

The Inventory of the
Flora and
Fauna of the
French Fort Cove
Nature Park



Showy Lady's Slipper

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A handwritten signature in blue ink, reading "Jimmy Comeau". The signature is stylized, with the first letters of the first and last names being large and prominent.

Jimmy Comeau
Chairman
French Fort Cove Development Commission



Dave McLeod conducting field work at French Fort Cove

Abstract

Merrithew, C. and D. McLeod. 2005. A Life Science Inventory of French Fort Cove Nature Park, Miramichi, New Brunswick. The French Fort Cove Nature Park Commission, City of Miramichi.

A life science inventory, with an emphasis on vascular plants, was conducted at French Fort Cove Nature Park by the authors, with most of the field work occurring from May to November, 2002. Several others contributed their personal observations of various flora and fauna, or in the case of bryophytes and lichens, assisted with identification or verification of collected specimens.

The site occupies a 150 hectare parcel on the north shore of the Miramichi River within the boundaries of the City of Miramichi. It is essentially a wooded ravine area running in a north-south direction that is bisected by French Fort Brook which empties into French Fort Cove to the south on the Miramichi River. The park is used mainly for passive recreational purposes, with the main access points being just off NB Route 8 which crosses the extreme southern portion of the area between the cove and the river.

The park is an excellent example of the mixed Acadian Forest ecosystem and is located in the Eastern Lowlands ecoregion of New Brunswick. The flora is representative of the poor, acidic soils that dominate the uplands, the dry upper valley slopes, and the wet seepage zone of the lower slopes, as well as the richer alluvial soils of the bottomland along the brook.

Of the 467 vascular plant taxa (461 species) reported from French Fort Cove, seven species are considered provincially rare according to the Atlantic Canada Conservation Data Centre. The occurrence of eighteen species in the park represent range extensions to the previously known provincial distributions for these species. A total of 81 bryophytes (69 mosses and 12 liverworts) was collected from the site. The rarest moss, *Desmatodon obtusifolius*, has been recorded on just one other occasion in the province from Saint John County. A very preliminary list of 52 lichen species was also made for the study area. Many lichens are sensitive to air pollutants and are useful monitoring agents in determining the air quality level in this part of the city.

Of the vertebrate fauna recorded, there were 103 birds, 14 mammals, 4 amphibians, 3 reptiles, and 7 fish species. Invertebrates included 11 molluscs (6 aquatic, including 1 mussel species, and 5 terrestrial snails), as well as very preliminary lists of 2 mites, 3 spiders, 22 butterflies and 28 moths.

Suggestions for consideration in the future development of park management plans include:

- 1) the maintenance of biodiversity using the lists of flora and fauna, in conjunction with their zones of occurrence, as documented in this report,
- 2) the need for more rigorous enforcement of the motorized vehicle (ATV's and trail bikes) prohibition within the park,
- 3) the need for careful planning of additional trail construction to avoid sensitive habitats and areas where rare or unique plants occur, as well as to control potential erosion problems,
- 4) the on-going maintenance of the lists of flora and fauna included in this report, and
- 5) the establishment of checklists of other groups of plants and animals not treated in this report, in order to increase the knowledge of the true biodiversity of this site, and hence a greater appreciation of it, with the aid of volunteers from interested individuals, school classes, organizations, or summer student employees.

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Preface

This inventory was initiated by the French Fort Cove Nature Park Commission in the winter of 2001-02. The Commission is responsible for the administration of the *circa* 500 acre site (202 hectares) in the middle of the municipality of Miramichi City. The inventory is a catalogue of the flora and fauna in the park. Vascular flora was examined closely as were mosses and lichens. Vertebrate fauna, with an emphasis on birds, was catalogued as well as invertebrates with an emphasis on butterflies and moths. Prior to 2002 no comprehensive study of the park had been done. The inventory allows the French Fort Cove Commission to better administer the park and plan for the future. It is consistent with the mission statement of the Commission which is *to develop the French Fort Cove Nature Park as a safe and accessible source of recreation and leisure while preserving its natural beauty and history*. The inventory is intended to be open and will be added to from time to time.

Field work commenced in May 2002 and continued until November 2002 although some limited field exploration continued through to the date of this publication. This extended period allowed for adequate seasonal coverage.

The work was carried out by volunteers. Dave McLeod, a retired naturalist, and Clay Merrithew, a member of the Commission, completed the bulk of the work with significant contributions from many others.

Regional Background

Location:

The French Fort Cove Nature Park is located at N. 47° 01' and W. 65° 33' on the north shore of the Miramichi River in the municipality of Miramichi City. The park is a long narrow area following the course of Crow Brook (a.k.a. French Fort Stream) which empties into French Fort Cove, a 500x125 metre body of water, which in turn flows into the Miramichi River. It is a unique park in that it contains wilderness sites within the boundaries of an urban area.

Land Use:

The park is mainly used for passive recreational purposes. There are 17 km of walking and biking trails. The Cove is also used for canoeing, kayaking and fishing. There is a children's playground at the east parking lot. The park is very popular with local residents. Educational eco-tours are conducted for school children and other interested groups. Camping and the use of motorized vehicles in the park are not allowed.

Access:

Five main access points exist into the park. Two are located off NB Route 8 (King George Hwy.), one on the west side of the Cove and one on the east. These each contain large parking lots and are the main points of entry. Another exists at Kethro Lookout which is physically separated from the rest of the park by Route 8. Two other less used access points are found on the west side of the Cove at the end of Old King George Hwy., and on the east at the terminus of French Fort Street.

Regional Background

Regional Context:

French Fort Cove Nature Park is an excellent example of the Acadian Forest ecosystem (Johnston, 2002, pers. comm.). This mixed Maritime forest serves as a transitional link between the coniferous Boreal Forest to the north and the deciduous Carolinian Forest to the south. This forest is delineated by a mix of deciduous and boreal species. Almost all the forested zones exhibit a mixed deciduous-coniferous woodland with the exception of Zone 18W which is predominantly American Beech (*Fagus grandifolia*).



The park is located in the Eastern Lowlands of New Brunswick. This flat region is underlain by sedimentary rock. The predominant bedrock in the park is sandstone. Poor drainage has created many bogs throughout the region. Fens exist in the park along the stream. These are created by seepage areas from the steep hillside of the v-shaped valley where the stream has eroded below the water table of the surrounding hills. Lack of drainage and the needle duff from coniferous trees have left the resulting Podzol soils thin, poor and acidic in the Eastern Lowlands. The upland and slope zones of the park tend to display the floristic impoverishment consistent with this poor soil, but some of the zones along the stream exhibit a more robust growth indicating the influence of richer alluvial soil (Clayden, 2000).

Physical and Historical Background:

The following information in this section was largely taken from “The History of French Fort Cove” (Smith, 2000).

During the Carboniferous Period 250-290 million years ago, French Fort Cove was covered by the sea and sand and silt were deposited on the sea bed forming the sandstone bedrock of the area. The sandstone is of such high quality that a major quarry was opened on the site by Charles Fish in 1884. After the last Ice Age, the steep-walled valley of the park was formed as Crow Brook (French Fort Stream) cut through the soft sedimentary rock.

The original inhabitants of the area were Mi’kmaq natives. Archeological evidence places them in the region by 1,000 B.C. The nearby Augustine Mound at Metepenagiag (Red Bank) has proven that it is the oldest continuously occupied human site in eastern Canada.

The European history of the area begins with the French occupation in the seventeenth century. Richard Denis established a trading post in the area *circa* 1677. French Fort Cove received its name during the expulsion of the Acadians from the region from 1755-1759. The governor of Quebec sent Charles Deschamps de Boishébert to the region with 30 soldiers to aid the Acadians. After two years of desperate resistance, Boishébert established his main headquarters at Miramichi in 1757. Almost 2,000 Acadian refugees joined him there. He settled them on a small island at the confluence of the North-West and South-West Miramichi Rivers. It became known as Île de Boishébert, today corrupted to Beaubear’s Island. Boishébert set up headquarters at French Fort Cove downstream from the island where he established a battery of cannon to protect the refugees. Boishébert and his soldiers returned to Quebec in 1759 to help defend the city from General Wolf’s attack and the Miramichi refugee centre disintegrated after the departure of the French troops. The area was firmly in British hands by 1760.

In 1765, William Davidson, a Scotch entrepreneur, received a large grant from the British Crown to establish a fishery and promote British settlement in the area. The American Revolutionary War, the poor, thin soils, and the harsh winters of the area retarded settlement, but Davidson established a salmon fishery and shipbuilding industry along the river, centred on Beaubear’s Island (Île de Boishébert).

By the 1830’s Miramichi had become a major shipbuilding and lumbering centre. This was the beginning of the “golden age” when immigrants and young people came to the area by the thousands seeking employment. French

Regional Background

Fort Cove was part of this development. Abrams' Shipyard was established on the east side of the Cove. The large number of Sweetbrier Roses (*Rosa eglantheria*) in the park are, according to legend, escaped specimens from Abrams, a rose lover and gardener. They grow in such profusion in Zone 8E that the community of Nordin on the east side of the Cove was once known as Rose Bank. A grist mill was also built in the Cove.

At the beginning of the twentieth century the Buckley Lumber Mill was constructed opposite Kethro Lookout. It burned in 1922, but the Buckley Stack, a large chimney, remains a major Miramichi landmark.

The property was purchased by the Drummond Mining Company in 1910. The company built a trestle to load iron ore onto ships at the wharf at the bottom of Kethro Lookout. Eventually the mining company was bought out by Noranda Mining Corporation. Noranda had no need for the area and leased the property to the Town of Newcastle in 1985 to develop a park. The town established the French Fort Cove Commission to oversee the site. The City of Miramichi assumed control of the park in 1995 when Newcastle and Nordin, the two communities between which the site is located were amalgamated into the new city. Noranda turned over the land to the City of Miramichi in 2002. Since that time a block of land known as the Shooting Range on the east side of the property was turned over to the French Fort Cove Commission by the Canadian Department of Defence. The French Fort Cove Commission continues to develop the park in accordance with their mission statement.

Vegetation and Floristics

Despite two centuries of human activity near the bank of the Miramichi River a great deal of the park remains wilderness, even though it is within the boundaries of the city. The bottomland of the steep-sided valley has never been lumbered because of its difficult topography. Much of the upland and slope area was burned in May, 1986. Spring fires are noted for their intensity and this was no exception. Because of this and the thin soils of the upland and slope, regeneration has been slow. Blackened areas with dominant Blueberry (*Vaccinium angustifolium*) and Sheep Laurel (*Kalmia angustifolia*) flora were still abundant in 2002.

For the purposes of the study, the park was divided into thirty-eight zones. Crow Brook (French Fort Stream) and French Fort Cove were used as a dividing line with zones being designated east or west of the water features.

The bottomland zones include the areas from 12E and W through 17E and W. The dividing lines for zones tend to be crossings of the stream made by various trails. This was done as a matter of convenience. The areas were a combination of fens and alluvial flats and tended to be floristically rich. The one exception is Zone 5W which is an alluvial flat on the banks of the Miramichi River.

There are nine upland mixed forest zones. The Zones 11E and 20W are in the 1986 forest fire area and have a great deal of regenerative growth. The other zones are located in the south of the park which was unaffected by the fire. Zones 3E, 3W, 6W, 8E, 9W, 10E, and 11W are more mature and are good examples of the Acadian Forest ecosystem.

Zone 18W is the only example of an upland deciduous zone. This is dominated by American Beech (*Fagus grandifolia*).

Vegetation and Floristics

Table I

Landforms and habitats at the French Fort Cove site are described in the first two columns, and the zones in which they are represented, are indicated in the third column.

Landforms	Habitats (Vegetative Communities)	Zones
WETLAND/LOWLAND	1. Open Water	
	a. River and river shore	1E, 1W
	b. Pond and pond margin (marsh)	99
	c. Stream	12 to 17
	d. Beaver ponds and meadows on muck soils	12W, 13E, 13W, 14E, 14W, 17E, 17W
	2. Swamp	
	a. Mixed-forest swamp (fed by seeps)	12W, 13W, 14E, 14W, 15W, 16E, 16W, 17E, 17W
	b. Cedar swamp (fed by seeps)	13E, 15E
	3. Marsh	
	a. Robust emergent: Cattail	15E
b. Narrow/broad-leaved emergents: Blue-joint grass, Arrowhead, Burreed	99	
4. Fen		
	Dominated by <i>Helodium blandowii</i> moss (terraced area fed by seeps)	13W
SEASONALLY WET LOWLAND	5. Alluvial flats	
	a. Deciduous forest (poplar, yellow birch, black ash)	5W, 13E
	b. Tall shrub thicket (alder, willow)	13W, 14E, 14W, 15E, 15W, 16E, 16W, 17E, 17W
	c. Open meadow (forbs, graminoids)	12E, 16E, 16W
SLOPE (includes seeps on lower portions)	6. Mature mixed-forest (climax stage)	6E, 10W
	7. Immature mixed-forest (pioneer to intermediate stage regeneration from 1986 forest fire)	9E, 19W
	8. Open deciduous forest	2E
	9. Vertical rock face (dominated by <i>Umbilicaria americana</i> Frosted Rock Tripe lichen)	2E, 2W, 9E
UPLAND	10. Mature mixed-forest (climax stage)	3E, 6W, 10E, 11W
	11. Immature mixed-forest (pioneer to intermediate stage regeneration from 1986 forest fire)	11E, 20W
	12. Deciduous forest [Beech (<i>Fagus</i>) dominant]	18W
	13. Coniferous forest [Jack Pine (<i>Pinus banksiana</i>) dominant]	8E
	14. Wet open shrub/herbaceous (perched water table)	6W
ANTHROPOGENIC	15. Highly Disturbed Areas	
	a. Open mixed parkland	4W, 9W
	b. Parking lot and/or manicured lawn	3W, 4E, 5E, 7E, 8W
	c. Imported landfill (toboggan/snowboarding hill)	7W
	d. Playground	5E
	e. Railroad	20W
f. Abandoned stone quarry	9E	

Vascular Plants

a. Methods

The inventory covered the six-month growing season of the Miramichi Area, May through October. This assured that all species, regardless of the timing of their various blooming and fruiting periods, would be revealed. We attempted to cover all zones in a systematic fashion throughout the growing season both along the trails and walking straight-line transects through the zones using a compass. Aquatic species were collected during two days in August by dragging the pond (zone 99) from a canoe. Known species were recorded as they were encountered and specimens of "difficult to identify" species were collected to enable a more definitive herbarium determination, or to document their occurrence as voucher specimens. In some instances where the plant is rare, photographic evidence has been maintained. A GPS (Global Positioning System) was used to obtain a UTM (Universal Transverse Mercator) grid number, indicating the exact location of each collection. These references are preserved by the French Fort Nature Park Commission and may be obtained by permission. Verification of "difficult to identify" species was carried out at the Connell Memorial Herbarium at the University of New Brunswick by Dave McLeod assisted by Clay Merrithew. The specimens will be deposited at the Herbarium.

b. Results

Analytical Summary

For the full checklist of vascular plants refer to Appendix A. Seventy-eight of the 135 families (58%), 242 of the 596 genera (41%), and 461 of the 1,644 species (28%) of vascular plants in New Brunswick (Hinds, 2000) were catalogued at French Fort Cove (see Appendix B).

Table II

The four families with the most species found during this inventory were:

1. ASTER	64
2. SEDGE	47
3. GRASS	41
4. ROSE	29

Table III

The five families (in which at least 8 species were found during this survey) with the highest percentage of species in relation to the provincial total were:

1. PINE	80% (8 of 10)
2. CLUB-MOSS	66% (10 of 15)
3. HONEYSUCKLE	45% (9 of 20)
4. RUSH	42% (11 of 26)
4. WOOD FERN	42% (11 of 26)

There were 358 native vascular plant taxa and 109 that were introduced in French Fort Cove. Provincially the totals are 1,545 native and 384 introduced. This means 23% percent of the native species in the province, as well as 28% of the introduced species were identified during this inventory. The ratio of native to introduced species at the Cove was 3.28:1 while the provincial ratio stands at 4.02:1. This would suggest that the area studied has had more human disturbance than the province as a whole. Most human activity has been in the southern part of the park where many of the introduced species were reported. There has been industrial activity there for almost two hundred years. This part of the Cove contains such developments as a provincial highway, a causeway, parking lots, a toboggan hill, an eco-centre (under development), a playground, and neighbouring residential and business areas.

Vascular Plants

Rare Species

Seven species are considered provincially rare according to the Atlantic Canada Conservation Data Centre (2005). S2 (very rare) means 6 to 20 recorded locations for indigenous species; may be susceptible to extirpation due to some factor of its biology. S3 (rare – uncommon) means 21 to 100 occurrences; may be susceptible to extirpation due to large scale disturbances (Hinds, 2000).

Table IV

S2	Drummond's Rock-cress	<i>Arabis drummondii</i> (one population)
	Showy Lady's-slipper	<i>Cypripedium reginae</i> (two populations)
	Coastal Salt Grass	<i>Distichlis spicata</i> (one population)
	Mountain Fir-moss	<i>Huperzia appalachiana</i> (one population)
	Whorled Water-milfoil	<i>Myriophyllum verticillatum</i> (one population)
S2/S3	Bead-like Sedge	<i>Carex ormostachya</i> (three populations)
S3	Rugel's Plantain	<i>Plantago rugelii</i> (two populations)

The exact locations of the species in Table IV are not indicated in this report, but are available upon request for scientific study purposes through the Commission.

Range Extension

Range extension refers to a plant found during this inventory that was not previously found in New Brunswick in the quadrant north and east of the Miramichi area as determined by the range maps in Hinds. This represents a wider occurrence of the species within the province than was previously known.

The 17 species in Table V were determined to be range extensions (RE) for New Brunswick based on the distribution maps in Hinds (2000).

Table V

Drummond's Rock-cress	<i>Arabis drummondii</i>
Silver Maple	<i>Acer saccharinum</i>
Bebb's Sedge	<i>Carex bebbii</i>
Porcupine Sedge	<i>Carex hystericina</i>
New England Sedge	<i>Carex novae-angliae</i>
Small Crab Grass	<i>Digitaria ischaemum</i>
Boott's Wood Fern	<i>Dryopteris xboottii</i>
Climbing False Buckwheat	<i>Fallopia scandens</i>
Mountain Fir-moss	<i>Huperzia appalachiana</i>
Field Pepper-grass	<i>Lepidium campestre</i>
Flat-branched Ground-pine	<i>Lycopodium obscurum</i>
Mexican Muhly	<i>Muhlenbergia mexicana</i>
Ninebark	<i>Physocarpus opulifolius</i>
Rugel's Plantain	<i>Plantago rugelii</i>
Common Purslane	<i>Portulaca oleracea</i>
Flat-stem Pondweed	<i>Potamogeton zosteriformis</i>
Poverty Grass or Ensheathed Drop-seed	<i>Sporobolus vaginiflorus</i>

Vascular Plants

Historic Records

In 1879 an article entitled "Mill Cove as a Field for the Botanist" appeared in the *Miramichi Advance*. The author signed as Yours truly, Naturalist (see Appendix C). Mill Cove is the old name for French Fort Cove.

The area covered was described in the article as follows: "I append below a list of plants to be found at Mill Cove, on each of the hills, and in the valley beneath, extending as far as the Miramichi river". However, the northern boundary of this area is not clear from the description. It may refer only to the most well-used southern portion of the present park area from the covered bridge on the old King George Highway around the cove pond to the river, or it may begin some distance north of the bridge in the brook valley.

The author goes on to describe the content of the list and to explain the reason for this area to be of interest to the botanist as follows:

"It merely comprises the flowering class, properly called, not including the extensive families of Grasses, Ferns, Mosses, Lichens, and Fungi, which, of themselves, would complete a set of their own. The list might prove of some benefit to those engaged or about to engage in the study of Botany, as a guide to where specimens of the plants can be procured.

Such a centre of practical study within one's reach -- not to mention the interest afforded by the rambles taken -- cannot fail to be a valuable auxiliary in that branch of study. The list will, perhaps, also assist in refuting some prevailing notions that our display of wild flowers is a poor one. It only requires a bold strike to be made from the regular beaten road to the woods to satisfy one of the error of such a judgment."

However, the author incorrectly lists "Grasses" among those families not included in the "flowering class". Grasses do have flowers, albeit not very showy ones in most cases, that produce seeds instead of spores, as is the case with the other non-flowering plants, the ferns, mosses, lichens, and fungi, that are mentioned.

In April of 1880, another article by the same person appeared in the *Advance*, but dealt with the Miramichi area rather than just Mill Cove, though he mentioned several finds from that area. The first article was of particular interest when compared with the recent findings of this inventory and elicited the following noteworthy observations:

a. Fourteen species of the 119 on the 1879 list were not found in this inventory. They are listed in Table VI in the order found in the 1879 article.

Table VI

1. American Dog Violet	<i>Viola conspersa</i>
2. Dutchman's-breeches	<i>Dicentra cucullaria</i>
3. Marsh-pea	<i>Lathyrus palustris</i>
4. Horseradish (introduced)	<i>Armoracia rusticana</i>
5. Hooked Buttercup	<i>Ranunculus recurvatus</i>
6. Common Milkweed	<i>Asclepias syriaca</i>
7. White Panicle Aster	<i>Aster lanceolatus</i>
8. Yellow Trout-lily	<i>Erythronium americanum</i>
9. Hairy Solomon's Seal	<i>Polygonatum pubescens</i>
10. Great Solomon's Seal (introduced)	<i>Polygonatum commutatum</i>
11. Star-flowered False Solomon's Seal	<i>Maianthemum stellatum</i>
12. Large Round-leaved Orchid	<i>Platanthera orbiculata</i>
13. Spotted Coral-root	<i>Corallorhiza maculata</i>
14. Large Yellow Lady's-slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>

Vascular Plants

The species in Table VI, with the exception of the last, might still be present at French Fort Cove and may be rediscovered in the future.

b. The Witch-hazel, which is rare in the area, was present as early as 1879.

c. The Large Yellow Lady's-slipper is probably now extirpated (*i.e.* locally extinct) since this plant with such a large, showy flower would be hard to miss if it were still extant, given that this area has been extensively botanized in recent years.

In an attempt to uncover the identity of the "Naturalist" who wrote these articles, the authors were given permission by the Miramichi Natural History Museum to examine the early Proceedings of the Miramichi Natural History Museum Association and the preserved specimens of vascular plants on site. Three names emerged from this research: Dr. James McGregor Baxter, Dr. Philip Cox and Roderick MacKenzie. Baxter, a Chatham doctor, was eliminated as he had no interest in flowering plants. Cox, the principal of Harkins Academy, is a possibility as most of the vascular plant specimens at the Museum were prepared by him, but none of them is as early as 1879-80 and he was first offered a job on the Miramichi in November, 1879 (Hamilton, pg. 79). MacKenzie, a bank manager, appears the most likely. MacKenzie had formed the Miramichi Field Naturalists' Club (Hamilton, pg. 80) in 1883 and in 1887 published a book entitled *Miramichi Wild Flowers*.

Bryophytes

These are usually low-growing, non-vascular plants that can be found in a wide variety of micro-habitats. They have adapted to the complete range of moisture régimes found in both shaded and open habitats, and grow on diverse substrate types, including soil, rocks, decaying logs, and the bark of living trees, where they occupy niches that are not normally used by vascular plants.

During this survey mosses and liverworts were not as thoroughly sampled as the vascular plants, but were collected only incidentally. The results are presented in Appendix D.

Bruce Bagnell identified and/or verified all species listed in the appendix.

Mosses

A total of 69 moss species was recorded from the study area. See Appendix D. This represents 44.5 % of the 155 taxa now known for Northumberland County, but only 17.9 % of the 386 taxa known from the province of New Brunswick.

Table VII provides data about the currently-known occurrence and distribution of moss diversity within the county and provincial settings, and thus, offers the opportunity to better understand the results obtained in this inventory from a French Fort Cove perspective relative to these larger areas:



Bryophytes

Table VII

N.B. Rank (by total taxa)	County	Area (sq. km)	Regional Location	Total Taxa	% of Total N.B. Taxa
1	Restigouche	8,577	North	268	69.4
2	Albert	1,806	South	255	66.1
3	Saint John	1,462	South	227	58.8
4	Victoria	5,503	North	221	57.3
5	York	8,953	Central	211	54.7
6	Kings	3,482	South	205	53.1
7	Charlotte	3,424	South	197	51.0
8	Queens	3,681	South	168	43.5
9	Northumberland	12,112	Central	155	40.2
10	Carleton	3,312	Central	140	36.3
11	Kent	4,551	Central	136	35.2
12	Westmorland	3,660	South	107	27.7
13	Madawaska	3,461	North	93	24.1
14	Sunbury	2,697	Central	90	23.3
15	Gloucester	4,673	North	88	22.8

The figures in the "Total Taxa" column were arrived at by using all occurrence records for all species in all counties as indicated by Bagnell (1995, 2002).

It is interesting to note that 24 of the 69 species reported for French Fort Cove are new additions to the moss flora of Northumberland County. This means that, prior to this inventory, only 131 species were known to the county, which would have originally ranked it in eleventh place overall, as opposed to its current ranking of ninth. Even now in ninth place, for the largest county in the province, and with the resultant wide variety of habitats present, Northumberland is obviously under-botanized for mosses (and probably for bryophytes in general). By contrast, the two smallest counties, Albert and Saint John, which are only 14.9 % and 12.1 % of the area of Northumberland, rank second and third respectively. It is quite apparent that these two, along with the southern counties, with the exception of Westmorland, have been more extensively botanized for mosses. It is equally evident that the northeastern counties of Gloucester, Northumberland and Kent require more field work. They presently rank fifteenth (last), ninth and eleventh respectively in terms of total taxa numbers, but are fifth, first and sixth in area, together comprising almost 30 % of the total area of the province.

One way of establishing the current rarity of any given moss within the province is by considering the number of counties in which it occurs. For instance, the species that occur in all fifteen counties are the most widespread, and hence, probably the most common. Table VIII presents the cumulative number of species found at French Fort Cove in terms of the number of counties in which each species, that contributes to the cumulative total, has been found:

Table VIII

Counties	Species	Rarity Status
15	12	Common (54 species)
14	11	
13	9	
12	7	
11	8	
10	7	Uncommon (12 species)
9	3	
8	1	
7	5	
6	3	Rare (3 species)
5	1	
4	1	
3	0	
2	1	
1	0	
Total	69	

The distribution pattern of the data in Table VIII conforms to expectations. Most species would be considered common, with most of those found during this survey being widespread throughout the province. Thus, 54 (78 % of 69) of the species reported here occur in ten or more counties. In the above table, three divisions may be demarcated, with the dividing lines occurring where between 9 and 10, and between 5 and 6. Those species present in 10 to 15 counties would be common, while those present in 6 to 9 counties, would be uncommon. Those found in only 1 to 5 counties would be considered rare. To determine the rarity status of any individual moss species using this technique, refer to the "Counties" column of Appendix D that gives the number of counties opposite the species in question, and then apply that number to the above table to see within which division it falls.

Making up the rare group at French Fort Cove are three species that are presently known to occur in five or fewer counties in the province. They are: *Pleuridium subulatum*, *Desmatodon obtusifolius*, and *Pottia truncata*.

The rarest of these is *Desmatodon obtusifolius* which has been found previously only in Saint John County. Ireland (1982) reports this species to be rare in the Maritimes, with the only other known occurrence being in Colchester County, Nova Scotia.

Pleuridium subulatum is now known to occur in Northumberland, York, Kings, and Westmorland counties, while *Pottia truncata*, in addition to Northumberland, is also known from Victoria, York, Kings, and Saint John counties. The latter species is a rather diminutive plant and, therefore, is probably often overlooked and under-collected.

Liverworts

Twelve species were found within the study area. Nine are classified among the leafy liverworts, while the remaining three are known as thalloid liverworts.

Some leafy species, such as *Frullania bolanderi*, usually form tiny, dark, branching designs on the bark of living trees, while many others grow on decaying logs in mixed communities among numerous moss and lichen species. One of the larger species, *Bazzania triloba* (Three-lobed Bazzania), can be found growing in dense mats on the ground in cool, moist situations.

Bryophytes

Two of the thalloid types, *Marchantia polymorpha* (Common Liverwort) and *Conocephalum conicum* (Great Scented Liverwort) are those which tend to be noticed most often by the layman. Both often grow in extensive carpets on the moist ground of wetland habitats, with the latter species attracting one's attention by giving off a very noticeable, gingery scent when crushed underfoot.

No information was found to allow an assessment of the rarity status of liverwort species within New Brunswick. However, all species reported from French Fort Cove are probably common, since these are the ones most likely to be encountered, given the cursory nature of specimen collection during the survey.

Lichens

A total of 52 lichen species from 14 families and in 26 genera was recorded from French Fort Cove during the study (see Appendix E). It is a very preliminary list since lichen collections were made inadvertently while focusing on the vascular plant inventory.

Each lichen species is composed of a fungus and an alga, which is usually a species of green or blue-green algae, that can produce food by photosynthesis. This symbiotic relationship is called mutualism, where both biological entities benefit from their association. Numerous such unions have been produced over time, at present resulting in about 14,000 known lichen species worldwide (Brodo, 2001).

Lichens are found in a wide diversity of terrestrial habitats, and on a great range of substrate types, including bare soil and rock, tree bark, humus and decaying logs. Each specimen collected at French Fort Cove was found attached to one of these surfaces. Avoidance of competition has been a dominant factor in the great success achieved by lichens in their fight for survival. They have become very efficient in colonizing barren rock where they have become the pioneer organisms involved in the gradual breakdown of these extremely hard surfaces into their mineral crystal components in the process of soil formation.

Lichens come in all sizes, shapes, colours and growth forms. This latter characteristic has been useful for making a superficial classification that encompasses all lichen species. There are three major divisions into one of which each species would fall. They are: crustose, foliose, or fruticose. Crustose or crustlike lichens are those which grow in such close contact with the substrate, usually rock or tree bark, that it is difficult to separate them without using a tool. Foliose species are those in which the main part or thallus of the lichen has a leaflike structure, often with overlapping lobes. Fruticose lichens have a shrubby or hairlike growth form and can usually be found growing on all substrates.

Examples of crustose lichens at French Fort Cove are *Candelariella efflorescens* (Powdery Goldspeck Lichen) and *Lecanora thysanophora* (Mapledust Lichen). They are collectively among the crustose-type that are called disk lichens, because of the small, flattened spore-bearing disks they bear. In the case of the former species the lichen was attached to the bark of a beech tree, while the latter was found on sandstone rock. The crustose genus, *Caloplaca*, containing species termed firedot lichens, also occurs within the study area. Two species in this genus, named *Caloplaca cerina* (Gray-rimmed Firedot Lichen) and *C. holocarpa* (Firedot Lichen), were both found growing on the bark of separate beech trees. Another crustose lichen, *Pertusaria trachythallina* (Powdered Wart Lichen), was similarly found on beech tree bark. *Dibaeis baeomyces* (Pink Earth Lichen) covered large open areas of disturbed clay or sandy mineral soils along walking trails in the park. It grows in extensive, greenish gray mats, but is not usually noticed until it fruits when it puts up numerous, small, pink-headed stalks, giving the ground a distinctly pink hue.

Two other crustose species present in the study area, known as stubble lichens, are worthy of note because of their importance in establishing the existence of old growth forest and as being excellent indicators of forest continuity. They are *Chaenotheca brunneola* (Brown-headed Stubble) and *Stenocybe pullatula* (Stubble Lichen). These are difficult to spot because the tiny, black fruiting bodies are on erect, slender, black stalks that only extend up to 1.5 mm from the substrate. The two species were collected in different zones (9E and 19W) on opposite sides of the brook. The first-mentioned was growing on a small, polypore-type fungus on the trunk of a balsam fir, while the other was on the bark of speckled alder. Although the adjacent land to the east and west of the area has been heavily urbanized and there is obviously no old growth forest left, because of its lumbering and forest fire history, the continuing presence of these stubble lichens here could indicate that the forest, at least in the wet bottomland and steep-sided ravine slopes of the French Fort Brook valley that has not been as greatly affected by past disturbances, has managed to maintain both a measure of some continuity with the extensively forested areas to the north of the park, as well as the integrity of the original ecosystem that prevailed more widely throughout this area.

The foliose lichen type is represented by many different genera found during the survey, including *Hypogymnia*, *Lobaria*, *Parmelia*, *Peltigera*, *Physcia*, *Platismatia*, *Tuckermannopsis*, *Umbilicaria* and *Vulpicida*. The largest and most conspicuous foliose lichen is *Lobaria pulmonaria* (Lungwort or Lung Lichen) that was growing on red maple and other tree trunks in the study area, usually extending in several horizontal layers as much as 10 cm (4 inches) away from the trunk. The other genera listed above also grow on tree bark, with the exception of *Peltigera* and *Umbilicaria*. Three species of *Peltigera* (Pelt or Dog Lichens) were found growing directly on mineral soil, on well-rotted stumps and logs, or over rock with various moss species in damp cedar swamp areas. *Umbilicaria americana* (Frosted Rock Tripe) was growing on a vertical sandstone rock face of the cliff along the Miramichi River.

Among the shrubby-type genera of fruticose lichens, characterized by erect stalks bearing the fruiting bodies, and usually growing on the ground or decaying logs, are *Cladonia* and *Cladina*. The former was the most common genus to be found during the inventory, with 14 species being identified. This amounts to 27% of the total 52 species recorded for the area. The most commonly recognized species is probably *Cladonia cristata* (British Soldiers) with its clusters of bright red fruiting heads. The genus, *Cladina*, commonly referred to as the reindeer lichens, or sometimes erroneously as the reindeer mosses, is closely related to *Cladonia* and has only recently been separated from it and recognized now as a new genus. Three species of reindeer lichen have been identified within the park.

Other shrubby-looking species were also found. *Evernia mesomorpha* (Boreal Oakmoss Lichen) was growing in a pendent fashion from the side of beech and red maple trunks in the beech forest. *Ramalina americana* (Sinewed Ramalina) was growing in a similar fashion from the side of a trembling aspen trunk in mixed woods, while *R. intermedia* (Rock Ramalina) was on a sandstone boulder.

Those fruticose lichens with a hairlike growth form included three *Usnea* and one *Bryoria* species. All are pendent from the trunks or branches of trees. The *Usnea* species are commonly referred to as old man's beard or beard lichens. *Usnea filipendula* (Fishbone Beard Lichen) was collected in two separate locations on opposite sides of the cove pond, but both were on red maple trunks in beech forest and mixed woods settings. *Usnea subfloridana* and *U. cf. substerilis* were both collected from the ground where they had fallen from the overhead pines and spruces. *Bryoria furcellata* (Burred Horsehair Lichen) was also found on both sides of the pond growing from a beech trunk in one case and from a white spruce trunk in the other.

As for the rarity status of those species that were found at French Fort Cove, there was very little information available from either a regional or provincial perspective. However, Brodo (2001) offers some idea on a broader, national and continental scale. Twenty-six (50 %) were considered to be "widespread in North America", while the remainder were designated as occurring in at least large regional areas of the continent, with the exception of two that were termed "localized in North America". These were *Umbilicaria americana* and *Peltigera polydactylon*. The term "localized", however, does not indicate whether either of these species are rare where they occur or otherwise may be locally common.

Lichens

Lichens are useful indicators of air quality and are especially good for monitoring airborne pollutants such as sulphur dioxide. The Canadian and United States governments have even started to explore the possibility of using them in large-scale monitoring projects. This is especially important from a human health perspective in cities where there are large numbers of people living in proximity to industries releasing toxins into the air. Because lichen species differ in their sensitivities to various chemicals, some species will begin to die off and the composition of lichen communities will change over time. Lichens can thus be likened (no pun intended) to the canary in the coal mine. The lichen species identified in 2002 at French Fort Cove could be used as base-line data for future comparisons in the same area. However, if the City of Miramichi were to undertake such a monitoring program, it would be important to establish a more rigorous standardized procedure for sampling from designated strategic areas around the city. Such a study would develop a base-line snapshot of the presence or absence of the various lichens that would allow for valid, long-term comparisons to be made in determining if air quality was either deteriorating or improving at a given location. Would that places like Belledune had such a system in place before now!

Fungi

No list of fungi was compiled for this report, because only a very incidental attempt was made to start one for the study site. However, several unidentified specimens were collected and preserved for future study. For anyone interested in developing a more comprehensive list, this information would gladly be made available by the authors.

Fauna

Both vertebrate and invertebrate fauna were recorded only incidentally during the inventory. The main emphasis was on recording and collecting vascular plants, but any fauna encountered at that time was also noted. The three exceptions to this were:

1. August 29, 2002, when the authors spent the night at French Fort Cove using a black light trap and a technique called 'sugaring' where tree trunks are painted with a combination of brown sugar and rum to attract and collect moths and other night-flying invertebrates,
2. days when Drew Merrithew travelled with us and collected invertebrates specifically, and
3. the use of the results of a fish survey done by the Environmental Technology class at the New Brunswick Community College, Miramichi, using electrofishing and dip or seine netting techniques.

Birds

One-hundred and three species have been recorded to date at French Fort Cove. A number of birds, not found by the authors, were reported to them by various knowledgeable people including: Harry Walker, Pam Watters, Jim Saunders, Bill Kern and Ann Power. A complete list can be found in Appendix F.

In a 1999 Checklist of Miramichi Birds prepared by Tom Greathouse and Harry Walker, 254 species were reported for the Miramichi area. The checklist covered the whole region and included seabirds not present at the inland French Fort Cove site. Nevertheless, the 103 species at French Fort Cove constitutes 41% of the coverage in the Miramichi Checklist. Three species listed as rare in the Greathouse/Walker Checklist were found at the Nature Park. These were: Barred Owl – Chouette rayée, Blackpoll Warbler – Paruline rayée, and Pine Warbler – Paruline des pins.

The single largest family was the Wood Warblers with 23 species. This group is especially evident in May and June when their melodious songs can be heard throughout the site.

Eleven species were confirmed as breeding at French Fort Cove. The number would have been higher if the authors had been concentrating their study on birds. A pair of breeding Scarlet Tanagers with young was there in 2002 and a male in breeding plumage was reported in 2004. The number, type and seasonal appearance of species recorded is consistent with provincial records maintained by the New Brunswick Bird Records Committee: <http://personal.nbnnet.nb.ca/maryspt/BRC/index.html>

Mammals

Only 14 species of mammals are recorded in the study. The number is reduced as a result of the incidental nature of the study of mammals. It is the contention of the authors that a live-trapping program for small mammals would increase this number significantly. Seven of the species were observed by the authors, while the other seven were placed on the list on the basis of tracks, scat or other evidence of activity, or of reports from other observers, most notably Bun Worrell, Art Mazerolle and Jack Newcombe who walk the Cove every day and regularly report their sightings to the authors. A complete list of mammals can be found in Appendix G.

Amphibians and Reptiles

Eight species of amphibians and reptiles were found during the survey. A complete list can be found in Appendix H. Despite a concerted effort to locate salamanders none were found. This is an incomplete list and this group requires additional study. Snakes were quite common on the slopes.

Fish

Seven fish species have been reported from the French Fort Cove pond and brook. During the spring and summer of 2002, the Environmental Technology class at the New Brunswick Community College (NBCC), Miramichi, under the direction of Ian Feir, carried out a survey of the fish at French Fort Cove. Electrofishing and dip and seine netting methods were employed. Those results form the basis of Appendix I. A special thanks to Joel Corcoran, instructor at NBCC and member of the French Fort Cove Commission, for obtaining these results for us.

Invertebrates

Two invertebrate phyla, Mollusca (mussels and snails), and Arthropoda [including the classes Arachnida (spiders and allies) and Insecta (insects), with only the Lepidoptera order (butterflies and moths)] are presented in Appendix J. Dwayne and Mary Sabine assisted in the identification of molluscs and Drew Merrithew worked on the identification of spiders, mites, butterflies and moths. Although specimens of other invertebrates were obtained the number of species was insufficient to warrant inclusion in the Appendix. These specimens included beetles, stoneflies, dragonflies, damselflies, wasps, ants, hoverflies, blackflies and caddisflies, but the coverage was so insignificant they were not included in the Appendix. This is such a wide body of study that each insect order or even family group warrants an inventory of its own, yet the authors' preliminary work might serve as a starting point for future examination of the invertebrates in the area.

Fifty Lepidoptera species were identified from the study area. There were 22 butterflies and 28 moths.

The most common family, represented by 12 species, was the Cut-worm Moths (Noctuidae). The Brush-footed Butterfly family (Nymphalidae) was the next most common with 11 species. These are some of our most spectacular butterflies including the Checkerspots, Fritillaries, Admirals and Viceroy. Of particular interest is the collection of the Harvester Butterfly on August 23, 2002, by Rachel Merrithew. This is the only carnivorous butterfly in Canada. The caterpillar feeds upon aphids including woolly aphids. The Silvery Checkerspot which was collected at Kethro Lookout on June 19, 2002 is a rare butterfly for this area (Layberry *et al.*, 1998).

Fauna

As noted above in the introduction to the fauna section, a black light insect trap as well as the sugaring technique were used to capture moth specimens for proper identification. This was done by the authors on the night of August 29, 2002, at the picnic table overlooking the pond in front of the history hut. The trap was equipped with a circular, ultraviolet neon tube mounted over a stainless steel bucket containing an inverted cone with a hole at the tip, allowing the moths that fell into the cone to enter the inside of the bucket and become trapped. It was made by BioQuip Products and is referred to as a "Universal Collecting System #2851 A". The Cut-worm Moth family (Noctuidae) was the most common of the Lepidoptera with 12 species. These are very common in the area as every gardener fighting cutworms already knows.

Although a list was not compiled for the Coleoptera order (Beetles) in this report, it is worth noting that our native Seven-spotted Lady Beetle was the only species observed in the early summer, but after the end of July the introduced Asian Lady Beetle was also found.

Recommendations

Although not mandated to offer recommendations the authors offer the following suggestions.

1. The French Fort Cove Nature Park Commission must be vigilant to maintain the park's natural beauty as set out in its mission statement. This is a unique area combining wilderness and human activity and is becoming increasingly popular. It may become a difficult task to balance usage and preservation, but the maintenance of biodiversity within the park boundaries should be an essential consideration in the formulation of a master management plan for the park.
2. The continued use of motorized vehicles, despite signage forbidding it, is a concern. In addition to their nuisance factor, they also play a role in the severe erosion on the steep-hilled paths. In one instance an ATV entered Zone 13E, a wet bottomland area rich in Trilliums and Jack-in-the-Pulpits, to steal cedar. The tracks are still quite evident in 2005 even affecting water flow, and have created the impression amongst some hikers that this is an authorized trail thus increasing human traffic in a sensitive area. This is a difficult issue as the park is surrounded by urban areas and there are many access points, but it is one which must be addressed.
3. There is a rising demand from hikers and mountain bikers for more trails. However, additional trail making must be carried out with careful planning. There are numerous floristically sensitive areas which must be avoided, and greater diligence must be given to their effect on water flow and erosion. They must also be built so motorized vehicles cannot use them.
4. The French Fort Cove Commission should maintain a list of new species which can be added to this work. The public should be encouraged to notify the Commission of any sightings, but any additions must be verifiable.
5. An effort should be made to develop checklists of those plant and animal groups, such as the fungi and invertebrates, that were not treated in this report. This could be done by enlisting the help of interested volunteers, local school classes, or by hiring summer students with an interest in a particular group, to compile such lists.

Appendix A

VASCULAR PLANTS OF FRENCH FORT COVE

A total of 467 vascular plant taxa was recorded for the area, including 461 species, plus an additional 3 subspecies, 1 variety, and 2 hybrids.

Nomenclature and taxonomic order follow Flora of New Brunswick (Hinds, 2000). Common names and introduced versus native status were taken from Hinds. Rarity status is based on the Atlantic Canada Conservation Data Centre, www.accdc.com/data/weblists/nbvasc Refer to zone map for location of zones.

Notations:

- ex* between two authors' names, means the scientific name was first applied to the taxon so-named by the last-mentioned author but was first legitimately published by the former according to the criteria of the International Code of Botanical Nomenclature.
- I* introduced or non-native plant.
- N* native plant.
- RE* range extension. This refers to plants found in this inventory that were not previously found in New Brunswick in the quadrant north and east of the Miramichi area as determined by the range maps in Hinds.
- S1* an extremely rare plant. 5 or fewer occurrences in the province.
- S2* a very rare plant. 6 to 20 occurrences in the province.
- S3* a rare to uncommon plant. 21 to 100 occurrences in the province.
- subsp.* subspecies.
- var.* variety.
- ** indicates a species which was historically present in the lists of vascular plants taken from The Miramichi Advance in 1879 and 1880 (See Appendix C)



Appendix A

SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
<u>LYCOPODIACEAE</u>		<u>CLUB-MOSS FAMILY</u>		
<i>Diphasiastrum complanatum</i> (L.) Holub	Ground-cedar	N		6W, 10E, 11E, 11W
<i>Diphasiastrum digitatum</i> (Dillenius ex A. Braun) Holub	Southern Running-pine	N		6W, 11E
<i>Diphasiastrum tristachyum</i> (Pursh) Holub	Blue or Wiry Ground-cedar	N		11E, 19W
<i>Huperzia appalachiana</i> Beitel & Mickel	Mountain Fir-moss	N	S2,RE	One zone
<i>Huperzia lucidula</i> (Michx.) Trevisan	Shining Club-moss	N		14E, 14W
<i>Lycopodium annotinum</i> L.	Bristly or Stiff Club-moss	N		8W, 10E, 20W
<i>Lycopodium clavatum</i> L.	Common or Running Club-moss	N		8E, 8W, 10E, 11E, 11W, 20W
<i>Lycopodium dendroideum</i> Michx.	Prickly Tree Club-moss	N		15E, 17E, 18W, 19W
<i>Lycopodium hickeyi</i> Wagner, Beitel & Moran	Hickey's Tree Club-moss	N		10E
<i>Lycopodium obscurum</i> L.	Flat-branched Ground-pine	N	RE	8E, 11E
<u>EQUISETACEAE</u>		<u>HORSETAIL FAMILY</u>		
<i>Equisetum arvense</i> L.	Common Field Horsetail	N		3E, 4W, 6E, 6W, 13E, 15E, 16W, 17E, 19W
<i>Equisetum fluviatile</i> L.	Water or River Horsetail	N		10W, 12W, 13W, 99
<i>Equisetum scirpoides</i> Michx.	Dwarf Scouring Rush	N		13E
<i>Equisetum sylvaticum</i> L.	Wood Horsetail	N		6W, 10W, 13E, 14W, 17E
<u>OSMUNDACEAE</u>		<u>FLOWERING FERN FAMILY</u>		
<i>Osmunda cinnamomea</i> L.	Cinnamon Fern	N		6E, 6W, 10W, 13E, 13W, 15E, 17W
<i>Osmunda claytoniana</i> L.	Interrupted Fern	N		8E, 10W, 11E, 13E, 14W, 15E, 16W, 17E, 20W
<u>DENNSTAEDTIACEAE</u>		<u>HAY-SCENTED FERN FAMILY</u>		
<i>Dennstaedtia punctilobula</i> (Michx.) Moore	Hay-scented Fern	N		20W
<i>Pteridium aquilinum</i> (L.) Kuhn	Bracken	N		2E, 3W, 5W, 6E, 7W, 8E, 10E, 10W, 11E, 11W, 12W, 13E, 18W, 19W, 20W
<u>THELYPTERIDACEAE</u>		<u>MARSH FERN FAMILY</u>		
<i>Phegopteris connectilis</i> (Michx.) Watt	Northern Beech Fern	N		6E, 9E, 10W, 13E, 13W, 16E, 17E, 19W, 20W
<i>Thelypteris noveboracensis</i> (L.) Nieuwl.	New York Fern	N		6E, 13E, 13W, 17W
<i>Thelypteris palustris</i> Schott	Marsh Fern	N		15E, 17W
<u>DRYOPTERIDACEAE</u>		<u>WOOD FERN FAMILY</u>		
<i>Athyrium filix-femina</i> (L.) Roth ex Mertens var. <i>angustum</i> (Willd.) Lawson	Lady Fern	N		6E, 6W, 8E, 10W, 12W, 13E, 13W, 14E, 14W, 15E, 16W, 17E, 20W
<i>Cystopteris bulbifera</i> (L.) Bernh.	Bulblet Bladder Fern	N		10W, 13E, 13W
<i>Cystopteris fragilis</i> (L.) Bernh.	Fragile or Brittle Fern	N		13E, 17W
<i>Dryopteris campyloptera</i> (Kunze) Clarkson	Mountain Wood Fern	N		13E
<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	Spinulose Wood Fern	N		3W, 6E, 9E, 10W, 12W, 13E, 13W, 14W, 15E, 16E, 16W, 17W, 20W
<i>Dryopteris cristata</i> (L.) Gray	Crested Wood Fern	N		9E
<i>Dryopteris intermedia</i> (Muhl.) Gray	Glandular Wood Fern	N		6E, 9E, 10W, 12W, 19W, 20W
<i>Dryopteris marginalis</i> (L.) Gray	Marginal Wood Fern	N		9E, 13E
<i>Dryopteris xboottii</i> (Tuck.) Underw.	Boott's Wood Fern	N	RE	9E
<i>Gymnocarpium dryopteris</i> (L.) Newm.	Oak Fern	N		6E, 9E, 10W, 13E, 13W, 14E, 16E, 16W, 17E
<i>Matteuccia struthiopteris</i> (L.) Todaro	Ostrich Fern or Fiddle-heads	N		6E, 12W, 13E, 14W, 15E, 16W, 17E
<i>Onoclea sensibilis</i> L.	Sensitive Fern	N		6E, 6W, 10W, 13E, 13W, 14W, 15E, 16E
<u>TAXACEAE</u>		<u>YEW FAMILY</u>		
<i>Taxus canadensis</i> Marshall*	Ground-hemlock	N		13E, 19W

Appendix A

SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
<u>PINACEAE</u>				
<u>PINE FAMILY</u>				
<i>Abies balsamea</i> (L.) Mill.*	Balsam Fir	N		6E, 9W, 10W, 11W, 13E, 19W, 20W
<i>Larix laricina</i> (Du Roi) Koch*	Tamarack or American Larch	N		6W, 11E, 12W, 13E, 20W
<i>Picea glauca</i> (Moench) Voss*	White Spruce	N		2E, 3W, 5W, 6E, 6W, 7W, 8E, 9W, 10E, 11E, 12W, 13E, 13W, 14E, 14W, 19W, 20W
<i>Picea rubens</i> Sarg.	Red Spruce	N		8E, 9W, 11E, 11W, 20W
<i>Pinus banksiana</i> Lamb.*	Jack Pine	N		3E, 5W, 6E, 6W, 7W, 8E, 9E, 10E, 11E, 20W
<i>Pinus resinosa</i> Ait.*	Red Pine	N		5W, 6E, 6W, 9E, 11W, 20W
<i>Pinus strobus</i> L.*	White Pine	N		2E, 3W, 5W, 6E, 6W, 7W, 9W, 11E, 11W, 20W
<i>Tsuga canadensis</i> (L.) Carr.	Eastern Hemlock	N		10E, 10W
<u>CUPRESSACEAE</u>				
<u>CYPRESS FAMILY</u>				
<i>Thuja occidentalis</i> L.*	Eastern White Cedar	N		2E, 2W, 6E, 10W, 13E, 13W, 15E, 19W
<u>RANUNCULACEAE</u>				
<u>CROWFOOT FAMILY</u>				
<i>Actaea pachypoda</i> Ell.*	White Baneberry	N		9E, 19W
<i>Actaea rubra</i> (Ait.) Willd.*	Red Baneberry	N		11W, 13W, 16E, 17W
<i>Aquilegia vulgaris</i> L.	European Columbine	I		7W
<i>Caltha palustris</i> L.*	Marsh-marigold	N		12W, 13W
<i>Clematis virginiana</i> L.*	Virgin's-bower	N		1W, 3W, 10W
<i>Coptis trifolia</i> (L.) Salisb.	Goldthread	N		16E, 17E, 19W
<i>Ranunculus abortivus</i> L.*	Kidney-leaf Buttercup	N		14W, 16E, 17W
<i>Ranunculus acris</i> L.*	Common Buttercup	I		3W, 4E, 6E, 6W, 7W, 8E, 9W, 11W, 12W, 14W
<i>Ranunculus aquatilis</i> L. var. <i>diffusus</i> Withering	White Water Crowfoot or Buttercup	N		13E, 17E, 99
<i>Ranunculus cymbalaria</i> Pursh	Seaside Crowfoot	N		1W, 5W
<i>Ranunculus hispidus</i> Michx.	Swamp Buttercup	N		6W, 10W, 13W, 14W, 16W
<i>Ranunculus pensylvanicus</i> L. f.*	Bristly Crowfoot or Buttercup	N		12W, 13W, 14W, 15E, 16W, 17E
<i>Ranunculus repens</i> L.	Creeping Buttercup	I		6E, 6W, 9E, 13E, 15E
<i>Thalictrum pubescens</i> Pursh*	Tall Meadow-rue	N		6E, 10W, 12W, 13E, 14W, 15E, 16W, 17E
<u>FUMARIACEAE</u>				
<u>FUMITORY FAMILY</u>				
<i>Corydalis sempervirens</i> (L.) Pers.*	Rock-harlequin	N		8E, 10E
<u>HAMAMELIDACEAE</u>				
<u>WITCH-HAZEL FAMILY</u>				
<i>Hamamelis virginiana</i> L.*	Witch-hazel	N		3W
<u>ULMACEAE</u>				
<u>ELM FAMILY</u>				
<i>Ulmus americana</i> L.	American or White Elm	N		1W, 2E, 10W
<u>URTICACEAE</u>				
<u>NETTLE FAMILY</u>				
<i>Urtica dioica</i> L. subsp. <i>dioica</i>	Eurasian Stinging Nettle	I		2E, 5E, 6E, 10W, 12W, 13E, 13W, 14W, 15E, 16W, 17E
<u>MYRICACEAE</u>				
<u>WAX-MYRTLE FAMILY</u>				
<i>Comptonia peregrina</i> (L.) Coult.	Sweet-fern	N		3W, 6W, 7W, 8E, 9E, 9W, 10W, 11E, 17W, 20W
<u>FAGACEAE</u>				
<u>BEECH FAMILY</u>				
<i>Fagus grandifolia</i> Ehrh.*	American Beech	N		6E, 10W, 11E, 11W, 14E, 18W, 19W, 20W
<i>Quercus rubra</i> L.	Northern Red Oak	N		2E, 6W, 8E, 8W, 10E, 10W, 11W, 20W
<u>BETULACEAE</u>				
<u>BIRCH FAMILY</u>				
<i>Alnus incana</i> (L.) Moench subsp. <i>rugosa</i> (Du Roi) Clausen*	Speckled Alder	N		2W, 5W, 6E, 10W, 11E, 13E, 13W, 14W, 15E, 16W, 17E, 20W
<i>Alnus viridis</i> (Villars) DC.	Green Alder	N		2E, 2W, 4E, 5W, 6E, 8E, 10W, 11E, 20W
<i>Betula alleghaniensis</i> Britt.*	Yellow Birch	N		13E, 13W, 19W
<i>Betula papyrifera</i> Marsh.*	White Birch	N		3E, 3W, 5W, 6E, 6W, 8E, 9W, 10W, 11E, 11W, 13E, 13W, 15E, 16W, 17E, 19W, 20W
<i>Betula populifolia</i> Marsh.	Grey Birch	N		6E, 8E, 11E, 20W
<i>Corylus cornuta</i> Marsh.*	Beaked Hazel	N		6E, 8E, 10W, 11E, 13E, 15E, 17E, 19W, 20W
<u>CHENOPODIACEAE</u>				
<u>GOOSEFOOT FAMILY</u>				
<i>Atriplex glabriuscula</i> Edmondston	North Seacoast Atriplex	N		1W
<i>Atriplex prostrata</i> Boucher ex DC.	Hastate Orache	N		1W
<i>Chenopodium album</i> L.	Lamb's Quarters	I		2W, 5E, 6E, 7E

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<u>MOLLUGINACEAE</u>		<u>CARPET-WEED FAMILY</u>		
<i>Mollugo verticillata</i> L.	Carpet-weed	I		9W
<u>PORTULACACEAE</u>		<u>PURSLANE FAMILY</u>		
<i>Portulaca oleracea</i> L.	Common Purslane	I	RE	11E
<u>CARYOPHYLLACEAE</u>		<u>PINK FAMILY</u>		
<i>Cerastium fontanum</i> Baumg.	Common Mouse-ear Chickweed	I		7W
<i>Moehringia lateriflora</i> (L.) Fenzl	Grove Sandwort	N		6W
<i>Sagina procumbens</i> L.	Bird's-eye Pearlwort	N		7W
<i>Silene vulgaris</i> (Moench) Garcke	Bladder Campion	I		2W, 6W, 7W
<i>Spergularia canadensis</i> (Pers.) Don	Canada Sand-spurrey	N		1W
<i>Spergularia rubra</i> (L.) J. & K. Presl.	Ruby Sand-spurrey	I		5E, 7W, 8W, 9W
<i>Stellaria alsine</i> Grimm	Marsh Chickweed	N		13W, 17E, 17W
<i>Stellaria calycantha</i> (Ledeb.) Bong.	Northern Starwort	N		15E, 17E
<i>Stellaria graminea</i> L.	Grass-leaved Stitchwort	I		3W, 5E, 6E, 6W, 7W, 8W, 9W
<u>POLYGONACEAE</u>		<u>BUCKWHEAT FAMILY</u>		
<i>Fallopia cilinodis</i> (Michx.) J. Holub	Fringed Black-bindweed	N		6E, 15E
<i>Fallopia convolvulus</i> (L.) A. Löve	Black-bindweed	I		5E, 6E
<i>Fallopia scandens</i> (L.) J. Holub	Climbing False Buckwheat	N	RE	14W
<i>Persicaria hydropiper</i> (L.) P.M. Opiz	Marshweed or Water-pepper	N		13E, 17E, 20W, 99
<i>Persicaria lapathifolia</i> (L.) S.F. Gray	Pale Smartweed	N		10W, 99
<i>Persicaria maculosa</i> S.F. Gray	Lady's-thumb	I		7W, 8W, 9W
<i>Persicaria sagittata</i> (L.) Gross	Arrow-leaved Tearthumb	N		6E, 10W, 15E, 16W, 17E
<i>Polygonum arenastrum</i> Jord. ex Boreau	Doorweed	I		5E, 6E
<i>Polygonum buxiforme</i> Small	Box Knotweed	N		10W
<i>Polygonum neglectum</i> Besser	Longleaf Knotweed	I		10W
<i>Polygonum ramosissimum</i> Michx.	Bushy Knotweed	N		1W
<i>Rumex acetosella</i> L.*	Sheep Sorrel	I		1W, 3W, 6W, 7W, 11W, 20W
<i>Rumex crispus</i> L.	Curled Dock	I		1E, 1W, 6E, 13E, 17W
<i>Rumex orbiculatus</i> Gray	Great Water Dock	N		10W, 12W, 13W, 14W, 15E, 16W, 17E, 17W
<i>Rumex salicifolius</i> Weinm. subsp. <i>mexicanus</i> (Meisn.) C.L. Hitchc.	Narrow-leaved Dock	N		1W
<u>CLUSIACEAE</u>		<u>ST. JOHN'S-WORT FAMILY</u>		
<i>Hypericum canadense</i> L.	Canada St. John's-wort	N		9E
<i>Hypericum perforatum</i> L.	Common St. John's-wort	I		2E, 3W, 4E, 6E, 6W, 7W, 8E, 9W, 13E, 13W, 15E, 20W
<u>TILIACEAE</u>		<u>LINDEN FAMILY</u>		
<i>Tilia platyphyllos</i> Scop.	Big-leaf Linden	I		3E, 4W, 6E, 6W, 7W, 8W, 11W
<u>MALVACEAE</u>		<u>MALLOW FAMILY</u>		
<i>Malva moschata</i> L.	Musk Mallow	I		20W
<u>CISTACEAE</u>		<u>ROCK-ROSE FAMILY</u>		
<i>Lechea intermedia</i> Leggett ex. Britt.	Large-pod Pinweed	N		1E, 9E, 11E
<u>VIOLACEAE</u>		<u>VIOLET FAMILY</u>		
<i>Viola blanda</i> Willd.	Large-leaved White Violet	N		3W, 8E, 10E, 11E, 16E
<i>Viola cucullata</i> Ait.*	Marsh Blue Violet	N		6W, 13W, 14W, 17W
<i>Viola macloskeyi</i> Lloyd*	Northern White Violet	N		13W, 17W
subsp. <i>pallens</i> (Banks ex DC.) Baker				
<i>Viola sororia</i> Willd.	Woolly Blue Violet	N		9E

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<u>SALICACEAE</u>				
<i>Populus balsamifera</i> L.	Balsam Poplar	N		6W, 9E, 13E, 15E, 20W
<i>Populus grandidentata</i> Michx.*	Large-toothed Aspen	N		2E, 2W, 5W, 6W, 8E, 9E, 9W, 10E, 10W, 11E, 13E, 20W
<i>Populus tremuloides</i> Michx.*	Trembling Aspen	N		2E, 3E, 3W, 4W, 5W, 6E, 6W, 8W, 9E, 10E, 10W, 11E, 13E, 14W, 15E, 19W, 20W
<i>Salix bebbiana</i> Sarg.*	Bebb's or Livid Willow	N		6W, 7E, 11E, 13E, 13W, 15E, 17E, 19W
<i>Salix discolor</i> Muhl.	Pussy Willow	N		6E, 6W, 7W, 10W, 11E, 16E, 20W
<i>Salix eriocephala</i> Michx.	Red-tipped Willow	N		6W, 13E, 15E, 16W, 17E, 19W
<i>Salix humilis</i> Marsh.	Prairie Willow	N		5W, 6E
<i>Salix lucida</i> Muhl.*	Shining Willow	N		9E
<i>Salix pyrifolia</i> Anderss.	Balsam Willow	N		11E
<u>WILLOW FAMILY</u>				
<u>BRASSICACEAE</u>				
<i>Alyssum alyssoides</i> (L.) L.	Pale or Yellow Alyssum	I		7E (garden escape)
<i>Arabis drummondii</i> Gray*	Drummond's Rock-cress	N	S2,RE	One zone
<i>Barbarea vulgaris</i> Ait. f.	Common Winter-cress or Yellow Rocket	I		2E, 7W
<i>Capsella bursa-pastoris</i> (L.) Medik.	Shepherd's-purse	I		7W
<i>Cardamine diphylla</i> (Michx.) Wood	Broad-leaved Toothwort	N		16E
<i>Cardamine pensylvanica</i> Muhl.*	Pennsylvania Bitter-cress	N		13E, 15E, 16E, 16W
<i>Erysimum cheiranthoides</i> L.	Wormseed Mustard	I		5E
<i>Lepidium campestre</i> (L.) Ait. f.	Field Pepper-grass	I	RE	1E, 1W, 5E
<i>Raphanus raphanistrum</i> L.	Wild Radish	I		1W, 8E, 20W
<i>Rorippa palustris</i> (L.) Bess.	Yellow-cress	N		5E, 7W
<i>Thlaspi arvense</i> L.	Penny-cress	I		20W
<u>MUSTARD FAMILY</u>				
<u>ERICACEAE</u>				
<i>Epigaea repens</i> L.*	Mayflower or Trailing Arbutus	N		3W, 6E, 8E, 9E, 10E, 11E, 17E, 19W, 20W
<i>Gaultheria hispidula</i> (L.) Muhl.*	Creeping Snowberry or Snowberry-wintergreen	N		9E, 14W, 16E, 16W, 17E, 19W
<i>Gaultheria procumbens</i> L.*	Wintergreen	N		3W, 8E, 9E, 10E, 11E, 19W, 20W
<i>Kalmia angustifolia</i> L.*	Sheep Laurel or Lambkill	N		3W, 8E, 9E, 10E, 11E, 11W, 19W, 20W
<i>Rhododendron canadense</i> (L.) Torr.*	Rhododendron or Rhodora	N		6W, 11E
<i>Rhododendron groenlandicum</i> * (Oeder) Kron & Judd	Labrador-tea	N		13E, 15E, 16E, 17E, 19W, 20W
<i>Vaccinium angustifolium</i> Ait.*	Lowbush Blueberry	N		3W, 4W, 5W, 6E, 6W, 9E, 10E, 11E, 13E, 17E, 19W, 20W
<u>HEATH FAMILY</u>				
<u>PYROLACEAE</u>				
<i>Chimaphila umbellata</i> (L.) Barton*	Pipsissewa or Prince's Pine	N		8E, 9E, 10E
<i>Orthilia secunda</i> (L.) House*	One-sided Pyrola	N		8E, 16E
<i>Pyrola americana</i> Sweet*	Round-leaved Pyrola	N		6W, 9E, 11E
<i>Pyrola chlorantha</i> Sw.*	Green-flowered Wintergreen	N		15E
<i>Pyrola elliptica</i> Nutt.*	Shinleaf	N		6E, 9E, 13W, 14E, 15E, 19W
<u>WINTERGREEN FAMILY</u>				
<u>MONOTROPACEAE</u>				
<i>Monotropa hypopithys</i> L.*	Pinesap or False Beech-drops	N		8E, 9E, 10E
<i>Monotropa uniflora</i> L.*	Indian-pipe	N		8E, 10E, 20W
<u>INDIAN PIPE FAMILY</u>				
<u>PRIMULACEAE</u>				
<i>Glaux maritima</i> L.	Sea-milkwort	N		1E, 1W
<i>Lysimachia terrestris</i> (L.) BSP.	Swamp-candles	N		10W, 15E, 17E
<i>Trientalis borealis</i> Raf.*	American Starflower	N		8E, 17W, 20W
<u>PRIMROSE FAMILY</u>				
<u>GROSSULARIACEAE</u>				
<i>Ribes glandulosum</i> Grauer	Skunk Currant	N		9E, 15E, 17E, 17W
<i>Ribes hirtellum</i> Michx.	Canada or Bristly Gooseberry	N		17W
<i>Ribes lacustre</i> (Pers.) Poir.	Bristly or Swamp Currant	N		6E, 9E, 13E, 14W, 16E, 16W
<i>Ribes triste</i> Pallas	Swamp Red Currant	N		9E, 13E, 14W, 17W
<u>GOOSEBERRY FAMILY</u>				
<u>SAXIFRAGACEAE</u>				
<i>Chrysosplenium americanum</i> Schwein.	Water-mat	N		6E, 13E, 13W, 14W
<i>Mitella nuda</i> L.	Naked Mitrewort	N		9E, 13W, 15E
<u>SAXIFRAGE FAMILY</u>				

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ROSACEAE		ROSE FAMILY		
<i>Amelanchier laevis</i> Wieg.	Smooth Shadbush	N		3W, 11E, 11W
<i>Amelanchier stolonifera</i> Wieg.	Running Serviceberry	N		1W
<i>Amelanchier xneglecta</i> Egglest.	Overlooked Serviceberry	N		9E, 17W
<i>Argentina egedii</i> (Wormsk.) Rydb.	Eged's Silverweed	N		1E, 1W, 4E
<i>Crataegus chrysocarpa</i> Ashe	Round-leaved Hawthorn	N		7W, 9W
<i>Crataegus flabellata</i> (Spach) Kirchn.	Variable Hawthorn	N		6W, 8W
<i>Dalibarda repens</i> L.	Dewdrop	N		11E
<i>Fragaria virginiana</i> Dcne.*	Wild Strawberry	N		4E, 5W, 6E, 6W, 7W, 11E, 13E, 13W, 16W, 17E,
<i>Geum aleppicum</i> Jacq.	Yellow Avens	N		6E, 13E, 14W, 16E, 16W, 20W
<i>Geum laciniatum</i> Murr.	Cut-leaved Avens	N		6E, 13E
<i>Geum macrophyllum</i> Willd.	Large-leaved Avens	N		6E
<i>Geum rivale</i> L.	Water Avens	N		13E, 13W, 17E, 17W
<i>Malus pumila</i> P. Mill.	Apple	I		3E, 6W, 8E, 9W, 13E, 20W
<i>Physocarpus opulifolius</i> (L.) Maxim.	Ninebark	I	RE	6W
<i>Potentilla argentea</i> L.	Silvery Cinquefoil	I		4E, 6W, 7W, 8W, 20W
<i>Potentilla intermedia</i> L.	Ashy Cinquefoil	I		7W, 13E
<i>Potentilla norvegica</i> L.	Rough Cinquefoil	I/N		4E, 6E, 7W, 9E, 10W, 13E, 13W, 15E, 16W, 17E
<i>Potentilla recta</i> L.	Rough-fruited Cinquefoil	I		4E, 7E, 7W, 9W
<i>Potentilla simplex</i> Michx.	Old-field Cinquefoil	N		13E
<i>Prunus pensylvanica</i> L. f.*	Pin Cherry	N		2E, 2W, 3E, 5W, 6E, 6W, 7W, 8E, 9E, 10W,
				11E, 11W, 13E, 14E, 20W
<i>Prunus virginiana</i> L.	Choke Cherry	N		2W, 3E, 5W, 6W, 7W, 8E, 9W, 10W, 11E,
				12W, 13E, 14W, 16W, 17E
<i>Rosa cinnamomea</i> L.	Cinnamon Rose	I		7E
<i>Rosa eglanteria</i> L.	Sweetbrier Rose	I		4E, 6W, 7W
<i>Rosa virginiana</i> Mill.	Virginia Rose	N		6E
<i>Rubus allegheniensis</i> Porter	Common Blackberry	N		17W, 19W
<i>Rubus canadensis</i> L.*	Smooth Blackberry	N		6E, 7W, 9E, 10W, 14W, 15E, 20W
<i>Rubus idaeus</i> L. var. <i>strigosus</i> (Michx.) Focke*	Red Raspberry	N		2E, 3E, 6E, 7W, 8E, 10E, 11E, 11W, 12W,
				13E, 14W, 15E, 16W, 17E, 19W, 20W
<i>Rubus idaeus</i> L. var. <i>idaeus</i>	Garden Raspberry	I		10W
<i>Rubus pubescens</i> Raf.	Swamp Red Raspberry	N		6E, 11E, 13E, 13W, 14W, 15E, 16E, 16W, 17E
<i>Sorbus americana</i> Marsh.	American Mountain-ash	N		2E, 5W, 6E, 6W, 8E, 9E, 11W, 13E, 15E, 16E,
				19W, 20W
<i>Spiraea alba</i> Du Roi var. <i>latifolia</i> (Ait.) Dippel*	Meadow-sweet	N		1W, 2W, 4E, 5W, 6E, 13E, 14W, 15E, 16E,
				17E, 20W
FABACEAE		PEA or BEAN FAMILY		
<i>Anthyllis vulneraria</i> L.	Lady's-fingers	I		4E, 6E, 6W, 7W, 8W, 13E
<i>Lotus corniculatus</i> L.	Bird's-foot Trefoil	I		6E, 7E, 8E, 8W
<i>Medicago lupulina</i> L.	Black Medick	I		4W, 6E, 7W, 8E, 8W
<i>Mellilotus officinalis</i> (L.) Lam.	White and Yellow Sweet Clover	I		1E, 4E, 7W, 8W, 20W
<i>Trifolium arvense</i> L.	Rabbit-foot Clover	I		4E, 6E, 7W, 9W, 20W
<i>Trifolium aureum</i> Pollich	Hop Clover	I		4E, 6E, 7W, 20W
<i>Trifolium campestre</i> Schreb.	Low Hop Clover	I		6E, 8E, 8W
<i>Trifolium hybridum</i> L.	Alsike Clover	I		2E, 4E, 7W, 8E
<i>Trifolium pratense</i> L.*	Red Clover	I		2E, 4E, 5E, 7W, 8E, 8W, 9W
<i>Trifolium repens</i> L.*	White Clover	I		1E, 4E, 8W, 13E, 16W, 20W
<i>Vicia cracca</i> L.	Cow or Tufted Vetch	I		1E, 2E, 3W, 4E, 6W, 7W, 9W, 10E, 12W, 13E
HALORAGACEAE		WATER-MILFOIL FAMILY		
<i>Myriophyllum verticillatum</i> L.	Whorled Water-milfoil	N	S2	One zone
ONAGRACEAE		EVENING-PRIMROSE FAMILY		
<i>Circaea alpina</i> L.	Small Enchanter's-nightshade	N		14W
<i>Epilobium angustifolium</i> L.	Fireweed	N		3W, 4E, 6E, 8E, 10W, 13E, 14W, 15E, 16E,
				17E, 19W, 20W
<i>Epilobium ciliatum</i> Raf. subsp. <i>glandulosum</i> (Lehm.) Hoch & Raven	Glandular Willow-herb	N		6E, 9W, 10W, 12W, 13W, 14W, 15E, 16W, 17E
<i>Oenothera biennis</i> L.*	Evening-primrose	N		2E, 4E, 6W, 7W, 9W, 13E, 20W
<i>Oenothera parviflora</i> L.	Small-flowered Evening-primrose	N		1W, 6E, 7W

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<u>CORNACEAE</u>				
<i>Cornus alternifolia</i> L.*	Alternate-leaved Dogwood	N		6E, 11W, 13E, 13W, 14W, 16E, 16W
<i>Cornus canadensis</i> L.*	Bunchberry	N		6W, 8E, 9E, 10E, 11E, 11W, 14E, 15E, 17E, 19W, 20W
<i>Cornus rugosa</i> Lam.*	Round-leaved Dogwood	N		2W, 7W, 15E, 16W, 20W
<i>Cornus sericea</i> L.*	Red Osier Dogwood	N		9E, 15E, 16W
<u>AQUIFOLIACEAE</u>				
<i>Nemopanthis mucronatus</i> (L.) Loes.	Mountain-holly	N		9E, 11E, 15E, 20W
<u>EUPHORBIACEAE</u>				
<i>Euphorbia cyparissias</i> L.	Cypress Spurge	I		10E
<u>RHAMNACEAE</u>				
<i>Frangula alnus</i> Mill.	Alder Buckthorn	I		5W, 6E, 6W, 7W, 8E, 10W, 13E, 20W
<u>VITACEAE</u>				
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia Creeper	N		4E
<u>LINACEAE</u>				
<i>Linum usitatissimum</i> L.	Common Flax	I		7E
<u>ACERACEAE</u>				
<i>Acer negundo</i> L.*	Manitoba Maple	N		1E, 6W, 20W
<i>Acer pensylvanicum</i> L.*	Striped Maple	N		6E, 9E, 10E, 10W, 13E, 13W, 14E, 19W, 20W
<i>Acer platanoides</i> L.	Norway Maple	I		3E, 7W, 10W
<i>Acer rubrum</i> L.*	Red Maple	N		3E, 5W, 6E, 8E, 9E, 9W, 10E, 11E, 11W, 13E, 13W, 16W, 17E, 19W, 20W
<i>Acer saccharinum</i> L.	Silver Maple	N	RE	13E, 20W
<i>Acer saccharum</i> Marsh.	Sugar Maple	N		9E, 14E, 19W, 20W
<i>Acer spicatum</i> Lam.	Mountain Maple	N		1W, 6E, 9E, 10W, 13E, 13W, 14W, 15E, 16W, 19W
<u>ANACARDIACEAE</u>				
<i>Rhus hirta</i> (L.) Sudworth*	Staghorn Sumac	N		2E, 6E, 7W, 9W, 14E, 15E, 17E
<u>OXALIDACEAE</u>				
<i>Oxalis montana</i> Raf.	Common Wood-sorrel	N		13W, 17E, 19W
<i>Oxalis stricta</i> L.*	Yellow Wood-sorrel	N		5E, 6E, 6W, 7W
<u>BALSAMINACEAE</u>				
<i>Impatiens capensis</i> Meerb.*	Spotted Jewel-weed	N		6E, 10W, 12W, 13E, 13W, 14W, 15E, 17E
<u>ARALIACEAE</u>				
<i>Aralia hispida</i> Vent.	Bristly Sarsaparilla	N		6E, 8E, 9E, 11W
<i>Aralia nudicaulis</i> L.	Wild Sarsaparilla	N		2W, 6W, 9E, 10E, 11E, 11W, 13E, 13W, 14E, 15E, 16E, 19W, 20W
<u>APIACEAE</u>				
<i>Angelica atropurpurea</i> L.	Angelica	N		12W, 13W, 14W, 15E, 16W, 17E
<i>Cicuta bulbifera</i> L.	Bulblet-bearing Water-hemlock	N		10W, 99
<i>Cicuta maculata</i> L.	Common Water-hemlock	N		1E
<i>Heracleum maximum</i> Bartr.*	Cow-parsnip	N		6E, 10W
<i>Hydrocotyle americana</i> L.	Marsh-pennywort	N		17E
<i>Ligusticum scoticum</i> L.	Scotch Lovage	N		1E, 1W
<i>Pastinaca sativa</i> L.	Wild Parsnip	I		7E
<i>Pimpinella saxifraga</i> L.	Burnet-saxifrage	I		20W
<i>Sium suave</i> Walt.*	Water-parsnip	N		1E
<u>APOCYNACEAE</u>				
<i>Apocynum androsaemifolium</i> L.*	Spreading Dogbane	N		4E, 9E, 20W
<u>SOLANACEAE</u>				
<i>Solanum dulcamara</i> L.*	Bittersweet Nightshade	I		1E, 1W, 6E, 6W, 10W, 13E, 13W, 14W, 15E
<u>CONVOLVULACEAE</u>				
<i>Calystegia sepium</i> (L.) R. Br.	Hedge-bindweed	N		1E, 1W, 2E, 16E
<u>DOGWOOD FAMILY</u>				
<u>HOLLY FAMILY</u>				
<u>SPURGE FAMILY</u>				
<u>BUCKTHORN FAMILY</u>				
<u>GRAPE FAMILY</u>				
<u>FLAX FAMILY</u>				
<u>MAPLE FAMILY</u>				
<u>CASHEW FAMILY</u>				
<u>WOOD-SORREL FAMILY</u>				
<u>TOUCH-ME-NOT FAMILY</u>				
<u>GINSENG FAMILY</u>				
<u>PARSLEY or CARROT FAMILY</u>				
<u>DOGBANE FAMILY</u>				
<u>NIGHTSHADE FAMILY</u>				
<u>MORNING -GLORY FAMILY</u>				

Appendix A

SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
<u>BORAGINACEAE</u>				
<i>Myosotis laxa</i> Lehm.	<u>BORAGE FAMILY</u> Small Forget-me-not	N		6W, 12W, 13E, 13W
<u>LAMIACEAE</u>				
<i>Galeopsis tetrahit</i> L.*	<u>MINT FAMILY</u> Common Hemp-nettle	I		5E, 6E, 9W, 13E, 16E, 17E
<i>Lycopus uniflorus</i> Michx.	Bugleweed	N		6W, 10W, 11E, 13E, 14W, 15E, 17E, 99
<i>Mentha canadensis</i> L.*	Canada Mint	N		6E, 13E, 13W, 14W, 16W, 17E, 99
<i>Prunella vulgaris</i> L.*	Heal-all or Self-heal	N		6E, 7E, 13E
<i>Scutellaria galericulata</i> L.	Common Skullcap	N		10W, 13E, 13W, 15E, 17E
<i>Scutellaria lateriflora</i> L.	Mad-dog Skullcap	N		15E
<i>Stachys palustris</i> L.*	Woundwort or Hedge-nettle	I		1E, 1W, 6E
<u>CALLITRICHACEAE</u>				
<i>Callitriche heterophylla</i> L.	<u>WATER-STARWORT FAMILY</u> Greater Water-starwort	N		99
<i>Callitriche palustris</i> L.	Vernal Water-starwort	N		15E
<u>PLANTAGINACEAE</u>				
<i>Plantago major</i> L.	<u>PLANTAIN FAMILY</u> Common Plantain	I		1E, 4E, 5E, 6E, 7W, 10W, 11E, 13E, 17E, 20W
<i>Plantago maritima</i> L. var. <i>juncooides</i> (Lam.) Gray	Seaside Plantain	N		1E, 1W
<i>Plantago rugelii</i> Dcne.	Rugel's Plantain	N	S3, RE	Two zones
<u>OLEACEAE</u>				
<i>Fraxinus nigra</i> Marsh.	<u>OLIVE FAMILY</u> Black Ash	N		9E, 13E, 13W, 14W, 15E
<u>SCROPHULARIACEAE</u>				
<i>Chelone glabra</i> L.*	<u>FIGWORT FAMILY</u> Turtlehead	N		6E, 6W, 10W, 12W, 13E, 13W, 14W, 15E
<i>Euphrasia nemorosa</i> (Pers.) Wallr.	Common Eyebright	I		8E
<i>Linaria repens</i> (L.) Mill.	Striped Toadflax	I		3W, 6E, 11E
<i>Linaria vulgaris</i> Mill.	Common Toadflax or Butter-and-eggs	I		1E, 1W, 3W, 4E, 5E, 5W, 7W, 8E, 20W
<i>Melampyrum lineare</i> Desr.	Cow-wheat	N		3W, 5E, 6W, 8E, 9E, 11E, 11W
<i>Mimulus moschatus</i> Dougl. ex Lindl.	Muskflower	I		6E, 10W, 12W, 13E, 13W, 14W, 15E, 16E, 17E
<i>Verbascum thapsus</i> L.*	Common Mullein	I		1W, 4E, 6E, 6W, 7W, 8W, 9E, 12W, 13E
<i>Veronica americana</i> Schwein ex Benth.	American Brooklime	N		6W, 10W, 11W, 13E, 13W, 14W, 15E, 16W
<i>Veronica officinalis</i> L.	Common Speedwell	I		1E, 5W, 6E, 6W, 8E, 11W, 13E, 14E, 20W
<i>Veronica scutellata</i> L.	Marsh Speedwell	N		16W
<i>Veronica serpyllifolia</i> L. subsp. <i>serpyllifolia</i>	Thyme-leaved Speedwell	I		6E, 9E, 10W
<u>OROBANCHACEAE</u>				
<i>Epifagus virginiana</i> (L.) Bart.	<u>BROOM-RAPE FAMILY</u> Beech-drops	N		18W, 20W
<u>CAMPANULACEAE</u>				
<i>Campanula rotundifolia</i> L.*	<u>BELLFLOWER FAMILY</u> Harebell or Bluebell	N		1W
<i>Lobelia inflata</i> L.	Indian-tobacco	N		5E, 6E, 9E
<u>RUBIACEAE</u>				
<i>Galium asprellum</i> Michx.	<u>MADDER FAMILY</u> Rough Bedstraw	N		12W, 13E, 13W, 14W, 15E, 17E
<i>Galium mollugo</i> L.	White or Smooth Bedstraw or Wild Madder	I		6W, 7W, 11E, 20W
<i>Galium palustre</i> L.	Marsh Bedstraw	N		6E, 6W, 10W, 12W, 15E, 16W, 17E
<i>Galium trifidum</i> L. subsp. <i>trifidum</i> *	Small Bedstraw	N		15E, 16W, 17E
<i>Galium triflorum</i> Michx.	Sweet-scented or Fragrant Bedstraw	N		4W
<i>Mitchella repens</i> L.*	Partridge-berry	N		13E, 16E
<u>CAPRIFOLIACEAE</u>				
<i>Diervilla lonicera</i> P. Mill.	<u>HONEYSUCKLE FAMILY</u> Northern Bush-honeysuckle	N		2E, 3W, 4E, 5W, 6E, 8E, 9E, 10E, 10W, 11E, 13E, 15E, 16E, 17E, 19W, 20W
<i>Linnaea borealis</i> L.*	Twinflower	N		8E, 9E, 10E, 11E, 11W, 16E, 19W
<i>Lonicera canadensis</i> Bartr. ex Marsh.*	Fly Honeysuckle	N		6E, 8W, 10W, 13E, 15E, 19W
<i>Lonicera tatarica</i> L.	Tartarian Honeysuckle	I		4E
<i>Sambucus canadensis</i> L.*	Common Elder	N		2E, 12W, 13E, 14W, 15E, 16W, 17E
<i>Sambucus racemosa</i> L.*	Red-berried Elder	N		1W, 3E, 5W, 6E, 6W, 7W, 8E, 10W, 11W, 13E, 13W, 19W
<i>Viburnum lantanooides</i> Michx.	Hobblebush	N		9E, 13E, 14E, 16E, 19W
<i>Viburnum nudum</i> L. var. <i>cassinoides</i> (L.) T. & G.*	Wild-raisin	N		11E, 14E, 15E, 16W, 20W
<i>Viburnum opulus</i> L. var. <i>americanum</i> Ait.	Highbush Cranberry	N		9E, 10W, 19W

Appendix A

SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
ASTERACEAE		ASTER FAMILY		
<i>Achillea millefolium</i> L.	Yarrow	N		4E, 5E, 6E, 8E, 13E, 20W
<i>Achillea ptarmica</i> L.	Sneezeweed	I		6W, 8W, 9W
<i>Ambrosia artemisiifolia</i> L.	Common Ragweed	N		3W, 4E, 6W, 7W, 8W
<i>Anaphalis margaritacea</i> (L.) Benth. & Hook. f.*	Pearly Everlasting	N		2W, 3E, 6E, 7W, 8E, 10W, 11E, 13E, 13W, 15E 17E, 19W 8W, 20W
<i>Antennaria howellii</i> Greene subsp. <i>canadensis</i> (Greene) Bayer	Small Canadian Pussy-toes	N		
<i>Antennaria howellii</i> Greene subsp. <i>neodioica</i> (Greene) Bayer	Small New Pussy-toes	N		6E
<i>Anthemis cotula</i> L.	Stinking Mayweed	I		3E, 4E
<i>Arctium minus</i> L.	Common Burdock	I		1E, 1W, 2E, 13E, 13W, 14W, 16W
<i>Artemisia biennis</i> Willd.	Biennial Wormwood	I		1W
<i>Artemisia vulgaris</i> L.	Mugwort	I		5E, 6E, 7W, 11E
<i>Aster acuminatus</i> Michx.	Whorled Wood Aster	N		6E, 9E, 13E, 14E, 17E, 19W, 20W
<i>Aster ciliolatus</i> Lindl.	Northern Heart-leaved Aster	N		4E, 8E
<i>Aster cordifolius</i> L.	Heart-leaved Aster	N		13E
<i>Aster lateriflorus</i> (L.) Britt.*	Calico Aster	N		2W, 4E, 5W, 6E, 8E, 8W, 9E, 10W, 13W, 15E, 19W, 20W
<i>Aster macrophyllus</i> L.	Large-leaved Aster	N		3W, 5W, 6E, 6W, 9W, 11W, 13E, 14E, 16E, 19W, 20W
<i>Aster novi-belgii</i> L. var. <i>novi-belgii</i>	New York Aster	N		1E, 5E
<i>Aster puniceus</i> L.	Purple-stemmed Aster	N		1W, 2E, 9E, 12W, 13E, 13W, 15W, 16W
<i>Aster umbellatus</i> Mill.	Flat-topped White Aster	N		11W, 20W
<i>Bidens cernua</i> L.	Nodding Beggar-ticks	N		6E, 10W, 15E, 16W, 17E
<i>Bidens frondosa</i> L.	Devil's Beggar-ticks	N		1W, 5E, 6E, 10W, 17W, 20W
<i>Carduus nutans</i> L.	Nodding or Musk Thistle	I		5E, 7W
<i>Centaurea nigra</i> L.	Black Knapweed	I		1W, 6E, 6W, 9W, 13E, 20W
<i>Cichorium intybus</i> L.	Chicory or Blue-sailors	I		7E
<i>Cirsium arvense</i> (L.) Scop.*	Canada Thistle	I		2E, 4E, 6E, 7W, 13E, 15E
<i>Cirsium muticum</i> Michx.*	Swamp Thistle	N		6E, 13E, 16E
<i>Cirsium vulgare</i> (Savi) Ten.*	Bull Thistle	I		13E, 13W, 15E
<i>Conyza canadensis</i> (L.) Cronq.	Horseweed	N		4E, 5E, 7W, 8W
<i>Erechtites hieraciifolia</i> (L.) Raf. ex DC.	American Burnweed	N		8E
<i>Erigeron strigosus</i> Muhl. ex Willd.	Rough Fleabane	N		4E, 6E, 7W, 8E, 8W, 13E, 20W
<i>Eupatorium maculatum</i> L.	Joe-Pye-weed	N		6E, 6W, 12W, 13E, 14W, 15E, 16W, 17E
<i>Eupatorium perfoliatum</i> L.	Boneset	N		6W, 13E, 99
<i>Euthamia graminifolia</i> (L.) Nutt. ex Cass.	Grass-leaved Goldenrod	N		3W, 4E, 6E, 7W, 10E, 10W, 13E, 13W, 15E, 16W, 17E, 20W
<i>Gnaphalium uliginosum</i> L.	Low Cudweed	I		4E, 7W, 9W, 17E
<i>Hieracium aurantiacum</i> L.	Orange Hawkweed	I		1W, 6W, 19W
<i>Hieracium canadense</i> Michx.	Canada Hawkweed	N		13E, 19W, 20W
<i>Hieracium lachenalii</i> Gmel.	Common Wall Hawkweed	I		3W, 6E, 9E, 11E, 11W, 12W, 14W, 16E, 18W, 20W
<i>Hieracium pilosella</i> L.	Mouse-ear Hawkweed	I		1E, 1W, 4E, 5W, 6E, 6W, 8E, 9E, 9W, 11W, 13E, 16W, 17E, 19W, 20W
<i>Hieracium piloselloides</i> Vill.	Glaucous King-devil	I		3W, 4E, 6E, 6W, 7W, 8E, 10W, 11W, 13E, 14W, 16W, 17E
<i>Hieracium scabrum</i> Michx.	Rough Hawkweed	N		9E, 10W, 14E, 16W, 18W, 19W, 20W
<i>Lactuca biennis</i> (Moench) Fern.	Tall Blue Lettuce	N		13E, 13W, 14W, 15E, 16W, 17E
<i>Lactuca canadensis</i> L.	Devil's-weed or Canada Lettuce	N		6E, 20W
<i>Leontodon autumnalis</i> L.	Fall Dandelion	I		3W, 5E, 7W, 8W
<i>Leucanthemum vulgare</i> Lam.*	Ox-eye Daisy	I		1E, 2E, 2W, 6E, 6W, 7W, 13E, 20W
<i>Matricaria discoidea</i> DC.	Pineapple-weed	I		2W, 7W, 8W
<i>Matricaria maritima</i> L.	Scentless Chamomile	I		1W
<i>Petasites frigidus</i> (L.) Fries var. <i>palmatius</i> (Ait.) Cronq.	Sweet Coltsfoot	N		6E, 13E, 13W, 16E, 17W
<i>Prenanthes altissima</i> L.*	White Lettuce	N		6E, 8E, 11E, 11W, 13W, 17E, 20W
<i>Prenanthes trifoliolata</i> (Cass.) Fern.*	Gall-of-the-earth	N		3W, 6E, 13E, 13W, 15E, 20W
<i>Rudbeckia hirta</i> L.	Black-eyed-Susan	I		4E, 20W
<i>Senecio aureus</i> L.	Golden Ragwort	N		13E, 13W, 14W, 15E, 16E, 16W, 17W
<i>Senecio jacobaea</i> L.	Tansy-ragwort	I		2W, 4E, 6E, 7W, 8E, 9W, 10W, 19W, 20W
<i>Senecio viscosus</i> L.	Sticky Groundsel	I		1W, 5E, 7W, 20W

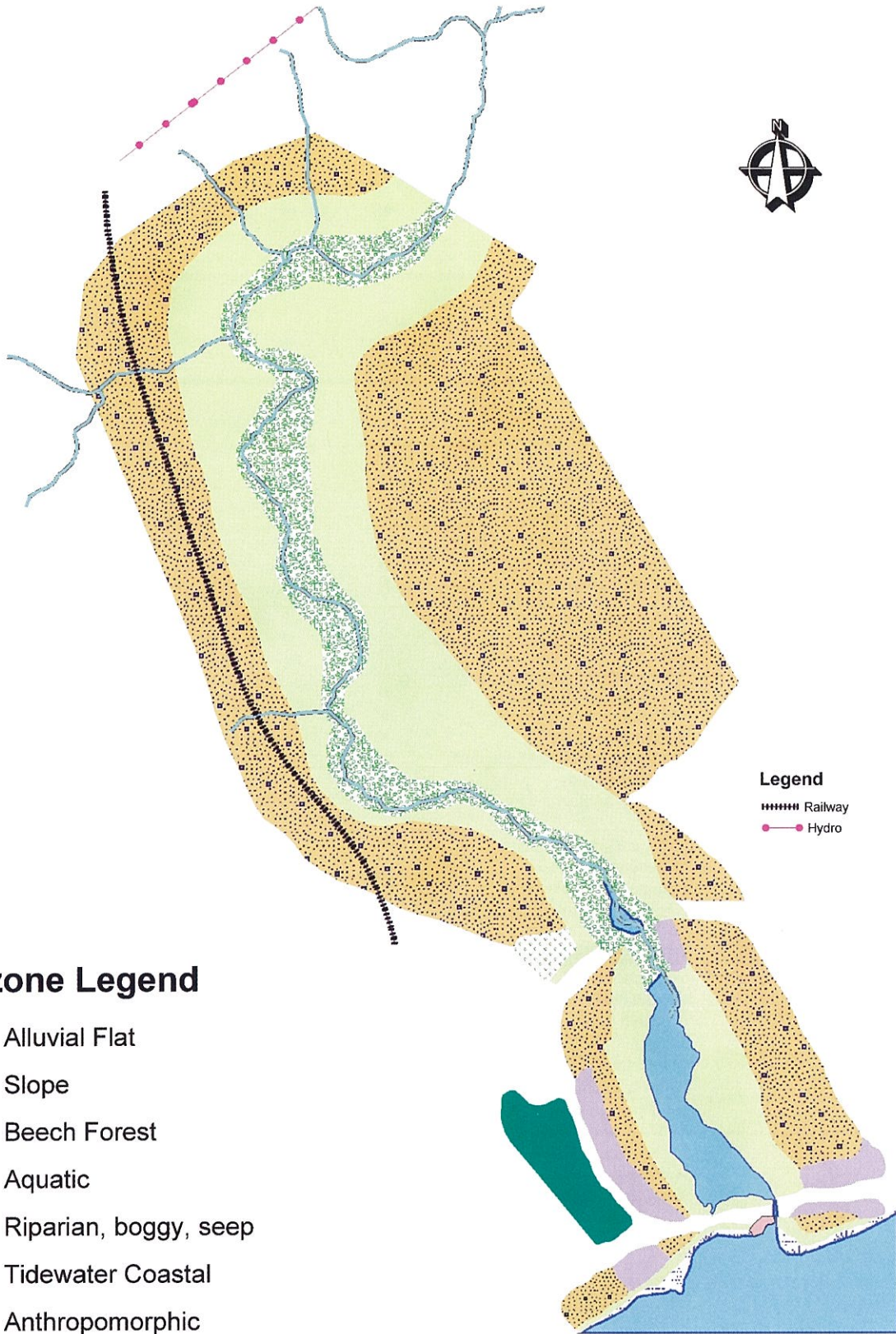
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SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
ASTERACEAE				
ASTER FAMILY				
<i>Senecio vulgaris</i> L.	Common Groundsel	I		7W, 9E
<i>Solidago bicolor</i> L.	Silverrod	N		3W, 4E, 6E, 8E, 9E, 9W, 11E, 20W
<i>Solidago canadensis</i> L. var. <i>canadensis</i>	Canada Goldenrod	N		1E, 4E, 6E, 6W, 10W, 13E, 17E, 20W
<i>Solidago flexicaulis</i> L.	Zigzag Goldenrod	N		13E
<i>Solidago puberula</i> Nutt.	Downy Goldenrod	N		3W, 4E, 6E, 8E, 9E, 11E, 20W
<i>Solidago rugosa</i> P. Mill.	Rough-stemmed Goldenrod	N		6E, 6W, 7W, 12W, 13E, 13W, 16W, 17E, 20W
<i>Solidago sempervirens</i> L.	Seaside Goldenrod	N		1E, 1W
<i>Solidago uliginosa</i> Nutt.	Bog Goldenrod	N		15E
<i>Sonchus arvensis</i> L. subsp. <i>arvensis</i>	Perennial Sow-thistle	I		7W
<i>Sonchus arvensis</i> L. subsp. <i>uliginosus</i> (Bieb.) Nyman	Perennial Sow-thistle	I		1E, 1W, 6E, 8W, 13E
<i>Tanacetum vulgare</i> L.*	Common Tansy	I		1E, 2W, 4E, 5E, 5W, 6E, 6W, 7W, 9W, 10E, 10W, 11W, 13E, 17E, 20W
<i>Taraxacum officinale</i> Weber subsp. <i>officinale</i> *	Common Dandelion	I		3W, 4E, 6E, 7W, 8W, 9W, 10W, 13W, 14W, 20W
<i>Tragopogon pratensis</i> L.	Goat's-beard	I		2E, 4E, 6E, 6W, 7W, 9W, 20W
<i>Tussilago farfara</i> L.	Coltsfoot	I		1E, 1W, 9W, 13E, 14W, 15E, 17E
ALISMATACEAE				
ARROWHEAD FAMILY				
<i>Sagittaria latifolia</i> Willd.	Broad-leaved Arrowleaf	N		6E, 10W
POTAMOGETONACEAE				
PONDWEED FAMILY				
<i>Potamogeton epiphydrus</i> Raf.	Ribbon-leaf Pondweed	N		99
<i>Potamogeton perfoliatus</i> L.	Clasping-leaf Pondweed	N		1E, 1W, 99
<i>Potamogeton zosteriformis</i> Fern.	Flat-stem Pondweed	N	RE	99
ZOSTERACEAE				
EEL-GRASS FAMILY				
<i>Zostera marina</i> L. var. <i>stenophylla</i> Asch. & Graebn.	Eel-grass	N		1W
ARACEAE				
ARUM FAMILY				
<i>Arisaema triphyllum</i> (L.) Schott	Jack-in-the-pulpit	N		6E, 12W, 13E, 13W
LEMNACEAE				
DUCKWEED FAMILY				
<i>Lemna minor</i> L.	Duckweed	N		6E, 12W, 14W, 99
JUNCACEAE				
RUSH FAMILY				
<i>Juncus arcticus</i> Willd. var. <i>balticus</i> (Willd.) Trautv.	Baltic Rush	N		1E, 1W, 3W, 6E
<i>Juncus articulatus</i> L.	Noded Rush	N		6E, 16W
<i>Juncus brevicaudatus</i> (Engelm.) Fern.	Narrow-panicked Rush	N		17E
<i>Juncus bufonius</i> L.	Toad Rush	N		7W, 9E, 17E
<i>Juncus effusus</i> L.	Soft Rush	N		6W, 13E, 14W, 15E, 16E, 16W, 17E, 99
<i>Juncus filiformis</i> L.	Thread Rush	N		7E
<i>Juncus gerardii</i> Loisel.	Black Grass	N		1E, 6E, 6W
<i>Juncus nodosus</i> L.	Knotted Rush	N		15E
<i>Juncus tenuis</i> Willd.	Path Rush	N		6E, 7W, 8E, 9E, 10W, 13E, 16W, 17E
<i>Luzula acuminata</i> Raf.	Pointed Woodrush	N		11W, 14E, 15E
<i>Luzula multiflora</i> (Ehrh.) Lejeune	Common Woodrush	N		3W, 4E, 6E, 6W, 7W, 10E, 11W, 12W, 13E, 15E, 17W, 19W, 20W
CYPERACEAE				
SEDGE FAMILY				
<i>Bulbostylis capillaris</i> (L.) Clarke	Dense-tuft Hairsedge	N		20W
<i>Carex arctata</i> Boott ex Hook.	Drooping Woodland Sedge	N		1W, 3E, 3W, 6E, 8E, 10E, 10W, 19W, 20W
<i>Carex bebbii</i> (Bailey) Fern.	Bebb's Sedge	N	RE	6E, 17E, 20W
<i>Carex brunnescens</i> (Pers.) Poir. subsp. <i>brunnescens</i>	Brownish Sedge	N		13W, 17W
<i>Carex brunnescens</i> (Pers.) Poir. subsp. <i>sphaerostachya</i> (Tuck.) Kalela	Brownish Sedge	N		6E, 16W
<i>Carex canescens</i> L.	Silvery Sedge	N		6W, 14W
<i>Carex communis</i> Bailey	Fibrous-root Sedge	N		3W, 6E, 10W, 17E, 20W
<i>Carex crawfordii</i> Fern.	Crawford's Sedge	N		7W, 9E, 10W, 15E
<i>Carex crinita</i> Lam.	Fringed Sedge	N		1E, 1W, 9E, 13E
<i>Carex cumulata</i> (Bailey) Mack. ex Fern.	Clustered Sedge	N		7W
<i>Carex debilis</i> Michx. var. <i>rudgei</i> Bailey	White-edge Sedge	N		3W, 6E, 9E, 11E, 16E, 19W
<i>Carex deflexa</i> Hornem.	Northern Sedge	N		5W, 9E, 11E, 15E, 16E

Appendix A

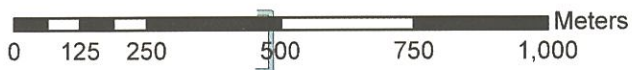
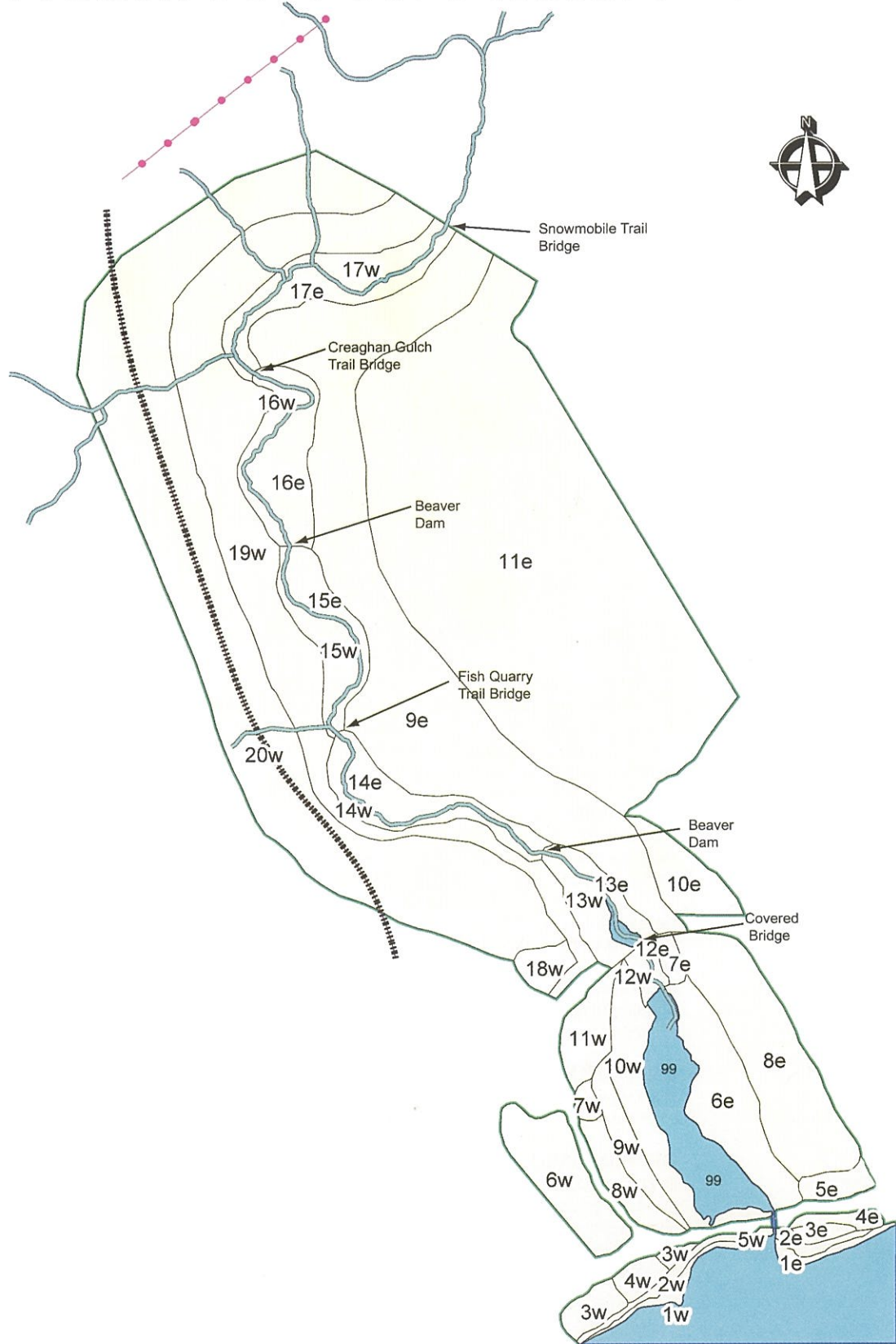
SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
CYPERACEAE				
SEDGE FAMILY				
<i>Carex deweyana</i> Schw.	Dewey's Sedge	N		3W, 6E, 9E, 11W, 13E, 18W, 19W
<i>Carex disperma</i> Dewey	Two-seeded Sedge	N		14W, 15E
<i>Carex echinata</i> Murray	Star Sedge	N		6W, 13E, 13W, 15E, 17E
<i>Carex foenea</i> Willd.	Copper Sedge	N		3E, 3W, 4E, 5W, 6W
<i>Carex gynandra</i> Schwein.	Nodding Sedge	N		6E, 6W, 10W, 14W, 15E, 16W, 17E, 17W
<i>Carex hystericina</i> Muhl. ex Willd.	Porcupine Sedge	N	RE	13E, 17E
<i>Carex interior</i> Bailey	Inland Sedge	N		13W, 15E, 17W
<i>Carex intumescens</i> Rudge	Bladder Sedge	N		13E, 15E
<i>Carex leptalea</i> Wahl.	Bristle-stalked Sedge	N		3W, 6W, 13E, 15W
<i>Carex leptoneuria</i> (Fern.) Fern.	Ribless Woodland Sedge	N		5W, 10W, 13E, 19W, 20W
<i>Carex lucorum</i> Willd. ex Link	Forest Sedge	N		3W, 6E, 9W, 11W, 17W, 18W
<i>Carex novae-angliae</i> Schw.	New England Sedge	N	RE	3W
<i>Carex ormostachya</i> Wieg.	Bead-like Sedge	N	S2/S3	Three zones
<i>Carex paleacea</i> Schreber ex Wahl.	Chaffy Sedge	N		1E, 1W
<i>Carex pallescens</i> L.	Pale Sedge	N		6W, 9W
<i>Carex pedunculata</i> Muhl. ex Willd.	Long-stalked Sedge	N		17E, 17W, 19W
<i>Carex projecta</i> Mack.	Spreading Sedge	N		6E, 6W, 9E, 12W, 13E, 15E, 16W
<i>Carex pseudocyperus</i> L.	Cyperus-like Sedge	N		10W, 15E, 16E
<i>Carex retrorsa</i> Schw.	Retorse Sedge	N		17E, 99
<i>Carex scabrata</i> Schw.	Eastern Rough Sedge	N		6E, 9E, 13E, 13W, 14W, 15E, 16W
<i>Carex scoparia</i> Schkuhr ex Willd.	Pointed Broom Sedge	N		1W, 4E, 7W, 16W
<i>Carex silicea</i> Olney	Sea-beach Sedge	N		1E
<i>Carex stipata</i> Muhl.	Stalk-grain Sedge	N		6E, 6W, 7W, 10W, 12W, 13E, 14W, 15E, 16E, 16W, 17E
<i>Carex stricta</i> Lam.	Stiff Sedge	N		15E
<i>Carex tinctoria</i> (Fern.) Fern.	Tinged Sedge	N		6W, 13E
<i>Carex tonsa</i> (Fern.) Bickn.	Shaved Sedge	N		2W
<i>Carex umbellata</i> Schkuhr ex Willd.	Umbel-like Sedge	N		15E
<i>Carex vulpinoidea</i> Michx.	Fox Sedge	N		13E
<i>Eleocharis acicularis</i> (L.) R. & S.	Needle Spike-rush	N		99
<i>Eleocharis erythropoda</i> Steud.	Bald or Red-stemmed Spike-rush	N		99
<i>Eleocharis ovata</i> (Roth) R. & S.	Ovoid Spike-rush	N		17E
<i>Schoenoplectus tabernaemontani</i> (Gmelin) Palla	Soft-stem Bulrush	N		1W
<i>Scirpus atrocinctus</i> Fern.	Black-girdle Wool-grass	N		9E, 17E
<i>Scirpus cyperinus</i> (L.) Kunth	Common Wool-grass	N		17E, 20W, 99
<i>Scirpus hattorianus</i> Makino	Mosquito Bulrush	N		6E, 9E, 13E, 14W, 17E
<i>Scirpus microcarpus</i> J. & K. Presl	Red-tinge Bulrush or Barber-pole Sedge	N		6W, 14W
POACEAE				
GRASS FAMILY				
<i>Agropyron trachycaulum</i> (Link) Malte ex H.F. Lewis var. <i>trachycaulum</i>	Dog Couch Grass or Slender Wheatgrass	N		1W
<i>Agrostis capillaris</i> L.	Fine Bent Grass	I		3W, 6E, 7W, 8W, 9E, 20W
<i>Agrostis gigantea</i> Roth	Redtop	I		6E, 7W, 8E
<i>Agrostis perennans</i> (Walt.) Tuckerm.	Upland Bent Grass	N		1W, 5E, 8E, 17E
<i>Agrostis scabra</i> Willd.	Fly-away Grass	N		3W, 9E, 10W, 16W
<i>Agrostis stolonifera</i> L.	Creeping Bent Grass	I		9E, 13E
<i>Brachyelytrum septentrionale</i> (Babel) G. Tucker	Northern Short-husk	N		13E, 17E
<i>Bromus ciliatus</i> L.	Fringed Brome Grass	N		13E, 15E, 16W, 17E, 20W, 99
<i>Bromus inermis</i> Leyss.	Smooth, Hungarian or Awnless Brome	I		6E, 8W
<i>Calamagrostis canadensis</i> (Michx.) P. Beauv.	Blue-joint Grass or Blue-node	N		1W, 6E, 6W, 10W, 12W, 13E, 13W, 14W, 15E, 16W, 17E
<i>Danthonia spicata</i> (L.) P. Beauv. ex Roem. & Schut.	Poverty Oat Grass	N		6E, 7W, 8E, 9E, 10E, 10W, 11E, 11W, 13E, 18W, 19W, 20W
<i>Digitaria ischaemum</i> (Schrebner) Muhl.	Small Crab Grass	I	RE	3W, 4E, 5E, 6E, 8E
<i>Distichlis spicata</i> (L.) Greene	Coastal Salt Grass	N	S2	One zone
<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Barnyard Grass	I		3W, 5E, 7W
<i>Elymus virginicus</i> L.	Virginia Lyme Grass	N		1E, 1W
<i>Elytrigia repens</i> (L.) Desv. ex Jackson	Twitch, Couch or Quack Grass	N		1E, 6E, 7W, 9W, 10W, 13E, 20W
<i>Festuca pratensis</i> Hudson	Meadow Fescue	I		5W, 18W
<i>Festuca rubra</i> L. subsp. <i>fallax</i> Thuill.	Red Fescue	I		3W, 4E, 5W, 6E, 6W, 9E, 9W
<i>Glyceria borealis</i> (Nash) Batch.	Small Floating Manna Grass	N		17W

Habitat Map French Fort Cove Nature Park



0 125 250 500 750 1,000 Meters

Eco-zone Map French Fort Cove Nature Park



Appendix A

SCIENTIFIC NAME	COMMON NAME	I/N	STATUS	ZONES
POACEAE		GRASS FAMILY		
<i>Glyceria canadensis</i> (Michx.) Trin.	Rattlesnake Grass	N		10W, 15E, 16E, 16W, 17E, 20W
<i>Glyceria grandis</i> S. Watson ex A. Gray	Reed Meadow Grass	N		6E, 6W, 12W, 13E, 13W, 17W
<i>Glyceria melicaria</i> (Michx.) Hubbard	Slender Manna Grass	N		12W, 13W, 14W, 15E, 16W, 17E, 20W
<i>Glyceria striata</i> (Lam.) Hitchc. var. <i>striata</i>	Fowl Manna Grass	N		6E, 13E, 14W, 15E, 16W, 17E
<i>Hierochloë odorata</i> (L.) P. Beauv.	Sweet Grass	N		1W
<i>Leersia oryzoides</i> (L.) Sw.	Rice Cutgrass	N		6E, 10W, 15E, 17E
<i>Muhlenbergia mexicana</i> (L.) Trin.	Mexican Muhly	N	RE	20W
<i>Oryzopsis asperifolia</i> Michx.	Rough Mountain-rice	N		3W, 11W, 19W, 20W
<i>Panicum acuminatum</i> Sw.	Western Panic Grass	N		1W, 6E, 7W, 20W
var. <i>fasciculatum</i> (Torr.) Fern.				
<i>Panicum boreale</i> Nash.	Northern Panic Grass	N		1W
<i>Panicum capillare</i> L.	Common Witch Grass	N		2W, 3W, 4E, 5E, 8E
<i>Phalaris arundinacea</i> L.	Reed Canary Grass	I/N		6E, 10W, 12W, 13E, 13W, 14W, 17E
<i>Phleum pratense</i> L.	Timothy	I		4E, 6E, 6W, 9W, 13E, 20W
<i>Poa annua</i> L.	Annual Bluegrass	I		8E
<i>Poa compressa</i> L.	Canada Bluegrass	I		1E, 5E, 6E, 6W, 8E, 11E, 11W, 19W, 20W
<i>Poa palustris</i> L.	Fowl Meadow Grass	N		3W, 5E, 6E, 7W, 9E, 11W, 12W, 13E, 13W, 14W, 15E, 16W, 17E
<i>Poa pratensis</i> L.	Kentucky Bluegrass	I		3W, 4E, 5W, 6E, 7W, 8E, 9W, 13E, 14W, 16W, 17W, 20W
<i>Poa saltuensis</i> Fern. & Wieg.	Forest Meadow Grass	N		3W
<i>Setaria viridis</i> (L.) P. Beauv.	Green Foxtail	I		2W, 9W
<i>Spartina pectinata</i> Link	Fresh-water Cord Grass	N		1E, 1W, 5W, 6E
<i>Sporobolus vaginiflorus</i> (Torr. ex Gray) Wood	Poverty Grass or Ensheathed Drop-seed	N	RE	1W, 5E
<i>Torreyochloa pallida</i> (Torr.) Church var. <i>fernaldii</i> (Hitchc.) Dore ex Koyama & Kawano	Fernald's Manna Grass	N		17E
SPARGANIACEAE		BUR-REED FAMILY		
<i>Sparganium emersum</i> Rehmann	Green-fruited Bur-reed	N		17E
TYPHACEAE		CAT-TAIL FAMILY		
<i>Typha latifolia</i> L.	Broad-leaved Cat-tail	N		7W, 13E, 13W, 14W, 15E, 17E
LILIACEAE		LILY FAMILY		
<i>Clintonia borealis</i> (Ait.) Raf.	Bluebead-lily	N		2W, 6W, 9E, 11W, 15E, 16E, 19W
<i>Convallaria majalis</i> L.	European Lily-of-the-valley	I		6W
<i>Maianthemum canadense</i> Desf.*	Wild or False Lily-of-the-valley	N		3W, 5W, 6E, 6W, 8E, 9E, 10E, 10W, 11E, 11W, 19W, 20W
<i>Maianthemum racemosum</i> (L.) Link.	False Solomon's Seal	N		9E, 19W, 20W
<i>Maianthemum trifolium</i> (L.) Sloboda*	Three-leaved False Solomon's Seal	N		15E, 17W
<i>Medeola virginiana</i> L.	Indian Cucumber-root	N		8E
<i>Streptopus lanceolatus</i> (Ait.) Reveal	Rose Twisted-stalk	N		17W, 19W
<i>Trillium cernuum</i> L.*	Nodding Trillium	N		13E, 13W, 14E, 14W, 15E, 19W
<i>Trillium undulatum</i> Willd.*	Painted Trillium	N		11E
IRIDACEAE		IRIS FAMILY		
<i>Iris versicolor</i> L.	Blue Flag Iris	N		99
<i>Sisyrinchium montanum</i> Greene	Strict Blue-eyed-grass	N		4E, 6W, 9E, 13E
ORCHIDACEAE		ORCHID FAMILY		
<i>Corallorhiza trifida</i> Chatelain*	Early Coral-root	N		13W
<i>Cypripedium acaule</i> Ait.*	Pink Lady's-slipper	N		3W, 6E, 8E, 9E, 10E, 11W, 16E, 18W, 19W, 20W
<i>Cypripedium reginae</i> Walt.	Showy Lady's-slipper	N	S2	Two zones
<i>Platanthera dilatata</i> (Pursh) Lindl.*	Bog-candle	N		13E, 13W, 15E
<i>Spiranthes lacera</i> (Raf.) Raf.*	Northern Slender Ladies'-tresses	N		6E, 9E, 20W

Appendix B

VASCULAR PLANT TAXANOMIC ANALYSIS

Notations:

- Spp. – Species (plural form)
- Subspp. & Var. – Subspecies (plural form) and varieties
- Hyb. – Hybrids
- N – Native taxa
- I – Introduced taxa
- * – Includes both native and introduced species

In the “Subtotal” rows, the number in parentheses after the cumulative number for the taxon (*i.e.* family, genus, species, *etc.*) in any particular column, refers to the corresponding number known for that taxon for the entire province of New Brunswick.

Divisions	Families	Genera	Spp.	Subspp. & Var.	Hyb.	N	I
LYCOPODIOPHYTA	<u>LYCOPODIACEAE</u>	<i>Diphasiastrum</i>	3	-	-	3	-
		<i>Huperzia</i>	2	-	-	2	-
		<i>Lycopodium</i>	5	-	-	5	-
	Subtotal: 1 (1)	3 (4)	10 (15) 66%	0	0	10	0
EQUISETOPHYTA	<u>EQUISETACEAE</u>	<i>Equisetum</i>	4	-	-	4	-
	Subtotal: 1 (1)	1 (1)	4 (8) 50%	0	0	4	0
POLYPODIOPHYTA	<u>OSMUNDACEAE</u>	<i>Osmunda</i>	2	-	-	2	-
	Subtotal: 1 (1)	2 (3)	2 (3)	0	0	2	0
	<u>DENNSTAEDTIACEAE</u>	<i>Dennstaedtia</i>	1	-	-	1	-
		<i>Pteridium</i>	1	-	-	1	-
	Subtotal: 2 (2)	2 (2)	2 (2)	0	0	2	0
	<u>THELYPTERIDACEAE</u>	<i>Phegopteris</i>	1	-	-	1	-
		<i>Thelypteris</i>	2	-	-	2	-
	Subtotal: 2 (2)	3 (4)	3 (4)	0	0	3	0
	<u>DRYOPTERIDACEAE</u>	<i>Athyrium</i>	1	-	-	1	-
		<i>Cystopteris</i>	2	-	-	2	-
		<i>Dryopteris</i>	5	-	1	6	-
		<i>Gymnocarpium</i>	1	-	-	1	-
		<i>Matteuccia</i>	1	-	-	1	-
		<i>Onoclea</i>	1	-	-	1	-
	Subtotal: 6 (9)	11 (26)	11 (26)	0	1	12	0
	Subtotal: 4 (10)	11 (22) 50%	18 (58) 31%	0	1	19	0

Appendix B

Divisions	Families	Genera	Spp.	Subspp. & Var.	Hyb.	N	I
PINOPHYTA	TAXACEAE	<i>Taxus</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (1)	0	0	1	0
	PINACEAE	<i>Abies</i>	1	-	-	1	-
		<i>Larix</i>	1	-	-	1	-
		<i>Picea</i>	2	-	-	2	-
		<i>Pinus</i>	3	-	-	3	-
		<i>Tsuga</i>	1	-	-	1	-
		Subtotal: 5 (5)	8 (10)	0	0	8	0
	CUPRESSACEAE	<i>Thuja</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (3)	0	0	1	0
	Subtotal: 3 (3)	7 (8)	10 (14) 71%	0	0	10	0
MAGNOLIOPHYTA a)MAGNOLIOPSIDA (DICOTYLEDONS)	RANUNCULACEAE	<i>Actaea</i>	2	-	-	2	-
		<i>Aquilegia</i>	1	-	-	-	1
		<i>Caltha</i>	1	-	-	1	-
		<i>Clematis</i>	1	-	-	1	-
		<i>Coptis</i>	1	-	-	1	-
		<i>Ranunculus</i>	7	-	-	5	2
		<i>Thalictrum</i>	1	-	-	1	-
		Subtotal: 7 (11)	14 (32)	0	0	11	3
	FUMARIACEAE	<i>Fumaria</i>	1	-	-	1	-
		Subtotal: 1 (4)	1 (4)	0	0	1	0
	HAMAMELIDACEAE	<i>Hamamelis</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (1)	0	0	1	0
	ULMACEAE	<i>Ulmus</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (3)	0	0	1	0
URTICACEAE	<i>Urtica</i>	1	-	-	-	1	
	Subtotal: 1 (4)	1 (5)	0	0	0	1	
MYRICACEAE	<i>Comptonia</i>	1	-	-	1	-	
	Subtotal: 1 (2)	1 (3)	0	0	1	0	
FAGACEAE	<i>Fagus</i>	1	-	-	1	-	
	<i>Quercus</i>	1	-	-	1	-	
	Subtotal: 2 (2)	2 (4)	0	0	2	0	
BETULACEAE	<i>Alnus</i>	2	-	-	2	-	
	<i>Betula</i>	3	-	-	3	-	
	<i>Corylus</i>	1	-	-	1	-	
	Subtotal: 3 (4)	6 (13)	0	0	6	0	
CHENOPODIACEAE	<i>Atriplex</i>	2	-	-	2	-	
	<i>Chenopodium</i>	1	-	-	-	1	
	Subtotal: 2 (7)	3 (27)	0	0	2	1	
MOLLUGINACEAE	<i>Mollugo</i>	1	-	-	-	1	
	Subtotal: 1 (1)	1 (1)	0	0	0	1	
PORTULACACEAE	<i>Portulaca</i>	1	-	-	-	1	
	Subtotal: 1 (3)	1 (3)	0	0	0	1	

Appendix B

Divisions	Families	Genera	Spp.	Subsp. & Var.	Hyb.	N	I
	<u>CARYOPHYLLACEAE</u>	<i>Cerastium</i>	1	-	-	-	1
		<i>Moehringia</i>	1	-	-	1	-
		<i>Sagina</i>	1	-	-	1	-
		<i>Silene</i>	1	-	-	-	1
		<i>Spergularia</i>	2	-	-	1	1
		<i>Stellaria</i>	3	-	-	2	1
		Subtotal: 6 (15)	9 (40)	0	0	5	4
	<u>POLYGONACEAE</u>	<i>Fallopia</i>	3	-	-	2	1
		<i>Persicaria</i>	4	-	-	3	1
		<i>Polygonum</i>	4	-	-	2	2
		<i>Rumex</i>	4	-	-	2	2
		Subtotal: 4 (7)	15 (43)	0	0	9	6
	<u>CLUSIACEAE</u>	<i>Hypericum</i>	2	-	-	1	1
		Subtotal: 1 (2)	2 (9)	0	0	1	1
	<u>TILIACEAE</u>	<i>Tilia</i>	1	-	-	-	1
		Subtotal: 1 (1)	1 (2)	0	0	0	1
	<u>MALVACEAE</u>	<i>Malva</i>	1	-	-	-	1
		Subtotal: 1 (5)	1 (10)	0	0	0	1
	<u>CISTACEAE</u>	<i>Lechea</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (3)	0	0	1	0
	<u>VIOLACEAE</u>	<i>Viola</i>	4	-	-	4	-
		Subtotal: 1 (1)	4 (17)	0	0	4	0
	<u>SALICACEAE</u>	<i>Populus</i>	3	-	-	3	-
		<i>Salix</i>	6	-	-	6	-
		Subtotal: 2 (2)	9 (23)	0	0	9	0
	<u>BRASSICACEAE</u>	<i>Alyssum</i>	1	-	-	-	1
		<i>Arabis</i>	1	-	-	1	-
		<i>Barbarea</i>	1	-	-	-	1
		<i>Capsella</i>	1	-	-	-	1
		<i>Cardamine</i>	2	-	-	2	-
		<i>Erysimum</i>	1	-	-	-	1
		<i>Lepidium</i>	1	-	-	-	1
		<i>Raphanus</i>	1	-	-	-	1
		<i>Rorippa</i>	1	-	-	1	-
		<i>Thlaspi</i>	1	-	-	-	1
		Subtotal: 10 (26)	11 (58)	0	0	4	7
	<u>ERICACEAE</u>	<i>Epigaea</i>	1	-	-	1	-
		<i>Gaultheria</i>	2	-	-	2	-
		<i>Kalmia</i>	1	-	-	1	-
		<i>Rhododendron</i>	2	-	-	2	-
		<i>Vaccinium</i>	1	-	-	1	-
		Subtotal: 5 (10)	7 (22)	0	0	7	0
	<u>PYROLACEAE</u>	<i>Chimaphila</i>	1	-	-	1	-
		<i>Orthilia</i>	1	-	-	1	-
		<i>Pyrola</i>	3	-	-	3	-
		Subtotal: 3 (4)	5 (8)	0	0	5	0
	<u>MONOTROPACEAE</u>	<i>Monotropa</i>	2	-	-	2	-
		Subtotal: 1 (2)	2 (3)	0	0	2	0

Appendix B

Divisions	Families	Genera	Spp.	Subspp. & Var.	Hyb.	N	I
	<u>PRIMULACEAE</u>	<i>Glaux</i>	1	-	-	1	-
		<i>Lysimachia</i>	1	-	-	1	-
		<i>Trientalis</i>	1	-	-	1	-
		Subtotal: 3 (6)	3 (14)	0	0	3	0
	<u>GROSSULARIACEAE</u>	<i>Ribes</i>	4	-	-	4	-
		Subtotal: 1 (1)	4 (7)	0	0	4	0
	<u>SAXIFRAGACEAE</u>	<i>Chrysosplenium</i>	1	-	-	1	-
		<i>Mitella</i>	1	-	-	1	-
		Subtotal: 2 (6)	2 (7)	0	0	2	0
	<u>ROSACEAE</u>	<i>Amlanchier</i>	2	-	1	3	-
		<i>Argentina</i>	1	-	-	1	-
		<i>Crataegus</i>	2	-	-	2	-
		<i>Dalibarda</i>	1	-	-	1	-
		<i>Fragaria</i>	1	-	-	1	-
		<i>Geum</i>	4	-	-	4	-
		<i>Malus</i>	1	-	-	-	1
		<i>Physocarpus</i>	1	-	-	-	1
		<i>Potentilla</i>	5	-	-	2	3
		<i>Prunus</i>	2	-	-	2	-
		<i>Rosa</i>	3	-	-	1	2
		<i>Rubus</i>	4	1	-	4	1
		<i>Sorbus</i>	1	-	-	1	-
		<i>Spiraea</i>	1	-	-	1	-
		Subtotal: 14 (26)	29(98)	1	1	23	8
	<u>FABACEAE</u>	<i>Anthyllis</i>	1	-	-	-	1
		<i>Lotus</i>	1	-	-	-	1
		<i>Medicago</i>	1	-	-	-	1
		<i>Melilotus</i>	1	-	-	-	1
		<i>Trifolium</i>	6	-	-	-	6
		<i>Vicia</i>	1	-	-	-	1
		Subtotal: 6 (20)	11 (45)	0	0	0	11
	<u>HALORAGACEAE</u>	<i>Myriophyllum</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (8)	0	0	1	0
	<u>ONAGRACEAE</u>	<i>Circaea</i>	1	-	-	1	-
		<i>Epilobium</i>	2	-	-	2	-
		<i>Oenothera</i>	2	-	-	2	-
		Subtotal: 3 (4)	5 (16)	0	0	5	0
	<u>CORNACEAE</u>	<i>Cornus</i>	4	-	-	4	-
		Subtotal: 1 (1)	4 (5)	0	0	4	0
	<u>AQUIFOLIACEAE</u>	<i>Nemopanthus</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (2)	0	0	1	0
	<u>EUPHORBIACEAE</u>	<i>Euphorbia</i>	1	-	-	-	1
		Subtotal: 1 (4)	1 (11)	0	0	0	1
	<u>RHAMNACEAE</u>	<i>Frangula</i>	1	-	-	-	1
		Subtotal: 1 (2)	1 (3)	0	0	0	1
	<u>VITACEAE</u>	<i>Parthenocissus</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (4)	0	0	1	0
	<u>LINACEAE</u>	<i>Linum</i>	1	-	-	-	1
		Subtotal: 1 (2)	1 (3)	0	0	0	1
	<u>ACERACEAE</u>	<i>Acer</i>	7	-	-	6	1
		Subtotal: 1 (1)	7 (9)	0	0	6	1

Appendix B

Divisions	Families	Genera	Spp.	Subspp. & Var.	Hyb.	N	I
	<u>ANACARDIACEAE</u>	<i>Rhus</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (3)	0	0	1	0
	<u>OXALIDACEAE</u>	<i>Oxalis</i>	2	-	-	2	-
		Subtotal: 1 (1)	2 (3)	0	0	2	0
	<u>BALSAMINACEAE</u>	<i>Impatiens</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (4)	0	0	1	0
	<u>ARALIACEAE</u>	<i>Aralia</i>	2	-	-	2	-
		Subtotal: 1 (2)	2 (4)	0	0	2	0
	<u>APIACEAE</u>	<i>Angelica</i>	1	-	-	1	-
		<i>Cicuta</i>	2	-	-	2	-
		<i>Heracleum</i>	1	-	-	1	-
		<i>Hydrocotyle</i>	1	-	-	1	-
		<i>Ligusticum</i>	1	-	-	1	-
		<i>Pastinaca</i>	1	-	-	-	1
		<i>Pimpinella</i>	1	-	-	-	1
		<i>Sium</i>	1	-	-	1	-
		Subtotal: 8 (21)	9 (29)	0	0	7	2
	<u>APOCYNACEAE</u>	<i>Apocynum</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (3)	0	0	1	0
	<u>SOLANACEAE</u>	<i>Solanum</i>	1	-	-	-	1
		Subtotal: 1 (4)	1 (8)	0	0	0	1
	<u>CONVOLVULACEAE</u>	<i>Calyptegia</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (2)	0	0	1	0
	<u>BORAGINACEAE</u>	<i>Myosotis</i>	1	-	-	1	-
		Subtotal: 1 (11)	1 (21)	0	0	1	0
	<u>LAMIACEAE</u>	<i>Galeopsis</i>	1	-	-	-	1
		<i>Lycopus</i>	1	-	-	1	-
		<i>Mentha</i>	1	-	-	1	-
		<i>Prunella</i>	1	-	-	1	-
		<i>Scutellaria</i>	2	-	-	2	-
		<i>Stachys</i>	1	-	-	-	1
		Subtotal: 6 (21)	7 (28)	0	0	5	2
	<u>CALLITRICHACEAE</u>	<i>Callitriche</i>	2	-	-	2	-
		Subtotal: 1 (1)	2 (3)	0	0	2	0
	<u>PLANTAGINACEAE</u>	<i>Plantago</i>	3	-	-	2	1
		Subtotal: 1 (2)	3 (6)	0	0	2	1
	<u>OLEACEAE</u>	<i>Fraxinus</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (5)	0	0	1	0
	<u>SCROPHULARIACEAE</u>	<i>Chelone</i>	1	-	-	1	-
		<i>Euphrasia</i>	1	-	-	-	1
		<i>Linaria</i>	2	-	-	-	2
		<i>Melampyrum</i>	1	-	-	1	-
		<i>Mimulus</i>	1	-	-	-	1
		<i>Verbascum</i>	1	-	-	-	1
		<i>Veronica</i>	4	-	-	2	2
		Subtotal: 7 (21)	11 (45)	0	0	4	7
	<u>OROBANCHACEAE</u>	<i>Epifagus</i>	1	-	-	1	-
		Subtotal: 1 (2)	1 (2)	0	0	1	0

Appendix B

Divisions	Families	Genera	Spp.	Subssp. & Var.	Hyb.	N	I
	<u>CAMPANULACEAE</u>	<i>Campanula</i>	1	-	-	1	-
		<i>Lobelia</i>	1	-	-	1	-
		Subtotal: 2 (3)	2 (11)	0	0	2	0
	<u>RUBIACEAE</u>	<i>Galium</i>	5	-	-	4	1
		<i>Mitchella</i>	1	-	-	1	-
		Subtotal: 2 (4)	6 (17)	0	0	5	1
	<u>CAPRIFOLIACEAE</u>	<i>Diervilla</i>	1	-	-	1	-
		<i>Linnaea</i>	1	-	-	1	-
		<i>Lonicera</i>	2	-	-	1	1
		<i>Sambucus</i>	2	-	-	2	-
		<i>Viburnum</i>	3	-	-	3	-
		Subtotal: 5 (7)	9 (20)	0	0	8	1
	<u>ASTERACEAE</u>	<i>Achillea</i>	2	-	-	1	1
		<i>Ambrosia</i>	1	-	-	1	-
		<i>Anaphalis</i>	1	-	-	1	-
		<i>Antennaria</i>	1	1	-	2	-
		<i>Anthemis</i>	1	-	-	-	1
		<i>Arctium</i>	1	-	-	-	1
		<i>Artemisia</i>	2	-	-	-	2
		<i>Aster</i>	8	-	-	8	-
		<i>Bidens</i>	2	-	-	2	-
		<i>Carduus</i>	1	-	-	-	1
		<i>Centaurea</i>	1	-	-	-	1
		<i>Cichorium</i>	1	-	-	-	1
		<i>Cirsium</i>	3	-	-	1	2
		<i>Conyza</i>	1	-	-	1	-
		<i>Erechtites</i>	1	-	-	1	-
		<i>Erigeron</i>	1	-	-	1	-
		<i>Eupatorium</i>	2	-	-	2	-
		<i>Euthamia</i>	1	-	-	1	-
		<i>Gnaphalium</i>	1	-	-	-	1
		<i>Hieracium</i>	6	-	-	2	4
		<i>Lactuca</i>	2	-	-	2	-
		<i>Leontodon</i>	1	-	-	-	1
		<i>Leucanthemum</i>	1	-	-	-	1
		<i>Matricaria</i>	2	-	-	-	2
		<i>Petasites</i>	1	-	-	1	-
		<i>Prenanthes</i>	2	-	-	2	-
		<i>Rudbeckia</i>	1	-	-	-	1
		<i>Senecio</i>	4	-	-	1	3
		<i>Solidago</i>	7	-	-	7	-
		<i>Sonchus</i>	1	1	-	-	2
		<i>Tanacetum</i>	1	-	-	-	1
		<i>Taraxacum</i>	1	-	-	-	1
		<i>Tragopogon</i>	1	-	-	-	1
		<i>Tussilago</i>	1	-	-	-	1
		Subtotal: 34 (58)	64 (183) 35%	2	0	37 149 25%	29 79 37%
	Subtotal: 56 (93) 60%	169 (425) 40%	294 (1068) 28%	3 (157)	1 (25)	203 (926) 22%	95 (324) 29%

Appendix B

Divisions	Families	Genera	Spp.	Subsp. & Var.	Hyb.	N	I
b) LILIOPSIDA (MONOCOTS)	<u>ALISMATACEAE</u>	<i>Sagittaria</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (6)	0	0	1	0
	<u>POTAMOGETONACEAE</u>	<i>Potamogeton</i>	3	-	-	3	-
		Subtotal: 1 (2)	3 (23)	0	0	3	0
	<u>ZOSTERACEAE</u>	<i>Zostera</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (1)	0	0	1	0
	<u>ARACEAE</u>	<i>Arisaema</i>	1	-	-	1	-
		Subtotal: 1 (3)	1 (3)	0	0	1	0
	<u>LEMNACEAE</u>	<i>Lemna</i>	1	-	-	1	-
		Subtotal: 1 (3)	1 (5)	0	0	1	0
	<u>JUNCACEAE</u>	<i>Juncus</i>	9	-	-	9	-
		<i>Luzula</i>	2	-	-	2	-
		Subtotal: 2 (2)	11 (26) 42%	0	0	11	0
	<u>CYPERACEAE</u>	<i>Bulbostylis</i>	1	-	-	1	-
		<i>Carex</i>	38	1	-	39	-
		<i>Eleocharis</i>	3	-	-	3	-
		<i>Schoenoplectus</i>	1	-	-	1	-
		<i>Scirpus</i>	4	-	-	4	-
		Subtotal: 5 (13)	47 (172) 27%	1 (22)	0 (9)	48 (198) 24%	0 (5)
	<u>POACEAE</u>	<i>Agropyron</i>	1	-	-	1	-
		<i>Agrostis</i>	5	-	-	2	3
		<i>Brachyelytrum</i>	1	-	-	1	-
		<i>Bromus</i>	2	-	-	1	1
		<i>Calamagrostis</i>	1	-	-	1	-
		<i>Danthonia</i>	1	-	-	1	-
		<i>Digitaria</i>	1	-	-	-	1
		<i>Distichlis</i>	1	-	-	1	-
		<i>Echinochloa</i>	1	-	-	-	1
		<i>Elytrigia</i>	1	-	-	1	-
		<i>Elymus</i>	1	-	-	1	-
		<i>Festuca</i>	2	-	-	-	2
		<i>Glyceria</i>	5	-	-	5	-
		<i>Hierochloë</i>	1	-	-	1	-
		<i>Leersia</i>	1	-	-	1	-
		<i>Muhlenbergia</i>	1	-	-	1	-
		<i>Oryzopsis</i>	1	-	-	1	-
		<i>Panicum</i>	3	-	-	3	-
		<i>Phalaris</i>	1	-	-	1	-
		<i>Phleum</i>	1	-	-	-	1
<i>Poa</i>	5	-	-	2	3		
<i>Setaria</i>	1	-	-	-	1		
<i>Spartina</i>	1	-	-	1	-		
<i>Sporobolus</i>	1	-	-	1	-		
<i>Torreyochloa</i>	1	-	-	1	-		
	Subtotal: 25 (52)	41 (132) 31%	0 (17)	0 (2)	28 (110) 25%	13 (41) 32%	

Appendix B

Divisions	Families	Genera	Spp.	Subspp. & Var.	Hyb	N	I
	<u>SPARGANIACEAE</u>	<i>Sparganium</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (7)	0	0	1	0
	<u>TYPHACEAE</u>	<i>Typha</i>	1	-	-	1	-
		Subtotal: 1 (1)	1 (2)	0	0	1	0
	<u>LILIACEAE</u>	<i>Clintonia</i>	1	-	-	1	-
		<i>Convallaria</i>	1	-	-	-	1
		<i>Maianthemum</i>	3	-	-	3	-
		<i>Medeola</i>	1	-	-	1	-
		<i>Streptopus</i>	1	-	-	1	-
		<i>Trillium</i>	2	-	-	2	-
		Subtotal: 6 (20)	9 (31)	0	0	8	1
	<u>IRIDACEAE</u>	<i>Iris</i>	1	-	-	1	-
		<i>Sisyrinchium</i>	1	-	-	1	-
		Subtotal: 2 (2)	2 (5)	0	0	2	0
	<u>ORCHIDACEAE</u>	<i>Corallorhiza</i>	1	-	-	1	-
		<i>Cypripedium</i>	2	-	-	2	-
		<i>Platanthera</i>	1	-	-	1	-
		<i>Spiranthes</i>	1	-	-	1	-
		Subtotal: 4 (16)	5 (42)	0	0	5	0
	Subtotal: 13 (25)	51 (131)	124 (474) 26%	1 (63)	0 (19)	111 (498) 22%	14 (58) 24%
	Grand Total: 78 (135) 58%	243 (596) 41%	461 (1644) 28%	4 (230)	2 (55)	358 (1545) 23%	109 (384) 29%

Notations:

- sp. – species (singular)
- spp. – species (plural)
- * – those species which we feel were misidentified.
- + – the species which were not found in the 2002 inventory.

PART A

Naturalist List 1879 for Mill Cove (French Fort Cove) Miramichi Advance, Chatham, Dec. 11, 1879 *Mill Cove as a Field for the Botanist*

The following checklist is based on an article in the *Miramichi Advance* in 1879 and signed by *A Naturalist*. The order of the species is presented below in the same order as it appeared in the original article so does not correspond to the currently accepted taxonomic order. The assistance of Joan MacKenzie, Heritage Officer of the City of Miramichi, was invaluable in obtaining this list. It only contains the names of those 63 species which do not correspond with any names used in the vascular plant checklist in this report (Appendix A). The inconsistencies fall into three categories:

- a. Those where the scientific names have changed. These were determined by finding the old scientific names or using the common names provided in the list. (36 spp.)
- b. Those where the original identifications, from our view, were erroneous (12 spp.)
- c. Those where the original identifications were correct (although not necessarily using the currently accepted name), but were not found in the 2002 inventory (15 spp.).

1879 NAME

Abies alba
Larix americana Michx.
Betula lenta L. (has not been found in NB)*
Betula alba L.*
Fagus ferruginea Ait.
Corylus rostrata Ait.
Lonicera ciliata Muhl. [*Xylosteon ciliatum* (Muhl.) Pursh]
Sambucus pubens Michx.
Cornus stolonifera Michx.
Cornus circinata L'Her.
Dicentra cucullaria (L.) Bernh.
Corydalis glauca Pursh
Oxalis acetosella auct. non L.
Heracleum lanatum Michx.
Sium lineare Michx.
Lathyrus palustris L.
Trientalis americana Pursh
Viola canina L.
Fragaria vesca L.*
Rubus strigosus Michx.
Rubus canadensis L.* The attachment of the common name Dewberry throws doubt on the original identification as being *R. canadensis* which is common at the site.
Spiraea tomentosa L.*
Rhus glabra L. (has not been found in NB)*
Impatiens pallida Nutt.* (found only in northwest NB)
Nasturium armoracia Fries

Arabis sp.
Thalictrum cornuti Torr. & Gray.
Ranunculus recurvatus Poir.
Ranunculus fascicularis Muhl. ex Bigelow (has not been found in NB)*
Actaea alba auct. non (L.) P. Mill.
Actaea spicata Ait.
Stachys aspera Michx.
Asclepias cornuti Decne. in DC.

CURRENT NAME

Picea glauca (Moench) Voss
Larix laricina (Du Roi) Koch
Probably *Betula alleghaniensis* Britt.
Betula papyrifera Marsh. (*alba* is now the variety *commutata* of *papyrifera*)
Fagus grandifolia Ehrh.
Corylus cornuta Marsh.
Lonicera canadensis Bartr. ex Marsh.
Sambucus racemosa L.
Cornus sericea L.
Cornus rugosa Lam.
Dicentra cucullaria (L.) Bernh. +
Corydalis sempervirens (L.) Pers.
Oxalis montana Raf.
Heracleum maximum Bartr.
Sium suave Walt.
Lathyrus palustris L. +
Trientalis borealis Raf.
Viola conspersa Reichenb. +
Fragaria virginiana Dcne. (Probably this as there was no *virginiana* on the list.)
Rubus idaeus L.
Could be *Rubus hispidus* L., *Dalibarda repens* L., or he is referring to *Rubus pubescens* Raf. which is common at the site and has a similar growth habit.
Spiraea alba Du Roi (Probably this as there was no *alba* on the list.)
Rhus hirta (L.) Sudworth
Impatiens capensis Meerb.
Armoracia rusticana Gaerth. + (Horseradish) or could be *Cardamine pensylvanica* Muhl. or *C. diphylla* (Michx.) Wood
Probably *Arabis drummondii* Gray since he calls it Rock Cress
Thalictrum pubescens Pursh
Ranunculus recurvatus Poir. +
Ranunculus hispidus Michx.
Actaea pachypoda Ell.
Actaea rubra (Ait.) Willd.
Stachys palustris L.
Asclepias syriaca L. +

Appendix C

1879 NAME

Chiogenes hispidula (L.) Torr. & Gray.
Azalia (*sic.*) *Azalea*
Ledum latifolium Ait.
Pyrola secunda L.
Pyrola rotundifolia L.
Taraxacum dens-leonis Desf.
Cirsium lanceolatum (L.) Scop.
Antennaria margaritacea Hook.
Aster simplex Willd.
Aster multiflorus Ait.*

Aster miser Nutt.
Nabulus albus (L.) Hook. (has not been found in NB)*
Nabulus altissimus (L.) Hook.
Salix livida
Trillium erythrocarpum Michx.
Erythronium sp.
Ornithogalum umbellatum L.*

Polygonatum biflorum (Walt.) Ell.

Polygonatum sp.

Smilacina bifolia A. Gray
Smilacina trifolia (L.) Desf.
Smilacina stellata (L.) Desf.
Habenaria dilatata (Pursh) Hook.
Habenaria orbiculata (Pursh) Torr.
Spiranthes sp.
Corallorhiza innata R. Br. in Ait.
Corallorhiza multiflora Nutt.
Cypripedium pubescens Willd.

CURRENT NAME

Gaultheria hispidula (L.) Muhl.
Rhododendron canadense (L.) Torr.
Rhododendron groenlandicum (Oeder) Kron & Judd
Orthilia secunda (L.) House
Pyrola americana Sweet
Taraxacum officinale Weber
Cirsium vulgare (Savi) Ten.
Anaphalis margaritacea (L.) Benth. & Hook. f.
Aster lanceolatus Willd.+
Aster ericoides (L.) Reveal & Keener (has not been found in NB) Probably refers to *A. lateriflorus* (L.) Britt. or *A. lanceolatus* Willd..
Aster lateriflorus (L.) Britt.
Prenanthes alba L. Probably refers to *P. trifoliolata* (Cass.) Fern.
Prenanthes altissima L.
Salix bebbiana Sarg.
Trillium undulatum Willd.
Erythronium americanum Ker-Gawl.+
Perhaps confused with *Trientalis borealis* Raf. as he describes *O. umbellatum* L. (Star of Bethlehem) in the 1880 article as seeing "them in all parts of the Miramichi. Can be found anywhere in the woods at this time of year" (*i.e.* May). Hinds (2000) describes *O. umbellatum* as a rarely escaped species from cultivation in Fredericton and Woodstock, NB.
Polygonatum pubescens (Willd.) Pursh+ (*biflorum* is a smooth, more southerly plant)
Could be *P. commutatum* (Schultes f.) A. Dietr. as he calls it Great Solomon's Seal.+
Maianthemum canadense Desf.
Maianthemum trifolium (L.) Sloboda
Maianthemum stellatum (L.) Link.+
Platanthera dilatata (Pursh) Lindl.
Platanthera orbiculata (Pursh) Lindl.+
Spiranthes lacera (Raf.) Raf.
Corallorhiza trifida Chatelain
Corallorhiza maculata (Raf.) Raf.+
Cypripedium parviflorum var. *pubescens* (Willd.) Knight+

PART B

The following plants were mentioned in an article by *A Naturalist* in the *Miramichi Advance*, April 29, 1880 as being present at Mill Cove, present day French Fort Cove. Only common names were used in the 1880 article. We have tried to interpret, using clues such as flowering time and flower colour as given below verbatim from the article, what the original author meant by these descriptions.

DESCRIPTION

Clematis, Blue, May. Pretty climbing plant, rare.
"Have only seen it on road that leads to river at mouth of Mill Cove."
Trillium, White, May. Stray flowers found at Mill Cove.
Wild Currents (*sic* Currants), Greenish, May. Numbers about Mill Cove.
Huckleberry, Reddish, June. "Have seen some between Ritchie's Mill and Mill Cove by the river banks."
Dogbane Drops, Rose Colour, July. "On river bank between Cove and Ritchie's Mill."
Bitter Cress, (Varieties), "Purple, July, ... another variety found in swamps – numerous about Mill Cove."

SCIENTIFIC NAME

Probably *Clematis accidentalis* (Hornem.) DC.+

Trillium cernuum L.
Ribes spp.
Gaylussacia baccata (Wangenh.) Koch+

Apocynum androsaemifolium L. (Spreading Dogbane)

Cardamine pensylvanica Muhl.

BRYOPHYTES OF FRENCH FORT COVE

A total of 81 species of bryophytes was recorded in the area, including 69 mosses, 9 leafy liverworts and 3 thalloid liverworts.

Taxonomic order for families and nomenclature follow "Moss Flora of the Maritime Provinces" (Ireland, 1982) except for *Sanionia uncinata* which follows "A County Checklist of the Mosses of New Brunswick" (Bagnell, 1995). However, genera within each family are listed in alphabetical order, as are species within each genus. The order for liverwort families follows "An Enthusiasts Guide to the Liverworts and Hornworts of Ontario" (Ley & Crowe, 1999). Common names, where given, were taken from Ireland (1982), Crum (1976), or "A Golden Guide to Non-flowering Plants" (Shuttleworth & Zim, 1967). The numbers in the "Counties" column refer to the number of New Brunswick counties (of the 15 in total) in which each species is known to occur, according to Bagnell (1995, 2002). An entry in the "Zones" column refers to the zone(s) in which that species has been recorded (see the zone map in this report).

Bruce Bagnell, a well-known New Brunswick bryologist and author of the above-mentioned checklist, identified and/or verified the species in this checklist.

Notations:

- * – denotes a new record for Northumberland County.
- cf.* – confer (Latin for compare). It is used to mean that the specimen compares favourably in most respects with the formal description of this taxa, but lacks some feature(s) to make a definitive determination.
- Counties – refers to the number of NB Counties in which the moss species has been found according to Bagnell (1995, 2002).
- ex* – between two authors' names, means the scientific name was first applied to the taxon so-named by the last-mentioned author but was first legitimately published by the former according the criteria of the International Code of Botanical Nomenclature.
- sp.* – at the end of a scientific name, means 'species' in the singular.
- syn.* – synonym
- var.* – before a portion of a scientific name, means variety.



Appendix D

MOSSES

SCIENTIFIC NAME	COMMON NAME	COUNTIES	ZONES
<u>SPHAGNACEAE</u>			
<i>Sphagnum fallax</i> (Klinggr.) Klinggr.		12	13W
<i>Sphagnum girgensöhnii</i> Russ.	Star-shaped Peat Moss	15	12W, 13W
<i>Sphagnum magellanicum</i> Brid.		15	13W
<i>Sphagnum quinquefarium</i> (Lindb. ex Braithw.) Warnst.		6*	9E
<i>Sphagnum squarrosum</i> Crome		14	13W, 16E, 17E
<u>ANDREAEACEAE</u>			
<i>Andreaea rupestris</i> Hedw.		7	18W
<u>DITRICHACEAE</u>			
<i>Ceratodon purpureus</i> (Hedw.) Brid.		13	5E, 8W, 11E, 18W
<i>Pleuridium subulatum</i> (Hedw.) Rabenh.		4*	8W
<u>DICRANACEAE</u>			
<i>Dicranella heteromalla</i> (Hedw.) Schimp.		12	8W
<i>Dicranum flagellare</i> Hedw.		13	20W
<i>Dicranum fuscescens</i> Turn.		13	6E
<i>Dicranum ontariense</i> Peterson	Ontario Moss	11	6E
<i>Dicranum polysetum</i> Sw.	Multi-stemmed Moss or Wavy Dicranum	15	6E, 8E, 8W, 10W
<i>Dicranum scoparium</i> Hedw.	Broom Moss	15*	13W, 18W
<i>Oncophorus wahlenbergii</i> Brid.		12	10W, 13W, 20W
<u>LEUCOBRYACEAE</u>			
<i>Leucobryum glaucum</i> (Hedw.) Ångstr. ex Fr.	White Cushion Moss	9	19W
<u>POTTIACEAE</u>			
<i>Barbula convoluta</i> Hedw.		6*	11E
<i>Barbula unguiculata</i> Hedw.		9*	8W, 18W
<i>Desmatodon obtusifolius</i> (Schwaegr.) Schimp.		2*	10W
<i>Pottia truncata</i> (Hedw.) Fühnr. ex B.S.G.		5*	8W
<u>FUNARIACEAE</u>			
<i>Funaria hygrometrica</i> Hedw.	Cord Moss	12	8E, 8W, 13E
<u>BRYACEAE</u>			
<i>Bryum argenteum</i> Hedw.	Silver Moss	7*	8W
<i>Bryum lisa</i> De Not. var. cf. <i>cuspidatum</i> (B.S.G.) Marg.		11*	8W, 11E
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn., Meyer & Scherb.		11	17W
<i>Pohlia nutans</i> (Hedw.) Lindb.	Nodding Pohlia	15	8W, 18W
<u>MNIACEAE</u>			
<i>Plagiomnium ciliare</i> (C. Müll.) Kop.		11*	13W
<i>Plagiomnium cuspidatum</i> (Hedw.) Kop.	Star Moss	13*	13E
<i>Rhizomnium appalachianum</i> Kop.		12	17W
<i>Rhizomnium magnifolium</i> (Horik.) Kop.		7	10W
<u>AULACOMNIACEAE</u>			
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.		14	17W
<u>BARTRAMIACEAE</u>			
<i>Philonotis fontana</i> (Hedw.) Brid. var. <i>fontana</i>		15	13W

Appendix D

SCIENTIFIC NAME

ORTHOTRICHACEAE

Orthotrichum obtusifolium Brid.
Ulota crispa (Hedw.) Brid.

FONTINALACEAE

Fontinalis antipyretica Hedw. var. *gigantea* (Sull.) Sull.

NECKERACEAE

Homalia trichomanoides (Hedw.) B.S.G.
Neckera pennata Hedw.

LESKEACEAE

Leskeella nervosa (Brid.) Loeske

THUIDIACEAE

Helodium blandowii (Web. & Mohr) Warnst.
Thuidium delicatulum (Hedw.) B.S.G.
Thuidium recognitum (Hedw.) Lindb.

AMBLYSTEGIACEAE

Calliergon cordifolium (Hedw.) Knidb.
Campylium hispidulum (Brid.) Mitt.
Sanionia uncinata (Hedw.) Loeske
[syn. *Drepanocladus uncinatus* (Hedw.) Warnst.]

BRACHYTHECIACEAE

Brachythecium reflexum (Starke ex Web. & Mohr) B.S.G.
Brachythecium rivulare B.S.G.
Brachythecium rutabulum (Hedw.) B.S.G.
Brachythecium cf. salebrosum (Web. & Mohr) B.S.G.
Brachythecium starkei (Brid.) B.S.G.

ENTODONTACEAE

Pleurozium schreberi (Brid.) Mitt.

HYPNACEAE

Callicladium haldanianum (Grev.) Crum
Herzogiella turfacea (Lindb.) Iwats.
Hypnum pallescens (Hedw.) P. Beauv. var. *pallescens*
Ptilium crista-castrensis (Hedw.) De Not.
Pylaisiella polyantha (Hedw.) Grout

RHYTIDIACEAE

Rhytidiadelphus subpinnatus (Lindb.) Kop.
Rhytidiadelphus triquetrus (Hedw.) Warnst.

HYLOCOMIACEAE

Hylocomiastrum pyrenaicum (Spruce) Fleisch.
Hylocomiastrum umbratum (Hedw.) Fleisch.
Hylocomium splendens (Hedw.) B.S.G.

CLIMACIACEAE

Climacium dendroides (Hedw.) Web. & Mohr

COMMON NAME

ORTHOTRICHUM FAMILY

11 18W
15* 5E, 8E

FONTINALIS FAMILY

Fire-preventer Moss 11 17 (in stream)

NECKERA FAMILY

Feather Moss 10* 9E
14 13E

LESKEA FAMILY

10* 13W

THUIDIUM FAMILY

Delicate Fern Moss 9* 13W, 17E, 17W
13* 13E
10 17E

AMBLYSTEGIUM FAMILY

10 6W
10 13E
14 8W, 13E, 13W

BRACHYTHECIUM FAMILY

11 18W
13 12W
10 6E, 13E
13* 5E, 8W, 13E, 18W
14 13W, 17E

ENTODON FAMILY

Schreber's Moss 15 8E, 11E, 20W

HYPNUM FAMILY

Shiny Moss 15* 6E, 13W, 18W, 20W
14* 6E, 13W
15 6E, 8E, 8W, 18W, 20W
14 8E, 13W
11* 18W

RHYTIDIUM FAMILY

Shaggy Moss 12 9E, 10W, 12W, 13W 14W
14* 8W, 13E, 19W

HYLOCOMIUM FAMILY

Stair-step or Mountain Fern Moss 7 13E
12 18W
14 13E, 13W

CLIMACIUM FAMILY

Tree Moss 15* 13E, 17W

Appendix D

SCIENTIFIC NAME	COMMON NAME	COUNTIES	ZONES
<u>DIPHYSCIACEAE</u>			
<i>Diphyscium foliosum</i> (Hedw.) Mohr.	<u>DIPHYSCIUM FAMILY</u> Nut Moss	10*	8W, 13E
<u>TETRAPHIDACEAE</u>			
<i>Tetraphis pellucida</i> Hedw.	<u>TETRAPHIS FAMILY</u> Four-tooth Moss	15	6E
<u>POLYTRICHACEAE</u>			
<i>Atrichum oerstedianum</i> (C. Müll.) Mitt.	<u>HAIR CAP MOSS FAMILY</u> Toothed False Hair Cap Common Hair Cap Moss Juniper Hair Cap Moss Awned Hair Cap Moss	13	6E, 13E
<i>Atrichum tenellum</i> (Röhl.) B.S.G.		7*	17E
<i>Pogonatum dentatum</i> (Brid.) Brid.		6	11E
<i>Polytrichum commune</i> Hedw. var. <i>commune</i>		14	5E, 11E
<i>Polytrichum juniperinum</i> Hedw.		14	6E, 6W, 8W, 9E, 13W, 18W
<i>Polytrichum piliferum</i> Hedw.		13	8E, 20W
<i>Polytrichum strictum</i> Brid.	8	12W	
LEAFY LIVERWORTS			
Order Jungermanniales			
SCIENTIFIC NAME	COMMON NAME	ZONES	
<u>LEPIDOZIACEAE</u>			
<i>Bazzania trilobata</i> (L.) S. Gray	<u>LEPIDOZIA FAMILY</u> Three-lobed Bazzania	9E, 13W	
<u>CALYPOGEIACEAE</u>			
<i>Calypogeia</i> sp. (<i>muelleriana</i> , <i>sphagnicola</i> , <i>suecica</i> ?)	<u>CALYPOGEIA FAMILY</u>	13W	
<u>CEPHALOZIELLACEAE</u>			
<i>Cephaloziella rubella</i> (Nees) Warnst.	<u>CEPHALOZIELLA FAMILY</u>	20W	
<i>Nowellia curvifolia</i> (Dicks.) Mitt.		20W	
<u>JUNGERMANNIACEAE</u>			
<i>Jamesoniella autumnalis</i> (DC.) Steph.	<u>JUNGERMANNIA FAMILY</u>	20W	
<u>HARPANTHACEAE</u>			
<i>Lophocolea heterophylla</i> (Schrad.) Dum.	<u>HARPANTHUS FAMILY</u>	6E, 13E, 13W	
<u>PLAGIOCHILACEAE</u>			
<i>Plagiochila porelloides</i> (Torrey ex Nees) Lindenb.	<u>PLAGIOCHILA FAMILY</u> Spleenwort Hepatic	13W	
<u>PTILIDIACEAE</u>			
<i>Ptilidium pulcherrimum</i> (G. Web.) Hampe	<u>PTILIDIUM FAMILY</u>	8W, 19W	
<u>JUBULACEAE</u>			
<i>Frullania bolanderi</i> Aust.	<u>JUBULA FAMILY</u>	13W	

Appendix D

THALLOID LIVERWORTS Order Metzgeriales

SCIENTIFIC NAME

PELLIACEAE

Pellia epiphylla (L.) Corda

COMMON NAME

PELLIA FAMILY

Common Pellia

ZONES

17E, 19W

Order Marchantiales

CONOCEPHALACEAE

Conocephalum conicum (L.) Lindb.

CONOCEPHALUM FAMILY

Great Scented Liverwort

13E

MARCHANTIACEAE

Marchantia polymorpha L.

MARCHANTIA FAMILY

Common Liverwort

13E, 17W



Appendix E

LICHENS OF FRENCH FORT COVE

A total of 52 species of lichens was recorded for the area.

Nomenclature and taxonomic order of the families follow Lichens of North America (Brodo, *et. al.*, 2001). Brodo uses the fungal component as the principal means of naming and ordering each family. Lichen genera and species are ordered alphabetically within each family. Common names have been taken from the same source. Distribution was ascertained from range maps in Brodo. An entry in the "Zones" column refers to the zone(s) in which that species has been recorded (see the zone map in this report).

Dr. Stephen Clayden, lichenologist at the New Brunswick Museum in Saint John, identified and/or verified the lichens in this checklist.

Notations:

- cf.* - confer (Latin for compare). It is used to mean that the specimen compares favourably in most respects with the formal description of this taxa, but lacks some feature(s) to make a definitive determination.
- ex* - between two authors' names, means the scientific name was first applied to the taxon so-named by the last-mentioned author but was first legitimately published by the former according the criteria of the International Code of Botanical Nomenclature.
- N.A. - North America
- subsp. - subspecies

SCIENTIFIC NAME	COMMON NAME	DISTRIBUTION	ZONES
MYCOCALICIACEAE			
<i>Stenocybe pullatula</i> (Ach.) Stein	Stubble Lichen	Unknown	9E
CONIOCYBACEAE			
<i>Chaenotheca brunneola</i> (Ach.) Müll. Arg.	Brown-head Stubble Lichen	Nfld. - Minn., south to N.Y., B.C. & Fla.	19W
CLADONIACEAE			
<i>Cladonia mitis</i> (Sandst.) Hustich	Green Reindeer Lichen	widespread in N.A.	6W
<i>Cladonia rangiferina</i> (L.) Nyl.	Gray Reindeer Lichen	widespread in N.A.	6W, 8E, 10E, 11W
<i>Cladonia stellaris</i> (Opiz) Brodo	Star-tipped Reindeer Lichen	widespread boreal	6W
<i>Cladonia cenotea</i> (Ach.) Schaerer	Powdered Funnel Lichen	widespread in N.A.	18W
<i>Cladonia cervicornis</i> subsp. <i>verticillata</i> (Hoffm.) Ahti	Ladder Lichen	widespread in N.A.	9E, 11E, 20W
<i>Cladonia chlorophaea</i> (Flörke ex Sommerf.) Sprengel	Mealy Pixie-cup	widespread in N.A.	13W
<i>Cladonia coniocraea</i> (Flörke) Sprengel	Common Powderhorn	widespread in N.A.	6E, 13W
<i>Cladonia cristatella</i> Tuck.	British Soldiers	eastern N.A.	9E, 11E, 13W
<i>Cladonia digitata</i> (L.) Hoffm.	Finger Pixie-cup	Rocky Mtns. & northeastern N.A.	6E
<i>Cladonia fimbriata</i> (L.) Fr.	Trumpet Lichen	widespread in N.A.	3W, 9E
<i>Cladonia gracilis</i> subsp. <i>turbinata</i> (Ach.) Ahti	Turbinate Smooth Cladonia	widespread in N.A.	20W
<i>Cladonia maxima</i> (Asah.) Ahti	Giant Cladonia	northeastern coastal area & Alaska	10E
<i>Cladonia cf. phyllophora</i> Hoffm.	Felt Cladonia	widespread in N.A.	20W
<i>Cladonia pyxidata</i> (L.) Hoffm.	Pebbled Pixie-cup	widespread in N.A.	19W
<i>Cladonia scabriuscula</i> (Delise) Nyl.	Mealy Forked Cladonia	northeastern N.A. & west coast	19W
<i>Cladonia sulphurina</i> (Michaux) Fr.	Greater Sulphur-cup	widespread boreal species	18W
<i>Cladonia turgida</i> Hoffm.	Crazy-scale Lichen	Alaska & northeastern N.A.	10E
ICMADOPHILACEAE			
<i>Dibaeis baewomyces</i> (L.f.) Rambold & Hertel	Pink Earth Lichen	eastern N.A. & Alaska	8E

Appendix E

SCIENTIFIC NAME	COMMON NAME	DISTRIBUTION	ZONE
<u>STEREOCAULACEAE</u>			
<i>Stereocaulon dactylophyllum</i> Flörke <i>Stereocaulon tomentosum</i> Fr.	<u>STEREOCAULON FAMILY</u> Finger-scale Foam Lichen Woolly Foam Lichen	southeastern Can. widespread in N.A.	8E 8W, 20W
<u>LECANORACEAE</u>			
<i>Candelariella efflorescens</i> R.C. Harris & W.R. Buck cf. <i>Lecanora thysanophora</i> R.C. Harris	<u>LECANORA FAMILY</u> Powdery Goldspeck Lichen Mapledust Lichen	central-eastern N.A. central-eastern N.A.	18W 9E
<u>PARMELIACEAE</u>			
<i>Bryoria furcellata</i> (Fr.) Brodo & D. Hawksw. <i>Evernia mesomorpha</i> Nyl. <i>Hypogymnia physodes</i> (L.) Nyl.	<u>PARMELIA FAMILY</u> Burred Horsehair Lichen Boreal Oakmoss Lichen Monk's-hood Lichen, Hooded Tube Lichen Northern Camouflage Lichen, Northern Brown Abraded Camouflage Lichen Bottlebrush Shield Lichen Hammered Shield Lichen Round-headed Starburst Lichen Varied Rag Lichen, Ragbag	mainly northeastern N.A. widespread in N.A. widespread in N.A. – common widespread in N.A. widespread in N.A. – common central-eastern N.A. widespread in N.A. widespread in N.A. common-mountains, Can. Shield, Atlantic coast central-eastern N.A. northeastern N.A. widespread in N.A. common boreal widespread in N.A.	8E, 18W 18W 13W, 18W, 19W 18W 18W 8E, 18W 8E, 18W 8E 8E, 9E 13W 6E, 18W 8E, 18W 8E, 9W 9W 8E, 19W
<i>Melanelia septentrionalis</i> (Lynge) Essl.			
<i>Melanelia subaurifera</i> (Nyl.) Essl. <i>Parmelia squarrosa</i> Hale <i>Parmelia sulcata</i> Taylor <i>Parmeliopsis capitata</i> R.C. Harris <i>Platismatia glauca</i> (L.) Culb. & C. Culb.			
<i>Platismatia tuckermanii</i> (Oakes) Culb. & C. Culb. <i>Tuckermannopsis americana</i> (Sprengel) Hale <i>Usnea filipendula</i> Stirton <i>Usnea subfloridana</i> Stirton <i>Usnea</i> cf. <i>substerilis</i> Mot. <i>Vulpicida pinastris</i> (Scop.) J.-E. Mattsson & M. J. Lai	Crumpled Rag Lichen Fringed Wrinkle-lichen Fishbone Beard Lichen Beard Lichen Beard Lichen Powdered Sunshine Lichen		
<u>PHYSICIACEAE</u>			
<i>Amandinea punctata</i> (Hoffm.) Coppins & Scheid. <i>Physcia adscendens</i> (Fr.) H. Olivier <i>Physcia aipolia</i> (Ehrh. ex Humb.) Fűrnr.	<u>PHYSICIA FAMILY</u> Tiny Button Lichen Hooded Rosette Lichen Hoary Rosette Lichen	widespread in N.A. widespread in N.A. widespread in N.A.	18W 18W 18W
<u>RAMALINACEAE</u>			
<i>Ramalina americana</i> Hale <i>Ramalina intermedia</i> (Delise ex Nyl.) Nyl.	<u>RAMALINA FAMILY</u> Sinewed Ramalina Rock Ramalina	central-eastern N.A. central-eastern N.A.	8E 8E, 9E
<u>LOBARIACEAE</u>			
<i>Lobaria pulmonaria</i> (L.) Hoffm.	<u>LOBARIA FAMILY</u> Lungwort, Lung Lichen	west coast & central-eastern N.A.	13E
<u>PELTIGERACEAE</u>			
<i>Peltigera horizontalis</i> (Hudson) Baumg. <i>Peltigera polydactylon</i> (Necker) Hoffm. <i>Peltigera praetextata</i> (Flörke ex Sommerf.) Zopf	<u>PELTIGERA FAMILY</u> Flat-fruited Pelt Many-fruited Pelt Scaly Dog-lichen, Born-again Lichen	Rocky Mtns. & central-eastern N.A. localized in N.A. widespread in N.A.	13E, 19W 13W 13W
<u>PERTUSARIACEAE</u>			
<i>Pertusaria trachythallina</i> Erichsen	<u>PERTUSARIA FAMILY</u> Powdered Wart Lichen	central-eastern N.A.	18W
<u>TELOSCHISTACEAE</u>			
<i>Caloplaca cerina</i> (Ehrh. ex Hedwig) Th. Fr. <i>Caloplaca holocarpa</i> (Hoffm. ex Ach.) M. Wade	<u>TELOSCHISTES FAMILY</u> Gray-rimmed Firedot Lichen Firedot Lichen	widespread in N.A. uncertain	18W 18W
<u>UMBILICARIACEAE</u>			
<i>Umbilicaria americana</i> Poelt & T.H. Nash	<u>UMBILICARIA FAMILY</u> Frosted Rock Tripe	localized in N.A.	2W

Appendix F

BIRDS OF FRENCH FORT COVE

A total of 103 species of birds was found in the area. This included 33 families. The nomenclature and taxonomic order follows the "A.O.U. Check-List of North American Birds, Seventh Edition" (1998), plus supplements 42 to 45 to the Check-List. A special thanks goes out to Harry Walker, Jim Saunders and Pam Watters who reported several species to the authors.

Notations:

- No. - This column refers to the number of sightings during the 2002 inventory. It does not refer to the number of birds.
- Breed. - This column refers to breeding status according to the following designations:
- Poss. - Possible breeding. Single male and suitable habitat available.
- Prob. - Probable breeding. Pair present, territorial behavior over a week or more (e.g. male singing), agitated behavior, etc.
- Con. - Confirmed breeding. Nest found, adults carrying food, distraction display, or recently fledged young.

COMMON NAME

SCIENTIFIC NAME

NO.

BREED.

LOON FAMILY

Common Loon - Plongeon huard

GAVIIDAE

Gavia immer

1

CORMORANT FAMILY

Double-crested Cormorant - Cormoran à aigrettes

PHALACROCORACIDAE

Phalacrocorax auritus

3

HERON and BITTERN FAMILY

Great Blue Heron - Grand Héron

ARDEIDAE

Ardea herodias

1

SWAN, GOOSE and DUCK FAMILY

Canada Goose - Bernache du Canada
 American Wigeon - Canard d'Amérique
 American Black Duck - Canard noir
 Mallard - Canard colvert
 Common Goldeneye - Garrot à oeil d'or
 Hooded Merganser - Harle couronné
 Common Merganser - Grand Harle
 Red-breasted Merganser - Harle huppé

ANATIDAE

Branta canadensis
Anas americana
Anas rubripes
Anas platyrhynchos
Bucephala clangula
Lophodytes cucullatus
Mergus merganser
Mergus serrator

4

7

7

4

4

2

3

1

Poss.

Con.

Con.

Prob.

Poss.

Poss.

OSPREY, HAWK and EAGLE FAMILY

Osprey - Balbuzard pêcheur
 Bald Eagle - Pygargue à tête blanche
 Northern Goshawk - Autour des palombes

ACCIPITRIDAE

Pandion haliaetus
Haliaeetus leucocephalus
Accipiter gentilis

1

3

1

FALCON FAMILY

American Kestrel - Crécerelle d'Amérique
 Merlin - Faucon émerillon

FALCONIDAE

Falco sparverius
Falco columbarius

2

1

Poss.

Prob.

PHEASANT, GROUSE and ALLIES FAMILY

Ruffed Grouse - Gélinotte huppée
 Ring-necked Pheasant - Faisan de Colchide

PHASIANIDAE

Bonasa umbellus
Phasianus colchicus

9

1

Con.

SANDPIPER and ALLIES FAMILY

Greater Yellowlegs - Grand Chevalier
 Solitary Sandpiper - Chevalier solitaire
 Spotted Sandpiper - Chevalier grivelé
 American Woodcock - Bécasse d'Amérique

SCOLOPACIDAE

Tringa melanoleuca
Tringa solitaria
Actitis macularia
Scolopax minor

3

1

3

8

Poss.

Con.

GULL and TERN FAMILY

Ring-billed Gull - Goéland à bec cerclé
 Herring Gull - Goéland argenté
 Great Black-backed Gull - Goéland marin

LARIDAE

Larus delawarensis
Larus argentatus
Larus marinus

5

1

3

Appendix F

COMMON NAME	SCIENTIFIC NAME	NO.	BREED.
<u>PIGEON and DOVE FAMILY</u>			
Rock Pigeon- Pigeon biset	<i>Columba livia</i>	2	
Mourning Dove - Tourterelle triste	<i>Zenaida macroura</i>	1	Prob.
<u>OWL FAMILY</u>			
Great Horned Owl - Grand-duc d' Amérique	<i>Bubo virginianus</i>	1	Poss.
Barred Owl - Chouette rayée	<i>Strix varia</i>	1	Poss.
<u>GOATSUCKERS</u>			
Common Nighthawk - Engoulevent d' Amérique			
<u>HUMMINGBIRD FAMILY</u>			
Ruby-throated Hummingbird - Colibri à gorge rubis			
<u>KINGFISHER FAMILY</u>			
Belted Kingfisher - Martin-pêcheur d' Amérique			
<u>WOODPECKER FAMILY</u>			
Yellow-bellied Sapsucker - Pic maculé			
Downy Woodpecker - Pic mineur			
Hairy Woodpecker - Pic chevelu			
Northern Flicker - Pic flamboyant			
Pileated Woodpecker - Grand Pic			
<u>TYRANT FLYCATCHER FAMILY</u>			
Eastern Wood-Pewee - Pioui de l' Est			
Yellow-bellied Flycatcher - Moucherolle à ventre jaune			
Alder Flycatcher - Moucherolle des aulnes			
Willow Flycatcher - Moucherolle des saules			
Least Flycatcher - Moucherolle tchébec			
Eastern Kingbird - Tyran tritri			
<u>VIREO FAMILY</u>			
Blue-headed Vireo - Viréo à tête bleue			
Red-eyed Vireo - Viréo aux yeux rouges			
<u>JAY and CROW FAMILY</u>			
Gray Jay - Mésangeai du Canada			
Blue Jay - Geai bleu			
American Crow - Corneille d' Amérique			
Common Raven - Grand Corbeau			
<u>SWALLOW FAMILY</u>			
Tree Swallow - Hironnelle bicolore			
Bank Swallow - Hironnelle de rivage			
Barn Swallow - Hironnelle rustique			
<u>TITMOUSE and CHICKADEE FAMILY</u>			
Black-capped Chickadee - Mésange à tête noire			
<u>NUTHATCH FAMILY</u>			
White-breasted Nuthatch - Sittelle à poitrine blanche			
Red-breasted Nuthatch - Sittelle à poitrine rousse			
<u>WREN FAMILY</u>			
Winter Wren - Troglodyte mignon			
<u>KINGLET FAMILY</u>			
Golden-crowned Kinglet - Roitelet à couronne dorée			
Ruby-crowned Kinglet - Roitelet à couronne rubis			
<u>COLUMBIDAE</u>			
	<i>Columba livia</i>	2	
	<i>Zenaida macroura</i>	1	Prob.
<u>STRIGIDAE</u>			
	<i>Bubo virginianus</i>	1	Poss.
	<i>Strix varia</i>	1	Poss.
<u>CAPRIMULGIDAE</u>			
	<i>Chordeiles minor</i>	1	Poss.
<u>TROCHILIDAE</u>			
	<i>Archilochus colubris</i>	4	Prob.
<u>ALCEDINIDAE</u>			
	<i>Ceryle alcyon</i>	8	Prob.
<u>PICIDAE</u>			
	<i>Sphyrapicus nuchalis</i>	2	Prob.
	<i>Picoides pubescens</i>	5	Con.
	<i>Picoides villosus</i>	4	Prob.
	<i>Colaptes auratus</i>	14	Prob.
	<i>Dryocopus pileatus</i>	2	Prob.
<u>TYRANNIDAE</u>			
	<i>Contopus virens</i>	1	Prob.
	<i>Empidonax flaviventris</i>	1	Prob.
	<i>Empidonax alnorum</i>	1	Poss.
	<i>Empidonax trailii</i>	1	Poss.
	<i>Empidonax minimus</i>	1	Poss.
	<i>Tyrannus tyrannus</i>	1	Poss.
<u>VIREONIDAE</u>			
	<i>Vireo solitarius</i>	1	Poss.
	<i>Vireo olivaceus</i>	7	Prob.
<u>CORVIDAE</u>			
	<i>Perisoreus canadensis</i>	1	Poss.
	<i>Cyanocitta cristata</i>	13	Prob.
	<i>Corvus brachyrhynchos</i>	23	Prob.
	<i>Corvus corax</i>	20	Prob.
<u>HIRUNDINIDAE</u>			
	<i>Tachycineta bicolor</i>	3	Prob.
	<i>Riparia riparia</i>	1	Prob.
	<i>Hirundo rustica</i>	2	Prob.
<u>PARIDAE</u>			
	<i>Poecile atricapillus</i>	28	Con.
<u>SITTIDAE</u>			
	<i>Sitta carolinensis</i>	1	Poss.
	<i>Sitta canadensis</i>	1	Prob.
<u>TROGLODYTIDAE</u>			
	<i>Troglodytes troglodytes</i>	2	Poss.
<u>REGULIDAE</u>			
	<i>Regulus satrapa</i>	4	Poss.
	<i>Regulus calendula</i>	4	Poss.

Appendix F

COMMON NAME

THRUSH FAMILY

Veery - Grive fauve
Swainson's Thrush - Grive à dos olive
Hermit Thrush - Grive solitaire
American Robin - Merle d' Amérique

MIMID or MOCKER FAMILY

Gray Catbird - Moqueur chat

STARLING FAMILY

European Starling - Étourneau sansonnet

WAXWING FAMILY

Cedar Waxwing - Jaseur d' Amérique

WOOD WARBLER FAMILY

Tennessee Warbler - Paruline obscure
Nashville Warbler - Paruline à joues grises
Northern Parula - Paruline à collier
Yellow Warbler - Paruline jaune
Chestnut-sided Warbler - Paruline à flancs marron
Magnolia Warbler - Paruline à tête cendrée
Cape May Warbler - Paruline tigrée
Black-throated Blue Warbler - Paruline bleue
Yellow-rumped Warbler - Paruline à croupion jaune
Black-throated Green Warbler - Paruline à gorge noire
Blackburnian Warbler - Paruline à gorge orangée
Pine Warbler - Paruline des pins
Palm Warbler - Paruline à couronne rousse
Bay-breasted Warbler - Paruline à poitrine baie
Blackpoll Warbler - Paruline rayée
Black-and-white Warbler - Paruline noir et blanc
American Redstart - Paruline flamboyante
Ovenbird - Paruline couronnée
Northern Water Thrush - Paruline des ruisseaux
Mourning Warbler - Paruline triste
Common Yellowthroat - Paruline masquée
Wilson's Warbler - Paruline à calotte noire
Canada Warbler - Paruline du Canada

TANAGER FAMILY

Scarlet Tanager - Tangara vermillon

EMBERIZINE SPARROW and ALLIES FAMILY

Chipping Sparrow - Bruant familier
Song Sparrow - Bruant chanteur
White-throated Sparrow - Bruant à gorge blanche
Dark-eyed Junco (Slate-coloured) - Junco ardoisé
American Tree Sparrow - Bruant hudsonien

CARDINAL and ALLIES FAMILY

Rose-breasted Grosbeak - Cardinal à poitrine rose

BLACKBIRD and ALLIES FAMILY

Common Grackle - Quiscale bronzé
Brown-headed Cowbird - Vacher à tête brune

FINCH FAMILY

Purple Finch - Roselin pourpré
White-winged Crossbill - Bec-croisé bifascié
Pine Siskin - Tarin des pins
American Goldfinch - Chardonneret jaune
Evening Grosbeak - Gros-bec errant

SCIENTIFIC NAME

TURDIDAE

Catharus fuscescens 9 Prob.
Catharus ustulatus 2 Poss.
Catharus guttatus 2 Prob.
Turdus migratorius 18 Con.

MIMIDAE

Dumetella carolinensis 1 Poss.

STURNIDAE

Sturnus vulgaris 3 Prob.

BOMBYCILLIDAE

Bombcilla cedrorum 12 Prob.

PARULIDAE

Vermivora peregrina 1 Poss.
Vermivora ruficapilla 3 Prob.
Parula americana 7 Prob.
Dendroica petechia 3 Prob.
Dendroica pensylvanica 3 Prob.
Dendroica magnolia 4 Prob.
Dendroica tigrina 1 Poss.
Dendroica caerulescens 2 Prob.
Dendroica coronata 10 Prob.
Dendroica virens 1 Poss.
Dendroica fusca 1 Poss.
Dendroica pinus 2 Poss.
Dendroica palmarum 1
Dendroica castanea 2 Poss.
Dendroica striata 1
Mniotilta varia 5 Prob.
Setophaga ruticilla 6 Prob.
Seiurus aurocapillus 5 Prob.
Seiurus noveboracensis 2 Poss.
Oporornis philade 1 Poss.
Geothlypis trichas 2 Prob.
Wilsonia pusilla 1 Poss.
Wilsonia canadensis 2 Poss.

THRAUPIDAE

Piranga olivacea 2 Con.

EMBERIZIDAE

Spizella passerina 12 Con.
Melospiza melodia 16 Con.
Zonotrichia albicollis 20 Con.
Junco hyemalis 2 Poss.
Spizella arborea 1

CARDINALIDAE

Pheucticus ludovicianus 2 Prob.

ICTERIDAE

Quiscalus quiscula 2 Prob.
Molothrus ater 1 Poss.

FRINGILLIDAE

Carpodacus purpureus 1 Poss.
Loxia leucoptera 1
Carduelis pinus 1 Poss.
Carduelis tristis 8 Prob.
Coccothraustes vespertinus 1 Poss.

MAMMALS OF FRENCH FORT COVE

Taxonomic order and nomenclature follow "The Mammals of Canada" (Banfield, 1974). The list is based on either actual observations of living or dead individuals or on good secondary evidence (tracks, scats, etc.).

SCIENTIFIC NAME	COMMON NAME	ZONES
CHIROPTERA	BATS	
<u>VESPERTILIONIDAE</u> <i>Myotis lucifugus</i> (LeConte)	<u>SMOOTH-FACED BAT FAMILY</u> Little Brown Bat/Petite Chauvre-souris brune	7E
LAGOMORPHA	PIKAS, HARES AND RABBITS	
<u>LEPORIDAE</u> <i>Lepus americanus</i> Erxleben	<u>RABBIT AND HARE FAMILY</u> Snowshoe or Varying Hare/Lièvre d'Amérique	6E, 13E, 19W, 20W
RODENTIA	RODENTS	
<u>SCIURIDAE</u> <i>Tamias striatus</i> (L.) <i>Sciurus carolinensis</i> Gmelin <i>Tamiasciurus hudsonicus</i> (Erxleben)	<u>SQUIRREL FAMILY</u> Eastern Chipmunk/Suisse Grey or Black Squirrel/Écureuil gris ou noir American Red Squirrel/Écureuil roux	5E, 8W 5E, 7E, 8E All
<u>CASTORIDAE</u> <i>Castor canadensis</i>	<u>BEAVER FAMILY</u> American Beaver/Castor	13 to 17 E&W, 99
<u>MURIDAE</u> <i>Ondatra zibethicus</i> (L.)	<u>RAT, MOUSE AND VOLE FAMILY</u> Muskrat/Rat musqué	10W
CARNIVORA	CARNIVORES	
<u>CANIDAE</u> <i>Vulpes vulpes</i> (L.)	<u>DOG FAMILY</u> Red Fox/Renard roux	20W
<u>URSIDAE</u> <i>Ursus americanus</i> Pallas	<u>BEAR FAMILY</u> American Black Bear/ Ours noir	11E
<u>PROCYONIDAE</u> <i>Procyon lotor</i> (L.)	<u>RACCOON FAMILY</u> Raccoon/Raton laveur	14 to 17 E&W
<u>MUSTELIDAE</u> <i>Mephitis mephitis</i> (Schreber) <i>Lontra canadensis</i> (Schreber)	<u>WEASEL FAMILY</u> Striped Skunk/Mouffette rayée River Otter/Loutre de rivière	8W 99
ARTIODACTYLA	CLOVEN-HOOFED MAMMALS	
<u>CERVIDAE</u> <i>Odocoileus virginianus</i> (Zimmermann) <i>Alces alces</i> (L.)	<u>DEER FAMILY</u> White-tailed Deer/Cerf de Virginie Moose/Original	16E 20W

Appendix H

AMPHIBIANS AND REPTILES OF FRENCH FORT COVE

The taxonomic order and nomenclature follow "Introduction to Canadian Amphibians and Reptiles" (Cook, 1980). The species listed were observed and/or heard by the authors.

AMPHIBIANS

SCIENTIFIC NAME	COMMON NAME	ZONES
<u>BUFONIDAE</u> <i>Bufo americanus</i>	<u>TOAD FAMILY</u> American Toad	10W, 19W
<u>HYLIDAE</u> <i>Hyla crucifer</i>	<u>TREEFROG FAMILY</u> Spring Peeper	10W, 6E, 99, 12W, 13 to 17 E&W
<u>RANIDAE</u> <i>Rana sylvatica</i> <i>Rana clamitans</i>	<u>TRUE FROG FAMILY</u> Wood Frog Green Frog	All zones except anthropomorphic. 13 to 17 E&W

REPTILES

SCIENTIFIC NAME	COMMON NAME	ZONES
<u>EMYDIDAE</u> <i>Clemmys insculpta</i>	<u>POND AND MARSH TURTLE FAMILY</u> Wood Turtle	15W
<u>COLUBRIDAE</u> <i>Thamnophis sirtalis</i> subsp. <i>pallidula</i> <i>Storeria occipitomaculata</i>	<u>TYPICAL SNAKE FAMILY</u> Common Garter Snake (Maritime Subspecies) Redbelly snake	9E 9E

Appendix I

FISH OF FRENCH FORT COVE

Taxonomic order and nomenclature, including common names, follow "Freshwater Fishes of Canada" (Scott & Crossman, 1973). This list was compiled from the stream and pond survey reports prepared by students in Ian Feir's Environmental Technology Year 1 class at the New Brunswick Community College Miramichi. The surveys were carried out from June 6 to June 14, 2002, using electrofishing and dip or seine netting techniques in both the cove pond (Zone 99) and in the French Fort Brook just upstream from the covered bridge (Zone 13).

SCIENTIFIC NAME	COMMON NAME	ZONES
<u>SALMONIDAE</u> <i>Salvelinus fontinalis</i> (Mitchill)	<u>SALMON FAMILY</u> Brook Trout	99, 13
<u>CYPRINIDAE</u> <i>Notemigonus crysoleucas</i> (Mitchill)	<u>MINNOW OR CARP FAMILY</u> Golden Shiner	99
<u>CATOSTOMIDAE</u> <i>Catostomus commersoni</i> (Lacépède)	<u>SUCKER FAMILY</u> White Sucker	99
<u>GASTEROSTEIDAE</u> <i>Culaea inconstans</i> (Kirtland) <i>Gasterosteus aculeatus</i> Linnaeus <i>Pungitius pungitius</i> (Linnaeus)	<u>STICKLEBACK FAMILY</u> Brook Stickleback Threespine Stickleback Ninespine Stickleback	99 99 99
<u>COTTIDAE</u> <i>Cottus cognatus</i> Richardson	<u>SCULPIN FAMILY</u> Slimy Sculpin	99, 13

Appendix J

INVERTEBRATES OF FRENCH FORT COVE

The taxonomic order of the invertebrates follows "Invertebrates of North America" (Milne & Milne, 1976).

CHECKLIST I

MOLLUSCS

The nomenclature (both scientific and common names) and taxonomic order follow "Mollusks" (Turgeon, *et al.* 1988) for both aquatic and land species. "The Distributions of the Native Land Mollusks of the Eastern United States" (Hubricht, 1985) was used to ascertain ranges of land molluscs. "The Freshwater Molluscs of Canada" (Clarke, 1981) was used for determining ranges of freshwater species. Eleven species of molluscs were found, 6 aquatic and 5 terrestrial.

SCIENTIFIC NAME	COMMON NAME	DATE	LOCATION
MOLLUSCA	MOLLUSCS: MUSSELS, SNAILS, etc.		
<u>UNIONIDAE</u>	<u>FRESH-WATER MUSSELS</u>		
<i>Anodonta cataracta cataracta</i> (Say, 1817)	Eastern Floater Mussel	9/26/2002	Zone 99
<u>HYDROBIIDAE</u>	<u>SPIRE SNAILS</u>		
<i>Amnicola limosus</i> (Say, 1817)	Ordinary Spiral Snail or Mud Amnicola	9/6/2002	Zone 99
<u>CALYPTRAEIDAE</u>	<u>SLIPPER SHELLS</u>		
<i>Crepidula fornicata</i> (L., 1758)	Common Atlantic Slippersnail	10/18/2002	Zone 1E
<u>LYMNAEIDAE</u>	<u>POND SNAILS</u>		
<i>Stagnicola elodes</i> (Say, 1821)	Marsh Pondsnaill or Common Stagnicola	9/6/2002	Zone 99
<u>PHYSIDAE</u>	<u>TADPOLE SNAILS</u>		
<i>Physa heterostropha</i> (Say, 1817)	Eastern Physa or Pewter Physa	9/6/2002	Zone 99
<u>PLANORBIDAE</u>	<u>RAMS-HORN SNAILS</u>		
<i>Helisoma anceps</i> (Menke, 1830) subsp. <i>anceps</i>	Two-ridge Rams-horn	9/28/2004	Zone 1W
<u>PUPILLIDAE</u>	<u>LAND SNAILS</u>		
<i>Columella simplex</i> (Gould, 1841)	High-spire Column	9/20/2003	Zone 13E
<u>VALLONIIDAE</u>	<u>LAND SNAILS</u>		
<i>Planogyra asteriscus</i> (E.S. Morse, 1857)	Eastern Flat-whorl	9/20/2003	Zone 13E
<u>DISCIDAE</u>	<u>LAND SNAILS</u>		
<i>Anguispira alternata</i> (Say, 1816)	Flamed Disc	5/19/2002	Zone 13W
<u>ARIONIDAE</u>	<u>SLUGS</u>		
<i>Arion fasciatus</i> (Nilsson)	Orange-banded Arion	9/12/2002	Zone 8E
<u>POLYGYRIDAE</u>	<u>LAND SNAILS</u>		
<i>Euchemotrema fraternum</i> (Say, 1824) subsp. <i>fraternum</i>	Upland Pillsnail	5/1/2004	Zone 9E

Appendix J

ARTHROPODA

CHECKLIST II

SPIDERS AND MITES

The nomenclature and taxonomic order for mites follow How To Know Mites and Ticks (McDaniel, 1979), and for spiders, How to Know the Spiders, 2nd. ed. (Kaston, 1972).

SCIENTIFIC NAME	COMMON NAME	DATE	LOCATION
ARACHNIDA			
SPIDERS AND MITES			
<u>DIGAMASELLIDAE</u>			
<i>Longoseius cuniculus</i> (Chant)	<u>MESOSTIGMATID MITES</u>	9/20/2003	Zone 13E
<u>STEGANACARIDAE</u>			
<i>Hoplophthiracarus</i> sp.	<u>ORIBATID MITES</u>	9/20/2003	Zone 13E
<u>DICTYNIDAE</u>			
<i>Lathys foxii</i> (Marx)	<u>DICTYNID SPIDERS</u>	9/20/2003	Zone 13E
<u>PISAUROIDAE</u>			
<i>Dolomedes tenebrosus</i> (Hentz)	<u>NURSERY WEB SPIDERS</u>	6/30/2004	Zone 11E
<u>CLUBIONIDAE</u>			
<i>Agroeca ornata</i> (Banks, 1892)	<u>SAC SPIDERS</u>	9/20/2003	Zone 13E

CHECKLIST III

BUTTERFLIES AND MOTHS

The scientific nomenclature and taxonomic order follow "Check List of the Lepidoptera of America North of Mexico" (Hodges, *et al.*, 1983), except in the case of a few moths where nomenclature follows Handfield's "Papillons du Québec" (1999). Common names of butterflies are after "The Butterflies of Canada" (Layberry, Hall & Lafontaine, 1998), while moth names (when available) follow "A Field Guide to the Moths of Eastern North America" (Covell Jr., 1984)

Although this is just a preliminary list, fifty species of Lepidoptera were reported during the inventory, including 22 butterflies and 28 moths. Most of the latter were collected using a trap equipped with an ultraviolet light on the night of August 29, 2002.

SCIENTIFIC NAME	COMMON NAME	DATE	ZONE	TAXA NO.
LEPIDOPTERA				
BUTTERFLIES AND MOTHS				
<u>HESPERIIDAE</u>				
<i>Erynnis icelus</i> (Scudder & Burgess, 1870)	<u>SKIPPERS</u>	6/20/2002	4E	3945
<i>Polites peckius</i> (W. Kirby, 1837)	Dreamy Duskywing	7/25/2002	12E	4036
<i>Thymelicus lineola</i> (Ochs., 1808)	Peck's Skipper	7/10/2002	7E	4012
<u>PAPLIONIDAE</u>				
<i>Papilio glaucus</i> (L., 1758)	<u>SWALLOWTAILS</u>	6/19/2002	4W	4176
<u>PIERIDAE</u>				
<i>Colias philodice philodice</i> (Godart, 1819)	<u>WHITES & SULPHURS</u>	8/2/2002	8W	4209
<i>Pieris oleracea</i> (Harr. 1829)	Clouded or Common Sulphur	8/12/2002	6E	4195d
<i>Pieris rapae</i> (L., 1758)	Mustard White	8/21/2002	1W	4197.1
	Cabbage Butterfly			

Appendix J

SCIENTIFIC NAME	COMMON NAME	DATE	ZONE	TAXA NO.
<u>LYCAENIDAE</u>				
<i>Celastrina ladon</i> (Cramer, 1780)	Spring Azure Butterfly	6/3/2002	17E	4363
<i>Everes amyntula maritima</i> (LeBlanc, 1985)	Western Tailed Blue	6/20/2002	4E	4362d
<i>Feniseca tarquinius</i> (Fabricius, 1793)	Harvester	8/23/2002	8E	4249
<i>Glaucoopsyche lygdamus</i> (Doubleday, 1842) subsp. <i>couperi</i> Grt., 1874	Silvery Blue	6/20/2002	4E	4372
<u>NYMPHALIDAE</u>				
<i>Aglais milberti</i> (Godt., 1819).	Milbert's Tortoiseshell	7/9/2002	7E	4433
<i>Boloria selene</i> (Denis & Schif., 1775) <i>atrocostalis</i> (Huard, 1927)	Silver-bordered Fritillary	8/29/2002	7E	4464f
<i>Chlosyne nycteis nycteis</i> (Doubleday, 1847)	Silvery Checkerspot	6/19/2002	4W	4490
<i>Enodia anthedon</i> (A.H. Clark, 1936)	Northern Pearly-Eye	7/24/2002	15E	4568.1
<i>Euphydryas phaeton phaeton</i> (Drury, 1773)	Baltimore Checkerspot	6/26/2002	6W	4516
<i>Limenitis archippus archippus</i> (Cramer, 1776)	Viceroy	8/23/2002	9E	4523
<i>Limenitis camilla</i> (L., 1764)	White Admiral	7/9/2002	9E	4522
<i>Megisto cymela cymela</i> (Cramer, 1777)	Little Wood-Satyr	6/20/2002	4E	4578
<i>Nymphalis antiopa</i> (L., 1758)	Mourning Cloak	5/7/2002	17W	4432
<i>Phyciodes cocyta</i> (Cramer, 1777)	Northern Crescent	6/26/2002	6W	4481.1
<i>Speyeria cybele novascotiae</i> (McD., 1935)	Great Spangled Fritillary	8/12/2002	6E	4450a
<u>PYRALIDAE</u>				
<i>Crambus laqueatellus</i> (Clem., 1860)		8/29/2002	7E	5378
<u>GEOMETRIDAE</u>				
<i>Archiearis infans</i> (Mösch., 1862)	The Infant	4/30/2005	6E	6256
<i>Chloroclysta truncata</i> (Hufn., 1767) <i>traversata</i> (Kellcott, 1886)		8/29/2002	7E	7187a
<i>Epirranthis substriataria</i> (Hulst, 1896)		5/20/2004	11E	6799
<i>Operophtera bruceata</i> (Hulst, 1886)	Bruce Spanworm	11/1/2002	19W	7417
<i>Rheumaptera sushastata</i> (Nolcken)	White-banded Black	6/19/200	4W	7294,3c
<i>Xanthorhoe ferrugata</i> (Clark, 1759)	Dark-barred Twin-spot Carpet Moth	8/29/2002	7E	7388
<i>Xanthotype urticaria</i> (Swert, 1918)	False Crocus Geometer	7/9/2002	9E	6740-1
<u>LASIOCAMPIDAE</u>				
<i>Malacosoma americanum</i> (F., 1793)	Eastern Tent Caterpillar	5/5/2004	6E	7701
<i>Tolyte laricis</i> (Fitch., 1856)	Larch Tolyte	8/29/2002	7E	7673
<u>SPHINGIDAE</u>				
<i>Hemaris thysbe</i> (Fabricius, 1775)	Hummingbird Clearwing	7/9/2002	9E	7853
<u>ARCTIIDAE</u>				
<i>Arctia caja americanum</i> (Harr., 1841)	Great Tiger Moth	5/5/2004	6E	8166a
<i>Cynia tenera</i> (Hdn., 1818)	Delicate Cynia	8/29/2002	7E	8230
<i>Lycomorpha pholus</i> (Drury, 1773)	Black and Yellow Lichen Moth	8/23/2002	11E	8087
<i>Pyrrharctia isabella</i> (J.E. Smith, 1797)	Isabella Tiger Moth	5/5/2004	6E	8129
<u>LYMANTRIIDAE</u>				
<i>Orygia leucostigma</i> (J.E. Sm., 1797) <i>intermedia</i> (Fitch, 1856)	White-marked Tussock Moth	8/29/2003	7E	8316a
<u>NOCTUIDAE</u>				
<i>Amphipyra pyramidoides</i> (Guenée, 1852)	Copper Underwing	8/29/2002	7E	9638
<i>Apamea cogitata</i> (Sm., 1891)		8/29/2002	7E	9367.1
<i>Apamea dubitans</i> (Walker, 1856)	Halting Apamea	8/29/2002	7E	9367
<i>Catocala concumbens</i> Wlk., 1858	Pink or Sleepy Underwing	8/29/2002	7E	8833
<i>Enargia decolor</i> (Wlk., 1858)		8/29/2002	7E	9549
<i>Euclidia cuspidea</i> (Hubner, 1818)	Toothed Somberwing	7/2/2002	8W	8731
<i>Eueretargotis sigmoides</i> (Gn., 1852)	Sigmoid Dart	8/29/2002	7E	11007
<i>Euxoa messoria</i> (Harr., 1841)	Reaper Dart Moth	8/29/2002	7E	10705
<i>Lacinipolia olivacea</i> (Morr., 1874)	Olive Arches	8/29/2002	7E	10406
<i>Nephelodes minians</i> (Gn., 1852)	Bronzed Cutworm	8/29/2002	7E	10524
<i>Xestia badicollis</i> (Grote, 1873)	Northern Variable Dart	8/29/2002	7E	10968
<i>Xestia dolosa</i> (Franc., 1980)	Greater Black-letter Dart	8/29/2002	7E	10742.1
<u>HARVESTERS, COPPERS, HAIRSTREAKS & BLUES</u>				
<u>BRUSH-FOOTED BUTTERFLIES</u>				
<u>PYRALID MOTHS</u>				
<u>GEOMETER MOTHS</u>				
<u>LAPPET MOTHS</u>				
<u>SPHINX MOTHS</u>				
<u>TIGER MOTHS</u>				
<u>TUSSOCK MOTHS</u>				
<u>CUT-WORM MOTHS</u>				

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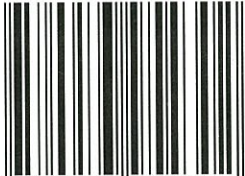


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