

Biological inventory of Nature Conservancy Canada's Cole Property, Cumberland County, Nova Scotia



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A report to Nature Conservancy of Canada
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Introduction

The Nature Conservancy of Canada (NCC) Cole Property is located in Cumberland County, Nova Scotia, 12 km north-northeast of the Town of Amherst near the provincial border with New Brunswick. It includes three separate parcels of land, totaling 14.9 ha: a 770 m x 175 m parcel contiguous with a large forested area north of Round Lake. Northwest of that by 350 m and 950 m are small portions (0.8 and 1.4 ha) of two upland islands within the extensive Missiguash Bog wetland complex (Figures 1 & 2). The Cole Property is within a larger assemblage of conservation land, which includes extensive peatlands and swamps within the Chignecto Isthmus Provincial Wilderness Area, numerous adjacent inholdings and bordering areas that have been purchased by Nature Conservancy of Canada (the Collins, Bowser and Oulton Properties), and additional areas receiving some protection as part of the Town of Amherst's Water Supply Area. The wetland complex within this area is one of the largest in northern mainland Nova Scotia and it represents the most important natural connection between Nova Scotia and the rest of North America. The Cole Property's two upland islands are Red Spruce-dominated forest with narrow zones of shrubby swamp transitioning into open fen. The larger parcel includes mature examples of Black Spruce – Red Maple – Red Spruce swamp forest, seepy mixed forest dominated by Red Maple and Red Spruce with somewhat richer soils because of groundwater influence, and Red Spruce-dominated uplands, as well as some younger Red Maple and Heart-leaved Birch stands.

Atlantic Canada Conservation Data Centre botanist Sean Blaney visited the Cole Property on June 17, 2014, walking into it from the south via the north end of Long Lake and the east side of Round Lake. Fieldwork was primarily focused on vascular plants, documenting 168 vascular plant species (167 native, 1 exotic), 136 of which (135 native, 1 exotic) were recorded within or adjacent to the Cole Property boundaries. The fieldwork produced 29 records of 5 provincially rare vascular plant species, of which 10 records of 4 species were within or adjacent to the Cole Property boundaries. A presumed nesting Olive-sided Flycatcher (S3 - At Risk, federally and provincially Threatened) was at the peatland margin of the largest Cole Property parcel, and a confirmed nesting Canada Warbler (S3 – At Risk, federally Threatened, provincially Endangered) was found outside the property to the southeast.

Our fieldwork has documented a fairly complete list of the vascular plants of the site and a few breeding bird species, but more intensive fieldwork would certainly add to the species diversity documented. The site's insects, lichens, bryophytes and other taxonomic groups were largely undocumented but would likely include some provincially significant species given the presence of extensive, high quality examples of provincially rare plant communities in the vicinity and the very limited disturbance history of the Cole Property itself.

Methods

Atlantic Canada Conservation Data Centre (AC CDC) botanist Sean Blaney (herein "I") conducted fieldwork in and around the NCC Bowser property on June 17, 2014, covering all major habitat types present and visiting open peatland, swamp forest and swamp thicket between Round Lake and the property and visiting open peatlands between the three parcels. I kept a GPS unit on while in the field to precisely record area covered, and my tracks are mapped in Figures 1 and 2. I traveled 14.4 km on foot, 7.1 km of which was within and between the three Cole Property parcels.

I compiled a full vascular plant species list for the Cole Property and vicinity, with locations documented for first sightings of non-rare species, and with species assigned a general ranking of their abundance within the property (rare, uncommon, fairly common, common). For provincially rare

species (those species with provincial status ranks [S-ranks], of S1 to S3S4 and/or provincial General Status Ranks assigned by Nova Scotia Department of Natural Resources of At Risk, May Be At Risk or Sensitive)¹, I recorded locations by GPS (accurate to 10 m or less), along with information on population size and extent, habitat and associated species. Most rare species found have already been well documented through previous work in the area on NCC's Collins, Bowser and Oulton Properties but a few specimens of provincially rare species were collected and will be deposited at the E.C. Smith Herbarium at Acadia University, Wolfville (ACAD), with duplicates sent to the Nova Scotia Museum of Natural History herbarium in Halifax (NSPM) and the Agriculture and Agrifoods Canada (DAO) herbarium in Ottawa. All data is attached with this report in the file "NCC_ColePropertyMissiguashNS_fieldnotes.xls", and will be permanently maintained in the Atlantic Canada Conservation Data Centre database for use in response to any future conservation-related data request in the vicinity of the study area. It will also be made available to the Nova Scotia Departments of Natural Resources and Environment and Local Government.

In addition to vascular plant data, I recorded incidental observations of birds (breeding evidence documented using Maritimes Breeding Bird Atlas codes) for birds noted incidentally, as well as a few butterfly and amphibian records.

Results and Discussion

All Cole Property data is within the Microsoft Excel spreadsheet file "NCC_ColeProperty_June17-2014.xls" accompanying this report.

Vascular plant species diversity

I found 168 vascular plant species (167 native, 1 exotic; Table 1) in and around the NCC Cole Property. Of these, 136 (135 native, 1 exotic) were recorded from within Cole Property boundaries or from the wetland margins of the property at the transition to open peatland. Around the peatland margins it was difficult to determine exactly which occurrences were within property boundaries, since the GIS projection of the property boundaries generally did not align perfectly with the wetland-upland transition zone by which the real property boundaries are intended to be defined. As noted in Table 1, many of the species recorded only outside the property boundaries were associated with open peatlands and most of these are likely absent from within the property because it lacks open peatland habitats. This survey has produced a fairly complete list of the property's flora, but the survey was intended to be a reconnaissance-level inventory, rather than a completely comprehensive one, and further inventory would undoubtedly document some additional species. The total native species diversity we recorded on the Cole Property is relatively low because of the property's small size and the limited number of habitats present. The surrounding Missiguash Bog and environs are, however, quite diverse and AC CDC fieldwork since 2003 has documented 365 native species in and around other adjacent NCC properties (Table 2). The almost complete lack of exotic species, with only Creeping Buttercup (*Ranunculus repens*) recorded on the property is a noteworthy indication of the limited disturbance history of the site.

¹ S-ranks are defined in detail at www.natureserve.org/explorer/ranking.htm#globalstatus, with S1 = critically imperiled, S2 = imperiled, S3 = vulnerable, S4 = Secure with some cause for long term concern, and S5 = Demonstrably secure. General Status Ranks are defined in detail at <http://www.gov.ns.ca/natr/wildlife/genstatus/background.asp>, with ranks of At Risk, May Be At Risk, Sensitive, Secure, Undetermined, Not Assessed, Exotic, Extirpated, Extinct, Accidental, Occurrence Not Verified.

Rare plant species

During 2014 fieldwork, I documented 29 records of five provincially rare vascular plant species, of which ten records of four provincially rare species were within or adjacent to Cole Property boundaries. Site status, habitat and provincial and regional context for the provincially rare species are described below.

Creeping Sedge (*Carex chordorrhiza*, S1 – May Be At Risk; Figure 3)

AC CDC fieldwork has documented widespread occurrence of this sedge in the upper Missiguash peatland complex in wetter areas within moderately to highly nutrient-enriched fen. It has been known in the Nova Scotia – New Brunswick border area since 1968 (Hinrich Harries collection, AC CDC database), but is currently known from nowhere else in Nova Scotia. Creeping Sedge is uncommon (S3 – Secure) but widely present in fens and fen-like marshes in New Brunswick but becomes quite rare in the southeast of the province. The species occurs fairly extensively (four records documented) in richer fen habitats around the upland island parcels of the Cole Property, within the transition zone between open peatland and shrubby swamp. It was also found in similar fen habitat on the eastern margin of Round Lake.

Bog Willow (*Salix pedicellaris*, S2 – Sensitive; Figure 3)

This small willow is a fen specialist and very uncommon in Nova Scotia overall, but is locally common in north-central Queens County, in the vicinity of Upper Stewiacke in Colchester County, and in the Black River Fens near Lake Ainslie in southern Cape Breton. It was previously known from the Nova Scotia – New Brunswick border peatlands based on a 1968 record from the LaPlanche River, but appears to be quite rare in the area as we only documented one other location in our extensive 2011, 2012 and 2013 surveys around the Missiguash Bog complex. It was present in a 5 m x 5 m area of shrubby peatland within the transition zone between open peatland and shrubby swamp.

Chamisso's Cotton-Grass (*Eriophorum chamissonis*, S3 – Secure)

This boreal sedge species reaches its southernmost range limit in eastern North America in the Maritimes and is perhaps the only species of boreal affinity that is widely present in the Maritimes but is not known to occur in New England. It is uncommon in Nova Scotia peatlands, being largely restricted to the northern half of mainland Nova Scotia at sites relatively near the coast, but is very abundant in open wet peatland in the Missiguash Bog area and was found during this survey at six open peatland locations outside the boundaries of the property, extending almost to the property boundaries in two areas.

Skunk Cabbage (*Symplocarpus foetidus*, S3S4 – Secure)

This species is quite common in swamp forest in Digby and Yarmouth Counties but is otherwise known in Nova Scotia only from the vicinity of Missiguash Bog, where it is widespread and locally abundant in peaty swamp forests dominated by red maple and black spruce. In New Brunswick the species is rare and local in the extreme southwest, with disjunct occurrences in the far northwest near Edmundston and on the Cape Tormentine peninsula about 20 km north of the Cole Property. Skunk Cabbage was present in small to moderate numbers at three sites within swamp forest in the largest Cole Property parcel and one site in the middle parcel and was extremely abundant in thinly forested peatland and in swamp forest between Round Lake and the Cole Property, where it was continuously present in two different wetlands for 330 m and 350 m.

Alder-Leaved Buckthorn (*Rhamnus alnifolia*, S3 – Sensitive)

This small shrub is widespread but uncommon in northern Nova Scotia, occurring primarily in circumneutral to basic swamps, and it is fairly widely distributed in the vicinity of the Chignecto

Isthmus Wilderness Area. I found five locations for the species in the swamp forest between the Cole Property and Round Lake.

Vascular plant communities

The vascular plant communities present on the Cole Property are not provincially rare, but the forest on most of the property is quite mature, with many trees likely exceeding 100 years old, and the forest shows less evidence of recent tree harvesting than on adjacent stands to the north and south that are part of the Collins Property. The largest (southern) parcel slopes gently from southeast to northwest, gradually becoming wetter with extensive groundwater seepage until it grades into wet Black Spruce – Red Spruce – Red Maple swamp in its northwestern corner, and eventually into a densely shrubby, open Tamarack – Black Spruce fen at the transition into open peatland that forms the parcel's margin (Figure 4). The southeastern three-quarters of the large parcel are dominated by mature Red Spruce in the southernmost area (Figure 5), with some areas of much younger Red Maple and Heart-Leaved Birch (*Betula papyrifera* var. *cordifolia*) (Figure 6). On the central portion of the property, groundwater seepage bringing nutrients to the surface results in slightly richer soils and a more diverse ground flora under a mixed forest canopy (Figure 7), which locally includes a few large White Ash. The two smaller island parcels are both Red Spruce-dominated, with the northwestern one relatively uniform mature Red Spruce (Figure 8) and the middle one mostly mature Red Spruce with very dense, approximately 20 year old Balsam Fir and some Red Spruce on its eastern and southern sides (Figure 9).

The margins of both smaller parcels at the transition zone between open peatland and upland have shrubby, open, species rich, Tamarack – Black Spruce swamp and fen grading into open, somewhat calcareous fen. The moderately to highly calcareous open peatland communities (Figures 10 and 11) of the Missiguash Bog complex have been well documented in previous reports to NCC for the Collins, Oulton and Bowser Properties, so are not discussed in detail here. The richest, most calcareous peatlands tend to be around upland margins, with more acidic peatlands often in the central parts of the large open areas (Figures 11 and 12). The largest area of calcareous peatland seen in the 2014 surveys was a graminoid-dominated fen of at least 200 m diameter to the northwest of the northwestern-most parcel of the Cole Property.

Birds

Birds were not the focus of this project and the day the fieldwork was conducted had a relatively low level of bird activity because of hot, windy conditions. As a result, I only recorded 16 bird species (Table 2), three of which were of conservation significance. A singing male Olive-sided Flycatcher (S3 – Sensitive, nationally and provincially Threatened) was at the bog margin on the northwest end of the large Cole Property parcel, and in the swamp and peatland forest between Round Lake and the Cole Property I recorded an adult Canada Warbler (S3 – Sensitive, nationally Threatened, Provincially Endangered) carrying food (indicating a nest with young nearby), and a singing male Yellow-bellied Flycatcher (S3 – Sensitive).

Other taxa

No specific effort was made to survey for any other taxonomic groups, but I did document Brown Elfin (*Callophrys augustinus*, S4 – Secure; Figure 4) on the open bog just outside the northwest end of the largest Cole Property parcel, and Northern Leopard Frog (*Lithobates pipiens*, S5 – Secure) on the bog near the smaller Cole Property parcels.

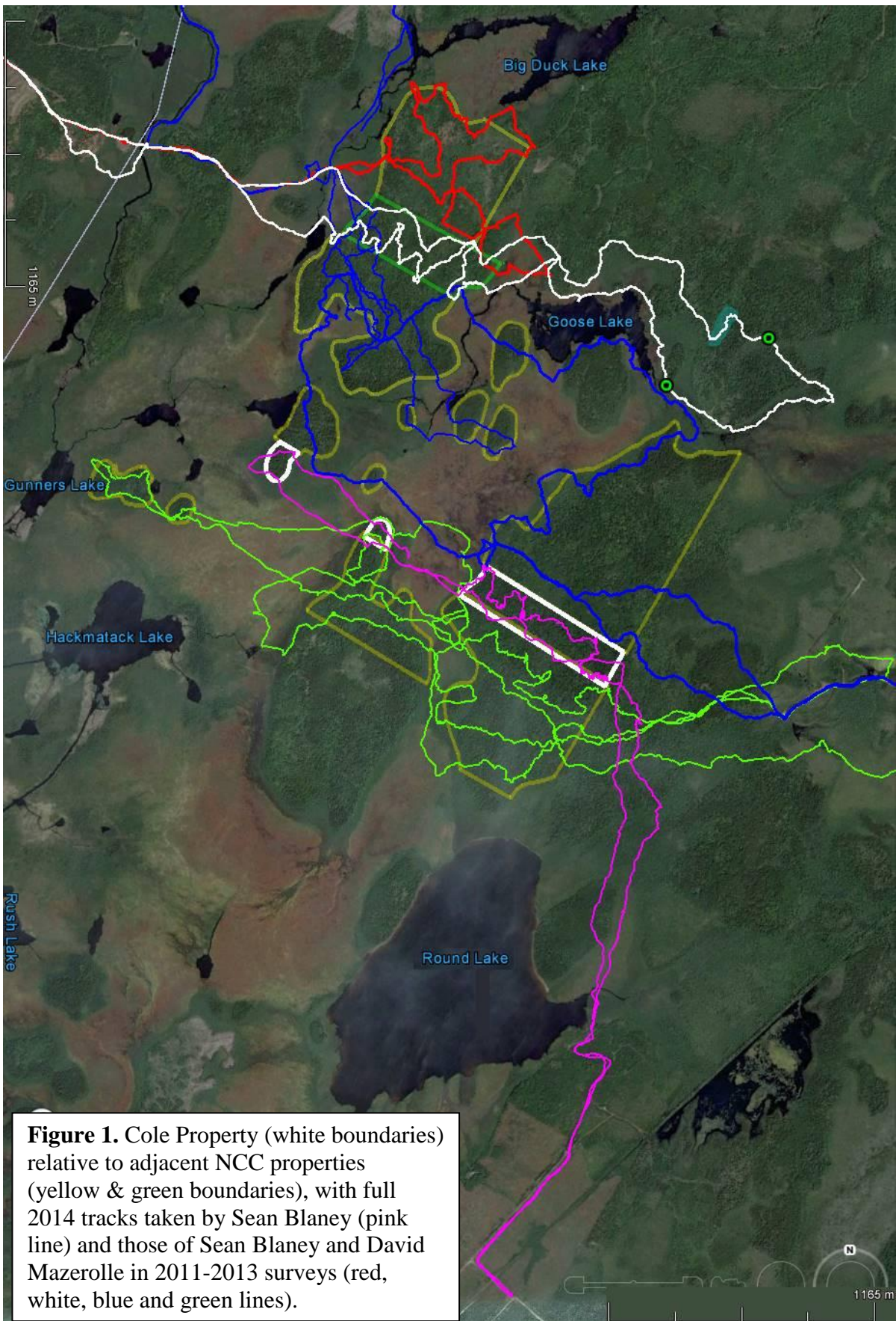
Conclusions

The Cole Property adds significantly to the extensive complex of protected areas centred around the Chignecto Isthmus Wilderness Area. It is in especially good condition relative to neighbouring properties, with most of its area in mature to very mature forest, and it is almost completely free of exotic species. The Cole Property supports the provincially rare and locally significant Skunk Cabbage and its protection prevents future forest harvesting or cabin development that might impact the provincially rare adjacent open, rich fen communities that support a suite of rare and uncommon species.

This survey provides a strong starting point toward a complete list of the species and plant communities present in the Cole Property. Further fieldwork examining the site's diversity of insects, lichens and mosses would undoubtedly provide additional records of significant species, and the occurrence of additional species of declining and provincially *Sensitive* boreal birds could likely be confirmed with further targeted fieldwork.

Acknowledgements

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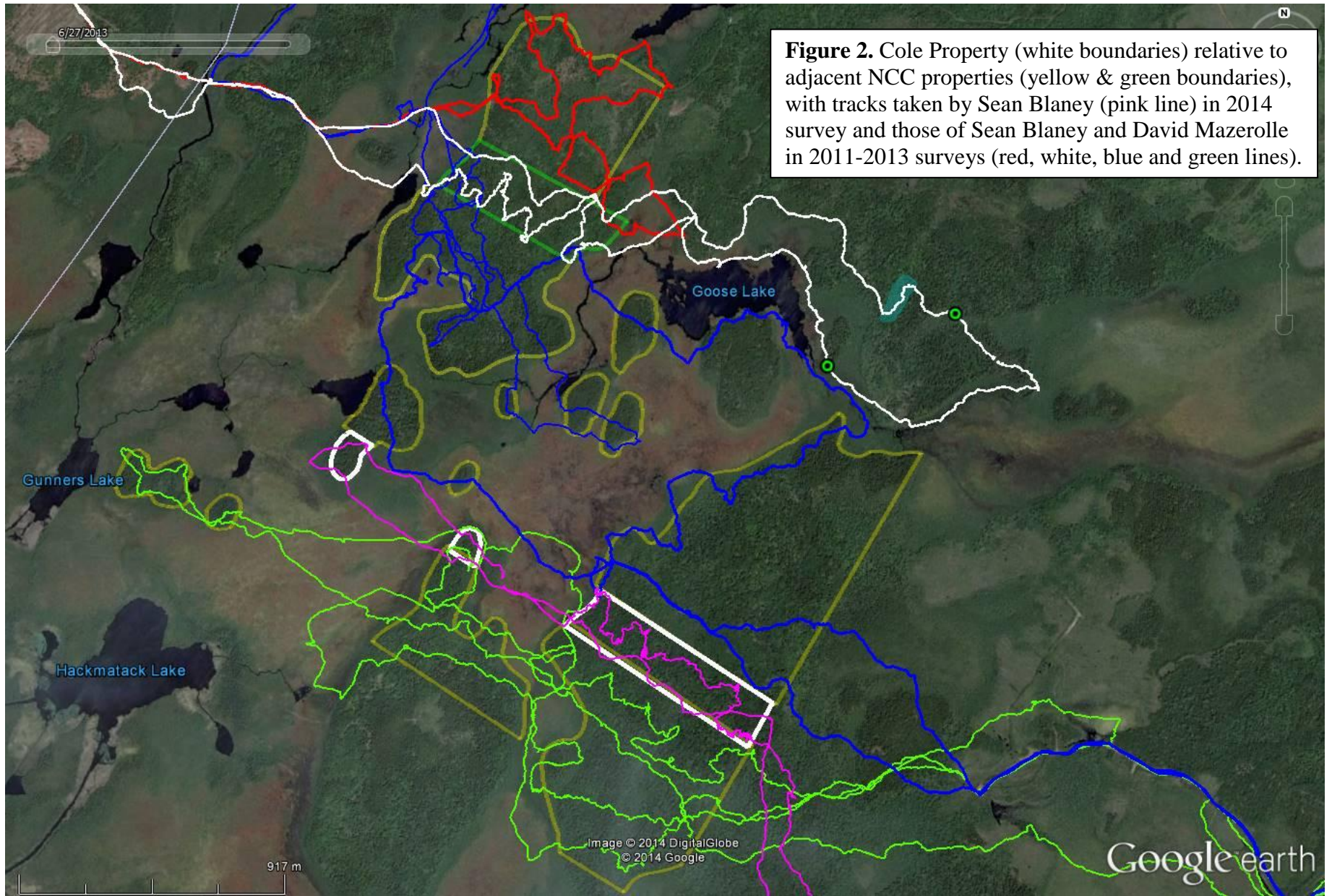




Figure 3. Creeping Sedge (*Carex chordorrhiza*, S1 – May Be At Risk; left) and Bog Willow (*Salix pedicellaris*, S2 – Sensitive) from near the NCC Cole Property. These were the two most significant plants recorded during the project.



Figure 4. Brown Elfin (*Callophrys augustinus*, S4 – Secure), feeding on Small Cranberry (*Vaccinium oxycoccus*), in open peatland just northwest of the largest Cole Property parcel.



Figure 5. Tamarack – Black Spruce peatland swamp at margin of open fen on the northwest end of the Cole Property’s largest parcel, as viewed from inside the stand (above) and in the open fen (below).



Figure 6. Mature upland Red Spruce forest at the southern end of the Cole Property's largest parcel, with GPS for scale against an especially large tree.



Figure 7. Younger upland forest stands dominated by Red Maple and Heart-leaved Birch, in the southeastern part of the Cole Property's largest parcel.



Figure 8. Mature mixed forest in the central part of the Cole Property's largest parcel.



Figure 9. Mature Red Spruce forest in the north-westernmost parcel of the Cole Property.



Figure 10. Calcareous fen communities around the two smaller Cole Property parcels. Bog Bean (*Menyanthes trifoliata*; the abundant broad-leaved species) is dominant with Slender Sedge (*Carex lasiocarpa* var. *americana*), locally dominant in rear of the upper photograph.



Figure 11. Extensive calcareous graminoid fen northwest of the northern Cole Property parcel (above), and calcareous fen margin, grading to more acidic peatland on the southern side of the same parcel.



Figure 12. Relatively acidic peatland south of the middle parcel of the Cole Property.

Table 1. Vascular plants recorded by Sean Blaney in and around the NCC Cole Property during June 17, 2014 survey, with provincial ranks (see Methods) and status on site (c = common; f = fairly common, u = uncommon, r = rare). For species with two status on site values, first value refers to the Cole Property and its immediate surroundings and the second value refers to the area outside the Cole Property. “out” indicates species was only seen outside Cole Property boundaries and notation in brackets indicates where the species was seen, with “transit” indicating between the Cole Property and the Round Lake.

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
ACERACEAE	MAPLES			
<i>Acer rubrum</i>	Red Maple	S5	Secure	c
<i>Acer spicatum</i>	Mountain Maple	S5	Secure	u
ANACARDIACEAE	CASHEWS			
<i>Toxicodendron rydbergii</i>	Northern Poison Oak	S5	Secure	out-R (transit)
APIACEAE	CARROTS			
<i>Cicuta bulbifera</i>	Bulbous Water-hemlock	S5	Secure	out-R (margins)
<i>Sium suave</i>	Common Water Parsnip	S5	Secure	u
AQUIFOLIACEAE	HOLLIES			
<i>Ilex verticillata</i>	Common Winterberry	S5	Secure	c
<i>Nemopanthus mucronatus</i>	Mountain Holly	S5	Secure	c
ARACEAE	ARUMS			
<i>Calla palustris</i>	Wild Calla	S4	Secure	u
<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage	S3S4	Secure	U; C
ARALIACEAE	SARSAPARILLAS			
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure	c
ASTERACEAE	ASTERS			
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5	Secure	c
<i>Eurybia radula</i>	Low Rough Aster	S5	Secure	r
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5	Secure	r
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5	Secure	c
<i>Oclemena nemoralis</i>	Bog Aster	S5	Secure	U; C
<i>Oclemena x blakei</i>	a hybrid White Panicked American-Aster	S5	Secure	c
<i>Petasites frigidus var. palmatus</i>	Northern Sweet Coltsfoot	S4	Secure	u
<i>Prenanthes altissima</i>	Tall Rattlesnakeroot	S5	Secure	u
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5	Secure	u
<i>Solidago uliginosa</i>	Northern Bog Goldenrod	S5	Secure	F; C
<i>Symphotrichum lateriflorum</i>	Calico Aster	S5	Secure	u
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster	S5	Secure	out-R (transit)
BALSAMINACEAE	TOUCH-ME-NOTS			
<i>Impatiens capensis</i>	Spotted Jewelweed	S5	Secure	u
BETULACEAE	BIRCHES			
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	S5	Secure	c
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure	r
<i>Betula papyrifera var. cordifolia</i>	Paper Birch	S5	Secure	c

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
<i>Betula populifolia</i>	Gray Birch	S5	Secure	f
<i>Betula x caerulea</i>	a hybrid Birch [papyrifera X populifolia]	SNA	Not Assessed	r
CALLITRICHACEAE	WATER-STARWORTS			
<i>Callitriche palustris</i>	Marsh Water-starwort	S5	Secure	r
CAPRIFOLIACEAE	HONEYSUCKLES			
<i>Linnaea borealis</i> ssp. <i>americana</i>	Twinflower	S5	Secure	u
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	S5	Secure	r
<i>Lonicera villosa</i>	Mountain Fly Honeysuckle	S4S5	Secure	f
<i>Viburnum nudum</i> var. <i>cassinoides</i>	Northern Wild Raisin	S5	Secure	c
CARYOPHYLLACEAE	PINKS			
<i>Stellaria borealis</i>	Boreal Stitchwort	S4	Secure	out-R (transit)
CLUSIACEAE	ST. JOHN'S-WORTS			
<i>Triadenum fraseri</i>	Fraser's Marsh St John's-wort	S5	Secure	u
CORNACEAE	DOGWOODS			
<i>Cornus canadensis</i>	Bunchberry	S5	Secure	c
<i>Cornus sericea</i>	Red Osier Dogwood	S5	Secure	r
CYPERACEAE	SEDGES			
<i>Carex brunnescens</i> ssp. <i>sphaerostachya</i>	Brownish Sedge	S5	Secure	c
<i>Carex canescens</i>	Silvery Sedge	S5	Secure	f
<i>Carex chordorrhiza</i>	Creeping Sedge	S1	May Be At Risk	f
<i>Carex diandra</i>	Lesser Panicked Sedge	S4	Secure	out-R (Round Lk)
<i>Carex disperma</i>	Two-seeded Sedge	S5	Secure	out-R (transit)
<i>Carex echinata</i>	Star Sedge	S5	Secure	c
<i>Carex interior</i>	Inland Sedge	S4S5	Secure	out-F (transit)
<i>Carex intumescens</i>	Bladder Sedge	S5	Secure	c
<i>Carex lacustris</i>	Lake Sedge	S4	Secure	out-R (Round Lk)
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender Sedge	S5	Secure	out-U (margins)
<i>Carex leptalea</i>	Bristly-stalked Sedge	S5	Secure	f
<i>Carex leptoneuria</i>	Finely-Nerved Sedge	S5	Secure	r
<i>Carex magellanica</i> ssp. <i>irrigua</i>	Boreal Bog Sedge	S5	Secure	c
<i>Carex novae-angliae</i>	New England Sedge	S5	Secure	r
<i>Carex pseudocyperus</i>	Cyperuslike Sedge	S4S5	Secure	u
<i>Carex trisperma</i> var. <i>billingsii</i>	Three-Seed Sedge	S4?	Secure	out-U (Round Lk)
<i>Carex trisperma</i> var. <i>trisperma</i>	Three-seeded Sedge	S5	Secure	c
<i>Eleocharis palustris</i>	Common Spikerush	S5	Secure	out-R (Round Lk)
<i>Eriophorum angustifolium</i>	Narrow-leaved Cottongrass	S5	Secure	u
<i>Eriophorum chamissonis</i>	Russet Cotton-Grass	S3S4	Secure	f
<i>Eriophorum vaginatum</i> var. <i>spissum</i>	Tussock Cottongrass	S5	Secure	out-C (bog)
<i>Eriophorum virginicum</i>	Tawny Cottongrass	S5	Secure	out-U (bog)
<i>Trichophorum alpinum</i>	Alpine Clubrush	S4	Secure	out-R (bog)
<i>Trichophorum caespitosum</i>	Tufted Clubrush	S5	Secure	out-R (bog)
DENNSTAEDTIACEAE	HAY-SCENTED FERNS			

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	S5	Secure	c
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	Bracken Fern	S5	Secure	c
DROSERACEAE	SUNDEWS			
<i>Drosera intermedia</i>	Spoon-Leaved Sundew	S5	Secure	out-U (bog)
<i>Drosera rotundifolia</i>	Round-leaved Sundew	S5	Secure	R; C
DRYOPTERIDACEAE	WOOD FERNS			
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Common Lady Fern	S5	Secure	f
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5	Secure	f
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	Secure	f
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	Secure	f
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	Secure	c
<i>Dryopteris x boottii</i> / <i>x uliginosa</i>	Crested Wood-fern hybrid	[SNA]	[Not Assessed]	r
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	S5	Secure	f
<i>Matteuccia struthiopteris</i>	Ostrich Fern	S5	Secure	out-F (transit)
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure	r
EMPETRACEAE	CROWBERRIES			
<i>Empetrum nigrum</i>	Black Crowberry	S5	Secure	c
EQUISETACEAE	HORSETAILS			
<i>Equisetum arvense</i>	Field Horsetail	S5	Secure	u
<i>Equisetum fluviatile</i>	Water Horsetail	S5	Secure	c
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5	Secure	c
ERICACEAE	HEATHS			
<i>Andromeda polifolia</i> var. <i>glaucophylla</i>	Bog Rosemary	S5	Secure	out-C (bog)
<i>Chamaedaphne calyculata</i>	Leatherleaf	S5	Secure	c
<i>Gaultheria hispida</i>	Creeping Snowberry	S5	Secure	c
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry	S5	Secure	out-U (bog)
<i>Kalmia angustifolia</i>	Sheep Laurel	S5	Secure	f
<i>Kalmia polifolia</i>	Pale Bog Laurel	S5	Secure	out-C (bog)
<i>Ledum groenlandicum</i>	Common Labrador Tea	S5	Secure	c
<i>Rhododendron canadense</i>	Rhodora	S5	Secure	r
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	S5	Secure	c
<i>Vaccinium macrocarpon</i>	Large Cranberry	S5	Secure	c
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5	Secure	f
<i>Vaccinium oxycoccos</i>	Small Cranberry	S5	Secure	U; C
GROSSULARIACEAE	GOOSEBERRIES			
<i>Ribes hirtellum</i>	Smooth Gooseberry	S5	Secure	out-F (transit)
<i>Ribes lacustre</i>	Bristly Black Currant	S5	Secure	out-R (transit)
IRIDACEAE	IRISES			
<i>Iris versicolor</i>	Harlequin Blue Flag	S5	Secure	c
JUNCACEAE	RUSHES			
<i>Juncus canadensis</i>	Canada Rush	S5	Secure	r
<i>Juncus effusus</i>	Soft Rush	S5	Secure	u

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
LAMIACEAE	MINTS			
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5	Secure	c
LENTIBULARIACEAE	BLADDERWORTS			
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	S5	Secure	r
LILIACEAE	LILIES			
<i>Clintonia borealis</i>	Yellow Bluebead Lily	S5	Secure	c
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure	c
<i>Maianthemum trifolium</i>	Three-leaved False Solomon's Seal	S5	Secure	c
<i>Medeola virginiana</i>	Indian Cucumber Root	S5	Secure	f
<i>Streptopus amplexifolius</i>	Clasping-leaved Twisted-stalk	S4S5	Secure	r
<i>Streptopus lanceolatus</i>	Rose Twisted-stalk	S5	Secure	r
<i>Trillium undulatum</i>	Painted Trillium	S5	Secure	c
LYCOPODIACEAE	CLUBMOSES			
<i>Huperzia lucidula</i>	Shining Firmoss	S5	Secure	r
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5	Secure	f
<i>Lycopodium clavatum</i>	Running Clubmoss	S5	Secure	r
<i>Lycopodium dendroideum</i>	Round-branched Tree-clubmoss	S5	Secure	f
MENYANTHACEAE	BOG-BEANS			
<i>Menyanthes trifoliata</i>	Bog Buckbean	S5	Secure	c
MONOTROPACEAE	INDIAN PIPES			
<i>Monotropa uniflora</i>	Indian Pipe	S5	Secure	r
MYRICACEAE	BAYBERRIES			
<i>Myrica gale</i>	Sweet Gale	S5	Secure	c
NYMPHAEACEAE	WATER-LILIES			
<i>Nuphar lutea ssp. variegata</i>	Variegated Pond-lily	S5	Secure	out-R (Round Lk)
OLEACEAE	OLIVES			
<i>Fraxinus americana</i>	White Ash	S5	Secure	u
ONAGRACEAE	EVENING-PRIMROSES			
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S5	Secure	r
<i>Epilobium ciliatum</i>	Northern Willowherb	S5	Secure	r
<i>Epilobium palustre</i>	Marsh Willowherb	S5	Secure	u
ORCHIDACEAE	ORCHIDS			
<i>Arethusa bulbosa</i>	Arethusa	S4	Secure	out-C (bog)
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5	Secure	c
<i>Pogonia ophioglossoides</i>	Rose Pogonia	S4	Secure	R; F
OSMUNDACEAE	FLOWERING FERNS			
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5	Secure	c
<i>Osmunda claytoniana</i>	Interrupted Fern	S5	Secure	c
<i>Osmunda regalis var. spectabilis</i>	Royal Fern	S5	Secure	out-R (margins)
OXALIDACEAE	WOOD SORRELS			
<i>Oxalis montana</i>	Common Wood Sorrel	S5	Secure	f
PINACEAE	PINES			

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
<i>Abies balsamea</i>	Balsam Fir	S5	Secure	c
<i>Larix laricina</i>	Tamarack	S5	Secure	c
<i>Picea mariana</i>	Black Spruce	S5	Secure	c
<i>Picea rubens</i>	Red Spruce	S5	Secure	c
POACEAE	GRASSES			
<i>Brachyelytrum septentrionale</i>	Northern Shorthusk	S5	Secure	u
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5	Secure	c
<i>Glyceria striata</i>	Fowl Manna Grass	S5	Secure	f
<i>Muhlenbergia glomerata</i>	Spiked Muhly	S4	Secure	out-R (bog, far end)
<i>Phragmites australis ssp. americanus</i>	Common Reed	S4	Secure	out-R (bog, far end)
POLYGONACEAE	SMARTWEEDS			
<i>Rumex orbiculatus</i>	Greater Water Dock	S5	Secure	u
PRIMULACEAE	PRIMROSE			
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5	Secure	f
<i>Lysimachia thysiflora</i>	Tufted Yellow Loosestrife	S4	Secure	f
<i>Lysimachia x commixta</i>	a hybrid loosestrife	SNA	[Not Assessed]	r
<i>Trientalis borealis</i>	Northern Starflower	S5	Secure	c
PYROLACEAE	PYROLAS			
<i>Orthilia secunda</i>	One-sided Wintergreen	S5	Secure	r
RANUNCULACEAE	BUTTERCUPS			
<i>Coptis trifolia</i>	Goldthread	S5	Secure	c
<i>Ranunculus repens</i>	Creeping Buttercup	SNA	Exotic	u
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5	Secure	out-F (transit)
RHAMNACEAE	BUCKTHORNS			
<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn	S3	Secure	out-U (transit)
ROSACEAE	ROSES			
<i>Amelanchier bartramiana</i>	Bartram's Serviceberry	S5	Secure	r
<i>Amelanchier bartramiana x ?</i>	serviceberry hybrid	[SNA]	[Not Assessed]	r
<i>Comarum palustre</i>	Marsh Cinquefoil	S5	Secure	u
<i>Fragaria virginiana</i>	Wild Strawberry	S5	Secure	u
<i>Geum rivale</i>	Water Avens	S5	Secure	out-R (transit)
<i>Photinia melanocarpa</i>	Black Chokeberry	S5	Secure	U; C
<i>Rosa nitida</i>	Shining Rose	S4	Secure	u
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5	Secure	c
<i>Sorbus americana</i>	American Mountain Ash	S5	Secure	c
<i>Spiraea alba var. latifolia</i>	White Meadowsweet	S5	Secure	r
RUBIACEAE	BEDSTRAWS			
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5	Secure	f
<i>Galium triflorum</i>	Three-flowered Bedstraw	S5	Secure	u
<i>Mitchella repens</i>	Partridgeberry	S5	Secure	u
SALICACEAE	WILLOWS			
<i>Salix pedicellaris</i>	Bog Willow	S2	Sensitive	r

Species / Family	Common Name	S-rank	GS Rank	2014 Cole
<i>Salix pyrifolia</i>	Balsam Willow	S5	Secure	f
SARRACENIACEAE	PITCHER PLANTS			
<i>Sarracenia purpurea</i>	Northern Pitcher Plant	S5	Secure	R; C
SAXIFRAGACEAE	SAXIFRAGES			
<i>Chrysosplenium americanum</i>	American Golden Saxifrage	S5	Secure	out-R (transit)
<i>Mitella nuda</i>	Naked Bishop's-Cap	S5	Secure	c
THELYPTERIDACEAE	MARSH FERNS			
<i>Phegopteris connectilis</i>	Northern Beech Fern	S5	Secure	c
<i>Thelypteris noveboracensis</i>	New York Fern	S5	Secure	c
<i>Thelypteris palustris var. pubescens</i>	Eastern Marsh Fern	S5	Secure	c
TYPHACEAE	CATTAILS			
<i>Typha latifolia</i>	Broad-leaved Cattail	S5	Secure	r
VIOLACEAE	VIOLETS			
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure	r
<i>Viola macloskeyi ssp. pallens</i>	Small White Violet	S5	Secure	c
VISCACEAE	MISTLETOES			
<i>Arceuthobium pusillum</i>	Eastern Dwarf Mistletoe	S5	Secure	C; F
XYRIDACEAE	YELLOW-EYED GRASSES			
<i>Xyris montana</i>	Northern Yellow-Eyed-Grass	S4	Secure	out-F (bog)

Table 2. Full vascular plant list from AC CDC fieldwork from in and around the Cole Property (2014), the Collins property (2011), Bowser Property (2012), Oulton Property (2013) and the Long Lake – Round Lake – Portage Run area (2003). Provincial S-ranks and General Status (GS) ranks are defined in Methods. Generalized estimates of abundance by site are: x = observed with no status recorded, R = rare, LC = rare but locally common, U = uncommon, F = fairly common, C = common. “out” indicates the species was only observed outside the NCC property in question. Species with two generalized abundance estimates (i.e. “F; C”) indicate differing status within the NCC property in question (first status) and outside it (second status).

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
LYCOPODIACEAE		CLUBMOSES						
<i>Huperzia lucidula</i>	Shining Firmoss	S5	Secure					r
<i>Lycopodiella inundata</i>	Northern Bog Clubmoss	S5	Secure	x	out	R	R	
<i>Lycopodium annotinum</i>	Stiff Clubmoss	S5	Secure	x	C		out	f
<i>Lycopodium clavatum</i>	Running Clubmoss	S5	Secure		C	R		r
<i>Lycopodium dendroideum</i>	Round-branched Tree-clubmoss	S5	Secure	x	C	U	R	f
<i>Lycopodium hickeyi</i>	Hickey's Tree-clubmoss	S4?	Secure		x		R	
<i>Lycopodium obscurum</i>	Flat-branched Tree-clubmoss	S4S5	Secure		x			
<i>Lycopodium tristachyum</i>	Blue Groundcedar	S4	Secure		x			
EQUISETACEAE		HORSETAILS						
<i>Equisetum arvense</i>	Field Horsetail	S5	Secure	x	x	R	F	u
<i>Equisetum fluviatile</i>	Water Horsetail	S5	Secure	x	C	U	C	c
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5	Secure	x	C	C	C	c
<i>Equisetum variegatum</i>	Variegated Horsetail	S3	Secure		out	R		
<i>Equisetum x litorale</i>	a Hybrid Horsetail	SNA	Not Assessed		U			
OPHIOGLOSSACEAE		GRAPE FERNS						
<i>Botrychium virginianum</i>	Rattlesnake Fern	S4	Secure		x		R	
OSMUNDACEAE		FLOWERING FERNS						
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5	Secure	x	C	C	C	c
<i>Osmunda claytoniana</i>	Interrupted Fern	S5	Secure	x	x	C	C	c
<i>Osmunda regalis var. spectabilis</i>	Royal Fern	S5	Secure	x	x	R	U; C	out-R (margins)
DENNSTAEDTIACEAE		HAY-SCENTED FERNS						
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	S5	Secure	x	C		C	c

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	Bracken Fern	S5	Secure	x	C	C	C	c
THELYPTERIDACEAE		MARSH FERNS						
<i>Phegopteris connectilis</i>	Northern Beech Fern	S5	Secure	x	x	U	F; C	c
<i>Thelypteris noveboracensis</i>	New York Fern	S5	Secure	x	x	C	C	c
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Eastern Marsh Fern	S5	Secure	x	x	F	U; C	c
DRYOPTERIDACEAE		WOOD FERNS						
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Common Lady Fern	S5	Secure	x	x	R	U; F	f
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5	Secure	x	C	F	C	f
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	Secure	x	x	F	U; F	f
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	Secure	x	x	F	C	f
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	Secure	x	C	C	C	c
<i>Dryopteris x boottii</i> / <i>x uliginosa</i>	Crested Wood-fern hybrid	[SNA]	[Not Assessed]		R		R	r
<i>Dryopteris x uliginosa</i>	a Hybrid Wood-fern	SNA	Not Assessed		x			
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	S5	Secure	x	C		out	f
<i>Matteuccia struthiopteris</i>	Ostrich Fern	S5	Secure					out-F (transit)
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure	x	C	C	F; C	r
PINACEAE		PINES						
<i>Abies balsamea</i>	Balsam Fir	S5	Secure	x	C	C	C	c
<i>Larix laricina</i>	Tamarack	S5	Secure	x	C	C	C	c
<i>Picea mariana</i>	Black Spruce	S5	Secure	x	C	C	C	c
<i>Picea rubens</i>	Red Spruce	S5	Secure	x	C	C	C	c
<i>Pinus strobus</i>	Eastern White Pine	S5	Secure	x	x			
NYMPHAEACEAE		WATER-LILIES						
<i>Nuphar lutea</i> ssp. <i>variegata</i>	Variiegated Pond-lily	S5	Secure	x	out	out-R	out	out-R (Round Lk)
CABOMBACEAE		WATER-SHIELDS						
<i>Brasenia schreberi</i>	Water-shield	S5	Secure		out		out	
CERATOPHYLLACEAE		COONTAILS						
<i>Ceratophyllum echinatum</i>	Prickly Hornwort	S2S3	Sensitive		x			

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
RANUNCULACEAE		BUTTERCUPS						
<i>Actaea rubra</i>	Red Baneberry	S5	Secure		x			
<i>Clematis virginiana</i>	Virginia Clematis	S5	Secure	x				
<i>Coptis trifolia</i>	Goldthread	S5	Secure	x	C	F	C	c
<i>Ranunculus acris</i>	Common Buttercup	SNA	Exotic		x	R		
<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup	S3	Secure	x	out			
<i>Ranunculus repens</i>	Creeping Buttercup	SNA	Exotic	x	x	R	U; F	u
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5	Secure	x	x		out	out-F (transit)
MYRICACEAE		BAYBERRIES						
<i>Morella pensylvanica</i>	Northern Bayberry	S5	Secure			R		
<i>Myrica gale</i>	Sweet Gale	S5	Secure	x	C	F	C	c
BETULACEAE		BIRCHES						
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	S5	Secure	x	C	C	C	c
<i>Alnus viridis ssp. crispa</i>	Green Alder	S5	Secure		out			
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure	x	L			r
<i>Betula papyrifera var. cordifolia</i>	Paper Birch	S5	Secure	x	C	C	C	c
<i>Betula papyrifera var. papyrifera</i>	Heart-leaved Birch	S5	Secure	x	x			
<i>Betula populifolia</i>	Gray Birch	S5	Secure	x	x	C	C	f
<i>Betula x caerulea</i>	a hybrid Birch [papyrifera X populifolia]	SNA	Not Assessed				U	r
<i>Corylus cornuta</i>	Beaked Hazel	S5	Secure	x				
CARYOPHYLLACEAE		PINKS						
<i>Cerastium fontanum ssp. vulgare</i>	Common Mouse-Ear Chickweed	SNA	Exotic	x	out			
<i>Stellaria borealis</i>	Boreal Stitchwort	S4	Secure		x		U	out-R (transit)
<i>Stellaria graminea</i>	Little Starwort	SNA	Exotic	x				
POLYGONACEAE		SMARTWEEDS						
<i>Polygonum amphibium</i>	Water Smartweed	S4S5	Secure	x				
<i>Polygonum arifolium</i>	Halberd-leaved Tearthumb	S2	Sensitive	x	x			
<i>Polygonum aviculare</i>	Prostrate Knotweed	S5	Secure	x				
<i>Polygonum hydropiper</i>	Marshpepper Smartweed	SNA	Exotic	x			out	

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
<i>Polygonum lapathifolium</i>	Pale Smartweed	S5	Secure	x				
<i>Polygonum persicaria</i>	Spotted Lady's-thumb	SNA	Exotic	x				
<i>Polygonum punctatum</i>	Dotted Smartweed	S5	Secure	x				
<i>Polygonum sagittatum</i>	Arrow-leaved Smartweed	S5	Secure	x		U	R; U	
<i>Rumex acetosella</i>	Sheep Sorrel	SNA	Exotic	x				
<i>Rumex orbiculatus</i>	Greater Water Dock	S5	Secure	x	x		R; U	u
CLUSIACEAE		ST. JOHN'S-WORTS						
<i>Hypericum boreale</i>	Northern St John's-Wort	S5	Secure		out			
<i>Hypericum canadense</i>	Canada St John's-wort	S5	Secure	x	out			
<i>Hypericum ellipticum</i>	Pale St John's-Wort	S5	Secure	x				
<i>Triadenum fraseri</i>	Fraser's Marsh St John's-wort	S5	Secure	x	C	F	U; F	u
SARRACENIACEAE		PITCHER PLANTS						
<i>Sarracenia purpurea</i>	Northern Pitcher Plant	S5	Secure	x	x	C	C	R; C
DROSERACEAE		SUNDEWS						
<i>Drosera intermedia</i>	Spoon-Leaved Sundew	S5	Secure	x	x	out-R	U; C	out-U (bog)
<i>Drosera rotundifolia</i>	Round-leaved Sundew	S5	Secure	x	x	U	U; C	R; C
VIOLACEAE		VIOLETS						
<i>Viola blanda var. palustriformis</i>	Sweet White Violet	S5	Secure		x	F		
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure		x	U	U; F	r
<i>Viola macloskeyi ssp. pallens</i>	Small White Violet	S5	Secure	x	F		U; F	c
<i>Viola sororia</i>	Woolly Blue Violet	S5	Secure		C			
SALICACEAE		WILLOWS						
<i>Populus grandidentata</i>	Large-toothed Aspen	S5	Secure		out			
<i>Populus tremuloides</i>	Trembling Aspen	S5	Secure	x	out	R	R	
<i>Salix bebbiana</i>	Bebb's Willow	S5	Secure	x	x	R	out	
<i>Salix discolor</i>	Pussy Willow	S5	Secure	x		R	out	
<i>Salix humilis</i>	Upland Willow	S5	Secure		out	R	out	
<i>Salix pedicellaris</i>	Bog Willow	S2	Sensitive				R	r
<i>Salix petiolaris</i>	Meadow Willow	S3	Secure			R		

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
<i>Salix pyrifolia</i>	Balsam Willow	S5	Secure	x	x	F	out	f
BRASSICACEAE		MUSTARDS						
<i>Cardamine pensylvanica</i>	Pennsylvania Bittercress	S5	Secure		x		out	
<i>Rorippa palustris</i>	Bog Yellowcress	S4	Secure	x				
EMPETRACEAE		CROWBERRIES						
<i>Empetrum nigrum</i>	Black Crowberry	S5	Secure		x	out-R	R; U	c
ERICACEAE		HEATHS						
<i>Andromeda polifolia</i> var. <i>glaucophylla</i>	Bog Rosemary	S5	Secure	x	x	out-F	U; C	out-C (bog)
<i>Chamaedaphne calyculata</i>	Leatherleaf	S5	Secure	x	C	U	C	c
<i>Gaultheria hispidula</i>	Creeping Snowberry	S5	Secure	x	x	C	C	c
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5	Secure		out		U; C	
<i>Gaylussacia baccata</i>	Black Huckleberry	S5	Secure	x	C	C	out	
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry	S5	Secure	x	x	R	out	out-U (bog)
<i>Kalmia angustifolia</i>	Sheep Laurel	S5	Secure	x	C	C	C	f
<i>Kalmia polifolia</i>	Pale Bog Laurel	S5	Secure	x	x	out-F	R; C	out-C (bog)
<i>Ledum groenlandicum</i>	Common Labrador Tea	S5	Secure	x	x	F	C	c
<i>Rhododendron canadense</i>	Rhodora	S5	Secure	x	C	C	out	r
<i>Vaccinium angustifolium</i>	Late Lowbush Blueberry	S5	Secure	x	C	C	C	c
<i>Vaccinium macrocarpon</i>	Large Cranberry	S5	Secure	x	x	R	R; U	c
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5	Secure	x	C	C	C	f
<i>Vaccinium oxycoccos</i>	Small Cranberry	S5	Secure	x	x	out-C	out	U; C
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Mountain Cranberry	S5	Secure			U		
PYROLACEAE		PYROLAS						
<i>Moneses uniflora</i>	One-flowered Wintergreen	S5	Secure		R			
<i>Orthilia secunda</i>	One-sided Wintergreen	S5	Secure		x		out	r
<i>Pyrola minor</i>	Lesser Pyrola	S3	Sensitive		out			
MONOTROPACEAE		INDIAN PIPES						
<i>Monotropa hypopithys</i>	Pinesap	S4	Secure		x			
<i>Monotropa uniflora</i>	Indian Pipe	S5	Secure	x	x	out-R	out	r

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
PRIMULACEAE		PRIMROSE						
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5	Secure	x	x	C	F	f
<i>Lysimachia thyrsoflora</i>	Tufted Yellow Loosestrife	S4	Secure	x	x	out-R	F	f
<i>Lysimachia x commixta</i>	a hybrid loosestrife	SNA	[Not Assessed]					r
<i>Trientalis borealis</i>	Northern Starflower	S5	Secure	x	C	C	C	c
GROSSULARIACEAE		GOOSEBERRIES						
<i>Ribes glandulosum</i>	Skunk Currant	S5	Secure			out	out	
<i>Ribes hirtellum</i>	Smooth Gooseberry	S5	Secure			U		out-F (transit)
<i>Ribes lacustre</i>	Bristly Black Currant	S5	Secure	x	x		out	out-R (transit)
<i>Ribes triste</i>	Swamp Red Currant	S4	Secure				out	
SAXIFRAGACEAE		SAXIFRAGES						
<i>Chrysosplenium americanum</i>	American Golden Saxifrage	S5	Secure			x	out	out-R (transit)
<i>Mitella nuda</i>	Naked Bishop's-Cap	S5	Secure	x	x		out	c
ROSACEAE		ROSES						
<i>Amelanchier bartramiana</i>	Bartram's Serviceberry	S5	Secure				R	r
<i>Amelanchier bartramiana x ?</i>	serviceberry hybrid	[SNA]	[Not Assessed]					r
<i>Amelanchier sp.</i>	serviceberry sp.		[native]		x	U		
<i>Comarum palustre</i>	Marsh Cinquefoil	S5	Secure	x	x	F	F; C	u
<i>Fragaria virginiana</i>	Wild Strawberry	S5	Secure	x	x	U	out	u
<i>Geum laciniatum</i>	Rough Avens	S5	Secure	x				
<i>Geum macrophyllum</i>	Large-Leaved Avens	S5	Secure	x				
<i>Geum rivale</i>	Water Avens	S5	Secure		x	out-R	out	out-R (transit)
<i>Malus pumila</i>	Common Apple	SNA	Exotic		x			
<i>Photinia floribunda</i>	Purple Chokeberry	S5	Secure		C			
<i>Photinia melanocarpa</i>	Black Chokeberry	S5	Secure	x	C	F	R	U; C
<i>Potentilla norvegica ssp. monspeliensis</i>	Rough Cinquefoil	S5	Secure	x				
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5	Secure		out		R	
<i>Prunus pennsylvanica</i>	Pin Cherry	S5	Secure	x		R		

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
<i>Prunus virginiana</i>	Chokecherry	S5	Secure	x	L			
<i>Rosa carolina</i>	Carolina Rose	S4S5	Secure		x			
<i>Rosa nitida</i>	Shining Rose	S4	Secure	x	x	C	out	u
<i>Rubus allegheniensis</i>	Alleghaney Blackberry	S5	Secure		x			
<i>Rubus canadensis</i>	Smooth Blackberry	S5	Secure	x	x	U	U	
<i>Rubus hispidus</i>	Bristly Dewberry	S5	Secure	x		R	out	
<i>Rubus idaeus ssp. strigosus</i>	Red Raspberry	S5	Secure	x	x	F	F	
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5	Secure	x	C	C	C	c
<i>Sorbus americana</i>	American Mountain Ash	S5	Secure	x	x	R	F	c
<i>Spiraea alba var. latifolia</i>	White Meadowsweet	S5	Secure	x	x	C	C	r
<i>Spiraea tomentosa</i>	Steeplebush	S5	Secure	x	x	R	out	
FABACEAE	BEANS							
<i>Lupinus polyphyllus</i>	Large-Leaved Lupine	SNA	Exotic		out			
<i>Trifolium arvense</i>	Rabbit's-foot Clover	SNA	Exotic	x				
<i>Trifolium aureum</i>	Yellow Clover	SNA	Exotic		out	R		
<i>Trifolium pratense</i>	Red Clover	SNA	Exotic	x	out	R		
<i>Trifolium repens</i>	White Clover	SNA	Exotic		out			
<i>Vicia cracca</i>	Tufted Vetch	SNA	Exotic		out			
ONAGRACEAE	EVENING-PRIMROSES							
<i>Chamerion angustifolium</i>	Fireweed	S5	Secure			R		
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S5	Secure	x	x		out	r
<i>Epilobium ciliatum</i>	Northern Willowherb	S5	Secure	x	x		out	r
<i>Epilobium leptophyllum</i>	Bog Willowherb	S5	Secure	x	F			
<i>Epilobium palustre</i>	Marsh Willowherb	S5	Secure	x	x	U	R	u
<i>Epilobium strictum</i>	Downy Willowherb	S3	Sensitive	x				
CORNACEAE	DOGWOODS							
<i>Cornus canadensis</i>	Bunchberry	S5	Secure	x	C	C	C	c
<i>Cornus sericea</i>	Red Osier Dogwood	S5	Secure	x	out	R	out	r
VISCACEAE	MISTLETOES							

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<i>Arceuthobium pusillum</i>	Eastern Dwarf Mistletoe	S5	Secure		x	U	out	C; F
AQUIFOLIACEAE		HOLLIES						
<i>Ilex verticillata</i>	Common Winterberry	S5	Secure	x	C	C	F; C	c
<i>Nemopanthus mucronatus</i>	Mountain Holly	S5	Secure	x	C	C	C	c
RHAMNACEAE		BUCKTHORNS						
<i>Frangula alnus</i>	Glossy Buckthorn	SNA	Exotic	x	R	R	R	
<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn	S3	Secure		x	R	out	out-U (transit)
ACERACEAE		MAPLES						
<i>Acer rubrum</i>	Red Maple	S5	Secure	x	C	C	C	c
<i>Acer spicatum</i>	Mountain Maple	S5	Secure	x	x		R	u
ANACARDIACEAE		CASHEWS						
<i>Toxicodendron rydbergii</i>	Northern Poison Oak	S5	Secure		x			out-R (transit)
OXALIDACEAE		WOOD SORRELS						
<i>Oxalis montana</i>	Common Wood Sorrel	S5	Secure	x	C	C	F	f
<i>Oxalis stricta</i>	Upright Yellow Wood-Sorrel	S5	Secure			R		
BALSAMINACEAE		TOUCH-ME-NOTS						
<i>Impatiens capensis</i>	Spotted Jewelweed	S5	Secure	x	x	U	U; F	u
ARALIACEAE		SARSAPARILLAS						
<i>Aralia hispida</i>	Bristly Sarsaparilla	S5	Secure		x	out-R	R	
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure	x	C	C	C	c
APIACEAE		CARROTS						
<i>Cicuta bulbifera</i>	Bulbous Water-hemlock	S5	Secure	x	R		out	out-R (margins)
<i>Cicuta maculata</i>	Spotted Water-Hemlock	S5	Secure	x	x			
<i>Hydrocotyle americana</i>	American Marsh Pennywort	S5	Secure	x		R	out	
<i>Sium suave</i>	Common Water Parsnip	S5	Secure	x	x		out	u
GENTIANACEAE		GENTIANS						
<i>Centaurium pulchellum</i>	Branched Centaury	SNA	Exotic	x				
CONVOLVULACEAE		BINDWEEDS						
<i>Calystegia sepium</i>	Hedge False Bindweed	S5	Secure	x				

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MENYANTHACEAE		BOG-BEANS						
<i>Menyanthes trifoliata</i>	Bog Buckbean	S5	Secure	x	x	C	C	c
BORAGINACEAE		BORAGES						
<i>Myosotis laxa</i>	Small Forget-Me-Not	S5	Secure	x				
LAMIACEAE		MINTS						
<i>Clinopodium vulgare</i>	Wild Basil	S5	Secure		R			
<i>Lycopus americanus</i>	American Water Horehound	S5	Secure	x	x			
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5	Secure	x	C	C	C	c
<i>Mentha arvensis</i>	Wild Mint	S5	Secure	x				
<i>Prunella vulgaris</i>	Common Self-heal	S5	Secure	x	x	R	R	
<i>Scutellaria galericulata</i>	Marsh Skullcap	S5	Secure	x			out	
<i>Scutellaria lateriflora</i>	Mad-dog Skullcap	S5	Secure	x	U			
CALLITRICHACEAE		WATER-STARWORTS						
<i>Callitriche palustris</i>	Marsh Water-starwort	S5	Secure					r
PLANTAGINACEAE		PLANTAINS						
<i>Plantago major</i>	Common Plantain	SNA	Exotic	x				
OLEACEAE		OLIVES						
<i>Fraxinus americana</i>	White Ash	S5	Secure	x	x		R	u
<i>Fraxinus nigra</i>	Black Ash	S1S2	1 At Risk				R	
SCROPHULARIACEAE		FIGWORTS						
<i>Chelone glabra</i>	White Turtlehead	S5	Secure	x	x	R	out	
<i>Lindernia dubia</i>	Yellow-seeded False Pimperel	S3	Secure	x				
<i>Mimulus moschatus</i>	Musk Monkeyflower	SNA	Exotic	x				
<i>Veronica officinalis</i>	Common Speedwell	S5	Exotic		out			
<i>Veronica scutellata</i>	Marsh Speedwell	S5	Secure	x				
LENTIBULARIACEAE		BLADDERWORTS						
<i>Utricularia cornuta</i>	Horned Bladderwort	S5	Secure	x	out-R			
<i>Utricularia gibba</i>	Humped Bladderwort	S4	Secure		out			
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	S5	Secure	x	x	U	out	r

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<i>Utricularia macrorhiza</i>	Greater Bladderwort	S5	Secure	x	out		out	
<i>Utricularia minor</i>	Lesser Bladderwort	S4	Secure		out			
RUBIACEAE		BEDSTRAW						
<i>Galium asprellum</i>	Rough Bedstraw	S5	Secure				out	
<i>Galium labradoricum</i>	Labrador Bedstraw	S2	Sensitive				out	
<i>Galium palustre</i>	Common Marsh Bedstraw	S5	Secure	x	C			
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5	Secure	x	C	F	R	f
<i>Galium triflorum</i>	Three-flowered Bedstraw	S5	Secure		x	R	out	u
<i>Mitchella repens</i>	Partridgeberry	S5	Secure				out	u
CAPRIFOLIACEAE		HONEYSUCKLES						
<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	S5	Secure		L	R		
<i>Linnaea borealis ssp. americana</i>	Twinflower	S5	Secure	x	C	C	out	u
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	S5	Secure			R	R	r
<i>Lonicera villosa</i>	Mountain Fly Honeysuckle	S4S5	Secure	x	x	C	U; F	f
<i>Sambucus racemosa</i>	Red Elderberry	S5	Secure	X				
<i>Viburnum lantanooides</i>	Hobblebush	S5	Secure		R			
<i>Viburnum nudum var. cassinooides</i>	Northern Wild Raisin	S5	Secure	x	C	C	C	c
VALERIANACEAE		VALERIANS						
<i>Valeriana officinalis</i>	Common Valerian	SNA	Exotic	x	x	R		
ASTERACEAE		ASTERS						
<i>Achillea millefolium</i>	Common Yarrow	S5	Secure	x	x	R		
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5	Secure	x	x	R	R	
<i>Bidens cernua</i>	Nodding Beggarticks	S5	Secure	x			out	
<i>Bidens connata</i>	Purple-stemmed Beggarticks	S4	Secure	x		out-R		
<i>Bidens frondosa</i>	Devil's Beggarticks	S5	Secure	x	out	R	out	
<i>Cirsium arvense</i>	Canada Thistle	SNA	Exotic	x	x	R		
<i>Cirsium muticum</i>	Swamp Thistle	S5	Secure		x			
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5	Secure	x	x	C	F; C	c
<i>Erechtites hieraciifolia</i>	Eastern Burnweed	S5	Secure	X				

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<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed	S5	Secure	x	x		R; U	
<i>Eupatorium perfoliatum</i>	Common Boneset	S5	Secure	x	out	R		
<i>Eurybia macrophylla</i>	Large-leaved Aster	S5	Secure			R	U	
<i>Eurybia radula</i>	Low Rough Aster	S5	Secure		x		U; F	r
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5	Secure	x	x	U	out	r
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	SNA	Exotic	x				
<i>Hieracium caespitosum</i>	Field Hawkweed	SNA	Exotic		out			
<i>Hieracium lachenalii</i>	Common Hawkweed	SNA	Exotic		x	R		
<i>Hieracium pilosella</i>	Mouse-ear Hawkweed	SNA	Exotic		x	R	out	
<i>Hieracium piloselloides</i>	Tall Hawkweed	SNA	Exotic			R	out	
<i>Hieracium scabrum</i>	Rough Hawkweed	S5	Secure		out			
<i>Hieracium x flagellare</i>	Whiplash Hawkweed	SNA	Exotic		out			
<i>Hieracium x floribundum</i>	Smoothish Hawkweed	SNA	Exotic		x			
<i>Leontodon autumnalis</i>	Fall Dandelion	SNA	Exotic	x	out	R		
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA	Exotic	x	x	R		
<i>Matricaria discoidea</i>	Pineapple Weed	SNA	Exotic	x				
<i>Megalodonta beckii</i>	Water Beggarticks	S3	Secure	x	out			
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5	Secure	x	C	C	F	c
<i>Oclemena nemoralis</i>	Bog Aster	S5	Secure	x	C	C	U; C	U; C
<i>Oclemena x blakei</i>	a hybrid White Panicked American-Aster	S5	Secure	x	x	C	F	c
<i>Petasites frigidus var. palmatus</i>	Northern Sweet Coltsfoot	S4	Secure		x	C	U; F	u
<i>Prenanthes altissima</i>	Tall Rattlesnakeroot	S5	Secure		x	R	R	u
<i>Prenanthes trifoliolata</i>	Three-leaved Rattlesnakeroot	S5	Secure	x	C	R		
<i>Solidago bicolor</i>	White Goldenrod	S5	Secure		out			
<i>Solidago canadensis</i>	Canada Goldenrod	S5	Secure		out			
<i>Solidago nemoralis</i>	Gray-stemmed Goldenrod	S4S5	Secure	x				
<i>Solidago puberula</i>	Downy Goldenrod	S5	Secure	x	x	U	out	
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5	Secure	x	x	C	U; C	u

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<i>Solidago uliginosa</i>	Northern Bog Goldenrod	S5	Secure	x	x	F	F; C	F; C
<i>Sonchus arvensis</i>	Field Sow Thistle	SNA	Exotic		x	out-R		
<i>Symphotrichum cordifolium</i>	Heart-leaved Aster	S4S5	Secure		L			
<i>Symphotrichum lateriflorum</i>	Calico Aster	S5	Secure	x	C	R	R; U	u
<i>Symphotrichum novi-belgii</i>	New York Aster	S5	Secure	x	out			
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster	S5	Secure	x	x		U; F	out-R (transit)
<i>Taraxacum officinale</i>	Common Dandelion	SNA	Exotic		out	R		
<i>Tussilago farfara</i>	Coltsfoot	SNA	Exotic	x	x	R		
ALISMATACEAE		WATER-PLANTAINS						
<i>Sagittaria cuneata</i>	Northern Arrowhead	S5	Secure	x				
<i>Sagittaria latifolia</i>	Broad-leaved Arrowhead	S5	Secure	x				
HYDROCHARITACEAE		WATER-WEEDS						
<i>Elodea canadensis</i>	Canada Waterweed	S2S3	Secure	x	out			
SCHEUCHZERIAACEAE		POD-GRASSES						
<i>Scheuchzeria palustris ssp. americana</i>	Marsh Scheuchzeria	S5	Secure	x	x		out	
POTAMOGETONACEAE		PONDWEEDS						
<i>Potamogeton epiphydrus</i>	Ribbon-leaved Pondweed	S5	Secure	x	out	R	out	
<i>Potamogeton foliosus</i>	Leafy Pondweed	S4S5	Secure	x				
<i>Potamogeton natans</i>	Floating-leaved Pondweed	S5	Secure	x	out	R	out	
<i>Potamogeton oakesianus</i>	Oakes' Pondweed	S4S5	Secure				out	
<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed	S3	Secure	x	x			
<i>Potamogeton perfoliatus</i>	Clasping-leaved Pondweed	S5	Secure	x				
<i>Potamogeton praelongus</i>	White-stemmed Pondweed	S3?	Sensitive	x				
<i>Potamogeton pusillus</i>	Small Pondweed	S5	Secure			R	out	
<i>Potamogeton pusillus ssp. tenuissimus</i>	Small Pondweed	S4?	Secure	x				
<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed	S2S3	Sensitive	x	out			
ARACEAE		ARUMS						
<i>Calla palustris</i>	Wild Calla	S4	Secure	x	x	U	out	u
<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage	S3S4	Secure		x		out	U; C

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LEMNACEAE		DUCKWEEDS						
<i>Lemna trisulca</i>	Star Duckweed	S4	Secure		x			
<i>Lemna turionifera</i>	Turion Duckweed	S5	Secure	x		R	out	
<i>Spirodela polyrrhiza</i>	Great Duckweed	S4?	Secure	x				
XYRIDACEAE		YELLOW-EYED GRASSES						
<i>Xyris montana</i>	Northern Yellow-Eyed-Grass	S4	Secure	x	x		out	out-F (bog)
JUNCACEAE		RUSHES						
<i>Juncus articulatus</i>	Jointed Rush	S5	Secure	x				
<i>Juncus balticus var. littoralis</i>	Baltic Rush	S5	Secure		out			
<i>Juncus brevicaudatus</i>	Narrow-Panicled Rush	S5	Secure	x	out			
<i>Juncus bufonius</i>	Toad Rush	S5	Secure	x				
<i>Juncus canadensis</i>	Canada Rush	S5	Secure	x	out		out	r
<i>Juncus effusus</i>	Soft Rush	S5	Secure	x	x	U	R; F	u
<i>Juncus filiformis</i>	Thread Rush	S5	Secure	x	out	U	U	
<i>Juncus pelocarpus</i>	Brown-Fruited Rush	S5	Secure	x	out		out	
<i>Juncus stygius ssp. americanus</i>	Moor Rush	S2	Sensitive	x	out			
<i>Juncus tenuis</i>	Slender Rush	S5	Secure	X				
<i>Luzula acuminata</i>	Hairy Woodrush	S5	Secure		U			
<i>Luzula multiflora</i>	Common Woodrush	S5	Secure	x	x	U		
CYPERACEAE		SEDGES						
<i>Carex arctata</i>	Black Sedge	S5	Secure	x	x	R	out	
<i>Carex brunnescens ssp. sphaerostachya</i>	Brownish Sedge	S5	Secure	x	C	C	C	c
<i>Carex canescens</i>	Silvery Sedge	S5	Secure	x	C	C	C	f
<i>Carex chordorrhiza</i>	Creeping Sedge	S1	May Be At Risk	x	x		out	f
<i>Carex communis</i>	Fibrous-Root Sedge	S5	Secure		out			
<i>Carex crinita</i>	Fringed Sedge	S5	Secure	x	out			
<i>Carex debilis var. rudgei</i>	White-edged Sedge	S5	Secure	x	x	U	out	
<i>Carex diandra</i>	Lesser Panicled Sedge	S4	Secure	x	x		out	out-R (Round Lk)

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<i>Carex disperma</i>	Two-seeded Sedge	S5	Secure		x	R	R	out-R (transit)
<i>Carex echinata</i>	Star Sedge	S5	Secure	x	C	C	C	c
<i>Carex gynandra</i>	Nodding Sedge	S5	Secure	x	x	F	F; C	
<i>Carex interior</i>	Inland Sedge	S4S5	Secure		x	R	out	out-F (transit)
<i>Carex intumescens</i>	Bladder Sedge	S5	Secure	x	C	F	out	c
<i>Carex lacustris</i>	Lake Sedge	S4	Secure	x	x		out	out-R (Round Lk)
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender Sedge	S5	Secure	x	x	out-C	C	out-U (margins)
<i>Carex leptalea</i>	Bristly-stalked Sedge	S5	Secure		x	C	U; C	f
<i>Carex leptonevia</i>	Finely-Nerved Sedge	S5	Secure	x	x		R	r
<i>Carex limosa</i>	Mud Sedge	S4	Secure	x	x	out-F		
<i>Carex livida</i> var. <i>radicaulis</i>	Livid Sedge	S1	May Be At Risk		out	out-R	R	
<i>Carex magellanica</i> ssp. <i>irrigua</i>	Boreal Bog Sedge	S5	Secure	x	C	F	C	c
<i>Carex nigra</i>	Smooth Black Sedge	S5	Secure	x				
<i>Carex novae-angliae</i>	New England Sedge	S5	Secure	x	x			r
<i>Carex pauciflora</i>	Few-Flowered Sedge	S4S5	Secure	x	x			
<i>Carex projecta</i>	Necklace Sedge	S5	Secure		out		R	
<i>Carex pseudocyperus</i>	Cyperuslike Sedge	S4S5	Secure	x	x	R	out	u
<i>Carex scoparia</i>	Broom Sedge	S5	Secure	x	x			
<i>Carex stipata</i>	Awl-fruited Sedge	S5	Secure		x	F	R; F	
<i>Carex stricta</i>	Tussock Sedge	S5	Secure				out	
<i>Carex trisperma</i> var. <i>billingsii</i>	Three-Seed Sedge	S4?	Secure	x	out		C	out-U (Round Lk)
<i>Carex trisperma</i> var. <i>trisperma</i>	Three-seeded Sedge	S5	Secure	x	C		C	c
<i>Carex utriculata</i>	Northern Beaked Sedge	S5	Secure			R	out	
<i>Dulichium arundinaceum</i>	Three-Way Sedge	S5	Secure	x	out	R	U	
<i>Eleocharis acicularis</i>	Needle Spikerush	S5	Secure	x	out			
<i>Eleocharis obtusa</i>	Blunt Spikerush	S5	Secure	x	out			
<i>Eleocharis ovata</i>	Ovate Spikerush	S2?	Sensitive	x				
<i>Eleocharis palustris</i>	Common Spikerush	S5	Secure	x	out		out	out-R (Round Lk)

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<i>Eleocharis tenuis</i>	Slender Spikerush	S5	Secure		out			
<i>Eriophorum angustifolium</i>	Narrow-leaved Cottongrass	S5	Secure	x	x	U	out	u
<i>Eriophorum chamissonis</i>	Russet Cotton-Grass	S3S4	Secure	x	x	out-R	C	f
<i>Eriophorum gracile</i>	Slender Cottongrass	S2	Sensitive		x	R	F	
<i>Eriophorum tenellum</i>	Rough Cottongrass	S4S5	Secure	x	out			
<i>Eriophorum vaginatum var. spissum</i>	Tussock Cottongrass	S5	Secure	x	x	out-F	out	out-C (bog)
<i>Eriophorum virginicum</i>	Tawny Cottongrass	S5	Secure	x	x	out-R	out	out-U (bog)
<i>Eriophorum viridicarinatum</i>	Green-keeled Cottongrass	S4	Secure	x	x		out	
<i>Rhynchospora alba</i>	White Beakrush	S5	Secure	x	x	out-F	out	
<i>Rhynchospora fusca</i>	Brown Beakrush	S4	Secure	x	out	out-R	out	
<i>Schoenoplectus acutus</i>	Hardstem Bulrush	S4	Secure	x	out	out-R		
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	S5	Secure	X				
<i>Scirpus atrocinctus</i>	Black-girdled Bulrush	S5	Secure		out	R	out	
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5	Secure	x	x	R	out	
<i>Scirpus hattorianus</i>	Mosquito Bulrush	S5	Secure		x	R	out	
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	S5	Secure	x	x		out	
<i>Trichophorum alpinum</i>	Alpine Clubrush	S4	Secure	x	out	out-F	out	out-R (bog)
<i>Trichophorum caespitosum</i>	Tufted Clubrush	S5	Secure	x	x	U	R; C	out-R (bog)
POACEAE	GRASSES							
<i>Agrostis capillaris</i>	Colonial Bent Grass	SNA	Exotic		out			
<i>Agrostis gigantea</i>	Redtop	SNA	Exotic	x				
<i>Agrostis perennans</i>	Upland Bent Grass	S4S5	Secure	x				
<i>Agrostis scabra</i>	Rough Bent Grass	S5	Secure	x				
<i>Anthoxanthum odoratum</i>	Large Sweet Vernal Grass	SNA	Exotic		x			
<i>Brachyelytrum septentrionale</i>	Northern Shorthusk	S5	Secure		x	R	out	u
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5	Secure	x	x	C	C	c
<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass	S1S2	Sensitive	x	out			
<i>Cinna latifolia</i>	Drooping Wood Reed Grass	S5	Secure	x				
<i>Danthonia spicata</i>	Poverty Oat Grass	S5	Secure	x	x	U	out	

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole	
<i>Deschampsia flexuosa</i>	Wavy Hair Grass	S5	Secure	x	out	R			
<i>Elymus repens</i>	Quack Grass	SNA	Exotic	x					
<i>Festuca rubra</i>	Red Fescue	S5	Secure		out				
<i>Glyceria borealis</i>	Northern Manna Grass	S5	Secure	x	out				
<i>Glyceria canadensis</i>	Canada Manna Grass	S5	Secure	x	U		U		
<i>Glyceria grandis</i>	Common Tall Manna Grass	S4S5	Secure		out				
<i>Glyceria laxa</i>	Northern Mannagrass	S4?	Secure	x	x	C			
<i>Glyceria melicaria</i>	Slender Manna Grass	S4	Secure			R	out		
<i>Glyceria striata</i>	Fowl Manna Grass	S5	Secure	x	x	U	F; C	f	
<i>Leersia oryzoides</i>	Rice Cut Grass	S5	Secure	x					
<i>Muhlenbergia glomerata</i>	Spiked Muhly	S4	Secure	x	out		out	out-R (bog, far end)	
<i>Muhlenbergia uniflora</i>	Bog Muhly	S5	Secure				R		
<i>Phalaris arundinacea</i>	Reed Canary Grass	S5	Secure	x					
<i>Phleum pratense</i>	Common Timothy	SNA	Exotic	x	out				
<i>Phragmites australis ssp. americanus</i>	Common Reed	S4	Secure	x	x	out-R	U	out-R (bog, far end)	
<i>Poa palustris</i>	Fowl Blue Grass	S5	Secure	x		R			
<i>Poa pratensis</i>	Kentucky Blue Grass	S5	Secure			R			
<i>Poa trivialis</i>	Rough Blue Grass	SNA	Exotic		x		out		
<i>Torreyochloa pallida var. fernaldii</i>	Pale False Manna Grass	S4S5	Secure	x					
<i>Zizania palustris</i>	Northern Wild Rice	SNA	Exotic	x	out				
SPARGANIACEAE		BUR-REEDS							
<i>Sparganium americanum</i>	American Burreed	S5	Secure		x				
<i>Sparganium emersum</i>	Green-fruited Burreed	S5	Secure		out	U			
<i>Sparganium eurycarpum</i>	Broad-fruited Burreed	S4	Secure	x					
<i>Sparganium fluctuans</i>	Floating Burreed	S4	Secure		out				
<i>Sparganium natans</i>	Small Burreed	S3	Secure		out		out		
TYPHACEAE		CATTAILS							
<i>Typha angustifolia</i>	Narrow-Leaved Cattail	S5	Secure	x					

Species / Family	Common Name	S-rank	GS Rank	2003 Long Lk & Portage Run	2011 Collins	2012 Bowser	2013 Oulton	2014 Cole
<i>Typha latifolia</i>	Broad-leaved Cattail	S5	Secure	x	x	U	out	r
PONTEDERIACEAE		PICKERELWEEDS						
<i>Pontederia cordata</i>	Pickerelweed	S5	Secure	x				
LILIACEAE		LILIES						
<i>Clintonia borealis</i>	Yellow Bluebead Lily	S5	Secure	x	x	F	F	c
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure	x	C	C	C	c
<i>Maianthemum trifolium</i>	Three-leaved False Solomon's Seal	S5	Secure	x	C	C	C	c
<i>Medeola virginiana</i>	Indian Cucumber Root	S5	Secure	x	U			f
<i>Streptopus amplexifolius</i>	Clasping-leaved Twisted-stalk	S4S5	Secure	x	x		R	r
<i>Streptopus lanceolatus</i>	Rose Twisted-stalk	S5	Secure		R	R	out	r
<i>Trillium undulatum</i>	Painted Trillium	S5	Secure	x	C	C	C	c
IRIDACEAE		IRISES						
<i>Iris versicolor</i>	Harlequin Blue Flag	S5	Secure	x	C	C	C	c
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed-grass	S5	Secure			R		
ORCHIDACEAE		ORCHIDS						
<i>Arethusa bulbosa</i>	Arethusa	S4	Secure		x	F	U	out-C (bog)
<i>Calopogon tuberosus</i>	Tuberous Grass Pink	S4	Secure	x	x		R	
<i>Corallorhiza trifida</i>	Early Coralroot	S4	Secure		out			
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5	Secure	x	C		C	c
<i>Platanthera aquilonis</i>	Tall Northern Green Orchid	S4?	Secure		out			
<i>Platanthera blephariglottis</i>	White Fringed Orchid	S4	Secure	x	R		R	
<i>Platanthera dilatata</i>	White Bog Orchid	S4S5	Secure		x		out	
<i>Platanthera obtusata</i>	Blunt-leaved Orchid	S4	Secure		x			
<i>Platanthera psycodes</i>	Small Purple Fringed Orchid	S4	Secure				R	
<i>Pogonia ophioglossoides</i>	Rose Pogonia	S4	Secure	x	x	out-R	R	R; F
<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses	S5	Secure	x				

Table 3. Breeding birds recorded in and around the NCC Cole Property, with maximum breeding evidence noted (following Maritimes Breeding Bird Atlas methods). Breeding evidence marked “**” indicates the species was only seen outside property boundaries.

Species	Common Name	S-rank	GS Rank	Breeding Evidence
<i>Contopus cooperi</i>	Olive-sided Flycatcher	S3B	1 At Risk	Possible breeding – singing male in suitable breeding habitat
<i>Wilsonia canadensis</i>	Canada Warbler	S3B	1 At Risk	** Confirmed breeding – adult carrying food
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	S3S4B	3 Sensitive	** Possible breeding – adult in suitable breeding habitat
<i>Bonasa umbellus</i>	Ruffed Grouse	S4S5	4 Secure	Possible breeding – singing male in suitable breeding habitat
<i>Corvus brachyrhynchos</i>	American Crow	S5	4 Secure	Possible breeding – adult in suitable breeding habitat
<i>Catharus ustulatus</i>	Swainson's Thrush	S4S5B	4 Secure	Possible breeding – singing male in suitable breeding habitat
<i>Vireo olivaceus</i>	Red-eyed Vireo	S5B	4 Secure	Possible breeding – singing male in suitable breeding habitat
<i>Parula americana</i>	Northern Parula	S5B	4 Secure	Possible breeding – singing male in suitable breeding habitat
<i>Dendroica magnolia</i>	Magnolia Warbler	S5B	4 Secure	Possible breeding – singing male in suitable breeding habitat
<i>Dendroica virens</i>	Black-throated Green Warbler	S4S5B	4 Secure	Confirmed breeding – adult carrying food
<i>Mniotilta varia</i>	Black-and-White Warbler	S4S5B	4 Secure	** Possible breeding – singing male in suitable breeding habitat
<i>Seiurus noveboracensis</i>	Northern Waterthrush	S4B	4 Secure	** Possible breeding – singing male in suitable breeding habitat
<i>Passerculus sandwichensis</i>	Savannah Sparrow	S4B	4 Secure	** Possible breeding – singing male in suitable breeding habitat
<i>Melospiza melodia</i>	Song Sparrow	S5B	4 Secure	Confirmed breeding – nest with eggs (4)
<i>Melospiza georgiana</i>	Swamp Sparrow	S5B	4 Secure	Possible breeding – adult in suitable breeding habitat
<i>Junco hyemalis</i>	Dark-eyed Junco	S4S5	4 Secure	Possible breeding – singing male in suitable breeding habitat