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Portage Island National Wildlife Area Management Plan



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Acknowledgements

This management plan was written by Colin MacKinnon of the Canadian Wildlife Service of Environment Canada. The Canadian Wildlife Service wishes to thank the following people who have assisted in past surveys on Portage Island National Wildlife Area: Krista Baker, Peter Barkhouse, Sean Blaney, Dave Cartwright, Don Colpitts, Jocelyn Gauvin, Hinrich Harries, Ron Hounsell, Randy Hicks, Jason Hudson, Bruce Johnson, Andrew Kennedy, Lance Laviolette, Mike Malone, Adam Macpherson, Julie McKnight, Dave Morrow and Al Smith. Helen Whitman has been most helpful sourcing early Crown maps of Portage Island. Thanks to Canadian Wildlife Service employees who were involved in the development or review of the document: Kevin Davidson, Al Hanson, Andrew Kennedy, Matthew Horseman and David Boivin.

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How to cite this document:

Environment Canada. 2014. Portage Island National Wildlife Area Management Plan. Environment Canada, Canadian Wildlife Service, Atlantic Region, 47 p.

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About Environment Canada's Protected Areas and Management Plans

What are Environment Canada protected areas?

Environment Canada establishes marine and terrestrial National Wildlife Areas for the purposes of conservation, research and interpretation. National Wildlife Areas are established to protect migratory birds, species at risk, and other wildlife and their habitats. National Wildlife Areas are established under the authority of the *Canada Wildlife Act* and are, first and foremost, places for wildlife. Migratory Bird Sanctuaries are established under the authority of the *Migratory Birds Convention Act, 1994* and provide a refuge for migratory birds in the marine and terrestrial environment.

What is the size of the Environment Canada Protected Areas Network?

The current Protected Areas Network consists of 54 National Wildlife Areas and 92 Migratory Bird Sanctuaries comprising more than 12 million hectares across Canada.

What is a management plan?

A management plan provides the framework in which management decisions are made. They are intended to be used by Environment Canada staff to guide decision making, notably with respect to permitting. Management is undertaken in order to maintain the ecological integrity of the protected area and to maintain the attributes for which the protected area was established. Environment Canada prepares a management plan for each protected area in consultation with First Nations and other stakeholders.

A management plan specifies activities that are allowed and identifies other activities that may be undertaken under the authority of a permit. It may also describe the necessary improvements needed in the habitat and specify where and when these improvements should be made. A management plan identifies Aboriginal rights and allowable practices specified under land claims agreements. Further, measures carried out for the conservation of wildlife must not be inconsistent with any law respecting wildlife in the province in which the protected area is situated.

What is protected area management?

Management includes monitoring wildlife, maintaining and improving wildlife habitat, periodic inspections, enforcement of regulations, as well as the maintenance of facilities and infrastructure. Research is also an important activity in protected areas; hence, Environment Canada staff carries out or coordinates research at some sites.

The series

All of the National Wildlife Areas are to have a management plan. All of these management plans will be initially reviewed 5 years after the approval of the first plan, and every 10 years thereafter.

To learn more

To learn more about Environment Canada's protected areas, please visit our website at www.ec.gc.ca/ap-pa or contact the Canadian Wildlife Service.

Portage Island National Wildlife Area

Portage Island National Wildlife Area (NWA) in Miramichi Bay, New Brunswick, is part of a chain of coastal islands, barrier beaches and dunes bordering the east coast of the province. Portage Island NWA represents a unique example of a barrier island, with habitat ranging from non-vegetated sand dunes to interior wetlands and forested dunes. This NWA is home to a diversity of wildlife, including the endangered Piping Plover.

Portage Island consists of a series of sand and gravel coastal beaches and a sand dune system of ridges and shallow ponds or “slacks.” The older sand ridges on the island are vegetated by dune communities, with a progression from Marram Grass (*Ammophila breviligulata*) in the south to lichen and shrub forest in the north. The dune slacks on the east side of the island and the fringe bordering the island’s sheltered bay are vegetated by salt marsh plant species. Brackish marshes and swamps occupy interior slacks.

The shallow waters around Portage Island NWA and its sheltered bay provide habitat for staging and migrating waterfowl. The dune slacks and interior ponds provide some habitat for breeding waterfowl and marsh birds. Its sand beaches and flats are used by migrating shorebirds, and several pairs of Osprey (*Pandion haliaetus*) nest on the island.

Composed almost entirely of sand, Portage Island has a geomorphology that is highly dynamic. Over the centuries, the shape of the island has been constantly changing. Erosion has dramatically removed extensive portions along the eastern side of the island, while at the same time accretion has caused an expansion towards the south. Climate change and anticipated sea-level rise will cause this system to be more dynamic in the future.

The Canadian Coast Guard established a lighthouse on Portage Island in 1869. The lighthouse was automated in 1970, and Portage Island was subsequently declared surplus property. Administration of Portage Island was formally transferred to the Canadian Wildlife Service (CWS) on November 3, 1970, and the island was designated Portage Island NWA on November 8, 1979.

There are no designated roads or buildings on Portage Island NWA. CWS visits the NWA every two years to conduct management activities, including a cursory monitoring of bird abundance and diversity, reporting of wildlife sightings, public use inspection, assessment of the extent of habitat change, and maintenance of regulatory signage.

For greater certainty, nothing in this management plan shall be construed so as to abrogate or derogate from the protection provided for existing Aboriginal or treaty rights of the Aboriginal peoples of Canada by the recognition and affirmation of those rights in section 35 of the *Constitution Act, 1982*.



Figure 1: Common Terns over the north bar, Portage Island NWA.

Photo: C. MacKinnon © Environment Canada, 1991

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1 DESCRIPTION OF THE PROTECTED AREA

Portage Island National Wildlife Area (NWA) is an island in Miramichi Bay at the mouth of the Miramichi River (Figure 2), New Brunswick (47°10'N, 65°02'W). The 348-ha island, measuring 5.7 km long by 1.15 km wide, comprises a variety of habitat types: 41% forest habitat, 25% unvegetated dunes, 12% salt marsh, 10% shrub-dominated (*Myrica* sp.) dunes, 9% grass-dominated (*Ammophila* sp.) dunes and 3% brackish ponds (Figure 3).

Portage Island NWA is an International Union for Conservation of Nature Category 1a protected area. This NWA is an important staging and migration area for waterfowl and supports a diversity of migrating shorebirds. A significant number of endangered Piping Plovers (*Charadrius melodus*) nest on the island (five nests recorded in 2003). Large numbers of Red-breasted Mergansers (*Mergus serrator*) and non-breeding Double-crested Cormorants (*Phalacrocorax auritus*) are also found here during the summer months (Barkhouse and Smith 1981; MacKinnon 1991).

Portage Island was declared an NWA on November 8, 1979. The NWA is administered under the *Wildlife Area Regulations* of the *Canada Wildlife Act* and is managed by the Canadian Wildlife Service of Environment Canada.

Table 1: Portage Island NWA summary information.

Protected area designation	National Wildlife Area
Province or territory	New Brunswick
Latitude and longitude	47°10'N, 65°02'W
Size	451 ha (1114 acres)* <i>*In 2000, due to erosion, the island size was 348 ha (860 acres)</i>
Protected Area Designation Criteria (Protected Areas Manual)	<p>Historic: Supports a population of a species or subspecies or a group of species which is concentrated, for any portion of the year.</p> <p>Specifically, Portage Island NWA supports concentrated populations of waterfowl and shorebirds, including 1% of the breeding population of Piping Plovers in the Atlantic Region.</p> <p>Current: Meets criteria 1(a), where “the area supports a population of a species or subspecies or a group of species which is concentrated, for any portion of the year.”</p> <p>Specifically, colonial species such as Double-crested Cormorant and Great Blue Heron utilize the wetlands on Portage Island NWA and are therefore concentrated on the island for a portion of the year. The area also satisfies criteria 2(b), where “the area has special value for maintaining the genetic and ecological diversity of a region because of the quality and uniqueness of its flora and fauna.”</p>
Protected Area Classification System	Species or Critical Habitat Conservation

International Union for Conservation of Nature (IUCN) Classification	1a
Order-in-Council number	PC 1970-1932 and PC 1979-3017
Directory of Federal Real Property (DFRP) number	04618
Gazetted	November 8, 1979
Additional designations	<ul style="list-style-type: none"> • Proposed New Brunswick Critical Area (Dionne et al. 1988) • Ecological Reserve under the International Biological Program (IBP) (Wein and Jones 1975)
Faunistic and floristic importance	Unique sequence of coastal dune succession
Invasive species	None documented
Species at risk	Piping Plover
Management agency	Environment Canada, Canadian Wildlife Service
Public access and use	Public access is allowed. Beaches, accessible by boat, are frequently used for summer recreation. No visitor infrastructure exists within the NWA.

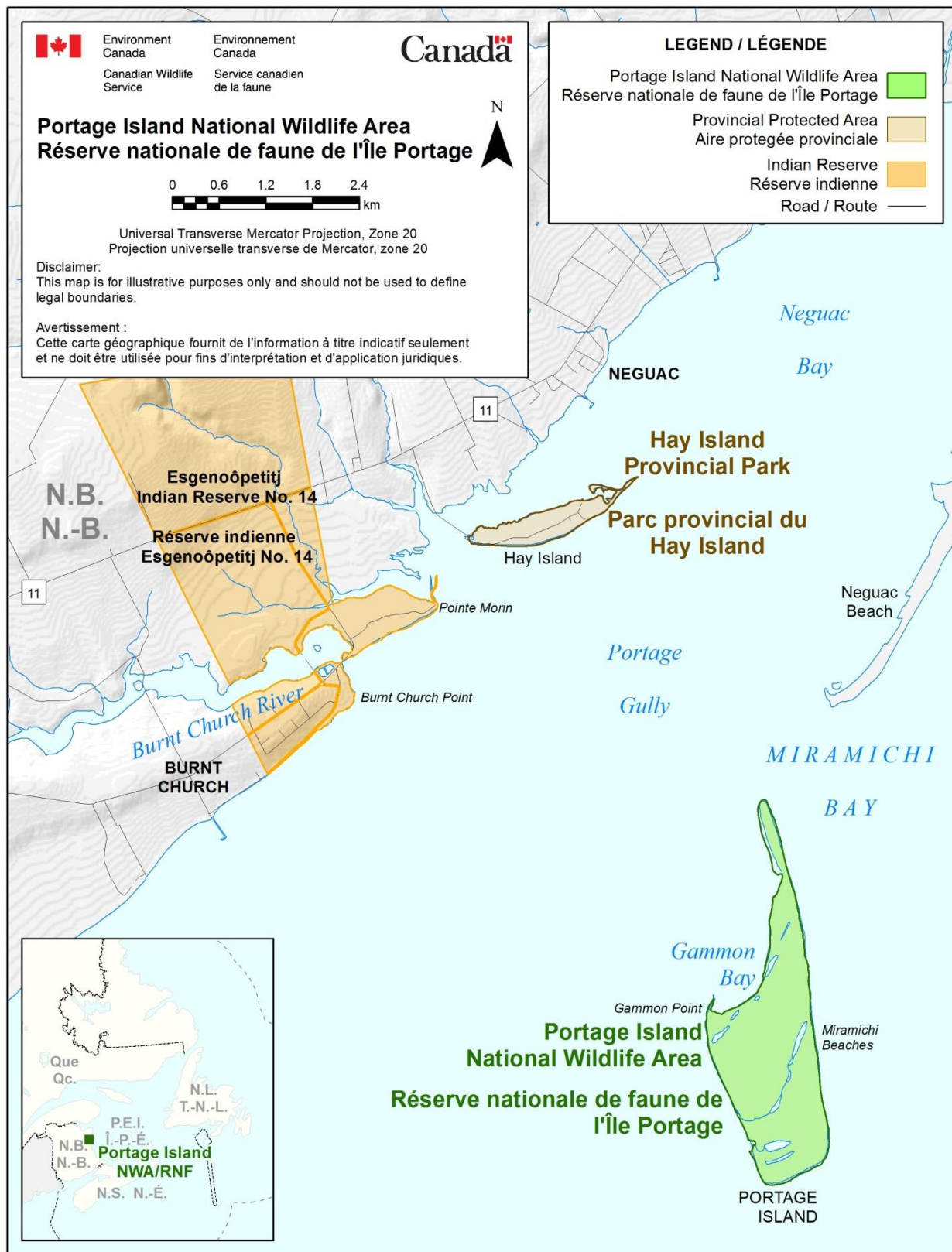


Figure 2: Portage Island NWA, Miramichi Bay, New Brunswick.



Figure 3: Aerial photo of Portage Island, 2003.

1.1 REGIONAL CONTEXT

Portage Island NWA is located in Miramichi Bay, 39 km northeast of Miramichi City, Northumberland County, New Brunswick (47°10'N, 65°02'W) and 6 km from the mainland. The mainland communities west of Portage Island, i.e., Neguac and Burnt Church (Esgenoôpetitj) First Nation, have a long history of human use of Portage Island associated with the coastal fishery (Perley 1852; Ganong 1904). The usual boat launching point to access Portage Island is situated at Hay Island Provincial Park, 3.7 km northwest of the island (Figure 2).

Portage Island lies within the Atlantic Maritime ecozone, one of 15 terrestrial ecozones in Canada. Within this ecozone, the island is situated within the southeastern coastal extremity of the Caraquet ecodistrict (Zelazny 2007). This ecodistrict follows the coastal rim of New Brunswick's Acadian Peninsula, which begins at the mouth of the Miramichi River (site of Portage Island NWA) and ends at the mouth of the Nepisiguit River. The eastern arm of this ecodistrict, from Caraquet Island to Bartibog Bridge, consists of a series of sand dunes, protected bays and barrier islands. Portage Island is the most southern and removed of this linear chain of coastal habitat.

Portage Island is part of a series of coastal dunes and islands that border the east coast of New Brunswick (McCann 1980; O'Carroll et al. 2006). To the immediate south of Portage Island lie Fox Island and Huckleberry Island, and to the southeast lie Bay du Vin Island and Egg Island. Another dune system, Neguac Bar, lies north of Portage Island.

This area is important to a variety of waterbirds. Bay du Vin Island supports a colony of Great Blue Herons, with 229 nests recorded in 1993, making it the largest colony in the province at that time (MacKinnon 1993a). A small isolated islet off the southern tip of Huckleberry Island also once supported a large colony of Common Terns. Egg Island has a colony of Double-crested Cormorants (MacKinnon 1996). Neguac Bar once supported a significant Common Tern colony, with 3527 nests recorded in 1993. This colony was abandoned around 1994 due to human disturbance (MacKinnon 1993b). As bird colonies shift and relocate, Portage Island NWA may provide important undisturbed habitat for these species (Boyne and Hudson 2002; Davis et al. 2011).

This entire network of coastal islands, including Portage Island, provides important habitat for the endangered Piping Plover (Environment Canada 2012). The Piping Plover's nesting habitat of exposed dune flats and areas of "wash-over" and "blow outs" make nesting precarious, as these sites are highly susceptible to flooding from high tides and storms (Goodale et al. 2007; Cohen et al. 2009). Portage Island provides both a large area and a diversity of coastal habitat that is important for this species.

1.2 HISTORICAL BACKGROUND

This region has been the home of the Mi'kmaq people for generations. The nearby First Nation community of Eskinuopitijk, also known by the English name of Burnt Church, has a long

history of settlement. Metepenagiag, located on the Miramichi River, has over 3000 years of continuous settlement, making it the oldest village in New Brunswick (Allen 1994).

Portage Island probably received its present name from the Aboriginal people and early French settlers who often stopped at the island when crossing the bay (Smethurst 1774). According to Perley (1852), the first year-round trading and fishing settlement on the Miramichi was established on Portage Island. Throughout the early 1800s, lobster fishing quickly developed as a supplement to the local economy. A small lobster processing facility was established on Portage Island, although the actual location of the facility is unknown and the site may have since eroded away.

In 1867, the island was divided into 31 “meadow lots” set aside primarily for harvesting native dune grasses for livestock forage. In 1869, a lighthouse was established on Portage Island to mark the northern half of the main entrance to Miramichi Bay. The lighthouse was eventually decommissioned and moved to the New Brunswick Aquarium and Marine Centre in Shippegan for preservation. Range lights are still maintained by the Canadian Coast Guard. For a more complete account of the history of Portage Island, see Appendix 1.

1.3 LAND OWNERSHIP

Portage Island in its entirety is owned and administered by the Government of Canada and contained within the NWA. The property boundary follows the mean high water mark (normal tide) around the periphery of the island, as per the standard definition of Crown land in New Brunswick.

The federal government does not hold the subsurface mineral rights for Portage Island NWA.

Except for a foot trail through the woods, there are no right-of-ways or fences on the island. All vehicle use is prohibited within Portage Island NWA.

1.4 FACILITIES AND INFRASTRUCTURE

There are no designated roads or buildings on Portage Island NWA, making maintenance requirements minimal. As noted, a very old foot trail connects the northwestern cove, Gammon Bay, to the eastern side of the island. This trail is not maintained. The eastern terminus of the trail can be difficult to locate along the constantly changing coastline, which is reshaped in severe storms. Site visits, at least once every two years, include inspections and repairs or replacement of regulatory signage (including boundary, public notice and 2' x 4' NWA identification signs) (Table 2).

Table 2: Facilities and infrastructure in Portage Island NWA.

Type of facility or infrastructure	Approximate size (m, m ² , km, km ² or linear m) or number	Responsibility holder or owner
Property boundary	14.5 km	Environment Canada – Canadian Wildlife Service (EC-CWS)
Boundary signs	25	EC-CWS
NWA entry signs (Gammon Cove)	1	EC-CWS
Public notice signs	4	EC-CWS
Range lights (PWGSC map S-1011)	3 towers	DFO-CCG*

*Department of Fisheries and Oceans – Canadian Coast Guard

2 ECOLOGICAL RESOURCES

2.1 TERRESTRIAL AND AQUATIC HABITATS

Portage Island is a coastal sand dune ecosystem with alternating dune ridges and slacks running in a northeast to southwest direction along its length. The island is minimally disturbed by human activity. The tops of the dunes exhibit a well-defined succession from predominantly Marram Grass (*Ammophila breviligulata*) to shrub dune, lichen and shrub forest. Salt marshes are found predominantly adjacent to Gammon Cove and in dune slacks along the east side of the island, while brackish and freshwater marshes and swamps occupy the interior slacks. According to local historical knowledge, the Jack Pine (*Pinus banksiana*) forest covering the northern half of the island (Figures 4 and 5) has burned twice in recent years; the last large fire occurred in the late 1940s (Malone 1978). To date, 51 plant species have been documented on Portage Island (Malone 1978; Christie 1978; Hinds 1983; Hinds 2000; Roland 1998).

The island's flora is dictated largely by the age of the underlying dunes. Shrub swamp dominated by Meadow-Sweet (*Spiraea latifolia*), Sweet Gale (*Myrica gale*), Blue-Joint (*Calamagrostis neglecta*), Water Parsnip (*Sium suave*) and Wire Birch (*Betula populifolia*) are common in the interior portions of Portage Island. Broad-leaved Cat-tail (*Typha latifolia*) and Saltmarsh Bulrush (*Bolboschoenus maritimus*) are also common. The majority of the interior shallow water ponds are influenced by marine waters and airborne salt, resulting in a dense growth of Widgeon Grass (*Ruppia maritima*) within them. Ponds in coastal salt marshes are often fringed by Salt-water Cord Grass (*Spartina alterniflora*) and hold some Widgeon Grass. Eelgrass (*Zostera marina*) is dominant in the large pond at the south end of Portage Island. Sago Pondweed (*Potamogeton pectinatus*) and the uncommon *Sparganium multipedunculatum* are present in the large pond on the east side of the island (Whitman 1970; Rothfels and Blaney 2004).

The salt marsh flora is consistent with other marshes of the region (Hanson 2004). Dominant species such as Salt-meadow Grass (*Spartina patens*) and Black Grass (*Juncus gerardii*) occur throughout, and Broad-leaved Cattail, Red Fescue (*Festuca rubra*), Bog Rush (*Juncus balticus*) and Scaly Sedge (*Carex palacea*) occur on higher ground. Some patches of Seashore Saltgrass (*Distichlis spicata*) exist. Scotch lovage (*Ligusticum scoticum*) is common on areas enriched by wrack. Samphire (*Salicornia europaea*), Orache (*Atriplex patula*) and Sea-Milkwort (*Glaux maritima*) are also well represented in the NWA.

Beaches surround the island, and except for occasional clumps of Beachgrass or Sea Lyme-grass (*Elymus mollis*), the beaches are devoid of vegetation. Areas of upper beach reaching inland to the east, caused by storm erosion, are becoming colonized by Sheep Sorrel (*Rumex acetosella*). Sea Lyme-grass and Beachgrass, the dune pioneering species, have stabilized the relatively new land on the south end. This widespread "Ammophila dune" offers protection for the establishment of

such common species as Sea-beach Sedge (*Carex silecia*), Wild Rose (*Rosa virginiana*), Beach-pea (*Lathyrus japonicus*) and Bayberry (*Myrica pennsylvanica*).

2.2 WILDLIFE SPECIES

The unique coastal habitat of Portage Island NWA has greatly influenced wildlife species composition and abundance on the island. The mosaic of undulating dunes in different phases of plant succession, combined with interspersed wetlands, provides a diversity not seen on adjacent coastal islands.



Figure 4: Dune succession, Portage Island NWA.

Photo: M. Malone © Environment Canada, 1978



Figure 5: Jack Pine forested sand dunes, Portage Island NWA.

Photo: C. MacKinnon © Environment Canada, 2005

2.2.1 Birds

The location of Portage Island NWA in the middle of the mouth of the Miramichi River results in substantial numbers of birds on and around this island. Although there are no large colonies of seabirds or other colonial waterbirds on Portage Island, the area is used extensively as a feeding and loafing site by a number of species. The forested portion of the island also hosts a large number of passerine species. To date, 77 species of birds have been observed on and around Portage Island NWA.

Double-crested Cormorants (*Phalacrocorax auritus*) and Common Terns (*Sterna hirundo*) feed in the shallow waters around the island and rest on its beaches, with maximum counts of 595 and 521 birds, respectively. Egg Island, just south of Portage Island, supports a colony of up to 610 pairs of Great Black-backed Gulls (*Larus marinus*), 441 pairs of Herring Gulls (*Larus argentatus*) and 558 pairs of Double-crested Cormorants (MacKinnon 1996). Birds from these colonies undoubtedly frequent Portage Island.

Immediately north of Portage Island is Neguac Bar, a site that once supported a large Common Tern colony. Another Common Tern colony is present at “Little Huckleberry Island” approximately 10.5 km south of Portage Island NWA. In the late 1980s and early 1990s, these two colonies supported upwards of 1800 and 3500 Common Terns, respectively. However, due to human disturbance and the erosion of suitable nesting areas, they have decreased substantially in recent years. Portage Island holds the potential to provide alternative nesting sites free of the human disturbances that have negatively impacted these colonies. Large colonial nesters such as Great Blue Heron may, on occasion, relocate to suitable habitat near an existing colony or to nearby islands (Davis et al. 2011; MacKinnon et al. 2005; MacKinnon and Kennedy 2006).

Gulls rest and forage along the shore of Portage Island. Peak numbers of 23 Bonaparte’s Gulls (*Larus philadelphia*), 200 Ring-billed Gulls (*Larus delawarensis*), 465 Herring Gulls and 175 Great Black-backed Gulls have been recorded at the NWA.

The salt marsh ponds and inter-dune slacks also support several bird species. American Black Duck (*Anas rubripes*) is the most commonly observed and abundant species of waterfowl; however, lesser numbers of Green-winged Teal (*Anas crecca*), Mallard (*Anas platyrhynchos*), Blue-winged Teal (*Anas discors*), Northern Pintail (*Anas acuta*) and American Wigeon (*Anas americana*) have been recorded. Great Blue Herons (*Ardea herodias*) also frequent these ponds. Red-breasted Mergansers (*Mergus serrator*) have been observed in substantial numbers, with a peak of 333 recorded (Christie 1978; Erskine 1978).

Shorebirds use the intertidal flats around the island, especially along the north and west side, making extensive use of Gammon Cove. Although surveys have been infrequent, 11 species of shorebirds have been observed. Nine of these are common migrants; 3 species, Willet (*Tringa semipalmata*), Spotted Sandpiper (*Actitis macularia*) and Common Snipe (*Gallinago gallinago*)

probably breed on the island. Black-bellied Plover (*Pluvialis squatarola*) is particularly abundant on the beaches of Portage Island NWA during spring migration.

One of the more obvious bird species nesting on Portage Island is Osprey. At least three nests were observed in 2000, and four active nests were observed in both 1987 and 1989. The forested portion of the island also supports a number of passerine species, although extensive surveys have not been conducted.

The endangered Piping Plover (*Charadrius melodus*) nests on Portage Island, preferring the exposed dunes and blown-out areas around the southern end of the island.

2.2.2 Mammals

Mammal diversity on Portage Island is low. The following species have been observed in the NWA: Meadow Vole (*Microtus pennsylvanicus*), Masked Shrew (*Sorex cinereus*), Snowshoe Hare (*Lepus americanus*), Mink (*Mustela vison*), Red Fox (*Vulpes vulpes*) and Grey Seal (*Halichoerus grypus*).

Walrus (*Odobenus rosmarus*) were once hunted on Portage Island. In 1968, R. D. Young collected a centuries-old walrus skull from the island. This specimen (NBMG 4584) is with the New Brunswick Museum (Miller 1990).

2.2.3 Reptiles and Amphibians

No reptile or amphibian species have been recorded on the NWA.

2.2.4 Fish

The salt marsh ponds and inter-dune slacks support stickleback and other brackish water fish, as inferred by the frequent sightings of foraging Great Blue Herons and Belted Kingfishers (*Ceryle alcyon*). However, these wetlands have not been sampled to determine species composition.

The beaches of Portage Island NWA frequently attract large numbers of birds that feed on spawning Sand Lance (*Ammodytes americanus*). On June 19, 1985, 173 Common Terns, 50 Greater Black-backed Gulls, 250 Herring Gulls and 50 Ring-billed Gulls were observed foraging for this fish along the southeast side of Portage Island.

2.2.5 Insects

A brief survey of conspicuous macroinvertebrates was recorded by the Atlantic Canada Conservation Centre (Rothfels and Blaney 2004). These observations included three species of beetles, six species of butterfly and seven species of dragonfly, as well as an additional dragonfly specimen identified at the genus level only. One beetle, *Trichodes nuttalli*, associated with pine stands and sand prairie, is the first record for New Brunswick.

2.3 SPECIES AT RISK

The endangered Piping Plover (*melodus* subspecies) has been recorded breeding on Portage Island for many years (Table 4; Figure 6). Portage Island supports upwards of 1% of the roughly 400 individuals in the Atlantic provinces (Environment Canada 2012).

Portage Island NWA provides habitat for Piping Plover for breeding and possibly staging. This species prefers wide sand, gravel or cobble beaches as nesting sites; barrier islands, sand spits and peninsulas are preferred locations. The area of beach considered suitable for nesting, feeding and cover includes the intertidal zone from the low water mark up to the crest of the vegetated dune, typically identified by the presence of Marram Grass or other dune vegetation. Habitat for feeding and brood-rearing must be located in close proximity to nesting sites. Microhabitat features such as the presence of wrack, driftwood and ephemeral pools enhance habitat quality by providing feeding opportunities and shelter. The entire beach area is therefore an important component of critical habitat, from the low water mark and the intertidal zone up to the line of Marram Grass or other vegetation, or the peak of the vegetated dune (Gratto-Trevor and Abbott 2011). Critical habitat has been identified for Piping Plover on Portage Island (Environment Canada 2012).

No other species at risk are known to breed in the NWA, although the Peregrine Falcon (*Falco peregrinus*) is a spring and fall transient. Other bird species of interest, identified as either sensitive or at-risk by the Province of New Brunswick, are Black-crowned Night Heron (*Nycticorax nycticorax*), Brown Thrasher (*Toxostoma rufum*), Horned Lark (*Eremophila alpestris*) and Willet (*Catoptrophorus semipalmatus*).

Table 3: Species at risk in Portage Island NWA.

Common and scientific names of species	Status			Presence or potential of presence ⁴
	Canada		New Brunswick	
	SARA ¹	COSEWIC ²	Provincial ranking ³	
Bird				
Piping Plover <i>Charadrius melodus melodus</i>	Endangered	Endangered	At risk	Confirmed
Peregrine Falcon <i>anatum</i> * <i>Falco peregrinus anatum</i>	Special concern	No status	No status**	Confirmed
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	No status	No status	Sensitive	Probable
Brown Thrasher <i>Toxostoma rufum</i>	No status	No status	Sensitive	Probable
Horned Lark <i>Calamospiza melanocorys</i>	No status	No status	May be at risk	Probable

Common and scientific names of species	Status			Presence or potential of presence ⁴
	Canada		New Brunswick	
	SARA ¹	COSEWIC ²	Provincial ranking ³	
Willet <i>Catoptrophorus semipalmatus</i>	No status	No status	Sensitive	Probable

¹ *Species at Risk Act*: Extinct, extirpated, endangered, threatened, special concern, not at risk (assessed and deemed not at risk of extinction) or no status (not rated)

² Committee on the Status of Endangered Wildlife in Canada: endangered, threatened, special concern, not at risk (assessed and deemed not at risk of extinction) or no status (not rated)

³ New-Brunswick status:

http://www2.gnb.ca/content/gnb/en/departments/natural_resources/wildlife/content/GeneralStatusWildSpecies/definitions.html

⁴ "Confirmed," "probable" or "potential"

* Only present at the NWA during fall and spring migrations.

**Only the breeding population of this species is considered at risk by the Province of New-Brunswick. Individuals observed at the NWA are transient.

Table 4: Piping Plover (*Charadrius melodus melodus*) observations at Portage Island NWA.

Year	Singles	Pairs (nests found)	Total adults
1983	0	1	2
1985	1	2	5
1987	1	1 (1)	3
1991	0	1	2
1994	1	1	3
1996	1	1	3
1999	1	1	3
2000	0	2 (1)	4
2001	1	3	7
2002	0	3	6
2003	0	5	10
2005	0	1	2
2006	0	1	2
2007	1	2	3



Figure 6: Piping Plover nest in typical habitat on Portage Island NWA.
Photo: A. Macfarlane © Environment Canada, 2000

3 MANAGEMENT CHALLENGES AND THREATS

3.1 TOURISM

Coastal boating and sea kayaking are rapidly growing recreational activities. Increasingly unique and previously inaccessible areas are being promoted for day adventure opportunities, either for guided tours or in tourism promotional material. The waters around Portage Island are frequented by boaters during the summer months. The series of coastal islands with their easily accessible sand beaches are enticing to tourists. Evidence of temporary picnicking and camping on the island suggests some use over the summer months. However, most visits are restricted to the coastal beaches, and few people wander into the interior, primarily due to the abundance of mosquitoes on the island.

3.2 DOGS AND PLOVERS

Short visits to Portage Island by picnickers have little lasting impact on the habitat. However, humans and accompanying family pets, primarily dogs, cause significant disturbance to ground-nesting birds and are especially harmful to Piping Plover. Dogs and cats are therefore prohibited on Portage Island NWA.

3.3 SHELLFISH AND AQUACULTURE

The potential further development of shellfish aquaculture sites in Gammon Bay adjacent to Portage Island NWA is a concern, due to disturbance and potential for conflicts that may arise if birds were to feed or roost at the aquaculture site (Figure 7). Severe storms can damage infrastructure, resulting in deposition of nets and related hardware on the island. Such materials can be difficult and costly to remove, damaging to habitat, and hazardous to beach-dwelling shorebirds, especially Piping Plovers. Shellfish from this area are in high demand, and one product is marketed as “Portage Island Oysters.”



Figure 7: Gammon Bay, adjacent to the Portage Island NWA, a mussel aquaculture site.
Photo: A. Kennedy © Environment Canada, 2005

3.4 HABITAT CHANGE

Coastal dune plant succession and dune erosion are the main habitat changes taking place at Portage Island NWA. As the dunes age, they will become increasingly vegetated with ericaceous and eventually forested habitat. This succession will be heavily influenced by erosion and flooding events that either create new dune and beach habitat or kill upland plants from flooding by salt water. Extreme weather events in recent years and significant loss of forested habitat along the island's east side suggest that the balance between island growth and loss may be compromised. At present, the rapid loss of forested habitat cannot be easily or quickly compensated by Portage Island's expansion to the south.

The appearance of Portage Island is expected to change in the future, with more open sand dunes, more dunes vegetated with Marram Grass, and a reduction in the area of Jack Pine forest.

3.5 PREDICTED CLIMATE CHANGE CONTEXT

The climate at the mouth of the Miramichi River, generally cool with a mean annual temperature of 4.7°C, is moderated by the marine environment of the Gulf of St. Lawrence. Summers are generally warm inland but slightly cooler along the coast. Midsummer temperatures range from average lows of 9–13°C with daytime highs of 22–25°C. The islands, including Portage Island, flanking the mouth of the Miramichi River are considered as at “moderate” risk from sea-level rise.

Portage Island NWA is very susceptible to impacts from severe storms, and such events will likely be compounded by sea-level rise (Daigle 2012). Fishing shacks once present in the mid-20th century on Gammon Point, the spit at the northwest end of the island, have been levelled by storm surges and subsequently buried by sand. Suitable nesting areas for the endangered Piping Plover are being dramatically altered or are disappearing at the northern bar due to continual erosion. However, deposition of sand at the southern end is increasing the size of that area of the island and providing more open dune habitat. This change in the physical nature of the island has impacted plants that occur there. Some sites of climax species, such as *Hudsonia* (*Hudsonia ericoides*), which may be hundreds of years old, have been destroyed by recent flooding brought on by storms. Much of the forest along the eastern side of the island has been killed by salt spray and shifting dunes (Figure 8).

Coastal erosion and subsequent habitat loss, often in concert with habitat gain through sand deposition, is part of the unique character of Portage Island (Table 5). The eastern shore of Portage Island has suffered severe coastal erosion over the past 40 years, although it is uncertain whether this erosion is part of typical cyclic occurrences or more severe weather influenced by climate change. Most noticeable is the almost complete loss of the largest linear pond on the island. Through erosion and inundation by sand, its length has been reduced by 250 m from 1971 to 2011. The southern end of the island is being enlarged by sand deposition, but this has not kept pace with the overall erosion rate. When gazetted in 1979, Portage Island was 451 hectares in size, compared with 348 hectares today. A sea-level rise of 90 cm (+/- 38 cm) has been predicted for the mouth of the Miramichi by 2100 (Daigle 2012). Island loss due to severe storm surges is of concern as well. Should Portage Island experience a 0.5 m increase in water level over a “large tide,” more than 50% of the island would be covered (Figure 9) (Miramichi River Environmental Association 2007). Canadian Wildlife Service Atlantic Region has established a Piping Plover habitat monitoring program for the eastern coast of New Brunswick to quantify changes in habitat related to storm surge and sea-level rise (Figure 10).

Table 5: Decrease in size of Portage Island, New Brunswick, 1870–2000.

Year	Size in hectares (acres)	Source
1870	451 (1114)	Map of Portage Island dated 17 March 1870
1979	451 (1114)	As gazetted in 1979
2000	348 ha (860)	Service New Brunswick*

*<http://geonb.snb.ca/geonb/>



Figure 8: Extensive coastal erosion along the eastern side of Portage Island NWA.
Photo: C. MacKinnon © Environment Canada, 2000

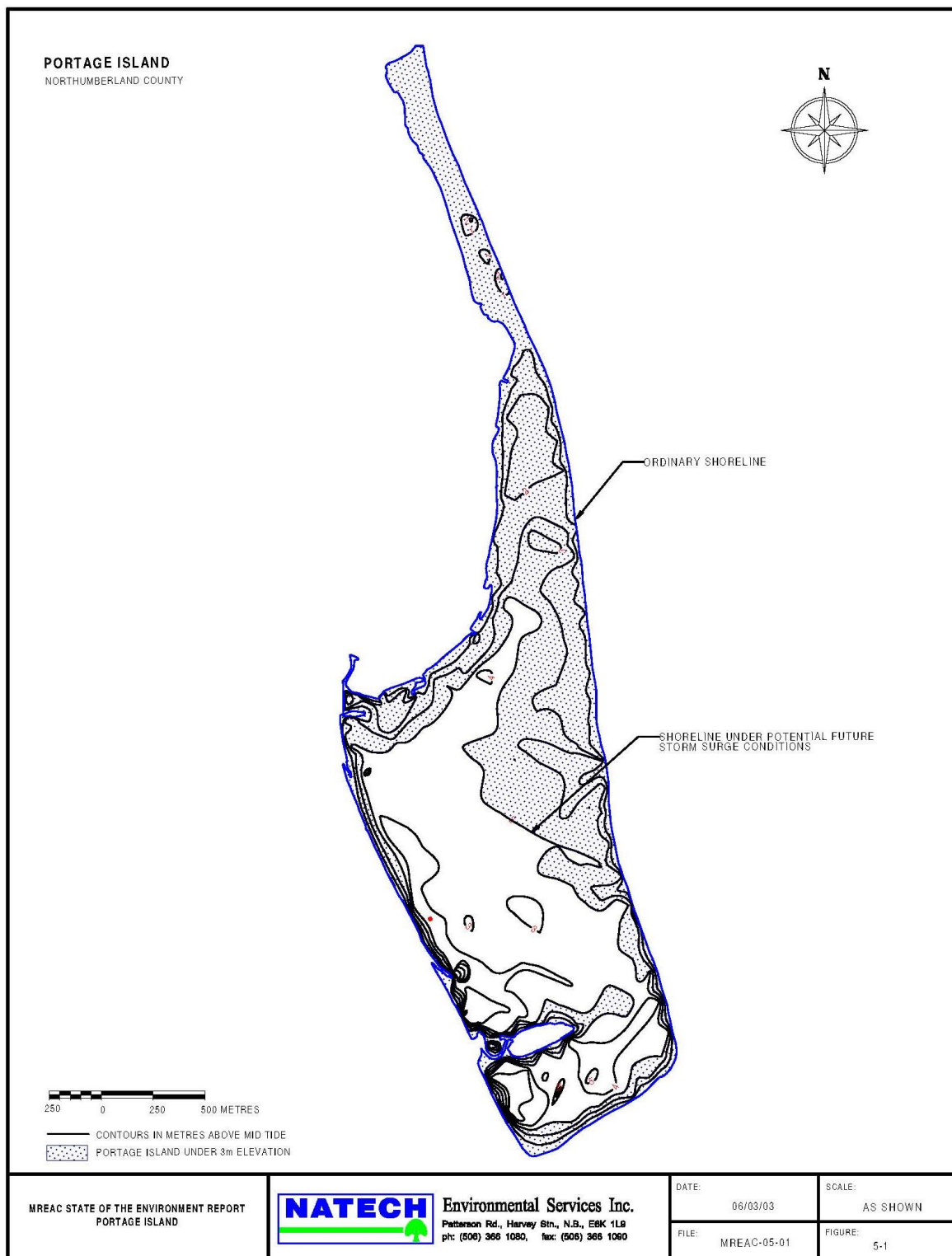


Figure 9: Portage Island NWA under a 3-m storm surge (from State of the Environment Report for the Miramichi Watershed, Miramichi River Environmental Association 2007).

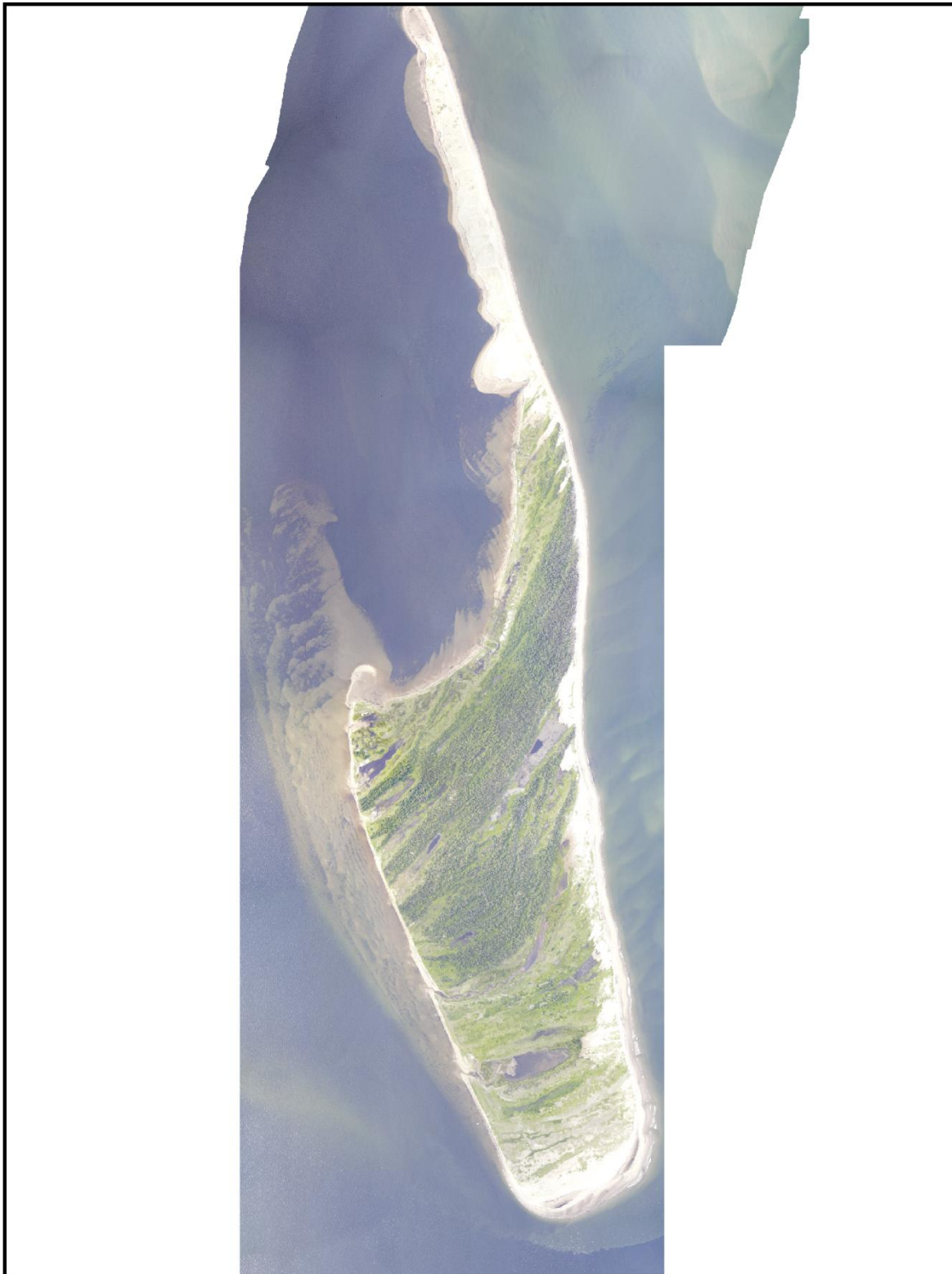


Figure 10: Portage Island NWA habitat change detection imagery, 2011.

3.6 CONTAMINATED SITES

The operational lighthouse station that was once supported on Portage Island raises concerns with respect to residual contaminants. As part of scheduled maintenance, lighthouse stations were scraped and painted on a yearly basis, frequently using lead-based paints. Mercury floats were often used to support the light within the tower. Phase I and II environmental site assessments have been conducted on Portage Island targeting these concerns, with minimal traces of lead and mercury found near the old lighthouse sites (SNC-Lavalin 2002).

4 GOALS AND OBJECTIVES

4.1 VISION

The long-term vision for Portage Island NWA is to maintain and enhance habitat for all native wildlife, with priority being given to species at risk and their associated habitats. Portage Island NWA was established for conservation purposes.

4.2 GOALS AND OBJECTIVES

Portage Island NWA was initially established to provide habitat protection for a variety of migratory bird species, with a focus on waterfowl. More broadly, this site protects a unique diversity of coastal, wetland and upland habitat in accordance with the document *A Wildlife Policy for Canada*, developed by federal, provincial and non-governmental organizations working group, and endorsed by the Wildlife Ministers Council of Canada in 1990.

Currently, the primary management goal for Portage Island NWA is to ensure that the wildlife habitat and associated wildlife are protected from human disturbances such that the potential for natural biological processes is maximized. In order to attain this goal, a specific set of goals and objectives have been established (see below) to ensure that the NWA will be managed to maintain its long-term natural productivity by maintaining or enhancing the quantity, quality and diversity of natural habitats, while permitting non-conflicting human use.

Portage Island NWA is a remote site where active management of habitat or human visitors is not required. Management activities are limited to responding to specific incidents as they may arise and to planned site inspection visits. Active habitat management will be conducted where appropriate to achieve the goals set for the NWA. The goals and objectives listed below reflect a management approach of responding only to negative human activities as they may arise and within program limitations related to financial and staff resources. The discussion of monitoring activities in section 5.3 provides additional information on how the overall management goals will be addressed.

Specific goals and objectives are as follows.

Goal 1: Protect the habitat and wildlife resources of Portage Island NWA by monitoring and responding to human activities that have negative impacts on them. In particular, monitor the reproductive success and survival of Piping Plovers nesting on Portage Island NWA.

- a. Objective: Monitor habitats in the NWA for change and disturbance due to human activities, storm surges and sea-level rise.
- b. Objective: Monitor and mitigate potential impacts of pollution and contaminated sites within the NWA.
- c. Objective: Survey and monitor Piping Plover use and nesting success on the island.

Goal 2: Respond to unauthorized and prohibited activities in the NWA. Protect and maintain the overall ecological qualities of the NWA, including unspoiled natural habitats and Piping Plover habitats, from illegal activities such as camping, camp fires and the presence of dogs.

- a. Objective: Document the number and nature of incidents where evidence exists of illegal activities within Portage Island NWA and report to the Wildlife Enforcement Division, therefore reducing or eliminating their occurrence in the NWA.

4.3 EVALUATION

Annual monitoring will be performed within the limits imposed by the availability of financial and human resources. The management plan will be reviewed 5 years after its initial approval, and reviewed and updated every 10 years thereafter. The evaluation will take the form of an annual review of monitoring data obtained from the monitoring and research projects outlined below. This monitoring will be used to establish priorities for action and to allocate resources.

5 MANAGEMENT APPROACHES

This section and the following table contain a description of all the possible approaches that could be used in the management of the Portage Island NWA. However, management actions will be determined during the annual work planning process and will be implemented as human and financial resources allow.

Table 6: Management approaches for Portage Island NWA.

Management challenge and/or threat	Goal and objective(s)	Management approach (actions, including level of priority¹)
Tourism activities such as bird watching, adventure tourism, camping and open campfires present the potential for significant disturbance to wetland and forest habitat birds.	<p>Objective 1(a): Monitor habitats in the NWA for change and disturbance due to human activities.</p> <p>Objective 1(b): Monitor and mitigate potential impacts of pollution and contaminated sites within the NWA.</p> <p>Objective 2(a): Document the number and nature of incidents where evidence exists of illegal activities within Portage Island NWA and report to the Wildlife Enforcement Division, therefore reducing or eliminating their occurrence in the NWA.</p>	<ul style="list-style-type: none"> • Monitor evidence of unregulated public use (such as illegal camping and open camp fires) and related disturbances (1). • Document the number and nature of incidents where evidence exists of illegal activities within the NWA and report to Wildlife Enforcement Division (1). • Communicate the protected status of Portage Island NWA and the possible cumulative environmental impacts of this aspect of the industry on remote islands to local tourism operators and the provincial department responsible for tourism (2).
Domestic pets, particularly dogs, accompanying day visitors to offshore islands in the summer months disturb habitats and wildlife. Dogs are especially harmful to Piping Plover.	<p>Objective 1(a): Monitor habitats in the NWA for change and disturbance due to human activities.</p> <p>Objective 1(c): Survey and monitor Piping Plover use and nesting success on the island.</p> <p>Objective 2(a): Document the number and nature of incidents where evidence exists of illegal activities within Portage Island NWA and report to the Wildlife Enforcement Division, therefore reducing or eliminating their occurrence in the NWA.</p>	<ul style="list-style-type: none"> • Monitor evidence of unregulated public use (1). • Conduct annual surveys for Piping Plover supported by Canadian Wildlife Service Atlantic Region species at risk staff (1). • Conduct and report on inspection visits, site monitoring and Piping Plover surveys as required, in collaboration with Wildlife Enforcement Division (1).

Management challenge and/or threat	Goal and objective(s)	Management approach (actions, including level of priority¹)
Existing facilities and potential expansion of shellfish aquaculture sites in close proximity to the NWA can cause damage to habitats and conflicts with wildlife within the NWA.	<p>Objective 1(a): Monitor habitats in the NWA for change and disturbance due to human activities, storm surges and sea-level rise.</p> <p>Objective 1(b): Monitor and mitigate potential impacts of pollution and contaminated sites within the NWA.</p>	<ul style="list-style-type: none"> • Monitor evidence of unregulated public use and pollution (1). • Minimize or eliminate discarded by-products found on Portage Island NWA (2). • Communicate the ecological sensitivity of Portage Island NWA to the provincial department responsible for aquaculture (1).
Habitat change due to unauthorized activities in the NWA is of concern. Natural dune succession can be severely altered by disturbances such as fire and off-road vehicle damage.	<p>Objective 1(a): Monitor habitats in the NWA for change and disturbance due to human activities, storm surges and sea-level rise.</p> <p>Objective 1(c): Survey and monitor Piping Plover use and nesting success on the island.</p> <p>Objective 2(a): Document the number and nature of incidents where evidence exists of illegal activities within Portage Island NWA and report to the Wildlife Enforcement Division, therefore reducing or eliminating their occurrence in the NWA.</p>	<ul style="list-style-type: none"> • Conduct macro-habitat monitoring through aerial photography and remote sensing every 10 years (2). • Conduct habitat monitoring supported by inspection visits every 2 years, periodic botanical studies, and focused research on coastal erosion and sea-level rise. Changes will be tracked but cannot be economically mitigated (2). • Conduct inspection visits and site monitoring in collaboration with Wildlife Enforcement Division (1).
<p>Sea-level rise due to climate change will likely result in increased erosion and subsequent habitat changes in the NWA, including:</p> <ul style="list-style-type: none"> ▪ significant habitat change and habitat loss from storm surges; ▪ loss of forested habitat but potential increase in Piping Plover habitat. 	Objective 1(a): Monitor habitats in the NWA for change and disturbance due to human activities, storm surges and sea-level rise.	<ul style="list-style-type: none"> • Monitor habitat for endangered species (Piping Plover) as well as potential habitat for colonial nesting birds. Periodic aerial photography allows for a comparison and evaluation of the rate of change due to erosion (1). • Conduct site inspections to monitor micro-habitat changes such as availability of specific Piping Plover nesting habitat (2). • Monitor botanical changes and plant succession related to changes in the geography of Portage Island (2).
The decommissioned Canadian Coast Guard lighthouse site is a contaminated site that could potentially harm the surrounding flora and fauna.	Objective 1(b): Monitor and mitigate potential impacts of pollution and contaminated sites within the NWA.	<ul style="list-style-type: none"> • Conduct contaminated sites assessments as required (2). • Leave contaminated sites of low risk undisturbed (1). • Minimize habitat disturbance and additional site exposure to flora or fauna (1).

¹ Level of Priority: 1 (from 0 to 3 years); 2 (from 4 to 6 years); 3 (from 7 to 10 years)

5.1 HABITAT MANAGEMENT

5.1.1 Forests

No requirement for forest management is anticipated. The unique character of Portage Island NWA is largely dependent on the natural plant succession within the dunes and the dynamic nature of this habitat. No erosion control measures are contemplated.

5.1.2 Alien and Invasive Plants

There are no immediate threats from alien or invasive plant species in Portage Island NWA. Site visits and periodic botanical surveys every two years will document changes to the flora in the NWA. Specific alien or invasive species will be addressed on a case-by-case basis.

5.2 WILDLIFE MANAGEMENT

No wildlife or habitat management or manipulation is anticipated. The unique habitat and fauna of Portage Island NWA is best conserved by minimizing or eliminating human disturbances. Many years ago, a forest fire ravaged the northern portion of the island. A similar fire in dry conditions would result in the loss of vegetated root mass, which is so important in binding and solidifying the sand dunes. The island is already very susceptible to erosion, and damage from fire would likely exacerbate the situation. The prohibitions on camp fires will be strictly enforced.

5.2.1 Species at Risk

Active management for Piping Plover is not anticipated. Public compliance with the existing regulations will provide safe breeding habitat for this species.

5.3 MONITORING

Due to the remoteness of Portage Island NWA, the site will be visited at least once every two years for maintenance of regulatory signs and to conduct monitoring and inspections in accordance with the outlined goals and objectives for Portage Island NWA. Additional visits may be warranted to support specific studies and regulatory activities.

Effective and efficient monitoring requires careful planning and a coordinated approach. Monitoring will also be carried out in a manner that contributes to meeting species at risk recovery strategy and action plan objectives. Ongoing monitoring needs are as follows:

1. Habitat change, such as changes in plant composition of the habitat due to native, non-native, alien and invasive plant species, as observed in biennial site inspections.
2. Biological inventories, as observed in biennial site inspections.
3. Human use (camping, open fires, soil disturbance) that may require enforcement action, as observed in biennial site inspections.

4. Large-scale changes to vegetation can be monitored by reviewing the periodic aerial photography conducted by the New Brunswick Department of Natural Resources and Energy approximately every 10 years.

There are no public facilities on Portage Island, and any formal management requirements are directed to curtailing undesirable public use. The ongoing site inspection schedule, which includes maintenance of NWA regulatory signage, is presently adequate to monitor the island.

5.4 RESEARCH

Research activities will be considered for permitting when the results obtained through research have the potential for the following:

1. Improved understanding of Piping Plover habitat selection and factors influencing reproductive success.
2. Vegetation and habitat inventory and monitoring of change.
3. Seasonal habitat use (including nearshore) by waterbirds, waterfowl, shorebirds and landbirds.
4. Improved understanding of the biological diversity of Portage Island NWA.

To obtain a permit to conduct research in Portage Island NWA and to receive instructions concerning guidelines for a research proposal, please contact:

Attention: Permits Officer
Atlantic Region
Environment Canada, Canadian Wildlife Service
17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6

or, by email:

Permi.Atl@ec.gc.ca

5.5 PUBLIC INFORMATION AND OUTREACH

Although public use of the island is not encouraged, the importance of Portage Island NWA will be featured in the Canadian Wildlife Service “Heritage to Protect” poster series. A limited number of posters will be available to educators, students and the general public on request. No formal education plan is in place or anticipated. Due to the unique character of Portage Island and its fragile dune habitat and to presence of an endangered species, the NWA will not be promoted as a tourism destination.

6 AUTHORIZATIONS AND PROHIBITIONS

In the interest of wildlife and their habitat, human activities are minimized and controlled in NWAs through the implementation of the *Wildlife Area Regulations*. These regulations set out activities that are prohibited [subsection 3(1)] in wildlife areas and provide mechanisms for the Minister of the Environment to authorize certain activities that are otherwise considered prohibited to take place in NWAs. The regulations also provide the authority for the Minister to prohibit entry into NWAs.

Activities within an NWA are authorized where notices have been posted at the entrance to or along the boundaries of the NWA or when notices have been published in local newspapers. All activities in an NWA are prohibited unless a notice has been posted or published authorizing the activity to take place. However, in addition to notices, certain activities may be authorized by obtaining a permit from the Minister of the Environment.

6.1 PROHIBITION OF ENTRY

Under the *Wildlife Area Regulations*, the Minister may publish a notice in a local newspaper or post notices at the entrance of any wildlife area or on the boundary of any part thereof prohibiting entry to any wildlife area or part thereof. These notices can be posted when the Minister is of the opinion that entry is a public health and safety concern or when entry may disturb wildlife and their habitat.

For the Portage Island NWA, entry is not prohibited; however public visitation is not encouraged owing to the fragile nature of the dune habitat and the presence of an endangered species (Piping Plover). Authorized activities and those activities that will be considered for permitting are described below. Domestic cats are prohibited and domestic dogs are only allowed in support of waterfowl hunting.

6.2 AUTHORIZED ACTIVITIES

For Portage Island NWA, notices authorizing the following activities will be posted in Gammon Cove with a 2' x 4' NWA identification sign. The listed permissible activities are consistent with allowable public use within Atlantic Region NWAs, although all listed activities may not occur at this site.

Authorized activities **without** special restrictions are as follows:

1. Wildlife observation
2. Hunting and trapping¹
3. Hiking
4. Picnicking

¹ Subject to federal and provincial regulations.

Domestic cats are prohibited and domestic dogs are only allowed in support of waterfowl hunting.

Note: If there is a discrepancy between the information presented in this document and the notice, the notice prevails as it is the legal instrument authorizing the activity.

6.3 AUTHORIZATIONS

Permits and notices authorizing an activity may be issued only if the Minister is of the opinion that the activity is scientific research relating to wildlife or habitat conservation; or the activity benefits wildlife and their habitats or will contribute to wildlife conservation; or the activity is not inconsistent with the purpose for which the NWA was established and is consistent with the most recent management plan.

The Minister may also add terms and conditions to permits in order to minimize the impact of an activity on wildlife and wildlife habitat.

All requests for permits or authorizations must be made (in writing or online) to the following address:

**Attention: Permits Officer
Atlantic Region
Environment Canada, Canadian Wildlife Service
17 Waterfowl Lane, P.O. Box 6227
Sackville NB E4L 1G6**

Or:

Permi.Atl@ec.gc.ca

For further information, please consult the Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated under the *Canada Wildlife Act* and *Migratory Birds Convention Act, 1994* (December 2011). This Environment Canada policy document is available on the Protected Areas website at www.ec.gc.ca/ap-pa.

6.4 EXCEPTIONS

The following activities will be exempt from the requirements for permitting and authorizations:

- Activities related to public safety, health or national security that are authorized by or under another Act of Parliament, or activities that are authorized under the *Health of Animals Act* and the *Plant Protection Act* to protect the health of animals and plants;
- Activities related to routine maintenance of National Wildlife Areas and to the implementation of management plans, and enforcement activities conducted by an officer or employee of Environment Canada.

6.5 OTHER FEDERAL AND PROVINCIAL AUTHORIZATIONS

Depending on the type of activity, other federal or provincial permits or authorizations may be required to undertake an activity in the Portage Island NWA.

Contact your regional federal and provincial permitting office for more information.

Attention: Permits Officer

Atlantic Region

Environment Canada, Canadian Wildlife Service

17 Waterfowl Lane, P.O. Box 6227

Sackville NB E4L 1G6

Province of New Brunswick

Department of Natural Resources and Energy

P.O. Box 6000

Fredericton, NB E3B 5H1

Tel.: 506-453-3826

7 HEALTH AND SAFETY

In the case of environmental emergencies, contact will be made with the Canadian Environment Emergencies Notification System at the following address:

Environment Canada, Canadian Wildlife Service

17 Waterfowl Lane, P.O. Box 6227

Sackville NB E4L 1G6

Tel.: 506-364-5044

Fax: 506-364-5062

All reasonable efforts will be made to protect the health and safety of the public, including adequately informing visitors of any known or anticipated hazards or risks. In addition, Environment Canada staff will take all reasonable and necessary precautions to protect their own health and safety as well as that of their co-workers. However, visitors (including researchers and contractors) must make all reasonable efforts to inform themselves of risks and hazards and must be prepared and self-sufficient. Natural areas contain some inherent dangers, and proper precautions must be taken by visitors, recognizing that Environment Canada staff neither regularly patrol nor offer services for visitor safety in NWAs.

Offshore islands and activities along the seacoast in general present issues of safety. The public must seek and heed expertise to operate in these environments and must obtain specialized training and certification where required.

Portage Island NWA has no point of designated public access. Waters around the island are mainly shallow, making landing with a deep drafted vessel difficult or impossible.

As this NWA is remote with no permanent staff, any emergency should be reported **immediately** to the appropriate responding authorities. The report should include the date, time and nature of the incident, name and contact information of the reporting party for follow-up, and all relevant details.

Multiple authorities should be advised, if the situation warrants, as soon as possible.

Table 7: Emergency contacts.

Emergency contacts for PORTAGE ISLAND NWA (47°10'N, 65°02'W)	
Any life-threatening emergency	911
Police/fire/ambulance	911
Royal Canadian Mounted Police (RCMP), Neguac detachment	1-506-776-3000
Rescue Coordination Centre (emergency only)	1-800-565-1582
Environmental emergencies	1-800-565-1633
CWS Wildlife Enforcement Division (Sackville, NB)	1-506-364-5036
EC-CWS Habitat Program 17 Waterfowl Lane, P.O. Box 6227 Sackville NB E4L 1G6	1-506-364-5044 1-506-364-5039 1-506-364-5061
Weather Report – marine information for New Brunswick	1-506-851-6610
Weather Report – Environment Canada (charges apply)	1-900-565-6565
Marine Radio Channel – monitored for emergencies	VHF channels 16 and 19

8 ENFORCEMENT

The management of NWAs is based on three Acts and their regulations:

- *Migratory Birds Convention Act, 1994, and Migratory Bird Sanctuary Regulations*
- *Canada Wildlife Act and Wildlife Area Regulations*
- *Species at Risk Act*

To promote compliance with the *Canada Wildlife Act* and *Wildlife Area Regulations*, the Canadian Wildlife Service (CWS) posts signs along the NWA boundaries and at main access points identifying the authorized activities within the NWA and any conditions imposed on those activities.

The Wildlife Enforcement Directorate (WED) of Environment Canada is responsible for enforcement of federal and provincial wildlife laws. Directorate officers perform on-site inspections and investigations and patrol the NWA to promote compliance and prevent prohibited uses within the NWA. When necessary, charges will be laid.

Officers monitor compliance with the *Canada Wildlife Act* on an ongoing basis and will initiate investigations when required. Officials with the CWS Atlantic Region Protected Areas program provide WED staff with details from site inspections that may require enforcement action.

9 PLAN IMPLEMENTATION

This management plan will be implemented over a 10-year period. Annual work plans will be developed in accordance with priorities and budgets, and the details of management plan implementation will be developed through Environment Canada's annual work planning process and implemented as human and financial resources allow. An adaptive management approach will be favoured for the implementation of the management plan. The implementation of the plan will be evaluated 5 years after its publication, on the basis of the actions identified in Table 8.

A priority for Portage Island NWA will be a revised botanical survey (conducted by an external contractor) to augment the existing data and evaluate for any potential at risk species.

Table 8: Implementation strategy timeline for Portage Island NWA.

Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Site inspection		x		x		x		x		x
Wildlife survey		x		x		x		x		x
Signage replacement and maintenance		x		x		x		x		x
Botanical survey (dune succession)					x					
National Piping Plover census			x							
NWA poster					x					

9.1 MANAGEMENT AUTHORITIES AND MANDATES

CWS Atlantic Region is responsible for site management of Portage Island NWA.

9.2 MANAGEMENT PLAN REVIEW

This management plan will be reviewed and updated 5 years after formal approval by Environment Canada, and every 10 years thereafter. Significant new information may be appended to the document as required, to aid in site management and decision making.

10 COLLABORATORS

There are no formal arrangements pertaining to the management or administration of Portage Island NWA.

Collaboration with local agencies and sector organizations to contribute to the protection and conservation of wildlife species and their habitats in the NWA will be favoured.

For instance, collaborations could be developed or pursued with universities and research centres to fill scientific knowledge gaps, with the province to implement species at risk recovery measures, particularly for species under provincial jurisdiction, and with non-governmental organizations and municipal authorities to increase public awareness of the objectives of the NWA. The main organizations likely to collaborate or to have a stake in the management of Portage Island NWA include:

- New Brunswick Department of Natural Resources and Energy, Fish and Wildlife Division (frequent data and information sharing)

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APPENDIX I: HISTORY OF PORTAGE ISLAND NATIONAL WILDLIFE AREA

The Portage Island region has been the home of the Mi'kmaq people for generations. The nearby First Nation community of Esgenoôpetitj (Burnt Church) has a long settlement history. Metepenagiag (formerly Red Bank First Nation) on the Miramichi River has over 3000 years of continuous settlement, making it the oldest village in New Brunswick (Allen 1994).

When French fishermen first arrived at the mouth of the Miramichi River, the Mi'kmaq called the largest island in the Miramichi Bay "Molaweeswayadik" (meaning the place of occurrence of Brant Geese) (Mitcham 1986). It is assumed that the present name of Portage Island refers to the fact that Aboriginal people and early French settlers often stopped at the island when crossing the bay (Smethurst 1774). According to Perley (1852), Portage Island was the site of the first year-round trading and fishing settlement to be established on Miramichi Bay. From 1643 to 1647, Jean Jacques Enaud, a native of the Basque provinces of France, had an establishment on this island for taking the "Morse" or Walrus (*Odobenus rosmarus*), and for exploiting the fur trade and fisheries. The Walrus was annihilated on Portage Island partly due to Enaud's efforts.

Throughout the early 1800s, lobster fishing quickly developed as a supplement to the local economy. A small lobster processing facility was established on Portage Island, although the actual location of this facility is unknown, and the site may have since eroded away. Perley, writing on the state of the New Brunswick fishery in 1852, provides the following details:

On the northern side of Miramichi Bay, at the entrance of the Miramichi River, is Portage Island, which on some of the older maps is called Waltham Island. It is about four miles and a half in length, and nearly a mile in width at its southwestern end, tapering gradually to its northeastern extremity, where it terminates in a long narrow sand-bar.

This Island is yet ungranted. It is low and sandy, much cut up with marshes, swamps and small lakes; a portion of it only is wooded, with dwarf white birch, and scrubby pine and spruce trees.

Near the northeastern end of Portage Island, some buildings were erected about five years ago, with the necessary conveniences for putting up salmon and lobsters, in tin cases hermetically sealed. This station was occupied during the season of 1849, by Mr. William J. Fraser, of Chatham, who then for the first time set up "fish flakes," and undertook to dry and cure cod, and other fish, caught near this locality.

When this establishment was visited in August last, it was in charge of George Letson, who furnished the following information in relation to it.

The season for putting up salmon and lobsters was over. There had been twenty two thousand pounds of salmon, and four thousand pounds of lobsters, put up in tin cases, of one pound and two pounds each. The quantity of lobsters put up was much less than usual, owing to the prevalence of cholera in the United States, and the consequent want of a market there.

The salmon put up here were all taken around the Island, and were purchased of the fishermen, by this establishment, at 3d. per pound, fresh caught, with a discount of ten per cent, for cleaning, which was said to be equal to £3 5s. per barrel. The lobsters were chiefly caught by the French inhabitants of the neighbouring Neguac Villages, from whom they were purchased at 2s. 6d. currency, per hundred. They were very plentiful the past season, especially at Black Lands and Tabusintac Gully; and as proof of the ease with which they were taken, it was mentioned that one Frenchman (Victor Savoy) had, unassisted, caught 1200 lobsters in part of one day. There were from twenty to twenty five men employed at the preserving establishment during the season.

Up to the 18th August, there had been seven hundred quintals of cod, ling, and haddock, caught and cured at this "room" to which a considerable addition was anticipated before the close of the season. There were then thirty three boats engaged in fishing at this station, averaging three men to each boat; these were chiefly settlers from the neighbouring shores, who employed the period between seed time and harvest, in following the fisheries. (Perley 1852, pages 28-29)

And further,

Within a few years, one establishment has been set up on Portage Island, at the mouth of the Miramichi River, and another at the mouth of the Kouchibouguac River, for putting up lobsters, in tin cases, hermetically sealed, for exportation. In 1845, no less than 13,000 cases of lobsters and salmon were thus put up at Portage Island. In 1847, nearly 10,000 cases, of lobsters only, each case containing the choicest parts of two or three lobsters, and one and a half tons of fresh salmon, in 2 lb. and 4 lb. cases, were put up at Kouchibouguac. The preservation of lobsters, in this manner, need only be restricted by the demand, for the supply is almost unlimited. The price paid for lobsters at the establishment on Portage

Island, when the writer visited it, was 2s. 6d. currency (2s. sterling) per hundred. (Perley 1852, pages 20-21)

In 1867, the island was divided into 31 “meadow lots” set aside primarily for harvesting native dune grasses for livestock forage to be used by farmers and fishermen on the mainland (Figure 12). In that year, the proprietors harvested a total of 8.8 tons of hay at an annual rent to the Crown of £5. 10. 0. Of botanical interest, the island was described as being mainly “course grass very thin,” with a narrow band of “woods” along the southern border of Gammon Cove and a “strip of small white birch” along the eastern side of this same cove. Two small areas are delineated as “Sand Hill” and “Wet Bog.” There are also three narrow, ribbon-shaped ponds, with the southernmost referred to as “Horn’s Brook.”

With all this activity in Miramichi Bay, it is no surprise that shipping interests wanted to take measures to ensure the safe movement of goods. In 1869, a lighthouse was established on Portage Island to mark the northern half of the main entrance to Miramichi Bay (Figure 13). At least eight lighthouse keepers, often with families, were resident on the island from 1869 to 1960 (Table 9). The lighthouse was eventually decommissioned and moved to the New Brunswick Aquarium and Marine Centre in Shippegan for preservation (Figure 14). Range lights are still maintained by the Canadian Coast Guard (Figure 15).

Table 9: Lighthouse Keepers on Portage Island (Annual Report of the Department of Marine and Fisheries).

Year	Lighthouse keeper
1869–1875	George Davidson
1875–1881	Hugh Murray
1881	Duncan Robertson
1881–1892	James Stymest
1892–1924	Peter Morrison, Jr.
1925–at least 1930	J.W. Gratton
1930s	Thomas LeBreton
1960	Venance Savoy

Where Portage Island provided close access to fishing grounds, it was also remote from the coastal communities and isolated in winter months. The island’s dunes were never suitable for farming, and no permanent settlements were ever established. It is uncertain when the fishery outlined by Perley ended operations. However, similar enterprises along the coast terminated in the late 19th and early 20th centuries.

In 1970, the Canadian Coast Guard automated the lighthouse, and keepers were no longer required. The island was declared surplus by the federal Department of Transport, and the Canadian Wildlife Service applied for transfer of the lands. Portage Island was formally transferred on November 3, 1970, by Order in Council P.C. 1970-1932.

A formal archaeological survey of Portage Island has not been conducted, but areas that require further investigation have been identified. Significant but as yet unidentified sites may exist

on Portage Island in light of the area's history, although the shifting sands and constant erosion on the island make the survival of very early archaeological resources difficult. Locations of sites worthy of further investigation are identified in Figure 11 (MacKinnon 1991). These are:

1. Excavations or basements – a series of pits of unknown purpose, averaging 3 m by 3 m in size. These may be related to the fishing activities outlined by Perley (1852).
2. Excavation – a pit 4 m by 4 m in size, located approximately 50 m from the beach. A Jack Pine growing out of the pit was aged to 53 years. Erosion has now destroyed this site.
3. Dyke – a low ridge, 40–50 m long with a break in the middle, connects two of the vegetated dunes along the northwest coast of the island at Gammon Bay. The break in the dyke may have been the location of an aboiteau. The dyke connects with the old foot trail that crosses the island. This feature is associated with Lot 14 assigned to Samuel Breau, as marked on the map of “Meadow Lots” dated 19 September 1867 (Figure 12).
4. Shallow depression (1 m by 2 m) situated on a ridge east of the dyke, of unknown purpose.
5. Ancient “foot trail” leading from Gammon Cove to the east side of Portage Island (Figure 16).
6. Lighthouse dwelling – basement and foundation remnants (Figures 13 and 14).

Other sites of significance will be documented on future trips, and these finds will be reported to the Provincial Archaeologist, Archaeological Services, Fredericton, New Brunswick.

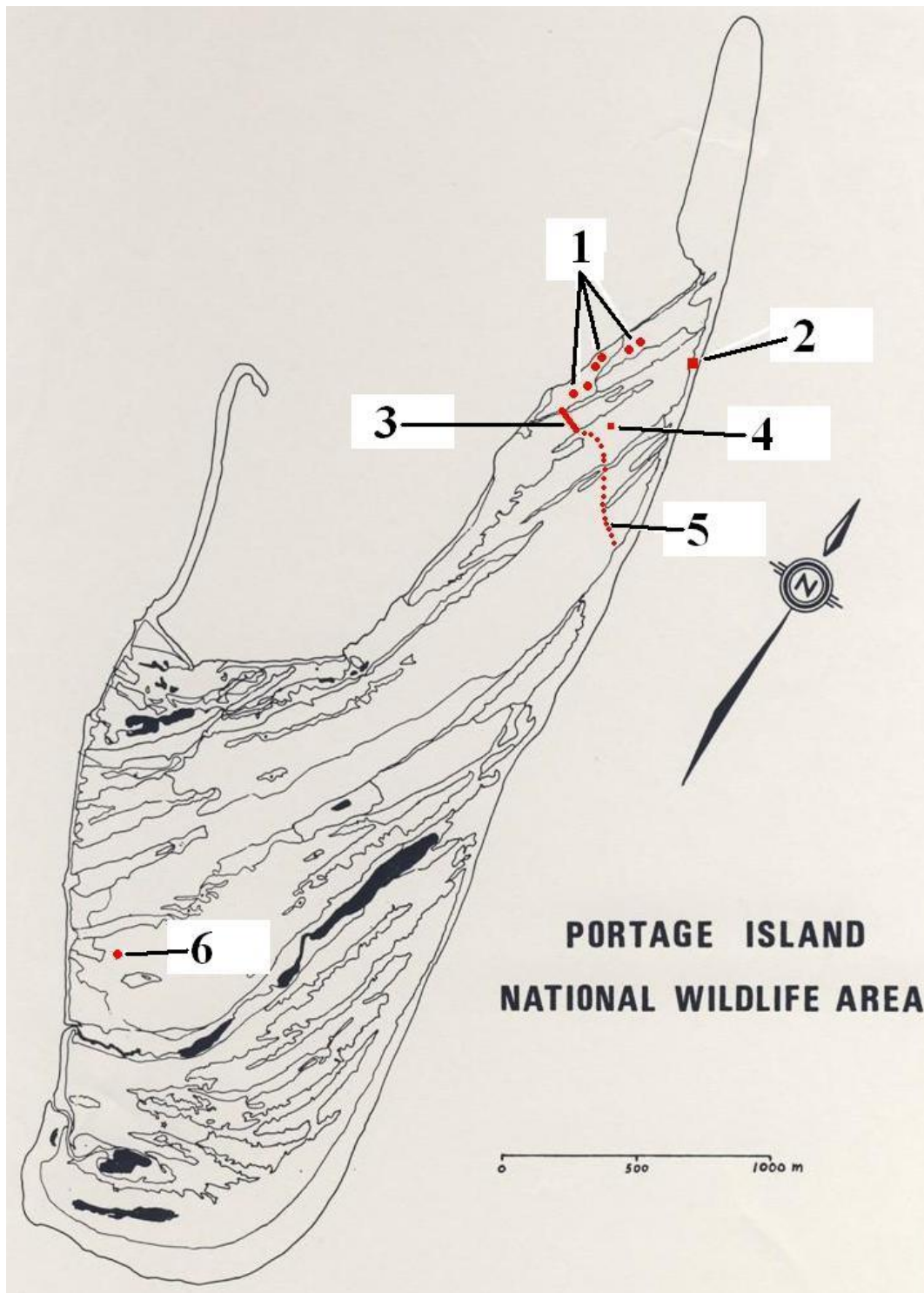


Figure 11: Historic features at Portage Island NWA, Miramichi Bay, New Brunswick. Some sites have been lost to erosion. The numbered sites are described in the text above.

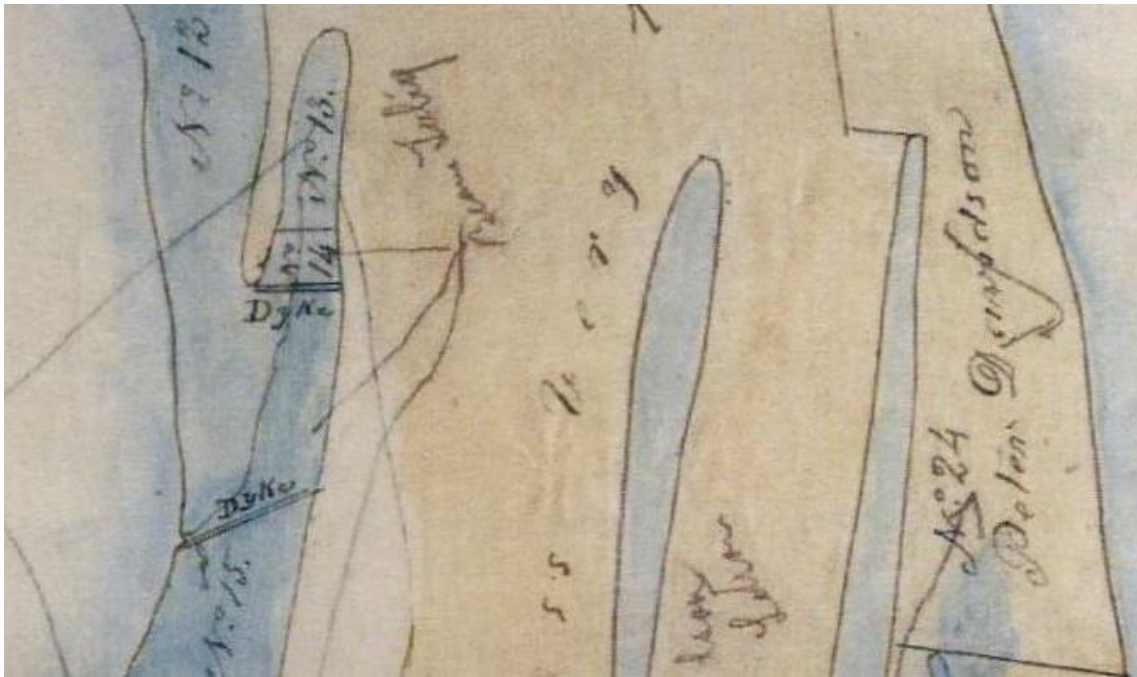


Figure 12: Portage Island “meadow lots” map dated 19 September 1867, showing Lot 14 (Samuel Breau) and the associated dyke between the dunes. Remnants of this feature can still be found (archives of Public Works and Government Services Canada, Halifax).

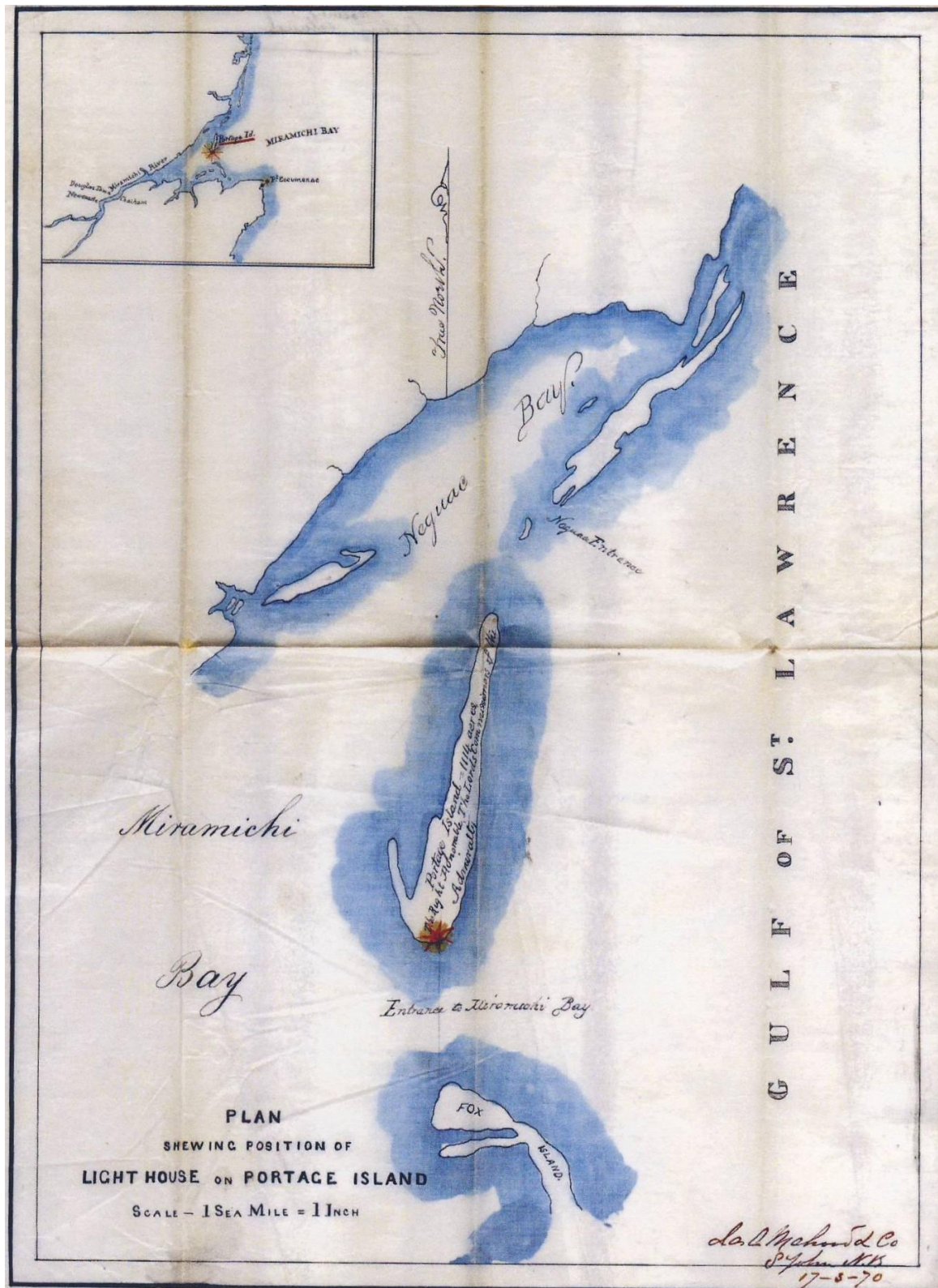


Figure 13: Plan showing the position of the lighthouse on Portage Island, March 3, 1870 (archives of Public Works and Government Services Canada, Halifax, Nova Scotia).



Figure 14: Lighthouse station on Portage Island in 1971; only the foundations of these features remain. The lighthouse tower was eventually decommissioned and moved to the New Brunswick Aquarium and Marine Centre in Shippagan.

Photo: A.D. Smith © Environment Canada

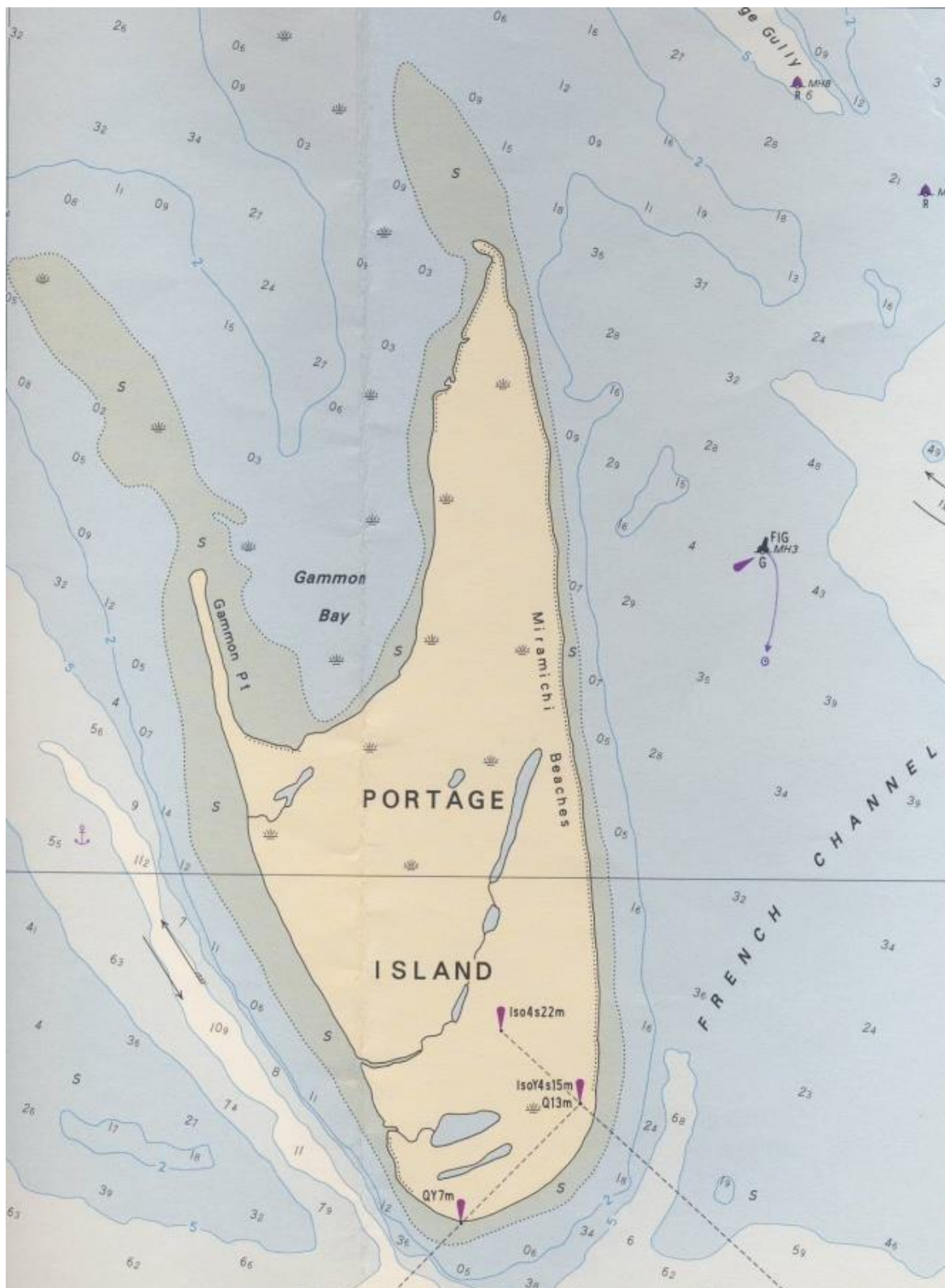


Figure 15: Nautical chart of Portage Island NWA, Miramichi Bay, New Brunswick, showing depths in metres. Due to coastal erosion, range light IsoY4s is now below the high water mark. Source: Canadian Hydrographic Service, Minister of Fisheries and Oceans Canada, 1993.



Figure 16: Ancient foot trail, interior of Portage Island NWA.
Photo: C. MacKinnon © Environment Canada