

Ecological Surveys and Vascular Plant Inventory of the Bay of Islands Conservation Area



Left: Small-flowered Bittercress (*Cardamine parviflora* var. *arenicola*, S2, Sensitive), Wolfes Island. Top right: Crowberry Blue, Gerard Island. Bottom right: Sand beach, Borgles Island.

Completed for the Nature Trust of Nova Scotia

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1.0 Introduction

In 2014, the Nova Scotia Nature Trust (NSNT) officially launched the Bay of Islands Conservation Area campaign. NSNT is aiming to secure the protection of 2,700 hectares of offshore islands and coastal mainland which will collectively form the Bay of Islands Coastal Wilderness Area. This area, stretching 30 kilometers along the coast between Clam Harbour Beach and Taylor Head, is a relatively undisturbed archipelago of dozens of small to medium-sized islands. The islands have many important conservation and scientific values and support some of the region's best examples of intact coastal ecosystems. Residential and recreational development have significantly altered coastal habitats throughout much of the Maritimes, but the limited history of permanent human occupancy on the islands means they have been retained as relatively unspoiled wilderness.

In August 2014, the Atlantic Conservation Data Centre conducted fieldwork in the Bay of Islands Conservation Area for the NSNT. The primary focus of our surveys was to comprehensively characterize the conservation values at each site using ecological land classification, species inventory, and by documenting stewardship issues (threats, habitat integrity, anthropogenic uses etc). The work outlined in this report will help inform the NSNT's conservation campaign, further strengthening the case for protection of this wilderness area and informing stewardship planning in the long-term.

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2.0 Methods

Fieldwork at the nine survey sites was conducted over eight field days between August 4 and 22, 2014 by Sean Blaney, Sarah Robinson, David Mazerolle and Alain Belliveau of AC CDC. Each field site was covered by two AC CDC botanists, on foot, over one field day (with the exception of Laybold and Porter Islands, which were covered in half a day each). Two botanists were present at a field site concurrently and each botanist covered different areas of the site. Table 1 lists the botanists and survey dates for each field site and Figure 1 maps general locations of survey sites.

The field surveys were focused on compiling a full inventory of vascular plant species observed with a general description of abundance for every species at each site, as well as describing and documenting habitats and plant communities at each site. Particular attention was given to the descriptions of ecologically sensitive habitats on the islands and to documenting the presence and extent of current and historical anthropogenic disturbances, invasive species, and site integrity. Ecological classification is based on NS DNR's Forest Ecosystem Classification for Nova Scotia for forested plant communities (Neily, et al., 2010.) and Nature Conservancy Canada ecosystem classification for non-forested communities (NCC, 2014). Mapping and aerial photos provided by the Nature Trust were used to identify the land cover and habitats present (*i.e.* wetlands, uplands, salt marshes, upland forest), and to determine what areas would most likely support plant communities containing species of interest.

Table 1. Survey sites with survey date and observers.

Survey Site	Survey Date	Observers
Gerard Island	2014 08 04	Blaney, C.S.; Robinson, S.L.
Wolfes Island	2014 08 05	Blaney, C.S.; Robinson, S.L.
Phoenix Island	2014 08 06	Blaney, C.S.; Robinson, S.L.
Baltee Island	2014 08 07	Blaney, C.S.; Robinson, S.L.
Borgles Island	2014 08 19	Mazerolle, D.M.; Belliveau, A.G.
Laybold Island	2014 08 20	Mazerolle, D.M.; Belliveau, A.G.
Porter Island	2014 08 20	Mazerolle, D.M.; Belliveau, A.G.
Cable Island	2014 08 21	Mazerolle, D.M.; Belliveau, A.G.
Shelter Cove	2014 08 22	Mazerolle, D.M.; Belliveau, A.G.

In addition to vascular plant and community data, we collected location data for rare or COSEWIC-listed birds when they were detected and collected data on breeding status of all bird species during the earlier fieldwork in the first week of August. We also documented a few records of other incidentally-observed animals, as noted in Results. All species data (species lists by site with generalized locations and precisely documented records of rare species and collections) have been permanently documented in the Atlantic Canada Conservation Data Centre database. All butterfly records will be submitted to the Maritimes Butterfly Atlas.¹

¹ For details on the Atlas see: <http://www.accdc.com/mba/index-mba.html>

Each botanist kept GPS units on while in the field to precisely record area covered, and these tracks are mapped in Figures 2 to 10. For provincially rare species (those species with provincial status ranks, or S-ranks, of S1 to S3S4 or General Status ranks of At Risk, May Be At Risk or Sensitive; see Appendix 2), we recorded locations by GPS, along with information on population size and extent, habitat and associated species. A majority of rare plant species were also documented by voucher specimens that will be deposited at the E.C. Smith Herbarium (ACAD) at Acadia University and the Nova Scotia Museum of Natural History Herbarium (NSPM) in Halifax.

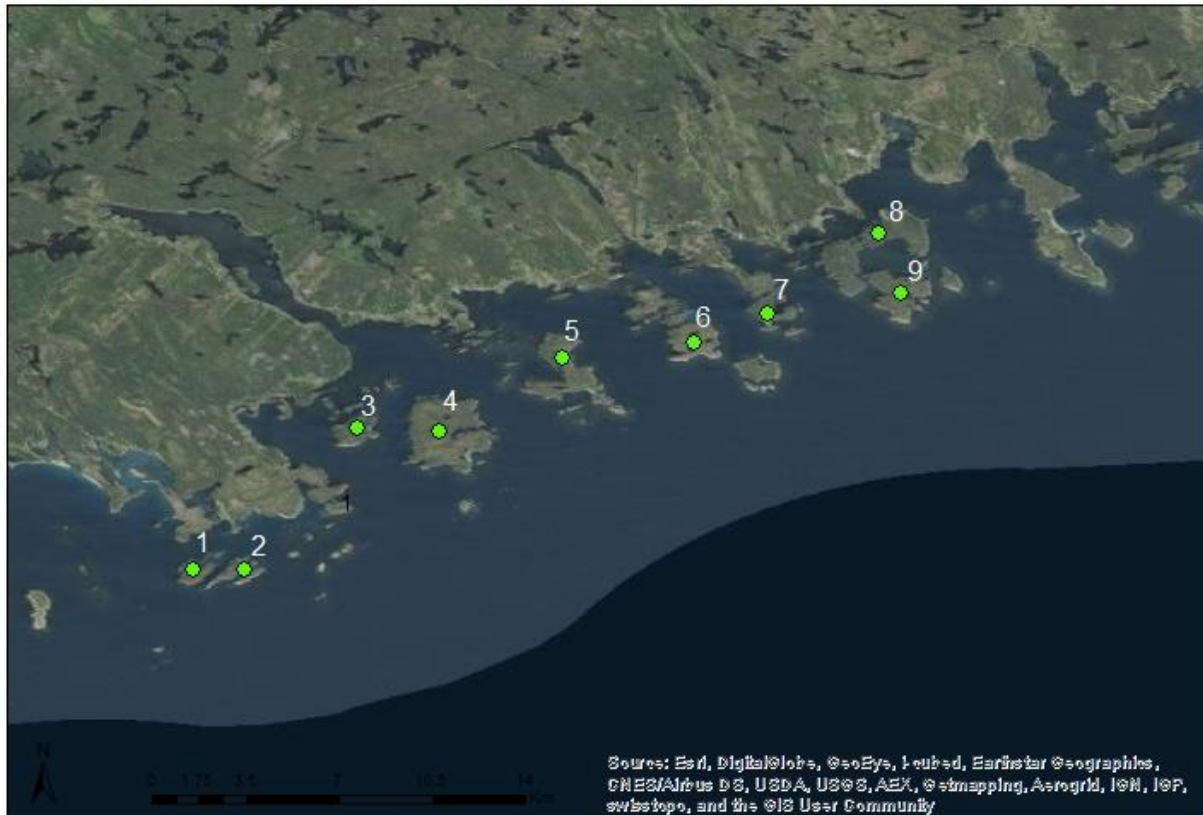


Figure 1. Sites surveyed by AC CDC in 2014 in the Bay of Islands Conservation Area: 1) Porter Island 2) Laybold Island 3) Cable Island 4) Wolfes Island 5) Borgles Island 6) Outer Baltee Island 7) Shelter Cove 8) Gerard Island and 9) Phoenix Island.

3.0 Results and Discussion

3.1 Summary of all survey sites

Appendix 1 lists all vascular plants by study site. Table 2 summarizes native, exotic and rare species records by site. Across all sites, we documented 350 vascular plant species, 299 of which were native species and 51 of which were exotic. Native species diversity by site ranged from 192 on Gerard Island to 118 on Porter Island. The proportion of exotic flora was low and relatively consistent across all sites, with exotics representing between 10% and 15% of the flora at each surveyed location. Exotic species diversity was greatest on Gerard Island with 26 species (14% of the site’s flora). Shelter Cove had the highest proportion of exotics, with close to 15% exotic species. This is not surprising given that this site is attached to the mainland and is relatively more accessible to human traffic than the island sites. Fewest exotic species were recorded on Porter Island (12 species, 10% of the site’s flora), Cable Island (14 species, 11% of the site’s flora) and Borgles Island (17 species, 10% of the site’s flora). Exotic species diversity by site reflects both the level of human disturbance within and around the site and the extent to which we travelled through anthropogenic habitats during the field day. Although exotic species diversity is strongly correlated with human disturbance history, we did not cover the islands comprehensively and may have missed certain anthropogenic or significantly human-influenced habitats, meaning that the proportion of exotic species we recorded is not necessarily an exact measure of the level of disturbance and ecological integrity of a whole island.

Table 2. Native, exotic and rare species by site.

Site	Native Vascular Plant Spp.	Exotic Vascular Plant Spp.	% Exotic Plant Spp.	Rare Vascular Plant Spp.
Gerard Island	192	26	13.5%	9
Wolfes Island	176	25	14.2%	4
Phoenix Island	164	20	12.2%	5
Outer Baltee Island	162	22	13.6%	3
Borgles Island	175	17	9.7%	5
Laybold Island	133	21	15.8%	5
Porter Island	118	12	10.2%	1
Cable Island	124	14	11.3%	2
Shelter Cove	135	20	14.8%	5

Below are site summaries for each site we visited, in which we discuss anthropogenic disturbances, invasive exotic species, rare vascular plant species, incidental observations and the plant communities observed. The supplemental data containing all observations made during the survey is provided in the following excel file ‘ACDC2014_BayOfIslandsData.xls’.

3.2 Site Summaries

3.2.1 Gerard Island

Observers: Blaney, C.S.; Robinson, S.L.

Survey date: August 04, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Senecio pseudoarnica</i>	Seabeach Groundsel	S2	Sensitive	1
<i>Galium aparine</i>	Common Bedstraw	S2?	May Be At Risk	3
<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort	S2S3	Secure	2
<i>Goodyera repens</i>	Dwarf Rattlesnake-Plantain	S3	Sensitive	1
<i>Amelanchier stolonifera</i>	Running Serviceberry	S3?	Secure	1
<i>Triglochin gaspensis</i>	Gaspé Arrowgrass	S3?	Undetermined	15
<i>Eriophorum chamissonis</i>	Russet Cotton-Grass	S3S4	Secure	2
<i>Suaeda calceoliformis</i>	American Sea-Blite	S3S4	Secure	1
<i>Polygonum fowleri</i>	Fowler's Knotweed	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: One of the largest islands within the Bay of Islands project area, Gerard Island is also the most disturbed by human settlement. Settled in the late 1800s and early 1900s, the island is known to have had up to 40 inhabitants, with houses, wharfs, a road and even a school. The island is semicircular and made up of two distinct lobes (Gerard Island West and Gerard Island East) separated by a narrow isthmus. Previous surveys have noted a small number of extant dwellings clustered in the northeast of Gerard Island East. Several historical structures were noted in this area during our survey, including a dug basement with stone foundation and a rock wall. More recent human disturbance was observed in the southwestern shore of Gerard Island West where a campsite including a tent pad, fire pit and trails have been established (Figure 11). The trails showed evidence of maintenance (fresh cut trees) sometime within a year of our survey and cut wood was stacked next to the fire pit area. This camp area is situated on a rocky shore / cobble beach that would be relatively resilient to moderate recreational usage. A latrine was built nearby to service this camp site, but has since tipped over. The latrine is positioned just upslope from a coastal brackish peatland. If the latrine is to be put to use, it should be relocated to a less sensitive forested habitat where a suitable pit could be dug. We also observed a narrow path that cuts across the isthmus, which could have originated by humans or deer.

Exotic species were significant in the northeastern part of the island, where extensive clearing had taken place historically. Shrubby meadow and open White Spruce – Balsam Fir forests that had regenerated following anthropogenic clearance were easy to distinguish based on the prevalence of Colonial Bentgrass (*Agrostis capillaris*) and Sheep Sorrel (*Rumex acetosella*). Two invasive species

were noted in this area but nowhere else on the island: a small patch of Japanese Knotweed (Figure 15a), and an impressively dense patch of False Spiraea (*Sorbaria sorbifolia*; Figure 15b) that had spread in a near monoculture over about 40m x 30m and was clearly preventing tree regeneration. Fairly large white spruce were all around the patch's margins but not within. This ornamental semi-woody shrub spreads vigorously by vegetative means but does not appear to establish extensively by seed in our region. Management of the False Spiraea would require significant effort and may not be necessary as spread will likely be significantly limited by the shade of the surrounding conifer forest. The Japanese Knotweed was quite limited and unhealthy looking in the deep shade of over-topping conifers, and had been subject to heavy browsing by deer and it seemed much more feasible to eliminate by manual removal than is typically the case with the species, but removal may not be necessary as its ecological impact appears insignificant. Elsewhere on Gerard Island exotic species were mostly limited to the sparsely vegetated cobble shores and disturbed dwarf headland habitats. The moderately invasive Field Sow Thistle was fairly common over the survey site in these habitats, especially in the landward edges of cobble beaches along the coast.

b) Plant communities: The forests of Gerard Island are typical of maritime boreal forest communities, dominated by thick stands of Black Spruce and Balsam Fir, with significant areas of blowdown. Because of frequent wind/storm damage and regeneration, the composition of these forests range from even-aged to mixed-aged stands. The predominant forest community of the island is CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss, followed by CO4 Balsam Fir / Foxberry - Twinflower, and pockets of old field CO2 White Spruce - Balsam Fir/Foxberry – Twinflower. Small patches of WC1 Black spruce / Cinnamon fern / Sphagnum are common along the coast where drainage was poor.

Several coastal shrub barren community types are present on Gerard Island. Inland Black Huckleberry-dominated communities occur patchily in both the northeast and southwest, where soils are shallow or rock outcrops are present. Narrow dwarf heath headlands dominated by Black Crowberry are typical along the headlands of the western shore of the island.

The tidal and freshwater wetland habitats boost the overall species diversity of an island dominated by relatively species-poor forests. Of particular note is a large area of salt marsh, known locally as the “Mud Hole”. Typical Atlantic shore saltmarsh-to-upland vegetation zonation was observed in this area, with stands of salt tolerant cord grasses (*Spartina* spp.) grading into brackish communities dominated by Baltic Rush, Creeping Bent Grass and Red Fescue.

Scattered throughout the island's interior are several small, open, acidic bogs and fens with margins of WC1 Black Spruce / Cinnamon Fern / Sphagnum and WC6 Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Sphagnum. The large bog in the southeast portion of the island was especially well-developed and somewhat more diverse than most others observed on the islands. In addition to the dominant species typical of coastal bogs, including Black Crowberry, Tufted Clubrush, Cloudberry, Black and Dwarf Huckleberry, Lambkill and Leatherleaf, this site had good populations of three species found nowhere else in our surveys: Few-seeded Sedge (*Carex oligosperma*); Russet Cotton-grass (*Eriophorum chamissonis*; S3S4 - Secure); and Atlantic Sedge (*Carex atlantica* ssp. *atlantica*) which were not found anywhere else during our surveys. The margins of the inland and coastal wetlands are dominated by stunted Black Spruce / Northern Bayberry swamp.

The seashore of the island is a mix of rocky shore, coastal headland, saltmarsh and sandy/cobble beach. The western side of the island has large stretches of large cobble beach. The small bays and inlets around 'The Bawleen' (the large cove surrounded by Gerard Island, Phoenix Island, Stoney Island and Cap Island) have large shoreline deposits of Common Eelgrass wrack, evidence of extensive eelgrass beds in the bay.

c) Rare species: Nine rare species were found on Gerard Island, five of which occur in coastal habitats. Of particular note is the large population of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) on the cobble beach of the southwest shoreline of Gerard Island West, stretching over 60 m, with possibly over a hundred individuals and several hundred flowering stems (Figure 12). Common Bedstraw (*Galium aparine*, S2?, May Be At Risk) was found in upper beach habitats near the southern tip of East Gerard Island and the southern beach of the isthmus separating the two lobes of the island (Figure 13). Knotted Pearlwort (*Sagina nodosa* ssp. *borealis*, S2S3, Secure) was observed in patches of bare soil at the upper margins of saltmarshes near the isthmus. Patches of Gaspé Arrowgrass (*Triglochin gaspensis*, S3?, Undetermined) were frequent in the narrow saltmarsh habitats along the southern sheltered shores surrounding the Bawleen (Figure 14). American Sea-Blite (*Suaeda calceoliformis*, S3S4, Secure) and Fowler's Knotweed (*Polygonum fowleri*, S3S4, Secure) were found near the isthmus in low and upper saltmarsh habitats, respectively.

Of the non-coastal rare species, a single individual of the orchid Dwarf Rattlesnake-Plantain (*Goodyera repens*, S3, Sensitive) was in a Black Spruce / Balsam Fir forest in East Gerard Island. Running Serviceberry (*Amelanchier stolonifera*, S3?, Secure) was approximately 150 meters northeast of the Dwarf Rattlesnake-Plantain in a dry, open rock barren. Large patches of Russet Cotton-Grass (*Eriophorum chamissonis*, S3S4, Secure), a plant of coastal bogs, were present in the wet lagg zone of the large bog in the south of East Gerard Island.

d) Incidental observations: We observed three mammal, three butterfly and 36 bird species, on Gerard Island (see Appendix 2). The rock ledges in The Bawleen around Long Ledge appear to be a significant area for seals, as about 50 were resting in the area at low tide. We detected four significant breeding bird species indicative of boreal conditions: Black-backed Woodpecker, Gray Jay, Yellow-bellied Flycatcher and Boreal Chickadee. Spotted Sandpiper was also recorded. Other observed birds with provincially rare status ranks (Common Loon, Semipalmated Plover, Greater Yellowlegs, and Common Tern) were not believed to be nesting on the island.

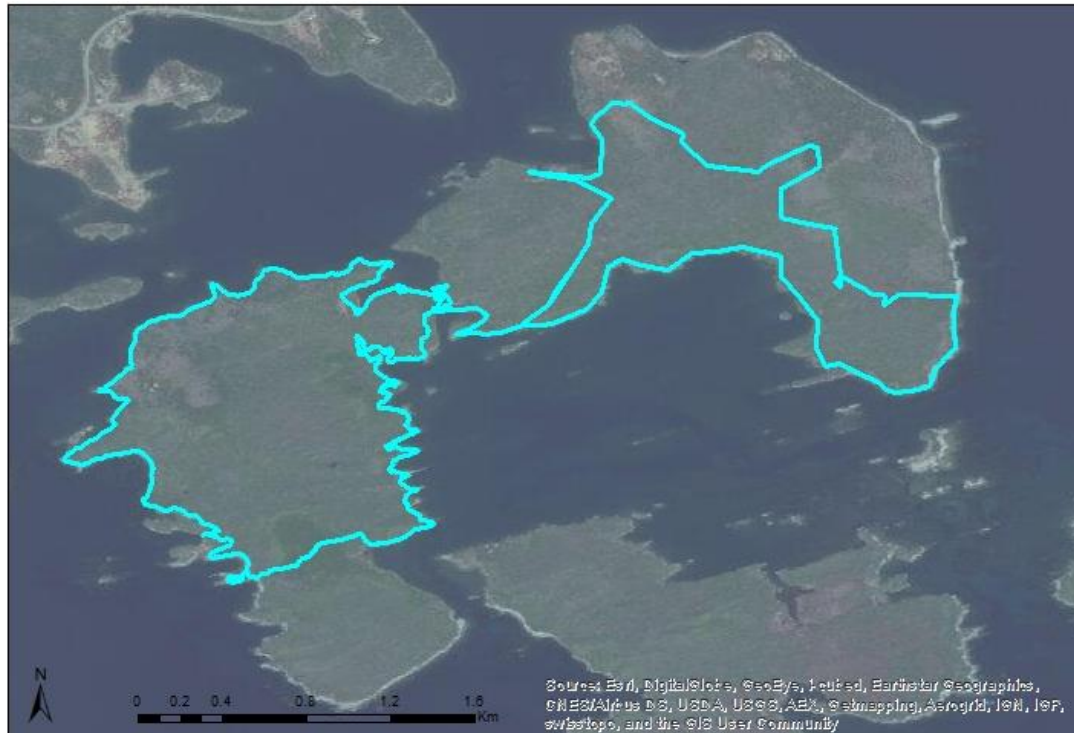


Figure 2. Site coverage during the survey of Gerard Island, NS. The blue line represents the approximate track walked during survey and is based on recorded waypoints.

3.2.2 Wolfes Island

Observers: Blaney, C.S.; Robinson, S.L.

Survey date: August 05, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-flowered Bittercress	S2	Sensitive	2
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	1
<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort	S2S3	Secure	3

Site summary

a) Anthropogenic disturbance: Wolfes Island, formerly known as Nichol Island, is the largest island investigated in this survey (352 ha). The northeast corner of Wolfes Island - north of Long Creek - is federal crown land (Transport Canada) and the rest of the island is provincial crown land. Several structures and remnants of structures were present along the north and eastern shores of the island. Visible from aerial photos, the foundation of the lightkeeper’s house is still present in the extreme northeastern tip of the island and a small cabin is located 100 m southeast of the

foundation. Two cabins are present on the north shore of the Long Creek inlet (Figure 17) and directly south on the opposite shore of the inlet there is a well-used campsite. Two other cabins were found on the north shore of a small inlet 700 m northwest of Big Sandy Cove. Some garbage was observed around the shore of the larger of the two freshwater lakes, including what may have been the shell of a refrigerator.

b) Plant communities: The island has a large interior zone of east/west orientated quartzite ridges. The vegetation of this zone alternates between shrub barren and open rock barren on the ridges to Black Spruce forest, Black Spruce swamp and shrub bog in the depressions. The island's forests are mainly limited to the depressions between ridges and a band along the coast. The Black Spruce-dominated forest is typical of CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss association, while in the wetter depressions the forest resembles WC2 — Black spruce / Lambkill – Labrador tea / Sphagnum with a strong Tamarack component. This forest also has a canopy of stunted trees in the tall shrub layer in more exposed and wetter locations.

Much of the interior of Wolfes Island is dominated by coastal barrens ranging from extensive tall shrub communities to dwarf shrub communities on exposed rock outcrops. The shrub barrens are dominated by Black Huckleberry, Lambkill, and Northern Bayberry with a significant stunted Black Spruce component (larger trees are present in the more sheltered areas). The exposed bedrock ridges have communities of Black Crowberry, Common Juniper and reindeer lichens (*Cladonia* spp.), among other lichens and mosses.

The island has a range of wetland and coastal habitats including sand and cobble beach strand, dune, coastal pond, rocky headland, cliffs, freshwater lake, salt and brackish marsh. Big Sandy Cove in the southeast boasts a spectacular sandy beach, over 600 meters in length. Along the eastern shore of the island, sandy beaches dot the coastline between the ridges of rock outcrop headland. The dunes at Big Sandy Cove were dune meadow and shrub communities dominated by American Beach Grass and Northern Bayberry, respectively. The large coastal pond behind the dunes supported a relatively diverse brackish wetland vegetation with a mix of halophytic and freshwater species. Creeping Bent Grass (*Agrostis stolonifera*), Red Fescue (*Festuca rubra*), Baltic Rush (*Juncus balticus* var. *littoralis*) and Marsh Straw Sedge (*Carex hormathodes*) were dominant around its outer margins.

c) Rare species: All the rare species observed on Wolfes Island were in coastal habitat types. Small-flowered Bittercress (*Cardamine parviflora* var. *arenicola*, S2, Sensitive; Figure 16) was along the northeastern shoreline in upper sandy/cobble beach near the forest margin. This represents only the second recorded occurrence of this species on the Atlantic shore of Nova Scotia, with the other being southwest of Halifax. Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure; Figure 16) was on bare sand near the outlet of the coastal pond in Big Sandy Cove. In the headland outcrops along the south and western shorelines of the island, large populations of Knotted Pearlwort (*Sagina nodosa* ssp. *borealis*, S2S3, Secure) were present.

A possible but not yet verified occurrence of Western Dock (*Rumex aquaticus* var. *fenestratus*) was found in a cove north of Long Creek. If the collected specimen can be identified with certainty, this discovery would represent the first confirmed record for the species Nova Scotia, but the immature state of the fruit made keying the species vs. the exotic Long-leaved Dock (*Rumex longifolius*) somewhat inconclusive, although a specialist in the genus might be able to reach a definitive identification.

d) Incidental observations: We observed one amphibian, two reptile, four mammal, two butterfly and 33 bird species on Wolfes Island (see Appendix 2). Breeding birds of conservation significance were Willet, Spotted Sandpiper, Blackpoll Warbler and Boreal Chickadee. Common Tern and Black Guillemot were also observed and likely breeding in the general area, although probably not on the island. A single Hudsonian Whimbrel was seen. This species is of significance as a migrant (S3M – Sensitive), and often feeds on berries in coastal barrens. The large barrens of Wolfes Island and other islands in the region may be important to the species. The Semipalmated Plover, Greater Yellowlegs and Solitary Sandpiper records were of presumed migrants and are of limited conservation significance.

A population of Red Admiral caterpillars were feeding on a patch of Stinging Nettle along the upper margin of a cobble beach (Figure 18). Red Admiral is a migratory species that does not overwinter in the Maritimes.



Figure 3. Site coverage during the survey of Wolfes Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.3 Phoenix Island

Observers: Blaney, C.S.; Robinson, S.L.

Survey date: August 06, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	Sensitive	1
<i>Triglochin gaspensis</i>	Gaspé Arrowgrass	S3?	Undetermined	2
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	1
<i>Polygonum fowleri</i>	Fowler's Knotweed	S3S4	Secure	1
<i>Suaeda calceoliformis</i>	Horned Sea-blite	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: Phoenix Island is situated just south of Gerard Island, with which it creates a well-protected basin, The Bawleen. Unlike the once permanently settled Gerard Island, Phoenix Island shows little sign of human disturbance. Exotics were mainly limited to coastal habitats where natural disturbances allow for the colonization of disturbance-adapted exotics. The exotic Common Brassbuttons (*Cotula coronopifolia*), was in upper saltmarsh in the north east of the island (Figure 21). This southern African native is uncommon in Nova Scotia but has been found on three other sites in the Bay of Islands Conservation Area (Hill et al., 2012). It did not appear to be a significant invasive on the site.

b) Plant communities: Similar to the other islands visited during this survey, the forests of Phoenix Island are dominated by thick stands of spruce and Balsam Fir, with significant areas of blowdown. The island's forest cover is concentrated mostly in the north and western areas and along the coast. The most typical coastal forest type on the island is CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss. Large areas of the interior in the east and southern areas of the island are dominated by Black Huckleberry, Lambkill, Northern Wild Raisin, Rhodora and Common Juniper shrub barrens. Some of the areas with significant Rhodora cover showed signs of major insect herbivory (Figure 22). The damage seemed to be caused by caterpillars of the moth Chain-dotted Geometer (*Cingilia catenaria*) (identified by John Klymko, AC CDC Zoologist). This species has been described as "locally abundant to the point of being a pest in some years, yet becoming increasingly rare over much of its former range in the Northeast" (Wagner et al., 2001).

A particularly interesting low shrub peatland with a transition to the saltmarsh called 'Goose Marsh' connects Black Duck Cove in the east to another inlet to the west (Figure 23). The sheltered cove in the eastern end of an adjacent boggy peatland supports a large saltmarsh (the largest found during our surveys) composed of Smooth Cord Grass, Salt Meadow Cordgrass, Black-Grass Rush and Seaside Goldenrod. As the saltmarsh transitions inland to shrub bog, species from the two distinct habitats co-occur. This type of ecotone (saltmarsh to bog) is uncommon in Nova Scotia. The

adjacent Sweet Gale, Leatherleaf, huckleberry (*Gaylussacia baccata* and *G. bigeloviana*), and Northern Bayberry-dominated shrub bog sits between two bedrock ridges running west to east.

North of the peatland near Black Duck Cove a large patch of Common Eelgrass has washed up into the upper salt and brackish marshes. The thick layers of eelgrass have created bare patches of highly nutrified soil leaving opportunities for disturbance adapted species. The exotic Black Nightshade (*Solanum* cf. *ptychantum*, or possibly *S. nigrum*), a species typical of richer sites, was present here but found nowhere else during the Bay of Islands surveys. The interior of Phoenix Island has several small, open, acidic bogs and fens with margins of WC1 Black Spruce / Cinnamon Fern / Sphagnum and WC6 Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Sphagnum.

The southern tip of the island hosts an extensive dwarf shrub barren of Black Crowberry, Common Juniper, Northern Bayberry, Eastern Teaberry, Three-Toothed Cinquefoil and reindeer lichens (Figure 24). Green Adder's-Mouth orchid was scattered throughout the barren. Dwarf shrub barren also occurs as a coastal fringe seaward of conifer woodland on exposed headlands and cliffs.

c) Rare species: Five rare coast-associated species were found on Phoenix Island. One large Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) with many flowering stems was in the upper cobble beach in Phoenix Cove. Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure) and Fowler's Knotweed (*Polygonum fowleri*, S3S4, Secure) were in upper cobble beach habitat in the northeastern part of the island, north of Black Duck Cove. American Sea-Blite (*Suaeda calceoliformis*, S3S4, Secure) was common in Goose Marsh, at the north east end of island. Gaspé Arrowgrass (*Triglochin gaspensis*, S3?, Undetermined) was also found in Goose Marsh and Phoenix Cove in lower saltmarsh habitat.

d) Incidental observations: We observed two reptile, three mammal and 27 bird species, on Phoenix Island (see Appendix 2). Bird species of conservation significance were: Gray Jay, Blackpoll Warbler, Boreal Chickadee, Willet and Spotted Sandpiper. Common Tern was present nearby and likely breeding in the general area, though probably not on the island, and Semipalmated Plover and Greater Yellowlegs were considered to be strictly migrants on the island and of limited conservation significance.

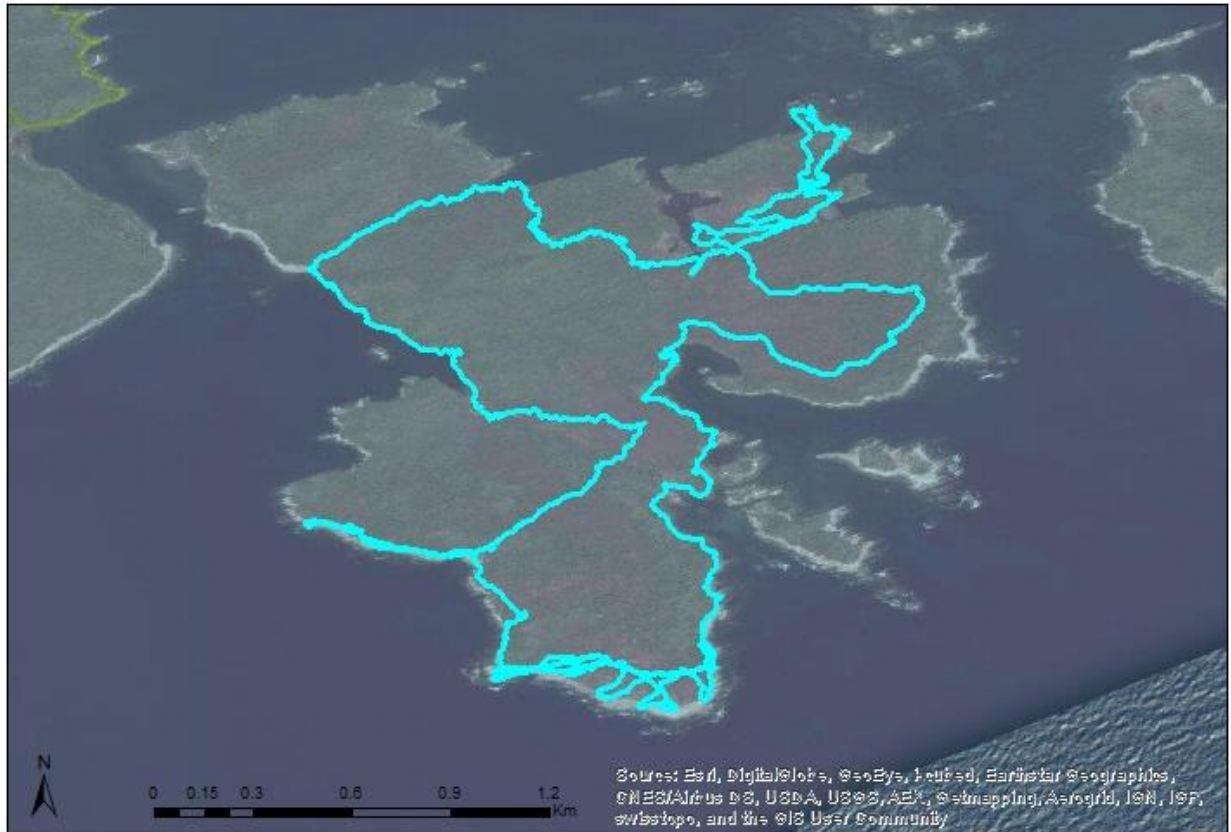


Figure 4. Site coverage during the survey of Phoenix Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.4 Outer Baltee Island

Observers: Blaney, C.S.; Robinson, S.L.

Survey date: August 07, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-flowered Bittercress	S2	Sensitive	2
<i>Galium aparine</i>	Common Bedstraw	S2?	May Be At Risk	3
<i>Rumex fuginus</i>	Tierra del Fuego Dock	S3S4	Secure	2

Site summary

a) Anthropogenic disturbance: With no permanent historical settlement and little current human usage, Outer Baltee Island is relatively intact ecologically. Few signs of historical or current human disturbance were noted during the surveys aside from an informal camping area on the beach near Romkeys Point, and a meadow with a high proportion of exotic grasses and herbs on Baltee Head. The meadow is likely a remnant of historical clearing and possibly grazing in the area. Exotic species were otherwise limited to coastal areas. Though not directly anthropogenic in origin, inland incursion of cobble beaches along the western shore of the island is encroaching upon forest edges (Figure 27). The movement of cobble landward is engulfing the understory vegetation and will likely result in the loss of some of the island's forested habitat, with this process likely to continue and/or increase with anthropogenic climate change and resulting sea level rise.

b) Plant communities: The majority of Outer Baltee Island is composed of medium to tall shrub barrens dominated by Black Huckleberry, Lambkill, Northern Bayberry, and Northern Wild Raisin with stunted Black Spruce in the wind sheltered areas. Patches of typical CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss forest type are scattered throughout the immediate coastal zone with larger patches in the northeast. An area of CO2 White Spruce – Balsam Fir / Foxberry – Twinflower forest occupies a headland at Romkeys Point, north of the sandy beach. Several small shrub bogs occur throughout the interior of the island. Pockets of CO5 White Birch – Balsam Fir / Foxberry – Wood Aster and WC2 Black Spruce / Lambkill – Labrador Tea / Sphagnum are commonly scattered in the north and western parts of the island.

The seashore of the island is an assortment of cobble beaches, rocky headlands, and cliffs, small pockets of saltmarsh and sandy beach. Several fine sand beaches are present along the eastern shore of Outer Baltee. The largest of these (Murphy's Cove) is a wide low-gradient beach with American Beach Grass and Northern Bayberry vegetated dunes.

Two large coastal ponds occur in the southern half of the island. Both ponds are separated by the open ocean by cobble beaches. The shallow waters support dense populations of Sea Ditchgrass and brackish marsh with emergent stands of Softstem Bulrush (Figure 25).

The two southern lobes of the island have typical Black Crowberry dwarf shrub barren communities along the island's most wind exposed coast. The vegetation in the western-most dwarf shrub barren showed considerable wind and salt spray damage.

A large freshwater lake lies in the interior of Outer Baltee (Figure 26). The shallows of the lake support Variegated Pond-lily and Water Lobelia. Leatherleaf – Black Huckleberry shrub thicket communities form a narrow zone at the upland edge of the lake shore.

c) Rare species: Three rare species were observed on Outer Baltee, all in the vicinity of Murphy's Cove. The upper edge of cobble and small boulder beach provided habitat for two populations of

Small-flowered Bittercress (*Cardamine parviflora* var. *arenicola*, S2, Sensitive) and one location for Common Bedstraw (*Galium aparine*, S2?, May Be At Risk). Common Bedstraw was also on the lee slope of low sand dune and upper beach habitats. Two locations of Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure) were around the upper sand beach and in the outlet channel from the backdune pond of Murphy’s Cove.

d) Incidental observations:

We observed one amphibian, two mammal, one butterfly and 23 bird species on Outer Baltee Island (see Appendix 2). The only breeding bird species of conservation concern observed were Willet and Spotted Sandpiper. Semipalmated Plover and Solitary Sandpiper observations were considered to represent migrants on the island and to be of limited conservation significance.



Figure 5. Site coverage during the survey of Outer Baltee Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.5 Borgles Island

Observers: Mazerolle, D.M.; Belliveau, A.G.

Survey date: August 19, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	Sensitive	2
<i>Galium aparine</i>	Common Bedstraw	S2?	May Be At Risk	2
<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort	S2S3	Secure	1
<i>Lycopodium complanatum</i>	Northern Clubmoss	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: Borgles Island was nearly developed as a commercial resort in the 1970s (Brian Murphy pers. comm. 2014) and signs of partial development efforts are still somewhat evident today, including over 3.5 km of cleared or bulldozed roads and a long, narrow cleared area that was meant for an airfield (Brian Murphy pers. comm. 2014). The abandoned airfield, located in a peatland in the southern part of the island and oriented in an east-west direction, is barely perceptible today. Despite the fairly regular use of the island for wilderness camping and for deer hunting, none of the old roads – now more-or-less trails – show signs of recent maintenance (Figure 28). One sheltered area along the island’s northern coast was unusually flat and dominated by white spruce and few understory species. This is likely the location of a historically cleared area and sheep pasture of the late 1800s. Historic geological maps by Faribault in 1896-97 appear to confirm the presence of several structures in this area. No abandoned camp/cottage sites were observed during 2014 field work, however the Faribault maps indicate that a few are or were present in the northwest and northeast corners of the island. The remnants of an old dock and a few small structures (possibly fishing shacks or storage sheds) were at the southeast end of Deep Cove (Figure 29). A recently cleared footpath was also found in this area, running less than 200 m from the south shore of Deep Cove to the small lake in the island’s southwest section. At least five wilderness camping sites were found on Borgles Island, with two showing recent signs of tree and brush clearing for tenting space and firewood. One in particular, located near the northwestern tip, is a fairly large camping site with substantial amounts of litter and is situated directly behind two patches of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) on a cobbly shore. The presence of this larger camping site could result in a shore that is more prone to trampling and instability due to reduced vegetation, and presents a conservation management issue. Throughout the island, exotic species were mostly limited to the sparsely vegetated cobble shores and along the bulldozed sections of old road.

b) Plant communities: The forests of Borgles Island are typical of maritime boreal forest communities, dominated by thick stands of spruce and balsam fir, with significant areas of blowdown. Because of frequent wind/storm and insect damage and regeneration, the composition

of these forests range from even-aged to mixed-aged stands. The predominant forest community observed in the northern half of the island is CO4 Balsam Fir / Foxberry – Twinflower, with one pocket of OF1 White Spruce / Aster – Goldenrod / Shaggy Moss along the northern shore. The most prevalent forest communities in the island's southern half are CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss, CO2 White Spruce – Balsam Fir / Foxberry – Twinflower. Small stands of CO5 White Birch – Balsam Fir / Foxberry – Wood Aster and WC2 Black Spruce / Lambkill – Labrador Tea / Sphagnum are also commonly scattered in this part of the island.

Several coastal and inland shrub barren community types are present on Borgles Island. Inland Black Huckleberry dominated communities occupy a significant portion of the island's southern half. The impressive coastal barren which spans over 500 m along the south side of Tuckers Head supports extensive communities characterized by Black Crowberry, Ground Juniper, dwarfed Northern Bayberry and Lambkill (Figure 31).

Though relatively species-poor forest habitats are most prevalent, the island's species diversity is significantly increased by the presence of tidal and freshwater wetland habitats as well as various transitional ecotones. The most significant tidal wetlands are small salt marshes scattered in the deeper, narrower coves of the western shore and are characterized by narrow bands of cord grass (*Spartina spp.*) grading up into Black-grass Rush, Baltic Rush, and Seaside Goldenrod. The northern half of Borgles Island contains a complex of several small, open, acidic bogs and fens with margins of WC1 Black Spruce / Cinnamon Fern / Sphagnum and WC6 Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Sphagnum. The open areas of these wetlands are dominated by dwarfed Black Spruce and Northern Bayberry, Lambkill and Leatherleaf along shrubbier margins, and Tawny Cottongrass, White Beakrush, Boreal Bog Sedge in wetter, more open graminoid sections. A larger open peatland supporting similar communities was also observed east of the small lake in the island's southern half. Areas along waterways or barrier beach ponds are usually characterized by Saltmarsh Spikerush, Bluejoint Reed Grass, and Softstem Bulrush.

The seashore of the island is an assortment of rocky shores, coastal headlands, tidal wetlands and sand and/or cobble beaches. The southwest-facing coast and northeastern tip are mostly cliff and rocky shore with varying amounts of dwarf shrub-dominated coastal barrens but otherwise mostly deprived from typical seashore vegetation. The rest of the island is comprised of gently to moderately sloping cobble, sand, or bedrock shores, and often vegetated with Beach Pea, Seaside Plantain, and Seaside Goldenrod, with an upland border of Black Crowberry, Red Fescue, Northern Bayberry, and Three-leaved Rattlesnakeroot.

c) Rare species: Four rare vascular plant species were found on Borgles Island, three of which are located on or along the coast. Of particular note are the two small populations of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) on a cobble beach shoreline near the island's northwestern tip. Small patches of Common Bedstraw (*Galium aparine*, S2?, May Be At Risk) were on the higher margins of cobble beach strands at the northwestern tip and on the east side of Whale Cove. Knotted Pearlwort (*Sagina nodosa ssp. borealis*, S2S3, Secure) was in small peaty bedrock crevices on an extensive exposed bedrock headland at Tuckers Head. Northern Clubmoss (*Lycopodium complanatum*, S3S4, Secure), a species not seen elsewhere in these islands during

2014 fieldwork, was observed in the northern half of the island along the old bulldozed road in fairly open, dry gravelly conditions.

d) Incidental observations: We observed one reptile, one mammal, one butterfly and 3 bird species, on Borgles Island (see Appendix 2). One bird species of conservation concern (Boreal Chickadee) was observed.

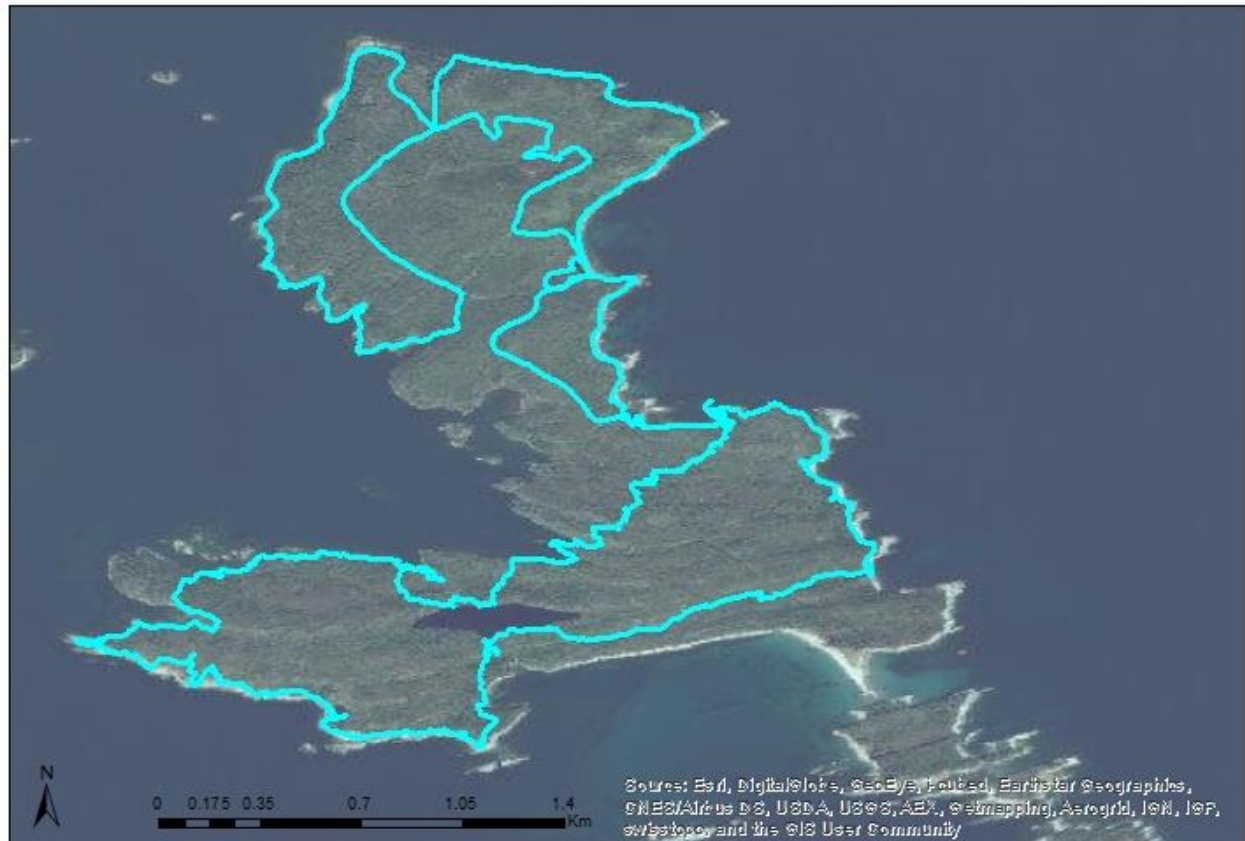


Figure 6. Site coverage during the survey of Borgles Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.6 Laybold Island

Observers: Mazerolle, D.M.; Belliveau, A.G.

Survey date: August 20, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Carex vacillans</i>	Estuarine Sedge	S1S3	Undetermined	1
<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	Sensitive	2
<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort	S2S3	Secure	2
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	3
<i>Suaeda calceoliformis</i>	Horned Sea-blite	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: Laybold Island, actually consisting of a pair of islands, is among the smallest in the chain of Eastern Shore islands surveyed in 2014. A small area along the central portion of the northwestern shore appears to have been historically cleared, based on the occurrence of white spruce forests, limited forest understory species diversity, and the presence of several unusual exotic species in the immediate vicinity. Although historic geological maps by Faribault in 1896-97 appear to confirm the presence of several structures in this area, no currently evident camp/cabin sites were observed. A single fairly well-used wilderness camping site was noted from the northeastern cove of the larger island. A cleared footpath crossing the width of the island was also observed in this area. This path may be the result of recent disturbance, or a maintained relic from the historically cleared area to the west. This footpath is not visible in aerial or satellite imagery, and further investigation is needed to reveal its full extent and ecological impact on the island. Tree cover that is becoming established in shrub-dominated barrens across some of the larger island’s interior suggests at least a brief history of fire disturbance, perhaps originating from activities related to historic structures.

b) Plant communities: The wind-swept forest communities of Laybold Island are dominated along the coast by varying stages of Black Spruce / Balsam Fir forest and White Spruce forest, and by thicker stands of Black Spruce in wetter sites. White Spruce stands, which would mostly classify as CO2 White Spruce – Balsam Fir / Foxberry / Twinflower and OF1 White Spruce / Aster – Goldenrod / Shaggy Moss, are significantly affected by insect damage and blowdown. Black Spruce / Balsam Fir stands are characterized by the SP5 Black Spruce / Lambkill / Bracken communities, with wetter sites tending more towards densely-forested stunted WC2 Black Spruce / Lambkill – Labrador Tea / Sphagnum and WC1 Black Spruce / Cinnamon Fern / Sphagnum.

Shrub-dominated barren and semi-barren community types are fairly extensive in the eastern half of the larger island. These are mostly dominated by tall shrubs like Black Huckleberry, Mountain Holly, and Northern Wild Raisin, and are peppered with Black Spruce and gradually grading into

forest. Dwarf headland barrens, though present, are not a significant component of the vegetation on this island.

Freshwater wetland habitats are present in the form of a few coastal pond wetlands, wet coniferous forests and associated open bogs. A few smaller, shrub-dominated and somewhat isolated pockets of hydric soil between small ridges in the interior also support wetland communities. Coastal pond margins are mainly vegetated with Bluejoint Reed Grass, Seaside Goldenrod, and Prairie Cord Grass, and occasionally grade upwards into open sphagnum bog composed of Leatherleaf, Northern Bayberry, and Northern Pitcher Plant. In two instances at the southern end of the larger island, open bogs further grade into the wet coniferous forests described above. Small isolated pockets of less organic shrub-dominated wetlands are also uncommonly scattered across the island and are composed of shorter shrubs like Labrador Tea and Leatherleaf. The northernmost cove of the larger Laybold Island holds a fairly large freshwater coastal pond and an open, mainly graminoid fen dominated by Boreal Bog Sedge (*Carex magellanica* ssp. *irrigua*), White Beakrush (*Rhynchospora alba*) and Sweet Gale (Figure 40).

Several tidal wetlands were noted from the more sheltered eastern side of the larger island, especially within the narrows between the two Laybold islands. They are mostly characterized by lower margins of Smooth Cord Grass grading up into wider bands of Softstem Bulrush, Baltic Rush, Salt Marsh Spikerush, Wild Radish, Broad-leaved Cattail and Seaside Goldenrod (Figure 42). At a few locations, these brackish wetlands grade inland into Bluejoint Reed Grass meadows. Common Eelgrass stands are present in the northernmost cove of Laybold Island, as well as in Porters Passage and Frenchmans Cove in the narrows between the two Laybold islands.

The seashore of the island is an assortment of bedrock shore, coarse gravel strands, saltmarsh (described above) and sandy beach. Most of the northwest-facing shore is an abrupt narrow bedrock coastline with little vegetation other than scattered Beach Pea, Seaside Plantain, Seaside Goldenrod, and occasional Roseroot, and an upland rim of Black Crowberry, Red Fescue, Northern Bayberry, and Three-leaved Rattlesnakeroot. Wider, more extensive and scoured bedrock shores are found along many of the south-facing coasts and are typically even less vegetated. Strands of cobble are also scattered near the southern and northeastern ends of the larger island, and are sparsely vegetated by Field Sow Thistle, Beach Pea, and Seaside Plantain.

c) Rare species: Five provincially rare vascular plant species were observed on Laybold Island, all of which are associated with coastal shoreline habitat. Of particular interest are the two small populations of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) each located on gravel strands just south of small coastal ponds at the southern end of the island. One included approximately 65 individuals and was significantly larger than the other, which had only 4 individuals.

At the north end of the larger Laybold Island, a small population of Estuarine Sedge (*Carex vacillans*, S1S3, Undetermined) was on open sphagnum at the interface between brackish marsh and fen (Figure 43). This species is poorly understood in Nova Scotia, as indicated by its current S1S3 provincial rank. Estuarine Sedge is a stabilized hybrid between Black Sedge (*Carex nigra*) and

Chaffy Sedge (*Carex paleacea*) and only relatively recently distinguished from *Carex recta*. Some or many Nova Scotia records of the latter may actually be *C. vacillans*.

Another specialist of open coastal habitats, Knotted Pearlwort (*Sagina nodosa* ssp. *borealis*, S2S3, Secure), was observed in narrow peaty cracks in the bedrock fields of Gunning Point near the southern tip of the larger Laybold island (Figure 39).

A rare saltmarsh halophyte, Horned Sea-blite (*Suaeda calceoliformis*, S3S4, Secure), was noted from a single location on an unvegetated cobble and gravel strand on the western shore of the smaller Laybold island (Figure 44).

Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure) was also observed at two sites at the north end the larger island, where large numbers of individuals were discovered on open brackish organic mud and sand.

d) Incidental observations: We observed one mammal and two bird species, on Laybold Island (see Appendix 2). One bird species of conservation concern (Common Tern) was observed, although it was not believed to be nesting on the island itself.

Long-dead and possibly very old partially submerged tree stumps– previously noted by Hill et al. (2012) and referred to as “drowned forest” – were noted along a sand and cobble shore at the northeastern tip of the larger island.



Figure 7. Site coverage during the survey of Laybold Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.7 Porter Island

Observers: Mazerolle, D.M.; Belliveau, A.G.

Survey date: August 20, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: With an approximate area of 49.3 hectares, Porter Island is, along with Laybold Island, among the smallest islands surveyed in 2014. It is also among the most exposed to onshore and westerly winds and would have been unsuitable for any historic development, given its steep topography and extensive bedrock outcrops. As such, it is relatively undisturbed (although anthropogenic fires could have contributed to the barren and semi-barren conditions across much of the island’s more elevated and rocky inland portion). A few buildings were present on the eastern tip and noted on historic geological maps by Faribault in 1896-97. No trails, current camp/cabin sites or wilderness camping sites were observed. A small hunting stand overlooking the waters of Porters Passage was along the island’s east shore (Figure 35). A large, monument-like cross was noted from the northwestern tip, and somewhat weathered, deeply chiselled letters “_EB” were engraved on bedrock on the island’s north shore.

b) Plant communities: The forests of Porter Island are dominated by thick stands of spruce and Balsam Fir, with significant areas of blowdown. Because of frequent wind/storm damage and the prevalence of very extensive apparently fire-driven shrub barrens in the interior, well-developed forested communities are largely restricted to mesic valley slopes and bottoms near the coast (especially in the western half of the island), where topography (valleys, ravines, depressions between bedrock ridges) offers greater shelter from onshore and westerly winds. The predominant forest community along slopes is SP5 Black Spruce / Lambkill / Bracken, and lowlands are characterized by WC6 Balsam Fir / Cinnamon Fern – Three Seeded Sedge / Sphagnum. Patches of CO2 White Spruce – Balsam Fir / Foxberry / Twinflower are also scattered along the northern and western coasts. Forest on along the island’s southern coast is predominantly CO2 White Spruce – Balsam Fir / Foxberry / Twinflower and CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss. Many inland forests appear structurally intact and multi-aged, suggesting that much of the island has never been harvested or cleared.

At least two shrub barren community types are present on Porter Island. Black Huckleberry, Northern Wild Raisin, Lambkill and Green Alder-dominated communities are found throughout the island and are particularly extensive throughout its southern half (Figure 38). These intergrade between sparsely treed black spruce forests and small areas of exposed bedrock. Narrow dwarf

heath headlands dominated by Black Crowberry are typical of the southern and western shores of the island.

Freshwater wetlands habitats are uncommon on this island and are mostly limited to a few valley lowlands and pockets of hydric soil between bedrock ridges. Lowlands are predominantly represented by WC6 Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Sphagnum. The few pockets of bedrock-defined wetlands are of nearly the same species composition as adjacent forest and barrens, especially within the ericaceous shrub barrens of the interior.

Tidal wetlands are in the form of small salt marshes scattered in some of the deeper, narrower coves of the western and northern shores and on shores sheltered by prominent bedrock ridges along the northern and southern coast (Figure 36). They are mostly characterized by narrow bands of cord grass (*Spartina* spp.), Black-grass Rush, Baltic Rush, Red Fescue and Seaside Goldenrod, sometimes grading into Bluejoint Reed Grass and Marsh Skullcap meadows, which occasionally in turn grade into the coniferous wetland forest described above. The bedrock-defined tidal wetlands are significantly more developed, as indicated by the presence of all three cord grasses along with many other halophytes. Significant and extensive stands of Common Eelgrass are present in the shallow waters along the island's north shore and in Porter's Passage between Porter and Laybold islands (Figure 37).

The island's shores are predominantly of exposed bedrock, even in the sheltered, shallower northern bay. Deeper, narrower coves support the more extensively developed tidal and brackish wetlands described above. With the exception of a few sandy or muddy coves, most of the island's coastline is fairly rugged and vegetated with scattered Beach Pea, Seaside Plantain and Seaside Goldenrod, with a narrow upland border of Black Crowberry, Red Fescue, Northern Bayberry, and Three-leaved Rattlesnakeroot.

c) Rare species: Coastal and inland habitats found on this small island are relatively unsuitable for most of the provincially rare plant species found on other nearby islands. A single provincially rare species, Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure), was observed at a single location in the sandy mucky upper margin of a sheltered cove.

d) Incidental observations: We observed one mammal and two bird species on Porter Island (see Appendix 2). One bird species of conservation concern (a pair of Boreal Chickadees) was observed.

A "drowned forest" (long dead and perhaps very old tree stumps in an area now flooded, here a mucky cobble shore) was observed in a cove on the island's northwestern shore.



Figure 8. Site coverage during the survey of Porter Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.8 Cable Island

Observers: Mazerolle, D.M.; Belliveau, A.G.

Survey date: August 21, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort	S2S3	Secure	1
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	2

Site summary

a) Anthropogenic disturbance: This privately owned island, measures roughly 92.61 hectares in area with a total shoreline of over 4.6 kilometers. The island sits along the eastern side of Owl Head Bay, where it receives shelter from the mainland to the west and Wolfes Island to the east. Despite

its fairly large size and sheltered situation, the island has been largely spared from recreational and residential development. Settlement has likely been precluded by the difficult topography, which rises nearly 40m above sea-level at the island's southwest end and features successive abrupt bedrock ridges.

Anthropogenic disturbance on the island is localized and was only noted at two locations. Sandy Cove, a sheltered sandy beach located on the island's east shore, appears to be commonly used as a camping area (Figure 45). Two fire pits, a picnic table and scattered litter were found at this site. In one area just above the sandy beach, several trees have been cut to clear space for tents and shelters (Figure 46). On the island's west shore, a small well-maintained cottage was found in a cove north of Cable Point (Figure 50). This structure, which was most likely brought on a barge, is situated just above the boulder and cobble shore within reach of storm waves. An old outhouse in disrepair was also near the cottage.

b) Plant communities: The forests of Cable Island for the most part consist of Black Spruce, White Spruce and Balsam fir-dominated stands of young to intermediate age. Much of the forest along the island's periphery is characterized by White Spruce, while Black Spruce is dominant in the interior, particularly in poorly drained areas between bedrock ridges. The most prevalent forest communities are CO1 Black Spruce – Balsam Fir / Foxberry / Plume Moss and CO2 White Spruce – Balsam Fir / Foxberry – Twinflower. Parts of the interior's forested and semi-barren areas are also fairly well represented by SP5 Black Spruce / Lambkill / Bracken and OW2 Black Spruce / Lambkill / Reindeer Lichen vegetation types. Small pockets of WC2 Black Spruce / Lambkill – Labrador Tea / Sphagnum sp., often with dense carpets of Three-seeded Sedge are scattered throughout. In several areas along the prominent headland of the islands south side, the forest community is perhaps best described as intermediate between CO2 White Spruce – Balsam Fir / Foxberry – Twinflower and CO2a White Spruce / Black Crowberry Headland variant. Several coastal and interior forest stands on the island have been severely impacted by wind disturbance and are presently dominated by regenerating Balsam fir. Stand age on this island is evidently limited by frequent blowdown which is a result of site exposure to wind and shallow or rocky soils.

The Sandy Cove area is of particular significance, as it holds several communities that were not found elsewhere on the island. The cove shelters a wide low-gradient fine sand beach, which grades into narrow bands of American Beach Grass dune and CO7 White Spruce – Bayberry coastal dune forest with Wavy Hair Grass and Lowbush Blueberry understory (Figure 47). Sheltered behind this dune are a tannin-rich bog pond and acidic basin bog dominated by Leatherleaf, Sweet Gale, Tawny Cottongrass, Lambkill and White Beakrush. The basin bog at this location supports a number of species not seen elsewhere on the island.

With the notable exception of Sandy Cove, a smaller beach and dune complex at the northeastern tip of the island, and a few other very small coves sheltering cobble beaches, the island's shoreline is very abrupt, consisting almost entirely of exposed bedrock outcrops and boulders. The island's southern shore features an impressive steeply sloping exposed rock face which extends over 600m and rises over 20m above sea level in some areas (Figure 48). The upper edge of this rock face and the parallel ridges that are found further upslope beyond it support various shrub barren communities, including Black Crowberry / Common Juniper / dwarfed Northern Bayberry

communities which grade upslope to dense Black Huckleberry-dominated barren. Similar shrub barren communities are also common further inland, typically found atop exposed bedrock ridges (Figure 49).

Taller shrub barren communities are also common and locally extensive throughout the island's interior (Figure 51). These communities are found in a wide variety of hydrological conditions, from dry well-drained areas to mesic and slightly peaty sites, and are composed of various assemblages of Black Huckleberry, Bayberry, Lambkill, Common Juniper, Northern Wild Raisin and Purple Chokeberry.

c) Rare species: Only two provincially rare vascular plant species were observed on Cable Island. A very small population of Knotted Pearlwort (*Sagina nodosa* ssp. *borealis*, S2S3, Secure; two small individuals seen), was discovered in the island's southeast end, in a peaty bedrock crevice above high tide but within reach of sea spray. Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure) was also recorded at two locations at the south end of Sandy Cove, where it was found growing on sand and wrack deposits along a bedrock and cobble shore.

d) Incidental observations: We observed three mammal and seven bird species, on Cable Island (see Appendix 2). Two bird species of conservation concern were observed (Boreal Chickadee and Common Tern, the latter nesting in a colony of at least 50 birds on a small rocky island 700m due north of the island's northeastern tip).



Figure 9. Site coverage during the survey of Cable Island, NS. The blue line is the track walked during survey recorded by handheld GPS.

3.2.9 Shelter Cove

Observers: Mazerolle, D.M.; Belliveau, A.G.

Survey date: August 22, 2014

Rare species

Scientific Name	Common Name	S-rank	GS Rank	# records
<i>Carex viridula</i> ssp. <i>brachyrrhyncha</i>	Greenish Sedge	S1	May Be At Risk	1
<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	Sensitive	1
<i>Galium aparine</i>	Common Bedstraw	S2?	May Be At Risk	1
<i>Triglochin gaspensis</i>	Gaspé Arrowgrass	S3?	Undetermined	1
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	1

Site summary

a) Anthropogenic disturbance: Acquired by the Nova Scotia Nature Trust in 2006, the Shelter Cove Wilderness Sanctuary protects roughly 57 hectares of land and 7 km of coastline at the end of the narrow peninsula southeast of Tangier. The protected area’s namesake is a deeply indented cove which has a long history of providing shelter to seafarers and remains a popular anchorage to this day. This natural area is relatively intact, with few signs of significant historical or recent anthropogenic disturbance. Difficult terrain (including the narrow salt marsh which connects the lower end of the peninsula to the mainland) has likely played a major role in preventing the establishment of roads in the area.

A popular wilderness recreation site, the sanctuary is evidently quite frequented by hikers, boaters and campers. A well-maintained trail, with Nature Trust interpretation panels, cuts across the southern part of the peninsula to the south shore of Sandy Cove Point. A number of small footpaths were also found during surveys, several of which were seen on the peninsula separating Shelter Cove from Eastern Sandy Cove. Although the impact of these footpaths is generally minor, foot traffic on the Sandy Cove / Eastern Sandy Cove tombolo dune is of greater concern, as dune communities are much more sensitive to this type of disturbance. If left unchecked, impacts on vegetation caused by these activities could lead to a weakening of the dune and a greater susceptibility to wind and overwash damage during major storms.

Several well-used campsites were found scattered along the shores of Eastern Sandy Cove, Sandy Cove, and Bulls Gut. These varied in size from small areas with trampled vegetation to well-used 20 m-wide areas with cut trees, cleared vegetation, fire pits, benches and tables (Figure 55).

At present, the most pressing management issue in this protected area may be the large population of Woodland Angelica discovered south of Shelter Cove. Detected at numerous locations, this highly invasive introduced plant species was found to be particularly abundant along the dune at Eastern Sandy Cove, where it has formed a fairly continuous dense band that extends over 200 m (see figure 58). Another invasive species, Rugosa Rose is also established in the middle of the tombolo dune complex between Sandy Cove and Eastern Sandy Cove. This species often forms pure stands at the upper margin of beaches and on dunes. Only a few stems were found and these were removed upon detection during the survey. Because Rugosa Rose can easily persist and re-sprout from sturdy root systems, the site should, however, be monitored for this species in the future. Field Sow Thistle, a moderately invasive species that often colonizes dunes and upper salt marshes, has also become locally common in this same area.

b) Plant communities: Forested communities at Shelter Cove are characteristic of Nova Scotia's maritime Boreal Forest and similar to those observed throughout much of the Bay of Islands Wilderness Area. White Spruce and Balsam Fir are most prevalent here, with Black Spruce also being dominant in several areas, particularly inland and/or where drainage is poor. Balsam Fir is co-dominant in almost all stands and is often a major component of the shrub stratum. It also dominates the regeneration in blowdown areas. The most prevalent forest communities near the coast are CO2 White spruce – Balsam fir / Foxberry – Twinflower, followed by CO1 – Black spruce – Balsam fir / Foxberry / Plume moss and CO4 – Balsam fir / Foxberry – Twinflower. Small stands of WC6 – Balsam fir / Cinnamon fern – Three-seeded Sedge / Sphagnum, wet Balsam Fir – Black Spruce / Three-seeded Sedge – Creeping Snowberry – Sphagnum and CO2a White Spruce / Black Crowberry Headland variant are also commonly scattered. Further inland in the northern part of the surveyed area, forests are less coastal in nature and are represented by a mix of SP5 Black Spruce / Lambkill / Bracken, and WC1 Black Spruce / Cinnamon Fern / Sphagnum in wetter areas like seeps and depressions. A few small pockets of SH8 Balsam fir / Wood Fern / Schreber's Moss were also observed in sheltered areas with a more developed soil profile. Although most stands throughout the Shelter Cove area are young or intermediate in age due to frequent wind disturbance and regeneration, a small number of more mature White Spruce stands with fern-dominated understories were found. Based on average diameter at breast height (>20 cm), these stands would appear to be among the oldest seen during Bay of Islands Coastal Wilderness surveys carried out by Hill et al. in 2011 and the AC CDC in 2014.

Shrub barrens of Black Huckleberry, Lambkill, Northern Wild Raisin, Mountain Holly, and regenerating Balsam Fir are common in the semi-barren interior of the Porcupine Hill area and along the peninsula separating Shelter Cove and Eastern Sandy Cove. A few small examples of low coastal shrub barren communities dominated by Black Crowberry, Common Juniper, Lowbush Blueberry and Wavy Hair Grass were also observed at Sandy Cove Point, Porcupine Point, and along the northern shore of Eastern Sandy Cove.

The 250-long tombolo dune linking Sandy Cove Point to the mainland supports CO7 White spruce / Bayberry coastal dune forest as well as American Beachgrass – Reindeer Lichen – Northern Bayberry – Black Crowberry dune communities (Figure 53) and a dune slack brackish marsh

dominated by Large Cranberry, Sweet Gale, Baltic Rush and Saltmarsh Spikerush. These communities were not seen elsewhere during surveys at Shelter Cove.

Shores along the Shelter Cove Wilderness Sanctuary are almost entirely of rock outcrop, low sea cliffs and cobble or boulder shore. A few small coves along the south shore of Shelter Cove provide sufficient shelter to support small saltmarsh communities mainly composed of Smooth Cord Grass, Salt Meadow Cordgrass, Black-Grass Rush and Seaside Goldenrod.

c) Rare species: Four provincially rare coastal species were discovered at this site. The most noteworthy finding was a small population of a globally rare dwarf subspecies of Greenish Sedge (*Carex viridula* ssp. *brachyrrhyncha*, S1, May Be At Risk), Figure 57. This very rare subspecies of exposed coastal shores was growing in a peaty crevice on a shoreline bedrock outcrop at Bulls Gut. The pockets of cobble and gravel beach along the south shore of Eastern sandy Cove supported small populations of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) and Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure). A small patch of Gaspé Arrowgrass (*Triglochin gaspensis*, S3?, Undetermined) was also discovered on fairly open organic peaty salt marsh mud in a small cove on the south shore of Shelter Cove.

The local abundance of what appears to be a hybrid dogwood (*Cornus x intermedia*) resulting from the crossing of the common Bunchberry (*Cornus canadensis*) and the provincially rare Swedish Bunchberry (*Cornus suecica*, S1S2, Sensitive) is also a botanically interesting occurrence (Figure 54). A large population of plants that appear to combine the characteristics of these two species was found on the tombolo dune at Sandy Cove and at several other nearby locations.

d) Incidental observations: We observed five mammal and four bird species, at Shelter Cove (see Appendix 2). Two bird species of conservation concern (Boreal Chickadee and Common Tern) were observed, with the latter not believed to be nesting at the site.

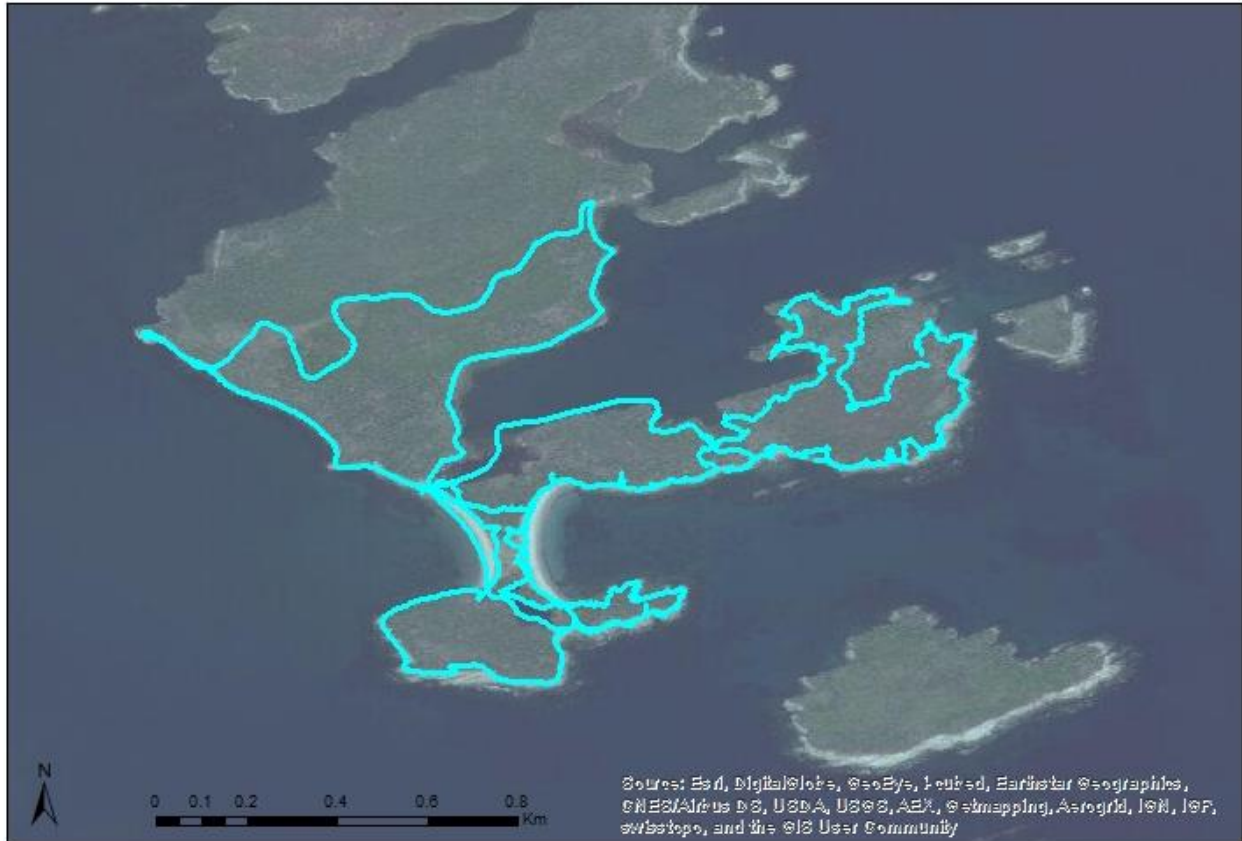


Figure 10. Site coverage during the survey of Shelter Cove, NS. The blue line is the track walked during the survey as recorded by handheld GPS.

4.0 Property photos



Figure11. A series of pictures documenting the campsite on West Gerard Island. Clockwise from top left: Cut firewood and bench, garbage, fresh cut trees from trail maintenance, gravel tent pad, more trail maintenance, outhouse structure.



Figure 12. Large population of Seabeach Groundsel (*Senecio pseudoarnica*, S2, Sensitive) on upper cobble beach, Gerard Island. The plants cover about 100 m around the cove (background).



Figure 13. Common Bedstraw (*Galium aparine*, S2?, May Be At Risk), Gerard Island.



Figure 14. Gaspé Arrowgrass (*Triglochin gaspensis*, S3?, Undetermined) in saltmarsh habitat, Gerard Island.



Figure 15. Invasive exotic plants in formerly settled area on the eastern side of Gerard Island. Left: Patch of Japanese Knotweed (*Polygonum cuspidatum*, SNA, Exotic) in regenerating White Spruce. Right: Large, nearly monospecific patch of False Spiraea (*Sorbaria sorbifolia*), that is so dense that it is limiting spruce regeneration.



Figure 16. Left: Small-flowered Bittercress (*Cardamine parviflora* var. *arenicola*, S2, Sensitive) found along the southeastern shoreline in upper sandy/cobble beach, Wolfes Island. Right: Tierra del Fuego Dock (*Rumex fueginus*, S3S4, Secure) on a bare sand dune near the outlet of the coastal pond in Big Sandy Cove, Wolfes Island.



Figure 17. Two cabins on the north shore of Long Creek inlet, Wolfes Island.



Figure 18. Red Admiral (*Vanessa atalanta*, S4B, Secure) caterpillar on Stinging Nettle, Wolfes Island.



Figure 19. Large saltmarsh north end of Phoenix Island.



Figure 20. Smooth Greensnake (*Ophiodrys vernalis*, S5, Secure) in a shrub bog on Phoenix Island.



Figure 21. Common Brassbuttons (*Cotula coronopifolia*, SNA, Exotic) in a salt/brackish marsh on the northeast coast of Phoenix Island.



Figure 22. Insect herbivory of Rhodora by Chain-dotted Geometer (*Cingilia catenaria*, inset), Phoenix Island.



Figure 23. Low shrub peatland with a transition to saltmarsh (background) near Black Duck Cove, Phoenix Island.



Figure 24. Extensive dwarf shrub barren in south end of Phoenix Island.



Figure 25. Brackish marsh dominated by Softstem Bulrush at the edge of a coastal pond, Outer Baltee Island.



Figure 26. Shallows of a large freshwater lake, Outer Baltee Island.



Figure 27. Cobble beach advancing landward into the coastal forest, Outer Baltee Island.



Figure 28. Forest regeneration in old road, Borgles Island.



Figure 29. Remnants of old wharf in Deep Cove, along the western shore of Borgles Island.



Figure 30. White Spruce and Black Spruce coastal forest communities and bedrock outcrop shore at Tuckers Head on the southwestern tip of Borgles Island.



Figure 31. Black Crowberry-, Bayberry- and Reindeer Lichen-dominated dwarf shrub barren at Tuckers Head on the southwestern tip of Borgles Island.



Figure 32. Small pocket of fine sand beach in Half Island Cove along the eastern shore of Borgles Island.



Figure 33. Steep-gradient cobble and boulder beach with sheltered brackish pond along the southern shore of Borgles Island.



Figure 34. Open acidic ericaceous shrub bog dominated by Leatherleaf in the southern half of Borgles Island.



Figure 35. Hunting stand overlooking Porters Passage, along the eastern shore of Porter Island.



Figure 36. Small pocket of Freshwater Cordgrass-dominated brackish marsh along the eastern shore of Porter Island.



Figure 37. Extensive Common Eelgrass wrack deposits at the northeastern tip of Porter Island.



Figure 38. Extensive tall shrub barrens dominated by Northern Wild Raisin, Bayberry, Black Huckleberry and Green Alder on Porter Island.



Figure 39. Knotted Pearlwort (*Sagina nodosa* ssp. *borealis*, S2S3, Secure), Laybold Island.



Figure 40. Acidic graminoid fen on northern tip of Laybold Island.



Figure 41. Sofstem Bulrush and Broad-leaved Cattail brackish marsh along the northwestern shore of Laybold Island.



Figure 42. Smooth Cord Grass and Saltmarsh Bulrush saltmarsh along Frenchmans Cove, Laybold Island.



Figure 43. Estuarine Sedge (*Carex vacillans*, S1S3, Undetermined) growing in interface between brackish marsh and acidic fen, Laybold Island.



Figure 44. Horned Sea Blite (*Suaeda calceoliformis*, S3S4, Secure) on open gravel and cobble beach, Laybold Island.



Figure 45. Picnic table and litter on wide low-gradient fine sand beach at campsite, Sandy Cove, Cable Island.



Figure 46. Cut trees and cleared vegetation at campsite, Sandy Cove, Cable Island.



Figure 47. Bare low-gradient fine sand beach, American Beach Grass dune community and coastal White Spruce forest at Sandy Cove, Cable Island.



Figure 48. Steep exposed bedrock face east of Cable Point, Cable Island.



Figure 49. Common Juniper, Lambkill and Late Lowbush Blueberry barren community on bedrock ridge, Cable Island.



Figure 50. Small cabin above cobble and boulder shore, in small cove north of Cable Point, Cable Island.



Figure 51. Black Huckleberry-dominated barren, Cable Island.



Figure 52. Sandy beach, American Beach Grass band and White Spruce dune community, Eastern Sandy Cove, Shelter Cove.



Figure 53. Bayberry, American Beach Grass, Black Crowberry and Reindeer Lichen stable dune community, with White Spruce coastal dune forest in background, Shelter Cove.



Figure 54. Probable hybrid bunchberry (*Cornus x intermedia*), the hybrid of the abundant *C. canadensis* and the provincially rare Arctic species Swedish Bunchberry (*Cornus suecica*, S1S2, Sensitive) in understory of White Spruce coastal forest, Shelter Cove.



Figure 55. Cleared vegetation, cut trees and built structure at well-used campsite, Shelter Cove.



Figure 56. Extensive area of blowdown in coastal Black Spruce-dominated forest, Shelter Cove.



Figure 57. Dwarf variety of Greenish Sedge (*Carex viridula* ssp. *brachyrrhyncha*, S1, May Be At Risk) in peaty crevice on shoreline bedrock outcrop, Shelter Cove.



Figure 58. Dense band of Wild Radish (yellow-flowered plant in foreground) and extensive population of the highly invasive Woodland Angelica (tall white-flowered plant) on dune at Eastern Sandy Cove, Shelter Cove.

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Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
Dryopteridaceae	Wood Ferns												
<i>Athyrium filix-femina</i> ssp. <i>angustum</i>	Common Lady Fern	S5	Secure	-	X	-	X	-	-	-	-	-	
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	S5	Secure	X	-	-	-	X	-	X	-	-	
<i>Dryopteris cristata</i>	Crested Wood Fern	S5	Secure	-	-	X	X	-	X	-	-	-	
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	Secure	-	X	-	X	X	-	-	-	X	
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure	-	-	-	X	-	-	-	-	-	
Taxaceae	Yews												
<i>Taxus canadensis</i>	Canada Yew	S5	Secure	-	-	-	X	-	-	-	-	-	
Pinaceae	Pines												
<i>Abies balsamea</i>	Balsam Fir	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Larix laricina</i>	Tamarack	S5	Secure	X	X	X	X	X	X	-	X	-	
<i>Picea glauca</i>	White Spruce	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Picea mariana</i>	Black Spruce	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Picea rubens</i>	Red Spruce	S5	Secure	-	-	X	X	X	-	-	-	-	
<i>Pinus strobus</i>	Eastern White Pine	S5	Secure	-	X	-	-	-	-	-	-	-	
Cupressaceae	Cypresses												
<i>Juniperus communis</i> var. <i>depressa</i>	Common Juniper	S5	Secure	X	X	X	X	X	X	X	X	-	
<i>Juniperus horizontalis</i>	Creeping Juniper	S4	Secure	-	-	X	-	-	-	-	-	-	
Nymphaeaceae	Water-Lilys												
<i>Nuphar lutea</i> ssp. <i>variegata</i>	Variiegated Pond-lily	S5	Secure	-	X	-	X	X	-	-	-	-	
Ranunculaceae	Buttercups												
<i>Coptis trifolia</i>	Goldthread	S5	Secure	X	X	X	X	X	-	X	-	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bald	Porter	Cable	Shelter Cove	Notes
<i>Ranunculus acris</i>	Common Buttercup	SNA	Exotic	X	-	-	-	-	-	-	-	-	
<i>Ranunculus cymbalaria</i>	Seaside Buttercup	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Ranunculus repens</i>	Creeping Buttercup	SNA	Exotic	X	-	-	-	-	X	-	-	-	
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5	Secure	X	-	X	-	-	-	-	-	X	
Urticaceae	Nettles												
<i>Urtica dioica</i> ssp. <i>dioica</i>	Stinging Nettle	SNA	Exotic	-	-	-	X	-	-	-	-	-	
<i>Urtica dioica</i> ssp. <i>gracilis</i>	Stinging Nettle	S4	Secure	-	X	-	X	-	-	-	-	-	
Myricaceae	Bayberries												
<i>Morella pensylvanica</i>	Northern Bayberry	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Myrica gale</i>	Sweet Gale	S5	Secure	X	X	X	X	X	X	-	X	X	
Betulaceae	Birches												
<i>Alnus incana</i> ssp. <i>rugosa</i>	Speckled Alder	S5	Secure	X	X	X	X	X	-	-	-	-	
<i>Alnus viridis</i> ssp. <i>crispa</i>	Green Alder	S5	Secure	X	X	X	-	X	X	X	X	X	
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure	-	-	-	-	-	-	X	-	-	
<i>Betula papyrifera</i> var. <i>cordifolia</i>	Heart-leaved Birch	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Betula papyrifera</i> var. <i>papyrifera</i>	Heart-leaved Birch	S5	Secure	-	-	-	-	X	X	X	X	X	
<i>Betula x caerulea</i>	a hybrid Birch [papyrifera X populifolia]	SNA	Not Assessed	X	-	-	-	-	-	-	-	-	
Chenopodiaceae	Goosefoots												
<i>Atriplex acadensis</i>	Maritime Saltbush	SU	Undetermined	X	-	X	-	-	-	-	-	X	
<i>Atriplex glabruscula</i>	Glabrous Orache	S4S5	Secure	X	X	X	X	-	-	X	-	X	
<i>Atriplex prostrata</i>	Thin-leaved Orache	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Atriplex subspicata</i>	Thick-leaved Orache	S5?	Secure	-	-	-	-	-	X	-	X	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Chenopodium album</i>	Common Lamb's Quarters	SNA	Exotic	X	-	X	X	-	-	-	-	-	
<i>Chenopodium berlandieri</i> var. <i>macrocalycium</i>	Large-calyx Goosefoot	SNR	Undetermined	-	-	-	-	-	X	-	-	-	
<i>Salicornia maritima</i>	Sea Glasswort	S5	Secure	X	X	X	-	-	X	X	-	X	
<i>Suaeda calceoliformis</i>	Horned Sea-blite	S3S4	Secure	X	-	X	-	-	X	-	-	-	
<i>Suaeda maritima</i>	White Sea-blite	S5	Secure	X	-	X	-	-	X	-	X	X	
Caryophyllaceae													
Pinks													
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	Common Chickweed	SNA	Exotic	X	X	X	X	-	X	X	X	X	
<i>Honckenya peploides</i> ssp. <i>robusta</i>	Seabeach Sandwort	S5	Secure	-	X	-	-	X	X	X	-	X	
<i>Moehringia lateriflora</i>	Blunt-leaved Sandwort	S5	Secure	X	X	X	X	-	-	-	-	X	
<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort	S2S3	Secure	X	X	-	-	X	X	-	X	-	
<i>Sagina procumbens</i>	Procumbent Pearlwort	S5	Exotic	X	X	X	X	X	X	X	X	X	
<i>Spergularia canadensis</i>	Canada Sandspurrey	S4	Secure	X	X	X	-	X	X	X	-	X	
<i>Spergularia rubra</i>	Ruby Sandspurrey	SNA	Exotic	X	X	-	-	-	-	-	-	-	
<i>Spergularia salina</i>	Saltmarsh Sandspurrey	S5	Secure	-	-	-	-	-	X	-	X	X	
<i>Stellaria borealis</i>	Boreal Stitchwort	S4	Secure	X	X	-	X	-	-	-	1	-	
<i>Stellaria media</i>	Common Starwort	SNA	Exotic	X	X	X	X	X	X	-	X	X	
Polygonaceae													
Smartweeds													
<i>Polygonum aviculare</i>	Prostrate Knotweed	S5	Secure	-	-	-	-	X	-	-	-	-	
<i>Polygonum convolvulus</i>	Eurasian Black Bindweed	SNA	Exotic	-	-	-	-	X	-	-	-	X	
<i>Polygonum cuspidatum</i>	Japanese Knotweed	SNA	Exotic	X	-	-	-	-	-	-	-	-	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Polygonum fowleri</i>	Fowler's Knotweed	S3S4	Secure	X	X	X	-	-	-	-	-	-	
<i>Polygonum hydropiper</i>	Marshpepper Smartweed	SNA	Exotic	-	-	-	-	X	X	X	X	X	
<i>Polygonum persicaria</i>	Spotted Lady's-thumb	SNA	Exotic	X	X	X	X	X	X	-	-	-	
<i>Polygonum punctatum</i>	Dotted Smartweed	S5	Secure	X	X	X	X	X	X	X	X	-	
<i>Rumex acetosella</i>	Sheep Sorrel	SNA	Exotic	X	X	X	X	X	X	X	X	X	
<i>Rumex aquaticus</i> var. <i>fenestratus</i>	Western Dock			-	X	-	-	-	-	-	-	-	ID not certain vs. <i>R. longifolius</i> ; would be first confirmed record for NS if it could be identified with certainty
<i>Rumex crispus</i>	Curled Dock	SNA	Exotic	-	X	-	-	X	X	-	-	X	
<i>Rumex fueginus</i>	Tierra del Fuego Dock	S3S4	Secure	-	X	X	X	-	X	X	X	X	not all records could be distinguished from <i>R. persicarioides</i>
<i>Rumex orbiculatus</i>	Greater Water Dock	S5	Secure	X	X	X	X	X	X	-	-	X	
Plumbaginaceae													
Leadworts													
<i>Limonium carolinianum</i>	Sea Lavender	S5	Secure	X	X	X	-	X	X	X	X	X	
Clusiaceae													
St. John's-worts													
<i>Hypericum boreale</i>	Northern St John's-Wort	S5	Secure	-	X	-	X	-	-	-	-	-	
<i>Hypericum canadense</i>	Canada St John's-wort	S5	Secure	-	X	-	X	X	X	-	-	-	
<i>Triadenum fraseri</i>	Fraser's Marsh St John's-wort	S5	Secure	X	X	X	X	X	X	X	X	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
Sarraceniaceae	Pitcher Plants												
<i>Sarracenia purpurea</i>	Northern Pitcher Plant	S5	Secure	X	X	X	X	X	X	X	X	-	
Droseraceae	Sundews												
<i>Drosera intermedia</i>	Spoon-Leaved Sundew	S5	Secure	-	X	X	X	X	X	-	-	-	
<i>Drosera rotundifolia</i>	Round-leaved Sundew	S5	Secure	X	X	X	X	X	X	X	X	X	
Violaceae	Violets												
<i>Viola blanda</i> var. <i>palustriformis</i>	Sweet White Violet	S5	Secure	X	-	-	X	-	-	-	-	-	
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure	-	-	-	-	X	X	X	X	X	
<i>Viola macloskeyi</i> ssp. <i>pallens</i>	Small White Violet	S5	Secure	X	X	X	X	X	X	X	X	-	
<i>Viola sororia</i>	Woolly Blue Violet	S5	Secure	X	-	-	X	X	-	-	-	X	
<i>Viola</i> sp.	violet sp.		[native]	-	-	X	-	-	-	-	-	-	
Brassicaceae	Mustards												
<i>Cakile edentula</i>	American Searocket	S5	Secure	X	X	X	-	X	X	X	X	X	
<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-flowered Bittercress	S2	Sensitive	-	X	-	X	-	-	-	-	-	
<i>Cardamine pennsylvanica</i>	Pennsylvania Bittercress	S5	Secure	-	-	-	-	-	-	X	-	-	
<i>Raphanus raphanistrum</i>	Wild Radish	SNA	Exotic	X	X	X	-	X	X	X	X	X	
Empetraceae	Crowberries												
<i>Empetrum nigrum</i>	Black Crowberry	S5	Secure	X	X	X	X	X	X	X	X	X	
Ericaceae	Heaths												
<i>Andromeda polifolia</i> var. <i>glaucophylla</i>	Bog Rosemary	S5	Secure	-	-	X	-	-	-	-	-	-	
<i>Arctostaphylos uva-ursi</i>	Common Bearberry	S4	Secure	X	X	-	-	-	-	-	-	-	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Chamaedaphne calyculata</i>	Leatherleaf	S5	Secure	X	X	X	X	X	X	-	X	X	
<i>Epigaea repens</i>	Trailing Arbutus	S5	Secure	X	-	-	-	X	-	-	X	-	
<i>Gaultheria hispidula</i>	Creeping Snowberry	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5	Secure	X	X	X	X	X	-	X	X	-	
<i>Gaylussacia baccata</i>	Black Huckleberry	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Gaylussacia bigeloviana</i>	Dwarf Huckleberry	S5	Secure	X	X	X	-	X	-	-	-	-	
<i>Kalmia angustifolia</i>	Lambkill	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Kalmia polifolia</i>	Pale Bog Laurel	S5	Secure	X	X	X	X	X	X	-	X	-	
<i>Ledum groenlandicum</i>	Labrador Tea	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Rhododendron canadense</i>	Rhodora	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Vaccinium macrocarpon</i>	Large Cranberry	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Vaccinium myrtilloides</i>	Velvet-leaved Blueberry	S5	Secure	X	-	-	X	X	-	-	-	-	
<i>Vaccinium oxycoccos</i>	Small Cranberry	S5	Secure	X	X	X	X	X	X	-	X	X	
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Foxberry	S5	Secure	X	X	X	X	X	X	X	X	X	
Pyrolaceae	Pyrolas												
<i>Moneses uniflora</i>	One-flowered Wintergreen	S5	Secure	-	X	-	X	X	-	X	-	X	
Monotropaceae	Indian Pipes												
<i>Monotropa hypopithys</i>	Pinesap	S4	Secure	-	-	X	-	-	-	-	X	X	
<i>Monotropa uniflora</i>	Indian Pipe	S5	Secure	X	X	X	-	X	-	-	X	X	
Primulaceae	Primroses												
<i>Glaux maritima</i>	Sea Milkwort	S5	Secure	X	X	X	X	X	X	X	-	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	S5	Secure	X	X	X	X	X	X	-	X	X	
<i>Trientalis borealis</i>	Northern Starflower	S5	Secure	X	X	X	X	X	X	X	X	X	
Grossulariaceae	Gooseberries												
<i>Ribes glandulosum</i>	Skunk Currant	S5	Secure	-	-	X	-	-	-	-	-	-	
<i>Ribes hirtellum</i>	Smooth Gooseberry	S5	Secure	X	-	X	X	X	X	X	-	X	
<i>Ribes lacustre</i>	Bristly Black Currant	S5	Secure	-	-	-	-	-	X	-	-	-	
Crassulaceae	Stonecrops												
<i>Rhodiola rosea</i>	Roseroot	S4	Secure	-	X	X	X	X	X	-	X	X	
Saxifragaceae	Saxifrages												
<i>Mitella nuda</i>	Naked Bishop's-Cap	S5	Secure	X	-	-	-	-	-	-	-	-	
Rosaceae	Roses												
<i>Amelanchier bartramiana</i>	Bartram's Serviceberry	S5	Secure	X	-	X	-	-	-	X	-	-	
<i>Amelanchier</i> sp.	a serviceberry		[native]	X	X	X	X	-	-	-	-	-	
<i>Amelanchier stolonifera</i>	Running Serviceberry	S3?	Secure	X	-	-	-	-	-	-	-	-	
<i>Argentina anserina</i>	Common Silverweed	S5	Secure	-	-	-	-	-	-	-	X	-	
<i>Argentina egedii</i>	Egede's Silverweed	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Comarum palustre</i>	Marsh Cinquefoil	S5	Secure	-	-	-	X	-	-	-	-	X	
<i>Fragaria virginiana</i>	Wild Strawberry	S5	Secure	X	-	X	X	X	X	X	X	X	
<i>Malus pumila</i>	Common Apple	SNA	Exotic	X	-	-	-	-	-	-	-	-	
<i>Photinia floribunda</i>	Purple Chokeberry	S5	Secure	-	-	-	X	X	X	X	X	-	
<i>Photinia melanocarpa</i>	Black Chokeberry	S5	Secure	X	X	X	X	X	X	X	-	X	
<i>Potentilla norvegica</i> ssp. <i>monspeliensis</i>	Rough Cinquefoil	S5	Secure	X	X	X	X	X	X	X	X	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Prunus pensylvanica</i>	Pin Cherry	S5	Secure	X	-	-	X	-	-	X	-	-	
<i>Rosa carolina</i>	Carolina Rose	S4S5	Secure	X	X	-	-	-	-	-	-	X	
<i>Rosa rugosa</i>	Rugosa Rose	SNA	Exotic	-	-	-	-	-	-	-	-	X	
<i>Rosa virginiana</i>	Virginia Rose	S5	Secure	X	-	-	-	X	-	X	-	-	
<i>Rubus allegheniensis</i>	Alleghany Blackberry	S5	Secure	-	-	-	-	-	X	-	-	-	
<i>Rubus canadensis</i>	Smooth Blackberry	S5	Secure	X	X	-	-	X	-	-	-	X	
<i>Rubus chamaemorus</i>	Cloudberry	S4	Secure	X	X	X	X	X	X	-	-	-	
<i>Rubus hispidus</i>	Bristly Dewberry	S5	Secure	X	-	X	-	-	X	-	-	X	
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Red Raspberry	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5	Secure	X	-	X	X	-	X	-	-	X	
<i>Rubus</i> sp.	blackberry sp.		[native]	-	-	X	X	-	-	-	-	-	
<i>Sibbaldiopsis tridentata</i>	Three-Toothed Cinquefoil	S5	Secure	-	X	X	X	X	-	-	X	-	
<i>Sorbaria sorbifolia</i>	False Spiraea	SNA	Exotic	X	-	-	-	-	-	-	-	-	
<i>Sorbus americana</i>	American Mountain Ash	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Sorbus decora</i>	Showy Mountain Ash	S4	Secure	-	-	X	-	-	-	-	-	-	
<i>Spiraea alba</i> var. <i>latifolia</i>	White Meadowsweet	S5	Secure	X	X	-	-	-	-	X	-	-	
Fabaceae	Beans												
<i>Lathyrus japonicus</i>	Beach Pea	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Lathyrus palustris</i>	Marsh Vetchling	S5	Secure	X	X	X	X	X	-	X	-	X	
<i>Trifolium repens</i>	White Clover	SNA	Exotic	X	X	X	X	X	X	X	X	X	
Onagraceae	Evening-Primroses												

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bald	Porter	Cable	Shelter Cove	Notes
<i>Chamerion angustifolium</i>	Fireweed	S5	Secure	-	X	-	-	X	-	-	-	-	
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S5	Secure	X	X	X	X	X	X	X	-	X	
<i>Epilobium ciliatum</i>	Northern Willowherb	S5	Secure	-	X	X	X	X	-	X	-	-	
<i>Epilobium leptophyllum</i>	Bog Willowherb	S5	Secure	-	-	-	-	X	X	-	X	-	
<i>Epilobium palustre</i>	Marsh Willowherb	S5	Secure	-	X	-	-	-	-	-	-	-	
<i>Oenothera biennis</i>	Common Evening Primrose	S5	Secure	X	X(cf)	-	-	-	-	-	-	X	
Cornaceae	Dogwoods												
<i>Cornus canadensis</i>	Bunchberry	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Cornus x intermedia</i>	a hybrid Dogwood	SNA	Not Assessed	-	-	-	-	-	-	-	-	X	
Viscaceae	Mistletoes												
<i>Arceuthobium pusillum</i>	Eastern Dwarf Mistletoe	S5	Secure	X	X	-	-	-	-	-	-	-	
Aquifoliaceae	Hollies												
<i>Ilex verticillata</i>	Common Winterberry	S5	Secure	-	-	X	X	-	-	-	-	-	
<i>Nemopanthus mucronatus</i>	Mountain Holly	S5	Secure	X	X	X	X	-	-	-	-	X	
Linaceae	Flaxs												
<i>Radiola linoides</i>	Tiny Allseed	SNA	Exotic	-	X	X	X	X	X	X	X	X	
Aceraceae	Maples												
<i>Acer rubrum</i>	Red Maple	S5	Secure	X	X	-	X	X	-	X	X	-	
Oxalidaceae	Wood-Sorrels												
<i>Oxalis montana</i>	Common Wood Sorrel	S5	Secure	X	X	X	X	X	-	-	X	X	
<i>Oxalis stricta</i>	European Wood Sorrel	S5	Secure	X	X	-	-	-	-	-	-	-	
Balsaminaceae	Touch-Me-Nots												

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Impatiens capensis</i>	Spotted Jewelweed	S5	Secure	X	X	X	X	X	X	X	-	X	
Araliaceae	Sarsaparillas												
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure	X	-	-	X	-	-	X	-	X	
Apiaceae	Carrots												
<i>Angelica lucida</i>	Seaside Angelica	S4	Secure	X	-	-	-	-	-	-	-	X	
<i>Angelica sylvestris</i>	Woodland Angelica	SNA	Exotic	X	-	-	-	-	-	-	-	X	
<i>Heracleum maximum</i>	Common Cow Parsnip	S5	Secure	X	-	X	-	X	X	-	-	X	
<i>Ligusticum scoticum</i>	Scotch Lovage	S5	Secure	X	X	X	X	X	X	X	X	X	
Solanaceae	Nightshades												
<i>Solanum dulcamara</i>	Bittersweet Nightshade	SNA	Exotic	X	-	-	-	X	-	-	-	-	
<i>Solanum nigrum</i>	European Black Nightshade	SNA	Exotic	-	-	X	-	-	-	-	-	-	
Convolvulaceae	Bindweeds												
<i>Calystegia sepium</i>	Hedge False Bindweed	S5	Secure	X	-	X	X	X	X	-	X	X	
Cuscutaceae	Dodders												
<i>Cuscuta</i> sp.	dodder sp.		[native]	X	-	-	-	-	-	-	-	-	
Menyanthaceae	Bog-Beans												
<i>Menyanthes trifoliata</i>	Bog Buckbean	S5	Secure	-	-	-	-	X	-	-	-	-	
Boraginaceae	Borages												
<i>Mertensia maritima</i>	Sea Lungwort	S4	Secure	-	-	-	-	X	X	-	-	-	
<i>Myosotis arvensis</i>	Field Forget-me-not	SNA	Exotic	-	X	-	-	-	-	-	-	-	
Lamiaceae	Mints												
<i>Galeopsis tetrahit</i>	Common Hemp-nettle	SNA	Exotic	X	-	-	X	X	X	-	-	X	
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5	Secure	X	X	X	X	X	X	X	X	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfe	Phoenix	Outer Baltee	Borges	Laybold	Porter	Cable	Shelter Cove	Notes
<i>Mentha arvensis</i>	Wild Mint	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Scutellaria galericulata</i>	Marsh Skullcap	S5	Secure	X	X	X	X	X	X	X	X	X	
Plantaginaceae	Plantains												
<i>Plantago major</i>	Common Plantain	SNA	Exotic	-	X	-	X	-	-	X	X	-	
<i>Plantago maritima</i> var. <i>juncooides</i>	Seaside Plantain	S5	Secure	X	X	X	X	X	X	X	X	X	
Scrophulariaceae	Figworts												
<i>Euphrasia nemorosa</i>	Common Eyebright	S5	Secure	-	cf.	-	cf.	-	X	-	-	X	
<i>Euphrasia randii</i>	Rand's Eyebright	S4	Secure	-	X	X	X	X	X	X	X	X	
<i>Melampyrum lineare</i>	American Cow Wheat	S5	Secure	-	X	X	-	X	-	X	X	-	
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	Thyme-Leaved Speedwell	SNA	Exotic	-	X	-	-	-	-	-	-	-	
Lentibulariaceae	Bladderworts												
<i>Utricularia cornuta</i>	Horned Bladderwort	S5	Secure	X	X	X	-	X	-	-	-	-	
Campanulaceae	Bellworts												
<i>Lobelia dortmanna</i>	Water Lobelia	S5	Secure	-	-	-	X	-	-	-	-	-	
Rubiaceae	Bedstraws												
<i>Galium aparine</i>	Common Bedstraw	S2?	May Be At Risk	X	-	-	X	X	-	-	-	X	
<i>Galium mollugo</i>	Smooth Bedstraw	SNA	Exotic	X	-	-	-	-	-	-	-	-	
<i>Galium palustre</i>	Common Marsh Bedstraw	S5	Secure	-	-	-	X	-	-	-	-	-	
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5	Secure	X	X	X	X	X	-	X	X	X	
Caprifoliaceae	Honeysuckles												
<i>Linnaea borealis</i> ssp. <i>americana</i>	Twinflower	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Lonicera villosa</i>	Mountain Fly Honeysuckle	S4S5	Secure	-	-	X	-	-	-	-	-	-	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Viburnum nudum</i> var. <i>cassinoides</i>	Northern Wild Raisin	S5	Secure	X	X	X	X	X	X	X	X	X	
Asteraceae	Asters												
<i>Achillea millefolium</i>	Common Yarrow	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Ambrosia artemisiifolia</i>	Common Ragweed	S5	Secure	-	X	-	-	X	X	-	-	-	
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5	Secure	X	-	-	-	X	-	X	-	X	
<i>Bidens connata</i>	Purple-stemmed Beggarticks	S4	Secure	-	X	-	X	-	X	-	-	-	
<i>Bidens frondosa</i>	Devil's Beggarticks	S5	Secure	X	X	-	X	X	X	-	X	-	
<i>Cirsium arvense</i>	Canada Thistle	SNA	Exotic	-	-	X	X	X	X	-	-	X	
<i>Cirsium vulgare</i>	Bull Thistle	SNA	Exotic	X	X	X	X	X	X	X	X	X	
<i>Cotula coronopifolia</i>	Common Brassbuttons	SNA	Exotic	-	-	X	-	-	-	-	-	-	
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5	Secure	X	-	-	-	-	-	-	-	X	
<i>Erechtites hieraciifolia</i>	Eastern Burnweed	S5	Secure	-	X	-	-	X	X	-	-	-	
<i>Eurybia radula</i>	Low Rough Aster	S5	Secure	-	-	X	-	-	-	-	-	-	
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Gnaphalium uliginosum</i>	Marsh Cudweed	SNA	Exotic	-	X	-	-	-	-	-	-	-	
<i>Hieracium pilosella</i>	Mouse-ear Hawkweed	SNA	Exotic	X	X	-	-	-	-	-	-	-	
<i>Hieracium x floribundum</i>	Smoothish Hawkweed	SNA	Exotic	-	-	-	-	-	-	-	X	-	
<i>Lactuca biennis</i>	Tall Blue Lettuce	S5	Secure	-	-	X	-	-	-	-	-	X	
<i>Leontodon autumnalis</i>	Fall Dandelion	SNA	Exotic	-	-	-	X	-	X	-	-	X	
<i>Matricaria discoidea</i>	Pineapple Weed	SNA	Exotic	-	-	X	X	-	-	-	-	-	
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Oclemena nemoralis</i>	Bog Aster	S5	Secure	X	-	X	X	X	-	-	-	-	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Prenanthes trifoliolata</i>	Three-leaved Rattlesnakeroot	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Senecio pseudoarnica</i>	Seabeach Ragwort	S2	Sensitive	X	-	X	-	X	X	-	-	X	
<i>Senecio sylvaticus</i>	Woodland Ragwort	SNA	Exotic	-	X	-	-	-	-	-	-	-	
<i>Senecio viscosus</i>	Sticky Ragwort	SNA	Exotic	-	X	-	-	-	X	-	-	-	
<i>Solidago canadensis</i>	Canada Goldenrod	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Solidago nemoralis</i>	Gray-stemmed Goldenrod	S4S5	Secure	-	-	-	-	X	-	-	-	X	
<i>Solidago puberula</i>	Downy Goldenrod	S5	Secure	-	-	-	X	-	-	X	X	X	
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5	Secure	X	X	-	-	X	X	-	-	-	
<i>Solidago sempervirens</i>	Seaside Goldenrod	S5	Secure	X	X	-	X	X	X	X	X	X	
<i>Solidago uliginosa</i>	Northern Bog Goldenrod	S5	Secure	X	X	X	X	X	X	-	-	-	
<i>Sonchus arvensis</i>	Field Sow Thistle	SNA	Exotic	X	X	X	X	X	X	X	X	X	
<i>Sonchus oleraceus</i>	Common Sow Thistle	SNA	Exotic	-	-	X	-	-	-	-	-	-	
<i>Symphyotrichum novi-belgii</i>	New York Aster	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Taraxacum officinale</i>	Common Dandelion	SNA	Exotic	-	X	X	-	-	-	X	X	-	
<i>Tripleurospermum maritima</i>	Seashore Chamomile	SNA	Exotic	-	X	-	-	-	-	-	-	-	
<i>Tussilago farfara</i>	Coltsfoot	SNA	Exotic	X	-	-	X	-	-	-	-	-	
Juncaginaceae	Arrow-Grasses												
<i>Triglochin gaspensis</i>	Gaspé Arrowgrass	S3?	Undetermined	X	-	X	-	-	-	-	-	X	
<i>Triglochin maritima</i>	Seaside Arrowgrass	S5	Secure	X	-	X	X	X	X	X	-	X	
Potamogetonaceae	Pondweeds												
<i>Potamogeton epihydrus</i>	Ribbon-leaved Pondweed	S5	Secure	-	-	-	X	-	-	-	-	-	

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Ruppiaceae	Wigeon-Grasses												
<i>Ruppia maritima</i>	Sea Ditchgrass	S5	Secure	X	X	-	X	-	-	-	-	-	
Zosteraceae	Eelgrasses												
<i>Zostera marina</i>	Common Eelgrass	S5	Secure	X	X	X	-	X	X	-	X	X	
Xyridaceae	Yellow-Eyed-Grasses												
<i>Xyris montana</i>	Northern Yellow-Eyed-Grass	S4	Secure	-	-	-	-	X	-	-	-	-	
Juncaceae	Rushs												
<i>Juncus balticus</i> var. <i>littoralis</i>	Baltic Rush	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Juncus brevicaudatus</i>	Narrow-Panicled Rush	S5	Secure	X	X	-	X	X	X	X	X	-	
<i>Juncus bufonius</i>	Toad Rush	S5	Secure	X	X	X	-	X	-	X	X	X	
<i>Juncus canadensis</i>	Canada Rush	S5	Secure	-	X	X	X	-	X	X	-	-	
<i>Juncus effusus</i>	Soft Rush	S5	Secure	-	-	-	-	X	-	X	X	-	
<i>Juncus filiformis</i>	Thread Rush	S5	Secure	X	X	X	X	-	-	-	-	-	
<i>Juncus gerardii</i>	Black-Grass Rush	S5	Secure	X	X	X	-	X	-	X	X	X	
<i>Juncus pelocarpus</i>	Brown-Fruited Rush	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Juncus tenuis</i>	Slender Rush	S5	Secure	-	X	-	-	-	X	X	-	-	
<i>Luzula multiflora</i>	Common Woodrush	S5	Secure	X	X	-	X	X	X	-	-	-	
Cyperaceae	Sedges												
<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge	S4	Secure	X	-	-	-	-	-	-	-	-	
<i>Carex aquatilis</i>	Water Sedge	S5	Secure	-	-	-	-	X	-	-	-	-	
<i>Carex atlantica</i> ssp. <i>atlantica</i>	Atlantic Sedge	S4	Secure	X	-	-	-	-	-	-	-	-	
<i>Carex brunnescens</i> ssp. <i>sphaerostachya</i>	Brownish Sedge	S5	Secure	X	X	-	-	X	X	X	-	X	
<i>Carex canescens</i>	Silvery Sedge	S5	Secure	X	X	X	X	X	X	-	X	-	

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<i>Carex communis</i>	Fibrous-Root Sedge	S5	Secure	-	X	-	-	-	-	-	-	-	
<i>Carex crawfordii</i>	Crawford's Sedge	S5	Secure	X	X	-	-	-	-	-	-	-	
<i>Carex deflexa</i>	Northern Sedge	S4	Secure	-	-	X	-	-	-	-	-	-	
<i>Carex echinata</i>	Star Sedge	S5	Secure	X	-	-	-	-	-	-	X	-	
<i>Carex hormathodes</i>	Marsh Straw Sedge	S4S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Carex lenticularis</i>	Lenticular Sedge	S4	Secure	-	-	-	-	X	-	-	-	-	
<i>Carex limosa</i>	Mud Sedge	S4	Secure	-	-	X	-	X	X	-	-	-	
<i>Carex magellanica</i> ssp. <i>irrigua</i>	Boreal Bog Sedge	S5	Secure	X	-	X	X	X	X	X	-	-	
<i>Carex nigra</i>	Smooth Black Sedge	S5	Secure	X	X	X	X	-	X	X	-	X	
<i>Carex novae-angliae</i>	New England Sedge	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Carex oligosperma</i>	Few-Seeded Sedge	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Carex paleacea</i>	Chaffy Sedge	S5	Secure	X	X	X	X	X	-	X	-	-	
<i>Carex pauciflora</i>	Few-Flowered Sedge	S4S5	Secure	X	X	X	-	-	-	-	-	-	
<i>Carex scoparia</i>	Broom Sedge	S5	Secure	-	X	X	X	-	-	-	X	-	
<i>Carex silicea</i>	Seabeach Sedge	S4S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Carex stipata</i>	Awl-fruited Sedge	S5	Secure	-	X	-	-	-	-	X	X	-	
<i>Carex stricta</i>	Tussock Sege	S5	Secure	X	X	-	-	-	-	-	-	-	
<i>Carex tonsa</i>	Deep Green Sedge	S5	Secure	-	-	-	-	-	-	X	X	-	
<i>Carex trisperma</i> var. <i>billingsii</i>	Three-Seed Sedge	S4?	Secure	X	X	X	X	X	-	-	-	-	
<i>Carex trisperma</i> var. <i>trisperma</i>	Three-seeded Sedge	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Carex vacillans</i>	Estuarine Sedge	S1S3	Undetermined	-	-	-	-	-	X	-	-	-	
<i>Carex viridula</i> ssp. <i>brachyrrhyncha</i>	Greenish Sedge	S1	May Be At Risk	-	-	-	-	-	-	-	-	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Dulichium arundinaceum</i>	Three-Way Sedge	S5	Secure	-	X	-	-	-	-	-	-	-	
<i>Eleocharis acicularis</i>	Needle Spikerush	S5	Secure	-	X	X	X	-	-	-	-	-	
<i>Eleocharis halophila</i>	Saltmarsh Spikerush	S4S5	Secure	X	X	X	X	X	X	-	-	X	
<i>Eleocharis palustris</i>	Common Spikerush	S5	Secure	X	X	X	-	X	X	X	-	X	
<i>Eleocharis parvula</i>	Dwarf Spikerush	S4	Secure	X	X	-	X	-	X	-	-	-	
<i>Eriophorum angustifolium</i>	Narrow-leaved Cottongrass	S5	Secure	X	X	X	X	X	-	-	X	-	
<i>Eriophorum chamissonis</i>	Russet Cotton-Grass	S3S4	Secure	X	-	-	-	-	-	-	-	-	
<i>Eriophorum vaginatum</i> var. <i>spissum</i>	Tussock Cottongrass	S5	Secure	X	X	X	X	X	X	-	X	-	
<i>Eriophorum virginicum</i>	Tawny Cottongrass	S5	Secure	X	X	X	X	X	X	-	X	-	
<i>Rhynchospora alba</i>	White Beakrush	S5	Secure	X	X	X	X	X	X	-	X	-	
<i>Rhynchospora fusca</i>	Brown Beakrush	S4	Secure	-	-	-	-	X	-	-	-	-	
<i>Schoenoplectus acutus</i>	Hardstem Bulrush	S4	Secure	-	X	-	-	-	-	-	-	-	
<i>Schoenoplectus maritimus</i>	Saltmarsh Bulrush	S4S5	Secure	X	X	X	-	X	X	X	-	-	
<i>Schoenoplectus pungens</i>	Three-square Bulrush	S5	Secure	-	X	-	-	-	-	-	-	-	
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush	S5	Secure	-	X	X	X	X	X	X	X	X	
<i>Scirpus atrocinctus</i>	Black-girdled Bulrush	S5	Secure	-	X	-	-	X	-	-	X	-	
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5	Secure	-	X	X	X	X	-	-	X	-	
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	S5	Secure	-	-	-	X	-	-	-	-	-	
<i>Trichophorum caespitosum</i>	Tufted Clubrush	S5	Secure	X	X	X	X	X	-	-	X	-	
Poaceae													
Grasses													
<i>Agrostis capillaris</i>	Colonial Bent Grass	SNA	Exotic	X	X	-	X	X	-	-	-	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Agrostis gigantea</i>	Redtop	SNA	Exotic	X	-	X	-	-	X	-	-	-	
<i>Agrostis perennans</i>	Upland Bent Grass	S4S5	Secure	-	-	-	-	X	X	-	X	-	
<i>Agrostis scabra</i>	Rough Bent Grass	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Agrostis stolonifera</i>	Creeping Bent Grass	S5	Secure	X	X	X	X	X	X	-	X	X	
<i>Alopecurus pratensis</i>	Meadow Foxtail	SNA	Exotic	-	-	-	X	-	-	-	-	-	
<i>Ammophila breviligulata</i>	American Beach Grass	S5	Secure	-	X	X	X	X	X	X	X	X	
<i>Anthoxanthum odoratum</i>	Large Sweet Vernal Grass	SNA	Exotic	X	X	-	X	-	X	-	-	-	
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass	S5	Secure	X	X	X	X	X	X	-	X	X	
<i>Danthonia spicata</i>	Poverty Oat Grass	S5	Secure	X	X	X	-	X	X	X	X	-	
<i>Deschampsia caespitosa</i>	Tufted Hair Grass	S4	Secure	-	-	-	-	X	-	-	-	-	
<i>Deschampsia flexuosa</i>	Wavy Hair Grass	S5	Secure	X	X	X	-	X	X	X	X	X	
<i>Dichanthelium boreale</i>	Northern Panic Grass	S5	Secure	-	-	-	-	-	-	-	X	-	
<i>Elymus repens</i>	Quack Grass	SNA	Exotic	X	-	X	X	X	X	X	X	X	
<i>Elymus trachycaulus</i>	Slender Wild Rye	S4?	Secure	X	X	X	X	X	X	X	X	X	
<i>Elymus virginicus</i>	Virginia Wild Rye	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Festuca rubra</i>	Red Fescue	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Glyceria canadensis</i>	Canada Manna Grass	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Glyceria obtusa</i>	Atlantic Manna Grass	S4	Secure	-	-	-	-	X	-	-	-	-	
<i>Glyceria striata</i>	Fowl Manna Grass	S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Hierochloe odorata</i>	Vanilla Sweet Grass	S4S5	Secure	X	-	-	-	-	X	X	X	-	
<i>Leersia oryzoides</i>	Rice Cut Grass	S5	Secure	-	-	-	X	-	-	-	-	-	
<i>Leymus mollis</i>	Sea Lyme Grass	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Phleum pratense</i>	Common Timothy	SNA	Exotic	-	-	-	-	-	X	-	-	-	
<i>Poa annua</i>	Annual Blue Grass	SNA	Exotic	-	X	X	X	-	-	-	-	X	

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bold	Porter	Cable	Shelter Cove	Notes
<i>Poa compressa</i>	Canada Blue Grass	SNA	Exotic	-	X	-	-	-	-	-	-	-	
<i>Poa palustris</i>	Fowl Blue Grass	S5	Secure	-	-	-	-	-	X	-	-	-	
<i>Poa pratensis</i>	Kentucky Blue Grass	S5	Secure	X	X	X	X	-	-	-	-	-	
<i>Puccinellia americana</i>	Seaside Alkali Grass	S4S5	Secure	X	X	X	X	X	-	X	-	X	
<i>Puccinellia tenella</i> ssp. <i>langeana</i>	Tundra Alkali Grass	S5	Secure	X	X	X	-	X	X	-	X	X	NOTE-some records ID'd only to <i>P. pumila</i> (s.st.), but all likely this taxon
<i>Spartina alterniflora</i>	Smooth Cord Grass	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Spartina patens</i>	Saltmeadow Cord Grass	S5	Secure	X	X	X	X	X	-	X	X	X	
<i>Spartina pectinata</i>	Prairie Cord Grass	S5	Secure	X	-	X	-	-	X	X	X	-	
Sparganiaceae	Bur-Reeds												
<i>Sparganium americanum</i>	American Burreed	S5	Secure	-	-	-	-	X	-	-	X	-	
<i>Sparganium angustifolium</i>	Narrow-leaved Burreed	S5	Secure	-	-	-	X	X	-	-	X	-	
<i>Sparganium emersum</i>	Green-fruited Burreed	S5	Secure	-	-	-	X	-	-	-	-	-	
<i>Sparganium fluctuans</i>	Floating Burreed	S4	Secure	-	-	-	X	-	-	-	-	-	
Typhaceae	Cattails												
<i>Typha angustifolia</i>	Narrow-Leaved Cattail	S5	Secure	-	-	-	X	-	-	-	-	-	
<i>Typha latifolia</i>	Broad-leaved Cattail	S5	Secure	-	X	-	-	X	X	-	-	-	
Liliaceae	Lilys												
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Maianthemum trifolium</i>	Three-leaved False Soloman's Seal	S5	Secure	X	-	X	X	X	-	-	-	-	
Iridaceae	Irises												

Species / Family Name	Common Name	S-rank	GS Rank	Gerard	Wolfes	Phoenix	Outer Baltee	Borg-les	Lay-bald	Porter	Cable	Shelter Cove	Notes
<i>Iris setosa</i> var. <i>canadensis</i>	Hooker's Iris	S4	Secure	X	X	X	X	-	-	X	-	-	
<i>Iris versicolor</i>	Harlequin Blue Flag	S5	Secure	X	X	X	X	X	X	X	X	X	
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed-grass	S5	Secure	X	X	-	X	X	X	X	-	X	
Orchidaceae	Orchids												
<i>Calopogon tuberosus</i>	Tuberous Grass Pink	S4	Secure	X	X	X	X	-	-	-	-	-	
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5	Secure	X	-	-	-	-	-	-	-	X	
<i>Goodyera repens</i>	Lesser Rattlesnake-plantain	S3	Sensitive	X	-	-	-	X	-	-	-	-	
<i>Goodyera tessellata</i>	Checkered Rattlesnake-Plantain	S4	Secure	X	-	-	X	X	-	-	-	X	
<i>Listera cordata</i>	Heart-leaved Twayblade	S4	Secure	-	-	-	-	-	-	X	-	-	
<i>Malaxis unifolia</i>	Green Adder's-Mouth	S4S5	Secure	-	-	X	-	X	-	-	-	-	
<i>Platanthera lacera</i>	Ragged Fringed Orchid	S4S5	Secure	X	-	-	-	-	-	-	-	-	
<i>Spiranthes lacera</i>	Slender Ladies'-tresses	S5	Secure	-	-	-	-	-	-	-	-	X	

<i>Scientific Name</i>	Common Name	S-rank	GS Rank	Gerard	Wolfe	Phoenix	Outer Batee	Borgles	Laybold	Porter	Cable	Shelter Cove
Birds												
<i>Gavia immer</i>	Common Loon	S3B, S4N	May Be At Risk	X								
<i>Morus bassanus</i>	Northern Gannet	SHB, S5M	Secure		X							
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	S5B	Secure	X	X	X			X		X	X
<i>Ardea herodias</i>	Great Blue Heron	S4B	Secure	X	X							
<i>Branta canadensis</i>	Canada Goose	SNAB, S4N	Secure			X						
<i>Anas rubripes</i>	American Black Duck	S5	Secure	X	X			X				
<i>Somateria mollissima</i>	Common Eider	S4	Secure	X								
<i>Lophodytes cucullatus</i>	Hooded Merganser	S4S5B	Secure				X					
<i>Pandion haliaetus</i>	Osprey	S5B	Secure	X	X	X	X			X		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	S4	Secure		X						X	
<i>Falco columbarius</i>	Merlin	S5B	Secure		X							
<i>Phasianus colchicus</i>	Ring-necked Pheasant	SNA	Exotic		X							
<i>Bonasa umbellus</i>	Ruffed Grouse	S4S5	Secure								X	
<i>Charadrius semipalmatus</i>	Semipalmated Plover	S1S2B, S5M	Secure	X		X	X					
<i>Tringa melanoleuca</i>	Greater Yellowlegs	S3B, S5M	Sensitive	X	X	X						
<i>Tringa solitaria</i>	Solitary Sandpiper	S1?B, S4S5M	Secure		X		X					
<i>Tringa semipalmata</i>	Willet	S2S3B	May Be At Risk		X	X	X					
<i>Actitis macularius</i>	Spotted Sandpiper	S3S4B	Sensitive	X	X	X	X					

<i>Scientific Name</i>	Common Name	S-rank	GS Rank	Gerard	Wolfe	Phoenix	Outer Baltee	Borgles	Laybold	Porter	Cable	Shelter Cove
<i>Numenius phaeopus hudsonicus</i>	Hudsonian Whimbrel	S3M	Sensitive		X							
<i>Larus argentatus</i>	Herring Gull	S4S5	Secure	X	X	X	X	X				X
<i>Larus marinus</i>	Great Black-backed Gull	S4	Secure	X	X	X	X					
<i>Sterna hirundo</i>	Common Tern	S3B	Sensitive	X	X	X			X		X	X
<i>Cephus grylle</i>	Black Guillemot	S3S4	Secure		X							
<i>Zenaida macroura</i>	Mourning Dove	S5	Secure	X	X							
<i>Archilochus colubris</i>	Ruby-throated Hummingbird	S5B	Secure				X					
<i>Megaceryle alcyon</i>	Belted Kingfisher	S5B	Secure	X	X	X						
<i>Picoides villosus</i>	Hairy Woodpecker	S5	Secure	X								
<i>Picoides arcticus</i>	Black-backed Woodpecker	S3S4	Sensitive	X								
<i>Colaptes auratus</i>	Northern Flicker	S5B	Secure	X	X	X	X					
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	S3S4B	Sensitive	X								
<i>Empidonax alnorum</i>	Alder Flycatcher	S5B	Secure				X					
<i>Perisoreus canadensis</i>	Gray Jay	S3S4	Sensitive	X		X						
<i>Corvus brachyrhynchos</i>	American Crow	S5	Secure	X	X	X	X					
<i>Corvus corax</i>	Common Raven	S5	Secure	X	X	X						
<i>Poecile atricapillus</i>	Black-capped Chickadee	S5	Secure								X	
<i>Poecile hudsonicus</i>	Boreal Chickadee	S3	Sensitive	X	X	X		X		X	X	X
<i>Troglodytes troglodytes</i>	Winter Wren	S5B	Secure	X		X						
<i>Regulus satrapa</i>	Golden-crowned Kinglet	S4	Sensitive	X	X		X					

<i>Scientific Name</i>	Common Name	S-rank	GS Rank	Gerard	Wolfe	Phoenix	Outer Baltee	Borgles	Laybold	Porter	Cable	Shelter Cove
<i>Catharus ustulatus</i>	Swainson's Thrush	S4S5B	Secure				X					
<i>Catharus guttatus</i>	Hermit Thrush	S5B	Secure	X	X	X	X					
<i>Turdus migratorius</i>	American Robin	S5B	Secure	X	X	X						
<i>Bombycilla cedrorum</i>	Cedar Waxwing	S5B	Secure	X		X	X					
<i>Vireo solitarius</i>	Blue-headed Vireo	S5B	Secure	X								
<i>Vermivora ruficapilla</i>	Nashville Warbler	S5B	Secure	X								
<i>Dendroica petechia</i>	Yellow Warbler	S5B	Secure				X					
<i>Dendroica magnolia</i>	Magnolia Warbler	S5B	Secure	X		X						
<i>Dendroica coronata</i>	Yellow-rumped Warbler	S5B	Secure		X	X						
<i>Dendroica palmarum</i>	Palm Warbler	S5B	Secure	X								
<i>Dendroica striata</i>	Blackpoll Warbler	S3S4B	Sensitive		X	X						
<i>Setophaga ruticilla</i>	American Redstart	S5B	Secure				X					
<i>Geothlypis trichas</i>	Common Yellowthroat	S5B	Secure	X	X	X	X				X	
<i>Melospiza melodia</i>	Song Sparrow	S5B	Secure	X	X	X						
<i>Melospiza lincolnii</i>	Lincoln's Sparrow	S4B	Secure			X						
<i>Melospiza georgiana</i>	Swamp Sparrow	S5B	Secure		X							
<i>Zonotrichia albicollis</i>	White-throated Sparrow	S5B	Secure	X			X					
<i>Junco hyemalis</i>	Dark-eyed Junco	S4S5	Secure	X	X	X	X					
<i>Carpodacus purpureus</i>	Purple Finch	S4S5	Secure				X					
<i>Loxia curvirostra</i>	Red Crossbill	S4?	Secure	X	X							
<i>Carduelis tristis</i>	American Goldfinch	S5	Secure		X		X					

Appendix 3. Ranking definitions

Definitions of Atlantic Canada Conservation Data Centre (AC CDC) provincial ranks (S-ranks) and Nova Scotia Department of Natural Resources General Status Ranks. Both sets of ranks were developed through the consensus of the Nova Scotia Flora Ranking Committee, cooperatively led by Nova Scotia Department of Natural Resources and AC CDC. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

Definitions of provincial (subnational) ranks (S-ranks):

- S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2 Rare throughout its range in the province (usually 6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S Uncommon throughout its range in the province (usually 21 to 100 occurrences), or found only in a restricted range, even if abundant in at some locations.
- S Usually widespread, fairly common throughout its range in the province (usually 100+ occurrences), and apparently secure, but the element is of long-term concern.
- S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions (100+ occurrences).
- S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- SNA Conservation status not applicable: The taxon is exotic, its occurrence in the jurisdiction is not confirmed, or it is a hybrid without conservation value.
- ? Is used as a qualifier indicating uncertainty: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK).

Definitions of National General Status Ranks (from *Canadian Endangered Species Conservation Council (CESCC). 2011. Wild Species 2010: The General Status of Species in Canada. National General Status Working Group: 302 pp.*)

- *Extirpated*: species that have disappeared from (or are no longer present in) a given geographic area but which occur in other areas
- *Extinct*: species that are extirpated worldwide (i.e., they no longer exist anywhere)
- *At Risk*: species for which a formal detailed risk assessment (COSEWIC assessment or provincial or territorial equivalent) has been completed, and which have been determined to be at risk of extirpation or extinction (i.e., Endangered) or are likely to become at risk of extirpation or extinction if limiting factors are not reversed (i.e., Threatened)
- *May Be At Risk*: species that may be at risk of extirpation or extinction and are, therefore, candidates for a detailed risk assessment by COSEWIC or the provincial or territorial equivalent