Results

Habitat Descriptions

1) Deciduous Woodland (Fig. 3) (20T 0490925 5040637)

Figure 3. Deciduous woodland located in the southwest corner of the survey area.

A relatively rich, deciduous woodland occurs in the southwest corner of the survey area (Figs. 1 & 3). It appears to have been clearcut at some point in the not too distant past but has since regrown considerably. Tree species found here include Balsam Fir (*Abies balsamea*), Mountain Maple (*Acer spicatum*), Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*) and Yellow Birch (*Betula alleghaniensis*), Shrub species present include Hobblebush (*Viburnum lantanoides*) and Red Elderberry (*Sambucus racemosa*). Herbaceous species present include Yellow Trout Lily (*Erythronium americanum*), Carolina Spring Beauty (*Claytonia c*aroliniana), Nodding Trillium (*Trillium cernuum*), Rose Twisted Stalk (*Streptopus lanceolatus*) and Large False Solomon's-seal (*Maianthemum racemosum*). Several sedge species are also present including Black Sedge (*Carex arctata*), Finely Nerved Sedge (*C. leptonervia*), Fibrous-root Sedge (*C. communis*) and Brownish Sedge (*C. brunnescens*).

Additional vascular plant species documented during the Fall survey include

Species of conservation concern:

American Beech (*Fagus grandifolia*) was the only vascular plant species of conservation concern observed in this habitat during this survey. American Beech is an S3S4/vulnerable to apparently secure/(yellow) species.

2) Mixed Woodland (Fig. 4) (20T 491018 5041248), 20T 0490908 5040807, etc.)

Figure 4. Mixed woodland around the edges of a small, elongate pond located at the north end of the survey area.

Mostly undisturbed, scattered small stands of mixed woodland remain on this property (Fig. 4). Tree species present within this habitat include Wire Birch (*Betula populifolia*), White Birch (*B. papyrifera*), Trembling Aspen (*Populus tremuloides*), Large-toothed Aspen (*P. grandidentata*), Red Maple (*Acer rubrum*), White Spruce (*Picea glauca*) and Balsam Fir (*Abies balsamea*). Shrub and herbaceous species present include Lowbush Blueberry (*Vaccinium angustifolium*), Bunchberry (*Cornus canadensis*). Northern Starflower (*Lysimachia borealis*), Wild Lily-of-the-Valley (*Maianthemum canadense*), Red Elderberry (*Sambucus racemosa*), Rough Goldenrod (*Solidago rugosa*), Common Speedwell (*Veronica officinalis*) and Hay-scented Fern (*Dennstaedtia punctiloba*).

Species of conservation concern:

There were no vascular plant species of conservation concern observed in this habitat during this survey.

3) Remnant Patches of Mixed Woodland along roadway adjacent to large clearcut area (Fig. 5) (20T 0490908 5040807).

A large proportion of the woodland at this site has recently been clearcut (Fig. 2). It is believed that these areas were generally composed of mixed and/or coniferous woodland.

Remaining small patches of mixed woodland (20T 0490908 5040807) adjacent to the clearcut present on site include the following tree species: White Spruce (*Picea glauca*), Balsam Fir (*Abies balsamea*), Yellow Birch (*Betula alleghaniensis*), Trembling Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*). Wire Birch (*Betula populifolia*) and Red Maple (*Acer rubrum*). Herbaceous species present include Wood Aster (*Oclemena acuminata*), Bluebead Lily (*Clintonia borealis*), Wild-Lily-of-the-Valley (*Maianthemum canadense*), Wild Sarsaparilla (*Aralia nudicaulis*), Northern Starflower (*Lysimachia borealis*), Lady Fern (*Athyrium filix-femina*), Northern Beech Fern (*Phegopteris connectilis*), Spinulose Woodfern (*Dryopteris carthusiana*), etc.

Species of conservation concern:

There were no vascular plant species of conservation concern observed in this habitat during this survey.

Figure 5. Remnant patch of woodland between roadway and edge of large clearcut.

Species of conservation concern:

There were no vascular plant species of conservation concern observed in this habitat during this survey.

4) **Wetlands (includes several marshes and a treed bog)**

Treed Bog (Fig. 6) (20T 0490793 5040984)

A treed bog occurs in the northwest quadrant of the survey area (20T 0490793 5040984). Tree species present include Black Spruce (*Picea mariana*), Red Maple (*Acer rubrum*), Balsam Fir (*Abies balsamea*), White Birch (*Betula papyrifera*). Shrub species present include Mountain Holly (*Ilex mucronata*), Sheep Laurel (*Kalmia angustifolia*), Labrador-tea (*Rhododendron labradoricum*), Velvet-leaved Blueberry (*Vaccinium myrtilloides*) and Northern Wild Raisin (*Viburnum cassinoides*). Herbaceous species include Cinnamon Fern (*Osmundastrum cinnamomeum*), Twinflower (*Linnaea borealis*), Wild Sarsaparilla (*Aralia nudicaulis*) and Convulsion Root (*Monotropa uniflora*).

Additional species documented during the Fall survey include Bog Fern (*Coryphopteris simulata*) and Three-seeded Sedge (*Carex trispema*).

Figure. 6. Treed bog located in the northwest quadrant of the survey area.

Species of conservation concern:

There were no vascular plant species of conservation concern observed in this habitat during this survey.

Marsh (Figs. 7, 8 & 9) (20T 0490996 5041230 ; 20T 0490904 5040789 ; 20T 0490900 5040865)

Two, moreorless intact marshes were surveyed within the survey area (Figs. 7 & 8) (20T 0490996 5041230; 20T 0490904 5040789). These areas harbour a variety of wetland flora. Herbaceous species present include Lady Fern (*Athyrium filix-femina*), Sensitive fern (*Onoclea sensibilis*), Interrupted Fern (*Claytosmunda claytoniana*), Cinnamon Fern (*Osmundastrum cinnamomeum*), New York Fern (*Parathelypteris noveboracensis*), Tall White Aster (*Doellingeria umbellata*), Soft Rush (*Juncus effusus*), Large-leaved Avens (*Geum macrophyllum*), Blue-joint Grass (*Calamagrostis canadensis*), Tussock Cottongrass (*Eriophorum vaginatum*), Graceful Sedge (*Carex gracillima*), Silvery Sedge (*Carex canescens*), Awl-fruited Sedge (*Carex stipata*), etc.

Shrub species present include Wild Raspberry (*Rubus idaeus* ssp. *strigosus*), Skunk Currant (*Ribes glandulosum*), White Meadowsweet (*Spiraea alba* var. *latifolia*), Red Elderberry (*Sambucus racemosa*), Several willows including Upland Willow (*Salix humilis*), Bebb's Willow (*S. bebbiana*), Shining Willow (*S. lucida*) and Cottony Willow (*S. eriocephala*) are also present.

A highly disturbed, third wetland (20T 0490900 5040865) occurs immediately adjacent to the large clearcut area (20T 0490900 5040865) (Fig. 9). Vascular plants documented at this site include Canada Manna Grass (*Glyceria canadensis*), Rough Bent Grass (*Agrostis scabra*), Soft Rush (*Juncus effusus*), Red Maple (*Acer rubrum*), New York fern (*Parathelypteris noveboracensis*), Rough Goldenrod (*Solidago rugosa*), White Meadowsweet (*Spiraea alba* var. *latifolia*), Tearthumb (*Persicaria sagittata*), Whorled Wood Aster (*Oclemena acuminata*), Spinulose Wood Fern (*Dryopteris carthusiana*), Interrupted Fern (*Claytosmunda claytoniana*), Cinnamon Fern (*Osmundastrum cinnamomeum*), (Soft Rush (*Juncus effusus*) and Upland Willow (*Salix humilis*).

Additional vascular plant species documented during the Fall survey for the wetland in Figure 7 include:

Figure 7. Small marsh located along a roadway in the middle of the property (20T 0490996 5041230).

Figure 8. Marsh associated with small elongate, narrow pond at north end of quarry property (adjacent to access road) (20T 0490904 5040789).

A highly disturbed, third wetland occurs immediately adjacent to the large clearcut area (20T 0490900 5040865) (Fig. 9). Vascular plants documented at this site include Canada Manna Grass (*Glyceria canadensis*), Rough bent Grass (*Agrostis scabra*), Soft Rush (*Juncus effusus*), Red Maple (*Acer rubrum*), New York fern (*Parathelypteris noveboracensis*), Rough Goldenrod (*Solidago rugosa*), White Meadowsweet (*Spiraea alba* var. *latifolia*), Tearthumb (*Persicaria sagittata*), Whorled Wood Aster (*Oclemena acuminata*), Spinulose Wood Fern (*Dryopteris carthusiana*), Interrupted Fern (*Claytosmunda claytoniana*), Cinnamon Fern (*Osmundastrum cinnamomeum*), (Soft Rush (*Juncus effusus*) and Upland Willow (*Salix humilis*).

Figure 9. A highly disturbed marsh located adjacent to a large clearcut.

Species of conservation concern:

There were no vascular plant species of conservation concern observed in these wetland habitats during this survey.

Discussion

No species listed under either federal species-at-risk legislation or provincial species-at-risk- legislation were observed on the Kemptown quarry property during this survey.

Almost all the vascular plant species observed and recorded during this current survey fall into the Nova Scotia general status rank categories of **GREEN, LIGHT GREEN** or **EXOTIC** with GREEN indicating a plant with a secure conservation status within the province, LIGHT GREEN indicating a species that is at a fairly low risk of extirpation within the province and EXOTIC meaning a species that is non-native to Nova Scotia.

The Atlantic Canada Conservation Data Centre subnational status ranks all fall (with one exception) into the categories of S4, S5, S4S5 or SNA, also indicating that nearly all species documented on site during this survey, are not of conservation concern (**S5 = Secure** - common, widespread, and abundant in the province; **S4 = Apparently Secure** - uncommon but not rare; some cause for long-term concern due to declines or other factors; **S4S5 = Apparently secure to Secure; SNA = Not Applicable** - a conservation status rank is not applicable because the species is not a suitable target for conservation activities a for example, non-native (exotic) species.

The one exception to the above is American Beech (*Fagus grandifolia*) which is now considered to be an S3S4 species, i.e., a species considered to be vulnerable to apparently secure (ACCDC) and a vulnerable/YELLOW species (provincial general status rank).

Species listed in the APPENDIX not identified to species are not expected to be of conservation concern.

Apart from American Beech (*Fagus grandifolia*) no other species documented during this survey have any degree of conservation concern.

As this survey was conducted in the spring, it is highly recommended that a fall survey be conducted as a follow up to the current study to ensure late flowering or fruiting plants are documented.

APPENDIX

List of all vascular plant species observed on the Kemptown Quarry property during a survey conducted on June 13th, 2023, including the habitats in which they were found and their status ranks (both the Nova Scotia General Status Rank*and the Atlantic Canada Conservation Data Centre Subnational s-rank** are provided for each species). (Habitats surveyed include deciduous woodland (DW), mixed woodland (MW), marsh (M), treed bog (TB),

Latin Name	**Common Name**	**Nova Scotia General Status Rank***	**ACCDC Subnational Status Rank****	**Habitat(s)**
Abies balsamea	Balsam Fir	S5/secure (green)	S5/secure	DW, MW, TB
Acer pensylvanicum	Striped Maple	S5/secure (green)	S5/secure	DW
Acer rubrum	Red Maple	S5/secure (green)	S5/secure	M, MW, TB
Acer saccharum	Sugar Maple	S5/secure (green)	S5/secure	DW, MW
Acer spicatum	Mountain Maple	S5/secure (green)	S5/secure	DW, MW
Agrostis scabra	**Rough Bentgrass**	**S5/secure (green)**	**S5/secure**	**M**
Aralia nudicaulis	Wild Sarsaparilla	S5/secure (green)	S5/secure	DW, MW, TB
Athyrium filix-femina	Lady Fern	S5/secure (green)	S5/secure	M
Betula alleghaniensis	Yellow Birch	S5/secure (green)	S5/secure	DW, M, MW, TB
Betula papyrifera	White Birch	S5/secure (green)	S5/secure	MW
Betula populifolia	Wire Birch	S5/secure (green)	S5/secure	MW
Calamagrostis canadensis	Bluejoint Reed Grass	S5/secure (green)	S5/secure	M
Carex arctata	Black Sedge	S5/secure (green)	S5/secure	DW
Carex brunnescens	Brownish Sedge	S5/secure (green)	S5/secure	DW
Carex canescens	Silvery Sedge	S5/secure (green)	S5/secure	M
Carex communis	Fibrous-root Sedge	S5/secure (green)	S5/secure	DW
Carex gracillima	Graceful Sedge	S4S5/apparently secure (light green) to secure (green)	S4S5/apparently secure to secure	M
Carex leptalea	Bristly-stalked Sedge	S5/secure (green)	S5/secure	DW
Carex leptonervia	Finely Nerved Sedge	S5/secure (green)	S5/secure	DW
Carex stipata	Awl-fruited Sedge	S5/secure (green)	S5/secure	M
Carex trisperma	**Three-seeded Sedge**	**S5/secure (green)**	**S5/secure**	**TB**
Chamaenerion angustifolium	Fireweed	S5/secure (green)	S5/secure	TB
Claytonia caroliniana	Carolina Spring Beauty	S5/secure	S4/apparently secure	DW
Claytosmunda claytoniana	Interrupted Fern	S5/secure (green)	S5/secure	M

Latin Name	**Common Name**	**Nova Scotia General Status Rank***	**ACCDC Subnational Status Rank****	**Habitat(s)**
Clintonia borealis	Bluebead Lily	S5/secure (green)	S5/secure	DW, MW
Coptis trifolia	Goldthread	S5/secure (green)	S5/secure	TB
Cornus canadensis	Bunchberry	S5/secure (green)	S5/secure	MW, TB
Coryphopteris simulata	**Bog Fern**	**S4/apparently secure (light green)**	**S4/apparently secure**	**TB**
Dennstaedtia punctilobula	Hay-scented Fern	S5/secure (green)	S5/secure	DW, M, MW
Doellingeria umbellata	Tall White Aster	S5/secure (green)	S5/secure	DW, MW
Dryopteris campyloptera	**Mountain Wood Fern**	**S5/secure (green)**	**S5/secure**	**DW**
Dryopteris carthusiana	**Spinulose Wood Fern**	**S5/secure (green)**	**S5/secure**	**DW**
Dryopteris internmedia	Intermediate Wood Fern	S5/secure (green)	S5/secure	DW
Epifagus virginiana	**Beechdrops**	**S4/ apparently secure (light green)**	**S4/apparently secure**	**DW**
Equisetum sylvaticum	Woodland Horsetail	S5/secure (green)	S5/secure	M
Eriophorum vaginatum	Tussock Cotton-grass	S5/secure (green)	S5/secure	M
Eriophorum sp.	a cotton-grass	-	-	TB
Erythronium americanum	American Trout Lily	S5/secure (green)	S4S5	DW, MW
Fagus grandifolia	**American Beech**	**S3S4/vulnerable to apparently secure/(yellow)**	**S3S4/vulnerable to apparently secure**	**DW**
Fragaria virginiana	Wild Strawberry	S5/secure (green)	S5/secure	MW
Frangula alnus	Glossy Buckthorn	NA/exotic	SNA/exotic	MW
Galium palustre	Marsh Bedstraw	S5/secure (green)	S5/secure	M
Gaultheria hispidula	Creeping Snowberry	S5/secure (green)	S5/secure	TB
Geum macrophyllum	Large-leaved Avens	S5/secure (green)	S5/secure	M
Glyceria canadensis	**Canada Manna Grass**	**S5/secure (green)**	**S5/secure**	**M**
Ilex mucronata	Mountain Holly	S5/secure (green)	S5/secure	TB
Iris versicolor	Blue Flag	S5/secure (green)	S5/secure	M
Impatiens sp.	a jewellweed	-	-	M
Juncus effusus sl	Soft Rush	S5/secure (green)	S5/secure	M
Kalmia angustifolia	Sheep Laurel	S5/secure (green)	S5/secure	TB
Linnaea borealis	Twinflower	S5/secure (green)	S5/secure	TB
Lysimachia borealis	Northern Starflower	S5/secure (green)	S5/secure	MW
Maianthemum canadense	Wild Lily-of-the-valley	S5/secure (green)	S5/secure	DW, MW
Maianthemum racemosum	Large False Solomon's-seal	S5/secure (green)	S4S5/apparently secure to secure	DW
Monotropa uniflora	Convulsion-root	S5/secure (green)	S5/secure	DW
Oclemena acuminata	Whorled Wood Aster	S5/secure (green)	S5/secure	DW, **M**, MW
Osmunda claytoniana	Interrupted Fern	S5/secure (green)	S5/secure	
Onoclea sensibilis	Sensitive Fern	S5/secure (green)	S5/secure	M
Osmundastrum cinnamomeum	Cinnamon Fern	S5/secure (green)	S5/secure	M, TB

Latin Name	**Common Name**	**Nova Scotia General Status Rank***	**ACCDC Subnational Status Rank****	**Habitat(s)**
Oxalis montana	Common Wood Sorrel	S5/secure (green)	S5/secure	DW
Parathelypteris novaeboracensis	New York Fern	S5/secure (green)	S5/secure	M
Persicaria sagitata	**Arrow-leaved Tearthumb**	**S5/secure (green)**	**S5/secure**	**M**
Phegopteris connectilis	Northern beech Fern	S5/secure (green)	S5/secure	MW
Picea glauca	White Spruce	S5/secure (green)	S5/secure	MW
Picea mariana	Black Spruce	S5/secure (green)	S5/secure	TB
Poa trivialis	Rough Blue Grass	NA/exotic	SNA/exotic	M
Populus grandidentata	Large-toothed Aspen	S5/secure (green)	S5/secure	MW
Populus tremuloides	Trembling Aspen	S5/secure (green)	S5/secure	MW
Potentilla sp.	a cinquefoil	-	-	MW
Rhododendron groenlandicum	Common Labrador Tea	S5/secure (green)	S5/secure	TB
Ribes glandulosum	Skunk Currant	S5/secure (green)	S5/secure	M
Ribes hirtellum	Smooth Gooseberry	S5/secure (green)	S5/secure	M
Rubus hispidus	Bristly Dewberry	S5/secure (green)	S5/secure	MW
Rubus idaeus* ssp. *strigosus	**Wild Raspberry**	**S5/secure (green)**	**S5/secure**	**M,** MW
Rubus pubescens	Dwarf Red Raspberry	S5/secure (green)	S5/secure	DW, M, MW
Rubus sp.	a blackberry	-	-	MW
Salix humilis	Upland Willow	S5/secure (green)	S5/secure	M
Salix eriocephala	Cottony Willow	S5/secure (green)	S5/secure	M
Sambucus racemosa var. *pubens*	Red Elderberry	S5/secure (green)	S5/secure	DW, M, MW
Solidago canadensis	Canada Goldenrod	S5/secure (green)	S4S5/apparently secure to secure	M
Solidago rugosa	Rough Goldenrod	S5/secure (green)	S5/secure	M, MW
Sparganium sp.	**a burreed**	**-**	**-**	**M**
Spiraea alba var. *latifolia*	White Meadow Meadowsweet	S5/secure (green)	S5/secure	M
Streptopus lanceolatus	Rose Twisted-stalk	S5/secure (green)	S5/secure	DW
Trillium cernuum	Nodding Trillium	S5/secure (green)	S4/apparently secure	DW
Vaccinium angustifolium	Late Lowbush Blueberry	S5/secure (green)	S5/secure	MW
Vaccinium myrtilloides	Velvet-leaved Blueberry	S5/secure (green)	S5/secure	TB
Veronica officinalis	Common Speedwell	NA/exotic	SNA	DW, MW
Viburnum cassinoides	Northern Wild Raisin	S5/secure (green)	S5/secure	TB
Viburnum lantanoides	Hobblebush	S5/secure (green)	S4/apparently secure	DW

*The Nova Scotia general status ranks used in this report are based on the ranks used in the 2015 Wild Species of Canada Report (available at https://www.wildspecies.ca/) ; S**5 = Secure/green** (at very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats**; S4 = Apparently secure/light green** (at a

fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors**; S3 = Vulnerable/yellow** (at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; **S2 = Imperilled/orange (**at high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors); **NA = not applicable** (non-native/exotic).

ACCDC: Atlantic Canada Conservation Data Centre explanation of status ranks used in this report (http://accdc.com/en/rank-definitions.html): **S5 = Secure (common, widespread, and abundant in the province); **S4** = **Apparently Secure** (uncommon but not rare; some cause for long-term concern due to declines or other factors); **S3 = Vulnerable** (Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.)**;** S2 = **Imperiled** (imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. **SNA** = **Not Applicable** - a conservation status rank is not applicable because the species is not a suitable target for conservation activities, e.g., a non-native species.

APPENDIX C

MAMMAL AND WILDLIFE SURVEY

May 2023

JUNE 13, 2023

A GENERAL WILDLIFE ASSESSMENT FOR THE PROPOSED CHAPMAN BROTHERS KEMPTOWN QUARRY, COLCHESTER COUNTY, NS

MARK PULSIFER MSC
EDGEWOOD ENVIRONMENTAL SERVICES
Antigonish, Nova Scotia

A GENERAL WILDLIFE ASSESSMENT FOR THE PROPOSED CHAPMAN BROTHERS KEMPTOWN QUARRY, COLCHESTER COUNTY, NS

1.0 Introduction and Background

Edgewood Environmental Services (EES) was subcontracted by Envirosphere Consultants Ltd. to complete a general wildlife assessment to support regulatory submissions for the development of an aggregate quarry near Earltown, Colchester County, Nova Scotia, UTM coordinates 20T 490827 E 5041469 N (Figure 1).

Figure 1. Google Earth image (28 October 2022) of the study area (outlined in red) for the proposed Chapman Brothers Construction Ltd. Kemptown Quarry. An existing quarry (Dexter Construction Ltd.) is shown on the left side of the image. A general wildlife assessment was conducted within and adjacent to the area outlined in red.

In Nova Scotia, developers of pits and quarries are required to submit an environmental assessment for developments that exceed 4 ha in size. Included within the formal environmental registration document is information on Valued Environmental Components (VECs) and potential mitigation options. One specific VEC addressed here is non-avian “wildlife”,

which for the purposes of this report refers to mammals and herpetofauna. Other faunal groups are addressed separately.

Various legislation in Nova Scotia protects wildlife, and biodiversity in general. The Nova Scotia Wildlife Act (1989), Species at Risk Act (1998), and Biodiversity Act (2021) protect species and habitats within the province from adverse impacts. The results of this survey will be used (in part) to address possible mitigation strategies for wildlife in general that may arise as a result of the quarry development, and specifically for any species at risk or species of conservation concern.

Potential impacts on all biodiversity are noteworthy; however, potential impacts on "species at risk" (SAR) or "species of conservation concern" (SCC) take priority because of their conservation status and potential vulnerability to human activities. In Nova Scotia, the responsibility for conservation of SAR/SCC is jointly shared by the Nova Scotia Department of Natural Resources and Renewables (NSNRR) under the provincial Endangered Species Act (NSESA), and by Environment and Climate Change Canada (ECCC) under the federal Species at Risk Act (SARA). Both jurisdictions maintain a listing of species prioritized by level of threat. The conservation status for a species is informed in part by population data supplied by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the Atlantic Canada Conservation Data Center (ACCDC), and the General Status of Wild Species in Canada.

ACCDC records for the area surrounding the Kemptown Quarry property do not indicate any known mammalian, or herpetofauna species at risk or conservation concern within a 5 km radius; however, provincially endangered Mainland Moose (*Alces alces*) have been reported within 5.3 km. Also, three nationally endangered bat species, Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tricolored (*Perimyotis subflavus*) have been recorded within a 14 - 43 km radius. ACCDC records also indicate that three freshwater turtle species of conservation concern (Wood Turtle, *Glyptemys insculpta*; Snapping Turtle, *Chelydra serpentina,* and Eastern Painted Turtle, *Chrysemys picta picta* have been recorded between 13 and 29 km from this site.

2.0. Study Area and Methodology

2.1 Study Area Description

The proposed quarry expansion site is located approximately 2 km from Kemptown, Colchester County, Nova Scotia. The quarry is easily accessible from the Kemptown Road. The survey area includes a mixture of recent cutover lands, immature mixedwood, and mature tolerant hardwood with pockets of mature softwood, and a treed wet area (Figures 3 - 10). The property had previously been commercially thinned in 2020; however, the majority of the survey area was salvage-harvested following post-tropical storm Fiona in September 2022 (Jamie Chapman, pers. comm.). The surveyed area lies immediately south of an existing quarry (Dexter Construction Ltd.) quarry at an elevation of approximately 305 m above sea level. There are no watercourses or permanent waterbodies identified within the proposed development, but there

are several wet areas within the study area where water accumulates (Figures 8 – 11). Additionally, there are two tributaries of the Salmon River within 100 m of the existing quarry (JWEL, 2004).

2.2 Survey Methodology

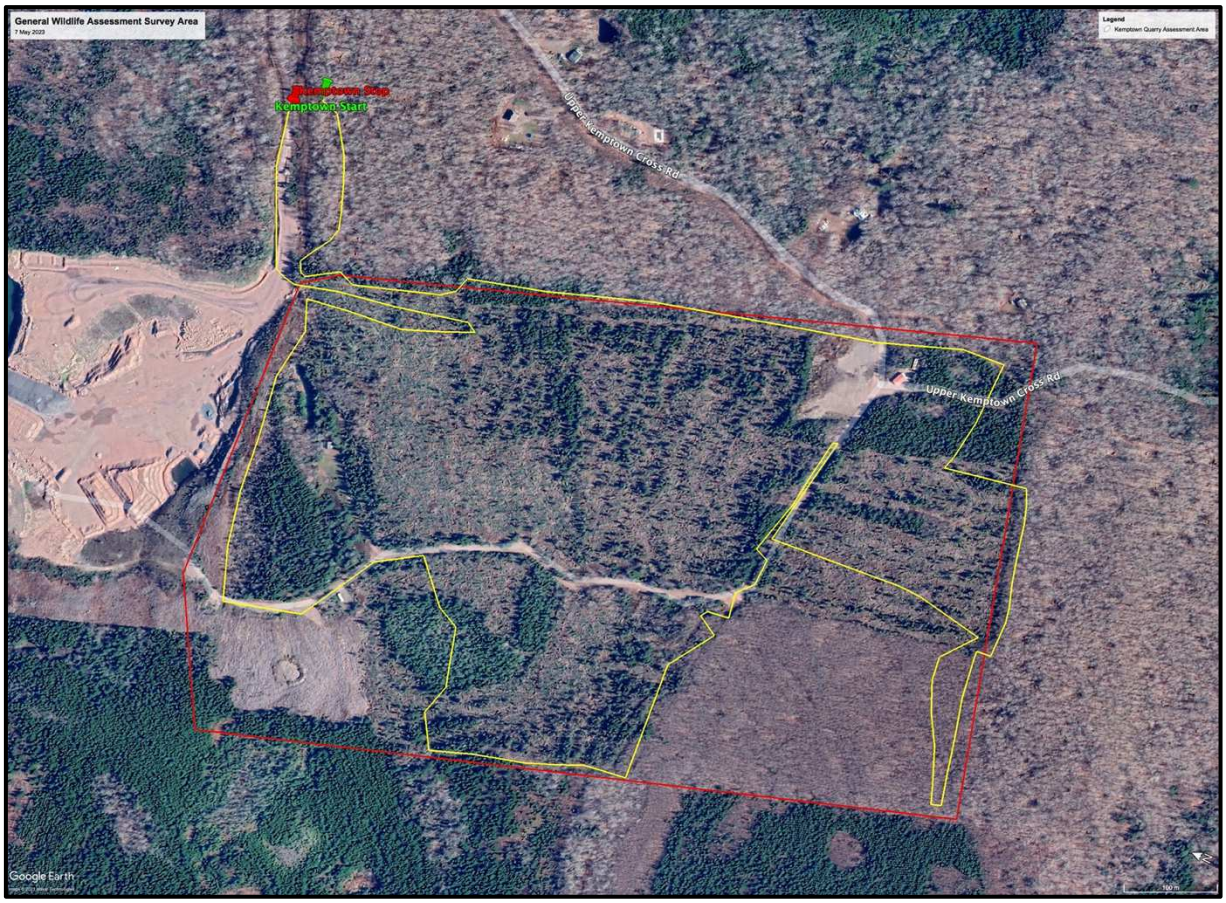


Figure 2. Approximate 6150 m walkover survey route shown in yellow completed on 7 May 2023.

A walkover survey for mammals and herpetofauna was conducted throughout, or adjacent to the survey area identified in red in Figure 1 prior to full leaf-out (See survey route in yellow in Figure 2). All surveys were conducted on-foot by a single observer and were designed to intersect major habitats or forest stand types within the designated study area, or follow existing roads and trails within or adjacent to the study area (Figure 2). Because this was a reconnaissance survey, effort was not standardized. Observations within forest habitats were made along indeterminant survey routes. Road surveys involved scanning the entire road width between start and stop points.

Evidence of species occurrence was confirmed by visual observation of individuals, skeletal parts, or egg masses, or indirect evidence such as auditory calls, scat, tracks, dens, and foraging behaviours (grubbing, rock and log rolling, browse, seed middens). GPS waypoints for points of

interest were recorded using a Garmin Oregon 750t® GPS, and all photos were recorded with an Apple iPhone 11®.

3.0. Results and Discussion

The general wildlife survey was completed on 7 May 2023 between 1130 hrs and 1600 hrs. Environmental conditions during the survey were partial sun, winds ~ 20 km/hr from the north, and temperature was consistently around 12°C. The walkover survey distance was approximately 6150 m in length and traversed all habitat types present within and adjacent to the survey area (Figure 2).

3.1 General Habitat

The following series of photos illustrate the variety of habitat types located within or immediately adjacent to the survey area outlined in red in Figure 1. Figure 11 shows the location waypoints where images were taken.

Figure 3. Habitat photo waypoint 274. Pole-size immature mixedwood composed of Balsam Fir (*Abies balsamea*), White Birch (*Betula papyrifera*) and Red Spruce (*Picea rubra*).

Figure 4a, b. Habitat photo waypoint 275. (a) Immature to mid-aged tolerant hardwood stand with Balsam Fir regeneration. Sugar Maple (*Acer rubrum*) and Yellow Birch (*Betula alleghaniensis*) make up the dominant canopy. (b) Deadwood structural habitat features located along the eastern survey boundary.

Figure 5. Habitat photo waypoint 279. Mature Red Spruce.

Figure 6a, b. Habitat photo waypoints 281(a) and 283 (b). Both images illustrate results of post-Fiona salvage harvest. Most overhead canopy cover has been removed. Ground cover is composed predominantly of herbaceous vegetation that can tolerate full exposure to sunlight and wind.

Figure 7. Examples of large diameter hardwood and course woody material scattered throughout tolerant hardwood stands adjacent to the survey area. Structural features such as these are potentially valuable for a variety of mammals, e.g., Fisher (*Pekania pennanti*), flying squirrels (*Glaucomys* spp.), and bats.

Figure 8a, b, c. Examples of ephemeral water bodies that can potentially provide temporary habitat for amphibians. (a) Photo waypoint Wet 290; rainwater collection on gravel woods road (b) Photo waypoint Wet 293; disrupted seep, (c) Photo waypoint Wet 298; ponding of drainage from treed wet area Wet 300.

Figure 9. Wet areas. Habitat photo waypoints (a) Wet 291 and (b) Wet 300. Vegetation (e.g., sedges, sphagnum moss) indicates that these areas are consistently wet.

Figure 10 a, b. Drainage from man-made pond in the Dexter Construction Ltd. quarry. Habitat photo waypoint Watercourse 307 (a) upstream towards quarry, (b) downstream view.

3.2 General Wildlife Survey Results

The general wildlife survey revealed no evidense of mammalian or herptile species at risk. Survey results provided evidence for four common mammal species and one ubiquitous amphibian species. White-tail Deer (*Odocoileus virginianus*), Eastern Coyote (*Canis latrans*), Red Squirrel (*Tamiasciurus hudsonicus*), and Snowshoe Hare (*Lepus americanus*) were identified based on scat, tracks and/or browse (Figure 11). Northern Spring Peeper (*Pseudacris crucifer*) could be heard vocalizing off-site west of waypoint Wet 298 (Figure 11). Additional species potentially present within or proximate to the study site were inferred from the availability of taxon-specific suitable habitats.

Figure 11. Google Earth image (28 Oct 2022) indicating locations of habitat and wildlife waypoint observations.

3.2.1 Mammals

By their nature, mammals tend to be nocturnal and therefore, inconspicuous. Consequently, their presence is often indicated by indirect sign (scat, tracks, calls, prey remains etc.) or inferred by habitat availability. Based on the type of habitats present at the study site there is likely a broad range of large, medium, and small mammal species present at this site.

Although no moose sign was observed, the study site is located within a moose concentration area and identified core moose habitat. ACCDC records indicate that moose have been reported < 6 km from the study area. Moose home ranges generally cover tens of square kilometers, and

encompass both mature and regenerating forest, wetlands, and riverine habitats. This study area potentially provides a variety of habitat types that could provide moose with foraging and cover opportunities over the short-term, so it is possible that the study area could include a portion of moose home range. Regenerating hardwoods 10-15 years old offer preferred browse and were present near the recently salvage-harvest area. Important moose habitats (e.g. wetlands, mature softwood stands) are lacking on this site; however, these habitats can be found within a kilometer of the center of the proposed expansion area.

Evidence of White-tail Deer was found within the survey area in the form of browse and scat (Figure 12). Signs of winter browse and pellet piles indicate that deer are using the area for foraging and travel, year-round. Regenerating early successional shrub and tree species provide abundant food resources that are capable of supporting a local population of deer. Deer generally move from high elevation areas in late fall and winter to avoid deep snow conditions; however, during mild winters snow may not reach critical depths and deer may utilize these habitats year-round.

Figure 12. White-tail Deer pellets located at waypoint WTD 285

No Black Bear (*Ursus americana*) sign was found; however, the heterogeneity and distribution of suitable bear habitats near the quarry site would indicate the potential for Black Bear to be in the area.

Mid-sized mammals such as American Marten (*Martes americana*) and Fisher generally prefer mature and late seral forests with large diameter trees and abundant coarse woody material. With the recent salvage-harvest of blown-down trees there was no evidence of these habitat elements on the study site; however, there were scattered large diameter tolerant hardwood trees with decay features that may provide suitable denning habitat in stands adjacent to the study area (Figure 7).

Both Fisher and American Marten are present in Nova Scotia, but Marten have not been documented by the ACCDC within 100 kilometers of the study site. Fisher have been reported within approximately 7 km of the quarry. Eastern Coyote are common throughout the province and their presence in the study area was confirmed by scat and tracks (Figure 13 a, b). No indications of predators such as Bobcat (*Lynx rufus*) were observed. Bobcat generally prefer mature softwood cover in lower elevation, wet areas frequented by Snowshoe Hare. Even though Snowshoe Hare were present at the study site, the general elevation of the site and absence of good prey species habitat suggests that Bobcat would not be common.

The limited presence of wetlands and watercourses indicates that aquatic furbearers normally associated with these habitats are not common. There was no evidence of furbearers other than Eastern Coyote within the study site. However, nearby drainages, wetlands, and watercourses would provide suitable habitat for several species. Streams in the general vicinity

Figure 13a, b. Eastern Coyote sign (a) scat (b) tracks located in the proposed expansion area at waypoints Coyote 304 and Coyote 305.

could be used as a travel corridors for River Otter (*Lontra canadensis*), Mink (*Neovison vison*), and Raccoon (*Procyon lotor*). There were no natural waterbodies to support Beaver or Muskrat. Forested upland habitats and riparian areas would also provide suitable habitat for Short-tailed Weasel (*Mustela erminae*).

Bat surveys were not part of the survey protocol; however, the lack of mature and old stands, with abundant standing deadwood structures (e.g., snag and cavity trees) would suggest that bats are not present or common at the quarry site. ACCDC records indicate that none of three endangered bat species in Nova Scotia have been reported closer than 14 km from the study site; however, it is very likely that bats do occur closer where there are foraging and roosting habitats (e.g., wet areas, large diameter old or dead trees).

Figure 14 a, b. (a) Snowshoe Hare pellet and (b) Red Squirrel seed midden located at waypoints Hare 294 and Red Squirrel 279.

Snowshoe Hare and Red Squirrel were present within the study area (Figure 14 a, b). Slash (i.e., brush) piles from recent harvest clearing, and residual wildlife clumps within the proposed expansion area create edge habitat that are preferred by small mammals such as Deer Mouse (*Peromyscus maniculatus*), and White-footed Mouse (*Peromyscus leucopus*). The lack of abundant coarse woody material and late seral conditions would suggest that the Red-backed Vole (*Myodes gapperi*) and Woodland Jumping Mouse (*Napaeozapus insignis*) are not present, or not present in any significant numbers. The absence of larger mature trees with cavities and cracks in the bole would likely preclude the presence of flying squirrels on site, but the presence

of these habitat features in adjacent forest stands suggests that flying squirrels may be present off-site. Insectivores such as shrews (*Blarina* sp., *Sorex* spp.) are most common where there is complex ground cover and coarse woody material present. Long-tailed Shrews are uncommon to rare in Nova Scotia, and are associated with late seral-closed canopy hardwood forests on talus slopes (Woolaver *et al*., 1998). This habitat does not exist at or adjacent to the quarry site so it is unlikely that this species occurs at this location. ACCDC records indicate one record of Long-tailed Shrews approximately 48 km from this site.

3.2.2 Herpetofauna

No reptile species were observed at the site; however, several provincial snake species are reported to occur in cutover areas, along roadsides, and in abandoned gravel pits (Gilhen, 1984). Similar habitats at or near the quarry area would indicate the potential presence of Maritime Garter Snake (*Thamnophis sirtalis*), Northern Redbelly Snake (*Storeria occipitomaculata*), and Eastern Smooth Green Snake (*Opheodrys vernalis*) in exposed sand, gravel, and waste areas, or deciduous forest adjacent to the proposed quarry (Gilhen, 1984). These areas would be used for thermoregulation (i.e., basking), while adjacent habitats with more complex vegetation structure near water could also be used for foraging. There have been no known occurrences of either Wood Turtle, Snapping Turtle, or Eastern Painted Turtle reported by the ACCDC within several kilometers of the study area. Suitable habitat conditions for these species are not present in the vicinity of the quarry site.

It is likely that the wet areas within the study area contains some common amphibian species. Wood Frogs (*Lithobates sylvaticus*) and Northern Spring Peeper are likely present in the study area where there is flowing, or standing water. The Green Frog (*Rana clamitans*) and American Toad (*Bufo americanus*) are ubiquitous and likely to be found wherever there are streams, or ponds. Red-backed salamanders (*Plethodon cinereus*) are common in deciduous forests similar to those occurring adjacent to the proposed expansion site.

4.0 References

Gilhen, J. 1984. Amphibians and Reptiles of Nova Scotia. The Nova Scotia Museum of Natural History, Halifax, NS.

Jacques Whitford Environment Ltd. 2004. Dexter Construction Co. Ltd. Environmental Assessment Registration Kemptown Road Quarry Expansion Project. JW Project# NSD17814.

Woolaver, L. G., Elderkin, M. F. 1998. *Sorex dispar*in Nova Scotia. Northeastern Naturalist Vol. 5, No. 4, 323-330.

5.0 Personal Communications

Chapman, Jamie. Owner/operator of Chapman Brothers Construction Ltd. (Quarry), 7 May 2023.

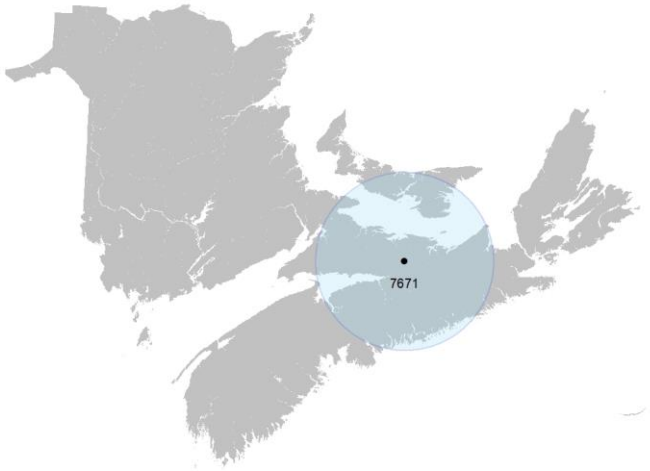
APPENDIX D

ATLANTIC CANADA CONSERVATION DATA CENTRE REPORT

DATA REPORT 7671: Kemptown, NS

Prepared 10 May 2023
by C. Robicheau, Conservation Data Analyst

CONTENTS OF REPORT



Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

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

1.1 DATA LIST

Included datasets:

Filename	Contents
KemptownNS_7671ob.xls	Rare or legally-protected Flora and Fauna in your study area
KemptownNS_7671ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
KemptownNS_7671msa.xls	Managed and Biologically Significant Areas in your study area
KemptownNS_7671ff_py.xls	Rare Freshwater Fish in your study area (DFO database)

1.2 RESTRICTIONS

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

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

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney
Senior Scientist / Executive Director
(506) 364-2658
sean.blaney@accdc.ca

Animals (Fauna)
John Klymko
Zoologist
(506) 364-2660
john.klymko@accdc.ca

Data Management, GIS
James Churchill
Conservation Data Analyst / Field Biologist
(902) 679-6146
james.churchill@accdc.ca

Billing
Jean Breau
Financial Manager / Executive Assistant
(506) 364-2657
jean.breau@accdc.ca

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

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) 541-0081
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Harrison.Moore@novascotia.ca

Eastern: Maureen Cameron-MacMillan
(902) 295-2554
Maureen.Cameron-MacMillan@novascotia.ca

Eastern: Elizabeth Walsh
(902) 563-3370
Elizabeth.Walsh@novascotia.ca

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

2.0 RARE AND ENDANGERED SPECIES

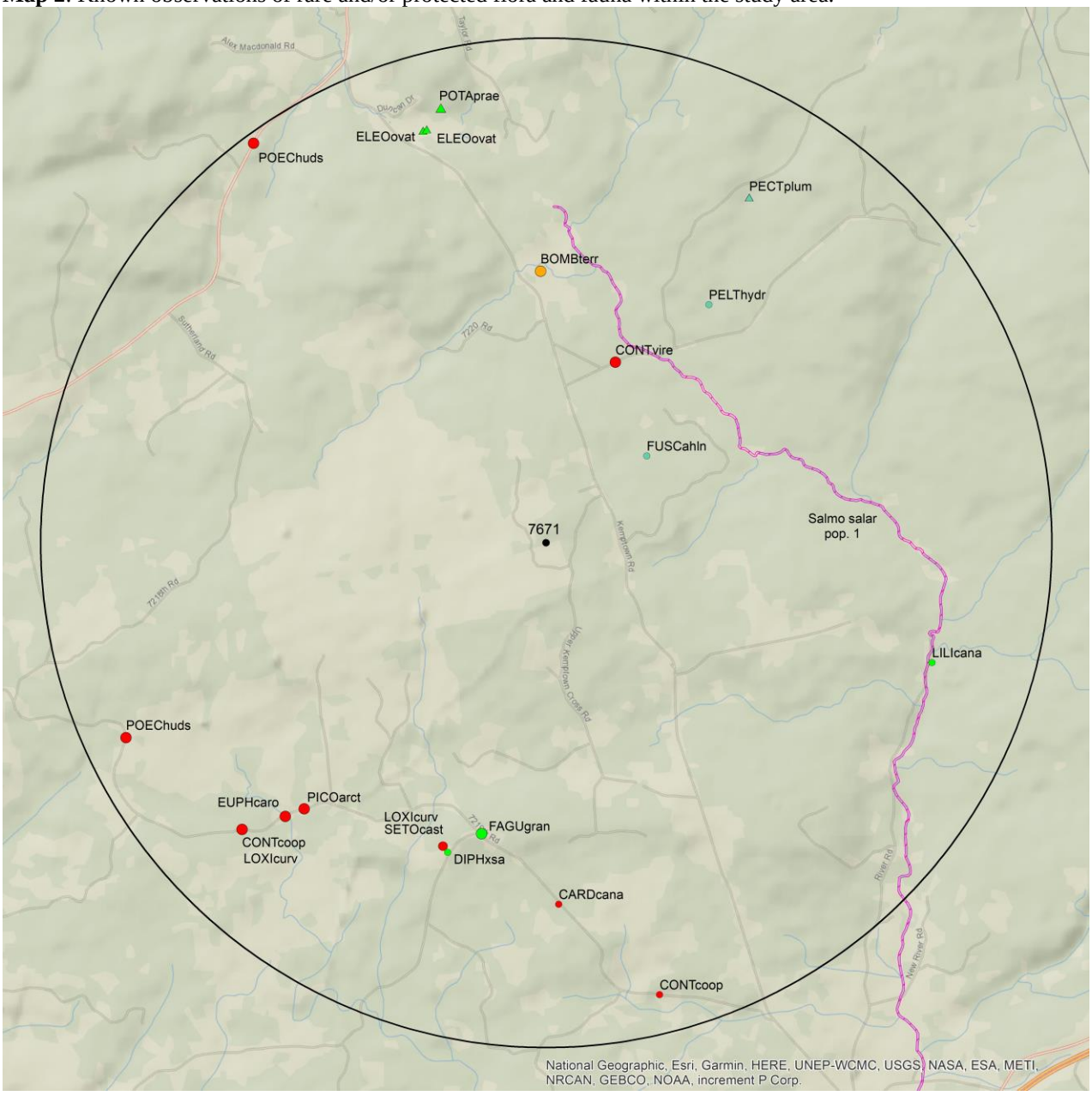
2.1 FLORA

The study area contains 6 records of 5 vascular and 3 records of 3 nonvascular flora (Map 2 and attached: *ob.xls), excluding 'location-sensitive' species.

2.2 FAUNA

The study area contains 13 records of 8 vertebrate and 1 record of 1 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List), excluding 'location-sensitive species'. Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

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



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

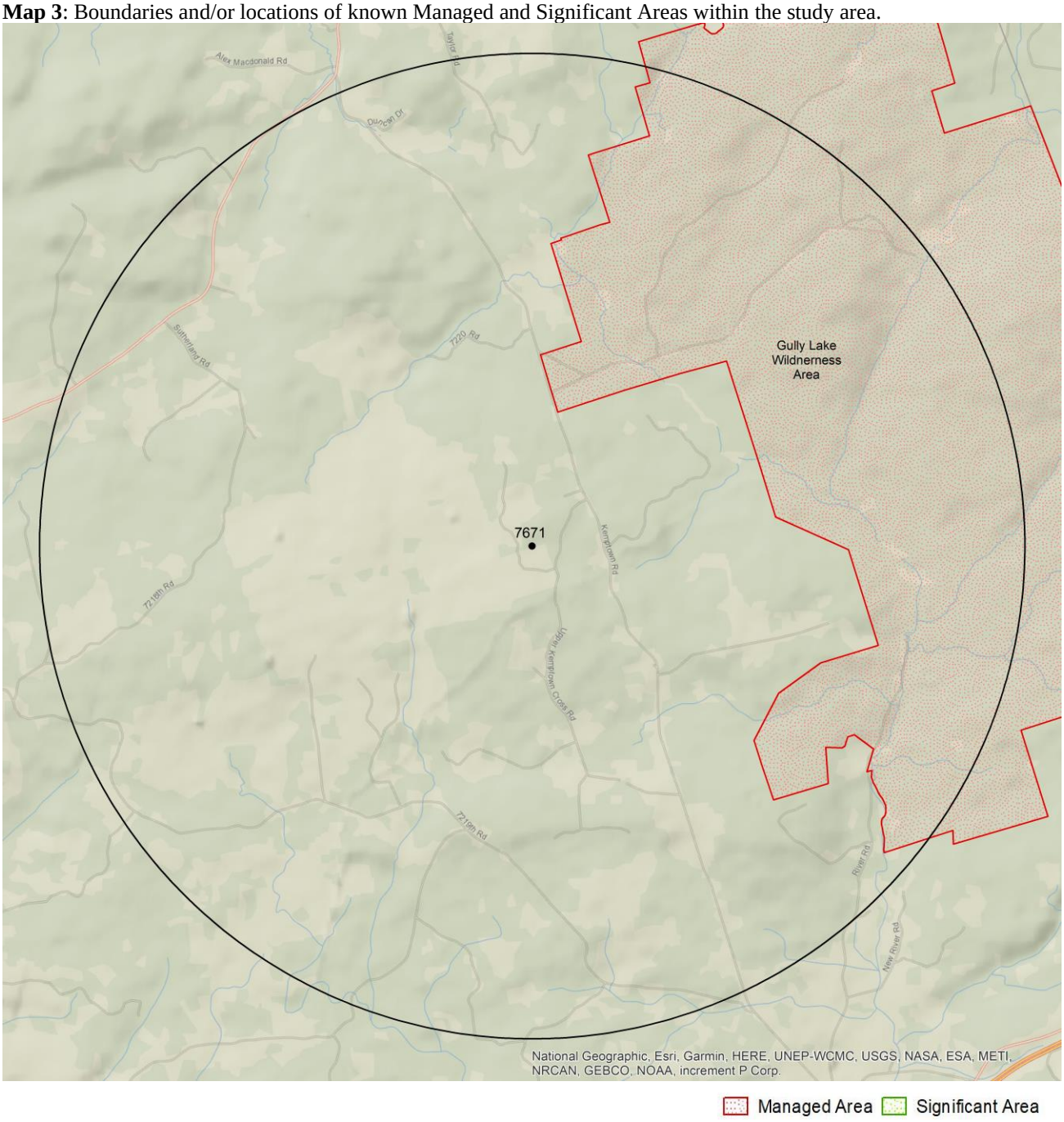
3.1 MANAGED AREAS

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 no biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls).

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



4.0 RARE SPECIES LISTS

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

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened	Threatened	Threatened	S1	1	2.9 ± 0.0
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	1	4.0 ± 0.0
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	1	1.3 ± 0.0
P	*Lilium canadense*	Canada Lily				S2	1	4.0 ± 0.0
P	*Eleocharis ovata*	Ovate Spikerush				S2S3	2	4.3 ± 0.0
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	1	4.4 ± 1.0
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3?	1	3.2 ± 0.0
P	*Fagus grandifolia*	American Beech				S3S4	1	3.0 ± 0.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	1	3.7 ± 0.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Endangered	S3B	1	3.6 ± 0.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	3	4.1 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	1	1.9 ± 0.0
A	*Poecile hudsonicus*	Boreal Chickadee				S3	2	4.6 ± 0.0
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	1	3.6 ± 0.0
A	*Loxia curvirostra*	Red Crossbill				S3S4	3	3.2 ± 0.0
A	*Setophaga castanea*	Bay-breasted Warbler				S3S4B,S4S5M	1	3.2 ± 0.0
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	1	2.7 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

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

Nova Scotia

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

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the 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
9	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
4	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
2	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.
2	Toms, Brad & Pepper, Chris; Neily, Tom. 2022. Nova Scotia lichen database [as of 2022-04]. Mersey Tobeatic Research Institute.
1	Amiro, P.G. 1998. Atlantic Salmon Inner Bay of Fundy SFA 22 & part of 23. DFO Sci. SSR D3-12.
1	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
1	Cameron, R.P. 2018. Degelia plumbea records. Nova Scotia Environment.
1	Canadian Wildlife Service. 2019. Canadian Protected and Conserved Areas Database (CPCAD). December 2019. ECCC.https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/protected-conserved-areas-database.html.
1	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
1	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
1	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.
1	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 42242 records of 140 vertebrate and 1292 records of 66 invertebrate fauna; 8175 records of 275 vascular and 2730 records of 157 nonvascular flora (attached: *ob100km.xls).

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

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	114	14.2 ± 0.0	NS
A	*Myotis septentrionalis*	Northern Myotis	Endangered	Endangered	Endangered	S1	86	42.5 ± 0.0	NS
A	*Perimyotis subflavus*	Tricolored Bat	Endangered	Endangered	Endangered	S1	8	43.3 ± 5.0	NS
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered		S1	31	8.6 ± 0.0	NS
A	*Salmo salar pop. 6*	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered			S1	31	43.1 ± 0.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	1299	26.0 ± 0.0	NS
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	20	90.2 ± 0.0	NS
A	*Dermochelys coriacea pop. 2*	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered		S1S2N	1	94.3 ± 1.0	NB
A	*Morone saxatilis pop. 2*	Striped Bass - Bay of Fundy population	Endangered			S2S3B,S2S3N	2	62.9 ± 0.0	NS
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Threatened	Endangered	S1B	1	71.3 ± 7.0	NS
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern		S1B	12	34.2 ± 7.0	NS
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	4633	13.0 ± 1.0	NS
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2B	2009	5.7 ± 7.0	NS
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	653	7.1 ± 7.0	NS
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S2S3M	72	36.7 ± 0.0	NS
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened			S2S3N	5	49.0 ± 0.0	NS
A	*Hydrobates leucorhous*	Leach's Storm-Petrel	Threatened			S3B	41	87.7 ± 7.0	NS
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	822	26.2 ± 0.0	NS
A	*Anguilla rostrata*	American Eel	Threatened			S3N	68	17.8 ± 0.0	NS
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened		SHB	1	97.5 ± 7.0	NS
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened		SUB	5	91.2 ± 0.0	NS
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened		SUB	42	5.7 ± 7.0	NS
A	*Salmo salar pop. 12*	Atlantic Salmon - Gaspe - Southern Gulf of St. Lawrence population	Special Concern			S1	45	13.9 ± 50.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Special Concern	Threatened	Threatened	S1?B	11	56.2 ± 7.0	NS
A	*Passerculus sandwichensis princeps*	Ipswich Sparrow	Special Concern	Special Concern		S1B	3	90.9 ± 0.0	NS
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern		S1N,SUM	14	38.1 ± 0.0	NS
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	253	3.7 ± 0.0	NS
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S2S3M	10	36.9 ± 0.0	NS
A	*Morone saxatilis pop. 1*	Striped Bass - Southern Gulf of St. Lawrence population	Special Concern			S2S3N	1	94.1 ± 1.0	NS
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S2S3N,SUM	23	75.2 ± 0.0	PE
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	111	15.5 ± 0.0	NS
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Endangered	S3B	1728	5.7 ± 7.0	NS
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Endangered	S3B	1120	3.6 ± 0.0	NS
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	423	12.0 ± 0.0	NS
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	1146	4.1 ± 0.0	NS
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Vulnerable	S3B	1642	7.3 ± 7.0	NS
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	820	5.7 ± 7.0	NS
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern		S3N,SUM	9	85.2 ± 1.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	1302	1.9 ± 0.0	NS
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	95	29.2 ± 0.0	NS
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B,SUN,SUM	4	24.3 ± 7.0	NS
A	*Fulica americana*	American Coot	Not At Risk			S1B	26	27.3 ± 7.0	NS
A	*Chlidonias niger*	Black Tern	Not At Risk			S1B	73	90.8 ± 0.0	NS
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SUM	48	75.1 ± 0.0	PE
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	1	47.9 ± 0.0	NS
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S2?B,SUM	8	13.2 ± 0.0	NS
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3	2	58.6 ± 100.0	NS
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	23	24.1 ± 0.0	NS
A	*Megaptera novaeangliae*	Humpback Whale	Not At Risk			S3	1	97.6 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	412	24.0 ± 0.0	NS
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	72	15.2 ± 7.0	NS
A	*Buteo lagopus*	Rough-legged Hawk	Not At Risk			S3N	6	70.3 ± 0.0	PE
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	154	8.5 ± 7.0	NS
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	2	55.8 ± 0.0	NS
A	*Ammospiza nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	512	22.6 ± 7.0	NS
A	*Calidris canutus rufa*	Red Knot rufa subspecies	E,SC	Endangered	Endangered	S2M	174	27.7 ± 0.0	NS
A	*Morone saxatilis*	Striped Bass	E,SC			S2S3B,S2S3N	5	42.3 ± 1.0	NS
A	*Alces alces americana*	Moose			Endangered	S1	241	5.3 ± 0.0	NS
A	*Picoides dorsalis*	American Three-toed Woodpecker				S1?	4	63.7 ± 7.0	NS
A	*Uria aalge*	Common Murre				S1?B	1	99.6 ± 0.0	NS
A	*Passerina cyanea*	Indigo Bunting				S1?B,SUM	19	24.7 ± 0.0	NS
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1B	1	97.0 ± 7.0	NS
A	*Oxyura jamaicensis*	Ruddy Duck				S1B	27	84.1 ± 7.0	NS
A	*Gallinula galeata*	Common Gallinule				S1B	28	14.6 ± 7.0	NS
A	*Myiarchus crinitus*	Great Crested Flycatcher				S1B	17	5.7 ± 7.0	NS
A	*Cistothorus palustris*	Marsh Wren				S1B	31	83.2 ± 3.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S1B	51	34.2 ± 7.0	NS
A	*Toxostoma rufum*	Brown Thrasher				S1B	8	22.6 ± 7.0	NS
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S4M	1057	23.6 ± 7.0	NS
A	*Calidris minutilla*	Least Sandpiper				S1B,S4M	660	26.1 ± 0.0	NS
A	*Anas acuta*	Northern Pintail				S1B,SUM	88	25.6 ± 0.0	NS
A	*Vireo gilvus*	Warbling Vireo				S1B,SUM	25	15.3 ± 7.0	NS
A	*Vespertilionidae sp.*	bat species				S1S2	106	15.8 ± 0.0	NS
A	*Pooecetes gramineus*	Vesper Sparrow				S1S2B,SUM	64	5.7 ± 7.0	NS

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A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B,SUM	97	14.4 ± 0.0	NS
A	*Fratercula arctica*	Atlantic Puffin				S2B	3	83.5 ± 0.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S2B	33	15.3 ± 7.0	NS
A	*Molothrus ater*	Brown-headed Cowbird				S2B	198	5.7 ± 7.0	NS
A	*Spatula clypeata*	Northern Shoveler				S2B,SUM	117	37.5 ± 0.0	NS
A	*Mareca strepera*	Gadwall				S2B,SUM	150	27.0 ± 0.0	NS
A	*Piranga olivacea*	Scarlet Tanager				S2B,SUM	19	27.8 ± 7.0	NS
A	*Calidris alba*	Sanderling				S2N,S3M	533	23.4 ± 0.0	NS
A	*Asio otus*	Long-eared Owl				S2S3	36	27.3 ± 0.0	NS
A	*Rallus limicola*	Virginia Rail				S2S3B	154	24.4 ± 7.0	NS
A	*Rissa tridactyla*	Black-legged Kittiwake				S2S3B	1	15.2 ± 0.0	NS
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B	391	5.7 ± 7.0	NS
A	*Phalacrocorax carbo*	Great Cormorant				S2S3B,S2S3N	142	50.2 ± 7.0	PE
A	*Cathartes aura*	Turkey Vulture				S2S3B,S4S5M	20	57.5 ± 0.0	NS
A	*Setophaga pinus*	Pine Warbler				S2S3B,S4S5M	22	18.1 ± 0.0	NS
A	*Bucephala clangula*	Common Goldeneye				S2S3B,S5N,S5M	166	26.8 ± 9.0	NS
A	*Icterus galbula*	Baltimore Oriole				S2S3B,SUM	70	24.4 ± 7.0	NS
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	82	33.6 ± 0.0	NS
A	*Numenius phaeopus hudsonicus*	Whimbrel				S2S3M	129	27.7 ± 0.0	NS
A	*Phalaropus fulicarius*	Red Phalarope				S2S3M	2	99.2 ± 0.0	NS
A	*Perisoreus canadensis*	Canada Jay				S3	612	5.7 ± 7.0	NS
A	*Poecile hudsonicus*	Boreal Chickadee				S3	911	4.6 ± 0.0	NS
A	*Spinus pinus*	Pine Siskin				S3	568	5.7 ± 7.0	NS
A	*Salvelinus fontinalis*	Brook Trout				S3	63	11.7 ± 0.0	NS
A	*Salvelinus namaycush*	Lake Trout				S3	2	50.0 ± 0.0	NS
A	*Pekania pennanti*	Fisher				S3	8	7.3 ± 0.0	NS
A	*Calcarius lapponicus*	Lapland Longspur				S3?N,SUM	3	85.4 ± 0.0	NB
A	*Spatula discors*	Blue-winged Teal				S3B	408	14.6 ± 7.0	NS
A	*Charadrius vociferus*	Killdeer				S3B	851	5.9 ± 0.0	NS
A	*Tringa semipalmata*	Willet				S3B	1357	24.1 ± 0.0	NS
A	*Sterna paradisaea*	Arctic Tern				S3B	39	85.8 ± 0.0	NS
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	134	15.3 ± 7.0	NS
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	430	8.5 ± 7.0	NS
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	867	5.7 ± 7.0	NS
A	*Alosa pseudoharengus*	Alewife				S3B	28	22.2 ± 0.0	NS
A	*Somateria mollissima*	Common Eider				S3B,S3M,S3N	357	26.8 ± 9.0	NS
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S4M	1314	26.2 ± 0.0	NS
A	*Falco sparverius*	American Kestrel				S3B,S4S5M	587	7.1 ± 7.0	NS
A	*Gallinago delicata*	Wilson's Snipe				S3B,S5M	1132	5.7 ± 7.0	NS
A	*Setophaga striata*	Blackpoll Warbler				S3B,S5M	118	14.5 ± 7.0	NS
A	*Cardellina pusilla*	Wilson's Warbler				S3B,S5M	115	17.0 ± 7.0	NS
A	*Pinicola enucleator*	Pine Grosbeak				S3B,S5N,S5M	124	7.3 ± 7.0	NS
A	*Setophaga tigrina*	Cape May Warbler				S3B,SUM	342	5.7 ± 7.0	NS
A	*Branta bernicla*	Brant				S3M	9	68.0 ± 0.0	NS
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	1007	23.6 ± 0.0	NS
A	*Arenaria interpres*	Ruddy Turnstone				S3M	384	27.6 ± 0.0	NS
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	981	26.2 ± 0.0	NS
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	113	26.2 ± 0.0	NS
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	634	26.2 ± 0.0	NS
A	*Chroicocephalus ridibundus*	Black-headed Gull				S3N	19	83.2 ± 4.0	NB
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	185	3.6 ± 0.0	NS
A	*Loxia curvirostra*	Red Crossbill				S3S4	167	3.2 ± 0.0	NS
A	*Sorex palustris*	American Water Shrew				S3S4	4	73.4 ± 0.0	PE

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A	*Botaurus lentiginosus*	American Bittern				S3S4B,S4S5M	771	15.3 ± 7.0	NS
A	*Setophaga castanea*	Bay-breasted Warbler				S3S4B,S4S5M	666	3.2 ± 0.0	NS
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	947	5.7 ± 7.0	NS
A	*Leiothlypis peregrina*	Tennessee Warbler				S3S4B,S5M	677	5.7 ± 7.0	NS
A	*Passerella iliaca*	Fox Sparrow				S3S4B,S5M	65	32.3 ± 0.0	NS
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5M,S5N	111	22.2 ± 0.0	NS
A	*Calidris maritima*	Purple Sandpiper				S3S4N	29	39.3 ± 0.0	NS
A	*Lanius borealis*	Northern Shrike				S3S4N	5	78.1 ± 0.0	NS
A	*Morus bassanus*	Northern Gannet				SHB	37	29.6 ± 4.0	NS
A	*Aythya americana*	Redhead				SHB	5	92.5 ± 7.0	NS
A	*Leucophaeus atricilla*	Laughing Gull				SHB	7	85.4 ± 0.0	NB
A	*Progne subis*	Purple Martin				SHB	12	61.0 ± 7.0	NS
A	*Eremophila alpestris*	Horned Lark				SHB,S4S5N,S5M	9	39.4 ± 7.0	NS
I	*Bombus bohemicus*	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	33	21.9 ± 5.0	NS
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	180	15.9 ± 0.0	NS
I	*Danaus plexippus plexippus*	Monarch	Endangered	Special Concern		S2?B,S3M	1	94.0 ± 0.0	NS
I	*Barnea truncata*	Atlantic Mud-piddock	Threatened	Threatened		S1	1	54.0 ± 1.0	NS
I	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Threatened			SH	1	21.7 ± 5.0	NS
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Threatened	S3	16	33.7 ± 0.0	NS
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	115	2.7 ± 0.0	NS
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern		Endangered	SH	8	6.7 ± 2.0	NS
I	*Gomphurus ventricosus*	Skillet Clubtail	Special Concern	Endangered		SH	2	73.3 ± 0.0	NS
I	*Erora laeta*	Early Hairstreak				S1	1	78.5 ± 0.0	PE
I	*Pachydiplax longipennis*	Blue Dasher				S1	3	97.7 ± 0.0	NS
I	*Atlanticoncha ochracea*	Tidewater Mucket				S1	18	82.1 ± 0.0	NS
I	*Polygonia satyrus*	Satyr Comma				S1?	18	17.9 ± 5.0	NS
I	*Euphyes bimacula*	Two-spotted Skipper				S1S2	1	48.9 ± 0.0	NS
I	*Boloria chariclea*	Arctic Fritillary				S1S2	3	18.4 ± 2.0	NS
I	*Somatochlora brevicincta*	Quebec Emerald				S1S2	2	89.8 ± 0.0	NS
I	*Tharsalea dospassosi*	Maritime Copper				S2	79	25.6 ± 0.0	NS
I	*Satyrium acadica*	Acadian Hairstreak				S2	16	25.6 ± 0.0	NS
I	*Neurocordulia michaeli*	Broad-tailed Shadowdragon				S2	26	49.1 ± 0.0	NS
I	*Coenagrion resolutum*	Taiga Bluet				S2	53	37.6 ± 0.0	NS
I	*Margaritifera margaritifera*	Eastern Pearlshell				S2	161	10.6 ± 1.0	NS
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	2	87.7 ± 1.0	NS
I	*Nymphalis l-album*	Compton Tortoiseshell				S2S3	10	20.9 ± 2.0	NS
I	*Aglais milberti*	Milbert's Tortoiseshell				S2S3	18	20.9 ± 2.0	NS
I	*Aglais milberti milberti*	Milbert's Tortoise Shell				S2S3	3	44.1 ± 0.0	NS
I	*Lanthus vernalis*	Southern Pygmy Clubtail				S2S3	8	63.1 ± 0.0	NS
I	*Somatochlora kennedyi*	Kennedy's Emerald				S2S3	5	90.0 ± 0.0	NS
I	*Somatochlora williamsoni*	Williamson's Emerald				S2S3	11	87.7 ± 0.0	NB
I	*Williamsonia fletcheri*	Ebony Boghaunter				S2S3	9	39.7 ± 0.0	NS
I	*Stylurus scudderi*	Zebra Clubtail				S2S3	4	65.6 ± 0.0	NS
I	*Alasmidonta undulata*	Triangle Floater				S2S3	36	29.8 ± 0.0	NS
I	*Astyleiopus variegatus*	Variegated Long-horned Beetle				S3	1	86.4 ± 0.0	NS
I	*Naemia seriata*	Seaside Lady Beetle				S3	3	87.9 ± 0.0	NS
I	*Chilocorus stigma*	Twice-stabbed Lady Beetle				S3	1	78.7 ± 0.0	PE
I	*Monochamus marmorator*	Balsam Fir Sawyer				S3	1	54.7 ± 0.0	NS
I	*Trachysida aspera*	Rough Flower Longhorn Beetle				S3	1	96.9 ± 0.0	NS
I	*Astylopsis sexguttata*	Six-speckled Long-horned				S3	1	89.0 ± 0.0	NS

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		Beetle							
I	*Satyrium calanus*	Banded Hairstreak				S3	5	29.2 ± 2.0	NS
I	*Callophrys lanoraieensis*	Bog Elfin				S3	11	32.1 ± 0.0	NS
I	*Strymon melinus*	Gray Hairstreak				S3	1	82.6 ± 2.0	NS
I	*Phanogomphus descriptus*	Harpoon Clubtail				S3	4	45.4 ± 1.0	NS
I	*Ophiogomphus aspersus*	Brook Snaketail				S3	5	62.5 ± 0.0	NS
I	*Ophiogomphus mainensis*	Maine Snaketail				S3	15	44.9 ± 0.0	NS
I	*Ophiogomphus rupinsulensis*	Rusty Snaketail				S3	56	62.4 ± 0.0	NS
I	*Epitheca princeps*	Prince Baskettail				S3	17	39.7 ± 0.0	NS
I	*Somatochlora forcipata*	Forcipate Emerald				S3	3	84.9 ± 1.0	PE
I	*Enallagma vernale*	Vernal Bluet				S3	6	42.7 ± 1.0	NS
I	*Strophitus undulatus*	Creeper				S3	6	64.6 ± 1.0	NS
I	*Polygonia interrogationis*	Question Mark				S3B	77	15.8 ± 0.0	NS
I	*Cecropterus pylades*	Northern Cloudywing				S3S4	26	14.3 ± 0.0	NS
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S3S4	23	19.4 ± 1.0	NS
I	*Cupido comyntas*	Eastern Tailed Blue				S3S4	5	25.6 ± 0.0	NS
I	*Argynnis aphrodite*	Aphrodite Fritillary				S3S4	33	20.9 ± 2.0	NS
I	*Polygonia faunus*	Green Comma				S3S4	21	20.9 ± 2.0	NS
I	*Oeneis jutta*	Jutta Arctic				S3S4	20	46.9 ± 0.0	NS
I	*Aeshna clepsydra*	Mottled Darner				S3S4	10	67.7 ± 1.0	NS
I	*Aeshna constricta*	Lance-Tipped Darner				S3S4	34	22.2 ± 1.0	NS
I	*Boyeria grafiana*	Ocellated Darner				S3S4	12	38.7 ± 0.0	NS
I	*Gomphaeschna furcillata*	Harlequin Darner				S3S4	6	72.3 ± 1.0	NS
I	*Somatochlora franklini*	Delicate Emerald				S3S4	8	46.9 ± 1.0	NS
I	*Nannothemis bella*	Elfin Skimmer				S3S4	21	76.4 ± 1.0	NS
I	*Sympetrum danae*	Black Meadowhawk				S3S4	7	78.7 ± 1.0	PE
I	*Amphiagrion saucium*	Eastern Red Damsel				S3S4	2	15.8 ± 0.0	NS
I	*Sphaerophoria pyrrhina*	Violaceous Globetail				SH	1	22.5 ± 5.0	NS
I	*Icaricia saepiolus*	Greenish Blue				SH	3	25.0 ± 2.0	NS
I	*Polygonia gracilis*	Hoary Comma				SH	2	20.9 ± 2.0	NS
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1	30	63.3 ± 0.0	NS
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	501	57.9 ± 0.0	NS
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened	Threatened	Threatened	S1	92	2.9 ± 0.0	NS
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	27	56.8 ± 0.0	NS
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened	Threatened	S3	36	40.2 ± 0.0	NS
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S3	6	57.4 ± 0.0	NS
N	*Heterodermia squamulosa*	Scaly Fringe Lichen	Threatened			S3	8	70.6 ± 0.0	NS
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	175	4.0 ± 0.0	NS
N	*Sclerophora peronella (Atlantic pop.)*	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S3S4	24	60.3 ± 0.0	NS
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	5	63.5 ± 0.0	NS
N	*Fissidens exilis*	Pygmy Pocket Moss	Not At Risk			S3	17	32.6 ± 0.0	NS
N	*Chaenotheca servitii*	Flexuous Golden Stubble	Data Deficient			S1	1	55.7 ± 1.0	NS
N	*Erioderma pedicellatum*	Boreal Felt Lichen	E,SC		Endangered	S1	1	63.2 ± 0.0	NS
N	*Aloina brevirostris*	Short-Beaked Rigid Screw Moss				S1	1	95.2 ± 2.0	NS
N	*Sematophyllum demissum*	a Moss				S1	1	87.3 ± 2.0	NS
N	*Tetrodontium brownianum*	Little Georgia				S1	1	85.3 ± 0.0	NS
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				S1	1	56.0 ± 0.0	NS
N	*Blennothallia crispa*	Crinkled Jelly Lichen				S1	1	80.5 ± 0.0	NS
N	*Usnea perplexans*	Powdered Beard Lichen				S1	1	92.1 ± 0.0	NS
N	*Lathagrium cristatum*	Fingered Jelly Lichen				S1	3	93.7 ± 0.0	NS
N	*Fuscopannaria praetermissa*	Moss Shingles Lichen				S1	1	98.8 ± 0.0	NS
N	*Scytinium schraderi*	Wrinkled Jellyskin Lichen				S1	1	44.7 ± 0.0	NS
N	*Lichina confinis*	Marine Seaweed Lichen				S1	2	88.6 ± 2.0	NS
N	*Polychidium muscicola*	Eyed Mossthorns				S1	1	44.2 ± 0.0	NS

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N	*Peltigera lepidophora*	Woollybear Lichen Scaly Pelt Lichen				S1	6	60.7 ± 0.0	PE
N	*Hypogymnia hultenii*	Powdered Honeycomb Lichen				S1	12	90.3 ± 0.0	NS
N	*Calypogeia neogaea*	Common Pouchwort				S1?	1	71.9 ± 0.0	NS
N	*Aloina rigida*	Aloe-Like Rigid Screw Moss				S1?	4	36.2 ± 0.0	NS
N	*Brachythecium erythrorrhizon*	Taiga Ragged Moss				S1?	2	98.6 ± 0.0	PE
N	*Campylostelium saxicola*	a Moss				S1?	2	78.2 ± 0.0	PE
N	*Tortula obtusifolia*	a Moss				S1?	3	19.8 ± 2.0	NS
N	*Didymodon tophaceus*	Olive Beard Moss				S1?	2	80.5 ± 4.0	NS
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	3	87.6 ± 0.0	NS
N	*Schistostega pennata*	Luminous Moss				S1?	1	80.6 ± 0.0	NS
N	*Syntrichia ruralis*	a Moss				S1?	1	90.9 ± 0.0	NS
N	*Enchylium limosum*	Lime-loving Tarpaper Lichen				S1?	2	80.5 ± 4.0	NS
N	*Scytinium intermedium*	Forty-five Jellyskin Lichen				S1?	2	80.5 ± 4.0	NS
N	*Arrhenopterum heterostichum*	One-sided Groove Moss				S1S2	2	73.8 ± 1.0	NS
N	*Mnium thomsonii*	Thomson's Leafy Moss				S1S2	1	97.1 ± 2.0	NS
N	*Plagiothecium latebricola*	Alder Silk Moss				S1S2	1	77.6 ± 3.0	NS
N	*Platydictya confervoides*	a Moss				S1S2	1	97.9 ± 0.0	NS
N	*Seligeria donniana*	Donian Beardless Moss				S1S2	1	86.1 ± 3.0	NS
N	*Sematophyllum marylandicum*	a Moss				S1S2	2	76.6 ± 6.0	NS
N	*Timmia megapolitana*	Metropolitan Timmia Moss				S1S2	3	34.0 ± 0.0	NS
N	*Tortula mucronifolia*	Mucronate Screw Moss				S1S2	1	98.6 ± 3.0	NS
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	2	79.8 ± 0.0	NS
N	*Haplocladium microphyllum*	Tiny-leaved Haplocladium Moss				S1S2	1	37.6 ± 5.0	NS
N	*Enchylium bachmanianum*	Bachman's Jelly Lichen				S1S2	1	94.2 ± 0.0	NS
N	*Placidium squamulosum*	Limy Soil Stipplescale Lichen				S1S2	1	45.1 ± 6.0	NS
N	*Peltigera ponojensis*	Pale-bellied Pelt Lichen				S1S2	1	27.4 ± 0.0	NS
N	*Pilophorus cereolus*	Powdered Matchstick Lichen				S1S2	1	63.4 ± 3.0	NS
N	*Parmeliella parvula*	Poor-man's Shingles Lichen				S1S2	12	67.6 ± 0.0	NS
N	*Heterodermia galactophylla*	Branching Fringe Lichen				S1S3	2	50.6 ± 0.0	NS
N	*Peltigera neckeri*	Black-saddle Pelt Lichen				S1S3	2	87.5 ± 0.0	NS
N	*Stereocaulon grande*	Grand Foam Lichen				S1S3	1	34.0 ± 0.0	NS
N	*Anacamptodon splachnoides*	a Moss				S2	1	77.6 ± 3.0	NS
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S2	2	83.2 ± 3.0	NS
N	*Sphagnum subnitens*	Lustrous Peat Moss				S2	1	87.3 ± 2.0	NS
N	*Scytinium imbricatum*	Scaly Jellyskin Lichen				S2	1	67.2 ± 4.0	NS
N	*Nephroma resupinatum*	a lichen				S2	2	84.4 ± 1.0	NS
N	*Placynthium flabellosum*	Scaly Ink Lichen				S2	1	66.8 ± 17.0	NS
N	*Riccardia multifida*	Delicate Germanderwort				S2?	1	63.6 ± 0.0	NS
N	*Anomodon viticulosus*	a Moss				S2?	1	37.3 ± 5.0	NS
N	*Weissia muhlenbergiana*	a Moss				S2?	4	97.1 ± 1.0	NS
N	*Atrichum angustatum*	Lesser Smoothcap Moss				S2?	3	13.8 ± 2.0	NS
N	*Ptychostomum pendulum*	Drooping Bryum				S2?	1	95.2 ± 2.0	NS
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2?	5	80.5 ± 4.0	NS
N	*Ditrichum rhynchostegium*	a Moss				S2?	1	58.8 ± 0.0	PE
N	*Kiaeria starkei*	Starke's Fork Moss				S2?	1	82.7 ± 10.0	NS
N	*Philonotis marchica*	a Moss				S2?	2	14.2 ± 0.0	NS
N	*Platydictya jungermannioides*	False Willow Moss				S2?	3	56.8 ± 0.0	NS
N	*Saelania glaucescens*	Blue Dew Moss				S2?	1	16.6 ± 0.0	NS
N	*Cyrtomnium*	Short-pointed Lantern Moss				S2?	1	16.6 ± 0.0	NS

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	hymenophylloides								
N	*Platylomella lescurii*	a Moss				S2?	1	78.1 ± 0.0	NS
N	*Oxyrrhynchium hians*	Light Beaked Moss				S2S3	4	57.1 ± 25.0	NS
N	*Platydictya subtilis*	Bark Willow Moss				S2S3	2	77.6 ± 3.0	NS
N	*Scorpidium revolvens*	Limprichtia Moss				S2S3	1	87.6 ± 0.0	NS
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle Lichen				S2S3	57	43.4 ± 0.0	NS
N	*Moelleropsis nebulosa ssp. frullaniae*	Blue-gray Moss Shingle Lichen				S2S3	3	65.0 ± 0.0	NS
N	*Ramalina thrausta*	Angelhair Ramalina Lichen				S2S3	15	31.2 ± 0.0	NS
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2S3	87	39.9 ± 0.0	NS
N	*Usnea ceratina*	Warty Beard Lichen				S2S3	1	73.7 ± 0.0	NS
N	*Usnea rubicunda*	Red Beard Lichen				S2S3	3	22.2 ± 0.0	NS
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S2S3	7	51.8 ± 6.0	NS
N	*Usnocetraria oakesiana*	Yellow Band Lichen				S2S3	3	91.0 ± 0.0	NS
N	*Cladonia incrassata*	Powder-foot British Soldiers Lichen				S2S3	1	79.4 ± 0.0	NS
N	*Cladonia parasitica*	Fence-rail Lichen				S2S3	3	46.5 ± 1.0	NS
N	*Scytinium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	18	22.4 ± 0.0	NS
N	*Melanohalea septentrionalis*	Northern Camouflage Lichen				S2S3	1	91.6 ± 0.0	NS
N	*Myelochroa aurulenta*	Powdery Axil-bristle Lichen				S2S3	1	20.3 ± 0.0	NS
N	*Parmelia fertilis*	Fertile Shield Lichen				S2S3	10	20.7 ± 0.0	NS
N	*Hypotrachyna minarum*	Hairless-spined Shield Lichen				S2S3	1	77.5 ± 0.0	NS
N	*Parmeliopsis ambigua*	Green Starburst Lichen				S2S3	2	35.4 ± 1.0	NS
N	*Racodium rupestre*	Rockhair Lichen				S2S3	1	95.7 ± 1.0	NS
N	*Usnea cavernosa*	Pitted Beard Lichen				S2S3	2	92.1 ± 0.0	NS
N	*Usnea mutabilis*	Bloody Beard Lichen				S2S3	1	92.3 ± 0.0	NS
N	*Fuscopannaria sorediata*	a Lichen				S2S3	7	65.4 ± 0.0	NS
N	*Stereocaulon condensatum*	Granular Soil Foam Lichen				S2S3	9	20.4 ± 0.0	NS
N	*Physcia subtilis*	Slender Rosette Lichen				S2S3	1	68.7 ± 0.0	NS
N	*Cladonia coccifera*	Eastern Boreal Pixie-cup Lichen				S2S3	2	55.0 ± 1.0	NS
N	*Cladonia deformis*	Lesser Sulphur-cup Lichen				S2S3	1	81.3 ± 0.0	PE
N	*Ephemerum serratum*	a Moss				S3	3	32.6 ± 3.0	NS
N	*Fissidens taxifolius*	Yew-leaved Pocket Moss				S3	8	24.6 ± 0.0	NS
N	*Anomodon tristis*	a Moss				S3	3	83.3 ± 0.0	NS
N	*Sphagnum contortum*	Twisted Peat Moss				S3	4	72.1 ± 4.0	NS
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3	4	69.9 ± 0.0	NS
N	*Rostania occultata*	Crusted Tarpaper Lichen				S3	5	80.5 ± 0.0	PE
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	18	44.7 ± 2.0	NS
N	*Solorina saccata*	Woodland Owl Lichen				S3	16	57.7 ± 2.0	NS
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	88	1.3 ± 0.0	NS
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	38	32.6 ± 0.0	NS
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S3	10	36.5 ± 0.0	NS
N	*Nephroma bellum*	Naked Kidney Lichen				S3	10	28.3 ± 0.0	NS
N	*Placynthium nigrum*	Common Ink Lichen				S3	4	45.5 ± 0.0	NS
N	*Platismatia norvegica*	Oldgrowth Rag Lichen				S3	1	91.2 ± 0.0	NS
N	*Punctelia appalachensis*	Appalachian Speckleback Lichen				S3	5	98.6 ± 0.0	NS
N	*Viridothelium virens*					S3	1	98.1 ± 2.0	NS
N	*Ephebe lanata*	Waterside Rockshag Lichen				S3	2	44.2 ± 0.0	NS
N	*Phaeophyscia adiastola*	Powder-tipped Shadow Lichen				S3	4	67.6 ± 0.0	PE
N	*Phaeophyscia pusilloides*	Pompom-tipped Shadow Lichen				S3	12	18.7 ± 0.0	NS
N	*Peltigera collina*	Tree Pelt Lichen				S3	17	12.0 ± 0.0	NS

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N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3?	3	60.6 ± 0.0	PE
N	*Calliergon giganteum*	Giant Spear Moss				S3?	2	91.3 ± 2.0	PE
N	*Elodium blandowii*	Blandow's Bog Moss				S3?	5	15.6 ± 3.0	NS
N	*Mnium stellare*	Star Leafy Moss				S3?	3	73.8 ± 1.0	NS
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S3?	1	89.1 ± 0.0	NS
N	*Sphagnum riparium*	Streamside Peat Moss				S3?	2	74.7 ± 0.0	NS
N	*Cladonia stygia*	Black-footed Reindeer Lichen				S3?	18	70.9 ± 0.0	NS
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S3S4	1	91.4 ± 3.0	NS
N	*Encalypta ciliata*	Fringed Extinguisher Moss				S3S4	1	98.6 ± 3.0	NS
N	*Encalypta procera*	Slender Extinguisher Moss				S3S4	5	86.1 ± 3.0	NS
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	1	16.6 ± 0.0	NS
N	*Splachnum ampullaceum*	Cruet Dung Moss				S3S4	4	71.2 ± 0.0	NS
N	*Thamnobryum alleghaniense*	a Moss				S3S4	5	60.3 ± 0.0	NS
N	*Tomentypnum nitens*	Golden Fuzzy Fen Moss				S3S4	3	87.6 ± 0.0	NS
N	*Schistidium agassizii*	Elf Bloom Moss				S3S4	2	77.2 ± 0.0	NS
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S3S4	1	86.1 ± 3.0	NS
N	*Bryoria pseudofuscescens*	Mountain Horsehair Lichen				S3S4	12	66.2 ± 0.0	PE
N	*Enchylium tenax*	Soil Tarpaper Lichen				S3S4	11	32.6 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3S4	51	23.6 ± 1.0	NS
N	*Arctoparmelia incurva*	Finger Ring Lichen				S3S4	12	90.8 ± 0.0	NS
N	*Scytinium teretiusculum*	Curly Jellyskin Lichen				S3S4	15	38.9 ± 0.0	NS
N	*Leptogium acadiense*	Acadian Jellyskin Lichen				S3S4	28	6.4 ± 0.0	NS
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3S4	33	49.0 ± 0.0	NS
N	*Vahliella leucophaea*	Shelter Shingle Lichen				S3S4	11	59.3 ± 0.0	NS
N	*Heterodermia speciosa*	Powdered Fringe Lichen				S3S4	22	26.3 ± 0.0	NS
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S3S4	38	53.7 ± 4.0	NS
N	*Melanohalea olivacea*	Spotted Camouflage Lichen				S3S4	6	34.6 ± 3.0	NS
N	*Parmeliopsis hyperopta*	Gray Starburst Lichen				S3S4	4	17.7 ± 1.0	NS
N	*Parmotrema perlatum*	Powdered Ruffle Lichen				S3S4	2	91.3 ± 0.0	NS
N	*Peltigera hymenina*	Cloudy Pelt Lichen				S3S4	1	81.7 ± 1.0	NS
N	*Sphaerophorus fragilis*	Fragile Coral Lichen				S3S4	1	90.8 ± 0.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	716	40.4 ± 0.0	NS
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	4	61.4 ± 0.0	PE
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	59	20.4 ± 0.0	NS
N	*Evernia prunastri*	Valley Oakmoss Lichen				S3S4	47	10.2 ± 5.0	NS
N	*Heterodermia neglecta*	Fringe Lichen				S3S4	56	9.8 ± 0.0	NS
P	*Fraxinus nigra*	Black Ash	Threatened		Threatened	S1S2	587	4.7 ± 0.0	NS
P	*Bartonia paniculata ssp. paniculata*	Branched Bartonia	Threatened	Threatened		SNA	1	43.2 ± 10.0	NS
P	*Lilaeopsis chinensis*	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S3	17	59.2 ± 0.0	NS
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S3	13	43.8 ± 0.0	NS
P	*Floerkea proserpinacoides*	False Mermaidweed	Not At Risk			S2S3	2	17.0 ± 7.0	NS
P	*Andersonglossum boreale*	Northern Wild Comfrey				S1	3	94.0 ± 1.0	NS
P	*Cochlearia tridactylites*	Limestone Scurvy-grass				S1	1	99.7 ± 0.0	NS
P	*Lobelia spicata*	Pale-Spiked Lobelia				S1	12	39.4 ± 7.0	NS
P	*Hudsonia tomentosa*	Woolly Beach-heath				S1	18	46.2 ± 7.0	NS
P	*Callitriche hermaphroditica*	Northern Water-starwort				S1	1	97.9 ± 0.0	PE
P	*Elatine americana*	American Waterwort				S1	1	68.0 ± 0.0	NS
P	*Ribes americanum*	Wild Black Currant				S1	4	21.4 ± 5.0	NS
P	*Utricularia ochroleuca*	Yellowish-white Bladderwort				S1	37	91.9 ± 0.0	NS
P	*Fraxinus pennsylvanica*	Red Ash				S1	8	49.8 ± 0.0	NS
P	*Persicaria careyi*	Carey's Smartweed				S1	1	39.1 ± 3.0	NS
P	*Phytolacca americana*	Common Pokeweed				S1	1	98.6 ± 0.0	NS
P	*Clematis occidentalis*	Purple Clematis				S1	3	92.9 ± 0.0	NS
P	*Ranunculus pensylvanicus*	Pennsylvania Buttercup				S1	31	40.2 ± 0.0	NS
P	*Amelanchier nantucketensis*	Nantucket Serviceberry				S1	1	93.6 ± 1.0	NS

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P	*Salix myrtillifolia*	Blueberry Willow				S1	1	57.9 ± 0.0	NS
P	*Salix serissima*	Autumn Willow				S1	2	57.9 ± 0.0	NS
P	*Carex garberi*	Garber's Sedge				S1	4	12.1 ± 0.0	NS
P	*Carex granularis*	Limestone Meadow Sedge				S1	2	92.1 ± 0.0	NS
P	*Carex ormostachya*	Necklace Spike Sedge				S1	1	89.4 ± 1.0	NB
P	*Carex plantaginea*	Plantain-Leaved Sedge				S1	4	15.5 ± 0.0	NS
P	*Carex prairea*	Prairie Sedge				S1	1	89.5 ± 0.0	PE
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S1	2	91.9 ± 0.0	NS
P	*Carex tincta*	Tinged Sedge				S1	3	93.8 ± 5.0	PE
P	*Carex viridula var. saxilittoralis*	Greenish Sedge				S1	4	90.0 ± 0.0	NS
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	6	94.0 ± 0.0	NS
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S1	7	39.7 ± 0.0	NS
P	*Scirpus atrovirens*	Dark-green Bulrush				S1	4	52.4 ± 0.0	NS
P	*Blysmopsis rufa*	Red Bulrush				S1	1	99.6 ± 5.0	PE
P	*Iris prismatica*	Slender Blue Flag				S1	2	86.0 ± 1.0	NS
P	*Juncus vaseyi*	Vasey Rush				S1	4	13.8 ± 0.0	NS
P	*Malaxis monophyllos var. brachypoda*	North American White Adder's-mouth				S1	4	73.1 ± 1.0	NS
P	*Elymus hystrix*	Spreading Wild Rye				S1	12	42.5 ± 1.0	NS
P	*Adiantum pedatum*	Northern Maidenhair Fern				S1	10	22.1 ± 1.0	NS
P	*Botrychium lunaria*	Common Moonwort				S1	8	99.4 ± 2.0	NS
P	*Selaginella rupestris*	Rock Spikemoss				S1	1	93.7 ± 0.0	NS
P	*Solidago hispida*	Hairy Goldenrod				S1?	1	56.8 ± 7.0	NS
P	*Suaeda rolandii*	Roland's Sea-Blite				S1?	5	64.2 ± 2.0	NS
P	*Carex pensylvanica*	Pennsylvania Sedge				S1?	3	39.8 ± 3.0	NS
P	*Bolboschoenus robustus*	Sturdy Bulrush				S1?	2	42.9 ± 7.0	NS
P	*Allium schoenoprasum*	Wild Chives				S1?	5	21.2 ± 10.0	NS
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S1?	1	22.6 ± 7.0	NS
P	*Cypripedium arietinum*	Ram's-Head Lady's-Slipper			Endangered	S1S2	300	39.8 ± 0.0	NS
P	*Sanicula odorata*	Clustered Sanicle				S1S2	9	20.4 ± 10.0	NS
P	*Ageratina altissima*	White Snakeroot				S1S2	2	95.0 ± 7.0	NS
P	*Draba glabella*	Rock Whitlow-Grass				S1S2	1	98.6 ± 0.0	NS
P	*Proserpinaca intermedia*	Intermediate Mermaidweed				S1S2	1	60.0 ± 0.0	NS
P	*Anemone virginiana var. alba*	Virginia Anemone				S1S2	5	14.7 ± 5.0	NS
P	*Parnassia parviflora*	Small-flowered Grass-of-Parnassus				S1S2	1	78.6 ± 1.0	NS
P	*Carex haydenii*	Hayden's Sedge				S1S2	4	21.1 ± 1.0	NS
P	*Platanthera huronensis*	Fragrant Green Orchid				S1S2	2	74.1 ± 10.0	NS
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S1S2	21	84.2 ± 0.0	PE
P	*Carex vacillans*	Estuarine Sedge				S1S3	5	92.3 ± 0.0	NS
P	*Zizia aurea*	Golden Alexanders				S2	44	12.1 ± 1.0	NS
P	*Antennaria parlinii ssp. fallax*	Parlin's Pussytoes				S2	8	18.3 ± 0.0	NS
P	*Rudbeckia laciniata*	Cut-Leaved Coneflower				S2	27	6.6 ± 0.0	NS
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S2	1	77.4 ± 0.0	NS
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	1	99.6 ± 5.0	PE
P	*Desmodium canadense*	Canada Tick-trefoil				S2	20	13.4 ± 0.0	NS
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S2	7	84.3 ± 0.0	NS
P	*Anemonastrum canadense*	Canada Anemone				S2	2	20.3 ± 0.0	NS
P	*Hepatica americana*	Round-lobed Hepatica				S2	53	13.0 ± 0.0	NS
P	*Ranunculus sceleratus*	Cursed Buttercup				S2	18	94.8 ± 0.0	NS
P	*Galium boreale*	Northern Bedstraw				S2	9	45.0 ± 5.0	NS
P	*Comandra umbellata*	Bastard's Toadflax				S2	5	99.4 ± 0.0	PE

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P	*Gratiola neglecta*	Clammy Hedge-Hyssop				S2	19	32.4 ± 2.0	NS
P	*Dirca palustris*	Eastern Leatherwood				S2	66	52.8 ± 7.0	NS
P	*Carex chordorrhiza*	Creeping Sedge				S2	39	90.7 ± 0.0	NS
P	*Carex gynocrates*	Northern Bog Sedge				S2	2	57.9 ± 0.0	NS
P	*Carex pellita*	Woolly Sedge				S2	12	13.9 ± 0.0	NS
P	*Carex livida*	Livid Sedge				S2	50	45.8 ± 0.0	NS
P	*Juncus greenei*	Greene's Rush				S2	7	45.0 ± 1.0	NS
P	*Juncus alpinoarticulatus ssp. americanus*	Northern Green Rush				S2	3	98.0 ± 3.0	PE
P	*Luzula spicata*	Spiked Woodrush				S2	1	94.0 ± 0.0	NS
P	*Allium tricoccum*	Wild Leek				S2	25	6.4 ± 0.0	NS
P	*Lilium canadense*	Canada Lily				S2	128	4.0 ± 0.0	NS
P	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper				S2	44	34.0 ± 7.0	NS
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	8	92.5 ± 0.0	NS
P	*Cypripedium reginae*	Showy Lady's-Slipper				S2	66	29.5 ± 0.0	NS
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S2	8	6.6 ± 1.0	NS
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S2	13	10.1 ± 5.0	NS
P	*Bromus latiglumis*	Broad-Glumed Brome				S2	33	32.4 ± 0.0	NS
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S2	19	32.3 ± 0.0	NS
P	*Elymus wiegandii*	Wiegand's Wild Rye				S2	20	20.3 ± 0.0	NS
P	*Festuca subverticillata*	Nodding Fescue				S2	12	50.7 ± 1.0	NS
P	*Cryptogramma stelleri*	Steller's Rockbrake				S2	3	63.1 ± 0.0	NS
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2?	5	32.0 ± 1.0	NS
P	*Rumex persicarioides*	Peach-leaved Dock				S2?	3	75.3 ± 5.0	PE
P	*Crataegus submollis*	Quebec Hawthorn				S2?	7	28.8 ± 5.0	NS
P	*Carex peckii*	White-Tinged Sedge				S2?	4	16.6 ± 0.0	NS
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S2S3	941	48.7 ± 0.0	NS
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2S3	26	19.3 ± 0.0	NS
P	*Bidens hyperborea*	Estuary Beggarticks				S2S3	3	60.0 ± 0.0	NS
P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2S3	7	43.6 ± 5.0	NS
P	*Lactuca hirsuta*	Hairy Lettuce				S2S3	3	78.3 ± 5.0	PE
P	*Impatiens pallida*	Pale Jewelweed				S2S3	4	33.1 ± 0.0	NS
P	*Caulophyllum thalictroides*	Blue Cohosh				S2S3	86	6.4 ± 0.0	NS
P	*Draba arabisans*	Rock Whitlow-Grass				S2S3	12	91.0 ± 0.0	NS
P	*Boechera stricta*	Drummond's Rockcress				S2S3	11	13.9 ± 0.0	NS
P	*Stellaria humifusa*	Saltmarsh Starwort				S2S3	7	74.2 ± 1.0	NS
P	*Oxybasis rubra*	Red Goosefoot				S2S3	6	36.3 ± 0.0	NS
P	*Hypericum majus*	Large St John's-wort				S2S3	21	41.0 ± 0.0	NS
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2S3	8	45.5 ± 1.0	NS
P	*Empetrum atropurpureum*	Purple Crowberry				S2S3	2	99.0 ± 5.0	PE
P	*Euphorbia polygonifolia*	Seaside Spurge				S2S3	8	56.3 ± 1.0	PE
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S2S3	14	33.2 ± 0.0	NS
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	9	37.5 ± 5.0	NS
P	*Oenothera fruticosa ssp. tetragona*	Narrow-leaved Evening Primrose				S2S3	3	7.1 ± 7.0	NS
P	*Polygonum aviculare ssp. buxiforme*	Box Knotweed				S2S3	6	22.6 ± 7.0	NS
P	*Polygonum oxyspermum ssp. raii*	Ray's Knotweed				S2S3	2	97.7 ± 5.0	PE
P	*Polygonum oxyspermum*	Sharp-fruit Knotweed				S2S3	1	96.1 ± 0.0	NS
P	*Rumex triangulivalvis*	Triangular-valve Dock				S2S3	6	41.8 ± 0.0	NS
P	*Primula mistassinica*	Mistassini Primrose				S2S3	16	14.1 ± 0.0	NS
P	*Anemone quinquefolia*	Wood Anemone				S2S3	21	33.2 ± 0.0	NS
P	*Caltha palustris*	Yellow Marsh Marigold				S2S3	35	53.2 ± 0.0	NS
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S2S3	1	73.5 ± 5.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Potentilla canadensis*	Canada Cinquefoil				S2S3	4	41.0 ± 5.0	NS
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2S3	1	89.4 ± 1.0	NB
P	*Salix pellita*	Satiny Willow				S2S3	8	33.0 ± 0.0	NS
P	*Tiarella cordifolia*	Heart-leaved Foamflower				S2S3	222	5.7 ± 7.0	NS
P	*Agalinis purpurea var. parviflora*	Small-flowered Purple False Foxglove				S2S3	27	32.3 ± 0.0	NS
P	*Boehmeria cylindrica*	Small-spike False-nettle				S2S3	2	63.9 ± 0.0	NS
P	*Carex adusta*	Lesser Brown Sedge				S2S3	6	22.3 ± 0.0	NS
P	*Carex capillaris*	Hairlike Sedge				S2S3	2	78.9 ± 0.0	NS
P	*Carex comosa*	Bearded Sedge				S2S3	10	26.7 ± 7.0	NS
P	*Carex houghtoniana*	Houghton's Sedge				S2S3	5	39.7 ± 1.0	NS
P	*Carex hystericina*	Porcupine Sedge				S2S3	6	24.6 ± 0.0	NS
P	*Eleocharis ovata*	Ovate Spikerush				S2S3	11	4.3 ± 0.0	NS
P	*Scirpus pedicellatus*	Stalked Bulrush				S2S3	7	33.4 ± 0.0	NS
P	*Vallisneria americana*	Wild Celery				S2S3	7	37.1 ± 1.0	NS
P	*Najas gracillima*	Thread-Like Naiad				S2S3	2	90.9 ± 0.0	NS
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S2S3	12	60.4 ± 1.0	NS
P	*Spiranthes casei var. novaescotiae*	Case's Ladies'-Tresses				S2S3	2	97.9 ± 0.0	PE
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2S3	23	13.4 ± 0.0	NS
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S2S3	7	83.1 ± 0.0	PE
P	*Potamogeton friesii*	Fries' Pondweed				S2S3	15	19.5 ± 5.0	NS
P	*Woodsia glabella*	Smooth Cliff Fern				S2S3	2	39.3 ± 1.0	NS
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S2S3	12	11.1 ± 1.0	NS
P	*Botrychium simplex*	Least Moonwort				S2S3	4	44.3 ± 0.0	NS
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	8	10.2 ± 0.0	NS
P	*Potamogeton pulcher*	Spotted Pondweed			Vulnerable	S3	3	45.4 ± 2.0	NS
P	*Angelica atropurpurea*	Purple-stemmed Angelica				S3	6	33.4 ± 0.0	NS
P	*Conioselinum chinense*	Chinese Hemlock-parsley				S3	3	16.9 ± 5.0	NS
P	*Hieracium robinsonii*	Robinson's Hawkweed				S3	3	6.0 ± 7.0	NS
P	*Iva frutescens*	Big-leaved Marsh-elder				S3	6	92.5 ± 0.0	NS
P	*Senecio pseudoarnica*	Seabeach Ragwort				S3	20	22.6 ± 7.0	NS
P	*Symphyotrichum boreale*	Boreal Aster				S3	51	22.6 ± 7.0	NS
P	*Symphyotrichum undulatum*	Wavy-leaved Aster				S3	7	92.8 ± 0.0	NS
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S3	22	34.3 ± 0.0	NS
P	*Betula pumila var. pumila*	Bog Birch				S3	1	96.7 ± 1.0	NS
P	*Betula michauxii*	Michaux's Dwarf Birch				S3	32	52.4 ± 0.0	NS
P	*Betula pumila*	Bog Birch				S3	28	58.4 ± 0.0	NS
P	*Cardamine parviflora*	Small-flowered Bittercress				S3	9	90.3 ± 0.0	NS
P	*Palustricodon aparinoides*	Marsh Bellflower				S3	42	13.3 ± 0.0	NS
P	*Mononeuria groenlandica*	Greenland Stitchwort				S3	4	71.0 ± 0.0	NS
P	*Sagina nodosa*	Knotted Pearlwort				S3	9	89.7 ± 0.0	NS
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S3	9	88.8 ± 0.0	NS
P	*Stellaria longifolia*	Long-leaved Starwort				S3	19	6.6 ± 0.0	NS
P	*Ceratophyllum echinatum*	Prickly Hornwort				S3	31	28.5 ± 0.0	NS
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S3	123	6.5 ± 0.0	NS
P	*Viburnum edule*	Squashberry				S3	3	12.7 ± 0.0	NS
P	*Crassula aquatica*	Water Pygmyweed				S3	2	95.8 ± 5.0	PE
P	*Empetrum eamesii*	Pink Crowberry				S3	7	72.3 ± 5.0	PE
P	*Halenia deflexa*	Spurred Gentian				S3	1	96.8 ± 1.0	NS
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	9	40.2 ± 2.0	NS
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	12	34.1 ± 0.0	NS
P	*Epilobium strictum*	Downy Willowherb				S3	59	21.1 ± 5.0	NS
P	*Polygala sanguinea*	Blood Milkwort				S3	21	9.8 ± 0.0	NS
P	*Persicaria arifolia*	Halberd-leaved Tearthumb				S3	78	37.2 ± 0.0	NS
P	*Plantago rugelii*	Rugel's Plantain				S3	7	22.6 ± 7.0	NS

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P	*Samolus parviflorus*	Seaside Brookweed				S3	22	45.1 ± 0.0	NS
P	*Pyrola minor*	Lesser Pyrola				S3	3	10.8 ± 0.0	NS
P	*Anemone virginiana*	Virginia Anemone				S3	39	14.7 ± 0.0	NS
P	*Galium labradoricum*	Labrador Bedstraw				S3	99	32.5 ± 0.0	NS
P	*Salix pedicellaris*	Bog Willow				S3	62	33.0 ± 0.0	NS
P	*Salix sericea*	Silky Willow				S3	1	75.1 ± 1.0	NS
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S3	1	98.6 ± 1.0	NS
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3	50	19.9 ± 0.0	NS
P	*Laportea canadensis*	Canada Wood Nettle				S3	62	5.8 ± 10.0	NS
P	*Pilea pumila*	Dwarf Clearweed				S3	28	29.6 ± 0.0	NS
P	*Viola nephrophylla*	Northern Bog Violet				S3	9	8.5 ± 1.0	NS
P	*Carex bebbii*	Bebb's Sedge				S3	38	13.5 ± 0.0	NS
P	*Carex castanea*	Chestnut Sedge				S3	26	52.8 ± 0.0	NS
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3	14	33.6 ± 0.0	NS
P	*Carex eburnea*	Bristle-leaved Sedge				S3	33	32.6 ± 0.0	NS
P	*Carex hirtifolia*	Pubescent Sedge				S3	59	6.3 ± 1.0	NS
P	*Carex lupulina*	Hop Sedge				S3	52	24.5 ± 0.0	NS
P	*Carex rosea*	Rosy Sedge				S3	42	12.1 ± 1.0	NS
P	*Carex swanii*	Swan's Sedge				S3	2	96.6 ± 0.0	NS
P	*Carex tenera*	Tender Sedge				S3	11	17.6 ± 1.0	NS
P	*Carex tribuloides*	Blunt Broom Sedge				S3	13	23.4 ± 0.0	NS
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	38	24.7 ± 0.0	NS
P	*Carex atratiformis*	Scabrous Black Sedge				S3	3	89.5 ± 1.0	NS
P	*Eleocharis nitida*	Quill Spikerush				S3	6	66.3 ± 7.0	NS
P	*Eleocharis flavescens var. olivacea*	Bright-green Spikerush				S3	8	32.1 ± 0.0	NS
P	*Eriophorum gracile*	Slender Cottongrass				S3	40	21.3 ± 10.0	NS
P	*Schoenoplectus americanus*	Olney's Bulrush				S3	1	94.0 ± 0.0	NS
P	*Juncus stygius ssp. americanus*	Moor Rush				S3	75	91.6 ± 0.0	NS
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S3	1	47.3 ± 0.0	NS
P	*Cypripedium parviflorum*	Yellow Lady's-slipper				S3	565	29.4 ± 0.0	NS
P	*Neottia bifolia*	Southern Twayblade				S3	73	12.7 ± 0.0	NS
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	147	8.0 ± 0.0	NS
P	*Platanthera hookeri*	Hooker's Orchid				S3	18	39.9 ± 0.0	NS
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S3	5	13.8 ± 0.0	NS
P	*Piptatheropsis canadensis*	Canada Ricegrass				S3	8	27.4 ± 1.0	NS
P	*Poa glauca*	Glaucous Blue Grass				S3	3	78.9 ± 0.0	NS
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S3	3	93.1 ± 0.0	PE
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	38	4.4 ± 1.0	NS
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3	7	5.7 ± 7.0	NS
P	*Potamogeton zosteriformis*	Flat-stemmed Pondweed				S3	27	34.3 ± 0.0	NS
P	*Asplenium viride*	Green Spleenwort				S3	12	46.2 ± 7.0	NS
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3	16	8.5 ± 7.0	NS
P	*Sceptridium dissectum*	Dissected Moonwort				S3	8	14.5 ± 5.0	NS
P	*Polypodium appalachianum*	Appalachian Polypody				S3	15	6.8 ± 0.0	NS
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S3?	4	63.0 ± 0.0	NS
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S3?	11	9.3 ± 0.0	NS
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3?	12	3.2 ± 0.0	NS
P	*Bidens vulgata*	Tall Beggarticks				S3S4	6	21.4 ± 0.0	NS
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3S4	38	38.8 ± 0.0	NS
P	*Hieracium paniculatum*	Panicled Hawkweed				S3S4	6	6.9 ± 0.0	NS
P	*Bidens beckii*	Water Beggarticks				S3S4	22	30.2 ± 0.0	NS
P	*Packera paupercula*	Balsam Groundsel				S3S4	135	13.4 ± 0.0	NS
P	*Packera paupercula var.*	Balsam Groundsel				S3S4	1	94.0 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	paupercula								
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S3S4	18	30.3 ± 2.0	NS
P	*Shepherdia canadensis*	Soapberry				S3S4	100	90.7 ± 1.0	NS
P	*Vaccinium boreale*	Northern Blueberry				S3S4	3	81.9 ± 1.0	NS
P	*Vaccinium cespitosum*	Dwarf Bilberry				S3S4	55	13.3 ± 0.0	NS
P	*Vaccinium corymbosum*	Highbush Blueberry				S3S4	2	91.2 ± 0.0	NS
P	*Fagus grandifolia*	American Beech				S3S4	254	3.0 ± 0.0	NS
P	*Bartonia virginica*	Yellow Bartonia				S3S4	1	75.1 ± 7.0	NS
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S3S4	4	41.9 ± 1.0	NS
P	*Decodon verticillatus*	Swamp Loosestrife				S3S4	1	98.3 ± 0.0	PE
P	*Nuphar microphylla*	Small Yellow Pond-lily				S3S4	5	28.6 ± 2.0	NS
P	*Persicaria pensylvanica*	Pennsylvania Smartweed				S3S4	24	17.0 ± 7.0	NS
P	*Fallopia scandens*	Climbing False Buckwheat				S3S4	45	15.4 ± 0.0	NS
P	*Rumex pallidus*	Seabeach Dock				S3S4	2	87.3 ± 0.0	NS
P	*Pyrola asarifolia*	Pink Pyrola				S3S4	12	11.0 ± 0.0	NS
P	*Endotropis alnifolia*	alder-leaved buckthorn				S3S4	280	33.1 ± 0.0	NS
P	*Amelanchier spicata*	Running Serviceberry				S3S4	11	27.0 ± 2.0	NS
P	*Crataegus succulenta*	Fleshy Hawthorn				S3S4	5	86.2 ± 5.0	PE
P	*Fragaria vesca ssp. americana*	Woodland Strawberry				S3S4	79	12.1 ± 1.0	NS
P	*Fragaria vesca*	Woodland Strawberry				S3S4	1	52.4 ± 0.0	NS
P	*Galium aparine*	Common Bedstraw				S3S4	24	23.2 ± 0.0	NS
P	*Geocaulon lividum*	Northern Comandra				S3S4	17	48.9 ± 0.0	NS
P	*Limosella australis*	Southern Mudwort				S3S4	32	46.1 ± 0.0	NS
P	*Ulmus americana*	White Elm				S3S4	95	15.6 ± 0.0	NS
P	*Verbena hastata*	Blue Vervain				S3S4	234	7.3 ± 0.0	NS
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S3S4	7	75.6 ± 1.0	PE
P	*Viola selkirkii*	Great-Spurred Violet				S3S4	5	47.4 ± 0.0	NS
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3S4	129	85.5 ± 0.0	NB
P	*Carex argyrantha*	Silvery-flowered Sedge				S3S4	3	72.0 ± 5.0	PE
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	19	88.4 ± 0.0	NS
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	7	63.3 ± 2.0	NS
P	*Juncus subcaudatus*	Woods-Rush				S3S4	19	35.9 ± 3.0	NS
P	*Luzula parviflora ssp. melanocarpa*	Black-fruited Woodrush				S3S4	5	62.5 ± 0.0	NS
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3S4	11	56.3 ± 1.0	PE
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	18	33.6 ± 1.0	NS
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	6	48.2 ± 1.0	NS
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3S4	38	6.6 ± 0.0	NS
P	*Alopecurus aequalis*	Short-awned Foxtail				S3S4	30	17.2 ± 1.0	NS
P	*Dichanthelium clandestinum*	Deer-tongue Panic Grass				S3S4	182	53.5 ± 5.0	NS
P	*Panicum philadelphicum*	Philadelphia Panicgrass				S3S4	14	39.9 ± 0.0	NS
P	*Koeleria spicata*	Narrow False Oats				S3S4	12	13.3 ± 0.0	NS
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3S4	7	94.1 ± 1.0	NS
P	*Equisetum pratense*	Meadow Horsetail				S3S4	12	13.7 ± 0.0	NS
P	*Diphasiastrum complanatum*	Northern Ground-cedar				S3S4	12	26.5 ± 0.0	NS
P	*Diphasiastrum sitchense*	Sitka Ground-cedar				S3S4	6	14.1 ± 5.0	NS
P	*Huperzia appressa*	Mountain Firmoss				S3S4	11	12.6 ± 5.0	NS
P	*Sceptridium multifidum*	Leathery Moonwort				S3S4	10	34.6 ± 0.0	NS
P	*Botrychium matricariifolium*	Daisy-leaved Moonwort				S3S4	12	7.0 ± 1.0	NS
P	*Viola canadensis*	Canada Violet				SH	2	17.0 ± 7.0	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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252	Blaney, C.S & Spicer, C.D.; Popma, T.M.; Basquill, S.P. 2003. Vascular Plant Surveys of Northumberland Strait Rivers & Amherst Area Peatlands. Nova Scotia Museum Research Grant, 501 recs.
245	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.
243	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
226	Neily, T.H. 2017. Nova Scotia lichen records. Mersey Tobeatic Research Institute.
226	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
204	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
198	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
192	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
180	Blaney, C.S. & Mazerolle, D.M. 2011. Field data from NCC properties at Musquash Harbour NB & Goose Lake NS. Atlantic Canada Conservation Data Centre, 1739 recs.
179	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
173	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
170	Bryson, I. 2013. Nova Scotia rare plant records. CBCL Ltd., 180 records.
166	Blaney, C.S.; Mazerolle, D.M.; Hill, N.M. 2011. Nova Scotia Crown Share Land Legacy Trust Fieldwork. Atlantic Canada Conservation Data Centre, 5022 recs.
166	Bryson, I.C. 2020. Nova Scotia flora and lichen observations 2020. Nova Scotia Environment, 139 recs.
165	Island Nature Trust. 2016. Farmland birds project. Mader, Shannon (ed.) .
159	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
148	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
140	Pepper, C. 2013. 2013 rare bird and plant observations in Nova Scotia. , 181 records.
138	Chapman-Lam, C.J. 2021. Atlantic Canada Conservation Data Centre 2020 botanical fieldwork. Atlantic Canada Conservation Data Centre, 17309 recs.
130	Toms, B. 2018. Bat Species data from www.batconservation.ca for Nova Scotia. Mersey Tobeatic Research Institute, 547 Records.
127	MacDonald, Haley. 2022. Updates to Fraxinus nigra observations on NCC Docherty's Brook property. Nature Conservancy of Canada.
113	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
111	Richardson, Leif. 2018. Maritimes Bombus records from various sources. Richardson, Leif.
105	Blaney, C.S. 2020. Sean Blaney 2020 field data. Atlantic Canada Conservation Data Centre, 4407 records.
105	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2011. Atlantic Canada Conservation Data Centre. Sackville NB, 760 recs.
103	Parks Canada. 2021. PEI National Park Bank swallow nest records from 2010-2019. Parks Canada, 1535 records.
102	Catling, P.M., Erskine, D.S. & MacLaren, R.B. 1985. The Plants of Prince Edward Island with new records, nomenclatural changes & corrections & deletions, 1st Ed. Research Branch, Agriculture Canada, Ottawa, Publication 1798. 22pp.
97	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.

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97	Cameron, R.P. 2009. Cyanolichen database. Nova Scotia Environment & Labour, 1724 recs.
96	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
94	Pepper, C. 2021. Rare bird, plant and mammal observations in Nova Scotia, 2017-2021.
89	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
87	McNeil, J.A. 2018. Wood Turtle records, 2018. Mersey Tobeatic Research Institute, 68 recs.
87	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
85	MacDonald, E.C. 2018. CWS Piping Plover Census, 2010-2017. Canadian Wildlife Service, 672 recs.
83	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
83	Burns, L. 2013. Personal communication concerning bat occurrence on PEI. Winter 2013. Pers. comm.
81	MacDonald, E.C. 2018. Piping Plover nest records from 2010-2017. Canadian Wildlife Service.
80	Nature Conservancy of Canada. 2022. NCC Field data for Nova Scotia. Nature Conservancy of Canada.
77	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
76	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
74	Neily, T.H. & Pepper, C. 2020. Nova Scotia SMP lichen surveys 2020. Mersey Tobeatic Research Institute.
69	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
69	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.
68	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
68	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
67	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
64	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
63	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.
62	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
59	Blaney, C.S. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 6719 recs.
58	Belliveau, A.G. 2021. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2021. E.C. Smith Herbarium.
58	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
57	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
57	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
57	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
57	Toms, Brad & Pepper, Chris; Neily, Tom. 2022. Nova Scotia lichen database [as of 2022-04]. Mersey Tobeatic Research Institute.
56	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
55	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
54	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
54	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
54	Churchill, J.L.; Klymko, J.D. 2015. Chignecto and Tintamarre National Wildlife Area Bird Surveys 2015. Atlantic Canada Conservation Data Centre, 2238 recs.
54	Glen, W. 1991. 1991 Prince Edward Island Forest Biomass Inventory Data. PEI Dept of Energy and Forestry, 10059 recs.
54	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
51	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
51	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
50	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
49	Hall, R.A. 2001. S.. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
48	Porter, Caitlin et al. 2022. 2021 wildlife observaitions from the Caemmerer NCC site. Atlantic Canada Conservation Data Centre.
47	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
47	Churchill, J.L. 2020. Atlantic Canada Conservation Data Centre Fieldwork 2020. Atlantic Canada Conservation Data Centre, 1083 recs.
46	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
45	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
44	Neily, T.H. & Pepper, C.; Toms, B. 2015. Nova Scotia lichen location database [as of 2015-02-15]. Mersey Tobeatic Research Institute, 1691 records.
43	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
43	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
42	Hagerman, Christianne. 2022. Wisqoq and Eastern White Cedar field work. E.C. Smith Herbarium, Acadia University.
41	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
41	Klymko, John. 2022. Atlantic Canada Conservation Data Centre zoological fieldwork 2021. Atlantic Canada Conservation Data Centre.
40	Cameron, E. 2007. Canadian Gypsum Co. survey 2005-07. Dillon Consulting Ltd, 40 recs.
40	Staicer, Cindy. 2022. 2021 Landbird Species at Risk observations. Dalhousie University.
38	eBird. 2021. eBird Basic Dataset. Version: EBD_relOct-2020. Ithaca, New York. Oct 2020, Prince Edward Island Bird SAR subset. Cornell Lab of Ornithology.
38	Staicer, C. 2021. Additional compiled Nova Scotia Species at Risk bird records, 2005-2020. Dalhousie University.
37	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
36	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
36	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. https://doi.org/10.1037/arc0000014.
35	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.

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35	Blaney, C.S.; Mazerolle, D.M.; Klymko, J; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
35	Pulsifer, M.D. 2002. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 369 recs.
33	Arsenault, M. 2019. Cormorant colony nest counts. PE Department of Communities, Land, and Environment.
33	Blaney, C.S. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre.
32	Erskine, D. 1960. The plants of Prince Edward Island, 1st Ed. Research Branch, Agriculture Canada, Ottawa., Publication 1088. 1238 recs.
30	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
28	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
27	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
26	LaPaix, Rich. 2022. Rare species observations, 2018-2022. Nova Scotia Nature Trust.
26	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
26	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
25	PEI National Park. 2019. SAR and Bombus records from PEI NP from the 2019 field season. Moody, Allison (ed.) PEI National Park, 158 recs.
25	Porter, Caitlin. 2021. Field data for 2020 in various locations across the Maritimes. Atlantic Canada Conservation Data Centre, 3977 records.
24	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
24	Hubley, Nicole. 2022. Monarch (Danaus plexippus) records submitted to MTRI from the 2021 field season. Mersey Tobeatic Research Institute.
24	Klymko, J. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
23	Anderson, Frances; Neily, Tom. 2010. A Reconnaissance Level Survey of Calciphilous Lichens in Selected Karst Topography in Nova Scotia with Notes on Incidental Bryophytes. Mersey Tobeatic Research Institute.
23	Cameron, R.P. 2018. Degelia plumbea records. Nova Scotia Environment.
23	Spicer, C.D. & Harries, H. 2001. Mount Allison Herbarium Specimens. Mount Allison University, 128 recs.
23	Westwood, A., Staicer, C. 2016. Nova Scotia landbird Species at Risk observations. Dalhousie University.
22	Chapman, C.N. (Cody). 2020. Nova Scotia Black Ash (Fraxinus nigra) field observations by Confederacy of Mainland Mi'kmaq. Forestry Program, Confederacy of Mainland Mi'kmaq.
22	Curley, F.R. 2005. PEF&W Collection 2003-04. PEI Fish & Wildlife Div., 716 recs.
22	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
22	Nelly, T.H. 2006. Cypripedium arietinum in Hants Co. Pers. comm. to C.S. Blaney. 22 recs, 22 recs.
22	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
22	Powell, B.C. 1967. Female sexual cycles of Chrysemy spicta & Clemmys insculpta in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.
21	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records. 296 recs.
21	Churchill, J.L., Klymko, J.D.D. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
21	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
20	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
20	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
20	NS DNR. 2017. Black Ash records from NS DNR Permanent Sample Plots (PSPs), 1965-2016. NS Dept of Natural Resources.
19	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
19	Brazner, J. 2016. Nova Scotia Forested Wetland Bird Surveys. Nova Scotia Department of Lands and Forestry.
19	Cameron, R.P. 2013. 2013 rare species field data. Nova Scotia Department of Environment, 71 recs.
19	Godbout, V. 2002. SAR Inventory: Birds in Fort Beauséjour NHS. Parks Canada, Atlantic, SARINV02-01. 202 recs.
19	Haughian, Sean. 2021. Update to lichen data from 2017-2021. Nova Scotia Museum.
19	Mersey Tobetic Research Institute. 2021. 2020 Monarch records from the MTRI monitoring program. Mersey Tobetic Research Institute, 72 records.
19	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
18	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
18	Ferguson, D.C. 1954. The Lepidoptera of Nova Scotia. Part I, macrolepidoptera. Proceedings of the Nova Scotian Institute of Science, 23(3), 161-375.
18	Neily, T.H. 2012. 2012 Erioderma pedicellatum records in Nova Scotia.
18	Phinney, Lori. 2020. Pre- and post White-nose Syndrome bat acoustic monitoring, NS. Mersey Tobeatic Research Institute, 1279 recs.
17	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
16	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
16	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
16	McNeil, J.A. 2016. Blandings Turtle (Emydoidea blandingii), Eastern Ribbonsnake (Thamnophis sauritus), Wood Turtle (Glyptemys insculpta), and Snapping Turtle (Chelydra serpentina) sightings, 2016. Mersey Tobeatic Research Institute, 774 records.
15	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
15	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
15	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (Riparia riparia) in Nova Scotia: inventory and assessment of colonies. Merset Tobeiatc Research Institute, 25 recs.
15	Richardson, D., Anderson, F., Cameron, R, McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (Anzia colpodes). COSEWIC.
15	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick, 2002-09. Canadian Wildlife Service, Sackville, 58 recs.
14	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of C. insculpta sightings. Acadia University, Wolfville NS, 88 recs.
14	Burke, Lindsey. 2022. Species data recorded during the 2021 season at Prince Edward Island National Park. Parks Canada.
14	Churchill, J.L. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
14	McMullin, R.T. 2022. Maritimes lichen records. Canadian Museum of Nature.
13	Ayles, P. 2006. Prince Edward Island National Park Digital Database. Parks Canada, 179 recs.
13	Klymko, J. 2021. Atlantic Canada Conservation Data Centre zoological fieldwork 2020. Atlantic Canada Conservation Data Centre.

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13	Nova Scotia Nature Trust. 2014. Ladyslipper records from Saint Croix Nova Scotia, JLC Ed. Nova Scotia Nature Trust.
13	Robinson, S.L. 2015. 2014 field data.
12	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
12	Bryson, I. 2020. Nova Scotia and Newfoundland rare species observations, 2018-2020. Nova Scotia Environment.
12	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.
12	Feltham, Carter. 2022. Monarch (Danaus plexippus) and Milkweed MTRI records from the 2022 Field Season. Mersey Tobeatic Research Institute.
12	Toms, Brad. 2022. Non-Lichen Observations from Lichen SMP and NCC Property Searches. Mersey Tobeatic Research Institute.
12	White, S. 2018. Notable species sightings, 2016-2017. East Coast Aquatics.
11	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
11	e-Butterfly. 2019. Export of Maritimes records and photos. McFarland, K. (ed.) e-butterfly.org.
10	Churchill, J.L.; Walker, J. 2017. Species at Risk Surveys at Correctional Services Canada Properties in Nova Scotia and New Brunswick. Atlantic Canada Conservation Data Centre.
10	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
10	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
10	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
10	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
10	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
10	Zahavich, J.L. 2020. Canada Warbler, Olive-sided Flycatcher and Eastern Wood-Pewee observations, Prince Edward Island, 2017-2019. Island Nature Trust.
9	Benjamin, L.K. 2006. Cypripedium arietinum. Pers. comm. to D. Mazerolle. 9 recs, 9 recs.
9	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
9	Cameron, R.P. 2005. Erioderma pedicellatum unpublished data. NS Dept of Environment, 9 recs.
9	Cameron, R.P. 2006. Erioderma pedicellatum 2006 field data. NS Dept of Environment, 9 recs.
9	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
9	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.
9	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
9	Zahavich, J. 2018. Canada Warbler and Olive-sided Flycatcher records 2018. Island Nature Trust, 14 recs.
8	Cameron-MacMillan, Maureen. 2020. Northern Goshawk Nests in Eastern Nova Scotia, as of November, 2020. Nova Scotia Department of Lands and Forestry.
8	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
8	Hill, N.M. 1994. Status report on the Long's bulrush Scirpus longii in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
8	Holder, M.L.; Kingsley, A.L. 2000. Kinglsey and Holder observations from 2000 field work.
8	Hughes, Cory. 2020. Atlantic Forestry Centre Coccinella transversoguttata collections. Canadian Forest Service, Atlantic Forestry Centre.
8	King, Katie; Jean, Samuel. 2021. Black ash observations near Booklyn, NS. E.C. Smith Herbarium.
8	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
7	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
7	Belland, R.J. 2012. PEI moss records from Devonian Botanical Garden. DBG Cryptogam Database, Web site: https://secure.devonian.ualberta.ca/bryo_search.php 748 recs.
7	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
7	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
7	Cameron, B. 2006. Hepatica americana Survey at Scotia Mine Site in Gays River, and Discovery of Three Yellow-listed Species. Conestoga-Rovers and Associates, (a consulting firm), october 25. 7 recs.
7	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
7	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
7	Harding, R.W. 2008. Harding Personal Insect Collection 1999-2007. R.W. Harding, 309 recs.
7	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
7	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-05-25]. Mersey Tobeatic Research Institute, 668 recs.
7	Neily, Tom. 2020. Lichen surveys for PEI Forested Landscapes Priority Place. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 158 records.
7	White, S. 2019. Notable species sightings, 2018. East Coast Aquatics.
6	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
6	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
6	Curley, F.R. 2007. PEF&W Collection. PEI Fish & Wildlife Div., 199 recs.
6	Gallop, John. 2021. Sheet Harbour rare lichen observations. McCallum Environmental.
6	Hall, R. 2008. Rare plant records in old fieldbook notes from Truro area. Pers. comm. to C.S. Blaney. 6 recs, 6 recs.
6	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
6	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
6	Matthew Smith. 2010. Field trip report from Avon Caving Club outlining the discovery of Cyrpipedium arietinum and Hepatica nobilis populations. Public Works and Government Services Canada.
6	Mazerolle, D.M. 2020. Atlantic Canada Conservation Data Centre botanical fieldwork 2019. Atlantic Canada Conservation Data Centre.
6	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.
6	Nova Scotia Nature Trust. 2022. Ram's Head Lady Slipper observations from 2015 and 2019. , 6 records.
6	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
6	Richardson, D., Anderson, F., Cameron, R, Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (Pannaria lurida). COSEWIC.
6	Stevens, C. 1999. Cam Stevens field data from PEI vegetation plots. Sent along with specimens to C.S. Blaney. UNB masters research project, 732 recs.
5	Basquill, S.P. 2010. Plant data from Prince Edward Island National Park Forest Community Plots. Atlantic Canada Conservation Data Centre, 150 records.

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5	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
5	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
5	Daury, R.W. & Bateman, M.C. 1996. The Barrow's Goldeneye (Bucephala islandica) in the Atlantic Provinces and Maine. Canadian Wildlife Service, Sackville, 47pp.
5	Giberson, D. 2008. UPEI Insect Collection. University of Prince Edward Island, 157 recs.
5	Majka, C.G. 2008. Lepidoptera at St Patricks, 1993-2007. Pers. comm. to R. Curley, 8 Jan. 29 recs, 29 recs.
5	McLelland, Don. 2022. Orchid records for Prince Edward Island. Pers. comm.
5	McMullin, R.T. 2015. Prince Edward Island's lichen biodiversity and proposed conservation status in a report prepared for the province of PEI. Biodiversity Institute of Ontario Herbarium, University of Guelph, 776 records.
5	McNeil, J.A. 2020. Snapping Turtle and Eastern Painted Turtle records, 2020. Mersey Tobeatic Research Institute.
5	Neily, T.H. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. T.H. Neily, Atlantic Canada Conservation Data Centre.
5	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
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3	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
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APPENDIX E

NOVA SCOTIA MUSEUM REPORT

HERITAGE AND BIOLOGICAL RESOURCES

NOVA SCOTIA

Communities, Culture, Tourism & Heritage

Tel: (902) 424-6475
Fax: (902) 424-0560

1741 Brunswick Street
3rd Floor
P.O. Box 456
Halifax, NS
B3J 2R5

June 2, 2023

Heather Levy
Envirosphere Consultants Limited
PO 2906 Unit 5 - 120 Morison Drive
Windsor, Nova Scotia
B0N 2T0

Dear Heather Levy:

RE: Environmental Screening 2023_05_15_Envirosphere_Kemptown Quarry

Further to your request of May 15, 2023, staff at Communities, Culture, Tourism and Heritage have reviewed their files for reference to the presence of natural and heritage resources in the study area. Please be aware that the information is not comprehensive and may include varying degrees of accuracy with respect to the precise location and condition of natural and heritage resources.

It should be noted that the amount and degree of disturbance from previous developments could have a significant role in establishing the presence, absence or condition of natural and heritage resources in this area.

Archaeology

Given that there are no recorded archaeological sites in the general vicinity, nor are there any within the proposed development area, significant hydrology is distant and both quarries are previously existing, I do not think archaeological oversight is necessary.

Botany

No staff were available to review at this time.

Palaeontology

The bedrock geology at this location is Devonian granite so there are no issues of palaeontology resources at this location.

Zoology

It is recommended that the Maritime Breeding Bird Atlas be consulted to up-to date information on bird species that have been observed in the project area and immediate vicinity. The following species have been reported to potentially use the project area for breeding activities:

NOVA SCOTIA

Communities, Culture, Tourism & Heritage

Tel: (902) 424-6475
Fax: (902) 424-0560

1741 Brunswick Street
3rd Floor
P.O. Box 456
Halifax, NS
B3J 2R5

Common Name	***Scientific name***	**Breeding Evidence?**	**Provincial Status**	**Federal Status**
Bobolink	*Dolichonyx oryzivorus*	Confirmed	Vulnerable	Threatened
Canada Warbler	*Cardellina canadensis*	Possible	Endangered	Threatened
Chimney Swift	*Chaetura pelagica*	Confirmed	Endangered	Threatened
Common Nighthawk	*Chordeiles minor*	Possible	Threatened	Threatened
Eastern Wood-pewee	*Contopus virens*	Confirmed	Vulnerable	Special Concern
Evening Grosbeak	*Coccothraustes vespertinus*	Confirmed	Vulnerable	Special Concern
Olive-sided Flycatcher	*Contopus cooperi*	Possible	Threatened	Threatened

Note that the endangered Monarch butterfly (*Danaus plexippus)*, which is considered endangered provincially and of special concern federally, has been observed in the region.
There is a confirmed observation of a Yellow-banded Bumble Bee (*Bombus terricola)* observed within the region of the project area. This species is considered vulnerable provincially and of species concern federally.

If you have any questions, please contact John.cormier@novascotia.ca

Sincerely,

John Cormier
Coordinator, Special Places

APPENDIX F

LABORATORY RESULTS

TSS & pH

Envirosphere Consultants Limited

Unit 5—120 Morison Drive, Box 2906, Windsor, Nova Scotia, B0N 2T0

ph: (902) 798-4022, fax: (902) 798-2614, e-mail: enviroco@ns.sympatico.ca, website: www.envirosphere.ca

Environmental Sample Analysis Report

Report Number: A1013

Lab Number: L2023-26

Project: Kemptown Quarry

Envirosphere Consultants Ltd
Unit 5 - 120 Morison Drive
Windsor, NS | B0N 2T0

Report Date: August 10, 2023

Sample ID	Location	Site	Sample Material	Date Received	Date Analyzed	pH	Type of Sample	Detection Limit	Sample Comments
20503		Pond US	surface water	Aug 09 2023	Aug 09 2023	6.6	REG	0.1	
20504		Pond DS	surface water	Aug 09 2023	Aug 09 2023	6.6	REG	0.1	
20504 (dup)		Pond DS	surface water	Aug 09 2023	Aug 09 2023	6.6	DUP	0.1	
20505		Culvert A US	surface water	Aug 09 2023	Aug 09 2023	6.1	REG	0.1	
20506		Culvert A DS	surface water	Aug 09 2023	Aug 09 2023	6.5	REG	0.1	
20507		Culvert B US	surface water	Aug 09 2023	Aug 09 2023	4.1	REG	0.1	
CRM			CRM	Aug 09 2023	Aug 09 2023	7.0	STD	0.1	CRM = 7.00 (ECL 863)

Name of Analyst: _____ Analyses reviewed by: _____ Director / Lab Manager (circle one)

This laboratory applies standard practice in conformance with ISO/IEC 17025:2017, "General Requirements for the Competence of Testing and Calibration Laboratories".

Validation Range: 3-10 units ***The results in this report relate only to the items tested.*** ***More information is available upon request.***

The quality of the results is dependent on the quality of sample provided.

Comment: Samples for pH should be kept cool until delivery to the lab unless the samples are analyzed immediately. Preferably samples should be analyzed within 24 hours. Hach manual recommends filling bottle completely and capping tightly; cooling to 4°C for storage and analyzing within 6 hours. If this can't be done, Hach manual recommends reporting the holding time with results.

Method: Standard Methods for the Examination of Water and Wastewater 23rd Edition. 2017 and online version., 4500-HB. Electrometric measurement of pH. ECL Method 8, pH.

Type of Sample: REG = regular; STD = standard; DUP = duplicate; CRM = certified reference material.

Sample Comments: BDL = Below Detection limit; QR = Qualified result; NR = No result, damaged or insufficient sample; MAC = Maximum Allowable Concentration.

Envirosphere Consultants Limited

Unit 5—120 Morison Drive, Box 2906, Windsor, Nova Scotia, B0N 2T0

ph: (902) 798-4022, fax: (902) 798-2614, e-mail: enviroco@ns.sympatico.ca, website: www.envirosphere.ca

Environmental Sample Analysis Report

Report Number: A1014

Lab Number: L2023-26

Project: Kemptown Quarry

Envirosphere Consultants Ltd
Unit 5 - 120 Morison Drive
Windsor, NS | B0N 2T0

Report Date: August 14, 2023

Sample ID	Location	Site	Sample Material	Date Received	Date Analyzed	TSS (mg/L)	Type of Sample	Detection Limit	Sample Comments
20503		Pond US	surface water	Aug 09 2023	Aug 12 2023	<0.5	REG	0.5 mg/L	
20503 (dup)		Pond US	surface water	Aug 09 2023	Aug 12 2023	<0.5	DUP	0.5 mg/L	
20504		Pond DS	surface water	Aug 09 2023	Aug 12 2023	11.5	REG	0.5 mg/L	
20505		Culvert A US	surface water	Aug 09 2023	Aug 12 2023	21.5	REG	0.5 mg/L	
20506		Culvert A DS	surface water	Aug 09 2023	Aug 12 2023	10.0	REG	0.5 mg/L	
20507		Culvert B US	surface water	Aug 09 2023	Aug 12 2023	1.5	REG	0.5 mg/L	
Blank			dH2O		Aug 12 2023	<0.5	BLANK	0.5 mg/L	
CRM			CRM		Aug 12 2023	213.0	STD	0.5 mg/L	CRM = 209 mg/L

Name of Analyst: K Burgess Analyses reviewed by: [signature] Director / Lab Manager (circle one)

This laboratory applies standard practice in conformance with ISO/IEC 17025:2017, "General Requirements for the Competence of Testing and Calibration Laboratories".

Validation Range: 1-1000 mg/L The results in this report relate only to the items tested. More information is available upon request.

The quality of the results is dependent on the quality of sample provided.

Samples for TSS analysis should be kept cool until delivery to the lab unless they are analyzed immediately. A minimum sample volume of 500 ml is preferred. Place sample in a clean plastic container free of cracks or contamination. Fill the bottle to the top and then cap. Samples should reach the lab within 24 hours of sampling, but will be accepted up to 7 days.

Methods: Modified from Standard Methods for the Examination of Water and Wastewater 23rd Edition. 2017 and online version. 2540D. Total Suspended Solids. ECL method 3, Total Suspended Solids.

Type of Sample: REG = regular; STD = standard; DUP = duplicate; CRM = certified reference material.

Sample Comments: BDL = Below Detection limit; QR = Qualified result; NR = No result, damaged or insufficient sample; MAC = Maximum Allowable Concentration.

APPENDIX B
HYDROGEOLOGICAL ASSESSMENT
(Consulting Geoscientists, W.G. Shaw & Associates Ltd., 2025)

Environmental Assessment Registration Document:
Kemptown Quarry Development
Upper Kemptown, Colchester County
Nova Scotia

Chapman Brothers Construction Ltd.

Proposed Kemptown Quarry

Upper Kemptown, Colchester County, Nova Scotia

General Quarry Plan
and
Surface Water and Groundwater Resources Management Plan

presented to:

Chapman Brothers Construction Ltd.

W.G. Shaw & Associates Ltd.
Consulting Geoscientists
February 28, 2025

W.G. Shaw & Associates Ltd.

Consulting Geoscientists

4546 Highway #7
Antigonish , Nova Scotia
Canada B2G 2L3
phone: (902) 863 - 1903
E-mail : wgshaw863@gmail.com

Mr. Jamie Chapman, P.Eng.
32 Maplewood Drive
New Glasgow, Nova Scotia
Canada, B2H 5Y2

February 28, 2025

Re: Chapman Brothers Construction Ltd. – Proposed Kemptown Quarry

Dear Mr. Chapman,

Please find attached a the technical report on the "General Quarry Plan and Surface Water and Groundwater Resources Management Plan" for the Kemptown Quarry Project.

Sincerely,

William G. Shaw

William G. Shaw, *P.Geo.*
President

Table of Contents

1.0 Introduction

The prosed Kemptown Quarry (Quarry) is located approximately 10 kilometres south of the community of Upper Kemptown, Colchester County, Nova Scotia and 1 kilometre west of the Kemptown Road (Figures #1 and #2)(PID #2034 3422).

In the Spring of 2023, Chapman Brothers initiated the production of crushed stone aggregate under a temporary authorization from NSPW for work on local highway projects.

The proposed new quarry is located within a rectangular shaped parcel of land that is approximately 800 metres long by 500 metres wide aggregating approximately 40 hectares (PID #2034 3422).

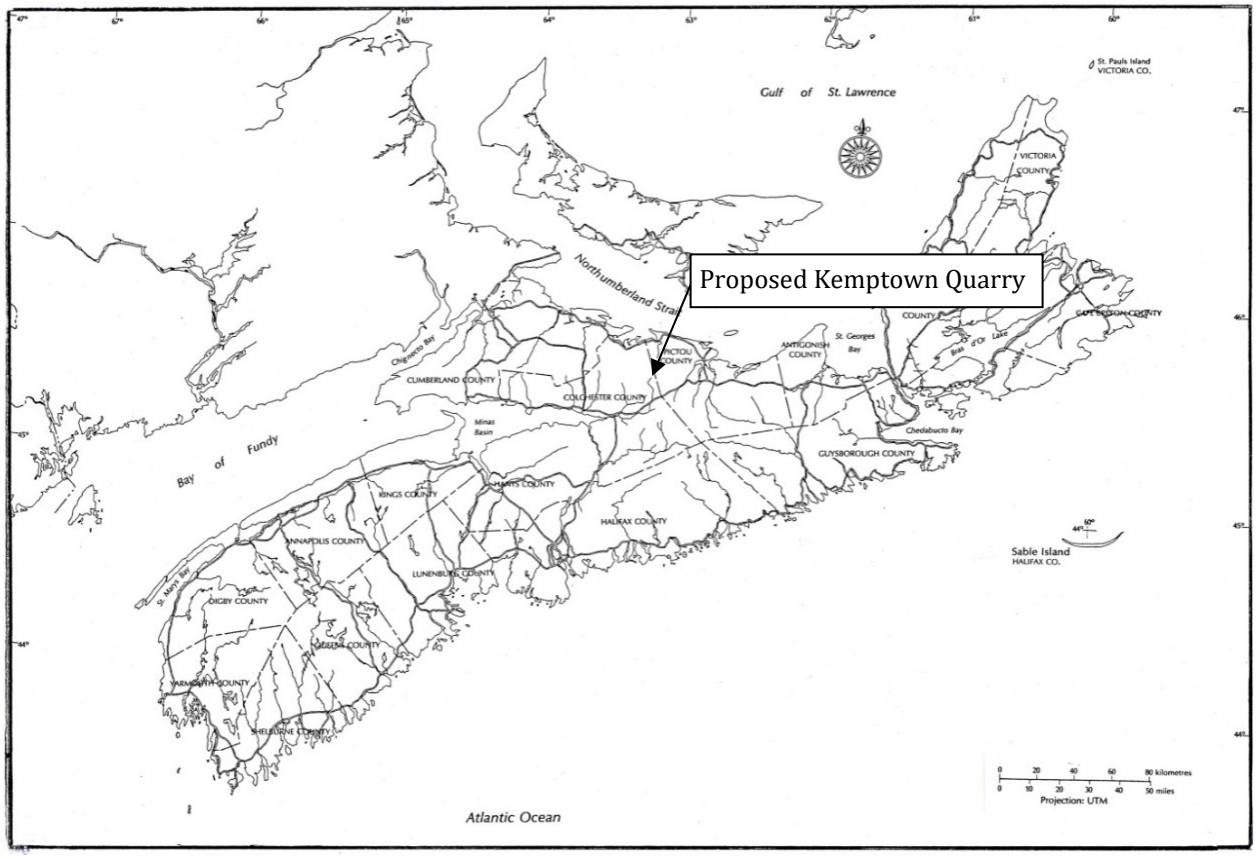

Figure #1 Location of the Proposed Kemptown Quarry

2.0 Future Development Plan

The 20-year development plan for Kemptown Quarry is to produce from 100,000 to 200,000 tonnes of aggregate per year from a 20 hectares area located near the middle of the Property (PID #2034 3422). The actual annual production of aggregate will depend on demand for local road construction.

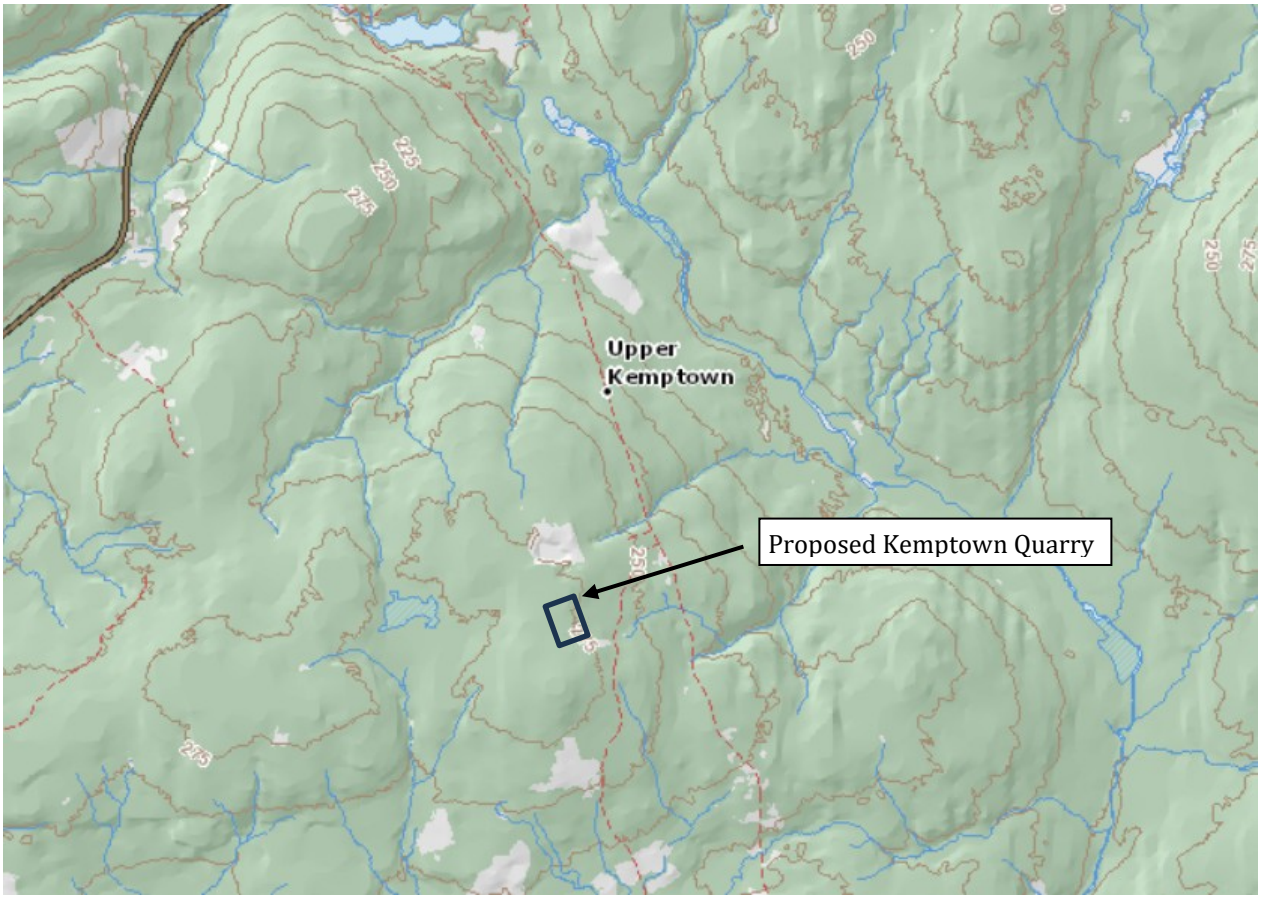

Figure #2 Location of the Proposed Kemptown Quarry