



Atlantic Canada CDC Canada Atlantique

Botanical Fieldwork on Cape Breton Island for the Nova Scotia Species at Risk Conservation Fund



Above: Mountain Sorrel (*Oxyria digyna*, S1 – May Be At Risk) at Big Southwest Brook, Cape Breton Highlands with Sean Basquill (NS DNR) pointing to its cliff ledge habitat. The species had not been documented in Nova Scotia in about 50 years. **Below:** Dorcas Copper (*Lycaena dorcas*), a new butterfly species for Nova Scotia, on Shrubby Cinquefoil flower (*Dasiphora fruticosa* ssp. *floribunda*) at Black River Fens.

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Introduction

This project attempted to precisely locate high priority areas for conservation in southwestern Cape Breton Island and to document sites of rare plant significance in the central part of Cape Breton Highlands National Park, especially the Arctic disjunct species that had been documented on Big Southwest Brook in the 1950s and 1960s but which had not been seen since and for which locations were not precisely known. Our 2010 work in southwestern Cape Breton builds upon the extensive work we conducted for the Nova Scotia Crown Share Land Legacy Trust in 2009 on River Inhabitants, River Denys, Mabou River, Southwest Mabou River, Mull River and Middle River, as well as an upland site on Skye Glen Mountain just north of Whycomagh.

Existing protected areas in southwestern Cape Breton (here referring to the area south and west of the Margaree and Middle Rivers) are limited to three: Trout Brook Wilderness Area (2875 ha), Bornish Hill Nature Reserve (960 ha), and MacFarlane Woods Nature Reserve (132 ha). Thus most of the significant community types present in the region are unprotected or are protected only to a limited extent. This is especially true of the species and communities of calcareous river valleys where there is limited public land, where agricultural impacts are greatest, and where there are often high concentrations of rare and highly threatened plant species.

Southwest Cape Breton Island and the Cape Breton Highlands were fairly extensively surveyed for plants by Chalmers Smith and collaborators in the 1950s. In southwest Cape Breton, they documented an exceptional suite of rare species (often with southern affinities) associated with calcareous (basic soil) fen, floodplain forest, river shores, cliffs, marshes and estuaries. In the Cape Breton Highlands, they, and Hal Hinds in the early 1980s, documented concentrations of disjunct Arctic and boreal plants in cool microclimate sites associated with deep ravines, as well as some species associated with rich, cool deciduous and mixed forests. Most of these northern species are not known from any other parts of Nova Scotia.

Aside from work by the AC CDC in 2001 and 2009, there has been little detailed botanical fieldwork in southwest Cape Breton and in the Cape Breton Highlands since the late 1950s and early 1980s respectively. Any existing rare plant records for the areas surveyed in 2010 were thus primarily 30 to 50 or more years old, not precisely located, and were only questionably persistent at present. These old and imprecise records give only limited direction as to which parcels of land would provide the greatest conservation value, but they clearly show that the areas are highly provincially significant for rare plants.

Data from the 2010 project will be permanently maintained in the Atlantic Canada Conservation Data Centre's database and will be made available to Nova Scotia Department of Natural Resources, Parks Canada, nature trusts and Nature Conservancy.

Methods

Fieldwork was conducted over 7 calendar days between July 14, 2010 and July 23, 2010. AC CDC botanists Sean Blaney and David Mazerolle each spent approximately 13 7.5 hour person days on fieldwork and approximately 7 days on data processing and reporting. We were assisted by Sean Basquill and Lawrence Benjamin of the Nova Scotia Department of Natural Resources on three field days at the Cape Breton Highlands site. Table 1 indicates field days and observers at each site. Figure 1 maps general locations of survey sites and Figures 2 to Figure 4 map precise areas covered in each site. Each AC CDC botanist kept GPS units on while in the field to precisely record area covered. We compiled full vascular plant species lists with a general abundance ranking for

every species at each site. The following four qualifiers were used to characterize the relative on-site abundance of species: *rare* – present in small numbers at very few locations; *uncommon* – present at roughly four or five sites in small numbers or one or two sites in large numbers; *fairly common* – widespread at the site but generally not in very large numbers; *common* – widespread at the site and present in large numbers.

For provincially rare species (those species with provincial status ranks, or S-ranks, of S1 to S3S4; S-ranks defined at www.natureserve.org/explorer/ranking.htm#globalstatus), we recorded locations by GPS, along with information on population size and extent, habitat and associated species. The S-ranks used were those as of summer 2010. It should be noted that Nova Scotia S-ranks are in the process of an extensive revision, with many species set to be revised to less-rare ranks and a few species revised to more-rare ranks, but that most rank revisions are not yet finalized as of December 2010. A majority of rare species were also documented by voucher specimens that will be deposited at the E.C. Smith Herbarium (ACAD) at Acadia University and the Nova Scotia Museum of Natural History Herbarium (NSPM) in Halifax. All species data (species lists by site with generalized locations and precisely documented rare species' records and non-rare species specimen records) will be permanently documented in the Atlantic Canada Conservation Data Centre database.

In addition to vascular plant data, Sean Blaney collected location data for provincially rare or COSEWIC-listed birds when they were detected and collected data on breeding status of all bird species during July fieldwork. These data have been entered into the Maritimes Breeding Bird Atlas database. Sean Blaney also a few moss specimens from various field sites. These specimens will be identified by bryologist Bruce Bagnell of Nauwigewauk, New Brunswick and will be deposited in the New Brunswick Museum Herbarium (NBM).

Results

Rare vascular plant species

Across all sites, we recorded 65 provincially rare vascular plant species, 73 rare species x survey site combinations (a conservative estimate of the number of Element Occurrences) and we documented a total of 627 rare plant locations by GPS (one Element Occurrence can be made up of many documented locations, as when a species occurs frequently but discontinuously along a stretch of shoreline). Table 1 lists rare species locations by survey site. Rare species included 15 extremely rare (S1, S1? or S1S2 ranked) species, 24 very rare (S2, S2? or S2S3 ranked) species, and 26 uncommon (S3, S3? or S3S4 ranked) species. Under NS DNR General Status Ranks, the 65 rare species included 20 Red (May Be At Risk) species, 26 Yellow (Sensitive) species, 17 Secure (Green) species and 2 Undetermined species.

The highest diversity of rare plant species by site was at the Cape Breton Highlands, where we found 270 locations of 33 rare species during our three field days. These included 62 locations of 7 species ranked S1, S1S2 or S1S3, 63 locations of 13 species ranked S2 or S2S3 and 145 locations of 13 species ranked S3 or S3S4. Under NS DNR ranks this amounted to 70 locations of 8 species ranked Red (May Be At Risk), 113 locations of 17 species ranked Yellow (Sensitive), 83 locations of 8 species ranked Green (Secure) and 4 locations of one species ranked Undetermined.

Second highest diversity of rare plant species by site was at the Black River Fens (during only a single day of fieldwork), where we found 54 locations of 5 species ranked S1 or S1S2, 63 locations of 7 species ranked S2 or S2S3 and 61 locations of 8 species ranked S3 or S3S4. Under NS DNR General Status Ranks these records amounted to 83 locations of 7 species ranked Red (May Be At Risk), 74 locations of 8 species ranked Yellow (Sensitive) and 35 locations of 5 species ranked Green (Secure).

The Northeast Margaree River (two days of fieldwork) was next richest in rare plants with 144 locations of 12 species, including 7 locations of two S1 species, 35 locations of six S2 or S2S3 species and 102 locations of four S3 or S3S4 species. Under NS DNR ranks, these amounted to 20 locations of four Red (May Be At Risk) species, 24 locations of four Yellow (Sensitive) species, and 100 locations of three Green (Secure) species.

The River Inhabitants site was the least diverse for rare species with 34 locations of 7 rare plant species, including 5 locations of two species ranked S1 or S1?, 7 locations of two species ranked S2S3 and 8 locations of 3 species ranked S3 or S3S4. Under NS DNR ranks, these amounted to 3 locations of one Red (May Be At Risk) species, 5 locations of one Yellow (Sensitive) species, 8 locations of three Green (Secure) species and 4 locations of two species ranked Undetermined.

Rare Animal Species

Although not the focus of our fieldwork, we made one very significant butterfly discovery, documenting the first Nova Scotia record of the Dorcas Copper (*Lycaena dorcas*) at the Black River Fens (Figure 6). Numerous individuals, including mated pairs, were found within rich, open fen habitats over an area about 2 km long. This species is known from western New Brunswick [where it is represented by a narrow endemic subspecies called Clayton's Copper (*Lycaena dorcas claytoni*)] that is restricted to New Brunswick and Maine and from across Canada from Yukon to eastern Newfoundland south of the tundra, but the occurrence at the Black River Fens is at 300 km to 500 km disjunct from the next nearest known population. We collected one specimen and took one photograph to document the population, but a larger collection of specimens will be required to determine whether the Nova Scotia population represents the nominate subspecies *Lycaena dorcas dorcas*, the Clayton's Copper subspecies *L. d. claytonii*, or (given the extremely disjunct nature of the occurrence), an undescribed subspecies. The species uses Shrubby Cinquefoil (*Dasiphora fruticosa* ssp. *floribunda*; =*Potentilla fruticosa*), which is a co-dominant shrub species over much of the open fens at Black River, as its larval foodplant.

In addition to rare vascular plant and moss data, we documented eight locations of COSEWIC Threatened bird species: two locations for Canada Warbler at the Black River Fens, where breeding was confirmed in two sites; four locations for single Olive-sided Flycatcher in suitable breeding habitat (Cape Breton Highlands, 2 locations in Black River Fens, Northeast Margaree River), one location for Common Nighthawk in suitable breeding habitat (on the River Inhabitants), and one location for Chimney Swift, with a pair in suitable breeding habitat. Other provincially tracked birds recorded included a Bank Swallow colony in a natural riverbank site on the Northeast Margaree River, and an agitated pair of Greater Yellowlegs plus multiple individuals in suitable habitat for Pine Grosbeak, Fox Sparrow and Blackpoll Warbler in the Cape Breton Highlands. All breeding bird records have been entered into the Maritimes Breeding Bird Atlas data set.

Discussion

Our 2010 fieldwork made a very important contribution to the understanding of rare plant distribution and status in Nova Scotia. It was highly successful in rediscovering and precisely documenting provincially unique or extremely rare plant species, in documenting new locations of rare plants and in providing important insights into the provincial status of many rare plant species which will be valuable in revising status ranks in the future. In addition to our plant records, we found one new butterfly for the province of Nova Scotia and numerous provincially tracked bird species. The data collected during this project will be permanently maintained in the Atlantic Canada Conservation Data Centre database and collectively these records will be important in guiding future conservation

and management efforts in and around the study areas. We greatly appreciate the support of the Nova Scotia Species at Risk Conservation Fund that allowed us to undertake this work.

Table 1. Number of observations of each rare species by survey site, with AC CDC (S-ranks) and NS DNR (General Status or GS Ranks) status ranks.

Species	Common Name	S-rank	GS Rank	# Locations by Survey Site				
				Black River Fens	Cape Breton Highlands	Northeast Margaree	River Inhabitants	TOTAL
<i>Agrimonia gryposepala</i>	Tall Hairy Groovebur	S3	Secure			48		48
<i>Angelica atropurpurea</i>	Great Angelica	S3S4	Secure	13			5	18
<i>Asclepias incarnata</i>	Swamp Milkweed	S3	Secure	14				14
<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort	S2	Sensitive		4			4
<i>Betula pumila</i>	Swamp Birch	S2S3	Sensitive	5	2			7
<i>Carex atratiformis</i>	Black Sedge	S2	Sensitive		1			1
<i>Carex bebbii</i>	Bebb's Sedge	S1S2	May Be At Risk	1				1
<i>Carex capillaris</i>	Hair-Like Sedge	S2	Sensitive		5			5
<i>Carex cryptolepis</i>	Northeastern Sedge	S3?	Secure		2			2
<i>Carex eburnea</i>	Ebony Sedge	S3	Sensitive		2			2
<i>Carex viridula var. elatior</i>	A Sedge	S1	May Be At Risk	11				11
<i>Carex wiegandii</i>	Wiegand's Sedge	S1	May Be At Risk		36			36
<i>Caulophyllum thalictroides</i>	Blue Cohosh	S2	May Be At Risk			4		4
<i>Cinna arundinacea</i>	Stout Wood Reed-Grass	S1	May Be At Risk				3	3
<i>Coeloglossum viride var. virescens</i>	Long-Bract Green Orchis	S2S3	May Be At Risk		6			6
<i>Cryptogramma stelleri</i>	Fragile Rockbrake	S1	May Be At Risk		1			1
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-Slipper	S2S3	Sensitive		1	1		2
<i>Cypripedium reginae</i>	Showy Lady's-Slipper	S2	May Be At Risk	26				26
<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern	S1	May Be At Risk		11			11
<i>Eleocharis quinqueflora</i>	Few-Flower Spikerush	S2	May Be At Risk	3				3
<i>Elymus wiegandii</i>	Wiegand's Wild Rye	S1	May Be At Risk			5		5
<i>Epilobium hornemannii</i>	Hornemann Willow-Herb	S3	Sensitive		5			5
<i>Epilobium strictum</i>	Downy Willow-Herb	S3	Sensitive	4				4
<i>Equisetum hyemale var. affine</i>	Scouring Rush	S3S4	Secure			3		3
<i>Equisetum pratense</i>	Meadow Horsetail	S2	Sensitive			2		2
<i>Erigeron hyssopifolius</i>	Daisy Fleabane	S3	Sensitive		17			17
<i>Fraxinus nigra</i>	Black Ash	S2S3	Sensitive	1	2	2		5
<i>Galium kamtschaticum</i>	Boreal Bedstraw	S3	Secure		37			37
<i>Galium labradoricum</i>	Bog Bedstraw	S2	Sensitive	23				23
<i>Geocaulon lividum</i>	Northern Comandra	S3	Sensitive		5			5
<i>Goodyera oblongifolia</i>	Giant Rattlesnake-Plantain	S3	Sensitive		7			7
<i>Hieracium robinsonii</i>	Robinson's Hawkweed	S2	Sensitive		24			24
<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss	S1S3	Undetermined		4			4
<i>Juncus trifidus</i>	Highland Rush	S2	Sensitive		1			1
<i>Laportea canadensis</i>	Wood Nettle	S3	Sensitive	2		2		4
<i>Lilium canadense</i>	Canada Lily	S2S3	Sensitive				5	5
<i>Liparis loeselii</i>	Loesel's Twayblade	S3S4	Secure	1				1
<i>Lobelia kalmii</i>	Kalm's Lobelia	S1	May Be At Risk	6				6
<i>Luzula parviflora</i>	Small-Flowered Wood-Rush	S3S4	Secure		21			21
<i>Osmorhiza longistylis</i>	Smoother Sweet-Cicely	S2	May Be At Risk			9		9
<i>Oxyria digyna</i>	Mountain Sorrel	S1	May Be At Risk		6			6
<i>Platanthera grandiflora</i>	Large Purple-Fringe Orchis	S3	Secure				3	3
<i>Platanthera orbiculata</i>	Large Roundleaf Orchid	S3	Secure		1			1
<i>Polygonum robustius</i>	Stout Smartweed	S3S4	Secure	6				6

Species	Common Name	S-rank	GS Rank	# Locations by Survey Site				
				Black River Fens	Cape Breton Highlands	Northeast Margaree	River Inhabitants	TOTAL
<i>Proserpinaca palustris</i>	Marsh Mermaid-Weed	S3	Secure				1	1
<i>Pyrola asarifolia</i>	Pink Wintergreen	S3	Secure	1	12			13
<i>Pyrola minor</i>	Lesser Wintergreen	S2	Sensitive		4			4
<i>Rhamnus alnifolia</i>	Alderleaf Buckthorn	S3	Sensitive	34				34
<i>Salix candida</i>	Hoary Willow	S1	May Be At Risk	29				29
<i>Salix pedicellaris</i>	Bog Willow	S2	Sensitive	4				4
<i>Sanguinaria canadensis</i>	Bloodroot	S3S4	Secure			49		49
<i>Saxifraga aizoides</i>	Yellow Mountain Saxifrage	S1	May Be At Risk		3			3
<i>Schizaea pusilla</i>	Curly-Grass Fern	S3	Secure		9			9
<i>Solidago multiradiata</i>	Alpine Goldenrod	S1S2	May Be At Risk		1			1
<i>Stuckenia filiformis</i>	Slender Pondweed	S2S3	Undetermined				2	2
<i>Triantha glutinosa</i>	Sticky False-Asphodel	S1	May Be At Risk	7				7
<i>Triglochin gaspensis</i>	Gaspe Peninsula Arrow-Grass	S1?	Undetermined				2	2
<i>Triosteum aurantiacum</i>	Coffee Tinker's-Weed	S2	Sensitive			17		17
<i>Trisetum melicoides</i>	Purple False Oats	S1	May Be At Risk			2		2
<i>Trisetum spicatum</i>	Narrow False Oats	S3S4	Secure		1			1
<i>Vaccinium boreale</i>	Northern Blueberry	S2	May Be At Risk		6			6
<i>Vaccinium caespitosum</i>	Dwarf Blueberry	S2	Sensitive		6			6
<i>Veronica serpyllifolia</i> ssp. <i>humifusa</i>	Thyme-Leaved Speedwell	S2S3	Sensitive		1			1
<i>Viburnum edule</i>	Squashberry	S3	Sensitive		26			26
<i>Viola nephrophylla</i>	Northern Bog Violet	S2	Sensitive	1				1
Total # Rare Spp x Site				20	33	12	7	72
Total Locations				192	270	144	21	627

Table 2. Comments on occurrences and significance of the most significant rare plant species observed during the Nova Scotia Species at Risk Conservation Fund fieldwork.

Species	Common Name	S-rank	GS Rank	Total # locations	Comments
<i>Oxyria digyna</i>	Mountain Sorrel	S1	May Be At Risk	6	An Arctic disjunct species, found in one area on Big Southwest Brook, at the site where it had been first found for Nova Scotia in the 1950s. Not seen at that site (the precise location of which was unclear) since the early 1960s and known from no other locations in the province. It was growing on moist, deeply shaded cliff ledges in a narrow ravine along the brook.
<i>Saxifraga aizoides</i>	Yellow Mountain Saxifrage	S1	May Be At Risk	3	An Arctic disjunct species, found in one area on Big Southwest Brook, at the site where it had been first found for Nova Scotia in the 1950s. Not seen at that site (the precise location of which was unclear) since the early 1960s and known from only one other Nova Scotia location at Corney Brook gorge in the northwestern part of the national park.
<i>Elymus wiegandii</i>	Wiegand's Wild Rye	S1	May Be At Risk	5	Five small populations found in rich floodplain forest and thickets along the Northeast Margaree River. This species is common in similar habitats in northern and western New Brunswick, but very restricted in Nova Scotia to rich floodplain sites and is significantly threatened as a result.
<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern	S1	May Be At Risk	11	Found in three separate areas of Big Southwest Brook on streamside cliff ledges, one of which had been previously documented, although the location was not precisely known. Specimens were sent to Carl Rothfels, Ph.D. candidate in <i>Cystopteris</i> taxonomy at Duke University, for genetic analysis.
<i>Carex viridula</i> var. <i>elatio</i> r	A Sedge	S1	May Be At Risk	11	Known in Nova Scotia only from the Black River Fens, where it is locally abundant in the richest parts of the open fens. We recorded 11 locations of the species across all of the the open fen sites.
<i>Cinna arundinacea</i>	Stout Wood Reed-Grass	S1	May Be At Risk	3	Large population in rich floodplain thickets on River Inhabitants, where it had previously been found in two other upstream locations. Only known from two other rivers (Stewiacke and Annapolis) in NS (Stewiacke and Annapolis).
<i>Lobelia kalmii</i>	Kalm's Lobelia	S1	May Be At Risk	6	Local within Black River Fens in mucky, more sparsely vegetated depressions in open fen peat. Very rare in Nova Scotia and restricted to seepy, calcareous river and sea shores and fens. Previously known from Black River Fens, but our records are the first to include precise location information.
<i>Salix candida</i>	Hoary Willow	S1	May Be At Risk	29	Locally common within the Black River Fens, the only known occurrence in Nova Scotia, where it is highly disjunct from the next nearest sites in western Newfoundland, western Prince Edward Island and northeastern New Brunswick. Ruth Newell is currently writing a provincial status report on the species and data from our 29 locations of the species has been passed on to her to help inform that document.
<i>Triantha glutinosa</i>	Sticky False-Asphodel	S1	May Be At Risk	7	Locally fairly common within the richest parts of the open fens at Black River. Already known from the site and from one other Nova Scotia location at Cheticamp River (where it likely occurred on seepy, calcareous river shore), but our records were the first to include precise location information.
<i>Cryptogramma stelleri</i>	Fragile Rockbrake	S1	May Be At Risk	1	One small population found at Big Southwest Brook, from an area where it had been previously documented in the 1950s. Restricted to cliffs that are at least somewhat calcareous and known from about 6 Nova Scotia locations.
<i>Carex wiegandii</i>	Wiegand's Sedge	S1	May Be At Risk	36	Previously known in Nova Scotia from only three locations, we found it to be common across the Cape Breton Highlands in mucky peat soils around the transition zones between open and forested peatlands and in some semi-open seepage communities on valley slopes. It had previously likely been overlooked and/or misidentified because of similarity to other sedge species, especially Atlantic Sedge (<i>Carex atlantica</i> ssp. <i>atlantica</i>). The species is a globally uncommon endemic to northeastern North America.
<i>Trisetum melicoides</i>	Purple False Oats	S1	May Be At Risk	2	Two widely separated sites found on moist rock outcrop ledges along the Northeast Margaree River. This species is otherwise known in Nova Scotia from a single occurrence at Indian Brook in Victoria County and had not been documented in Nova Scotia since the 1950s. It is fairly common in similar habitats in northern New Brunswick.

Species	Common Name	S-rank	GS Rank	Total # locations	Comments
<i>Triglochin gaspensis</i>	Gaspé Peninsula Arrow-Grass	S1?	Undetermined	2	Found in saltmarsh on lower River Inhabitants. A relatively recently segregated species poorly documented in Nova Scotia, it appears to be fairly common in suitable habitat throughout the province meaning that the status ranks need updating.
<i>Solidago multiradiata</i>	Alpine Goldenrod	S1S2	May Be At Risk	1	Found in one location on a high cliff ledge on the upper Big Southwest Brook, which was a new site, although the species had been documented from the brook previously.
<i>Carex bebbii</i>	Bebb's Sedge	S1S2	May Be At Risk	1	One site found in a moist ditch along the old railway bed at Black River Fens. This is a species of moist, often seepy, sites with calcareous soil, which restricts its occurrence in Nova Scotia. Known from about 5 other provincial locations but was not previously documented from the Black River area.
<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss	S1S3	Undetermined	4	Found in four locations on cliff ledges along Big Southwest Brook. Undetermined status and the broad range S-rank (S1S3) reflect uncertainty about its status vs. the similar <i>H. selago</i> , from which it was recently separated. It is likely that most or all NS records of <i>H. selago</i> are actually <i>H. appalachiana</i> , in which the species would deserve S3 status and would probably be considered Secure.
<i>Caulophyllum thalictroides</i>	Blue Cohosh	S2	May Be At Risk	4	All occurrences were within one population in a good remnant floodplain sugar maple - white ash forest on the Northeast Margaree River. The site represents the largest population known for the species in Cape Breton and is one of the largest in Nova Scotia. The species is restricted in Nova Scotia to rich floodplain sites and is significantly threatened as a result.
<i>Vaccinium boreale</i>	Northern Blueberry	S2	May Be At Risk	6	Was fairly consistently present on drier peaty hummocks (probably representing sites with bedrock approaching the peat surface) within open peatland on the Cape Breton Highlands. A potential threat from hybridization with the more common Velvet-leaf Blueberry (<i>Vaccinium myrtilloides</i>) means the status ranks are rarer/more threatened than they otherwise would be.
<i>Cypripedium reginae</i>	Showy Lady's-Slipper	S2	May Be At Risk	26	Common to locally abundant in Black River Fens, where we documented 26 locations. Very rare in Nova Scotia overall, where it is restricted to calcareous swamps and fens and subject to a relatively high level of threat because of habitat alteration.
<i>Osmorhiza longistylis</i>	Smoother Sweet-Cicely	S2	May Be At Risk	9	Five small populations found in rich floodplain forest and thickets along the Northeast Margaree River. It is rare throughout the Maritime provinces and is largely restricted in Nova Scotia to rich floodplain sites, making it significantly threatened.
<i>Eleocharis quinqueflora</i>	Few-Flower Spikerush	S2	May Be At Risk	3	Local within Black River Fens in mucky, more sparsely vegetated depressions in open fen peat plus one very large population in mucky margins of a calcareous pond created by the old railway bed. Very rare in Nova Scotia and restricted to seepy, calcareous river shores and fens. Previously known from Black River Fens, but our records are the first to include precise location information.
<i>Hieracium robinsonii</i>	Robinson's Hawkweed	S2	Sensitive	24	Locally common on drier rock outcrops along the shores of Big Southwest Brook and the North Aspy River, where we documented 24 locations. The species is a globally rare (G2) endemic to northeastern North America with a significant portion of known sites in Cape Breton.
<i>Galium labradoricum</i>	Bog Bedstraw	S2	Sensitive	23	Locally fairly common within the richest parts of the Black River Fens, where it was already known from old, low precision records. Restricted to calcareous sites and known from only 6 provincial occurrences. Status ranks likely over-estimate abundance of the species.
<i>Vaccinium caespitosum</i>	Dwarf Blueberry	S2	Sensitive	6	Some very large populations found in the southern part of Cape Breton Highlands National Park in semi-open, moose-suppressed forest. All other Nova Scotia occurrences are from river shore rock outcrops or sites relatively near rivers. If such occurrences were widespread in Cape Breton Highlands, the provincial status ranks might need to be revised. The species is known in Nova Scotia from only six different river systems, but is common across Canada and is widespread along northern New Brunswick rivers.

Species	Common Name	S-rank	GS Rank	Total # locations	Comments
<i>Stuckenia filiformis</i>	Slender Pondweed	S2S3	Undetermined	2	Large populations in the slightly brackish upper tidal section of River Inhabitants, where it was not previously known. It is rare throughout the Maritime provinces and is only known from about 10 provincial sites in fairly basic waters, all of which are in Cape Breton.

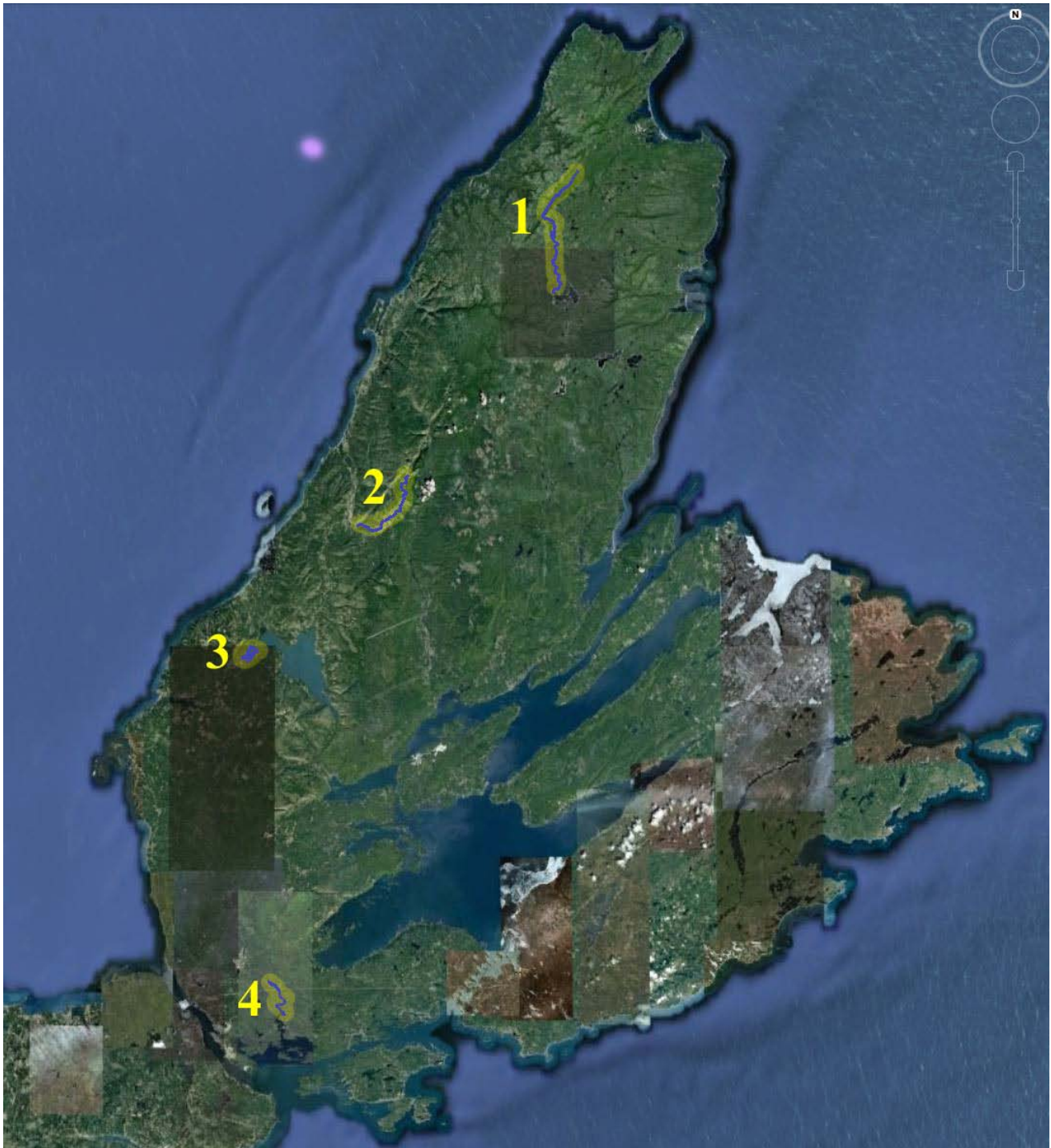


Figure 1. Field site locations (highlighted with yellow shading) within Cape Breton, Nova Scotia. Site 1 = Cape Breton Highlands (Cheticamp Flowage to Big Intervale, Aspy River), Site 2 = Northeast Margaree River, Site 3 = Black River Fens, Site 4 = River Inhabitants.



Figure 2. Tracks (blue lines) taken by Sean Blaney and David Mazerolle during Cape Breton Highlands fieldwork, July 14-16, 2010. Map is aligned north and is 22 km top to bottom. Map from Google Earth.



Figure 3. Tracks (blue lines) taken by Sean Blaney and David Mazerolle during fieldwork on the Northeast Margaree River, July 22-23, 2010. Map is aligned north and is 10 km top to bottom. Map from Google Earth.



Figure 4. Tracks (blue lines) taken by Sean Blaney and David Mazerolle during fieldwork on the Northeast Margaree River, July 21, 2010. Map is aligned north and is 3.75 km top to bottom. Map from Google Earth.

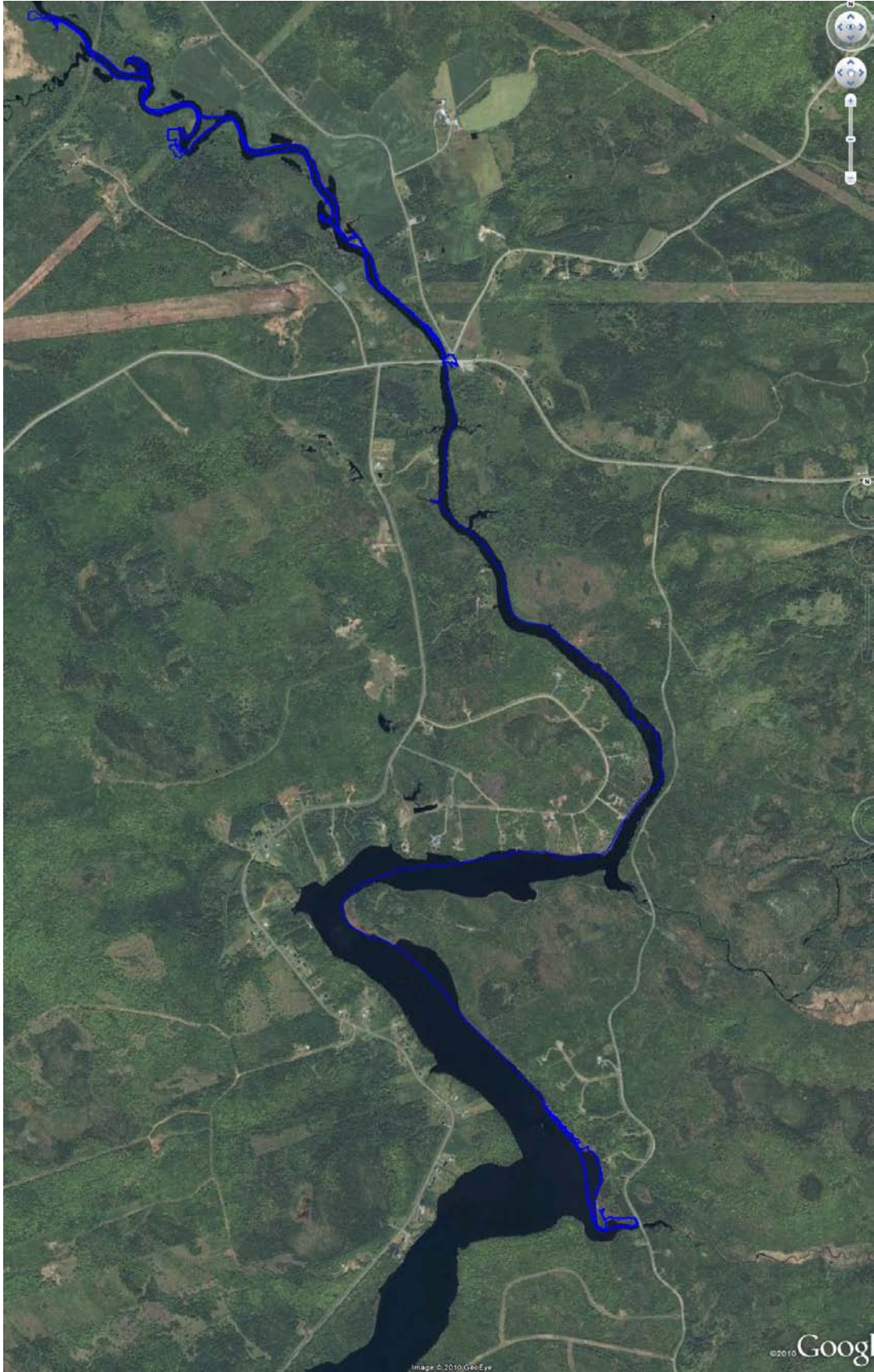


Figure 5. Tracks (blue lines) taken by Sean Blaney and David Mazerolle during fieldwork on the River Inhabitants, July 20, 2010. Map is aligned north and is 6.25 km top to bottom. Map from Google Earth.



Figure 6. Dorcas Copper (*Lycaena dorcas*) on its larval foodplant (Shrubby Cinquefoil - *Dasiphora fruticosa* ssp. *floribunda*) at Black River Fens. The species was common and breeding in open fen at the site for the first Nova Scotia record, about 300 km disjunct from the next nearest occurrences in southwest Newfoundland.