

**THE MUNICIPAL GROUP
OF COMPANIES**

MUNICIPAL ENTERPRISES LIMITED

**COLPTON
QUARRY EXPANSION**
Lunenburg County,
Nova Scotia

Site Features

- EA Study Area
- Study area
- Elevation Contour (m)
- Watercourse

Map A-4

Map by:
Envirosphere Consultants Limited.
Windsor, Nova Scotia, May 2023



APPENDIX B

BOTANICAL SURVEYS

Fall 2020 & Spring/Early Summer 2021

Spring and Autumn Botanical
Surveys for a Proposed Quarry
Expansion in Colpton, Lunenburg
County, Nova Scotia

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Spring and Autumn Botanical Surveys for a Proposed Quarry Expansion in Colpton, Lunenburg County, Nova Scotia

Introduction

Spring and autumn vascular plant surveys were conducted at the site of a proposed quarry expansion in Colpton, Lunenburg County, Nova Scotia, on June 18th and 19th and October 17th and 18th, 2022 by botanist Ruth E. Newell, B.Sc. (Hons.), M.Sc.

The survey area is indicated by the solid yellow line shown in Figure 1.

Primary habitats present within the survey area include disturbed habitat such as the open quarry area and areas recently clearcut southeast of the quarry, mixed woodland scattered throughout the property, various wetlands, and shrub barrens located west of the quarry.

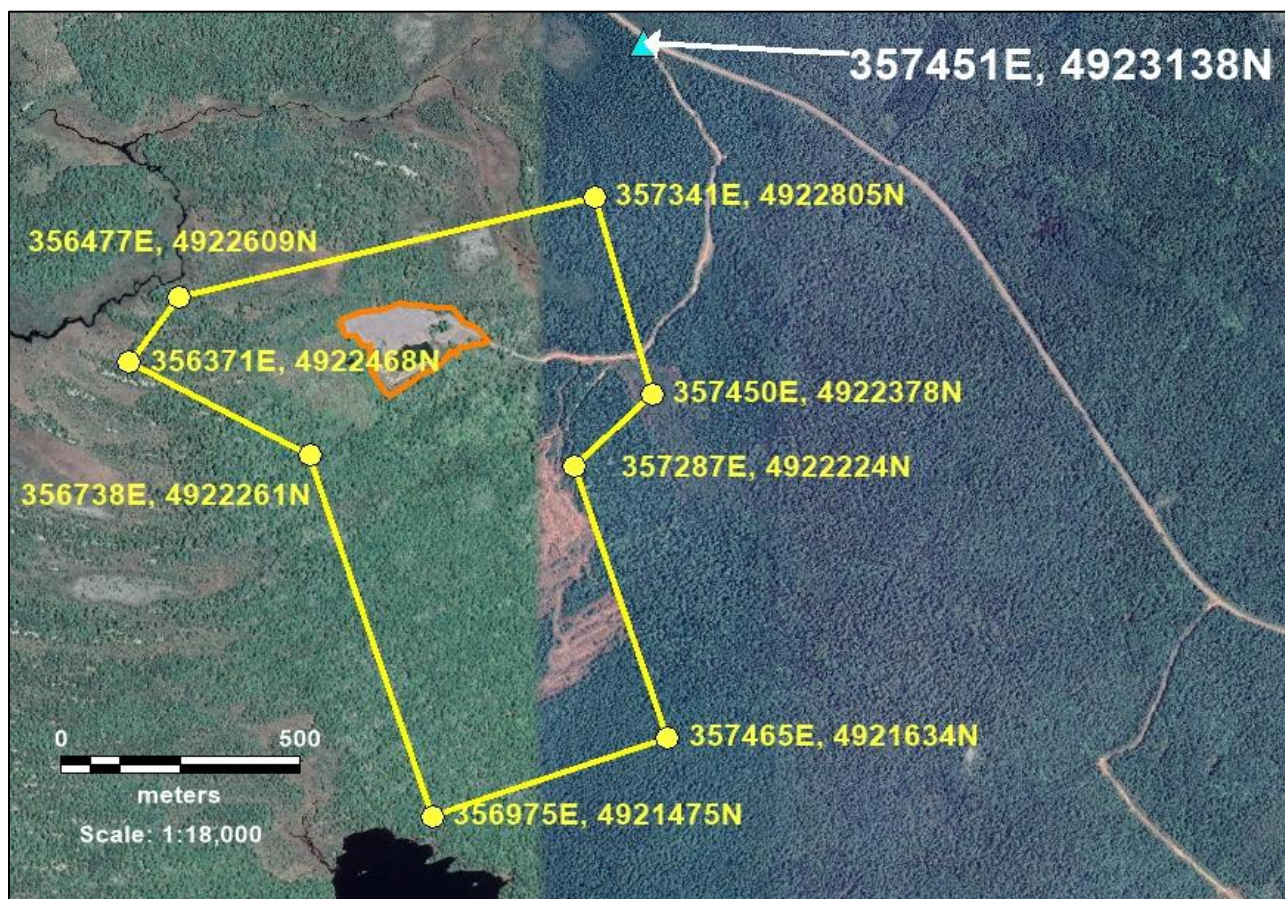


Figure 1. The survey area (as indicated by the yellow line) for the Colpton Quarry vascular plant surveys.

All vascular plants observed during these surveys as well as the habitats in which they occur, and both their provincial general status rank and the Atlantic Canada Conservation Data Centre (ACCDC) subnational status rank are provided in the APPENDIX located at the end of this document. Information on these status ranks including status rank definitions can be found on the Wild Species 2015, The General Status of Species in Canada website (<https://www.wildspecies.ca/>), the Atlantic Canada Conservation Data Centre (ACCDC) website (<http://www.accdc.com>) as well as at the end of this document in the APPENDIX.

Results

Habitat Descriptions

1) Open, highly disturbed habitat (includes the quarry pit and recent clearcuts located southeast of the quarry pit).



Figure 2. Quarry pit with scattered patches of generally weedy, mostly non-native vegetation.

Quarry Pit

Vascular plants occurring in the open quarry pit (Fig. 2) consist of a mix of native and non-native, generally weedy species.

Native and non-native, herbaceous, vascular plant species occurring within the quarry pit area include Dwarf Snapdragon (*Chaenorhinum minus*), Rabbit's-foot clover (*Trifolium arvense*), White Clover (*Trifolium repens*), Common Plantain (*Plantago major*), Canada Bluegrass (*Poa compressa*), Rough Fleabane (*Erigeron strigosus*), several hawkweeds (*Hieracium* spp.), an evening primrose (*Oenothera* sp.), Common St. John's-wort (*Hypericum perforatum*), Ox-eye Daisy (*Leucanthemum vulgare*) etc.

Additional vascular plant species observed within this habitat during the autumn survey include Dandelion (*Taraxacum officinale*), Pearly Everlasting (*Anaphalis margaritacea*), Queen Anne's Lace (*Daucus carota*), Calico Aster (*Symphytotrichum lateriflorum*) and Variegated Horsetail (*Equisetum variegatum*).

All vascular plant species documented within this habitat are listed in the Appendix.

Species of conservation concern:

A small number of Variegated Horsetail (*Equisetum variegatum*) plants, i.e., approximately 10-15, (Fig. 3) were observed at one location within the open quarry pit. These plants were observed near the north edge of the quarry area (20T 0357031 4922546). This species is listed by the 2015 Wild Species of Canada Report as a S3 (vulnerable/yellow) species. However, the Atlantic Canada Conservation Data Centre (ACCDC) lists this species as a S4 (apparently secure) species. The ACCDC status is more current having been updated in 2022 and is therefore likely to be more accurate than the 2015 Wild Species of Canada Report.



Figure 3. Variegated Horsetail (*Equisetum variegatum*) along the north edge of the open quarry.

Clearcuts

A large clearcut occurs southeast of the quarry pit (Fig. 4). Vascular plant species observed here during the June survey include Bracken Fern (*Pteridium aquilinum*), Wild Raspberry (*Rubus idaeus* ssp. *strigosus*), Bristly Aralia (*Aralia hispida*), Wild Sarsaparilla (*Aralia nudicaulis*), Velvet-leaved Blueberry (*Vaccinium myrtilloides*), Northern Bush Honeysuckle (*Diervilla lonicera*), Sheep Laurel (*Kalmia angustifolia*), Black Cherry (*Prunus serotina*) and Starflower (*Lysimachia borealis*).



Figure 4. A large clearcut located southeast of the quarry pit.

A second, relatively recent cutover area located in close proximity to the southeast edge of the open quarry, was surveyed in the autumn (Fig. 5). Vascular plant species observed here include Northern Red Oak (*Quercus rubra*), Trembling Aspen (*Populus tremuloides*), Red Maple (*Acer rubrum*), Balsam Fir (*Abies balsamea*), White Pine (*Pinus strobus*), Eastern Hemlock (*Tsuga canadensis*), Red Raspberry (*Rubus idaeus* ssp. *strigosus*), Christmas Fern (*Polystichum acrostichoides*), Lady Fern (*Athyrium filix-femina*) and Whorled Wood Aster (*Oclemena acuminata*).



Figure 5. A second, relatively recent clearcut area, located close to the southeast edge of the quarry.

Species of conservation concern:

There were no species of conservation concern located within these clearcut areas.

2) Mixed Woodland

Mixed woodland including some that has been cutover within the last 10-20 years occurs throughout much of the property (Fig. 6). Tree and shrub species observed during both surveys include Balsam Fir (*Abies balsamea*), White Pine (*Pinus strobus*), Red Spruce (*Picea rubens*), Red Maple (*Acer rubrum*), Large-toothed Aspen (*Populus grandidentata*), Red Oak (*Quercus rubra*), White Ash (*Fraxinus americana*), White Birch (*Betula papyrifera*) and Northern Bush Honeysuckle (*Diervilla lonicera*).

Herbaceous plants present within the mixed woodland include Bracken Fern (*Pteridium aquilinum*), Wild Sarsaparilla (*Aralia nudicaulis*), Wild Lily-of-the-valley (*Maianthemum canadense*), Starflower (*Lysimachia borealis*), Twinflower (*Linnaea borealis*), Wild Lily-of-the-valley (*Maianthemum canadense*), Whorled wood Aster (*Oclemena acuminata*), Common Lady Fern (*Athyrium filix-femina*), Eastern Teaberry (*Gaultheria procumbens*), etc.



Figure 6. An example of mixed woodland occurring throughout the survey area.

Species of conservation concern:

There were no species of conservation concern located within this habitat during either survey.

3) Shrub barren (semi-open)

Immediately west of the quarry is a somewhat open, rocky area dominated by low shrubs with areas of relatively young tree growth (Fig. 7).

Tree species present within this barren habitat include Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), White Pine (*Pinus strobus*), Red Spruce (*Picea rubens*), Wire Birch (*Betula populifolia*), White Spruce (*Picea glauca*) and White Birch (*Betula papyrifera*).

Bracken Fern (*Pteridium aquilinum*) is predominant in the herbaceous layer. Other commonly occurring herbaceous species present include Eastern Teaberry (*Gaultheria procumbens*), Cinnamon Fern (*Osmundastrum cinnamomeum*) and Wild Lily-of-the Valley (*Maianthemum canadense*). Commonly occurring shrub species present include Sheep laurel (*Kalmia angustifolia*), Velvet-leaved Blueberry (*Vaccinium myrtilloides*), Sweet Fern (*Comptonia peregrina*), Witch Hazel (*Hamaemelis virginiana*), Black Huckleberry (*Gaylussacia baccata*), Witherod (*Viburnum nudum* var. *cassinoides*), Northern Bayberry

(*Morella pensylvanica*) and Rhodora (*Rhododendron canadense*). Bristly Dewberry (*Rubus hispidus*) was documented here during the autumn survey.

One seasonal pond (Fig. 8) was observed in this area (20T 0356821 4922443). No standing water appeared to be present at the time of both surveys. Marsh fern (*Thelypteris pubescens*) was predominant within this depression/wetland. Other species present included various mosses, Blue Flag (*Iris versicolor*) and Meadowsweet (*Spiraea alba* var. *latifolia*). This pond was surrounded by trees including Wire Birch (*Betula populifolia*), White Pine (*Pinus strobus*) and Northern Red Oak (*Quercus rubra*). Bluejoint Grass (*Calamagrostis canadensis*) was also documented within this seasonal pond during the autumn survey.

The substrate within the barren habitat is relatively rocky. It is not known if this is a fire barren or an area that was clearcut or cutover.



Figure 7. Semi-open shrub barren located just west of the open quarry.



Figure 8. An apparent shallow seasonal pond observed in the shrub barren located immediately west of the quarry pit.

Species of conservation concern:

There were no species of conservation concern located within this habitat during either survey.

4) Wetlands

A variety of wetlands occur throughout the survey area including a stream (with associated marsh, alder thickets and floodplain), swamps, a fen, and several bogs.

Stream with associated marsh, floodplain & alder thickets (Figs. 9, 10 & 11).

On the upper east side of the designated survey area (Fig. 1), in the vicinity of the quarry access road, there is a stream with an associated, extensive, open marsh (Fig. 7). The stream flows across the access road from south to north. North of the access road the wetland habitat associated with this stream converts to alder thickets (Fig. 9) for a short distance before it changes back to open marshland/floodplain in the northeast corner of the designated survey area (Fig. 8).

The section of open marsh along the quarry access road was extensively surveyed during the spring and autumn surveys. The marsh/floodplain in the northeast corner of the property was surveyed during the autumn survey only.

The wetland plants associated with the stream and marsh in the vicinity of the access road are diverse and include Fowl Manna Grass (*Glyceria striata*), Meadowsweet (*Spiraea alba* var. *latifolia*), Steeplebush (*S. tomentosa*), Blue Flag (*Iris versicolor*), Sensitive Fern (*Onoclea sensibilis*), Black-girdled Bulrush (*Scirpus atrocinctus*), Star Sedge (*Carex echinata*), Broom Sedge (*Carex scoparia*), Marsh Fern (*Thelypteris palustris* var. *pubescens*), Cyperus-like Sedge (*Carex pseudo-cyperus*), Swamp Yellow Loosestrife (*Lysimachia terrestris*), Marsh Bedstraw (*Galium palustre*), Red Maple (*Acer rubrum*), Speckled Alder (*Alnus incana*), etc.

Vascular plants observed in the marsh/floodplain in the northeast corner of the survey area during the Autumn survey include sedge species (*Carex* spp.), Spiked Muhly Grass (*Muhlenbergia glomerata* var. *cinnoides*), Canada Rush (*Juncus canadensis*), New York Aster (*Symphyotrichum novi-belgii*), White Meadowsweet (*Spiraea alba* var. *latifolia*), Shining Rosa (*Rosa nitida*), a pondweed (*Potamogeton* sp.), Bog Aster (*Oclemena nemoralis*), New York Aster (*Symphyotrichum novi-belgii*), Labrador Tea (*Rhododendron groenlandicum*) and Pitcher Plant (*Sarracenia purpurea*).

Vascular plants occurring in the alder thickets (Fig. 9) located between the two open wetlands include Meadowsweet (*Spiraea latifolia* ssp. *alba*), Common Winterberry (*Ilex verticillata*), Dewberry (*Rubus pubescens*), sedges (*Carex* spp.), Blue Joint Grass (*Calamagrostis canadensis*), Speckled Alder (*Alnus incana* ssp. *rugosa*), Tall White Aster (*Doellingeria umbellata*), Cinnamon Fern (*Osmundastrum cinnamomeum*), Meadowrue (*Thalictrum pubescens*), Sensitive Fern (*Onoclea sensibilis*), Rough Goldentod (*Solidago rugosa*), Red Maple (*Acer rubrum*), etc.



Figure 9. Stream and associated marsh located in the vicinity of the quarry access road east of the quarry pit.



Figure 10. Wetland (floodplain) in the northeast corner of the survey area. The stream here (present but not visible in photo) is a continuation of the same stream as shown in Figure 7).



Figure 11. Alder thicket occurring north of the quarry access road and downstream from the large marsh occurring beside the quarry access road east of the quarry pit (Fig. 9).

Species of conservation concern:

There were no species of conservation concern located at this time within these habitats.

Fen Habitat (Figures 12 & 13)

Fen habitat occurs a short distance (20T 0356806, 4922655) northwest of the quarry pit. A small portion of this wetland falls within the designated survey area.

Vascular plant species documented within this habitat during the spring and autumn surveys (Figs. 12 & 13) include Tussock Sedge (*Carex stricta*), Eastern Marsh Fern (*Thelypteris palustris* var. *pubescens*), Meadowsweet (*Spiraea alba* var. *latifolia*), Pitcher Plant (*Sarracenia purpurea*), Speckled Alder (*Alnus incana* ssp. *rugosa*), Royal Fern (*Osmunda regalis*), Sheep Laurel (*Kalmia angustifolia*), Cinnamon Fern (*Osmundastrum cinnamomeum*), Larch (*Larix laricina*), Black Spruce (*Picea mariana*), Sweet Gale (*Myrica gale*), Shining Rose (*Rosa nitida*), Bog Rosemary (*Andromeda polifolia*), Spiked Muhly Grass (*Muhlenbergia glomerata* var. *cinnoides*) and Tall Meadow-rue (*Thalictrum pubescens*).



Figure 12. Fen habitat during the Spring survey.



Figure 13. Fen habitat during the Autumn survey.

Species of conservation concern:

There were no species of conservation concern located within this habitat at the time of these surveys.

Swamp Habitat (Fig. 14)



Figure 14. Swamp habitat occurring immediately adjacent to the northeast side of the quarry pit.

Swamp habitat (Fig. 14) occurs in several locations within the survey area. One location is adjacent to the northeast edge of the quarry pit (20T 0357122, 4922568) and another occurs in the vicinity of the north perimeter of the survey area (20T 0356954, 4922668). Vascular plant species occurring within these areas include Cinnamon Fern (*Osmundastrum cinnamomeum*), Speckled Alder (*Alnus incana* ssp. *rugosa*), Black Spruce (*Picea mariana*), Blue Flag (*Iris versicolor*), Meadow-rue (*Thalictrum pubescens*), Larch (*Larix laricina*), Red Maple (*Acer rubrum*), Sensitive Fern (*Onoclea sensibilis*), Lady-fern (*Athyrium filix-femina*), Blue Joint Grass (*Calamagrostis canadensis*), Common Winterberry (*Ilex verticillata*), Labrador-tea (*Rhododendron groenlandicum*), Three-seeded Sedge (*Carex trisperma*), Mountain Holly (*Ilex mucronata*), etc.

Additional vascular plant species observed within swamp habitat along the northeast perimeter of the quarry during the Autumn survey include: Goldthread (*Coptis trifolia*), Turtlehead (*Chelone glabra*), Dwarf Red Raspberry (*Rubus pubescens*), Low Rough Aster (*Eurybia radula*), Eastern Marsh Fern (*Thelypteris palustris*), Tall Meadow-rue (*Thalictrum pubescens*), Bugleweed (*Lycopus uniflorus*), Velvet-leaved Blueberry (*Vaccinium myrtilloides*), American Witch-Hazel (*Hamamelis virginiana*), Black Huckleberry (*Gaylussacia baccata*), American Hog-peanut (*Amphicarpaea bracteata*) and Sheep Laurel (*Kalmia angustifolia*), etc.

Species of conservation concern:

There were no species of conservation concern observed within this habitat.

Bog Habitat (Fig. 15 & 16)

Two shrub bogs, separated only by a narrow shrub and tree thicket, occur along the north perimeter of the survey area. The smaller one (20T 0356984, 4922715), was surveyed during the Spring survey. Both bogs were surveyed in the Autumn. The two bogs appear similar in terms of vascular plant species present. Shrub and tree species observed during the survey of the smaller bog include Leatherleaf (*Chamaedaphne calyculata*), Sheep Laurel (*Kalmia angustifolia*), Rhodora (*Rhododendron canadense*), Labrador-tea (*Rhododendron groenlandicum*), Witherod (*Viburnum nudum* var. *cassinoides*), Black Spruce (*Picea mariana*) and Larch (*Larix laricina*). Herbaceous species present include Three-seeded Sedge (*Carex trisperma*) Reindeer Lichens (*Cladonia* spp.) (Fig. 11) are prevalent within these wetlands and appear to give the two wetlands a whitish cast on satellite images.

Fall surveys were conducted within the two bog habitats described above. Additional vascular plant species documented at this time include Black Huckleberry (*Gaylussacia baccata*), Dwarf Huckleberry (*Gaylussacia bigeloviana*) and White Pine (*Pinus strobus*).



Figure 15. The smaller of the two shrub bogs which appear whitish or light gray in Fig. 1. They are both located along the north perimeter of the survey area. Shrub and tree species present include Sheep Laurel (*Kalmia angustifolia*), Labrador-tea (*Rhododendron groenlandicum*), Larch (*Larix laricina*), and Black Spruce (*Picea mariana*).



Figure 16. Photograph of the substrate in one of the two bogs located along the northern perimeter of the survey area. Shrub species present in the photo include Leatherleaf (*Chamaedaphne calyculata*), Labrador-tea (*Rhododendron groenlandicum*) and Sheep Laurel (*Kalmia angustifolia*). Reindeer Lichens (*Cladonia* spp.) carpet the ground beneath the shrubs and herbs. The graminoid plant present in the photo is possibly Coastal Sedge (*Carex exilis*).

Species of conservation concern:

There were no species of conservation concern observed within this habitat during this survey.

Discussion

No vascular plant species listed under either federal species-at-risk legislation or provincial species-at-risk-legislation were observed on the Colpton quarry property during these surveys.

All the vascular plant species, *with one exception*, which were observed and recorded during these surveys fall into the Nova Scotia general status rank categories of **GREEN, LIGHT GREEN, LIGHT GREEN TO 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.

A small number of Variegated Horsetail (*Equisetum variegatum*) plants, i.e., approximately 10-15, (Fig. 3) were observed at one location within the open quarry pit. These plants were observed near the north edge of the open quarry area (20T 0357031 4922546). This species is listed by the 2015 Wild Species of Canada Report as a S3 (vulnerable/yellow) species. The Atlantic Canada Conservation Data Centre (ACCDC) however, lists this species as a S4 (apparently secure) species. The ACCDC status for this species is likely to be more current than the 2015 Wild Species of Canada Report since the ACCDC status ranks were updated in 2022 (<http://www.accdc.com/en/ranks.html>).

The Atlantic Canada Conservation Data Centre subnational status ranks all fall into the categories of S5, S4, S4S5 or SNA, also indicating that 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 = a status rank ranging from **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.

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

APPENDIX

List of all vascular plant species observed on the Colpton Quarry property during Spring and Autumn surveys conducted on June 19th & 20th, 2022 and October 17th & 18th, 2022, 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 present on site include the quarry pit (Q), semi-open, shrub barren habitat (B), wetlands (W) (at=alder thicket; m = marsh; f= fen; b=bog; s=swamp; fp=floodplain), mixed woodland (MW) and clearcuts (CC). **Species in bold are additional species observed during the Autumn survey that were not previously documented during the Spring survey or species not observed in specific habitats during the Spring survey.**

Latin Name	Common Name	Nova Scotia General Status Rank*	ACCDC Subnational Status Rank**	Habitat(s)
<i>Abies balsamea</i>	Balsam Fir	S5/secure (green)	S5/secure	MW, W
<i>Acer rubrum</i>	Red Maple	S5/secure (green)	S5/secure	B, MW, W (at, b, f, m)
<i>Agrostis scabra</i>	Rough Bent Grass	S5/secure (green)	S5/secure	W(m)
<i>Alnus alnobetula</i> ssp. <i>crispa</i>	Mountain Alder	S5/secure (green)	S5/secure	Q, W (m)
<i>Alnus incana</i> ssp. <i>rugosa</i>	Speckled Alder	S5/secure (green)	S5/secure	W (at, f, fp , m, s)
<i>Amphicarpaea bracteata</i>	American Hog-peanut	S4/apparently secure (light green)	S4/apparently secure	W (s)

Latin Name	Common Name	Nova Scotia General Status Rank*	ACCDC Subnational Status Rank**	Habitat(s)
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5/secure (green)	S5/secure	Q
<i>Andromeda polifolia</i>	Bog Rosemary	S5/secure (green)	S5/secure	W (b, f, fp)
<i>Aralia hispida</i>	Bristly Sarsaparilla	S5/secure (green)	S5/secure	CC
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5/secure (green)	S5/secure	CC, MW
<i>Aronia</i> sp.	a chokeberry	-	-	W (b, f)
<i>Athyrium filix-femina</i>	Common Lady Fern	S5/secure (green)	S5/secure	MW, W
<i>Betula papyrifera</i>	White Birch	S5/secure (green)	S5/secure	B, MW
<i>Betula populifolia</i>	Wire birch	S5/secure (green)	S5/secure	B
<i>Calamagrostis canadensis</i>	Blue Joint	S5/secure (green)	S5/secure	W (at, f, fp, m, s)
<i>Carex echinata</i>	Star Sedge	S5/secure (green)	S5/secure	W (m)
<i>Carex exilis</i>	Coastal Sedge	S4/apparently secure (light green)	S4/apparently secure	W (b, f)
<i>Carex lurida</i>	Sallow Sedge	S5/secure (green)	S5/secure	W (m)
<i>Carex nigra</i>	Smooth Black Sedge	S5/secure (green)	S5/secure	W (m)
<i>Carex pseudocyperus</i>	Cyperuslike Sedge	S5/secure (green)	S5/secure	W (m)
<i>Carex scoparia</i>	Broom Sedge	S5/secure (green)	S5/secure	W (m)
<i>Carex stipata</i>	Awl-fruited Sedge	S5/secure (green)	S5/secure	W (at m)
<i>Carex stricta</i>	Tussock Sedge	S5/secure (green)	S5/secure	W (f, fp?)
<i>Carex trisperma</i>	Three-seeded Sedge	S5/secure (green)	S5/secure	W (b)
<i>Carex</i> sp.	a sedge	-	-	W (fp)
<i>Chaenorhinum minus</i>	Dwarf Snapdragon	NA/exotic	SNA	Q
<i>Chamaedaphne calyculata</i>	Leatherleaf	S5/secure (green)	S5/secure	W (b, f, fp)
<i>Chelone glabra</i>	White Turtlehead	S5/secure (green)	S5/secure	W (s)
<i>Clematis virginiana</i>	Virginia Clematis	S5/secure (green)	S5/secure	W (at)
<i>Comptonia peregrina</i>	Sweet-fern	S5/secure (green)	S5/secure	B, MW
<i>Coptis trifolia</i>	Goldthread	S5/secure (green)	S5/secure	W (s)
<i>Cornus canadensis</i>	Bunchberry	S5/secure (green)	S5/secure	MW, W (s)
<i>Corylus cornuta</i>	Beaked Hazel	S5/secure (green)	S5/secure	MW
<i>Daucus carota</i>	Queen Anne's Lace	NA/exotic	SNA	Q
<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	S5/secure (green)	S5/secure	MW
<i>Doellingeria umbellata</i>	Flat-top White Aster	S5/secure (green)	S5/secure	W (at, m)
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5/secure (green)	S5/secure	W (at)
<i>Dryopteris marginalis</i>	Marginal Wood Fern	S5/secure (green)	S5/secure	MW
<i>Dulichium arundinaceum</i>	Three-way Sedge	S5/secure (green)	S5/secure	W (m)
<i>Eleocharis</i> sp.	a spikerush	-	-	W (m)

Latin Name	Common Name	Nova Scotia General Status Rank*	ACCDC Subnational Status Rank**	Habitat(s)
<i>Epigaea repens</i>	Mayflower	S5/secure (green)	S5/secure	MW
<i>Epilobium palustre</i>	Marsh Willowherb	S5/secure (green)	S5/secure	W (f)
<i>Epipactus helleborine</i>	Helleborine	NA/exotic	SNA	MW
<i>Equisetum variegatum</i>	Variegated Horsetail	S3/vulnerable (yellow)	S4/apparently secure	Q
<i>Erechtites hieraciifolius</i>	Eastern Burnweed	S5/secure (green)	S5/secure	CC
<i>Erigeron strigosus</i>	Rough Fleabane	S5/secure (green)	S5/secure	Q
<i>Eupatorium perfoliatum</i>	Boneset	S5/secure (green)	S5/secure	W (m)
<i>Eurybia radula</i>	Low Rough Aster	S5/secure (green)	S5/secure	W (f, s)
<i>Fragaria virginiana</i>	Wild Strawberry	S5/secure (green)	S5/secure	Q
<i>Fraxinus americana</i>	White Ash	S5/secure (green)	S4/apparently secure	MW
<i>Galium palustre</i>	Common Marsh Bedstraw	S5/secure (green)	S5/secure	W (m)
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5/secure (green)	S5/secure	B, MW
<i>Gaylussacia baccata</i>	Black Huckleberry	S5/secure (green)	S5/secure	B, MW, W (s)
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry	S5/secure (green)	S5/secure	W (b)
<i>Geranium cf. molle</i>	Dove's-foot Crane's-bill	NA/exotic	SNA	CC
<i>Glyceria canadensis</i>	Canada Manna Grass	S5/secure (green)	S5/secure	W (m)
<i>Glyceria striata</i>	Fowl Manna Grass	S5/secure (green)	S5/secure	W (at, m)
<i>Hamamelis virginiana</i>	American Witch- hazel	S5/secure (green)	S5/secure	B, MW, W (s)
<i>Hieracium</i> spp.	hawkweeds	-	-	Q
<i>Hypericum boreale</i>	Northern St. John's-wort	S5/secure (green)	S5/secure	W(m)
<i>Hypericum mutilum</i>	Dwarf St. John's- wort	S4S5/apparently secure (light green) to secure (green)	S4/S5 (apparently secure to secure)	W (m)
<i>Ilex mucronata</i>	Mountain Holly	S5/secure (green)	S5/secure	W
<i>Ilex verticillata</i>	Common Winterberry	S5/secure (green)	S5/secure	W (at, f)
<i>Iris versicolor</i>	Blue Flag	S5/secure (green)	S5/secure	B, W(m)
<i>Juncus effusus</i>	Soft Rush	S5/secure (green)	S5/secure	W (at)
<i>Juncus canadensis</i>	Canada Rush	S5/secure (green)	S5/secure	W (fp, m)
<i>Kalmia angustifolia</i>	Sheep Laurel	S5/secure (green)	S5/secure	B, CC, MW, W (b, f)
<i>Kalmia polifolia</i>	Pale Bog Laurel	S5/secure (green)	S5/secure	W (b, f)
<i>Larix laricina</i>	Larch	S5/secure (green)	S5/secure	MW, W (b, f)
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA/exotic	SNA	Q
<i>Linnaea borealis</i>	Twinflower	S5/secure (green)	S5/secure	MW
<i>Lycopus americanus</i>	American Water Horehound	S5/secure (green)	S5/secure	W(m)

Latin Name	Common Name	Nova Scotia General Status Rank*	ACCDC Subnational Status Rank**	Habitat(s)
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5/secure (green)	S5/secure	W (m, s)
<i>Lysimachia borealis</i>	Northern Starflower	S5/secure (green)	S5/secure	CC, MW, W (s)
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5/secure (green)	S5/secure	W (m, s)
<i>Maianthemum canadense</i>	Wild Lily-of-the- valley	S5/secure (green)	S5/secure	B, MW, W
<i>Monotropa uniflora</i>	Indian Pipe	S5/secure (green)	S5/secure	MW
<i>Morella pensylvanica</i>	Northern Bayberry	S5/secure (green)	S5/secure	B, W
<i>Muhlenbergia glomerata</i>	Spiked Muhly Grass	S4/apparently secure (light green)	S4/apparently secure	W (f, fp, m)
<i>Myrica gale</i>	Sweet Gale	S5/secure (green)	S5/secure	W (b, f, fp)
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5/secure (green)	S5/secure	CC, MW, W (s)
<i>Oclemena nemoralis</i>	Bog Aster	S5/secure (green)	S5/secure	W (b, f, fp)
<i>Oenothera</i> sp.	Evening Primrose	S5/secure (green)	S5/secure	Q
<i>Onoclea sensibilis</i>	Sensitive Fern	S5/secure (green)	S5/secure	W (at, m, s)
<i>Osmunda regalis</i>	Royal Fern	S5/secure (green)	S5/secure	W (f, m)
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern	S5/secure (green)	S5/secure	B, W (at, f, s)
<i>Quercus rubra</i>	Northern Red Oak	S5/secure (green)	S5/secure	B, MW
<i>Paratheypteris noveboracensis</i>	New York Fern	S5/secure (green)	S5/secure	MW
<i>Picea glauca</i>	White Spruce	S5/secure (green)	S5/secure	MW
<i>Picea mariana</i>	Black Spruce	S5/secure (green)	S5/secure	W (b, f, s)
<i>Picea rubens</i>	Red Spruce	S5/secure (green)	S5/secure	B, MW
<i>Pinus strobus</i>	White Pine	S5/secure (green)	S5/secure	B, MW, W (b)
<i>Plantago major</i>	Common Plantain	SNA/exotic	SNA	Q
<i>Poa compressa</i>	Canada Bluegrass	SNA/exotic	SNA	Q
<i>Poa palustris</i>	Fowl Bluegrass	S5/secure (green)	S5/secure	W (m)
<i>Polystichum acrostichoides</i>	Christmas Fern	S5/secure (green)	S5/secure	MW
<i>Polygonum</i> sp.	a knotweed	-	-	W (m)
<i>Populus grandidentata</i>	Large-toothed Aspen	S5/secure (green)	S5/secure	MW
<i>Populus tremuloides</i>	Trembling Aspen	S5/secure (green)	S5/secure	MW
<i>Potamogeton</i> sp.	a pondweed	-	-	W (fp)
<i>Prunus serotina</i>	Black Cherry	S5/secure (green)	S5/secure	CC
<i>Pteridium aquilinum</i>	Bracken Fern	S5/secure (green)	S5/secure	B, CC, MW, W (f)
<i>Quercus rubra</i>	Northern Red Oak	S5/secure (green)	S5/secure	MW
<i>Ranunculus repens</i>	Creeping Buttercup	SNA/exotic	SNA	W
<i>Rhododendron canadense</i>	Rhodora	S5/secure (green)	S5/secure	B, W (b, f)
<i>Rhododendron groenlandicum</i>	Labrador Tea	S5/secure (green)	S5	B, W (b, f, fp, s)

Latin Name	Common Name	Nova Scotia General Status Rank*	ACCDC Subnational Status Rank**	Habitat(s)
<i>Rosa nitida</i>	Shining Rose	S4S5/apparently secure (light green) to secure (green)	S4S5/apparently secure to secure	W (f, fp)
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Wild Raspberry	S5/secure (green)	S5/secure	CC, MW, W (m)
<i>Rubus hispidus</i>	Bristly Dewberry	S5/secure (green)	S5/secure	B, MW, W (b, f)
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5/secure (green)	S5/secure	W (at, f, s)
<i>Salix</i> sp.	a willow	-	-	MW
<i>Sarracenia purpurea</i>	Northern Pitcher- plant	S5/secure (green)	S5/secure	W (b, f, fp, m)
<i>Scirpus atrocinctus</i>	Black-girdled Bulrush	S5/secure (green)	S5/secure	W (m)
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5/secure (green)	S5/secure	W (m)
<i>Solidago rugosa</i>	Rough Goldenrod	S5/secure (green)	S5/secure	W (at, m)
<i>Solidago uliginosa</i>	Bog Goldenrod	S5/secure (green)	S5/secure	W (b, f, fp)
<i>Sparganium</i> sp. (non- flowering)	a bur-reed	-	-	W (m)
<i>Spiraea alba</i> var. <i>latifolia</i>	White Meadowsweet	S5/secure (green)	S5/secure	B, W (at,f, fp, m)
<i>Spiraea tomentosa</i>	Steeplebush	S5/secure (green)	S5/secure	W (m)
<i>Symphotrichum lateriflorum</i>	Calico Aster	S5/secure (green)	S5/secure	Q
<i>Taraxacum officinale</i>	Dandelion	NA/exotic	SNA	Q
<i>Thalictrum pubescens</i>	Tall Meadow-rue	S5/secure (green)	S5/secure	W (at, f, m, s)
<i>Thelypteris noveboracensis</i>	New York Fern	S5/secure (green)	S5/secure	W (m)
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Marsh Fern	S5/secure (green)	S5/secure	B, W (f, m, s)
<i>Toxicodendron radicans</i>	Poison Ivy	S5/secure (green)	S5/secure	W
<i>Triadenum</i> sp.	-	-	-	W (m)
<i>Trifolium arvense</i>	Rabbit's-foot Clover	NA/exotic	SNA	Q
<i>Tsuga canadensis</i>	Eastern Hemlock	S4S5 (light green)	S4	MW
<i>Typha latifolia</i>	Broad-leaved Cattail	S5/secure (green)	S5/secure	W (m)
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	S5/secure (green)	S5/secure	B, MW
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5/secure (green)	S5/secure	B, CC, MW, W (s)
<i>Vaccinium oxycoccos</i>	Small Cranberry	S5/secure (green)	S5/secure	W(f)
<i>Veronica officinalis</i> *	Common Speedwell	NA/exotic	SNA	MW
<i>Viburnum nudum</i> var. <i>cassinoides</i>	Witherod	S5/secure (green)	S5/secure	B, MW, W (b)
<i>Viola lanceolata</i>	Lance-leaved Violet	S5/secure (green)	S5/secure	W (m)
<i>Viola</i> sp.	A violet	-	-	CC, W (f, fp)

*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/>) ; **S5 = 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); **S1 = Critically imperilled/red** (at very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors); **SNA = not applicable** (non-native/exotic).

ACCDC: Atlantic Canada Conservation Data Centre status ranks definitions (<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 = Imperilled** (imperilled 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; **S1= Critically Imperilled** (critically imperilled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the 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 2022



10 JUNE 2022

A PRELIMINARY ASSESSMENT FOR MAMMALS AND
HERPETOFAUNA AT A PROPOSED QUARRY EXPANSION
IN COLPTON, LUNENBURG COUNTY, NOVA SCOTIA

MARK PULSIFER MSC.
EDGEWOOD ENVIRONMENTAL SERVICES
Antigonish, Nova Scotia

