</i>	Gray Catbird				S3B	2 May Be At Risk	1	3.7 \pm 7.0
A	<i>Cardellina pusilla</i>	Wilson's Warbler				S3B	3 Sensitive	4	0.2 \pm 0.0
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	1	3.7 \pm 7.0
A	<i>Somateria mollissima</i>	Common Eider				S3S4	4 Secure	4	1.5 \pm 0.0
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B	3 Sensitive	2	3.7 \pm 7.0
A	<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	7	0.8 \pm 0.0
A	<i>Regulus calendula</i>	Ruby-crowned Kinglet				S3S4B	3 Sensitive	12	0.7 \pm 0.0
A	<i>Catharus fuscescens</i>	Veery				S3S4B	4 Secure	1	3.7 \pm 7.0
A	<i>Catharus ustulatus</i>	Swainson's Thrush				S3S4B	4 Secure	10	0.5 \pm 0.0
A	<i>Oreothlypis peregrina</i>	Tennessee Warbler				S3S4B	3 Sensitive	2	1.3 \pm 0.0
A	<i>Setophaga castanea</i>	Bay-breasted Warbler				S3S4B	3 Sensitive	3	0.7 \pm 0.0
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B	3 Sensitive	2	1.0 \pm 0.0
A	<i>Passerella iliaca</i>	Fox Sparrow				S3S4B	4 Secure	2	0.4 \pm 0.0
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3S4B,S5N	4 Secure	2	3.7 \pm 7.0
I	<i>Callophrys henrici</i>	Henry's Elfin				S3	4 Secure	1	0.5 \pm 0.0

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
1	<i>Amblyscirtes vialis</i>	Common Roadside-Skipper				S3S4	4 Secure	1	0.5 ± 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?
<i>Fraxinus nigra</i>	Black Ash		Threatened	No
<i>Emydoidea blandingii</i>	Blanding's Turtle - Nova Scotia pop.	Endangered	Vulnerable	No
<i>Glyptemys insculpta</i>	Wood Turtle		Threatened	No
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat hibernaculum or bat species occurrence		[Endangered]¹	[Endangered]¹	YES

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

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
38	Bell, G. 2018. Moose, bat and bird records from Goldboro LNG Project, NS, Environmental Assessment. Amec Foster Wheeler.
37	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
10	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
8	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
3	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
2	Benjamin, L.K. (compiler) 2012. Significant Habitat & Species Database. NS Dept of Natural Resources.
2	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
2	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
2	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database [as of 2018-03]. Mersey Tobeatic Research Institute.
2	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
1	Bird Studies Canada & Nature Canada. 2004-10. Important Bird Areas of Canada Database. Bird Studies Canada, Port Rowan ON, 62 objects.
1	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
1	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
1	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.
1	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 19,702 records of 138 vertebrate and 420 records of 45 invertebrate fauna; 3213 records of 222 vascular and 1700 records of 85 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	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	42	27.7 ± 0.0	NS
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered		S1	2 May Be At Risk	1	97.6 ± 0.0	NS
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B	1 At Risk	678	17.1 ± 7.0	NS
A	<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	S1B	1 At Risk	76	8.0 ± 0.0	NS
A	<i>Dermochelys coriacea (Atlantic pop.)</i>	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered		S1S2N		2	54.7 ± 0.0	NS
A	<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered	Endangered	Endangered	S2M	1 At Risk	17	10.0 ± 0.0	NS
A	<i>Pagophila eburnea</i>	Ivory Gull	Endangered	Endangered		SNA	8 Accidental	1	83.4 ± 0.0	NS
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1 At Risk	2	61.7 ± 7.0	NS
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Endangered	S1S2B	1 At Risk	1	77.2 ± 7.0	NS
A	<i>Limosa haemastica</i>	Hudsonian Godwit	Threatened			S1S2M	3 Sensitive	5	57.9 ± 0.0	NS
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2	3 Sensitive	3865	23.2 ± 10.0	NS
A	<i>Anguilla rostrata</i>	American Eel	Threatened			S2	4 Secure	3	81.3 ± 0.0	NS
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	1 At Risk	136	23.2 ± 7.0	NS
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Endangered	S2S3B	2 May Be At Risk	528	3.7 ± 7.0	NS
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Endangered	S2S3B	1 At Risk	426	3.7 ± 7.0	NS
A	<i>Cardellina canadensis</i>	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	368	3.7 ± 7.0	NS
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Vulnerable	S3S4B	3 Sensitive	174	15.3 ± 7.0	NS
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened		SHB	3 Sensitive	2	24.3 ± 0.0	NS
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened		SUB	5 Undetermined	8	14.0 ± 7.0	NS
A	<i>Passerculus sandwichensis princeps</i>	Savannah Sparrow princeps ssp	Special Concern	Special Concern		S1B	3 Sensitive	3	15.3 ± 7.0	NS
A	<i>Bucephala islandica (Eastern pop.)</i>	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern		S1N	1 At Risk	2	93.2 ± 0.0	NS
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	4	1.4 ± 0.0	NS
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	173	16.1 ± 0.0	NS
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S2B	1 At Risk	182	3.7 ± 7.0	NS
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S2B	1 At Risk	593	3.4 ± 0.0	NS
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S2N	1 At Risk	36	10.0 ± 0.0	NS
A	<i>Morone saxatilis pop. 1</i>	Striped Bass- Southern Gulf of St Lawrence pop.	Special Concern			S2S3N	2 May Be At Risk	1	56.4 ± 1.0	NS
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	3 Sensitive	28	29.9 ± 0.0	NS
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	3 Sensitive	222	13.2 ± 7.0	NS
A	<i>Coccythraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3S4B,S3N	4 Secure	234	3.7 ± 7.0	NS
A	<i>Phocoena phocoena pop. 1</i>	Harbour Porpoise - Northwest Atlantic pop.	Special Concern			S4		1	55.0 ± 0.0	NS
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern		S4N	4 Secure	6	53.1 ± 0.0	NS
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern			S4S5	4 Secure	2	48.2 ± 1.0	NS
A	<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	Special Concern	Special Concern		SNA	8 Accidental	1	86.0 ± 0.0	NS
A	<i>Lynx canadensis</i>	Canadian Lynx	Not At Risk		Endangered	S1	1 At Risk	6	70.4 ± 1.0	NS
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S1B	2 May Be At Risk	3	10.0 ± 0.0	NS
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SNAM	3 Sensitive	3	54.8 ± 7.0	NS
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S2?B	5 Undetermined	5	34.7 ± 7.0	NS
A	<i>Hemidactylium scutatum</i>	Four-toed Salamander	Not At Risk			S3	4 Secure	11	16.4 ± 0.0	NS
A	<i>Megaptera novaeangliae</i>	Humpback Whale (NW Atlantic pop.)	Not At Risk			S3		2	55.0 ± 0.0	NS
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B	3 Sensitive	369	7.2 ± 7.0	NS
A	<i>Sialia sialis</i>	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	14	13.2 ± 7.0	NS
A	<i>Buteo lagopus</i>	Rough-legged Hawk	Not At Risk			S3N	4 Secure	5	28.4 ± 6.0	NS
A	<i>Accipiter gentilis</i>	Northern Goshawk	Not At Risk			S3S4	4 Secure	53	17.1 ± 7.0	NS
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4		4	55.0 ± 0.0	NS
A	<i>Circus hudsonius</i>	Northern Harrier	Not At Risk			S3S4B	4 Secure	183	0.7 ± 0.0	NS
A	<i>Ammospiza nelsoni</i>	Nelson's Sparrow	Not At Risk			S3S4B	4 Secure	77	7.2 ± 7.0	NS
A	<i>Morone saxatilis</i>	Striped Bass	E,SC			S2S3	2 May Be At Risk	1	61.0 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Salmo salar</i>	Atlantic Salmon	E,T,SC			S1	2 May Be At Risk	66	2.9 ± 1.0	NS
A	<i>Alces americanus</i>	Moose			Endangered	S1	1 At Risk	61	0.6 ± 0.0	NS
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S1?	5 Undetermined	4	25.7 ± 7.0	NS
A	<i>Passerina cyanea</i>	Indigo Bunting				S1?B	5 Undetermined	4	37.6 ± 7.0	NS
A	<i>Uria aalge</i>	Common Murre				S1?B,S5N	4 Secure	1	79.8 ± 0.0	NS
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1B	2 May Be At Risk	1	66.3 ± 7.0	NS
A	<i>Anas acuta</i>	Northern Pintail				S1B	2 May Be At Risk	3	37.6 ± 7.0	NS
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B	4 Secure	2	53.6 ± 7.0	NS
A	<i>Haematopus palliatus</i>	American Oystercatcher				S1B	5 Undetermined	7	51.9 ± 7.0	NS
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S1B	4 Secure	16	10.0 ± 0.0	NS
A	<i>Toxostoma rufum</i>	Brown Thrasher				S1B	5 Undetermined	4	51.6 ± 0.0	NS
A	<i>Vireo gilvus</i>	Warbling Vireo				S1B	5 Undetermined	5	57.0 ± 7.0	NS
A	<i>Setophaga pinus</i>	Pine Warbler				S1B	5 Undetermined	3	53.9 ± 0.0	NS
A	<i>Calidris minutilla</i>	Least Sandpiper				S1B,S3M	4 Secure	142	10.0 ± 0.0	NS
A	<i>Charadrius semipalmatus</i>	Semipalmated Plover				S1B,S3S4M	4 Secure	237	10.0 ± 0.0	NS
A	<i>Vespertilionidae sp.</i>	bat species				S1S2		62	1.1 ± 0.0	NS
A	<i>Pluvialis dominica</i>	American Golden-Plover				S1S2M	3 Sensitive	20	57.9 ± 0.0	NS
A	<i>Vireo philadelphicus</i>	Philadelphia Vireo				S2?B	5 Undetermined	16	10.0 ± 0.0	NS
A	<i>Spatula clypeata</i>	Northern Shoveler				S2B	2 May Be At Risk	1	96.5 ± 0.0	NS
A	<i>Mareca strepera</i>	Gadwall				S2B	2 May Be At Risk	2	52.7 ± 0.0	NS
A	<i>Empidonax traillii</i>	Willow Flycatcher				S2B	3 Sensitive	4	37.6 ± 7.0	NS
A	<i>Setophaga tigrina</i>	Cape May Warbler				S2B	3 Sensitive	70	1.2 ± 0.0	NS
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B	5 Undetermined	5	53.7 ± 7.0	NS
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2B	2 May Be At Risk	5	25.7 ± 7.0	NS
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2B	4 Secure	31	23.2 ± 7.0	NS
A	<i>Bucephala clangula</i>	Common Goldeneye				S2B,S5N	4 Secure	103	5.8 ± 12.0	NS
A	<i>Branta bernicla</i>	Brant				S2M	3 Sensitive	1	37.2 ± 16.0	NS
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2S3	3 Sensitive	92	10.0 ± 0.0	NS
A	<i>Asio otus</i>	Long-eared Owl				S2S3	2 May Be At Risk	23	0.4 ± 0.0	NS
A	<i>Spinus pinus</i>	Pine Siskin				S2S3	3 Sensitive	210	7.2 ± 7.0	NS
A	<i>Cathartes aura</i>	Turkey Vulture				S2S3B	3 Sensitive	2	87.9 ± 0.0	NS
A	<i>Rallus limicola</i>	Virginia Rail				S2S3B	5 Undetermined	7	42.2 ± 7.0	NS
A	<i>Tringa semipalmata</i>	Willet				S2S3B	2 May Be At Risk	533	6.8 ± 0.0	NS
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B	2 May Be At Risk	97	15.3 ± 7.0	NS
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S2S3B	3 Sensitive	157	7.2 ± 7.0	NS
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	2 May Be At Risk	21	39.8 ± 7.0	NS
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2S3B,S5N	2 May Be At Risk	77	14.0 ± 7.0	NS
A	<i>Numenius phaeopus hudsonicus</i>	Hudsonian Whimbrel				S2S3M	3 Sensitive	57	10.0 ± 0.0	NS
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S2S3M	4 Secure	26	10.0 ± 0.0	NS
A	<i>Perisoreus canadensis</i>	Canada Jay				S3	3 Sensitive	345	0.7 ± 0.0	NS
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3	3 Sensitive	640	1.3 ± 0.0	NS
A	<i>Sitta canadensis</i>	Red-breasted Nuthatch				S3	4 Secure	469	3.7 ± 7.0	NS
A	<i>Alosa pseudoharengus</i>	Alewife				S3	3 Sensitive	17	18.2 ± 1.0	NS
A	<i>Salvelinus fontinalis</i>	Brook Trout				S3	3 Sensitive	42	2.9 ± 1.0	NS
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	3 Sensitive	1	82.0 ± 0.0	NS
A	<i>Menidia menidia</i>	Atlantic Silverside				S3		2	80.1 ± 0.0	NS
A	<i>Pekania pennanti</i>	Fisher				S3	3 Sensitive	5	40.9 ± 7.0	NS
A	<i>Calidris maritima</i>	Purple Sandpiper				S3?N	3 Sensitive	31	10.0 ± 0.0	NS
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S3?N	4 Secure	2	63.0 ± 0.0	NS
A	<i>Falco sparverius</i>	American Kestrel				S3B	4 Secure	220	13.2 ± 7.0	NS
A	<i>Charadrius vociferus</i>	Killdeer				S3B	3 Sensitive	148	15.3 ± 7.0	NS
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3B	3 Sensitive	231	7.2 ± 7.0	NS
A	<i>Sterna paradisaea</i>	Arctic Tern				S3B	2 May Be At Risk	109	7.2 ± 7.0	NS
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	2 May Be At Risk	43	24.4 ± 7.0	NS
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3B	3 Sensitive	69	10.0 ± 0.0	NS
A	<i>Dumetella carolinensis</i>	Gray Catbird				S3B	2 May Be At Risk	163	3.7 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Cardellina pusilla</i>	Wilson's Warbler				S3B	3 Sensitive	68	0.2 ± 0.0	NS
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	296	3.7 ± 7.0	NS
A	<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel				S3B,S5M	4 Secure	67	10.0 ± 0.0	NS
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S3B,S5N	3 Sensitive	2	10.3 ± 0.0	NS
A	<i>Fratercula arctica</i>	Atlantic Puffin				S3B,S5N	3 Sensitive	4	10.0 ± 0.0	NS
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3M	4 Secure	188	10.0 ± 0.0	NS
A	<i>Tringa flavipes</i>	Lesser Yellowlegs				S3M	4 Secure	221	10.0 ± 0.0	NS
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	4 Secure	83	10.0 ± 0.0	NS
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	3 Sensitive	190	10.0 ± 0.0	NS
A	<i>Calidris fuscicollis</i>	White-rumped Sandpiper				S3M	4 Secure	58	62.6 ± 0.0	NS
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	4 Secure	121	10.0 ± 0.0	NS
A	<i>Calidris alba</i>	Sanderling				S3M,S2N	4 Secure	105	10.0 ± 0.0	NS
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S3N	4 Secure	18	57.5 ± 0.0	NS
A	<i>Somateria mollissima</i>	Common Eider				S3S4	4 Secure	549	1.5 ± 0.0	NS
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3S4	3 Sensitive	90	7.2 ± 7.0	NS
A	<i>Loxia curvirostra</i>	Red Crossbill				S3S4	4 Secure	53	17.1 ± 7.0	NS
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B	3 Sensitive	141	20.6 ± 0.0	NS
A	<i>Spatula discors</i>	Blue-winged Teal				S3S4B	2 May Be At Risk	71	22.3 ± 7.0	NS
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B	3 Sensitive	483	3.7 ± 7.0	NS
A	<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	503	0.8 ± 0.0	NS
A	<i>Regulus calendula</i>	Ruby-crowned Kinglet				S3S4B	3 Sensitive	1168	0.7 ± 0.0	NS
A	<i>Catharus fuscescens</i>	Veery				S3S4B	4 Secure	202	3.7 ± 7.0	NS
A	<i>Catharus ustulatus</i>	Swainson's Thrush				S3S4B	4 Secure	920	0.5 ± 0.0	NS
A	<i>Oreothlypis peregrina</i>	Tennessee Warbler				S3S4B	3 Sensitive	154	1.3 ± 0.0	NS
A	<i>Setophaga castanea</i>	Bay-breasted Warbler				S3S4B	3 Sensitive	307	0.7 ± 0.0	NS
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B	3 Sensitive	87	1.0 ± 0.0	NS
A	<i>Passerella iliaca</i>	Fox Sparrow				S3S4B	4 Secure	86	0.4 ± 0.0	NS
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3S4B,S5N	4 Secure	112	3.7 ± 7.0	NS
A	<i>Bucephala albeola</i>	Bufflehead				S3S4N	4 Secure	38	5.8 ± 12.0	NS
A	<i>Lanius borealis</i>	Northern Shrike				S3S4N	4 Secure	1	80.1 ± 1.0	NS
A	<i>Leucophaeus atricilla</i>	Laughing Gull				SHB	4 Secure	3	10.0 ± 0.0	NS
A	<i>Progne subis</i>	Purple Martin				SHB	2 May Be At Risk	4	10.0 ± 0.0	NS
A	<i>Eremophila alpestris</i>	Horned Lark				SHB,S4S5N	4 Secure	1	82.3 ± 7.0	NS
A	<i>Morus bassanus</i>	Northern Gannet				SHB,S5M	4 Secure	34	10.0 ± 0.0	NS
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Endangered	S2B	3 Sensitive	34	10.7 ± 0.0	NS
I	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern	Special Concern	Threatened	S1S2	3 Sensitive	8	23.8 ± 0.0	NS
I	<i>Bombus terricola</i>	Yellow-banded Bumblebee	Special Concern	Special Concern	Vulnerable	S3	3 Sensitive	2	20.1 ± 0.0	NS
I	<i>Neurocordulia michaeli</i>	Broadtailed Shadowdragon				S1		26	27.9 ± 0.0	NS
I	<i>Lycaena dorcas</i>	Dorcas Copper				S1?	6 Not Assessed	19	83.6 ± 0.0	NS
I	<i>Strymon melinus</i>	Grey Hairstreak				S1S2	4 Secure	2	72.8 ± 1.0	NS
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S1S2	4 Secure	1	92.6 ± 2.0	NS
I	<i>Haematopota rara</i>	Shy Cleg				S1S3	5 Undetermined	1	86.2 ± 0.0	NS
I	<i>Lycaena hyllus</i>	Bronze Copper				S2	4 Secure	2	39.2 ± 0.0	NS
I	<i>Satyrium calanus</i>	Banded Hairstreak				S2	5 Undetermined	1	92.3 ± 2.0	NS
I	<i>Aglais milberti</i>	Milbert's Tortoiseshell				S2	4 Secure	1	92.6 ± 2.0	NS
I	<i>Margaritifera margaritifera</i>	Eastern Pearlshell				S2	3 Sensitive	58	22.4 ± 0.0	NS
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S2?B	3 Sensitive	1	37.1 ± 1.0	NS
I	<i>Thorybes pylades</i>	Northern Cloudywing				S2S3	3 Sensitive	19	38.6 ± 0.0	NS
I	<i>Amblyscirtes hegon</i>	Pepper and Salt Skipper				S2S3	4 Secure	5	33.5 ± 0.0	NS
I	<i>Satyrium liparops</i>	Striped Hairstreak				S2S3	5 Undetermined	4	91.5 ± 1.0	NS
I	<i>Euphydryas phaeton</i>	Baltimore Checkerspot				S2S3	4 Secure	24	27.3 ± 0.0	NS
I	<i>Gomphus descriptus</i>	Harpoon Clubtail				S2S3	3 Sensitive	16	71.7 ± 0.0	NS
I	<i>Ophiogomphus aspersus</i>	Brook Snaketail				S2S3	2 May Be At Risk	5	71.7 ± 0.0	NS
I	<i>Ophiogomphus mainensis</i>	Maine Snaketail				S2S3	2 May Be At Risk	14	55.5 ± 0.0	NS
I	<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail				S2S3	2 May Be At Risk	36	27.8 ± 0.0	NS
I	<i>Alasmidonta undulata</i>	Triangle Floater				S2S3	4 Secure	5	36.9 ± 0.0	NS
I	<i>Naemia seriata</i>	a Ladybird beetle				S3	3 Sensitive	1	58.1 ± 0.0	NS
I	<i>Ipthiminius opacus</i>	a Darkling Beetle				S3		1	88.4 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
I	<i>Monochamus marmorator</i>	a Longhorned Beetle				S3		2	20.0 ± 0.0	NS
I	<i>Callophrys henrici</i>	Henry's Elfin				S3	4 Secure	2	0.5 ± 0.0	NS
I	<i>Callophrys lanoraieensis</i>	Bog Elfin				S3	2 May Be At Risk	1	73.1 ± 1.0	NS
I	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	4 Secure	4	47.8 ± 100.0	NS
I	<i>Polygonia faunus</i>	Green Comma				S3	4 Secure	7	39.1 ± 0.0	NS
I	<i>Megisto cymela</i>	Little Wood-satyr				S3	4 Secure	1	81.6 ± 1.0	NS
I	<i>Oeneis jutta</i>	Jutta Arctic				S3	2 May Be At Risk	4	42.2 ± 0.0	NS
I	<i>Aeshna clepsydra</i>	Mottled Darner				S3	4 Secure	3	45.5 ± 1.0	NS
I	<i>Boyeria grafiana</i>	Ocellated Darner				S3	3 Sensitive	7	27.8 ± 0.0	NS
I	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	3 Sensitive	3	59.3 ± 0.0	NS
I	<i>Nannothemis bella</i>	Elfin Skimmer				S3	4 Secure	3	59.3 ± 0.0	NS
I	<i>Sympetrum danae</i>	Black Meadowhawk				S3	3 Sensitive	8	6.3 ± 0.0	NS
I	<i>Enallagma vernale</i>	Vernal Bluet				S3	5 Undetermined	4	66.9 ± 0.0	NS
I	<i>Amphiagrion saucium</i>	Eastern Red Damsel				S3	4 Secure	4	87.8 ± 0.0	NS
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3?		1	72.1 ± 0.0	NS
I	<i>Polygonia interrogationis</i>	Question Mark				S3B	4 Secure	17	16.6 ± 0.0	NS
I	<i>Erynnis juvenalis</i>	Juvenal's Duskywing				S3S4	4 Secure	1	54.3 ± 1.0	NS
I	<i>Amblyscirtes vialis</i>	Common Roadside-Skipper				S3S4	4 Secure	16	0.5 ± 0.0	NS
I	<i>Polygonia progne</i>	Grey Comma				S3S4	4 Secure	20	37.3 ± 0.0	NS
I	<i>Lanthus parvulus</i>	Northern Pygmy Clubtail				S3S4	4 Secure	10	29.6 ± 0.0	NS
I	<i>Lampsilis radiata</i>	Eastern Lampmussel				S3S4	3 Sensitive	16	31.3 ± 0.0	NS
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	1 At Risk	468	7.5 ± 0.0	NS
N	<i>Erioderma mollissimum</i>	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1S2	2 May Be At Risk	12	45.0 ± 0.0	NS
N	<i>Peltigera hydrothyria</i>	Eastern Waterfan	Threatened	Threatened	Threatened	S1	2 May Be At Risk	6	50.1 ± 0.0	NS
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S1S2	2 May Be At Risk	1	98.9 ± 0.0	NS
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S2S3	2 May Be At Risk	5	67.8 ± 0.0	NS
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened	Threatened	Threatened	S3	3 Sensitive	8	51.2 ± 0.0	NS
N	<i>Sclerophora peronella</i> (Atlantic pop.)	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S1?		21	13.9 ± 0.0	NS
N	<i>Pectenia plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	129	3.4 ± 0.0	NS
N	<i>Fissidens exilis</i>	Pygmy Pocket Moss	Not At Risk			S1S2	1 At Risk	4	45.5 ± 0.0	NS
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	3 Sensitive	4	13.8 ± 0.0	NS
N	<i>Cinclidium stygium</i>	Sooty Cupola Moss				S1		2	90.4 ± 0.0	NS
N	<i>Cladonia brevis</i>	Short Peg Lichen				S1		1	86.4 ± 0.0	NS
N	<i>Oligotrichum hercynicum</i>	Hercynian Hair Moss				S1?	5 Undetermined	1	99.1 ± 0.0	NS
N	<i>Lichina confinis</i>	Marine Seaweed Lichen				S1?	6 Not Assessed	2	88.5 ± 2.0	NS
N	<i>Polychidium muscicola</i>	Eyed Mossstems Woollybear Lichen				S1?	2 May Be At Risk	2	46.1 ± 0.0	NS
N	<i>Parmeliella parvula</i>	Poor-man's Shingles Lichen				S1?	2 May Be At Risk	6	8.8 ± 0.0	NS
N	<i>Sphagnum platyphyllum</i>	Flat-leaved Peat Moss				S1S2		4	84.2 ± 0.0	NS
N	<i>Cyrto-hypnum minutulum</i>	Tiny Cedar Moss				S1S2	3 Sensitive	1	77.9 ± 0.0	NS
N	<i>Hamatocaulis vernicosus</i>	a Moss				S1S2	3 Sensitive	1	93.8 ± 0.0	NS
N	<i>Peltigera neckeri</i>	Black-saddle Pelt Lichen				S1S3	5 Undetermined	1	56.1 ± 0.0	NS
N	<i>Riccardia multifida</i>	Delicate Germanderwort				S2?	5 Undetermined	1	20.0 ± 0.0	NS
N	<i>Anacamptodon splachnoides</i>	a Moss				S2?	3 Sensitive	1	47.5 ± 0.0	NS
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss				S2?	3 Sensitive	1	58.2 ± 3.0	NS
N	<i>Campylium polygamum</i>	a Moss				S2?	5 Undetermined	2	52.2 ± 0.0	NS
N	<i>Campylium radicale</i>	Long-stalked Fine Wet Moss				S2?	5 Undetermined	1	86.1 ± 0.0	NS
N	<i>Platydictya jungermannioides</i>	False Willow Moss				S2?	3 Sensitive	2	62.4 ± 0.0	NS
N	<i>Pohlia sphagnicola</i>	a moss				S2?		1	36.2 ± 0.0	NS
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2?	3 Sensitive	2	84.3 ± 0.0	NS
N	<i>Sphagnum subnitens</i>	Lustrous Peat Moss				S2?	3 Sensitive	2	95.5 ± 0.0	NS
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss				S2?	3 Sensitive	3	42.8 ± 0.0	NS
N	<i>Leptogium teretiusculum</i>	Beaded Jellyskin Lichen				S2?	3 Sensitive	4	62.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
N	<i>Cladonia labradorica</i>	Labrador Lichen				S2?	5 Undetermined	1	14.2 ± 0.0	NS
N	<i>Peltigera collina</i>	Tree Pelt Lichen				S2?	3 Sensitive	29	1.4 ± 0.0	NS
N	<i>Tetraplodon mnioides</i>	Entire-leaved Nitrogen Moss				S2S3	4 Secure	1	51.6 ± 0.0	NS
N	<i>Limprichtia revolvens</i>	a Moss				S2S3	3 Sensitive	5	83.8 ± 0.0	NS
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2S3	3 Sensitive	1	58.4 ± 0.0	NS
N	<i>Solorina saccata</i>	Woodland Owl Lichen				S2S3	2 May Be At Risk	4	56.2 ± 0.0	NS
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S2S3	5 Undetermined	4	68.9 ± 0.0	NS
N	<i>Cetraria muricata</i>	Spiny Heath Lichen				S2S3	5 Undetermined	2	6.0 ± 1.0	NS
N	<i>Cladonia incrassata</i>	Powder-foot British Soldiers Lichen				S2S3	5 Undetermined	1	51.1 ± 0.0	NS
N	<i>Leptogium tenuissimum</i>	Birdnest Jellyskin Lichen				S2S3	6 Not Assessed	11	8.3 ± 0.0	NS
N	<i>Parmelia fertilis</i>	Fertile Shield Lichen				S2S3	5 Undetermined	1	92.4 ± 0.0	NS
N	<i>Usnea mutabilis</i>	Bloody Beard Lichen				S2S3	3 Sensitive	1	85.5 ± 0.0	NS
N	<i>Usnea rubicunda</i>	Red Beard Lichen				S2S3	3 Sensitive	2	2.1 ± 0.0	NS
N	<i>Stereocaulon condensatum</i>	Granular Soil Foam Lichen				S2S3	5 Undetermined	4	64.7 ± 0.0	NS
N	<i>Cladonia coccifera</i>	Eastern Boreal Pixie-cup Lichen				S2S3	3 Sensitive	3	21.2 ± 0.0	NS
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	3 Sensitive	4	59.5 ± 0.0	NS
N	<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S3	3 Sensitive	14	13.8 ± 0.0	NS
N	<i>Leptogium subtile</i>	Appressed Jellyskin Lichen				S3	3 Sensitive	4	65.5 ± 0.0	NS
N	<i>Fuscopannaria ahlneri</i>	Corrugated Shingles Lichen				S3	4 Secure	37	3.2 ± 0.0	NS
N	<i>Heterodermia speciosa</i>	Powdered Fringe Lichen				S3	4 Secure	7	30.7 ± 0.0	NS
N	<i>Heterodermia squamulosa</i>	Scaly Fringe Lichen				S3	3 Sensitive	1	46.2 ± 0.0	NS
N	<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S3	3 Sensitive	22	46.1 ± 0.0	NS
N	<i>Leptogium lichenoides</i>	Tattered Jellyskin Lichen				S3	2 May Be At Risk	4	53.7 ± 0.0	NS
N	<i>Nephroma bellum</i>	Naked Kidney Lichen				S3	3 Sensitive	3	63.3 ± 0.0	NS
N	<i>Placynthium nigrum</i>	Common Ink Lichen				S3	5 Undetermined	1	61.5 ± 10.0	NS
N	<i>Platismatia norvegica</i>	Oldgrowth Rag Lichen				S3	4 Secure	1	17.6 ± 0.0	NS
N	<i>Moelleropsis nebulosa</i>	Blue-gray Moss Shingle Lichen				S3	4 Secure	30	7.5 ± 0.0	NS
N	<i>Fuscopannaria sorediata</i>	a Lichen				S3		7	2.9 ± 0.0	NS
N	<i>Ephebe lanata</i>	Waterside Rockshag Lichen				S3	3 Sensitive	2	39.9 ± 0.0	NS
N	<i>Anomodon tristis</i>	a Moss				S3?	3 Sensitive	1	55.5 ± 0.0	NS
N	<i>Sphagnum riparium</i>	Streamside Peat Moss				S3?	3 Sensitive	2	90.6 ± 0.0	NS
N	<i>Phaeophyscia pusilloides</i>	Pompom-tipped Shadow Lichen				S3?	5 Undetermined	4	63.1 ± 0.0	NS
N	<i>Cladonia stygia</i>	Black-footed Reindeer Lichen				S3?	3 Sensitive	2	44.4 ± 0.0	NS
N	<i>Dicranella varia</i>	a Moss				S3S4	5 Undetermined	2	85.1 ± 0.0	NS
N	<i>Dicranum leioneuron</i>	a Dicranum Moss				S3S4	4 Secure	1	58.4 ± 0.0	NS
N	<i>Encalypta procera</i>	Slender Extinguisher Moss				S3S4	4 Secure	5	59.6 ± 0.0	NS
N	<i>Sphagnum lindbergii</i>	Lindberg's Peat Moss				S3S4	4 Secure	4	36.2 ± 0.0	NS
N	<i>Splachnum ampullaceum</i>	Cruet Dung Moss				S3S4	4 Secure	2	66.8 ± 0.0	NS
N	<i>Schistidium agassizii</i>	Elf Bloom Moss				S3S4	4 Secure	1	27.7 ± 3.0	NS
N	<i>Arctoparmelia incurva</i>	Finger Ring Lichen				S3S4	4 Secure	4	52.1 ± 0.0	NS
N	<i>Hypogymnia vittata</i>	Slender Monk's Hood Lichen				S3S4	4 Secure	87	13.9 ± 0.0	NS
N	<i>Leptogium acadense</i>	Acadian Jellyskin Lichen				S3S4		10	14.7 ± 0.0	NS
N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen				S3S4	5 Undetermined	1	86.8 ± 0.0	NS
N	<i>Vahlia leucophaea</i>	Shelter Shingle Lichen				S3S4	4 Secure	1	63.4 ± 0.0	NS
N	<i>Melanohalea olivacea</i>	Spotted Camouflage Lichen				S3S4	5 Undetermined	1	77.4 ± 0.0	NS
N	<i>Parmotrema chinense</i>	Powdered Ruffle Lichen				S3S4	4 Secure	1	46.0 ± 0.0	NS
N	<i>Physconia detersa</i>	Bottlebrush Frost Lichen				S3S4	3 Sensitive	1	51.2 ± 0.0	NS
N	<i>Sphaerophorus fragilis</i>	Fragile Coral Lichen				S3S4	4 Secure	1	52.4 ± 0.0	NS
N	<i>Coccocarpha palmicola</i>	Salted Shell Lichen				S3S4	4 Secure	612	6.2 ± 0.0	NS
N	<i>Physcia tenella</i>	Fringed Rosette Lichen				S3S4	6 Not Assessed	1	45.1 ± 3.0	NS
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen				S3S4	4 Secure	20	13.8 ± 0.0	NS
N	<i>Evermia prunastri</i>	Valley Oakmoss Lichen				S3S4	3 Sensitive	2	62.1 ± 0.0	NS
N	<i>Dermatocarpon luridum</i>	Brookside Stippleback				S3S4	4 Secure	7	16.8 ± 8.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
N	<i>Heterodermia neglecta</i>	Lichen				S3S4	4 Secure	21	17.1 ± 0.0	NS
P	<i>Fraxinus nigra</i>	Fringe Lichen				S1S2	1 At Risk	66	37.9 ± 0.0	NS
P	<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	Black Ash	Threatened		Threatened					NS
P	<i>Juncus caesariensis</i>	Branched Bartonia	Threatened	Threatened		SNA		1	93.1 ± 10.0	NS
P	<i>Floerkea proserpinacoides</i>	New Jersey Rush	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	71	84.3 ± 0.0	NS
P	<i>Thuja occidentalis</i>	False Mermaidweed	Not At Risk			S2	3 Sensitive	9	47.4 ± 1.0	NS
P	<i>Sanicula odorata</i>	Eastern White Cedar			Vulnerable	S1	1 At Risk	1	53.6 ± 0.0	NS
P	<i>Zizia aurea</i>	Clustered Sanicle				S1	2 May Be At Risk	2	76.9 ± 0.0	NS
P	<i>Arnica lonchophylla</i>	Golden Alexanders				S1	2 May Be At Risk	16	35.2 ± 0.0	NS
P	<i>Bidens hyperborea</i>	Northern Arnica				S1	2 May Be At Risk	1	70.1 ± 7.0	NS
P	<i>Ageratina altissima</i>	Estuary Beggarticks				S1	2 May Be At Risk	1	57.9 ± 1.0	NS
P	<i>Cardamine dentata</i>	White Snakeroot				S1	2 May Be At Risk	2	57.0 ± 7.0	NS
P	<i>Cochlearia tridactylites</i>	Toothed Bittercress				S1	2 May Be At Risk	1	83.2 ± 0.0	NS
P	<i>Stellaria crassifolia</i>	Limestone Scurvy-grass				S1	2 May Be At Risk	12	27.9 ± 0.0	NS
P	<i>Hudsonia tomentosa</i>	Fleshy Stitchwort				S1	2 May Be At Risk	1	91.1 ± 2.0	NS
P	<i>Desmodium canadense</i>	Woolly Beach-heath				S1	2 May Be At Risk	6	54.8 ± 1.0	NS
P	<i>Fraxinus pennsylvanica</i>	Canada Tick-trefoil				S1	2 May Be At Risk	10	90.3 ± 0.0	NS
P	<i>Bistorta vivipara</i>	Red Ash				S1	2 May Be At Risk	1	54.6 ± 0.0	NS
P	<i>Montia fontana</i>	Alpine Bistort				S1	2 May Be At Risk	1	78.7 ± 1.0	NS
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Water Blinks				S1	2 May Be At Risk	2	53.6 ± 3.0	NS
P	<i>Scrophularia lanceolata</i>	Small-flowered Purple False Foxglove				S1		2	85.8 ± 0.0	NS
P	<i>Pilea pumila</i>	Lance-leaved Figwort				S1	5 Undetermined	1	30.4 ± 1.0	NS
P	<i>Carex alopecoidea</i>	Dwarf Clearweed				S1	2 May Be At Risk	1	77.2 ± 6.0	NS
P	<i>Carex granularis</i>	Foxtail Sedge				S1	2 May Be At Risk	2	53.2 ± 0.0	NS
P	<i>Carex gynocrates</i>	Limestone Meadow Sedge				S1	2 May Be At Risk	1	86.2 ± 0.0	NS
P	<i>Carex haydenii</i>	Northern Bog Sedge				S1	2 May Be At Risk	11	86.7 ± 0.0	NS
P	<i>Carex pellita</i>	Hayden's Sedge				S1	2 May Be At Risk	2	65.1 ± 5.0	NS
P	<i>Carex plantaginea</i>	Woolly Sedge				S1	2 May Be At Risk	7	90.5 ± 0.0	NS
P	<i>Carex tenuiflora</i>	Plantain-Leaved Sedge				S1	2 May Be At Risk	2	98.2 ± 0.0	NS
P	<i>Carex tinctoria</i>	Sparse-Flowered Sedge				S1	2 May Be At Risk	3	19.7 ± 1.0	NS
P	<i>Carex viridula</i> var. <i>saxillitoralis</i>	Tinged Sedge				S1	2 May Be At Risk	1	53.2 ± 1.0	NS
P	<i>Carex viridula</i> var. <i>elatior</i>	Greenish Sedge				S1	2 May Be At Risk	4	90.1 ± 0.0	NS
P	<i>Carex grisea</i>	Greenish Sedge				S1	2 May Be At Risk	17	87.9 ± 0.0	NS
P	<i>Cyperus lupulinus</i>	Inflated Narrow-leaved Sedge				S1	2 May Be At Risk	6	52.7 ± 0.0	NS
P	<i>Cyperus lupulinus</i> ssp. <i>macilentus</i>	Hop Flatsedge				S1	2 May Be At Risk	5	54.3 ± 0.0	NS
P	<i>Eleocharis erythropoda</i>	Hop Flatsedge				S1	2 May Be At Risk	10	54.8 ± 1.0	NS
P	<i>Iris prismatica</i>	Red-stemmed Spikerush				S1	2 May Be At Risk	1	94.8 ± 0.0	NS
P	<i>Luzula spicata</i>	Slender Blue Flag				S1	2 May Be At Risk	2	35.2 ± 7.0	NS
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	Spiked Woodrush				S1	2 May Be At Risk	1	53.0 ± 0.0	NS
P	<i>Bromus latiglumis</i>	North American White Adder's-mouth				S1	2 May Be At Risk	1	42.7 ± 7.0	NS
P	<i>Elymus wiegandii</i>	Broad-Plumed Brome				S1	2 May Be At Risk	14	63.6 ± 0.0	NS
P	<i>Elymus hystrix</i>	Wiegand's Wild Rye				S1	2 May Be At Risk	6	66.8 ± 0.0	NS
P	<i>Potamogeton nodosus</i>	Spreading Wild Rye				S1	2 May Be At Risk	1	80.7 ± 1.0	NS
P	<i>Sparganium angustifolium</i>	Long-leaved Pondweed				S1	2 May Be At Risk	1	35.1 ± 5.0	NS
P	<i>Equisetum palustre</i>	Branching Bur-Reed				S1	2 May Be At Risk	1	52.1 ± 1.0	NS
P	<i>Solidago hispida</i>	Marsh Horsetail				S1	2 May Be At Risk	8	97.7 ± 0.0	NS
P	<i>Dichanthelium lindheimeri</i>	Hairy Goldenrod				S1?	2 May Be At Risk	1	73.1 ± 7.0	NS
P	<i>Rudbeckia laciniata</i>	Lindheimer's Panicgrass				S1?	5 Undetermined	1	89.0 ± 0.0	NS
P	<i>Cornus suecica</i>	Cut-Leaved Coneflower				S1S2	2 May Be At Risk	2	39.1 ± 0.0	NS
P	<i>Anemone virginiana</i> var. <i>alba</i>	Swedish Bunchberry				S1S2	3 Sensitive	2	53.4 ± 0.0	NS
P		Virginia Anemone				S1S2	3 Sensitive	1	98.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Parnassia parviflora</i>	Small-flowered Grass-of-Parnassus				S1S2	2 May Be At Risk	1	78.0 ± 1.0	NS
P	<i>Carex livida</i>	Livid Sedge				S1S2	2 May Be At Risk	23	51.2 ± 0.0	NS
P	<i>Juncus greenii</i>	Greene's Rush				S1S2	2 May Be At Risk	1	54.9 ± 1.0	NS
P	<i>Juncus alpinoarticulatus</i> ssp. <i>americanus</i>	Northern Green Rush				S1S2	2 May Be At Risk	8	51.7 ± 5.0	NS
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S1S2	5 Undetermined	2	60.3 ± 10.0	NS
P	<i>Cinna arundinacea</i>	Sweet Wood Reed Grass				S1S2	2 May Be At Risk	24	63.5 ± 0.0	NS
P	<i>Sparganium hyperboreum</i>	Northern Burreed				S1S2	3 Sensitive	2	0.9 ± 0.0	NS
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S1S2	2 May Be At Risk	10	99.6 ± 0.0	NS
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S1S2	2 May Be At Risk	2	82.6 ± 0.0	NS
P	<i>Carex vacillans</i>	Estuarine Sedge				S1S3	5 Undetermined	3	53.2 ± 0.0	NS
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2	2 May Be At Risk	15	44.2 ± 0.0	NS
P	<i>Erigeron philadelphicus</i>	Philadelphia Fleabane				S2	3 Sensitive	2	61.7 ± 7.0	NS
P	<i>Symphyotrichum ciliolatum</i>	Fringed Blue Aster				S2	3 Sensitive	3	25.2 ± 0.0	NS
P	<i>Impatiens pallida</i>	Pale Jewelweed				S2	3 Sensitive	6	32.0 ± 7.0	NS
P	<i>Caulophyllum thalictroides</i>	Blue Cohosh				S2	2 May Be At Risk	32	44.1 ± 0.0	NS
P	<i>Cardamine parviflora</i>	Small-flowered Bittercress				S2	3 Sensitive	2	94.2 ± 0.0	NS
P	<i>Lobelia kalmii</i>	Brook Lobelia				S2	2 May Be At Risk	70	79.4 ± 0.0	NS
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S2	3 Sensitive	4	35.2 ± 0.0	NS
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S2	3 Sensitive	1	67.1 ± 0.0	NS
P	<i>Oxybasis rubra</i>	Red Goosefoot				S2	2 May Be At Risk	4	66.3 ± 7.0	NS
P	<i>Crassula aquatica</i>	Water Pygmyweed				S2	3 Sensitive	2	77.2 ± 7.0	NS
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S2	3 Sensitive	4	26.0 ± 0.0	NS
P	<i>Persicaria arifolia</i>	Halberd-leaved Tearthumb				S2	3 Sensitive	7	23.8 ± 0.0	NS
P	<i>Rumex triangulivalvis</i>	Triangular-valve Dock				S2	3 Sensitive	4	63.2 ± 6.0	NS
P	<i>Anemonastrum canadense</i>	Canada Anemone				S2	2 May Be At Risk	2	56.8 ± 3.0	NS
P	<i>Anemone quinquefolia</i>	Wood Anemone				S2	3 Sensitive	5	28.2 ± 0.0	NS
P	<i>Anemone virginiana</i>	Virginia Anemone				S2	3 Sensitive	23	53.7 ± 0.0	NS
P	<i>Caltha palustris</i>	Yellow Marsh Marigold				S2	3 Sensitive	2	57.2 ± 0.0	NS
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S2	3 Sensitive	28	83.5 ± 0.0	NS
P	<i>Salix pedicularis</i>	Bog Willow				S2	3 Sensitive	6	84.9 ± 0.0	NS
P	<i>Comandra umbellata</i>	Bastard's Toadflax				S2	2 May Be At Risk	22	54.0 ± 0.0	NS
P	<i>Saxifraga paniculata</i> ssp. <i>laestadii</i>	Laestadius' Saxifrage				S2	3 Sensitive	1	96.0 ± 7.0	NS
P	<i>Tiarella cordifolia</i>	Heart-leaved Foamflower				S2	3 Sensitive	2	56.4 ± 3.0	NS
P	<i>Viola nephrophylla</i>	Northern Bog Violet				S2	3 Sensitive	6	68.4 ± 0.0	NS
P	<i>Carex bebbii</i>	Bebb's Sedge				S2	3 Sensitive	6	48.0 ± 10.0	NS
P	<i>Carex castanea</i>	Chestnut Sedge				S2	2 May Be At Risk	15	83.1 ± 0.0	NS
P	<i>Carex hystericina</i>	Porcupine Sedge				S2	2 May Be At Risk	29	53.6 ± 0.0	NS
P	<i>Carex tenera</i>	Tender Sedge				S2	3 Sensitive	3	52.1 ± 3.0	NS
P	<i>Carex atratiformis</i>	Scabrous Black Sedge				S2	3 Sensitive	1	99.3 ± 7.0	NS
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S2	3 Sensitive	10	87.0 ± 0.0	NS
P	<i>Juncus stygius</i> ssp. <i>americanus</i>	Moor Rush				S2	3 Sensitive	27	82.5 ± 1.0	NS
P	<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	Wild Chives				S2	2 May Be At Risk	1	63.1 ± 7.0	NS
P	<i>Lilium canadense</i>	Canada Lily				S2	2 May Be At Risk	44	27.8 ± 2.0	NS
P	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Yellow Lady's-slipper				S2	3 Sensitive	6	53.5 ± 0.0	NS
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S2	2 May Be At Risk	124	56.3 ± 0.0	NS
P	<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid				S2	5 Undetermined	1	32.4 ± 1.0	NS
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S2	2 May Be At Risk	30	81.7 ± 1.0	NS
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2	3 Sensitive	1	93.1 ± 7.0	NS
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S2	2 May Be At Risk	3	67.8 ± 0.0	NS
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S2	2 May Be At Risk	4	35.5 ± 0.0	NS
P	<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern				S2	2 May Be At Risk	3	99.3 ± 10.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S2	3 Sensitive	3	28.0 ± 0.0	NS
P	<i>Polystichum lonchitis</i>	Northern Holly Fern				S2	3 Sensitive	5	81.2 ± 5.0	NS
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S2	3 Sensitive	1	99.3 ± 7.0	NS
P	<i>Symphytotrichum boreale</i>	Boreal Aster				S2?	3 Sensitive	41	85.3 ± 0.0	NS
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2?	5 Undetermined	6	53.0 ± 0.0	NS
P	<i>Epilobium coloratum</i>	Purple-veined Willowherb				S2?	3 Sensitive	3	59.8 ± 0.0	NS
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S2?	5 Undetermined	2	67.6 ± 7.0	NS
P	<i>Eleocharis ovata</i>	Ovate Spikerush				S2?	3 Sensitive	1	20.5 ± 0.0	NS
P	<i>Scirpus pedicellatus</i>	Stalked Bulrush				S2?	3 Sensitive	3	64.1 ± 0.0	NS
P	<i>Senecio pseudoarnica</i>	Seabeach Ragwort				S2S3	3 Sensitive	18	10.3 ± 0.0	NS
P	<i>Betula michauxii</i>	Michaux's Dwarf Birch				S2S3	3 Sensitive	19	0.8 ± 0.0	NS
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S2S3	4 Secure	7	35.4 ± 1.0	NS
P	<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort				S2S3	4 Secure	2	88.9 ± 0.0	NS
P	<i>Hypericum x dissimulatum</i>	Disguised St. John's-wort				S2S3	3 Sensitive	1	22.8 ± 1.0	NS
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S2S3	3 Sensitive	137	44.1 ± 0.0	NS
P	<i>Shepherdia canadensis</i>	Soapberry				S2S3	3 Sensitive	3	97.3 ± 0.0	NS
P	<i>Empetrum atropurpureum</i>	Purple Crowberry				S2S3	3 Sensitive	1	52.6 ± 3.0	NS
P	<i>Euphorbia polygonifolia</i>	Seaside Spurge				S2S3	3 Sensitive	10	54.4 ± 0.0	NS
P	<i>Halenia deflexa</i>	Spurred Gentian				S2S3	3 Sensitive	23	29.6 ± 1.0	NS
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	3 Sensitive	2	76.8 ± 5.0	NS
P	<i>Polygonum aviculare ssp. buxiforme</i>	Box Knotweed				S2S3	5 Undetermined	1	93.0 ± 0.0	NS
P	<i>Polygonum oxyspermum ssp. raii</i>	Ray's Knotweed				S2S3	5 Undetermined	4	24.5 ± 1.0	NS
P	<i>Amelanchier fernaldii</i>	Fernald's Serviceberry				S2S3	5 Undetermined	1	21.2 ± 1.0	NS
P	<i>Potentilla canadensis</i>	Canada Cinquefoil				S2S3	3 Sensitive	1	53.9 ± 2.0	NS
P	<i>Galium aparine</i>	Common Bedstraw				S2S3	3 Sensitive	15	53.4 ± 0.0	NS
P	<i>Salix pellita</i>	Satiny Willow				S2S3	3 Sensitive	1	49.8 ± 1.0	NS
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	3 Sensitive	1	40.8 ± 5.0	NS
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S2S3	3 Sensitive	22	44.2 ± 0.0	NS
P	<i>Eleocharis flavescens var. olivacea</i>	Bright-green Spikerush				S2S3	3 Sensitive	3	48.1 ± 0.0	NS
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S2S3	3 Sensitive	8	3.8 ± 1.0	NS
P	<i>Cypripedium parviflorum</i>	Yellow Lady's-slipper				S2S3	3 Sensitive	52	53.7 ± 0.0	NS
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2S3	3 Sensitive	4	99.6 ± 0.0	NS
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S2S3	3 Sensitive	6	63.2 ± 0.0	NS
P	<i>Botrychium lanceolatum ssp. angustisegmentum</i>	Narrow Triangle Moonwort				S2S3	3 Sensitive	5	82.2 ± 0.0	NS
P	<i>Botrychium simplex</i>	Least Moonwort				S2S3	3 Sensitive	3	79.0 ± 1.0	NS
P	<i>Angelica atropurpurea</i>	Purple-stemmed Angelica				S3	4 Secure	10	62.6 ± 0.0	NS
P	<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3	3 Sensitive	12	53.6 ± 0.0	NS
P	<i>Bidens beckii</i>	Water Beggarticks				S3	4 Secure	6	47.4 ± 0.0	NS
P	<i>Packera paupercula</i>	Balsam Groundsel				S3	4 Secure	47	53.7 ± 0.0	NS
P	<i>Betula pumila</i>	Bog Birch				S3	3 Sensitive	1	85.5 ± 0.0	NS
P	<i>Campanula aparinoides</i>	Marsh Bellflower				S3	3 Sensitive	8	37.1 ± 0.0	NS
P	<i>Vaccinium boreale</i>	Northern Blueberry				S3	3 Sensitive	5	21.2 ± 1.0	NS
P	<i>Vaccinium cespitosum</i>	dwarf bilberry				S3	4 Secure	36	27.8 ± 0.0	NS
P	<i>Bartonia virginica</i>	Yellow Bartonia				S3	4 Secure	1	80.1 ± 0.0	NS
P	<i>Proserpinaca palustris</i>	Marsh Mermaidweed				S3	4 Secure	27	55.8 ± 0.0	NS
P	<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S3	4 Secure	2	89.0 ± 1.0	NS
P	<i>Teucrium canadense</i>	Canada Germander				S3	3 Sensitive	34	50.6 ± 0.0	NS
P	<i>Decodon verticillatus</i>	Swamp Loosestrife				S3	4 Secure	1	85.0 ± 7.0	NS
P	<i>Epilobium strictum</i>	Downy Willowherb				S3	3 Sensitive	5	40.1 ± 0.0	NS
P	<i>Polygala sanguinea</i>	Blood Milkwort				S3	3 Sensitive	3	10.5 ± 0.0	NS
P	<i>Persicaria pensylvanica</i>	Pennsylvania Smartweed				S3	4 Secure	15	52.9 ± 0.0	NS
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3	3 Sensitive	26	30.4 ± 0.0	NS
P	<i>Plantago rugelii</i>	Rugel's Plantain				S3	4 Secure	2	96.1 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Samolus parviflorus</i>	Seaside Brookweed				S3	3 Sensitive	7	53.0 ± 0.0	NS
P	<i>Pyrola asarifolia</i>	Pink Pyrola				S3	4 Secure	3	86.8 ± 0.0	NS
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	3 Sensitive	1	99.9 ± 2.0	NS
P	<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup				S3	4 Secure	27	36.0 ± 2.0	NS
P	<i>Endotropis alnifolia</i>	alder-leaved buckthorn				S3	4 Secure	330	55.2 ± 0.0	NS
P	<i>Agrimonia gryposepala</i>	Hooked Agrimony				S3	4 Secure	177	37.7 ± 0.0	NS
P	<i>Amelanchier spicata</i>	Running Serviceberry				S3	4 Secure	5	17.4 ± 0.0	NS
P	<i>Galium kamtschaticum</i>	Northern Wild Licorice				S3	4 Secure	4	94.7 ± 0.0	NS
P	<i>Geocaulon lividum</i>	Northern Comandra				S3	4 Secure	65	2.1 ± 0.0	NS
P	<i>Limosella australis</i>	Southern Mudwort				S3	4 Secure	3	83.1 ± 5.0	NS
P	<i>Lindernia dubia</i>	Yellow-seeded False Pimperel				S3	4 Secure	11	53.1 ± 0.0	NS
P	<i>Laportea canadensis</i>	Canada Wood Nettle				S3	3 Sensitive	15	44.0 ± 3.0	NS
P	<i>Verbena hastata</i>	Blue Vervain				S3	4 Secure	48	44.0 ± 0.0	NS
P	<i>Carex cryptolepis</i>	Hidden-scaled Sedge				S3	4 Secure	7	49.1 ± 1.0	NS
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3	3 Sensitive	23	58.0 ± 5.0	NS
P	<i>Carex lupulina</i>	Hop Sedge				S3	4 Secure	11	52.4 ± 6.0	NS
P	<i>Carex rosea</i>	Rosy Sedge				S3	4 Secure	5	36.7 ± 4.0	NS
P	<i>Carex tribuloides</i>	Blunt Broom Sedge				S3	4 Secure	11	20.3 ± 0.0	NS
P	<i>Carex wiegandii</i>	Wiegand's Sedge				S3	3 Sensitive	2	49.9 ± 0.0	NS
P	<i>Carex foenea</i>	Fernald's Hay Sedge				S3	4 Secure	1	72.4 ± 0.0	NS
P	<i>Schoenoplectus americanus</i>	Olney's Bulrush				S3	3 Sensitive	1	53.0 ± 0.0	NS
P	<i>Juncus subcaudatus</i>	Woods-Rush				S3	3 Sensitive	4	15.3 ± 0.0	NS
P	<i>Juncus dudleyi</i>	Dudley's Rush				S3	4 Secure	81	32.8 ± 0.0	NS
P	<i>Goodyera repens</i>	Lesser Rattlesnake-plantain				S3	3 Sensitive	6	68.4 ± 0.0	NS
P	<i>Neottia bifolia</i>	Southern Twayblade				S3	4 Secure	47	14.4 ± 0.0	NS
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	4 Secure	46	22.3 ± 10.0	NS
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3	4 Secure	3	49.3 ± 0.0	NS
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3	4 Secure	2	40.6 ± 0.0	NS
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S3	4 Secure	3	85.3 ± 0.0	NS
P	<i>Alopecurus aequalis</i>	Short-awned Foxtail				S3	4 Secure	5	59.2 ± 1.0	NS
P	<i>Dichanthelium clandestinum</i>	Deer-tongue Panic Grass				S3	4 Secure	81	28.2 ± 0.0	NS
P	<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed				S3	4 Secure	11	48.4 ± 1.0	NS
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S3	3 Sensitive	10	32.0 ± 10.0	NS
P	<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed				S3	3 Sensitive	1	97.2 ± 7.0	NS
P	<i>Sparganium natans</i>	Small Burreed				S3	4 Secure	7	29.0 ± 0.0	NS
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	4 Secure	4	49.3 ± 0.0	NS
P	<i>Asplenium viride</i>	Green Spleenwort				S3	3 Sensitive	17	65.1 ± 0.0	NS
P	<i>Equisetum pratense</i>	Meadow Horsetail				S3	3 Sensitive	14	82.1 ± 0.0	NS
P	<i>Equisetum variegatum</i>	Variiegated Horsetail				S3	4 Secure	37	45.6 ± 0.0	NS
P	<i>Isoetes tuckermanni</i> ssp. <i>acadiensis</i>	Acadian Quillwort				S3	3 Sensitive	3	20.2 ± 0.0	NS
P	<i>Diphasiastrum sitchense</i>	Sitka Ground-cedar				S3	4 Secure	19	36.9 ± 1.0	NS
P	<i>Huperzia appressa</i>	Mountain Firmoss				S3	3 Sensitive	1	95.9 ± 1.0	NS
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	4 Secure	3	51.8 ± 1.0	NS
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3	5 Undetermined	1	93.5 ± 0.0	NS
P	<i>Bidens vulgata</i>	Tall Beggarticks				S3?	7 Exotic	1	82.0 ± 0.0	NS
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S3?	5 Undetermined	1	53.0 ± 0.0	NS
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3?	4 Secure	2	61.0 ± 5.0	NS
P	<i>Atriplex glabriuscula</i> var. <i>franktonii</i>	Frankton's Saltbush				S3S4	4 Secure	1	48.5 ± 0.0	NS
P	<i>Suaeda calceoliformis</i>	Horned Sea-blite				S3S4	4 Secure	4	31.6 ± 0.0	NS
P	<i>Myriophyllum sibiricum</i>	Siberian Water Milfoil				S3S4	4 Secure	2	57.4 ± 0.0	NS
P	<i>Nuphar microphylla</i>	Small Yellow Pond-lily				S3S4	4 Secure	1	98.1 ± 2.0	NS
P	<i>Sanguinaria canadensis</i>	Bloodroot				S3S4	4 Secure	135	43.2 ± 5.0	NS
P	<i>Polygonum fowleri</i>	Fowler's Knotweed				S3S4	4 Secure	4	57.6 ± 0.0	NS
P	<i>Rumex fueginus</i>	Tierra del Fuego Dock				S3S4	4 Secure	9	87.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Fragaria vesca ssp. americana</i>	Woodland Strawberry				S3S4	4 Secure	17	59.5 ± 0.0	NS
P	<i>Salix petiolaris</i>	Meadow Willow				S3S4	4 Secure	4	84.9 ± 0.0	NS
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3S4	4 Secure	3	3.5 ± 4.0	NS
P	<i>Eriophorum russeolum</i>	Russet Cottongrass				S3S4	4 Secure	7	45.8 ± 5.0	NS
P	<i>Triglochin gaspensis</i>	Gasp Arrowgrass				S3S4	5 Undetermined	23	54.0 ± 0.0	NS
P	<i>Juncus acuminatus</i>	Sharp-Fruit Rush				S3S4	4 Secure	3	55.0 ± 0.0	NS
P	<i>Luzula parviflora</i>	Small-flowered Woodrush				S3S4	4 Secure	3	47.6 ± 0.0	NS
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	4 Secure	4	42.7 ± 0.0	NS
P	<i>Panicum philadelphicum</i>	Philadelphia Panicgrass				S3S4	4 Secure	1	79.5 ± 0.0	NS
P	<i>Trisetum spicatum</i>	Narrow False Oats				S3S4	4 Secure	1	90.4 ± 0.0	NS
P	<i>Cystopteris bulbifera</i>	Bulblet Bladder Fern				S3S4	4 Secure	105	49.4 ± 1.0	NS
P	<i>Equisetum hyemale ssp. affine</i>	Common Scouring-rush				S3S4	4 Secure	31	47.5 ± 0.0	NS
P	<i>Equisetum scirpoides</i>	Dwarf Scouring-Rush				S3S4	4 Secure	62	82.5 ± 0.0	NS
P	<i>Diphasiastrum complanatum</i>	Northern Ground-cedar				S3S4	4 Secure	2	85.0 ± 5.0	NS
P	<i>Schizaea pusilla</i>	Little Curlygrass Fern				S3S4	4 Secure	9	7.4 ± 0.0	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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48	Neily, T.H. & Pepper, C.; Toms, B. 2015. Nova Scotia lichen location database [as of 2015-02-15]. Mersey Tobeatic Research Institute, 1691 records.
46	MacDonald, E.C. 2018. CWS Piping Plover Census, 2010-2017. Canadian Wildlife Service.
45	Bell, G. 2018. Moose, bat and bird records from Goldboro LNG Project, NS, Environmental Assessment. Amec Foster Wheeler.
44	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
44	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
43	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
42	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
42	Pepper, C. 2013. 2013 rare bird and plant observations in Nova Scotia. , 181 records.
41	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
39	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
35	Benjamin, L.K. 2009. D. Anderson Odonata Records for Cape Breton, 1997-2004. Nova Scotia Dept Natural Resources, 1316 recs.
35	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
34	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
33	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
32	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
32	Quigley, E.J. & Neily, P.D.. 2012. Botanical Discoveries in Inverness County, NS. Nova Scotia Dept Natural Resources. Pers. comm. to C.S. Blaney, Nov. 29, 141 rec.
30	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
29	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
25	Neily, T.H. 2017. Maritimes Lichen and Bryophyte records. Atlantic Canada Conservation Data Centre, 1015 recs.
24	Neily, T.H. 2013. Email communication to Sean Blaney regarding <i>Listera australis</i> observations made from 2007 to 2011 in Nova Scotia. , 50.
24	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
23	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
22	Churchill, J.L. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
21	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
21	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
20	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
20	Neily, T.H. 2012. 2012 Erioderma pedicellatum records in Nova Scotia.
19	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
19	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
17	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of <i>C. insculpta</i> sightings. Acadia University, Wolfville NS, 88 recs.
17	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
16	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
15	Clayden, S. Digitization of Wolfgang Maass Nova Scotia forest lichen collections, 1964-2004. New Brunswick Museum. 2018.
14	Cameron, R.P. 2009. Cyanolichen database. Nova Scotia Environment & Labour, 1724 recs.
14	Robinson, S.L. 2011. 2011 ND dune survey field data. Atlantic Canada Conservation Data Centre, 2715 recs.
13	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
13	Hill, N.M. 1994. Status report on the Long's bulrush <i>Scirpus longii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
13	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
13	White, S. 2018. Notable species sightings, 2016-2017. East Coast Aquatics.
12	Williams, M. Cape Breton University Digital Herbarium. Cape Breton University Digital Herbarium. 2013.
11	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
11	Robinson, S.L. 2015. 2014 field data.
10	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
10	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
10	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
10	Holder, M.L.; Kingsley, A.L. 2000. Kingsley and Holder observations from 2000 field work.
10	Knapton, R. & Power, T.; Williams, M. 2001. SAR Inventory: Fortress Louisbourg NP. Parks Canada, Atlantic, SARINV01-13. 157 recs.
10	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
10	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.

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9	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
9	Bryson, I. 2020. Nova Scotia and Newfoundland rare species observations, 2018-2020. Nova Scotia Environment.
9	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
9	Newell, R.E. 2004. Assessment and update status report on the New Jersey Rush (<i>Juncus caesariensis</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 15 recs.
9	Power, T.; Gilhen, J. 2018. Status, distribution, and nesting ecology of Snapping Turtle (<i>Chelydra serpentina</i>) on Cape Breton Island, Nova Scotia, Canada. <i>The Canadian Field Naturalist</i> , 132(1): 8-17.
9	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
8	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J.; ONHIC, 487 recs.
7	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
7	Cameron, R.P. 2013. 2013 rare species field data. Nova Scotia Department of Environment, 71 recs.
7	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
7	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
7	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
7	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
7	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
7	Taylor, B.R., and Tam, J.C. 2012. Local distribution of the rare plant <i>Triosteum aurantiacum</i> in northeastern Nova Scotia, Canada. <i>Rhodora</i> , 114(960): 366-382.
6	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
6	Cameron, R.P. 2005. <i>Erioderma pedicellatum</i> unpublished data. NS Dept of Environment, 9 recs.
6	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
6	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (<i>Riparia riparia</i>) in Nova Scotia: inventory and assessment of colonies. Mersert Tobeiatc Research Institute, 25 recs.
6	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
6	Powell, B.C. 1967. Female sexual cycles of <i>Chrysemy spicta</i> & <i>Clemmys insculpta</i> in Nova Scotia. <i>Can. Field-Nat.</i> , 81:134-139. 26 recs.
5	anon. 2001. S. H. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 76 recs.
5	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
5	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
5	Cameron, R.P. 2018. <i>Degelia plumbea</i> records. Nova Scotia Environment.
5	Power, T. 2019. Cape Breton Wood Turtle records. NS Lands and Forestry.
5	Richardson, D., Anderson, F., Cameron, R, McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (<i>Anzia colpodes</i>). COSEWIC.
5	Whittam, R.M. 1997. Status Report on the Roseate Tern (<i>Sterna dougallii</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 5 recs.
4	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
4	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
4	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
4	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
4	Ferguson, D.C. 1954. The Lepidoptera of Nova Scotia. Part I, macrolepidoptera. Proceedings of the Nova Scotian Institute of Science, 23(3), 161-375.
4	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database Update. Mersey Tobeatic Research Institute, 14 recs.
4	NS DNR. 2017. Black Ash records from NS DNR Permanent Sample Plots (PSPs), 1965-2016. NS Dept of Natural Resources.
4	O'Neil, S. 1998. Atlantic Salmon: Northumberland Strait Nova Scotia part of SFA 18. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-08. 9 recs.
4	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
4	Rousseau, J. 1938. Notes Floristiques sur l'est de la Nouvelle-Ecosse in Contributions de l'Institut Botanique de l'Universite de Montreal. Universite de Montreal, 32, 13-62. 11 recs.
3	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
3	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
3	Chapman, C.N. (Cody). 2019. Nova Scotia Black Ash (<i>Fraxinus nigra</i>) field observations by Confederacy of Mainland Mi'kmaq. Forestry Program, Confederacy of Mainland Mi'kmaq, 7 records.
3	e-Butterfly. 2018. Selected Maritimes butterfly records from 2016 and 2017. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
3	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
3	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
3	Neily, T.H. 2016. Email communication (May 6, 2016) to Sean Blaney regarding <i>Fissidens exilis</i> observations made in 2016 in Nova Scotia. Pers. Comm., 3 recs.
3	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.
3	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
2	Basquill, S.P. 2012. 2012 Bryophyte specimen data. Nova Scotia Department of Natural Resources, 37 recs.
2	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
2	Cameron, B. 2005. <i>C. palmicola</i> , <i>E. pedicellatum</i> records from Sixth Lake. Pers. comm. to C.S. Blaney. 3 recs, 3 recs.
2	Cameron, R.P. 2006. <i>Erioderma pedicellatum</i> 2006 field data. NS Dept of Environment, 9 recs.
2	COSEWIC (Committee on the Status of Wildlife in Canada). 2013. COSEWIC Assessment and Status Report on the Eastern Waterfan <i>Peltigera hydrothyria</i> in Canada. COSEWIC, 46 pp.
2	Frittaion, C. 2012. NSNT 2012 Field Observations. Nova Scotia Nature Trust, Pers comm. to S. Blaney Feb. 7, 34 recs.
2	Gillis, J. 2007. Botanical observations from bog on Skye Mountain, NS. Pers. comm., 8 recs.
2	Gillis, J. 2015. Rare plant records from Cape Breton gypsum sites. Pers. comm., 25 rare plant records.
2	Hill, N. 2003. <i>Floerkea proserpinacoides</i> at Heatherdale, Antigonish Co. 2002. , Pers. comm. to C.S. Blaney. 2 recs.
2	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
2	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.

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2	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
2	Sollows, M.C., 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
2	Whittam, R.M. et al. 1998. Country Island Tern Restoration Project. Canadian Wildlife Service, Sackville, 2 recs.
1	Baechler, Lynn. 2016. Plant observations & photos, 2016. Pers. comm. to S. Blaney, May 2016, 2 recs.
1	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
1	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
1	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
1	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
1	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
1	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
1	Crowell, M. 2013. email to Sean Blaney regarding <i>Listera australis</i> at Bear Head and Mill Cove Canadian Forces Station. Jacques Whitford Environmental Ltd., 2.
1	Daury, R.W. & Bateman, M.C. 1996. The Barrow's Goldeneye (<i>Bucephala islandica</i>) in the Atlantic Provinces and Maine. Canadian Wildlife Service, Sackville, 47pp.
1	Doucet, D.A. 2009. Census of Globally Rare, Endemic Butterflies of Nova Scotia Gulf of St Lawrence Salt Marshes. Nova Scotia Dept of Natural Resources, Species at Risk, 155 recs.
1	Gregory, G. 2018. Bat species observation. Pers. comm. to J.L. Churchill.
1	Haughian, S.R. 2018. Description of <i>Fuscopannaria leucosticta</i> field work in 2017. New Brunswick Museum, 314 recs.
1	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
1	Klymko, J. Henry Hensel's Butterfly Collection Database. Atlantic Canada Conservation Data Centre. 2016.
1	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
1	McNeil, J.A. 2016. Blandings Turtle (<i>Emydoidea blandingii</i>), Eastern Ribbonsnake (<i>Thamnophis sauritus</i>), Wood Turtle (<i>Glyptemys insculpta</i>), and Snapping Turtle (<i>Chelydra serpentina</i>) sightings, 2016. Mersey Tobeatic Research Institute, 774 records.
1	Neily, P.D. Plant Specimens. Nova Scotia Dept Natural Resources, Truro. 2006.
1	Neily, T.H. & Pepper, C.; Toms, B. 2019. Boreal Felt Lichen Observation, April 2019. Mersey Tobeatic Research Institute.
1	Neily, T.H. & Pepper, C.; Toms, B. 2019. Boreal Felt Lichen Observation, January 2019. Mersey Tobeatic Research Institute, 1 rec.
1	Neily, T.H. 2013. Email communication to Sean Blaney regarding <i>Agalinis paupercula</i> observations made in 2013 in Nova Scotia. , 1 rec.
1	Newell, R.B.; Sam, D. 2014. 2014 Bloodroot personal communication report, Antigonish, NS. NS Department of Natural Resources.
1	Newell, R.E. 2001. Fortress Louisbourg Species at Risk Survey 2001. Parks Canada, 4 recs.
1	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
1	Parker, G.R., Maxwell, J.W., Morton, L.D. & Smith, G.E.J. 1983. The ecology of <i>Lynx</i> , <i>Lynx canadensis</i> , on Cape Breton Island. Canadian Journal of Zoology, 61:770-786. 51 recs.
1	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
1	Porter, K. 2013. 2013 rare and non-rare vascular plant field data. St. Mary's University, 57 recs.
1	Quigley, E.J. 2006. Plant records, Mabou & Port Hood. Pers. comm. to S.P. Basquill, Jun. 12. 4 recs, 4 recs.
1	Robinson, C.B. 1907. Early intervale flora of eastern Nova Scotia. Transactions of the Nova Scotia Institute of Science, 10:502-506. 1 rec.
1	Standley, L.A. 2002. <i>Carex haydenii</i> in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
1	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
1	White, S. 2019. Notable species sightings, 2018. East Coast Aquatics.
1	Whittam, R.M. 2000. <i>Senecio pseudoarnica</i> on Country Island. , Pers. comm. to S. Gerriets. 1 rec.

APPENDIX G. TABLE 1 AND 2 OF WESP RESULTS

Table 1: WESP Summary Evaluation Results - Grouped Wetland Functions

WL ID	HYDROLOGIC Group		WATER Quality Group		AQUATIC SUPPORT Group		AQUATIC HABITAT Group		TERRESTRIAL HABITAT Group		WETLAND CONDITION		WETLAND RISK		Average Function	Average Benefits
	Function	Benefits	Function	Benefits	Function	Benefits	Function	Benefits	Function	Benefits	Function	Benefits	Function	Benefits		
1	1	3	1	3	2	1	2	2	2	1	N/A	3	N/A	1	2	2
2	1	1	1	1	1	1	1	1	1	2	N/A	1	N/A	1	1	1
3	3	3	3	2	2	2	1	1	2	2	N/A	3	N/A	2	2	2
4	3	3	3	2	1	1	1	1	2	2	N/A	3	N/A	2	2	2
5	3	3	3	2	1	1	1	1	3	3	N/A	3	N/A	2	2	2
6	3	3	3	2	1	1	1	1	2	2	N/A	3	N/A	2	2	2
7	3	3	3	2	1	1	1	1	3	2	N/A	1	N/A	3	2	2
8	2	3	2	3	1	1	1	1	2	2	N/A	1	N/A	3	2	2
9	3	3	3	3	2	1	1	1	2	2	N/A	2	N/A	3	2	2
10	3	3	3	3	1	1	1	1	2	2	N/A	1	N/A	3	2	2
11	3	3	3	3	1	1	1	1	2	2	N/A	2	N/A	3	2	2
12	3	3	3	1	1	1	1	1	3	2	N/A	3	N/A	2	2	2
13	1	3	1	1	2	2	2	2	3	1	N/A	3	N/A	1	2	2
14	3	3	3	3	2	1	1	1	2	2	N/A	1	N/A	2	2	2
15	3	3	3	1	2	1	1	2	3	2	N/A	2	N/A	2	2	2
16	3	3	3	1	1	1	1	2	3	2	N/A	2	N/A	2	2	2
17	1	3	2	3	1	3	2	2	3	2	N/A	3	N/A	2	2	3
18	1	3	1	3	1	3	2	2	3	2	N/A	3	N/A	1	2	3
19	3	3	3	1	2	1	1	1	3	2	N/A	2	N/A	2	2	2
20	3	3	3	2	2	1	1	1	2	2	N/A	3	N/A	2	2	2
21	3	3	3	2	2	1	1	1	2	2	N/A	3	N/A	2	2	2
22	2	3	3	2	2	3	2	2	3	2	N/A	3	N/A	2	2	3
23	1	3	2	2	2	1	1	1	3	2	N/A	3	N/A	2	2	2
24	3	3	3	1	1	1	1	1	2	2	N/A	1	N/A	2	2	2
25	3	3	3	2	1	1	1	1	2	2	N/A	3	N/A	2	2	2
26	3	3	3	2	1	1	1	1	2	2	N/A	3	N/A	2	2	2
27	3	3	3	2	2	1	1	1	2	2	N/A	3	N/A	2	2	2
28	2	3	3	3	1	2	2	2	3	3	N/A	3	N/A	2	2	3
29	3	3	3	3	2	1	1	1	3	2	N/A	3	N/A	2	2	2
30	3	3	3	2	2	1	1	1	3	2	N/A	3	N/A	2	2	2
31	1	3	2	3	1	2	2	2	3	2	N/A	3	N/A	1	2	3
32	3	3	3	1	1	1	1	1	2	2	N/A	3	N/A	1	2	2
33	3	3	3	1	2	1	1	1	2	2	N/A	3	N/A	2	2	2
34	1	3	1	3	1	2	2	2	3	2	N/A	2	N/A	1	2	2
35	1	3	1	3	2	2	2	2	3	2	N/A	1	N/A	3	2	2
36	3	3	3	2	2	1	1	2	2	3	N/A	3	N/A	3	2	2
37	3	3	3	2	2	1	1	2	2	3	N/A	3	N/A	3	2	2
38	3	3	3	2	2	1	1	2	2	3	N/A	3	N/A	3	2	2
39	3	3	3	2	2	1	1	2	2	3	N/A	3	N/A	3	2	2
Total Average (all wetlands)	2	3	3	2	2	1	1	1	2	2	N/A	2	N/A	2		

1 = Low Average Accumulated Score
 2 = Moderate Average Accumulated Score
 3 = High Average Accumulated Score

Table 2: WESP Evaluation Results - Specific Wetland

Functions

Wetland	1		2		3		4		5		6		7		8		9		10		11		12	
	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating	Function Rating	Benefits Rating
Surface Water Storage (WS)	1	3	1	1	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3
Stream Flow Support (SFS)	1	1	1	1	3	2	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
Streamwater Cooling (WC)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sediment & Toxicant Retention & Stabilization (SR)	1	2	1	1	3	2	3	2	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Phosphorus Retention (PR)	1	2	1	1	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Nitrate Removal & Retention (NR)	1	3	1	1	3	2	3	2	3	2	3	2	3	2	1	1	3	3	3	3	3	3	3	1
Carbon Sequestration (CS)	2	N/A	1	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	1	N/A	1	N/A	1	N/A
Organic Nutrient Export (OE)	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	1	N/A	2	N/A	2	N/A	2	N/A	2	N/A
Anadromous Fish Habitat (FA)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Resident & Other Fish Habitat (FR)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aquatic Invertebrate Habitat (INV)	3	2	1	1	2	1	2	1	2	1	2	1	2	1	2	1	3	1	1	2	1	2	2	2
Amphibian Habitat (AM)	2	2	1	1	1	2	1	2	1	2	1	2	2	3	1	2	2	2	1	2	2	2	2	2
Waterbird Feeding Habitat (WBF)	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Waterbird Nesting Habitat (WBN)	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Songbird, Raptor, & Mammal Habitat (SBM)	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2
Pollinator Habitat (POL)	1	1	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2
Native Plant Habitat (PH)	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Public Use & Recognition (PU)	N/A	2	N/A	1	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	2	N/A	1
Wetland Sensitivity (Sens)	N/A	1	N/A	1	N/A	2	N/A	2	N/A	2	N/A	2	N/A	3	N/A	1	N/A	3	N/A	2	N/A	2	N/A	3
Wetland Ecological Condition (EC)	N/A	3	N/A	1	N/A	3	N/A	3	N/A	3	N/A	3	N/A	1	N/A	1	N/A	2	N/A	1	N/A	2	N/A	3
Wetland Stressors (STR) (higher score means more)	N/A	2	N/A	1	N/A	1	N/A	1	N/A	1	N/A	1	N/A	2	N/A	3	N/A	2	N/A	3	N/A	3	N/A	1
Average Function/Benefit	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2

1 = Low Average Accumulated Score
2 = Moderate Average Accumulated Score
3 = High Average Accumulated Score

