

BACCALIEU ISLAND ECOLOGICAL RESERVE

MANAGEMENT PLAN



Parks and Natural Areas Division
Department of Environment and Conservation
Government of Newfoundland and Labrador

**BACCALIEU ISLAND
ECOLOGICAL RESERVE**

**MANAGEMENT PLAN
AND REGULATIONS**

**Parks and Natural Areas Division
Department of Environment and Conservation
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FOREWARD

In 1980, the **Wilderness and Ecological Reserves Act** was established to protect and preserve special natural areas in Newfoundland and Labrador. Several areas of the Province have been set aside as Ecological Reserves under the Act. These areas contain representative or unique ecosystems, species, or naturally occurring phenomena. The objectives of establishing an Ecological Reserve as stated in the Act are:

- a. To provide for scientific research and educational purposes in aspects of the natural environment;
- b. To preserve the habitat of an animal or plant species that is rare or endangered;
- c. To provide standards against which the effects of development in other areas may be measured;
- d. To provide an opportunity for study of the recovery of ecosystems from the effects of modification by human beings;
- e. To preserve rare botanical, zoological, geological or geographical characteristics;
- f. To preserve representatives of distinct ecosystems in the province; or
- g. To preserve organisms in their natural habitat to ensure the preservation of their gene pools.

INTRODUCTION

The coastal and shelf waters of Newfoundland and Labrador, which includes the Grand Banks, are some of the most productive in the world. Cold, sub-arctic waters in the form of the Labrador Current flow south along the Labrador coast and continue, for the most part, down the east coast of insular Newfoundland. Currents and wind generated surface water movement interact with the coastline and submarine shelves (in particular the Grand Banks) to produce up welling and mixing of nutrient rich waters. These nutrients power a food web which is responsible for huge concentrations of living organisms. Capelin stocks alone support an impressive quantity and diversity of marine vertebrates, including whales, seals, ground fish and seabirds. In addition, the Province's coastline and offshore islands offer high quality habitat for breeding seabirds. The abundant food and breeding habitat have resulted in Newfoundland and Labrador having some of the largest seabird colonies in the world.

Baccalieu Island (Figure 1) is the largest seabird island in Newfoundland and Labrador. This island supports the greatest diversity of breeding seabirds of any of our seabird colonies. More Leach's Storm-Petrels breed on Baccalieu than anywhere else in the world. A major proportion of the western North Atlantic populations of Common Murre and Atlantic Puffin breed on islands off our coast and Baccalieu Island supports significant colonies of both species. In addition, Baccalieu Island supports one of only six Northern Gannet colonies in North America. The details of breeding seabird colonies and other biophysical information are contained in the NATURAL FEATURES section of this plan.

Most seabirds breed synchronously in large aggregations of individuals called colonies. Breeding in colonies offers many adaptive advantages to seabirds including reduced predation and more efficient feeding. However, the colonial breeding habit also makes seabirds highly vulnerable because it places so many birds in the same place at the same time. Experts have identified several issues which threaten seabird populations¹.

- o Oil pollution, whether chronic bilge-pumping or isolated disasters, results in the mortality of hundreds of thousands of seabirds every year.
- o Chemical poisoning of seabirds over long periods of time also affects seabird populations by reducing the health of individual birds and lowering productivity.
- o Disturbance and destruction of breeding, migrating and overwintering sites results in loss of available habitat.
- o The presence of humans also accounts for the presence of many unnatural predators which increases the level of predation on seabird colonies.
- o The inevitable by-catch of seabirds in various types of fishing gear affect seabird populations.
- o Humans also directly affect breeding seabird colonies, deliberately and inadvertently, through illegal hunting, research and observation, and many other activities.

Although these issues are global in scope, aspects of each one affect the seabirds of Baccalieu Island. Many agencies are involved in the wide-scale *conservation* of seabird species, through educational programs and management policies. No conservation effort can be totally successful, however, unless the preservation of the essential habitats is effectively provided for through protected area status.

As one step in a lengthy and involved process, Baccalieu Island was approved by the Provincial Cabinet as a Provisional Reserve in February, 1991, under the **Wilderness and Ecological Reserves Act**. Since that time, seabird experts have been consulted in preparing this plan and discussions and meetings have been held with local groups and the public. This Management Plan documents the **OBJECTIVES** of the Baccalieu Island Ecological Reserve, and outlines possible actions to deal with the pressures facing the seabirds and their habitat. These **ACTIONS** are contained in the **MANAGEMENT ISSUES** section of this plan.

OBJECTIVES OF THE BACCALIEU ISLAND ECOLOGICAL RESERVE

The following objectives, in order of priority, outline the reasons for the establishment of the Baccalieu Island Ecological Reserve, and the fundamental basis on which management decisions will be made:

- 1. To preserve an internationally important seabird breeding colony, which is essential to the maintenance of species diversity, composition, and abundance at levels sufficient to ensure viable, long-term populations.**
- 2. To maintain the natural communities of the Reserve with their associated vistas, flora, and fauna in a condition no less pristine than at the time of Reserve establishment.**
- 3. To provide a refuge for non-breeding birds, whether migrating or overwintering.**
- 4. To foster scientific studies which ensure the achievement of the previous two objectives.**
- 5. To provide an opportunity for education and interpretation of seabirds and the ecosystems of which they are a part.**
- 6. To ensure the future protection of the natural integrity of the ecosystem and its components of Baccalieu Island.**

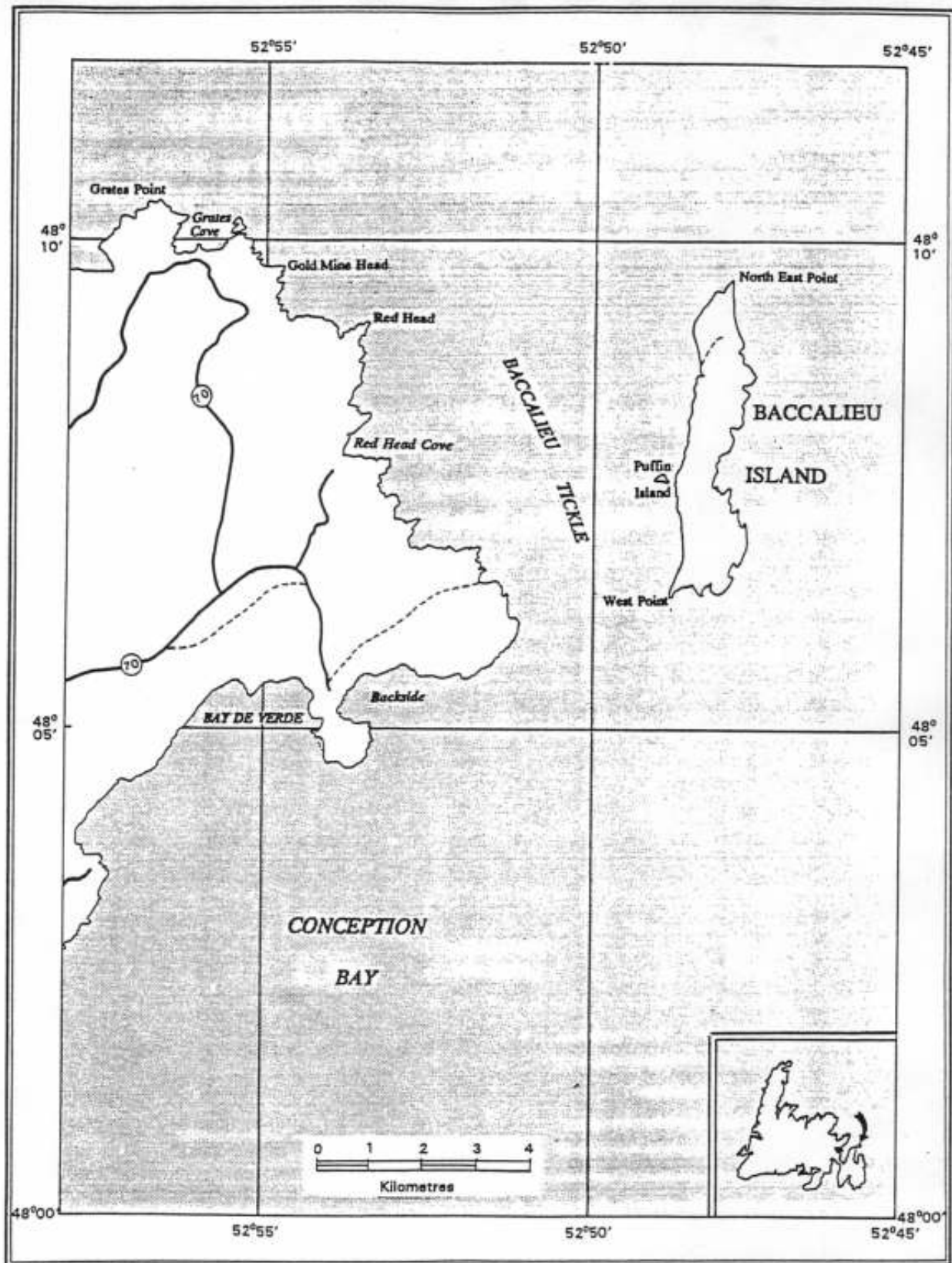


FIGURE 1 Baccalieu Island, Newfoundland, and surrounding communities

THE BACCALIEU ISLAND ECOLOGICAL RESERVE:

1. NATURAL FEATURES.

1.1 Location and Setting

Baccalieu Island is more than an internationally known seabird breeding colony. There is a clear association between the people of the local communities, especially the fishermen, and the island. It is best described in the very words of a local representative.

“Baccalieu Island lies approximately three kilometres east of Split Point, which is very near the fishing community of Bay de Verde. The water surrounding the Island has traditionally been one of the richest fishing areas of Newfoundland. Fishermen from Bay de Verde know these fishing grounds in intimate detail. They have been the economic base for our community since first settlement. Fishermen have the same feeling for them as a farmer has for his farm after many generations of cultivation. They also know the Island with its rare scenic beauty and bountiful bird colonies. At various times in our history, people have lived on the Island, mostly on a seasonal basis. Skipper Ned Walsh built a house and fishing premises, cultivated land and raised a family in Ned Walsh’s Cove.

Even though the fishermen from this area have fished the shores of Baccalieu for ten generations or more, the Island itself is in practically the same pristine condition in which they found it. For the most part, the flora has remained unabused. The bird colonies have flourished even with the fishing activities.”

-- Submission from the Town of Bay de Verde, 1995

Baccalieu Island (48° 07'N 52° 48'W) is located 6 km off the northern tip of the Avalon Peninsula (Figure 1). The island (6.3 X 1 km) and the surrounding waters support the largest major seabird colony in Newfoundland and Labrador. During the period of the caplin run, food is most abundant. At this time, fishermen, seabirds, and baleen whales all take advantage of this rich fish resource. Most of the breeding seabird species, however, have returned to the vicinity of the island by April. From September to April, the waters surrounding the island also provide an important refuge for wintering seaducks, including eider and scoters. Migrating seabirds and ducks also take advantage of the rich food supply and the sheltered coves during the spring and fall migrations. Baccalieu Island is an important site for these birds all year round. In the following section each breeding seabird will be dealt with separately. Migrating and overwintering birds will also be listed and the significance of Baccalieu Island to these birds will be described..

1.2 Biotic Factors (Figure 2, Appendix 1)

1.2.1 Breeding Seabirds

Leach's Storm Petrel - Baccalieu Island is the largest breeding colony of this species in the world, with a colony size of over 3,360,000 pairs. Petrels nest in burrows they excavate in the soft, peaty soil of the slopes near Southern End Pond, Grannie Cliff, and the meadows of Ned Walsh's Cove. These seabirds return from the open Atlantic around late April. The species is nocturnal at the breeding colony and forages far offshore, mostly on lanternfish (*Benthosema glaciale*)³. In September, after the breeding season, the adults and newly fledged chicks leave Baccalieu Island.

Northern Gannet - These large seabirds nest on several steep cliffs around Baccalieu Island, most notably at Gannet Head. The first census in 1941 recorded approximately 200 pairs. The last census in 1987, recorded 650 pairs. Although not a large colony, it represents one of only six in North America and as such is of considerable significance. Gannets usually feed near the colony, plunging into the sea from a height of up to 30 m. A variety of fish are eaten, including herring and mackerel. They usually arrive at the colony in late March and depart after the chicks have fledged in late September or October.

Northern Fulmar - Baccalieu Island is one of only four islands in Eastern Canada (Great Island, Green Island, Funk Island) where Northern Fulmar breed. This seabird, usually an Arctic breeder, has recently been expanding its breeding range southward. They were first sighted at Baccalieu in 1959 and have since reached 20 pairs. It is suspected that the population may increase even further given the abundant habitat available to them. Northern Fulmars usually arrive when the sea-ice moves off, around April. As with most of the other breeding seabirds species on Baccalieu Island, they leave sometime in August.

Atlantic Puffin - Baccalieu Island supports the second largest puffin colony in Newfoundland with a total breeding population of 30,000 pairs (Witless Bay has 91,300 pairs). This species nests in burrows excavated in peaty soil such as in Woody Cove, under rocks or in rock crevices around the island. It is suspected that the number of breeding puffins on Baccalieu Island has increased sharply since 1934. They arrive at Baccalieu Island later than the murrelets, usually around late March or early April. Once the chicks are hatched they are fed mostly capelin. The puffins pursue the fish, using their short wings to 'fly' under water. Most puffins have left the colony by late August.

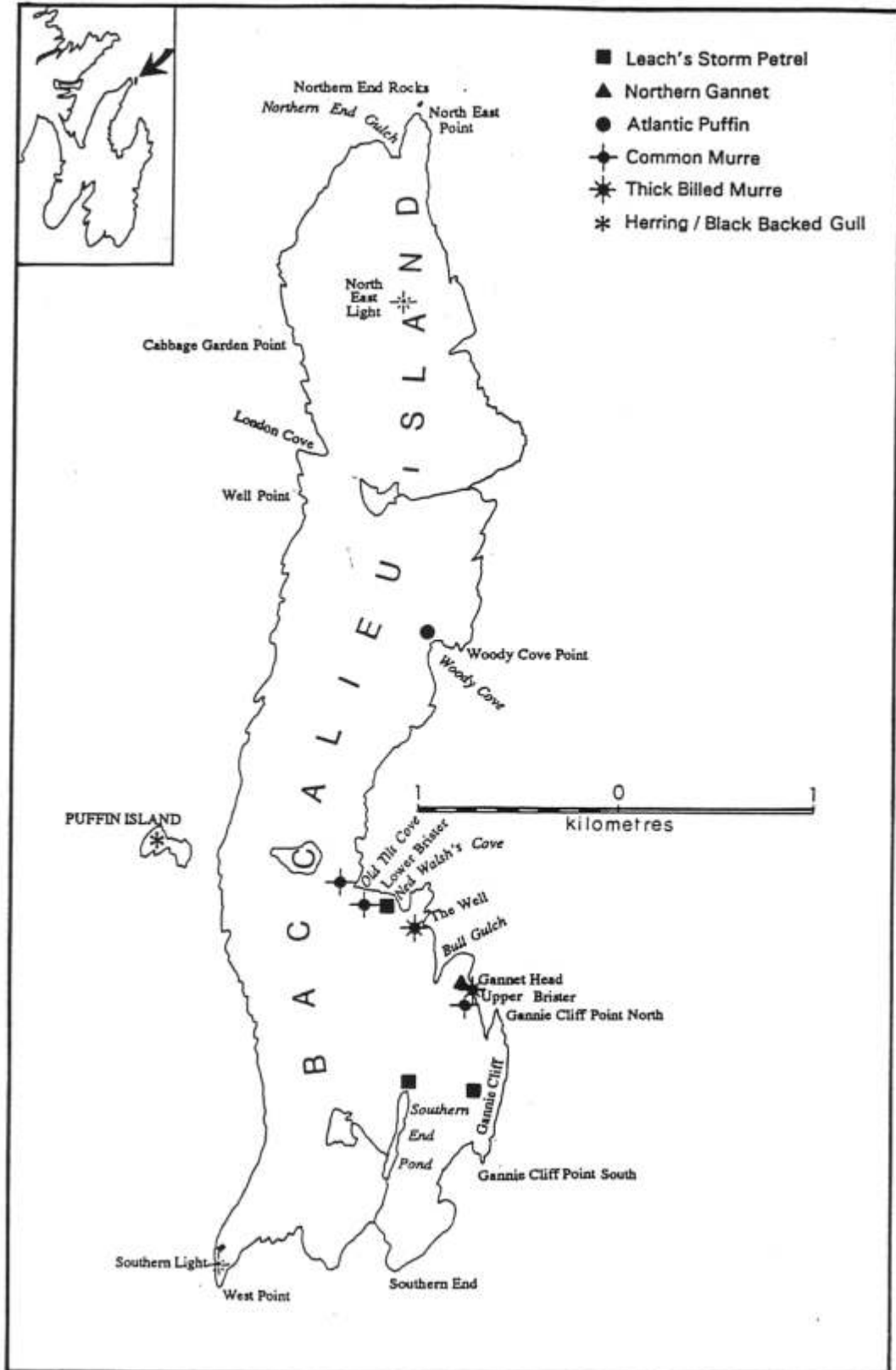


FIGURE 2 Major concentrations of breeding seabirds on Baccalieu Island, Newfoundland

Common Murre - The Common Murre colony of Baccalieu Island is the third largest in Newfoundland with approximately 4000 pairs (Funk Island has 396,462, Witless Bay has 77,000 pairs). Common Murres nest on narrow ledges of cliffs around the island with the greatest concentrations at Upper Brister, Old Tilt Cove, and Lower Brister. Some birds begin to return as soon as the island is ice-free (late February, early March), replacing the overwintering Thick-billed Murres. Common Murres do not build nests but lay a single egg on bare rock. They also feed their chicks caplin, and may forage up to three times a day near the colony. After the chicks fledge, the colony is quickly deserted in early August.

Thick-billed Murre - Although there are no recent estimates for this species, 181 breeding pairs were counted in 1981, making Baccalieu Island possibly the third-largest colony of this species in Newfoundland. Thick-billed Murres breed amongst the Common Murres on the small ledges of steep cliffs, mostly around The Well and Upper Brister. They arrive at the colony around February or March. This seabird also lays one egg on the rocky ledges. However, the Thick-billed Murre may forage farther away from the colony than the Common Murre. They leave the colony around the same time as the Common Murres in early August.

Black-legged Kittiwake - This small gull nests on several cliffs around Baccalieu Island, including Upper Brister, Gannet Head, Bull Gulch, Old Tilt Cove and Lower Brister. Recent estimates indicate that there are about 13,000 breeding pairs, making this colony the second largest colony for Newfoundland (after Witless Bay, 44,000 pairs). After they have arrived in March or April, the kittiwakes build a well-constructed nest and usually lay two eggs. The chicks fledge in late July and the colony is empty by late August.

Razorbills - This closest living relative to the extinct Great Auk usually nests in small, scattered colonies. It has been estimated that there are a minimum of 100 pairs nesting at Baccalieu Island. They are difficult to census, since they nest in crevices or boulder scree. The Razorbills arrive sometime in late February and leave in August.

Black Guillemots - These seabirds are also difficult to estimate because they tend to be scattered around the perimeter of the island under boulders or in deep rock crevices. As of yet, no systematic counts have been made. However, it is estimated that approximately 100 pairs breed on the island. This seabird does not winter as far in the open ocean as some seabirds, but usually remain somewhat close to the coast. They arrive at the colony in February or March, even before the ice has receded. As opposed to other Alcides, the Black Guillemot usually lays two eggs. They leave before the end of August.

Herring and Great Black-backed Gulls - Surprisingly, few pairs of these gulls nest on Baccalieu. It is suspected that the presence of red foxes deter extensive nesting on the island by these gulls. On Puffin Island, about 150 pairs of Herring Gulls and three pairs of Great Black-backed Gulls have been recorded. Unlike most of the other breeding seabirds of Baccalieu, these gulls lay up to three eggs. Many spend their winters around Newfoundland surviving by feeding on the refuse of our communities. They return to breed in April and have usually fledged their young by mid-August.

1.2.2 Migrating/Overwintering birds/Terrestrial birds

Seventy-seven species representing 28 Families of birds either breed, reside, migrate or overwinter on or around Baccalieu Island (Appendix 2)⁴. This accounts for almost a third of the birds known to occur in Newfoundland. This level of avian activity is very significant for two reasons. Baccalieu Island falls within the Eastern Hyperoceanic Barrens Eco-region which contains harsh and open landscapes⁵, not normally associated with a high level of avian activity. In addition, most of the records compiled to date are as a result of occasional summer visits by researchers. Few Fall or Winter observations have been recorded. It is known, however, that several species of waterfowl over-winter in the waters around the island, including Eider, Long-tailed Duck, and Scoters.

The near-coastal waters of Baccalieu Island are a major overwintering site for eider⁶. Two aerial surveys revealed that Baccalieu Island supports anywhere from 5000 to 10000 overwintering eider. The waters surrounding Baccalieu Island provide an important refuge for these waterfowl, especially in light of the massive decline of both Common and King Eider. In 1953 the wintering eider population of Newfoundland was approximately 2,000,000 birds. The last estimate (1990) only measured 230,000 individuals⁷. Since then, the wintering population may have decreased even more.

During the fall and spring migrations, the surrounding waters and the lakes and ponds of the island support hundreds of Black Duck, Green-winged Teal, Whimbrel, Solitary Sandpiper, Greater Yellowlegs, and others. A diverse selection of habitats on the island allow many other land birds to breed, including Horned Lark, Black-capped Chickadee, Water Pipit, Common Ravens, Willow Ptarmigan, Savannah Sparrow, warblers and Bald Eagles.

1.2.3 Terrestrial Mammals

Baccalieu Island supports only two mammals, the Red Fox and the Sea Otter. The Sea Otter sightings are not common and are restricted to ponds on the southern end of the island⁸. The presence of the Red Fox, however, has been recorded since 1914. They were probably there much earlier, crossing the winter ice to get to the island. The primary prey of the foxes appears to be the Leach's Storm-Petrels, but the presence of this terrestrial predator has acted to discourage the breeding of ground-nesting large gulls. The cliff-nesting seabirds on the island (e.g., murre, kittiwakes, gannets) are not particularly vulnerable to fox predation.

1.2.4 Marine Mammals

The waters around Baccalieu Island are visited by a variety of marine mammals including Humpback, Minke, Pothead, and Fin whales, which are most commonly found in the area during the caplin season. White-beaked and White-sided Dolphins and Harbour Porpoise also frequent these waters. Harp and Hooded Seals can be

found along the pack ice front from mid-February to March but rarely occur near Baccalieu Island in substantial numbers. Also, Harbour Seals have been seen at various times over the summer.

1.2.5 Vegetation

Baccalieu Island lies in the Eastern Hyper-Oceanic Barrens Eco-region which is characterized by the absence of true forests and is dominated by an oceanic climatic influence. On Baccalieu Island there are extensive stands of Black and White Spruce and Balsam Fir representing 34% of the surface area. These stands usually occur in the sheltered valleys across the island. Stunted Balsam Fir or tuckamoore accounts for another 38%. Shrubs, such as Labrador Tea, Sheep Laurel, Bilberry, and Crowberry comprise approximately 2% of the total surface area. The final 17% is represented by blanket bogs, lichen-covered rocks, and other communities. This vegetation pattern suggests that Baccalieu Island contains communities representative of the Eastern Hyper-oceanic Barrens Eco-region (Skilepovich and Montevecchi, 1989).

1.3 Abiotic Factors

1.3.1 Climate

Baccalieu Island lies in the climatic region of Newfoundland most influenced by maritime conditions. Fog is a prevalent feature for the island. Annual precipitation is between 1200-1700 mm with half falling as snow. However, winters are moderately mild and summers are sunnier and warmer compared with the rest of the climatic region. This may be a result of the prevailing southwesterly winds as precipitation and snow cover usually occur with a northeasterly airflow. A combination of currents, prevailing winds, and underwater shoals make boating around the island difficult at the best of times.

1.3.2 Geology/Topography/Soils

The topography of Baccalieu Island includes undulating valleys and hills, precipitous cliffs and steep talus slopes. The maximum elevation is 137 meters with cliffs surrounding the island at an average of 90 meters. The two highest points on the islands are the northern and southern tips. Between these plateaus, there are a series of valleys and ridges which form a “wave” pattern, which flows in a northerly direction. Baccalieu Island has a Precambrian basement of acidic to mafic rock and lies in the Avalon Tectonic Zone. The basement is overlain by Pleistocene glacial till and organic rich, orthic ferro-humic, podzolic soils. In the higher, more windswept areas, the soil layer is very thin or may be non-existent. A number of valleys, however, have a relatively thick, rich layer of the dark, organic soil. The range of habitats provided by the undulating topography and other abiotic factors contributes to the high number of birds which have been noted.

THE BACCALIEU ISLAND ECOLOGICAL RESERVE:

2. MANAGEMENT ISSUES AND ACTIONS

The management issues concerning the Baccalieu Island Ecological Reserve arise from the need to preserve and protect the island's globally important seabird habitats. It is important to note that the discussion of issues recognizes the traditional human use of the area, which has taken place for many years. It is the purpose of this Management Plan to outline these activities and establish the appropriate guidelines and regulations, in order to ensure that the objectives of the Baccalieu Island Ecological Reserve are met.

Baccalieu Island and its adjacent waters were given Ecological Reserve status primarily because of its provincial, national, and international importance to breeding, migrating and overwintering birds. To reflect the primary significance of the area, the management policies governing the regulations give priority to the conservation of breeding seabirds and their habitats, and is congruent in purpose to the preservation and protection objectives of the provincial **Wilderness and Ecological Reserves Act (1980)** and the federal **Migratory Birds Convention Act (1917)**.

2.1 Boundary Description (Figure 3)

Past efforts to protect seabird colonies in sanctuaries have usually been limited to the terrestrial portion of the colony. With a better understanding of the needs of each species, it has now been recognized that this practice does not protect all the necessary aspects of a breeding colony. A marine component must also be included. Protection of only the terrestrial portion of the colony would be analogous to only having insurance on half your house. Seabirds, by definition, are animals of the ocean. The activities of each individual species in the waters surrounding the island are exhaustive, but an examination of a few should illustrate the need for a marine boundary.

It is well known that the Atlantic Puffin's daily schedule includes swimming in the waters around the colony. Also, when Atlantic Puffins first arrive at the colony they spend most of their time on the water. This is an important part of their pre-breeding cycle. Over the summer, many immature, non-breeding puffins arrive at the colony but they stay, for the most part, on the water. This time is an important part of their "puffin education". Further, when puffin chicks (and other Alcides) fledge, they do not fly from the colony, but jump from the cliffs and swim to the open ocean. Clearly, the waters surrounding Baccalieu Island are of great importance to the breeding seabirds.

It is important, therefore, to include an adequate marine boundary to accommodate these requirements.

In addition to the importance of the surrounding waters to the breeding seabirds, the marine component of the island supports a nationally significant level of migrating and overwintering birds (Section 1.2.2).

Action:

- i- The Baccalieu Island Ecological Reserve includes Baccalieu Island, Puffin Island and a one (1) kilometer marine boundary.

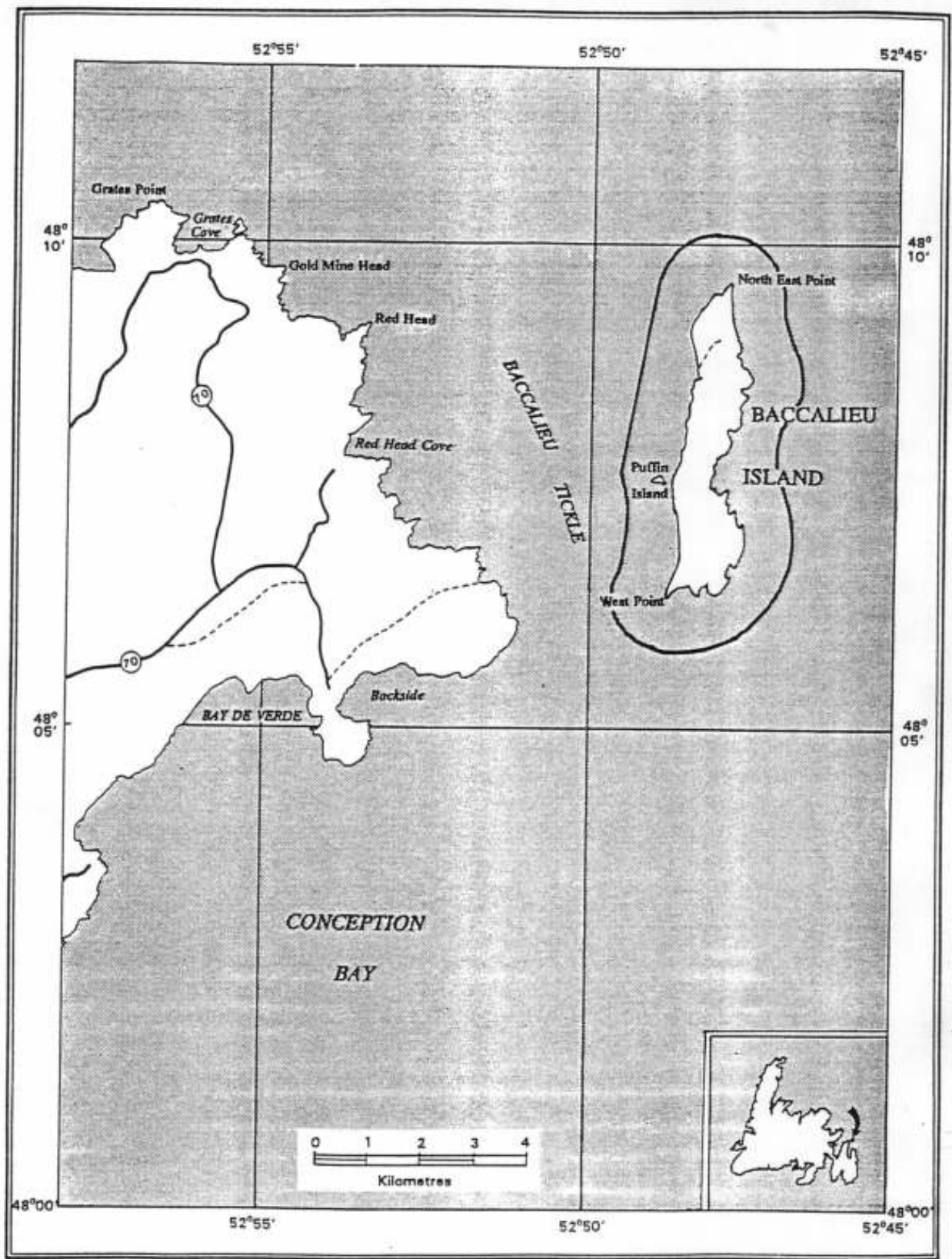


Figure 3. Boundary for the Baccalieu Island Ecological Reserve

2.2 Management and Administration

Parks and Natural Areas Division is responsible for the management and administration of Ecological Reserves. The Canadian Wildlife Service has a mandate for the protection of migratory birds through the regulations of the Migratory Birds Convention Act.

Actions:

- i-** A Seabird Management Advisory Committee will be established to advise Parks and Natural Areas Division on the implementation of this management plan. It will meet as required but not less than once per annum.
- ii-** A Local Advisory Committee will be established. The Committee will be comprised mainly of local residents with representation from Parks and Natural Areas Division. The Committee will advise Parks and Natural Areas Division on the management of the Reserve and will meet as necessary when identified by the Committee members.
- iii-** Parks and Natural Areas Division Staff, Provincial Conservation Officers, Canadian Wildlife Service Enforcement Co-ordinators and the RCMP will have authority to enforce the Baccalieu Island Ecological Reserve regulations.

2.3 Fishing Activity

Since the time of John Cabot the waters of Baccalieu Island have been fished. Generation upon generation of Newfoundlander's have lived on and around Baccalieu Island, living with and using the seabird colonies. Although fishing activity close to Baccalieu Island inevitably results in some seabird and marine mammal by catch, the historical human presence as much defines the island as the seabird colonies. In recent years, however, fishing stocks have become so decimated that, for the first time in 400 years, the traditional commercial cod fishery has been prohibited. It is expected that the stocks should recover at some time in the future. Instead of restricting such an integral aspect of the local residents lives, efforts will be made to reduce the level of by-catch as much as possible through experimentation with alternate gear types. Seabirds and small cetaceans (e.g., Harbour Porpoise) are particularly prone to entrapment in cod and salmon gill nets, and the most severely affected species are the divers such as murre and puffins. Japanese cod traps (completely enclosed traps with tops) are also capable of incidentally catching seabirds. For the most part, fishermen do not want to catch seabirds in their nets because of the wasted time and energy required to clear the nets of dead birds and the damage done to the nets in this process.

Actions:

- i- There will be no restrictions placed on the commercial fisheries in the marine component of the Ecological Reserve.
- ii- Recreational fishing will be allowed in the marine component of the Reserve subject to the restrictions of Section 2.11.

2.4 Transport Canada and Environment Canada Facilities (Figure 4)

In 1858, a manned lighthouse was constructed on the northern end of Baccalieu Island and generations of families lived in and maintained the structure. A new automated tower, has been built adjacent to the old tower. Transport Canada, Canadian Coast Guard, had planned to dismantle the old tower, but local residents requested that the tower remain standing due to its historical significance, and its potential value as a tourist attraction. Transport Canada has since decided to let the old lighthouse remain. Another lighthouse on the southwestern tip of the island is still operated year-round.

Environment Canada placed an automatic weather station near the manned lighthouse on the southwest end of Baccalieu Island in the fall of 1991. Standing 10 meters tall it records wind speed and direction as well as temperature.

Maintenance of Transport Canada and Environment Canada facilities presently on Baccalieu Island will necessitate periodic visits by workers resulting in human activity in the vicinity of the structures. Such activities have the potential to cause disturbance of nesting seabirds.

Actions:

- i- The land areas presently occupied by Transport Canada and Environment Canada will not be excluded from the Ecological Reserve. Exceptions will be made in the regulations to allow for the pre-existing activities which are necessary for the effective operation and maintenance of the facilities. Parks and Natural Areas Division, in association with Canadian Wildlife Service, will advise Transport Canada and Environment Canada on methods to reduce to a minimum the impact of their activities on the island.

2.5 Hunting

Hunting of Common and Thick-billed murres and eider ducks is a popular activity in rural Newfoundland. It is estimated, however, that between 600,000 and 900,000 murres are shot each year. This level is too high for a species which starts to breed at five years of age and then lays only one egg a year. According to local residents, most of the overwintering murres can be found over one (1) kilometer north of the northern tip of the island, which means that prohibiting hunting for murres within the Reserve will allow for most of the traditional murre hunt to continue.

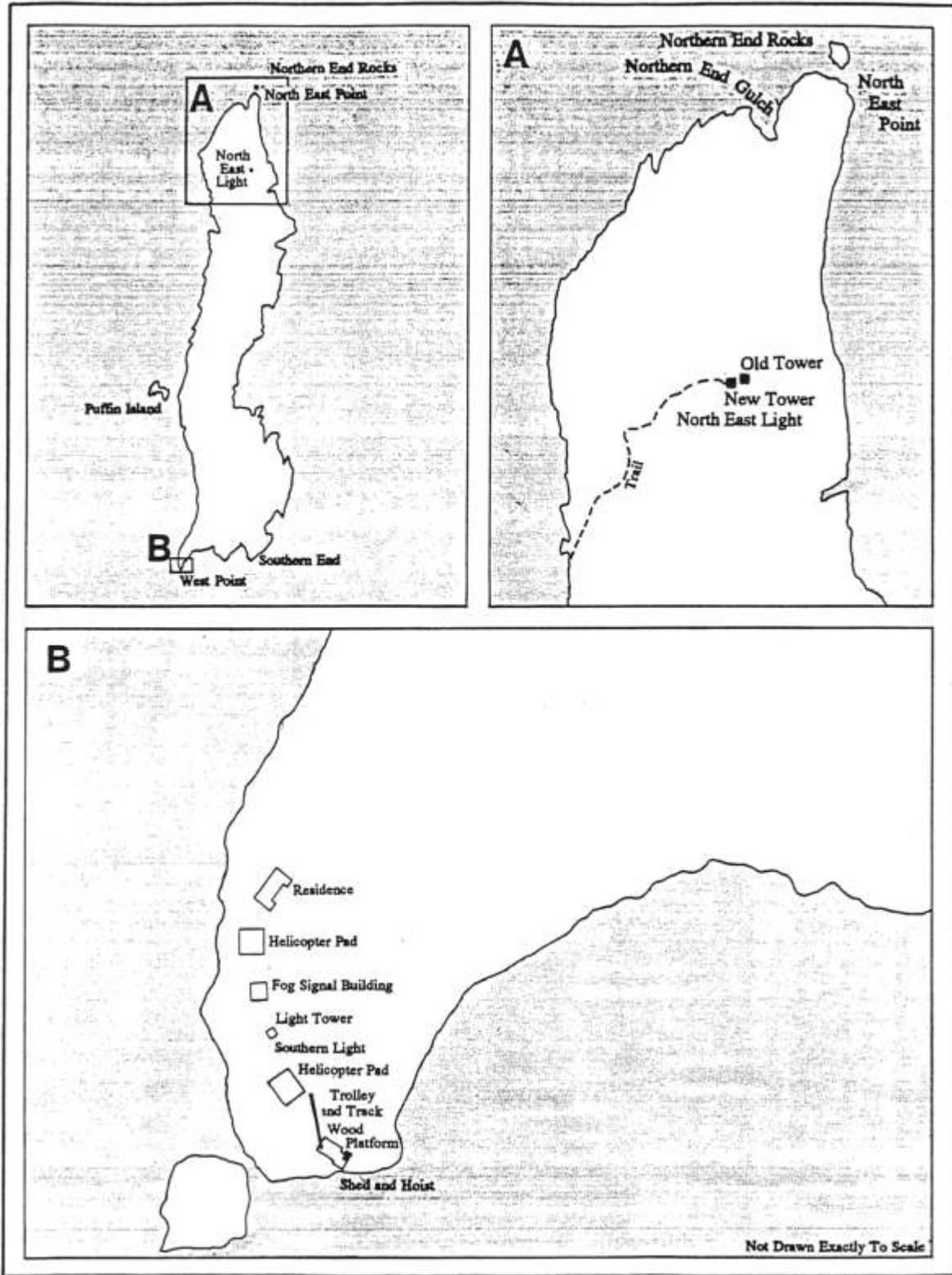


FIGURE 4 Canadian Coast Guard, Transport Canada Facilities on Baccalieu Island

Winter eider duck populations have declined drastically since the turn of the century. Baccalieu Island shelters one of the highest populations of overwintering eiders for the Province. The prohibition of hunting around the immediate waters of Baccalieu Island will still allow for hunting along the extensive mainland coast (i.e. 60 km from Low Point to Lead Cove). A protected marine portion within the reserve will act as a refuge for these birds.

The hunting of seabirds is incompatible with the objectives for establishing ecological reserves as defined in the **Wilderness and Ecological Reserves Act**.

Actions:

- i- Hunting will be prohibited in the Baccalieu Island Ecological Reserve.

2.6 Historical Aspects of Baccalieu Island

Baccalieu Island has long had an association with human fishing activities. The island first appeared on a map in 1503 and Gaspar Corte-Real named Baccalieu Island “Y. dos bacalhas” (literally Island of Cod in old Portuguese). Since their first sighting, the seabirds of Baccalieu have been used as important indicators of landfall to sailors. The Common Murre, Atlantic Puffin, and Razorbill are known locally and elsewhere as “Baccalieu Bird”. Evidence of long-term human habitation and use of the island can be seen in the number and diversity of the place names around the island. The historical importance of Baccalieu Island is recognized in this management plan.

Actions:

- i- Parks and Natural Areas Division will recognize the international and historical significance of Baccalieu Island and will include aspects of this significance in information and interpretation publications. In addition, local knowledge will be used in the compilation of any publication.
- ii- This Management Plan will recognize the significance of the light stations, particularly the old lighthouse on the northern part of the island, and supports their continued use for both vessel safety and interpretation of local, historical features.

2.7 Aircraft Activity

Air traffic over the Baccalieu Island Ecological Reserve consists mostly of helicopters ferrying staff and supplies to the Transport Canada facilities. There may be as many as 50 flights to and from the island a year. These flights have the potential to be very disruptive to breeding seabirds on the island, potentially causing flyoffs resulting in egg and chick mortality.

Actions:

- i- Canadian Coast Guard aircraft landing at the southern facilities must approach from the south, avoiding the eastern and western cliffs, from April 1 to October 30. When servicing the facilities at the northeastern end the aircraft must approach from the north, circling around the northeastern and northwestern cliff faces, from 1 April to October 30.

- ii- Aircraft flying over the Reserve must maintain an altitude of at least 300 meters from April 1 to October 30.

2.8 Domestic Animals

The lighthouse keepers on Baccalieu Island have traditionally kept pet dogs. These animals have not only served as company over the long winters but have also provided a degree of safety in certain circumstances. However, domestic animals can be very disruptive at a seabird colony by chasing birds, digging up nests and eating eggs or chicks.

Actions:

- i- With the following exception, all domestic animals will be prohibited in the reserve.
- ii- Except for the present number of lighthouse keeper's dogs (2), domestic animals will be excluded from the Reserve.
- iii- If at any time it is shown that the lighthouse keeper's dogs are causing significant habitat destruction or seabird mortality, the dogs will be excluded from the Reserve.

2.9 Woodcutting by the Lighthouse Keepers

The building of small boats has been a traditional activity of the Baccalieu Island lighthouse keepers. Most of the wood for the boats has been taken from the stands of trees on the island. This activity can be allowed to continue at the level it occurred prior to establishment of the provisional reserve (under Section 25 of the W.E.R. Act). The present level of cutting is minimal and does not appear to affect the ecology of the island.

Actions:

- i- Parks and Natural Areas Division will monitor the level of Woodcutting activity by the lighthouse keepers in the Baccalieu Island Ecological Reserve. If at any time it is determined that this activity is adversely affecting the ecology of the island, wood cutting may be reduced or eliminated.

2.10 Access

The level of visitation to Baccalieu Island has historically been much higher than the present level. Summer fishing camps were established on the northern end of the island during the summer months. With the widespread use of speedboats and motorboats this activity appears to have stopped. A small number of local residents continue to make day-trips to the island for recreational activities, such as berry picking or picnicking. In addition, there may be a future demand for access to the islands from interested members of the public and research scientists. Habitat destruction is of particular concern for the two burrowing species (Atlantic Puffin and Leach's Storm-Petrel), where walking often causes burrows to collapse and accelerates habitat erosion.

Unrestricted recreational use of Reserve waters, especially close to the colonies, may cause stress to the seabirds. While the impact of disturbance created by vessel traffic near seabird colonies is not well known, it is thought to be important.

Actions:

- i- A general access permit to land on the island will not be implemented at this time.
- ii- In order to minimize disturbance to areas containing high concentrations of puffin and petrel burrows,

and cliffs containing nesting seabirds, persons who visit the Island will require a permit to visit these sensitive areas, from April 1 to October 30. Maps which clearly define the location of these areas will be developed by Parks and Natural Areas Division. These maps and permits will be available through Parks and Natural Areas Division.

- iii- A general permit system will be implemented in the future if it is shown that the breeding seabird habitat is being destroyed. This system would be conducted in consultation with the local communities.

2.11 Tour Boat and Other Vessel Operation

The Reserve provides some opportunities to observe, from the water, breeding seabirds and other marine life, such as whales. There is a concern with the effect that tour boats and other vessels may have on the Reserve's wildlife. Both the distance at which boats approach the shoreline and their operation (e.g. speed, activities on board) may potentially impact breeding seabirds, in particular. The following section contains guidelines that will minimize potential impacts on the Reserve's resource yet allow for a high quality experience for visitors.

Actions:

- i- Motorized boats will not be permitted within 100 m of cliffs containing nesting birds during the breeding season (April 1 to October 30) except for the designated landing sites at Ned Walsh's Cove and London Cove (Figure 2).
- ii- Non-motorized boats will not be permitted within 20 m of the cliffs containing nesting birds during the breeding season (April 1 to October 30) except for the designated landing sites at Ned Walsh's Cove and London Cove (Figure 2).
- iii- Noise level, originating from either the boat or from the people on board will be kept below a level which causes disturbance to the birds.

- iv-** Tourboat operators will require a yearly permit from Parks and Natural Areas Division for each vessel they operate within the reserve. Qualifications for the permit will include:
1. Compliance with Canadian Coast Guard safety regulations;
 2. Demonstration of an up-to-date knowledge of the components of the reserve, including seabirds and marine mammals;
 3. Adherence to a Tourboat Operator Code of conduct, to be developed in cooperation between Parks and Natural Areas Division and the tourboat operators;
 4. Attendance at an informational workshop to be organized by Parks and Natural Areas Division.

2.12 Information/Education

Despite the significance of the Reserve, there is a general lack of understanding and appreciation for the fragility of the seabirds and their habitat. Interpretive material will greatly enhance visitor appreciation and ensure that correct and consistent information is distributed to the public.

Actions:

- i-** Interpretive literature will be produced by Parks and Natural Areas Division and distributed through government agencies and tourist information offices.

2.13 Research and Monitoring

One of the objectives of the Baccalieu Island Ecological Reserve is to foster scientific studies which help ensure the achievement of two other higher level objectives:

- (a) To preserve an internationally important seabird breeding colony that is essential to the maintenance of species diversity, composition and abundance at levels sufficient to ensure viable long-term populations; and
- (b) To maintain the natural communities of the Reserve with their associated vistas, flora and fauna in a condition no less pristine than at the time of Reserve establishment.

Actions:

- i-** A Research Strategy and Action Plan will be produced by Parks and Natural Areas Division drawing upon the expertise within the Seabird Management Advisory Committee.

- ii- Research in the Reserve will be authorized by Research Permits from Parks and Natural Areas Division and from Canadian Wildlife Service, as appropriate.
- iii- The research of highest priority will be that which addresses management issues with an emphasis on marine birds.
- iv- In issuing research permits, preference will be given to research activities identified in the Research Strategy and Action Plan.
- v- The killing of birds for scientific or other research purposes will not be permitted except in special circumstances where the desired information could not otherwise be obtained.

2.14 Ecological Integrity

It is essential that the ecological integrity of the Baccalieu Island Ecological Reserve be maintained. This necessitates the prohibition of a number of activities that will be detrimental to natural ecological processes.

Actions:

- i- Except for scientific or management purposes, traditional fishing and berry picking activities, there will be no disturbance, damage or removal of any plant, animal or natural object from the Reserve.
- ii- Ecosystems of the Reserve will be allowed to follow natural succession unless deliberate management is required for the preservation of an indigenous plant or animal species.
- iii- The use of motorized vehicles or equipment will be prohibited in the terrestrial portion of the Reserve.
- iv- Dumping, depositing or the emission of any substances will be prohibited in the Reserve.
- v- Open fires will not be permitted in the Reserve, except for small camp fires at the designated landing sites.

2.15 Large Vessel Traffic

The waters off the east coast of the Avalon are part of a major shipping route and therefore are subject to a substantial level of large vessel traffic. This vessel activity threatens seabirds by introducing oil pollution due to accidental spills and deliberate illegal bilge discharges. Depending on wind, tides and currents, spills occurring some distance from the Reserve can have as negative an impact as those occurring within the Reserve itself. Marine oil pollution is lethal to breeding and wintering seabirds.

Actions:

- i- Parks and Natural Areas Division will participate in efforts to educate the public about the effects of oil pollution on seabirds.

3. SUMMARY STATEMENT

Baccalieu Island is extremely important on a North American, indeed, on a global scale. Its breeding seabird colonies are of international significance. The island's history dates back to the earliest days of New World exploration. The lives of the local people are intricately tied to Baccalieu. Through cooperation, preservation of Baccalieu Island through the management measures outlined in this plan will not only go a long way in protecting the multitudes of birds and other animals which rely on the island, but will also help ensure that this facet of local residents' lives and our history will remain for generations to come.

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Appendix 1. Breeding Populations of Seabirds on Baccalieu Island (Montevecchi and Tuck, 1987)

Species Name	<i>Scientific Name</i> (pairs)	Common Name	Number (pairs)
Northern Fulmar	<i>Fulmarus glacialis</i>	Noddy	20
Leach's Storm Petrel	<i>Oceanodroma leucorhoa</i>	Mother Carey's Chick	3,360,000
Northern Gannett	<i>Sula bassanus</i>	Gannet	637
Herring Gull	<i>Larus argentatus</i>	Blue Gull	+
Black-backed Gull	<i>L. marininas</i>	Saddleback	+
Black-legged Kittiwake	<i>Rissa tridactyla</i>	Tickleace	12,975
Common Murre	<i>Uria aalga</i>	Turre	4,000
Thick-billed Murre	<i>U. lomvia</i>	Turre	181
Razorbill	<i>Alca torda</i>	Tinker	100
Black Guillemot	<i>Cephus gyrlle</i>	Pigeon	100
Atlantic Puffin	<i>Fratercula arctica</i>	Baccalieu Bird	30,000

APPENDIX 2. INITIAL BIRD SPECIES LISTING FOR BACCALIEU ISLAND.

ORDER	SPECIES	OCCURRENCE-STATUS
GAVIIFORMES	RED-THROATED LOON	R-V
PROCELLARIFORMES	NORTHERN FULMAR	U-SR*
	GREATER SHEARWATER	C-SR
	SOOTY SHEARWATER	C-SR
	MANX SHEARWATER	R-SR
	LEACH'S STORM-PETREL	C-SR*
PELECANTFORMES	NORTHERN GANNET	C-SR*
	DOUBLE-CRESTED CORMORANT	R-V
ANSERIFORMES	BLACK DUCK	U-M
	GADWALL	R-A
	GREEN-WINGED TEAL	R-M
	LONG-TAILED DUCK	WR
	KING EIDER	WR
	COMMON EIDER	2WR
	WHITE-WINGED SCOTER	WR
FALCONIFORMES	SHARP-SKINNED HAWK	R-V
	BALD EAGLE	R-SR*
	MARSH HAWK	R-V
	OSPREY	R-V
	PEREGRINE FALCON	R-A
	MERLIN	R-V
GALLIFORMES	WILLOW PTARMIGAN	R-PR
GHARADRIIFORMES	WHIMBREL	R-M
	SPOTTED SANDPIPER	C-SR*
	SOLITARY SANDPIPER	R-M
	GREATER YELLOWLEGS	R-M
	WHITE-RUMPED SANDPIPER	R-A
	GREAT BLACK-BACKED GULL	C-PR*
	HERRING GULL	C-PR*
	IVORY GULL	WA
	BLACK-LEGGED KITTIWAKE	C-SR*
	COMMON TERN	R-V
	ARCTIC TERN	R-V
RAZORBILL	C-SR*	

ORDER	SPECIES	OCCURRENCE-STATUS
GHARADRIIFORMES	COMMON MURRE	C-SR*
	THICK-BILLED MURRE	C-SR*
	DOVEKIE	WR
	BLACK GUILLEMOT	C-SR*
	ATLANTIC PUFFIN	C-SR*
STIUIGIFORMES	SNOWY OWL	WA
	SHORT-EARED OWL	R-V
PICIFORMES	COMMON FLICKER	R-V
PASSERIIFORMES	EASTERN KINGBIRD	R-A
	YELLOW-BELLIED FLYCATCHER	C-SR
	EASTERN WOOD PEWEE	R-A
	HORNED LARK	C-SR*
	TREE SWALLOW	R-A
	BARN SWALLOW	R-A
	COMMON RAVEN	C-PR*
	BLACK-CAPPED CHICKADEE	U-PR*
	BOREAL CHICKADEE	C-PR*
	WINTER WREN	R-SR*
	AMERICAN ROBIN	C-SR*
	SWAINSON'S THRUSH	R-A
	GRAY-CHEEKED THRUSH	C-SR*
	GOLDEN-CROWNED KINGLET	R-V
	WATER PIPIT	U-SR*
	CEDAR WAXWING	R-V
	STARLING	U-SR*
	BLACK AND WHITE WARBLER	R-A
	TENNESSEE WARBLER	U-M
	YELLOW WARBLER	C-SR*
	MAGNOLIA WARBLER	R-A
	YELLOW-RUMPED WARBLER	C-SR*
	BLACK-THROATED GRN. WARBLER	R-A
	BLACKPOLL WARBLER	C-SR*
	NORTHERN WATERTHRUSH	C-SR*
	WILSON'S WARBLER	U-A
	AMERICAN GOLDFINCH	R-M
	PINE GROSBEAK	C-PR*
PINE SISKIN	R-M	
SAVANNAH SPARROW	C-SR*	

ORDER	SPECIES	OCCURRENCE-STATUS
PASSERIIFORMES	WHITE-THROATED SPARROW	R-A
	FOX SPARROW	C-SR*
	SWAMP SPARROW	C-SR*
	SNOW BUNTING	WR

* - BREEDING SPECIES, NESTS AND/OR EGGS FOUND, OR EXHIBITED TERRITORIAL BEHAVIOUR

C - COMMON, SEEN ALMOST DAILY

U - UNCOMMON, SEEN OCCASIONALLY OR ONLY IN PARTICULAR LOCATIONS

R - VERY UNCOMMON, LESS THAN FIVE SIGHTINGS

PR- PERMANENT RESIDENT

SR- SUMMER RESIDENT, ARRIVES IN SPRING, DEPARTS IN FALL

WR- WINTER RESIDENT, ARRIVES IN FALL, DEPARTS IN SPRING, NO OCCURRENCE DATA AVAILABLE

W - WINTER SIGHTING

V - VISITOR TO, IN MANY CASES SUMMER OR PERMANENT RESIDENT OF NEARBY MAINLAND (BAY DE VERDE, REDHEAD COVE, OLD PERLICAN)

A - ACCIDENTAL

Appendix 3. Selected Historical References Concerning Baccalieu Island.

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THE BACCALIEU ISLAND ECOLOGICAL
RESERVE REGULATIONS
1995

under

THE WILDERNESS AND ECOLOGICAL RESERVES ACT

REGULATIONS

1. These regulations may be cited as the Baccalieu Island Ecological Reserve Regulations, 1995.
2. In these regulations
 - (a) “Act” means the Wilderness and Ecological Reserve Act, Chapter W-9 of the Statutes of Newfoundland, 1990;
 - (b) “animal” means any living thing, other than man, that is not a plant;
 - (c) “aircraft” means any machine for flying and includes fixed or rotary winged airplanes, gliders and hang gliders;
 - (d) “camp” means any trailer, recreational vehicle, tent or shelter erected or used for any purpose;
 - (e) “commercial fishing” means any fishing carried out under licences issued by the Federal Department of Fisheries and Oceans.
 - (f) “firearm” means any device whereby any missile is discharged by means of an explosive propellant or by means of compressed air or by a spring, and includes sporting guns, rifles, pistols and revolvers of every description, and bows and arrows of every description;
 - (g) “hunt” means to chase, pursue, worry, follow after, or on the trail of, lie in wait for, or attempt in any manner to capture, kill, injure, or harass wildlife whether or not that wildlife is subsequently captured, killed, or injured;
 - (h) “Minister” means the Minister of Tourism, Culture and Recreation;
 - (i) “motorized boat” means a water craft equipped with a mechanical means of propulsion;

- (j) “Motorized vehicle” means any motor car, motor truck, four wheel drive vehicle, all terrain vehicle, tracked vehicle or any other motorized conveyance designed for on or off-road use;
- (k) “permit” means a permit issued and valid under these regulations;
- (l) “Reserve” means the Baccalieu Island Ecological Reserve as established under Section 18 of the Act;
- (m) “structure” means any man-made object intended to be permanent or temporary in nature and includes but is not limited to buildings, houses, cottages, cabins, wharves, docks, boat houses and slipways, but does not include semipermanent blinds, the upkeep and repair of existing structures, or signs erected under the authority of the Baccalieu Island Ecological Reserve Management Plan;
- (n) “tourboat” includes any boat which transports any person for any consideration;
- (o) “wildlife” means any animal or plant;

PERMITS AND LICENCES

- 3.
 - (1) The Minister, or any person authorized by the Minister may issue a permit or other written authorization that allows certain activities to be carried on in the Reserve, subject to the restrictions imposed by these regulations and the Act.
 - (2) A permit or written authorization shall be issued in accordance with the guidelines described in the management plan for the Reserve.
 - (3) The activities referred to in Subsection (1) may be limited by the conditions declared on the permit or in the written authorization.
 - (4) Persons who are required to have permits to enter the Reserve must have the permit in their possession at all times while in the Reserve.
 - (5) Subject to Section 10, any person who enters any portion of the Reserve shall comply with all restrictions set out in these regulations.
- 4.
 - (1) Commercial and recreational fishing in accordance with other applicable legislation is permitted within the marine waters of the Reserve;
 - (2) Berry picking is permitted except in areas of high seabird breeding concentration where access permits are necessary.

RESTRICTIONS

5. Within the Reserve, no person shall
 - (a) pollute or obstruct any stream or other body of water;
 - (b) dispose of any garbage;
 - (c) build or erect, or cause to have built or erected any structure, path or fence;
 - (d) hunt, remove, or disturb any wildlife;
 - (e) destroy, damage, remove, disturb or handle the home, den or nest of any wildlife species;
 - (f) be in possession of any firearm unless the firearm is securely wrapped and tied;
 - (g) destroy, damage, remove, disturb or handle the egg of any wild bird;
 - (h) destroy, damage, disturb or remove any sand, soil, gravel, fossil, natural object, or any part thereof;
 - (i) destroy, damage, or remove any sign or other government property;
 - (j) operate any motorized vehicle on the terrestrial portion of the reserve;
 - (k) light or maintain any fires, open or contained in boats, except contained fires which are permitted in ships traveling through the marine portion of the Reserve;
 - (l) erect or maintain any camp, or otherwise carry on any camping activity;
 - (m) apply any chemical to the reserve.

6. (1) Within the marine portion of the Reserve no person shall
 - (a) operate a motorized boat within 100 meters of cliffs containing nesting birds from April 1st. to October 30th.;
 - (b) operate any unmotorized boat within 20 meters of cliffs containing nesting seabirds from April 1st. to October 30th.

- (2) No person shall within the Reserve
 - (a) operate a dragger, tanker, freighter, barge, or any vessel longer than 20 meters;
 - (b) operate a boat in a manner that disturbs wildlife or allow noise from the boat or persons on board to disturb wildlife.

- 7. (1) No person shall operate an aircraft over the Reserve at an altitude less than 300 meters between the dates of April 1st. and October 30th.
 - (2) No aircraft shall take off or land in the Reserve between the dates of April 1st. and October 30th.

- 8. (1) Subject to Subsection (2) no person shall allow a domestic animal to enter the Reserve.
 - (2) A person may enter the water portion of the Reserve with a dog if
 - (a) the dog is a seeing eye dog specially trained for that purpose and is being used for that purpose; and
 - (b) the seeing eye dog is kept under control at all times.

- 9. (1) No person shall operate or cause to be operated a tour boat or guiding enterprise within the Reserve unless in possession of a license issued under Section 3 of these regulations.
 - (2) In addition to these regulations the operator shall comply with conditions set out in the licence.

EXCEPTIONS

- 10. (1) Any person engaged in the administration or management of this Reserve, in the normal course of his or her duties is exempt from Sections 5(d), (e), (f), (g), (h), (i), (k) and (1), Section 6(1), and Section 7.
 - (2) Any person engaged in a scientific study approved by Parks and Natural Areas Division and in possession of all requisite permits may be exempted from Section 5(d), (e), (f), (g), (h) and (1), Section 6(1) and Section 7.

- (3) Commercial fishermen, while engaged in fishing are exempt from sub-sections 5(d) and 5(h) and sub-section 6(1) to the extent that it is necessary for the proper conduct of this fishing activity.
- (4) Any person engaged in recreational fishing is exempt from Subsections 5(d) and 5(h) to the extent that it is necessary for the proper conduct of this activity.
- (5) Any employee of the Federal Department of Transport, or a person working on the behalf of that Department,
 - (a) is exempt from sub-section 5(c) for the purpose of maintaining existing paths or structures associated with the operation and maintenance of the facilities existing prior to provisional reserve establishment;
 - (b) is exempt from sub-section 5(d) for the purposes of cutting trees for boat building as outlined under the management plan of the Reserve;
 - (c) is exempt from Sections 6 and 7 for the purpose of transporting persons or goods to and from the existing facilities, in accordance with the procedures outlined under the management plan of the Reserve;
 - (d) is exempt from sub-section 8(1), in accordance with the conditions outlined under the management plan of the Reserve.
- (6) Any employee of the Federal Department of Environment, or any person working on the behalf of that Department,
 - (a) is exempt from Sections 6 and 7 for the purpose of transporting persons or goods to maintain the existing Department of Environment facilities, in accordance with procedures outlined under the management plan for the Reserve.
- (7)
 - (a) Any person in the process of landing a boat in Ned Walsh's Cove or London Cove is exempted from Section 6(1).
 - (b) Any person is permitted to have a small open or contained fire on the designated landing sites of Ned Walsh's Cove and London Cove.