

**MARINE BIRD
IMPORTANT BIRD AREAS
IN
LABRADOR FROM THE GROSWATER
BAY AREA SOUTH TO ST. LEWIS**

**Conservation Concerns
and Potential Strategies**

2001

Prepared for the Canadian Nature Federation
and the Natural History Society of Newfoundland and Labrador

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Executive Summary

The IBA program is an international initiative coordinated by BirdLife International, a partnership of member-based organizations in over 100 countries seeking to identify and conserve sites important to all bird species worldwide. The Canadian BirdLife co-partners are the Canadian Nature Federation (CNF) and Bird Studies Canada (BSC).

In Newfoundland and Labrador the Important Bird Areas program partner is the Natural History Society of Newfoundland and Labrador. The IBA program in this province began with the identification and designation of IBA sites. Marine birds were selected as the focus of the first phase of the IBA program because Newfoundland and Labrador includes so many sites of global importance to this group of birds.

The identification of important bird habitat is a necessary first step in establishing habitat-based priorities in bird conservation. The designation of a network of sites can help decision-makers focus their efforts and protect the most critical bird habitat.

In the area of Labrador covered by this document Quaker Hat Island, Northeast Groswater Bay, South Groswater Bay Coastline, Bird islands, Cape Porcupine and Adjacent Marine Area, Tumbledown Dick and Stag Islands, The Backway, Table Bay and the Gannet Islands have been designated as Important Bird Areas (IBAs) for marine birds. The species responsible for triggering these IBA site designations are Razorbills breeding on Quaker Hat Island; Atlantic Puffins and Razorbills breeding in Northeast Groswater Bay; Common Eiders breeding and Black Scoters staging along the South Groswater Bay Coastline; Atlantic Puffins and Razorbills breeding at the Bird Islands; Surf Scoters moulting around Cape Porcupine and the adjacent Marine Area; Harlequin Ducks moulting off the Tumbledown Dick and Stag Islands; Surf Scoter staging inside The Backway; Common Eiders breeding in Table Bay and breeding Razorbills, Atlantic Puffins and Common Murres, and

moulting Harlequin Ducks using the Gannet Islands.

The IBA program relies on grassroots involvement to develop and implement effective conservation plans. This document is one of a set of documents covering over thirty marine bird IBA sites in Newfoundland and Labrador. It is intended as a first step by which to generate interest, provide basic information and spark ideas for potential conservation strategies, projects, project partners and sources of funding. The funding and time resources for this early phase of the IBA Program in Newfoundland and Labrador were insufficient to allow for much travel and community consultation. The geographical territory involved is vast and the array of human communities and interests that potentially overlap with the interests of marine birds at the identified sites is extremely diverse and evolving politically. Therefore, this first step was taken without community consultation. There will be many gaps in this document that will reflect this deficiency. The authors take full responsibility for this. We hope that this documents will be treated, not as a vessel half empty but as one worth filling through the involvement of interested communities and individuals.

We hope that the distribution of this set of initial documents will inform the growing public awareness about the sites and the birds that use them. These documents are intended to evolve with use. They aim to begin by facilitating the building of partnerships at all levels: international, national, provincial, and local to conserve these IBA sites for both the birds and the people that benefit from their continued existence.

The list of marine bird IBA sites in Newfoundland and Labrador and the information available about the sites through documents such as this one will evolve as additional information becomes available. The public is encouraged to notify the Canadian IBA program if they have any information to offer in this regard. For further information on the IBA program please visit the Canadian IBA web site <http://www.ibacanada.com>

Executive Summary

1. Introduction

Many species of seaducks and seabirds breed, moult or winter in the waters surrounding the island of Newfoundland and the coast of Labrador. Some, like the Black Guillemot or “Pigeon”, are resident year round while others migrate elsewhere for part of the year. Harlequin ducks breeding in Northern Labrador winter in Greenland. Eiders breeding around Newfoundland may winter off the United States. Dovekies here in winter will leave for the summer to breed in Greenland. Shearwaters “wintering” on the Grand Banks migrate all the way to the South Atlantic to breed (Brown & Nettleship 1984).

The Grand Banks have been dubbed the Seabird Cross Roads of the Atlantic. In the same spirit, the entire stretch of Labrador and Newfoundland coastline swept by the Labrador Current can be likened to a busy marine bird highway. This eastern edge of Canada is dotted with sites known for their importance to sea ducks and seabirds. Newfoundlanders and Labradorians, therefore, have a special opportunity to contribute to marine bird conservation. Having defined ourselves largely with reference to the sea, marine birds hold a special significance for Newfoundland and Labrador cultures. Conserving areas important for the survival of seaducks and seabirds is a fitting challenge for the people of this province.

Evidence of human occupation on the Labrador side of the Strait of Belle goes back 8000 years (LIA 1977). On the Newfoundland side, archaeological evidence beginning 5500 years ago and spanning several cultures has shown that all peoples that inhabited the region ate marine birds (Tuck 1976). Contemporary Newfoundlanders and Labradorians continue this utilitarian relationship to marine life, although fewer species are harvested today than in the past.

Most contemporary residents of the province, other than hunters and fishermen, remain familiar only with those marine birds still hunted for the table, mainly eider ducks and turrs (murre sp.). However, prior to confederation and the Migratory Bird Act, people were familiar with a greater diversity

of marine bird life. Some still maintain a rich knowledge of their natural environment but for many, the contemporary North American lifestyle has displaced the need for local ecological knowledge. The pendulum, however, is swinging back. Appreciation for the value of an ecological perspective is experiencing a renaissance.

Worldwide, pressures on dwindling resources have led to a false separation of ecology from economy, as if without ecology there would still be an economy. In the global context of environmental degradation Newfoundland and Labrador are still blessed with environmental riches, especially off our coasts. Unfortunately, we are also world famous for having decimated marine life through over harvesting. Examples abound. Funk Island was perhaps the largest colony of Great Auks in the world (Montevecchi & Tuck, 1987). Today they are extinct. Northern Cod were so prolific in our waters they made history half way around the world (Innis 1940). In 1998 Northern Cod were listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a Species of Special Concern. While cod was a prized commercial catch, the Barndoor Skate, was mainly killed as by-catch. Despite its size and low commercial value, this skate has approached extinction largely unnoticed (Casey & Myers, 1998). With our history of destroying marine ecology in the name of the economy, there is no shortage of local lessons from which marine bird conservation could benefit.

Habitat required by marine birds within Newfoundland and Labrador increasingly falls under human influence. Our activities are the main source of stress for the marine environment, both directly through such things as oil pollution and indirectly through our influence on climate change and primary productivity. Although most marine life is out of sight and eludes our empathy, marine birds are an obvious liaison between us and the ocean.

Visible and aesthetically pleasing, birds have captured our imagination and garnered more support than most marine life forms. Birds require a functioning marine ecosystem to survive. Through knowing birds better we will come to know much

else, less obvious and beautiful, but no less important.

In 1990, the 20th World Conference of the International Council for Bird Preservation held a Specialist Group Workshop and published the Proceedings. The last sentence of the Proceedings underlines the true importance of seabird conservation. "If we cannot conserve seabirds, the most obvious and easiest to monitor of all organisms of two-thirds of our planet's surface, then how do we plan to conserve the rest of Earth?" (Duffy, 1994).

In response to that challenge, the purposes of this report are to:

1. outline the challenges facing the conservation of marine birds which use areas of Newfoundland and Labrador designated as Important Bird Areas (IBAs)
2. suggest strategies and some of the resources available to address these challenges

The guiding principle for this work is that set by Duffy's challenge; IBAs must be viewed from an ecological perspective that connects bird conservation with the necessities of life on earth. There is no choice about whether to conserve birds rather than people. If we fail to maintain conditions in which marine birds can flourish, neither will we.

Our recent failure to protect Northern Cod populations from managed over-fishing is a rich source of conservation lessons. Among them is a growing realization that we can not "manage" wildlife populations. Rather, the most we can aspire to is to manage our own behavior as it relates to other species. This document will attempt to outline some of the interactions between human behavior and wild marine birds around which we have some hope of creating conservation strategies for the future of the birds and ourselves. The objective is to provide a base tool from which to build grass roots involvement in conservation plans, help generate public awareness about birds and help build partnerships between various interest levels: international, national, provincial and local.

The audience for this document includes anyone with an interest in, or a mandate that effects the conservation of marine birds. No previous knowledge of marine birds is assumed. This audience includes local residents living adjacent to or seasonally occupying an IBA area, but also includes decision-makers far removed from the local context. While this plan deals with sites in Labrador, the birds using these sites are migratory, traveling in some cases throughout the province if not further afield. Therefore, the perspective taken here is broader than the geographic location of the specific IBA sites in the part of Newfoundland and Labrador covered by this document. To set the context for everyone, we begin with the general political context of the province.

1.1. The Formal Political Context in Newfoundland and Labrador

In 2000, the province of Newfoundland and Labrador had a combined population of 538,823 (Statistics Canada, Demography Division). 28,763 people live in Labrador and the remainder on the island. Much of the population is concentrated on the island's Avalon Peninsula where 252,365 people live.

In addition to the federal and provincial governments there are aboriginal nations within the province and France also holds territory off the south coast of Newfoundland. There are sites of relevance to marine birds within all these jurisdictions. Some of the species for which the IBA sites in this part of Labrador have been identified are known to occupy other parts of the province at other times of year.

Labrador Inuit Association (LIA) The LIA is a non-profit organization formed in 1973 and incorporated under Newfoundland law in 1975. The LIA is affiliated with the Inuit Tapirisat of Canada (ITC) and represents roughly 4,000 Inuit living mainly in the five coastal Labrador communities of Nain, Hopedale, Postville, Makkovik and Rigolet. In 1977 the LIA filed a statement of land claims with Canada. In June, 2001 the LIA, the Canadian and the Newfoundland governments signed the Labrador Inuit Land Claims Agreement-in-Principle (AIP).

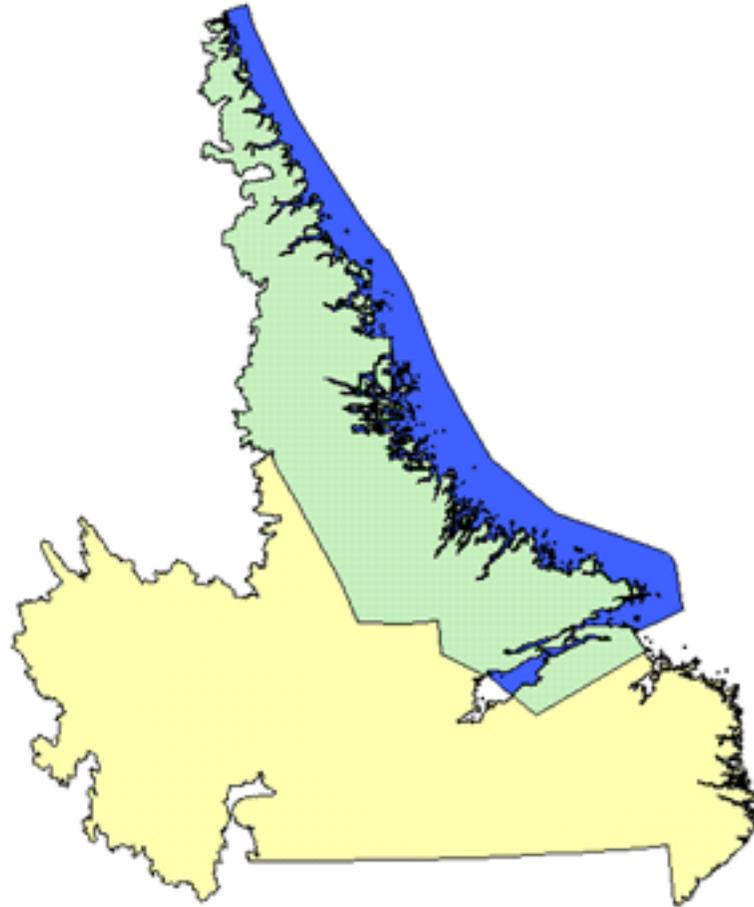


Figure 1-1: Map showing LIA land claims area in Labrador reproduced from LIA website. (http://www.nunatsiavut.com/claim_area.html) Onshore land claims areas are indicated by green hatching and offshore land claims areas are colored blue.

The AIP provides for the Inuit to establish protected areas on lands where it has jurisdiction. Within the settlement area off Inuit lands the Inuit and government will establish protected areas (including marine protected areas) in the context of the co-management regimes established through the agreement.

Four of the IBA sites identified here fall within the Labrador Inuit Association land claims area: Quaker Hat Island, Northeast Groswater Bay, South Groswater Bay, and The Backway.

The Innu Nation. The roughly 1,700 Innu of Labrador live in the communities of Sheshatshiu and Utshimassit (Davis Inlet). They are represented politically by the Innu Nation, which first filed land claims with the Canadian Government in 1977. In 1990 the provincial and federal governments accepted the Innu Statement of Claim and in 1999 the three parties reached an agreement in principle on the next steps in the process. Several of the IBA sites identified here are adjacent to areas identified by the Innu Nation Land selection

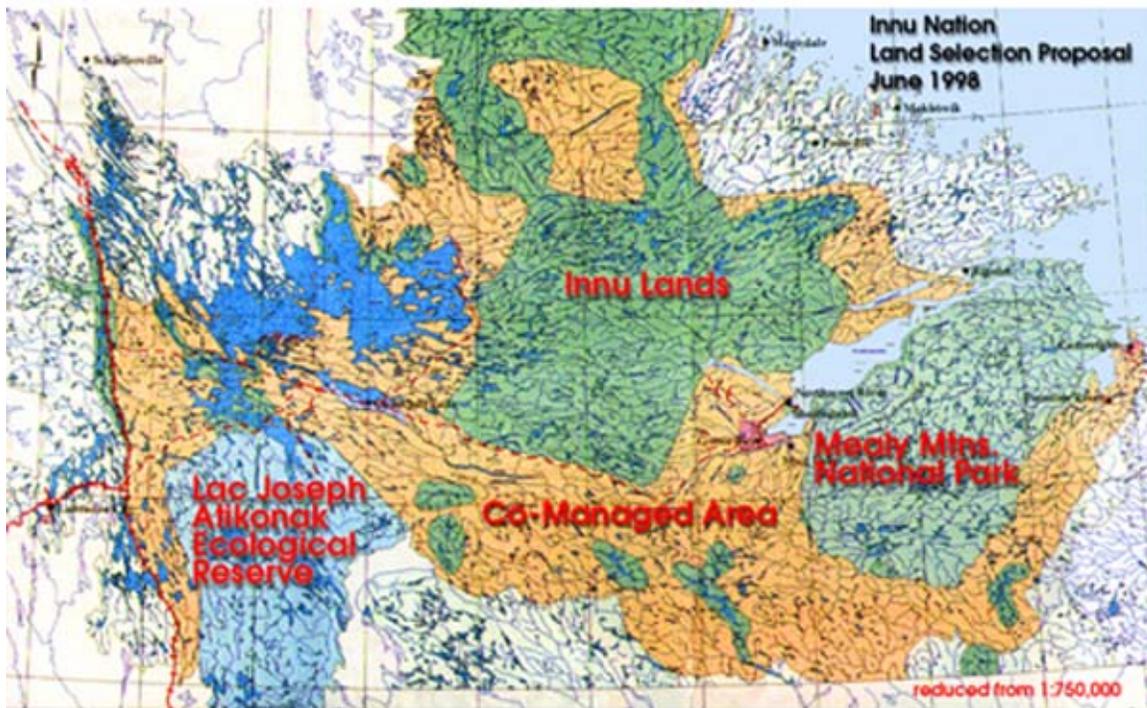


Figure 1-2: Maps showing the Innu Nation land Selection Proposal reproduced from the Innu Nation website. (<http://www.innu.ca/landselect.html>)

Proposal (Figure 1-2). The Backway, South Groswater Bay, Cape Porcupine and the Tumbledown Dick and Stag Islands are adjacent to the area identified in Figure 1-2 as the Mealy Mountains National Park. The Bird Islands, Gannet Islands and Table Bay are near the area identified in Figure 1-2 as a Co-Managed Area.

Métis. Residents of Labrador descended from both Europeans and Inuit and living from Lake Melville south to the Strait of Belle Isle are known as Métis. In 1982 the Canadian Constitution Act included Inuit, Indians (First Nations) and Métis as aboriginal peoples. The Labrador Métis Associa-

tion was formed in 1985 to represent roughly 5000 members and in 1998 took the name Labrador Métis Nation. In 1991 the Labrador Métis Nation submitted a land claim to the Government of Canada. In 1998 the Department of Justice recommended that the Department of Indian Affairs and Northern Development (DIAND) reject the Métis claim. On February 24, 2001, an Ontario Court of Appeal recognized the Métis as a distinct people with constitutional rights comparable to other aboriginal groups. The Labrador Métis Nation land claim area includes all of the IBA sites covered by this document.

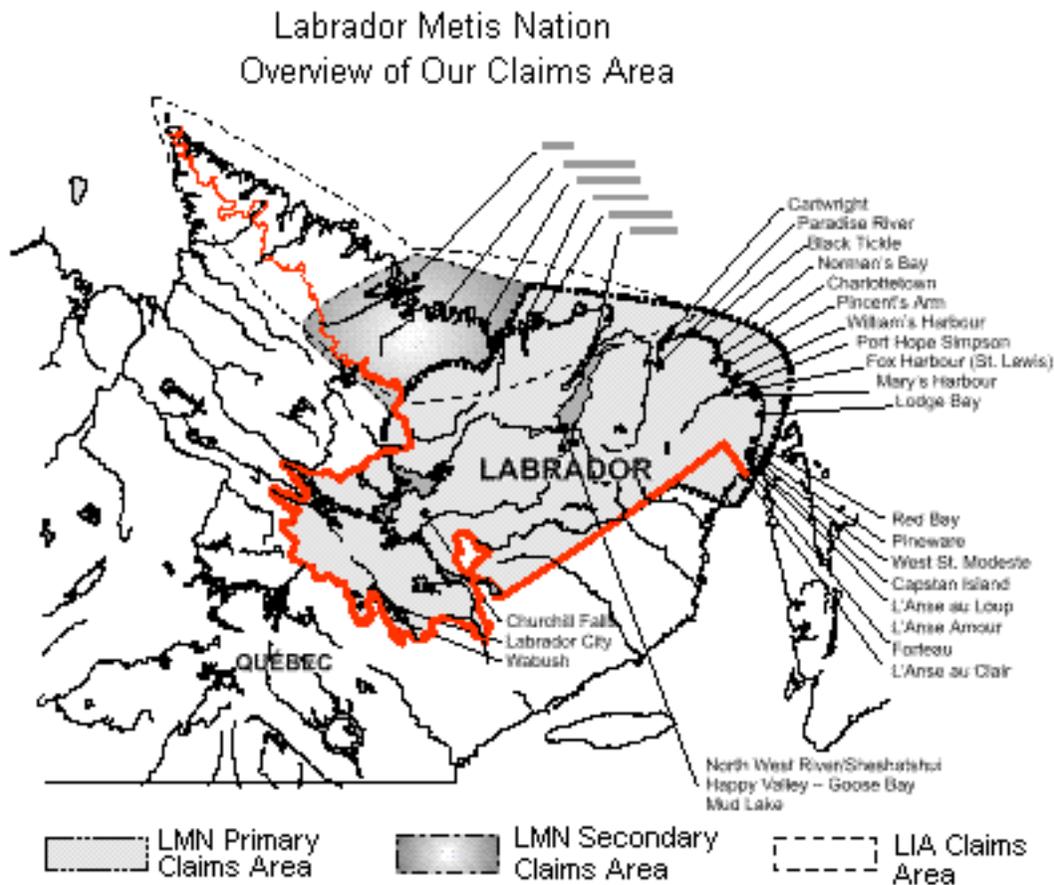


Figure 1-3: Map showing Labrador Métis Nation (LMN) land claim area, adapted from LMN website (<http://www.labmetis.org/landright.htm>)

Mi'kmaq. A population of roughly 3600 Mi'kmaq live on the island of Newfoundland. The largest community is Miawpukek (Conne River) which was recognized as a status Indian Reserve by the

Government of Canada in 1987. In 1972 the Federation of Newfoundland Indians (FNI) was established to promote the social, cultural, economic and educational well-being and seek official recog-

dition through the Indian Act or a self-government process for its members in ten bands on the island. There are Band Councils in Corner Brook, Benoit's Cove, Bartlett's Harbour, Flat Bay, St. George's, Port au Port East, Stephenville/Crossing, Exploits, Glenwood, and Gander Bay.

Saint Pierre and Miquelon. Saint Pierre and Miquelon is a self-governing territory of France. It is an archipelago 25km off Newfoundland's south coast, populated by 6500 people living year round in St. Pierre and 700 in Miquelon. The territorial waters of France extend 12 nautical miles around the archipelago with the addition of a marine corridor extending 200 nautical miles (see Figure 7-4).

1.2. The Informal Political Context in Newfoundland and Labrador

The harvesting of wildlife is important to many people throughout Newfoundland and Labrador and the French Islands of Saint Pierre and Miquelon. The coastal communities have a tradition of subsistence harvesting of marine life. These traditions are maintained to varying degrees throughout the province and retain tremendous significance in the lives of many people. In addition to subsistence harvesting traditions there is a highly developed commercial harvesting sector focused on marine resources.

Nonetheless, conservation can be a dirty word in Newfoundland. Anti-sealhunt protests in the 1970s made the word "Greenpeace" into a generic term. When used in the pejorative, "Greenpeace" can be loosely interpreted as "interfering conservation groups making money off foreign urbanites at the expense of people from Newfoundland and Labrador." The legacy of negative feelings towards anything associated with Greenpeace continues to permeate the political culture. This creates reactionary attitudes from some quarters toward organized conservation efforts and especially towards efforts from outside the province. For some, conservation is confused with not being allowed to kill anything. In a province where harvesting wildlife for the table is still a strong part of the culture this misunderstanding is a challenge for conservation.

Lack of organized community conservation groups. The absence of a widespread network of organized groups with a mandated interest in natural history and conservation means that conservation measures have often come from the top-down, mainly from government. While in hindsight people may appreciate restrictions placed on our behavior for conservation reasons, government initiatives are generally viewed with suspicion. A Parks Canada bid to create a marine conservation area in the Bonavista-Notre Dame Bay region was shelved in 1999 due to public opposition. While many people supported the initiative in principle, they did not trust the government to protect traditional rights of access. Communities need the tools and confidence to initiate conservation measures themselves.

A further consequence of the lack of a widespread network of organized community conservation groups is that grass roots projects requiring capital often have difficulty raising the matching funds necessary to access national funding opportunities.

Northern Cod tragedy. Public perception of government conservation initiatives in Newfoundland are tainted by the recent managed collapse of Northern Cod by the Department of Fisheries and Oceans (Finlayson 1994). DFO failed to conserve the Northern Cod from over-harvesting. The Government administered a managed collapse during which it was legal to over-harvest and warnings from fixed gear fishermen were ignored (Steele et al 1992). Political pressure to maintain harvest rates at unsustainable levels contributed to the demise of the fishery.

The public has associated the managed over-harvesting of northern cod with a failure of science and a widespread skepticism about science and science-based wildlife management has resulted. Government sponsored science failed the people of Newfoundland and Labrador when it came to the fishery, providing many a lesson for the conservation of other marine life.

Outdoor rights movement. There is little private land in Newfoundland and Labrador. The enormity of the landscape compared with the population and the non-arable nature of much of the land

has enabled a history of public land use quite different from most of North America. In Newfoundland and Labrador, one can venture into the landscape pretty much wherever one chooses to go. There are no privately owned rivers and lakes and 95% of the total area of the province is public land open to everyone. Access to a 10 m strip along all shorelines is reserved for the public unless a special grant expressly removes that access (The Lands Act Chapter 36, S.N. 1991 7.(1)). This freedom of access to the land is one that until recently was taken for granted.

Proposals to change the status quo on some rivers lead recently to a public outcry for the protection of outdoor rights. The government responded with a public consultation on outdoor resources resulting in the 1999 release of a two volume report of the Committee of Ministers and MHAs on the Use of Outdoor Resources entitled "Protecting the Legacy" (http://www.gov.nf.ca/protecting_the_legacy.htm). As part of its Declaration of Rights of Newfoundlanders and Labradorians to the Use of the Outdoors the government declared the following:

The Government of Newfoundland and Labrador hereby declares and affirms the traditional privileges and freedoms of hunting, angling and the gathering of wild foods by the citizens of this province. Government further recognizes that citizens have enjoyed and will continue to enjoy the privileges and freedoms of equal and common access to wildlife, fish game, wildfoods and other outdoor resources, subject to proper resource management.

The Government of Newfoundland and Labrador hereby declares and affirms access to public lands and water bodies for recreational use including hunting, angling and the gathering of wild foods and that for these purposes the province's citizens will have clear and open access to a buffer zone around lakes, ponds and rivers.

During the establishment of Seabird Ecological Reserves at Baccalieu and Cape St. Mary's, residents of adjacent areas expressed concern about

loss of access to the provincial Department of Tourism and there were heated public meetings. In 1999, a proposal by Parks Canada to create a marine conservation area off the Northeast coast of Newfoundland was shelved due to public opposition. Contributing factors in all cases were mistrust of government and fears that traditional rights to inshore fishing grounds would be lost. Some people supported the idea of protected areas in principal but lacked the confidence to support the government proposals.

The people of Newfoundland and Labrador do not take the loss of their rights of access to the landscape lightly. Conservation efforts associated with plans to restrict public access must create a full and informed public dialogue on the costs and benefits such changes would bring.

Industrial resource extraction backdrop. European settlement of Newfoundland and Labrador was based on the commercial extraction for foreign export of codfish, then seal pelts and seal and whale oil (Innis 1940, Ryan 1994). Later came mining, industrial forestry, the Churchill Falls mega and smaller scale hydropower projects and offshore oil and gas.

The economy of Newfoundland and Labrador continues to be based on the extraction and export of raw materials. Since the collapse of Northern Cod, the province's fishery has flourished by moving down the food chain and increasing the harvests of crab and shrimp. Ironically, and deceptively, the dollar value of landed catch is greater now than before the collapse of northern cod although the fishery now generates fewer jobs onshore.

In Labrador, proposals to extract the mineral wealth of Voisey's Bay and dreams by the provincial government to harness the power of the Lower Churchill with another mega hydro electric project typify the resource extraction/liquidation approach the provincial economy has long relied on. This perspective threatens basic conservation of wildlife both directly through destruction of habitat and over harvesting and indirectly through failing to appreciate the indirect and long-term contribution a healthy culture and environment could make to our future.

Depressed coastal community economics. The extraction for export of Newfoundland and Labrador natural resources, in some cases to depletion, has not translated into financial security for the province's residents.

Newfoundland has the highest unemployment rate of any province of Canada. In February 2001 the unemployment rate reported for Newfoundland was 16.4% compared with a low in Manitoba of 4.5% and the next highest rates in Prince Edward Island, New Brunswick and Nova Scotia respectively of 11.7, 11.6 and 8.8% (Statistics Canada, Labour Force Survey, Mar. 2001).

Coastal communities, in particular, have suffered from the collapse of the ground fishery. While the landed value of the fishing industry measured in dollars is at an all time high, the number of local jobs associated with those earnings has declined. Recent years have seen an increase in out-migration from coastal communities. Some schools have closed and there are fears for the future health of rural towns.

In Labrador, matters are complicated by the historical abuse of native people's rights. The militarization of the Goose Bay area economy has polarized residents with different value systems against one another. The huge interior landscape of Labrador has been altered in ways we will never know by the

damming of Churchill Falls and by extensive military low-level flight training. In the absence of settled land claims the provincial government's approach has been to forge ahead with developments that significantly affect the very nature of the lands being claimed. But despite great riches in natural resources and the eagerness with which the government exploits these resources, the people on the Labrador coast have benefited relatively little from the destruction of their resource base.

Contemporary rural Newfoundland and Labrador is concerned with jobs. The desperation with which communities seek jobs creates a vulnerability to unsustainable and/or poorly thought out job creation schemes. It also fosters a tendency on the part of planners to support conservation only to the extent that it creates obvious jobs. This can lead to a shortsighted commodification of wildlife and wild spaces that may be no more sustainable than explicit liquidation. The conservation of areas important for marine birds will in some cases require that we leave them their quotient of peace. Many people living in depressed economic circumstances in coastal areas may see this strategy as an unaffordable luxury. Addressing this reality is a significant challenge. Conservation of marine birds and their habitat faces the difficult problem of re-connecting ecology and economy for mutual benefit.

2. The IBA Program

The IBA program is an international initiative coordinated by BirdLife International, a partnership of member-based organizations in over 100 countries seeking to identify and conserve sites important to all bird species worldwide. Through the protection of birds and habitats, they also promote the conservation of the world's biodiversity. There are currently IBA programs in Europe, Africa, the Middle East, Asia, and the Americas.

The Canadian BirdLife co-partners are the Canadian Nature Federation (CNF) and Bird Studies Canada (BSC). The Canadian IBA program is part of the Americas IBA program, which includes the United States, Mexico, and 17 countries in Central and South America.

The goals of the Canadian IBA program are to:

- identify a network of sites that conserve the natural diversity of Canadian bird species and are critical to the long-term viability of naturally occurring bird populations;
- determine the type of protection or stewardship required for each site, and ensure the conservation of sites through partnerships of local stakeholders who develop and implement appropriate on-the-ground conservation plans;
- establish ongoing local involvement in site protection and monitoring.

IBAs are identified under one or more of the following internationally agreed-upon categories:

1. Sites regularly holding significant numbers of an endangered, threatened, or vulnerable species.
2. Sites regularly holding an endemic species, or species with restricted ranges.
3. Sites regularly holding an assemblage of species largely restricted to a biome.

4. Sites where birds concentrate in significant numbers when breeding, in winter, or during migration

The identification of important bird habitat is a necessary first step in establishing habitat-based priorities in bird conservation. The designation of a network of sites can help decision-makers focus their efforts and protect the most critical bird habitat. The IBA program is inclusive and identifies important sites for all groups of birds. It integrates aquatic and terrestrial habitat conservation by protecting seabird, shorebird, landbird, and waterfowl habitat. Most importantly, the program is community-driven, and cooperative. It relies on grassroots involvement to develop and implement effective conservation plans. The program will also help generate widespread public awareness about birds and will help build partnerships at all levels: international, national, provincial, and local.

IBA program in Newfoundland and Labrador.

In Newfoundland and Labrador the Important Bird Areas program partner is the Natural History Society of Newfoundland and Labrador. The IBA program in this province began with the identification and designation of IBA sites. Marine birds were selected as the focus of the first phase of the IBA program because Newfoundland and Labrador includes so many sites of global importance to this group of birds. In 2000, a Conservation Planner was contracted to write initial conservation strategy documents (including this one) for over thirty marine bird IBAs. Rather than write individual plans for each site, sites were placed into groups based on a consideration of the threats shared by birds at several locations.

Marine birds are vulnerable to oil pollution and in today's oceans this threat is everywhere. Variation in the threat to marine birds from oil pollution was the main factor considered in the grouping of sites for this phase of the IBA program in Newfoundland and Labrador. Separate conservation strategy documents have been prepared for each of the groupings (Table 2-1).

Table 2-1: Initial set of conservation strategy documents created under the auspices of the IBA Program in Newfoundland and Labrador

Document Title	Marine Bird IBA Sites Covered
<i>Marine Bird Important Bird Areas in Northern Labrador: Conservation Concerns and Potential Strategies</i>	Galvano Islands, Seven Islands Bay and an area of offshore islands and coastline near Nain
<i>Marine Bird Important Bird Areas in Labrador from the Groswater Bay area south to St. Lewis: Conservation Concerns and Potential Strategies</i>	Quaker Hat Island, Northeast Groswater Bay, South Groswater Bay Coastline, Bird islands, Cape Porcupine and Adjacent Marine Area, Tumbledown Dick and Stag Islands, The Backway, Table Bay and the Gannet Islands
<i>Marine Bird Important Bird Areas near the Strait of Belle Isle and Northern Peninsula: Conservation Concerns and Potential Strategies</i>	St. Peter Bay and Point Amour in Labrador, Fischot Island, Northern Groais Island and Bell Island off the Northern Peninsula
<i>Marine Bird Important Bird Areas on the Northeast Coast of Newfoundland: Conservation Concerns and Potential Strategies</i>	Funk Island, the Wadham Islands and adjacent Marine Area, the Cape Freels coastline, Grates Point, Baccalieu Island and Cape St. Francis
<i>Marine Bird Important Bird Areas in Southeast Newfoundland: Conservation Concerns and Potential Strategies</i>	Witless Bay Islands, Cape St. Mary's, Corbin Island, Middle Lawn Island and Green Island in Newfoundland and Grand Columbier Island and the northeast coast of Miquelon Island in France

Information on the numbers of birds using different areas is incomplete. The Canadian Wildlife Service monitors populations of migratory birds, but has not maintained regular and consistent long-term surveys of marine birds within our waters. As a consequence, there are undoubtedly areas in the region important to marine birds that have not been designated as such by the current round of IBA site designations.

Gathering the information required to establish what sites have been missed in this first round of

IBA designations will be a priority of the IBA program in Newfoundland and Labrador for the near future. The list of marine bird IBA sites in Newfoundland and Labrador will evolve as additional information becomes available. The public is encouraged to notify the Canadian IBA program if they have any information to offer in this regard. For further information on the IBA program please visit the Canadian IBA web site <http://www.iba-canada.com>

3. IBA Site Information

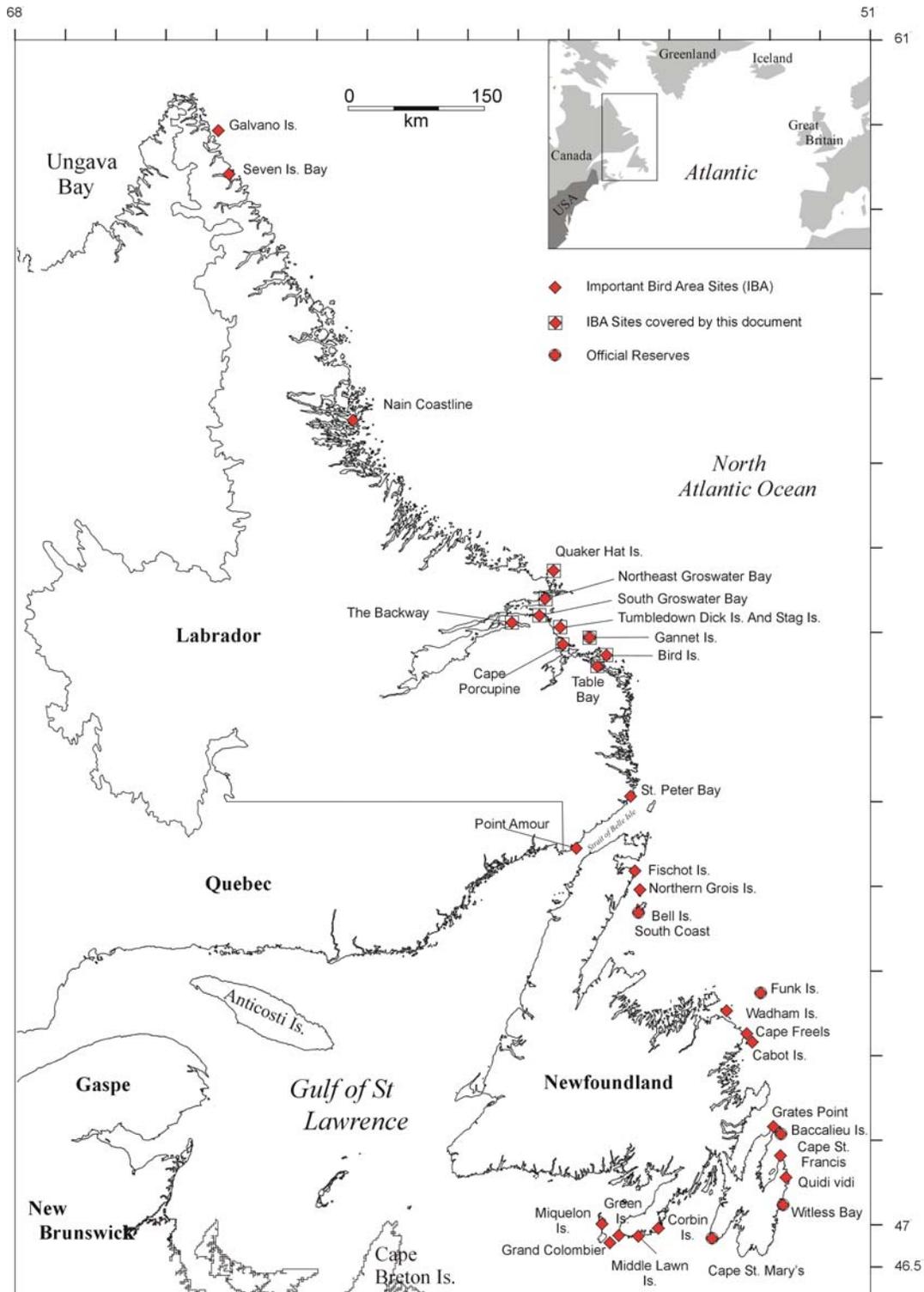


Figure 3-1: Important Bird Area (IBA) sites for marine birds in Newfoundland and Labrador; the sites covered by this document are indicated

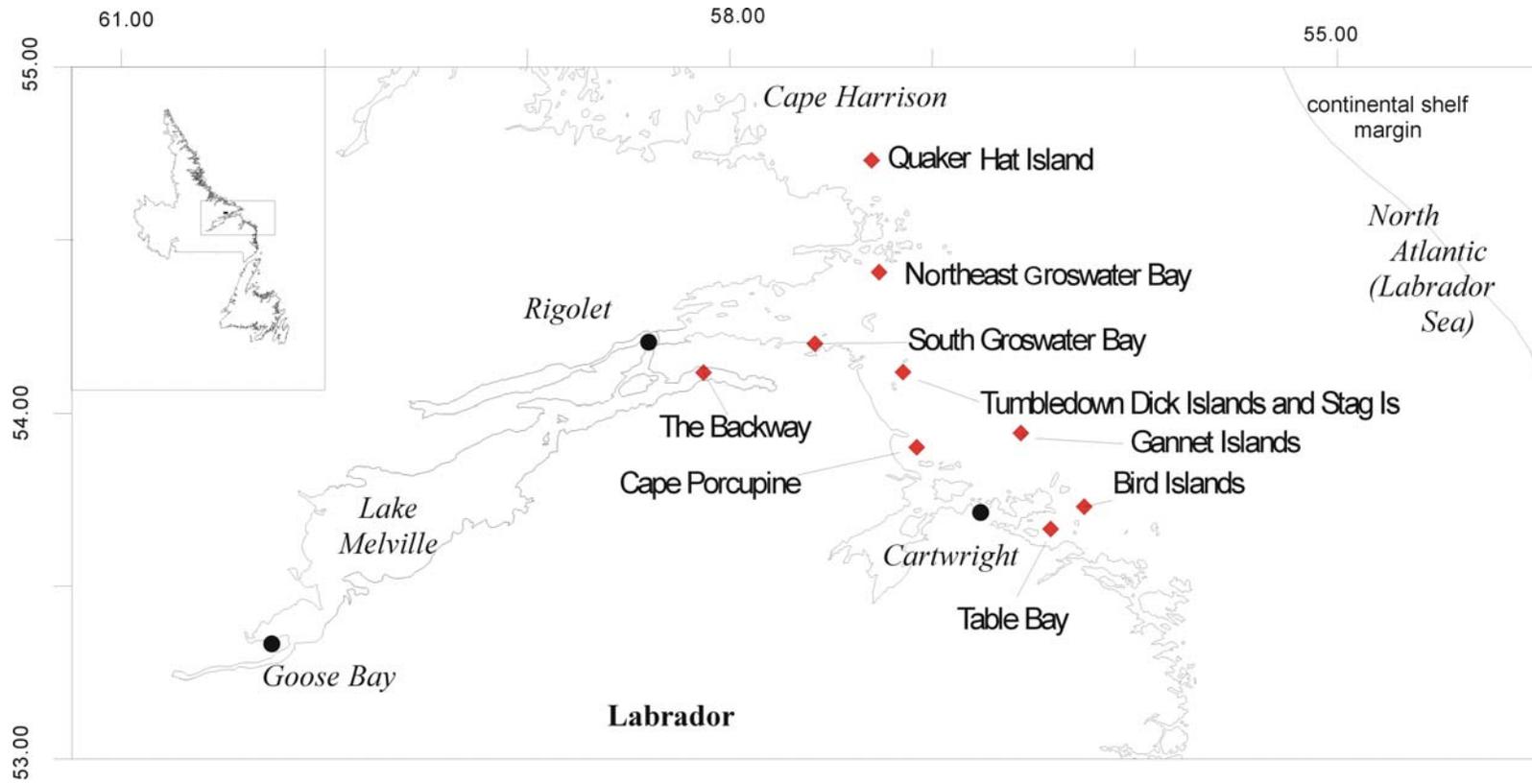


Figure 3-2: Important Bird Area sites for marine birds in Newfoundland and Labrador covered by this document.

Table 3-1: Marine Bird IBA Sites in Labrador From Groswater Bay South to St. Lewis

IBA Site #	Site Name	IBA Site Status	Legal Protective Status	Species Triggering IBA Status¹
LB009	Quaker Hat Island	Global	None	RAZO
LB012	Northeast Groswater Bay	Global	None	ATPU, RAZO
LB013	South Groswater Bay Coastline	Continental	None	COEI, BLSC
LB019	Bird Islands	Global	None	ATPU, RAZO
LB020	Cape Porcupine and Adjacent Marine Area	Global	None	SUSC
LB025	Tumbledown Dick and Stag Islands	Continental	None	HADU
LB026	The Backway	Global	None	SUSC
LB027	Table Bay	Continental	None	COEI
LB001	Gannet Islands	Global	Ecological Reserve	RAZO, COMU, ATPU, HADU

1. ATPU = Atlantic Puffin, BLSC = Black Scoter, COEI = Common Eider, COMU = Common Murre, HADU = Harlequin Duck, RAZO = Razorbill, SUSC = Surf Scoter

There are currently a total of 30 sites in Newfoundland and Labrador which have been designated as IBAs and for which conservation strategy documents are available (Figure 3-1). This document focuses on nine of those sites (Figure 3-2, Table 3-1). Figure 3-3 illustrates the various ecoregions of the surrounding areas.

Oceanography

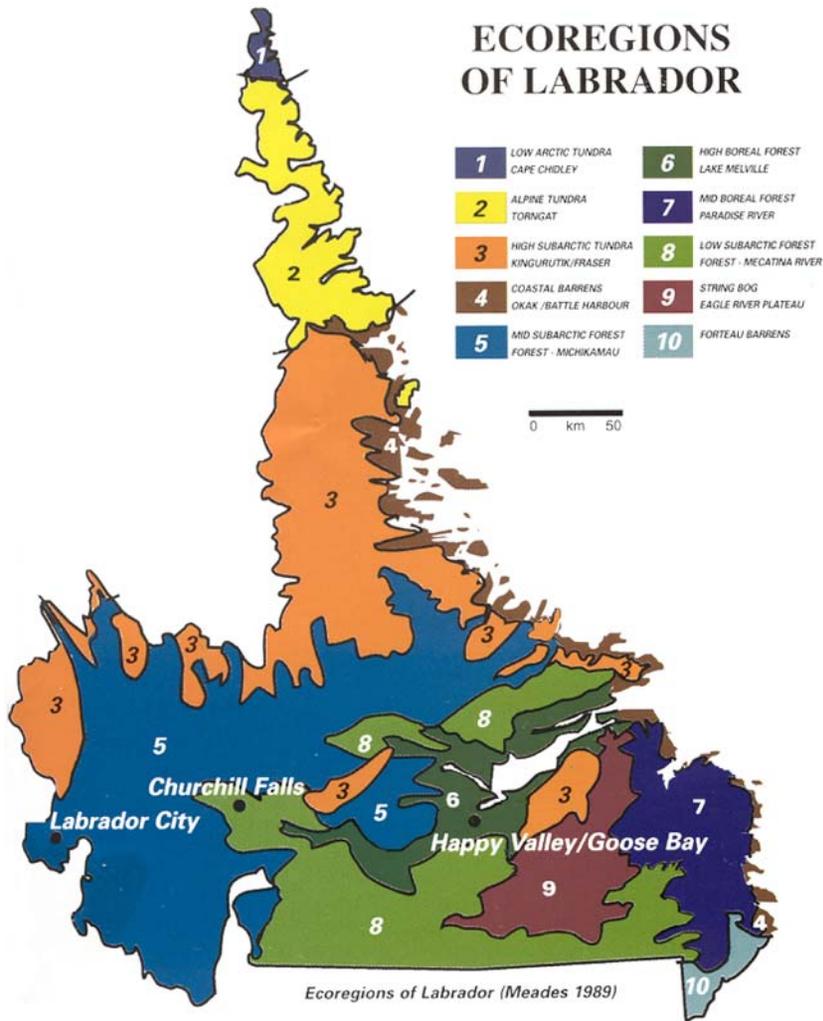
The coast of Labrador is strongly influenced by the Labrador Current. Figure 3-4 and Figure 3-5 illustrate the principal currents and bathymetry of the region. They are reproduced from the *Gazetteer of Marine Birds in Atlantic Canada: an atlas of sea-bird vulnerability to oil pollution* (Lock et al.

1994). Groswater Bay is removed from the direct influence of the Labrador Current.

Protected Status. Designation as an official IBA site does not bring with it any legal protective status. IBA designation simply signifies that the information available on the birds using a site meets the criteria used by the IBA Program to identify and designate areas of importance for the conservation of birds.

The Gannet Islands are currently protected as a provincial Ecological Reserve.

Brief single page descriptions of each site follow and updates can be found on the IBA website (<http://www.ibacanada.com>).



ECOREGIONS OF NEWFOUNDLAND

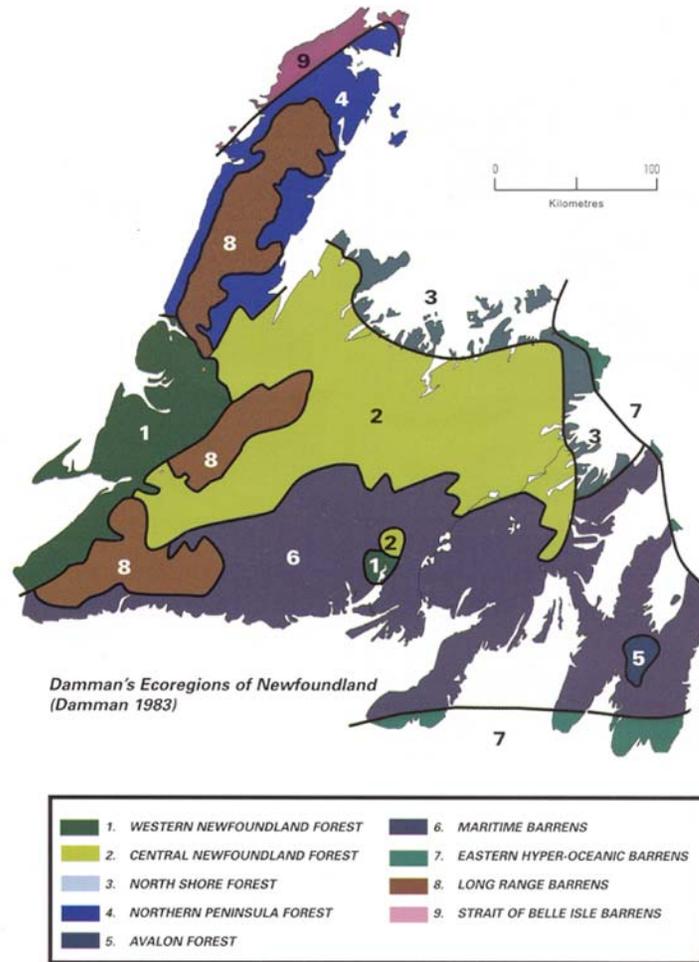


Figure 3-3: Ecoregions of Newfoundland and Labrador adapted from *Caring for Our Special Places*, a publication of the Parks and Natural Areas Division of the Government of Newfoundland and Labrador

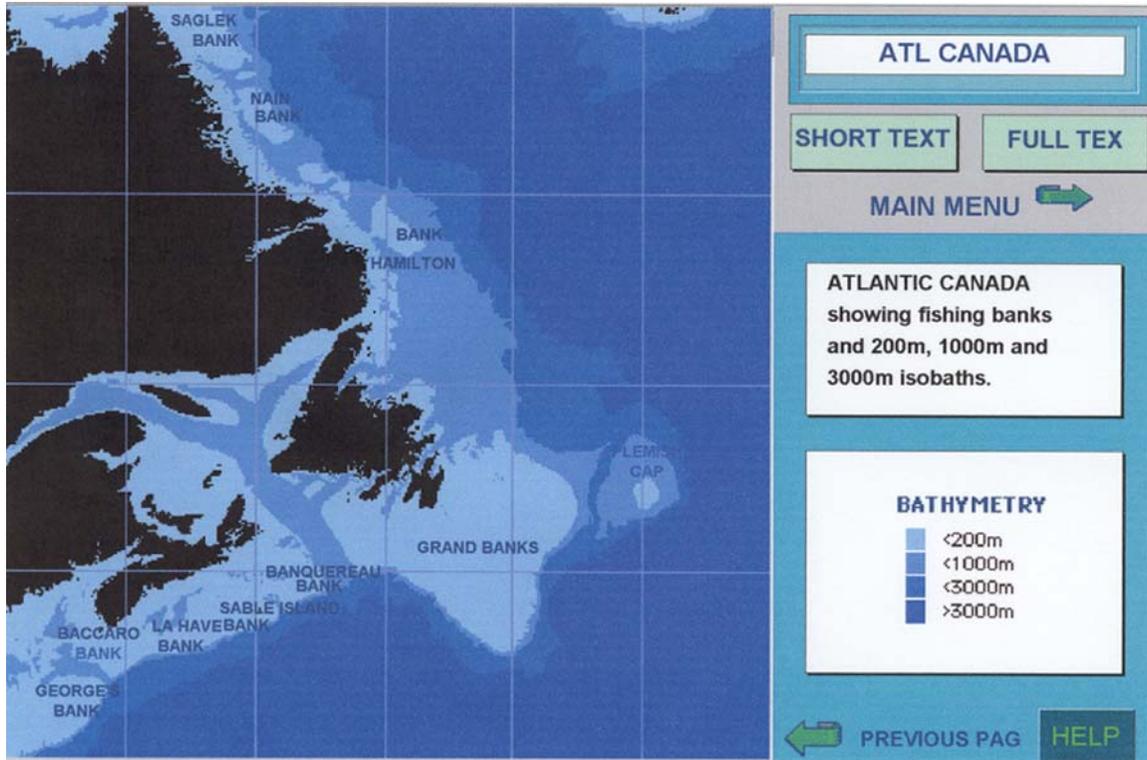


Figure 3-4: Map reproduced from *The Gazetteer of Marine Birds in Atlantic Canada* (Lock et al, 1994) showing bathymetry of the Northwest Atlantic.

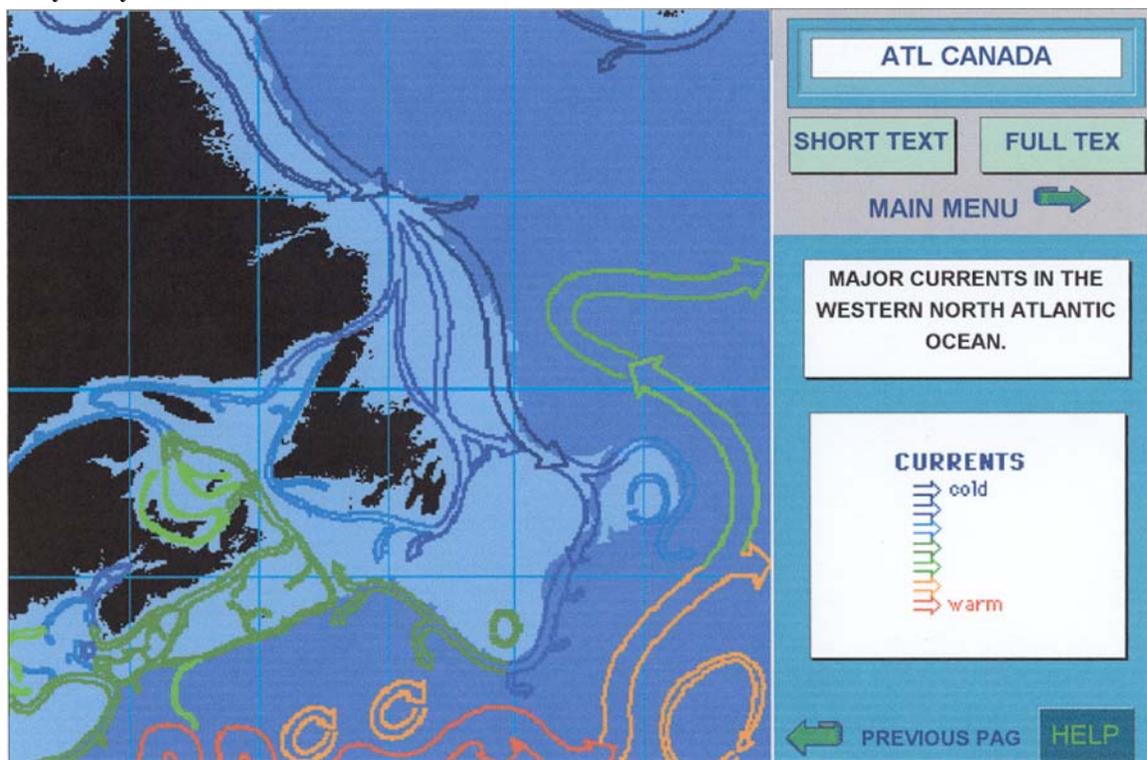


Figure 3-5: Map reproduced from *The Gazetteer of Marine Birds in Atlantic Canada* (Lock et al, 1994) showing ocean currents of the Northwest Atlantic.

Quaker Hat Island		CALB009G
		54°44' N, 57°20' W
Near Makkovik, Labrador		Sea level to ?, ± 10 km²
Habitats: coastal cliffs and rocky shores	Land-use: <i>secondary</i> - hunting	Threats: <i>potential</i> – oil pollution, overharvesting
Protection status: none		

Site description

Quaker Hat Island is located 40 km southeast of Cape Harrison and 10 km northeast of the northern head of Hamilton Inlet. It is an isolated small island, that is devoid of trees with rocky shores, situated 10 km of from the mainland shoreline.

Species or groups meeting IBA criteria	Season	Number
Razorbill	B	460 pairs

B = Breeding FM = Fall migration SM = Spring Migration
W = Winter S = Summer (non-breeding)

Birds

Quaker Hat Island contains a diverse assemblage of breeding seabirds, primarily of the auk family. Approximately 460 pairs of breeding Razorbill, representing over 1% of the estimated North American population have been recorded at this site. Other birds of the family Alcidae that breed at this site include 650 pairs of Thick-billed Murre, 650 pairs of Common Murre and 2,100 pairs of Atlantic Puffins.

Conservation issues

Surveys of these breeding colonies have not been completed since 1978. Therefore, it is not clear how the populations of these seabirds have changed since that date.

These seabirds and their eggs were likely killed and collected in the past for food. Although this activity probably continues today, the extent would be much less. Currently, chronic oil pollution from passing freight ships is probably light, but a substantial increase in shipping is predicted if the proposed mine site is developed farther north at Voisey Bay.

Quaker Hat Island

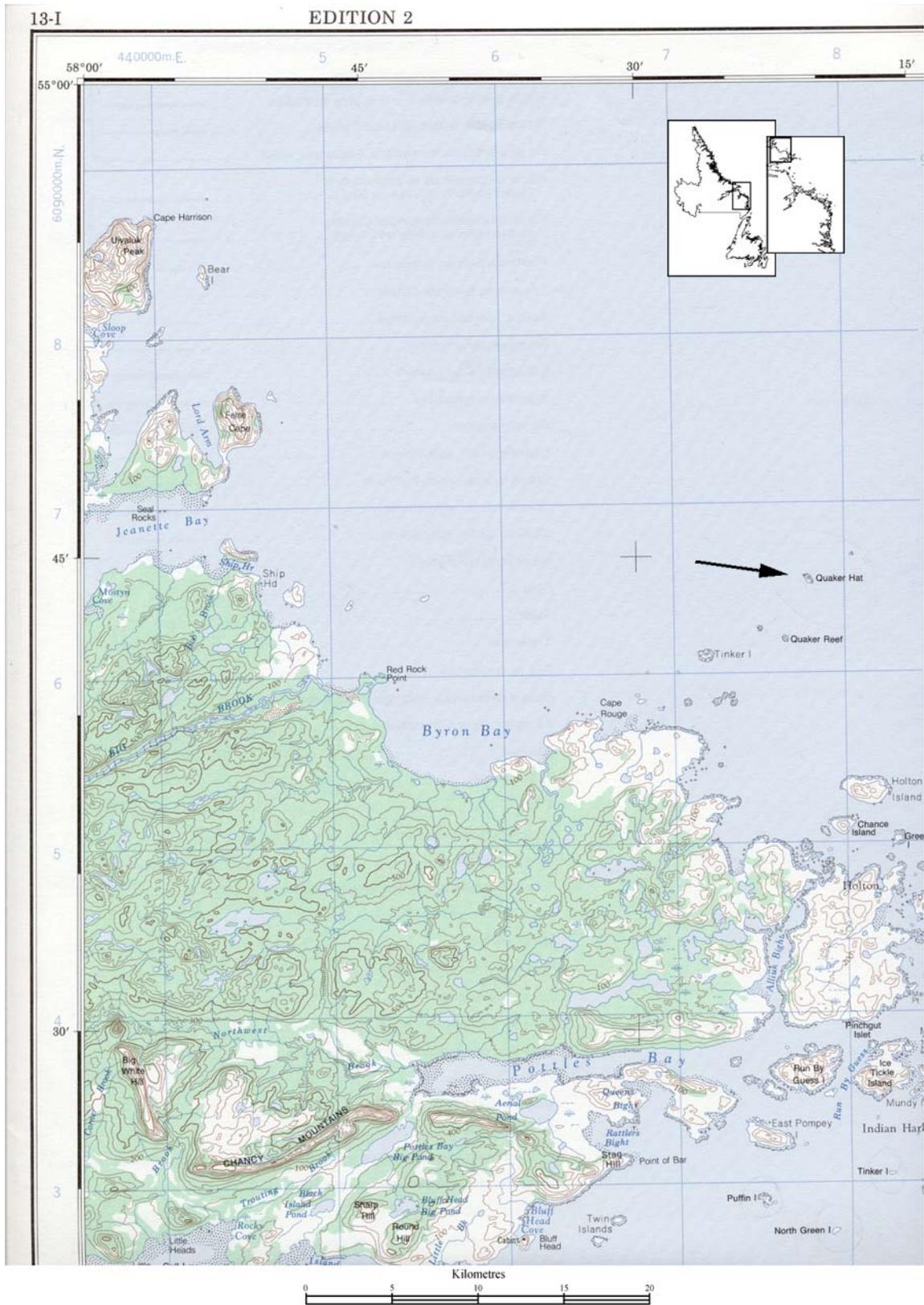


Figure 3-6: Topographic map showing Quaker Hat Island and area, adapted from 1:250,000 map sheet "13-I"

Northeast Groswater Bay		CALB012G
		54°20' N, 57°06' W
Hamilton Inlet, Labrador		Sea level to 70 m, < 50 km² plus adjacent marine areas
Habitats: open sea, coastal cliffs, rocky shores and inlets	Land-use: <i>primary</i> – subsistence hunting, fishing and gathering	Threats: <i>potential</i> – oil pollution, over-harvesting
Protection status: none		

Site description

Groswater Bay is located in southcentral Labrador at the northeastern most head of Hamilton Inlet. The town of Rigolet is situated approximately 75km to the west. Along the northeast side of Groswater, a series of offshore islands support a large number of nesting seabirds. These islands include Herring, the Doughboy, Caesar, Puffin, Tinker, North Green and several other smaller islets. In general, these islands are small in size (the largest being 1 km by 0.6 km in size), rocky and highly variable in shape. The topography varies from gently sloping rocky hills to steep cliffs. In areas that contain soil, the vegetative cover is often dense, being composed mainly of heath-type species (crowberry, bakeapple) and tussock grasses.

Birds

During surveys completed in 1978, large numbers of nesting colonial seabirds were recorded on these islands. Almost 6% of the estimated North American Atlantic Puffin population was recorded, with as many as 16,900 pairs being located on Herring Island alone. Razorbills were also recorded in significant numbers, with about 1,800 pairs being present (as much as 5% of the estimated North American population). Large numbers of Common Murre (4,300 pairs) were also recorded, with this

number being just below 1% of the estimated eastern North American population. Other nesting seabird species included Leach's Storm-petrel (> 10 pairs), Great Black-backed Gull (100 pairs), Herring Gull (present), Thick-billed Murre (220 pairs), and Black Guillemot (present). In all, almost 28,000 pairs of nesting seabirds were estimated on these islands. No more recent surveys have been completed.

Species or Groups meeting IBA criteria	Season	Number
Atlantic Puffin	B	21,450 pair (1978)
Razorbill	B	1,831 pair (1978)
Seabird Colony	B	27,990 pairs (1978)

B = Breeding FM = Fall migration SM = Spring Migration
W = Winter S = Summer (non-breeding)

Conservation issues

From June to November, there is a regular freight-shipping route through Groswater Bay into Lake Melville and on to Goose Bay. Associated with such shipping traffic, is the potential for small oil spills and illegal oil discharges. Egg collecting is a traditional activity in this area; it is not known to what extent this activity affects the seabird colonies in this area.

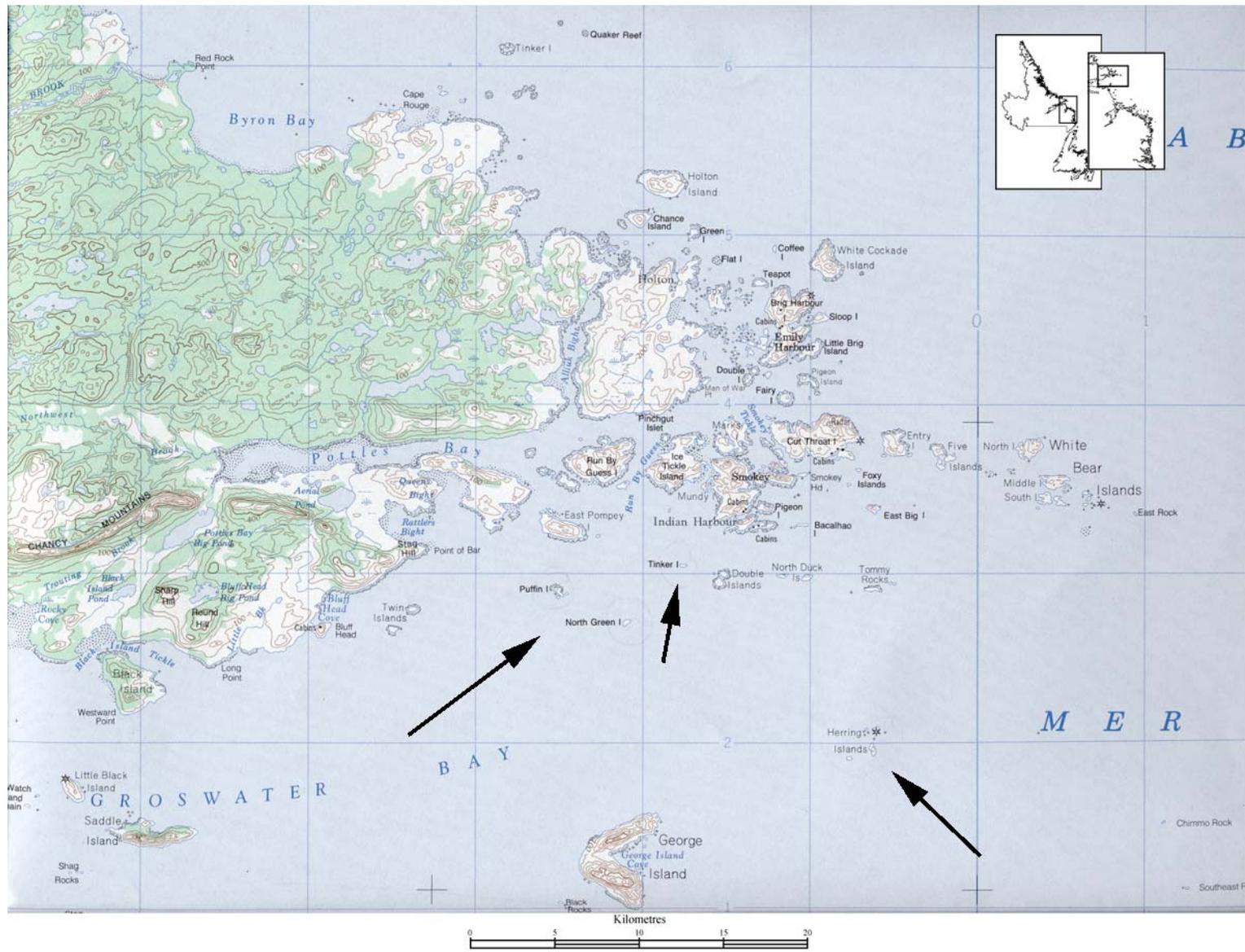


Figure 3-7: Topographic map showing Northeast Groswater Bay and area, adapted from 1:250,000 map sheet “13-I”

South Groswater Bay Coastline		CALB013C
		54°12' N, 57°35' W
Near Rigolet, Labrador		Sea level to 50m, 150 km ²
Habitats: Low rocky headlands and shores, muddy coves, boulder strewn tidal flats	Land-use: Rarely visited by humans	Threats: <i>Potential</i> – oil pollution
Protection status: None		

Site description

Groswater Bay is located at the entrance of Hamilton Inlet in southcentral Labrador. The stretch of coastline that is the subject of this site account is located on the south side of the bay, and extends about 30 km from Tinker Harbour in the west to the South Duck and Tub Islands in the east. The coastline along this stretch consists of low-lying, relatively flat terrain, with boulder-ridden mudflats that are exposed at low tide. Numerous coves and shallow bays occur along the coastline and numerous islands are located within five km of the shore. The entire area is mostly ice-covered from December through to early June. The town of Rigolet is located approximately 20km to the west.

Birds

The south Groswater Bay coastline supports significant concentrations of nesting, moulting and staging waterfowl. At least 1,000 nesting pairs of Common Eiders nest on the islands along this stretch of coastline. Groswater Bay is within the region where the northern Common Eider (*ssp. borealis*) overlaps with the Atlantic Common Eider (*ssp. dresseri*). It is thought that the majority of the eiders nesting along the south Groswater Bay coastline are of the *dresseri* subspecies. This nesting colony would represent about 1.25% of the estimated breeding population for this subspecies.

In addition to the nesting Common Eiders, large numbers of scoters also utilize the area. A noteworthy record of over 1,500 Black Scoters was observed during September 1980, which would represent about 1% of the estimated eastern North American population. The coastline also appears to be used by pre-moulting scoters with as many as 519 Surf Scoters being recorded in June of 1980. It is not known whether the concentration of scoters is an annual event in this area. During surveys completed in August 1998, no moulting scoters were recorded at this site, but large numbers were recorded at the Backway about 30 km to the southwest

	Season	Number
Common Eider (<i>ssp. dresseri</i>)	B	1,000 pairs
Black Scoter	FM	1,547

Conservation issues

The Hamilton Inlet area experiences relatively heavy shipping traffic which passes through Groswater Bay in order to reach the community of Goose Bay. As such, there is potential for oil spills, both small illegal discharges, and large accidental spills.

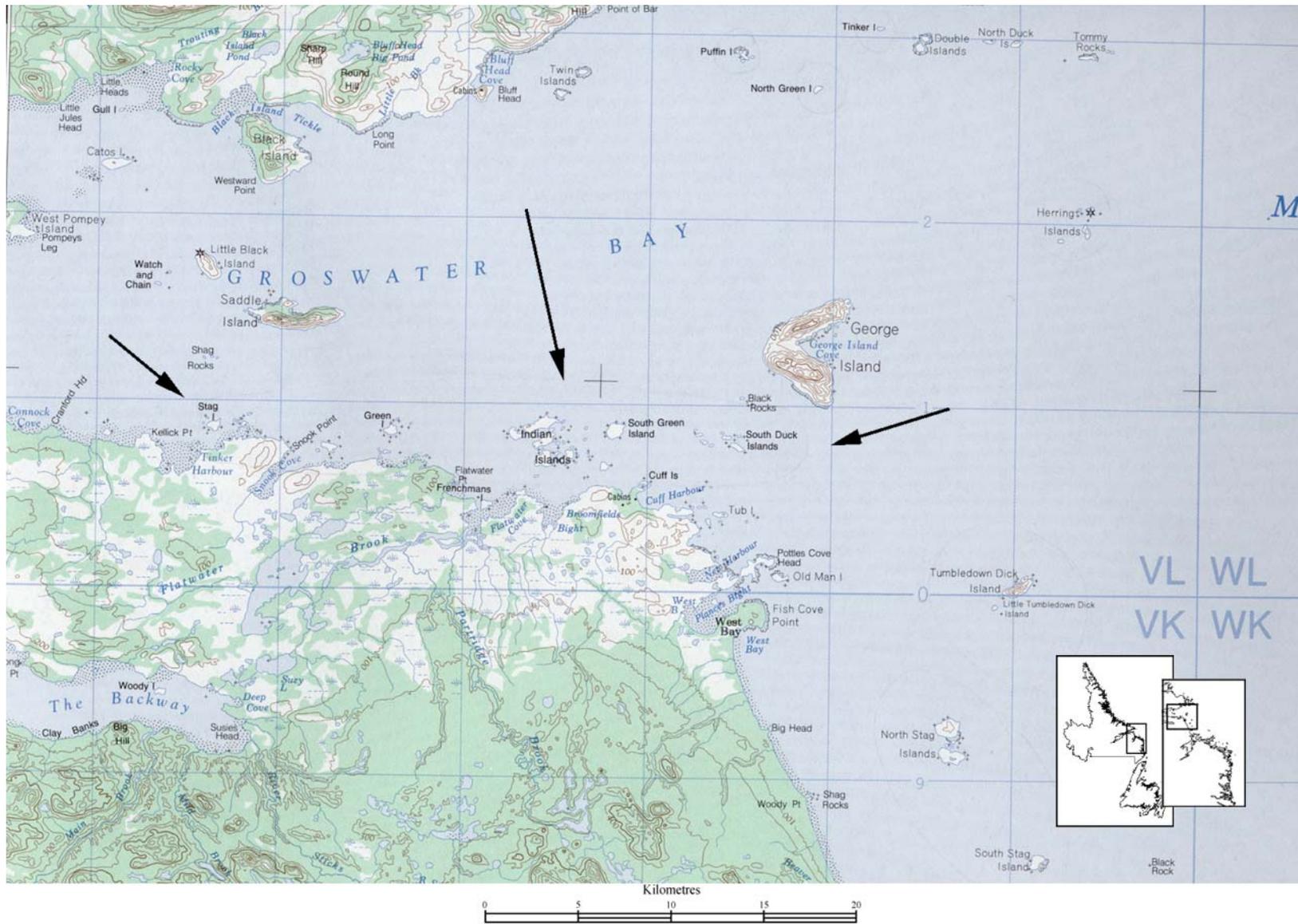


Figure 3-8: Topographic map showing South Groswater Bay Coastline and area, adapted from 1:250,000 map sheet "13-I"

Bird Islands		CALB019G
		53°44' N, 56°15' W
East of Cartwright, Labrador		Sea level to 55m, 0.2 km² plus adjacent marine area
Habitats: coastal cliffs and rocky shores, grassy turf	Land-use: rarely visited	Threats: <i>potential</i> – oil pollution
Protection status: none		

Site description

Bird Islands is located along the southcentral Labrador coast at the mouth of Table Bay. It is approximately 80km southeast of Hamilton Inlet, and 50 km east of Cartwright. The islands are somewhat isolated, being more than 10 km from the closest point of mainland and more than five km from any other offshore island. The larger island (500m by 200m) has steep cliffs along its north side, while the south side slopes steeply to the water. The upper portion, in a slightly depressed area, is vegetated with grassy turf. The other island (located to the east) is only 200m by 150m in size. It also has steep cliffs that rise from its north side, with the south side rising more gently. Grasses and other herbaceous vegetation grow from the cracks in the rocks; there are no areas of grassy turf.

Birds

The Bird Islands support a large colony of nesting seabirds. During surveys completed in the late 1970s, at least two species were present in significant numbers: Atlantic Puffin (8,070 pairs – about 2.2% of the estimated North American population); and Razorbills (1,530 pairs – about 4.1% of the estimated North American population). Although their nesting population is below the national threshold, large

numbers of Common Murres (3,100 pairs) were also present. Other nesting seabirds include Great Black-backed Gull (20 pairs), Leach’s Storm-petrel, and Thick-billed Murre. In all, it was estimated that the colony contained 12,770 pairs of nesting seabirds. No more recent surveys have been completed. In recent years a peregrine falcon pair have been seen nesting on the Bird Islands.

Species or Groups meeting IBA criteria	Season	Number
Atlantic Puffin	B	8,070 pairs (1978)
Razorbill	B	1,530 pairs (1978)
Seabird Colony	B	12,770 pairs (1978)

B = Breeding FM = Fall migration SM = Spring Migration
W = Winter S = Summer (non-breeding)

Conservation issues

From June to early December, coastal ferries and other boats shipping freight pass along the coast of Labrador. This activity has the potential to lead to oil pollution (either illegal discharges, or accidental groundings) that could negatively affect the nesting seabirds. Ships and coastal ferries that are approaching Cartwright from the south often use a route that takes them between the mainland and Bird Island.



Figure 3-9: Topographic map showing Bird Islands and area, adapted from 1:250,000 map sheet “13H & 3E”

Cape Porcupine		CALB020G
		53°52' N, 57°07' W
Cartwright, Labrador		Sea level to 50m, ±30 km²
Habitats: Sandy beaches, coastal cliffs, rocky shores and inlets	Land-use: <i>Secondary</i> – hunting	Threats: <i>Potential</i> – oil pollution, over-harvesting
Protection status: None		

Site description

Cape Porcupine is located just south of Hamilton Inlet and north of Sandwich Bay on the southern coast of Labrador. The cape divides a 40 km long stretch of sand beach known as the Porcupine Strand. South of Cape Porcupine the Strand extends 15 km from Trunmore Bay to Duck Point. To the north, the Porcupine Strand stretches a farther 25 km to Fish Cove Point. Along much of the beach length, boreal forest or barrens start abruptly from the highest tide line. Unlike the majority of the Labrador coastline, there are very few large offshore islands near Cape Porcupine. The full force of the high seas is prevented from reaching most of the beach by small offshore islands and shallow waters.

Birds

Cape Porcupine is a globally significant site for scoters. All three species (Surf, White-winged, Black) are found in the area, though Surf Scoters make up the vast majority of the birds present. In June of 1994, over 10,000 scoters (mainly Surf) were recorded, which represents over 1% of the estimated North American Surf Scoter population. These birds were likely staging in their pre-moulting season, which occurs primarily in June and July. At this time scoters are dispersed over Groswater Bay (to the north) and Porcupine Strand. Additional results of pre-moult scoter surveys are:

2,068 June 1980, and 1,000 July 1998. These birds were counted across the entire 40 km of the Porcupine Strand. The only survey conducted during the moult season found 4,674 scoters (mostly Surf) on the Southern Porcupine Strand (Trunmore Bay). At this time there were no scoters found on the Northern Porcupine Strand or in southern Groswater Bay. During the moulting period scoters tend to accumulate in dense flocks. The 1998 surveys indicate that Trunmore Bay, with nearly 5,000 scoters, is the second most important moulting site in the Groswater Bay area.

Scoters are commonly observed feeding in the surf a few meters off the beach. It is likely that they are foraging on shellfish on the shallow, sandy bottom.

	Season	Number
Surf Scoter	S	10,422 (1996)

Conservation issues

Hunters from Cartwright include the Porcupine Strand as part of their large hunting area, however the numbers of birds shot is unknown.

The shipping route into Goose Bay and Cartwright passes close to Cape Porcupine. Any oil spills from these ships would threaten a large number of waterfowl that are unable to fly.



Figure 3-10: Topographic map showing Cape Porcupine and Adjacent Marine Area, adapted from 1:250,000 map sheet "13H & 3E"

Tumbledown Dick Islands and Stag Islands		CALB025C
		54°05' N, 57°11' W
Near Cartwright, Labrador		Sea level, ± 30 m ²
Habitats: Open sea, inlets and coastal features, coastal cliffs and rocky shores	Land-use: Hunting (to a limited extent)	Threats: <i>Potential</i> - oil pollution, over harvesting (hunting)
Protection status: None		

Site description

The Tumbledown Dick and Stag Islands lie at the mouth of Sandwich Bay, approximately 10km north of the southeastern Labrador mainland. A total of four main islands are located in the group: Little Tumbledown Dick, Tumbledown Dick, North Stag and South Stag. The largest island in each group is approximately 1 x 0.5 km. These islands have rugged, rocky shores, with dry barrens, small bogs, and stunted forest in the ravines. The town of Cartwright is located approximately 40 km south of the Stag Islands.

Birds

The eastern North American population of Harlequin Ducks is designated as nationally endangered. Although they have been suspected of moulting in the vicinity of the Tumbledown Dick and Stag Islands since the 1980s, the first complete survey was not conducted until 1998. This survey recorded a total of 162 birds, which represents almost 11% of the estimated eastern North American Harlequin Duck population. Of the 162 birds, 57 were observed near the Stag Islands and 105 were observed near the Tumbledown Dick Islands. In addition to the moulting Harlequins, 975 moulting Common Eiders were also observed during the August 1998 surveys.

	Season	Number
Harlequin Duck	S	162

Conservation issues

The goal of the National Recovery Plan for the eastern North American Harlequin Duck population (written in 1995) was to increase the population to a level where its status could be downlisted from nationally endangered to nationally vulnerable. Specifically, the objectives of the recovery plan suggested that populations of 2,000 birds by 2005 and 3,000 birds by 2010 would be considered a significant step towards the recovery of this species. Although the 1995 population was estimated to be 1,000 individuals, more recent estimates using additional survey data suggest that there may be as many as 1,500 Harlequins in eastern North America.

Although the Tumbledown Dick and Stag Islands can be accessed by hunters from Rigolet or Cartwright, it is not known whether hunts are frequent, or whether they result in the harvest of significant numbers of birds.



Figure 3-11: Topographic map showing Tumbledown Dick and Stag Islands and area, adapted from 1:250,000 map sheet “13-1”

The Backway		CALB026G
		54°07' N, 58°08' W
Rigolet, Labrador		Sea level ± 105 km²
Habitats: Inlets and coastal features	Land-use: <i>Secondary</i> – hunting	Threats: <i>Potential</i> - oil pollution, overharvesting
Protection status: None		

Site description

The Backway is a 35 km long by 3 km wide narrow saltwater bay that forms the eastern end of Lake Melville, Labrador. Hamilton Inlet and Groswater Bay are located northeast of The Backway, which is fully sheltered from the ocean by Mount Gnat and the surrounding forested hills. The coastline within this secluded bay is relatively flat, with sand and clay mudflats extending well offshore. Numerous streams and small creeks flow into the Backway, but no major rivers are present. There are also a few small isolated islands.

Birds

The Backway supports very significant concentrations of Surf Scoters. Systematic surveys were not completed in this area until 1998. Aerial surveys yielded 26,070 and 34,740 scoters in August of 1998 and 1999 respectively. The vast majority of the birds were identified as Surf Scoters (mostly

males), although a few Black Scoters and White-winged Scoters were also present. No Harlequin Ducks or eiders were observed. This concentration of scoters is the largest ever recorded in eastern Canada, and represents over 3.3% of world's estimated Surf Scoter population. It is thought that the large flocks of scoters seen at The Backway are an aggregation of smaller pre-moult flocks that occur around Groswater Bay in June and early July.

	Season	Number
Surf Scoters	S	30,370 (1998/9 avg.)

Conservation issues

Although The Backway is not on the direct shipping route to Goose Bay, the threat of oil pollution from shipping traffic is still present; tides and westerly winds could move the oil into The Backway. It is not known whether significant waterfowl hunting occurs at this site.

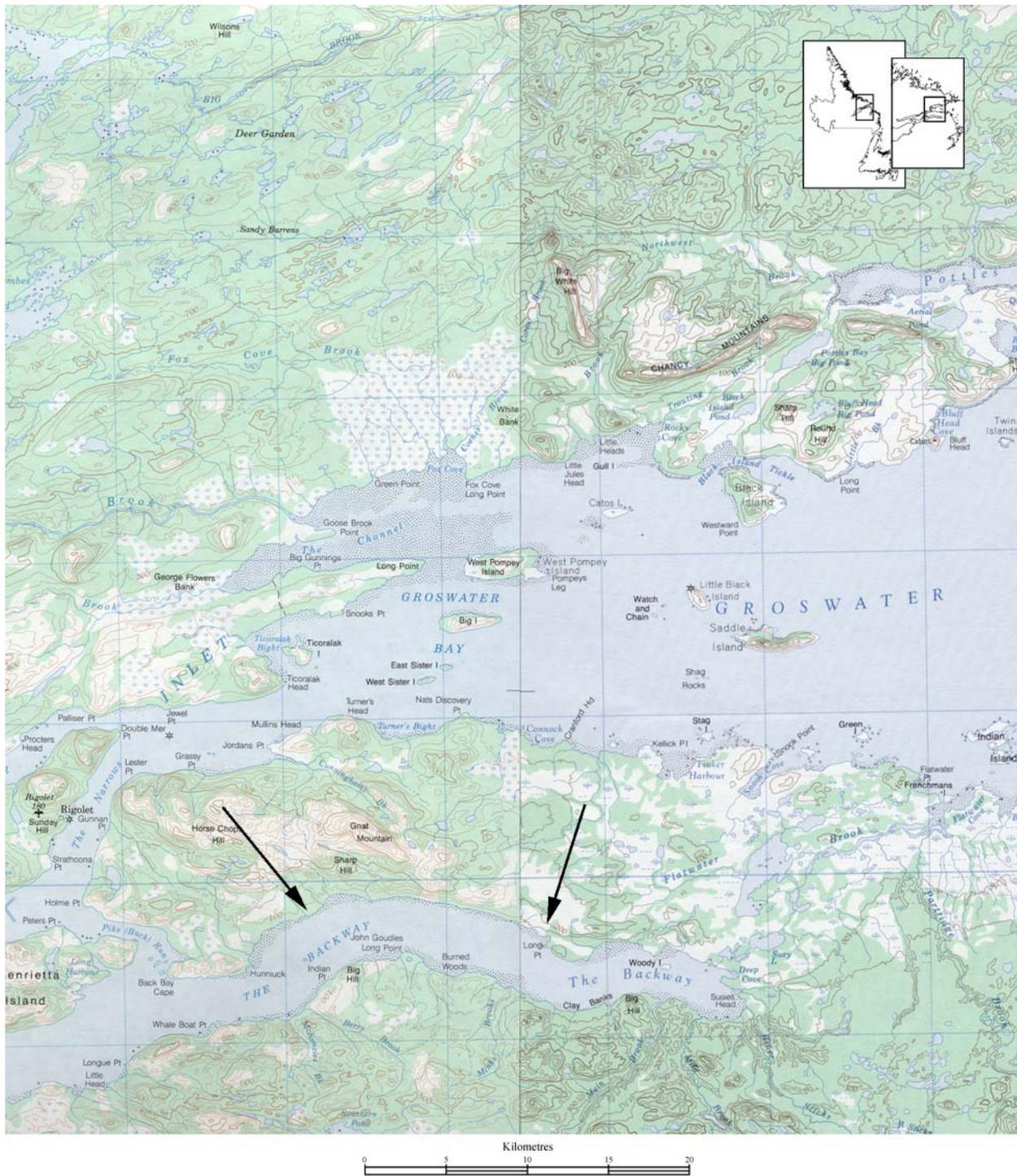


Figure 3-12: Topographic map showing The Backway and area, adapted from 1:250,000 map sheet “13I & 13J”

Table Bay		CALB027C
		53°40' N, 56°26' W
East of Cartwright, Labrador		Sea level to 100 m, ± 200 km²
Habitats: Open sea, inlets and coastal features, coastal cliffs and rocky shores, inland cliffs, coniferous woods	Land-use: <i>Primary</i> – fisheries, hunting, wildlife conservation	Threats: <i>Potential</i> - oil pollution, over-harvesting, predation
Protection status: None		

Site description

Table Bay is located on the southcentral Labrador coast about 35 km east of Cartwright. The site extends from Cape North (at the northern head of Table Bay) to Cape Greep, which is located about 30 km to the southwest. Within the bay, there are numerous islands, islets, and shoals. The larger islands include Collingham, Devils Lookout, Quakers Hat, Entry Island, and Ledge Island. The offshore islands are mostly rock, with heath-type shrubs and scattered grasses. The islands closer to shore, like Ledge Island, are vegetated with stunted coniferous forest.

Birds

In the early 1980s, 2,459 pairs of nesting Common Eiders were recorded on the offshore islands in Table Bay. Table Bay is generally recognized as a zone of overlap between the northern *borealis* and more southern *dresseri* subspecies of Common Eider. Many of the birds in Table Bay cannot be identified as being either *borealis* or *dresseri* because of overlapping morphological characteristics. The nesting population at this site, however, exceeds the combined 1% threshold for both subspecies. The largest colonies occur on three unnamed islands: two km east of Suglo Point – 675 pairs; two km south of Cape Greep – 395 pairs; and three km east of Cape Greep – 370 pairs. Occasionally a Red Fox, Arctic Fox or Polar Bear will spend time on these islands, disrupting the breeding birds for the year.

In addition to the nesting Common Eiders, large numbers of moulting scoters utilize Table Bay. In early August 1998, the Canadian Wildlife Service recorded 1,375 scoters (mostly Surf Scoters) during aerial surveys.

Devils Lookout Island, which is in the southern portion of Table Bay, has long been known as a site for nesting Peregrine Falcons (ssp, *anatum*), with at least one pair being present. In 1999, the *anatum* ssp. was downgraded from nationally endangered to nationally threatened as a result of the recovery of populations throughout its breeding range.

	Season	Number
Common Eider	B	2,459 pairs

Conservation issues

Hunting, both legal and illegal, is a common practice in the Table Bay area. However, Canada Geese and American Black Ducks are the main species targeted. Egg-collecting was formerly a common practice, but this activity has been reduced in recent years. Both the Newfoundland Wildlife Division and the Table Bay Eider Duck Conservation Committee are active with nesting habitat enhancement programs and regular patrols of the eider nesting colonies during the breeding season. The main route for coastal ferry and freighter shipping to Goose Bay and Cartwright is 5 to 15 km north and east of Table Bay. A ship-related oil spill in this area could threaten the nesting colonies.



Figure 3-13: Topographic map showing Table Bay and area, adapted from 1:250,000 map sheet “13H & 3E”

Gannet Islands		CALB001G
		53°58' N, 56°32' W
Grady Harbour, Labrador		sea level to 50 m, 227 km²
Habitats: rocky shores, dwarf heath scrub, tundra.	Land-use: wildlife conservation	Threats: <i>potential</i> - oil pollution
Protection status: Provincial ecological reserve		

Site description

The Gannet Islands are a remote group of seven islands at the mouth of Sandwich Bay. The nearest point on the mainland is Cape North, approximately 17 km away. Six of the islands, the Gannet Clusters, are located in close proximity to one another. The seventh island, Outer Gannet, is located approximately seven km to the north. All of the islands are low lying and rocky. The vegetation is dominated by dwarf heath scrub with sedges, and grasses characteristic of the tundra may also be present.

Birds

The site hosts significant breeding populations of Razorbills, Atlantic Puffins and Common Murres. The largest Razorbill colony in eastern North America occurs here, with approximately 5,400 pairs being present (over 14% of the eastern North America population). Large populations of Atlantic Puffins (about 50,000 pairs - approximately 13% of the eastern North America population) and Common Murre (about 63,000 pairs - approximately 11% of the eastern North America population) are also present. There is some evidence that the populations of both Common and Thick-billed Murres have increased at the Gannet Islands. In the early 1950s, 11,650 pairs of Common Murres and 315 pairs of Thick-billed Murres were recorded.

Other seabird species breeding on the islands include Thick-billed Murre, Black Guillemot, Northern Fulmar, Black-legged Kittiwake, Great Black-backed Gull and Leach's Storm-Petrel. Northern Gannets, ironically, do not breed on Gannet Island; the islands were named after a British Admiralty survey ship - HMA Gannet.

The Gannet Islands support breeding populations of all the auk species occurring in eastern Canada, including the most southerly colony of a substantial number of Thick-billed Murres (964 pairs on the Gannet Clusters, and 441 pairs on Outer Gannet Island). Large flocks of molting Harlequin Ducks (70 to 150) from the eastern population (nationally endangered) are also present around the islands in summer.

Species or Groups meeting IBA criteria	Season	Number
Razorbill	B	5,400 pairs (1983)
Common Murre	B	63,087 pairs
Atlantic Puffin	B	49,705 pairs
Harlequin Duck	S	70 to 150

B = Breeding FM = Fall migration SM = Spring Migration
W = Winter S = Summer (non-breeding)

Conservation issues

The islands are protected as a provincial ecological reserve. Although disturbance is a concern with most seabird colonies, the remoteness of these islands makes this threat minimal.

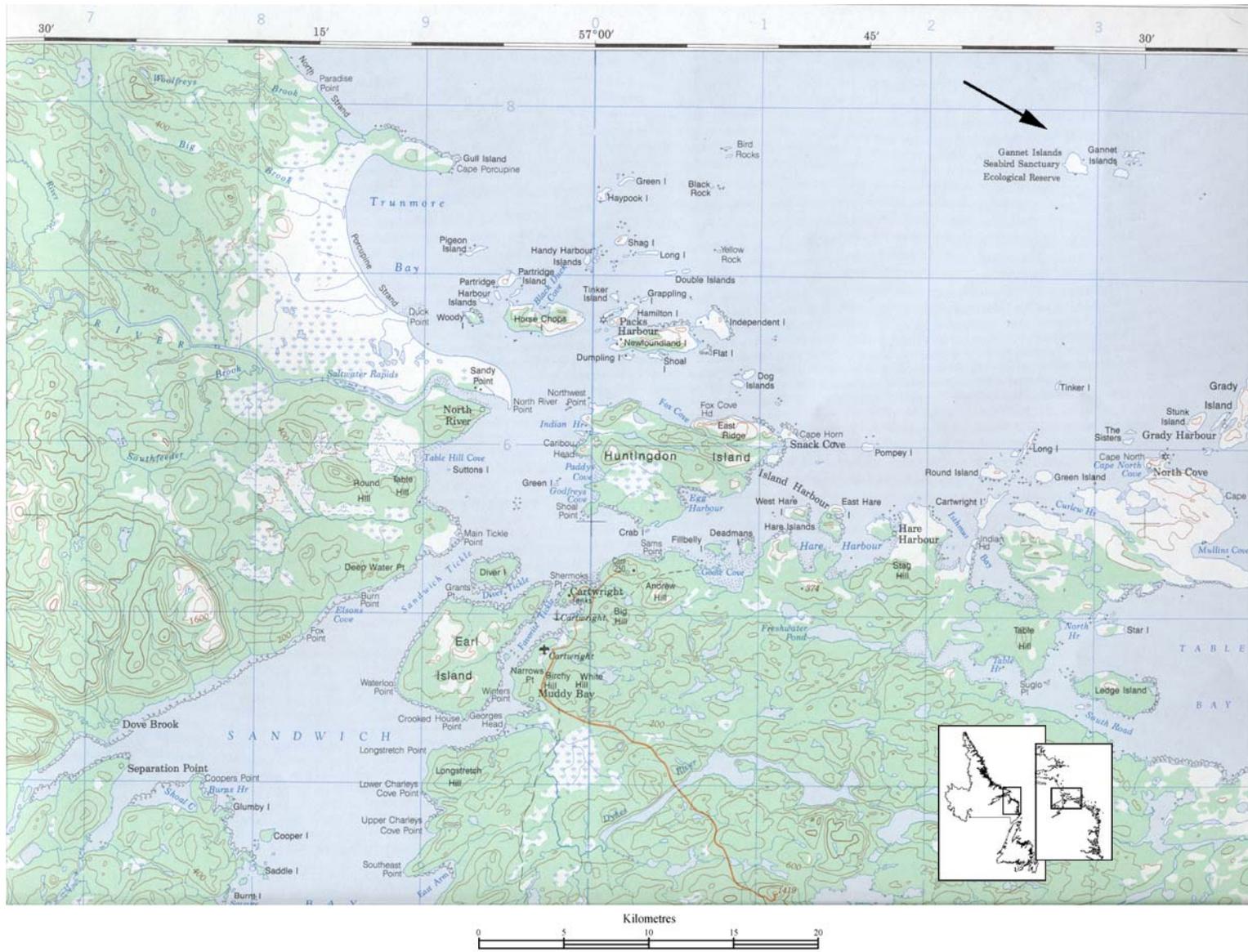


Figure 3-14: Topographic map showing The Gannet Islands and area, adapted from 1:250,000 map sheet “13H & 3E”



GANNET ISLANDS Labrador

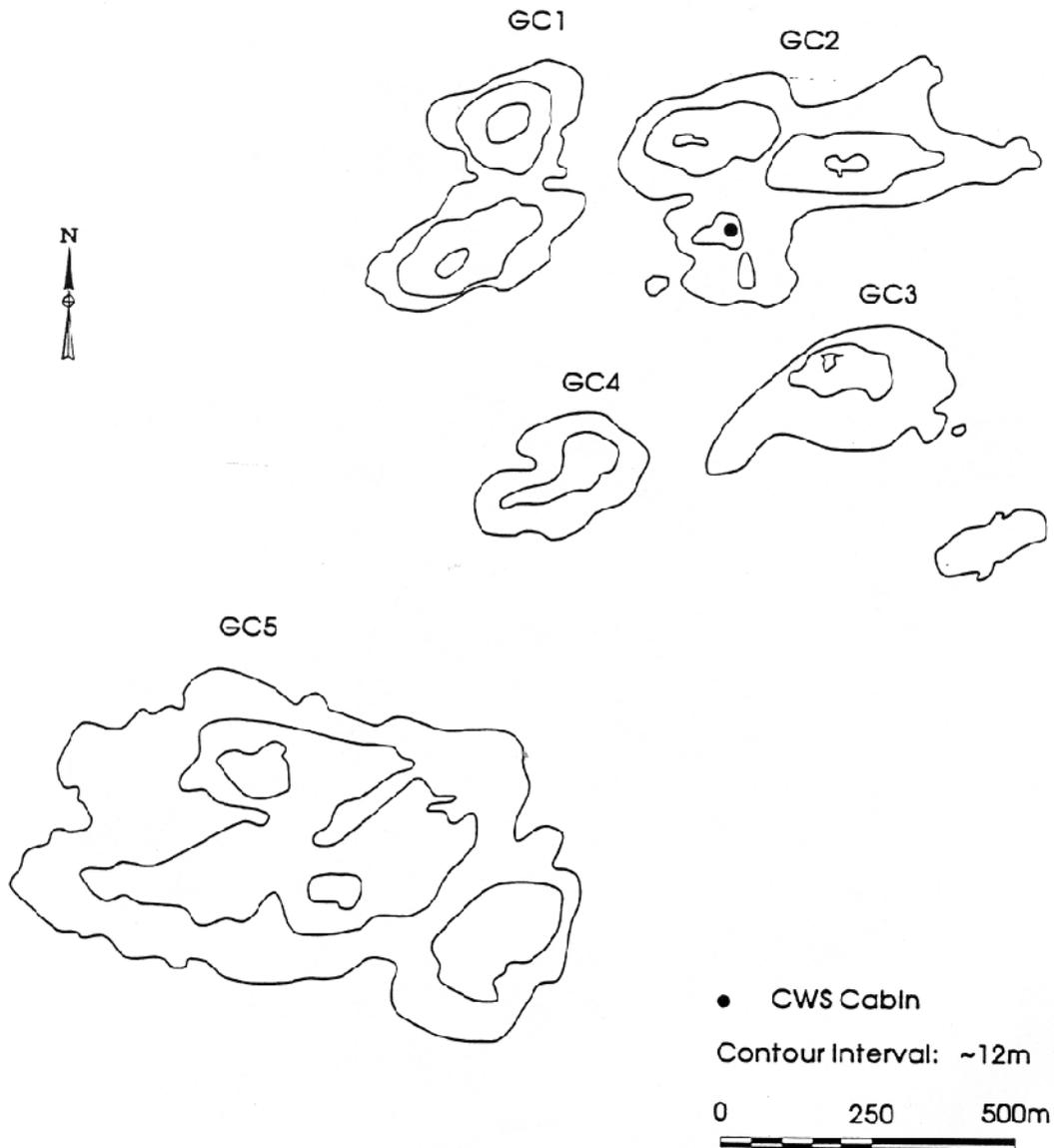


Figure 3-15: Map showing The Gannet Islands Ecological Reserve adapted from Newfoundland and Labrador Seabird Ecological Reserves, Government of Newfoundland and Labrador

4. IBA Species Information

The marine bird IBAs in this part of Labrador were designated IBAs for several species including Common Eider, Common Murre, Harlequin Duck, Surf Scoter, Black Scoter, Atlantic Puffin, and Razorbill (see Table 3-1 on page 13).

Tables 4-1 to 4-10 summarize some of the available survey information relevant to the species responsible for IBA site designation in this area of Labrador. Brief natural history biographies of these species follow in Sections 4.4. - 4.10. starting on page 49.

Quaker Hat Island

Table 4-1: Species Triggering IBA Site Designation at Quaker Hat Island

Species	Season ¹	Number ²	Source ³
Razorbill	B, 1978	458	CWS-SCD

1. B = Breeding
2. active nests
3. Canadian Wildlife Service - Seabird Colony Database

Northeast Groswater Bay

Table 4-2: Species Triggering IBA Site Designation in the Northeast Groswater Bay Area

Colony	Species	Season ¹	Number ²	Source ³
Herring Islands	Atlantic Puffin	B, 1978	16,900	CWS-SCD
“	Razorbill	B, 1978	1,250	CWS-SCD
North Green Island	Atlantic Puffin	B, 1978	2,200	CWS-SCD
“	Razorbill	B, 1978	380	CWS-SCD
Tinker Island	Atlantic Puffin	B, 1978	30	CWS-SCD
“	Razorbill	B, 1978	11	CWS-SCD
Puffin Island	Atlantic Puffin	B, 1978	2,000	CWS-SCD
“	Razorbill	B, 1978	70	CWS-SCD

1. B = Breeding
2. active nests
3. Canadian Wildlife Service - Seabird Colony Database

South Groswater Bay Coastline

Table 4-3: Species Triggering IBA Site Designation in the South Groswater Bay Coastline Area

Species	Season ¹	Number	Source
Common Eider (ssp. <i>dresseri</i>)	B	1,000 pairs	Gilliland, unpub.
Black Scoter	FM, 1980	1,547	Lock, 1986

1. B = Breeding, FM = Fall Moulting

Tumbledown Dick and Stag Islands

Table 4-4: Summary of moult sites for Harlequin Ducks identified from aerial and boat surveys from 1994 to 1998 in Groswater Bay, adapted from Gilliland & Lewis, 1999

Island	June 1994 ¹	July 1995 ²	July 1998 ¹	August 1998 ¹	August 1998 ²
Tumbledown Dick	0	-	30	70	56
Little Tumbledown Dick	26	-	21	35	0
North Stag	0	42	15	57	47
South Stag	27	2	6	0	0
Total	53	44	72	162	105

1. Aerial Survey
2. Boat Survey

The Backway

Table 4-5: Backway (CWS Coastal Block # = 922) Surf Scoter Counts as Reported in Gilliland & Lewis, 1999

Season	Number of Individuals
July 1998	10,000 (all scoters combined)
August 1998	95 Surf Scoters and 25,975 unidentified scoters

Cape Porcupine**Table 4-6: Cape Porcupine Surf Scoter Counts (Trunmore Bay) as Reported in Gilliland & Lewis, 1999**

Season	Number of Individuals
June 1980	1,560 Surf Scoters
September 1980	1,475 Surf Scoters
June 1994	720 Surf Scoters
July 1998	1,000 (all scoters combined)
August 1998	4,674 (all scoters combined)

The Gannet Islands**Table 4-7: Species Triggering IBA Site Designation at The Gannet Islands Cluster**

Species	Season ¹	Number ²	Source ³
Atlantic Puffin	B, 1978	33,000	CWS-SCD
“	B, 1983	41,311	CWS-SCD
“	B, 1999	34,612	CWS-SCD
Common Murre	B, 1978	20,600	CWS-SCD
“	B, 1983	38,345	CWS-SCD
“	B, 1998	19,360	CWS-SCD
Thick-billed Murre	B, 1983	964	CWS-SCD
“	B, 1998	1,337	CWS-SCD
Razorbill	B, 1978	5,800 active nests	CWS-SCD
“	B, 1983	4,928	CWS-SCD
“	B, 1999	11,796	CWS-SCD
Common Eider	F, 1998	60 individuals	CWS-SCD
Harlequin Duck	F, 1998	230 individuals	CWS-SCD

1. B = Breeding, F = Fall

2. Breeding pairs unless otherwise identified

3. Canadian Wildlife Service - Seabird Colony Database

Table 4-8: Species Triggering IBA Site Designation at Outer Gannet Island

Species	Season ¹	Number ²	Source ³
Atlantic Puffin	B, 1978	6,350	CWS-SCD
“	B, 1983	8,394	CWS-SCD
“	B, 2000	4,054	CWS-SCD
Common Murre	B, 1978	2,600	CWS-SCD
“	B, 1983	24,742	CWS-SCD
“	B, 1998	17,342	CWS-SCD
Thick-billed Murre	B, 1998	560	CWS-SCD
Razorbill	B, 1978	620	CWS-SCD
“	B, 1983	472	CWS-SCD

1. B = Breeding
2. Breeding pairs
3. Canadian Wildlife Service - Seabird Colony Database

Bird Islands

Table 4-9: Species Triggering IBA Site Designation at The Bird Islands

Species	Season ¹	Number	Source ²
Atlantic Puffin	B, 1978	8,100 active nests	CWS-SCD
Razorbill	B, 1978	1,530 active nests	CWS-SCD

1. B = Breeding
2. Canadian Wildlife Service - Seabird Colony Database

Table Bay

Table 4-10: Species Triggering IBA Site Designation at Table Bay

Species	Season ¹	Number	Source ²
Common Eider	B, 1978	2,459 pairs	CWS-SCD

1. B = Breeding
2. Canadian Wildlife Service - Seabird Colony Database

There is concern in North America for the population status of most of the sea ducks breeding here.

Unfortunately, seaduck ecology, population dynamics, and harvest levels are poorly known

(CWS, 2001b). Eiders breeding in the Arctic are of most concern. Most of these birds winter in Greenland but some winter throughout the Maritimes. Despite the broader concerns, aerial counts of male eiders on the Labrador coast show an increase in the breeding population of about 4% per year between 1980 and 1994 with roughly 31,500 eiders nesting along the Labrador coast in 1994 (Gilliland 2000, Figures 4-1 on page 43, and 4-2 and 4-3 on page 44).

A recent Canadian Wildlife Service publication summarized the status and population trends of Razorbills in eastern North America describing Razorbills as one of the rarest breeding auks. They estimate roughly 38,000 pairs are breeding in east-

ern North America with the largest concentrations on the Quebec North Shore and southern Labrador. The Gannet Islands, Labrador is the largest colony, and trends in numbers are generally encouraging suggesting a rebuilding since an earlier decimation likely caused by over-harvesting and disturbance.

However, while recent conditions for Razorbills have seemingly been favorable, Chapdelaine et al. point out that threats to the still small population of eastern North American Razorbills could arise at any time. For this reason, they emphasize the need to resurvey populations at colonies in Labrador which were last surveyed more than twenty years ago (Chapdelaine et al. 2001).

Table 4-11: Estimated population (pairs) of Razorbills breeding at specific islands in the Groswater Bay and Cartwright offshore areas of Labrador¹

Site	Location	Estimated Pairs ²	Method ³	Year
Halfway Island	53°42'N 56°11'W	+	e	1978
Bird Island	53°44'N 56°15'W	1,530	b	1978
Gannet Islands	53°56'N 56°32'W	9,808	b	1999
Outer Gannet Island	54°00'N 56°32'W	388	b	1998
Herring Islands	54°20'N 57°06'W	1,250	b	1978
North Green Island	54°24'N 57°19'W	380	b	1978
North Duck Island	54°25'N 57°10'W	+	e	1978
Tinker Island	54°25'N 57°16'W	11	b	1978
Puffin Island	54°25'N 57°23'W	70	b	1978
Unidentified Island east of Pompey Island	54°26'N 57°07'W	50	b	1978
East Big Island	54°27'N 57°06'W	+	e	1978
Bacalhao Island	54°27'N 57°10'W	+	e	1978
Tinker Island	54°42'N 57°26'W	3	b	1978
Unidentified Island northeast of Red Rock Point	54°43'N 57°42'W	+	e	1978
Unidentified Island north of Red Rock Point	54°43'N 57°45'W	+	e	1978

Table 4-11: Estimated population (pairs) of Razorbills breeding at specific islands in the Groswater Bay and Cartwright offshore areas of Labrador¹

Site	Location	Estimated Pairs ²	Method ³	Year
Quakers Hat	54°44'N 57°20'W	450	b	1978

1. Data in this table are reported from *Status and population trends of the Razorbill in eastern North America*, by Gilles Chapdelaine, Anthony W. Diamond, Richard D. Elliot and Gregory J. Robertson, Occasional paper Number 105, Canadian Wildlife Service, 2001
2. + = birds present in low number but no estimate
3. b = counts of birds corrected by a *k*-factor; e = unknown

In general, information concerning population trends for all marine bird species in Newfoundland and Labrador is sketchy and sufficient long-term surveys are lacking.

4.1. Excerpts from the 2001 CWS Report entitled *Population status of Migratory Game Birds in Canada*

Northern Common Eider

...the majority of Northern Common Eiders winter in southwest Greenland rather than in Canada as was previously thought. These recent findings have important international management implications because they confirm that the majority of eiders harvested in Greenland during winter breed in Canada. Population and harvest data of the northern common eider were integrated in a simulation model (Gilliland et al. 2001), and results suggested that the Greenland harvest of northern eiders was not sustainable.

Approximately 80,000 Northern Eiders winter in the gulf of St. Lawrence (Bordage et al. 1998). Numbers wintering in Newfoundland seem to have decreased in recent years but quantitative surveys are lacking (S. Gilliland, CWS Atlantic).

American Common Eider

...Based on surveys conducted in the last two decades, breeding populations were estimated at

approximately 18,000 pairs in Labrador, 3000 in Newfoundland, 26,000 in the Gulf of St. Lawrence and St. Lawrence estuary, and 18,000 to 22,000 in Nova Scotia and New Brunswick.

Harlequin Duck, Eastern Population

There is great concern about the status of the eastern North American population of the Harlequin Duck, which was listed as endangered in Canada in 1990. As a consequence, hunting of this species was closed throughout the Atlantic Flyway. In the late 1980's the population wintering in eastern North America was estimated at less than 1,000 individuals (Goudie 1991). Overhunting, disturbance, and habitat loss are believed to have played a role in the decline of the eastern population of Harlequin Ducks (Robertson and Goudie 1999). As a result of new information in 2001, the status of the eastern population was downgraded to a population of special concern.

...The population of Harlequin Ducks wintering in eastern North America has been increasing in recent years and is now estimated at about 1,800 birds, with most (~1,000) wintering in Maine at a single location (Robertson and Goudie 1999). Some birds also winter in Atlantic Canada. Counts of Harlequin Ducks wintering in Newfoundland showed small increases in 1996 and again in 1997. This was encouraging given the dramatic decline that occurred there through the 1980s and early 1990s.

Scoters

Based on traditional mid-winter and spring waterfowl breeding surveys, scoters as a group seem to have declined in North America over the long term (Savard et al. 1998). The three scoter species are not differentiated during these surveys as it is difficult to discriminate among them from fixed-winged aircraft. Mid-winter survey data suggested a decline in scoter numbers between 1954 and 1994; however, the trend was not significant (Kehose, 1996). In eastern North America, breeding population estimates declined significantly at an approximate average annual rate of 1% between 1955 and 1992 (USFW 1993).

...Also, between 50,000 and 62,000 moulting scoters (mostly male Surf Scoters) were located along the Labrador coast in 1998 and 1999 (S. Gilliland, pers.comm.).

4.2. Harlequin Duck Satellite Tracking Project

The following is reproduced and/or adapted from the website of the Canadian Wildlife Service in Quebec (http://www.qc.ec.gc.ca/faune/sauvagine/html/hd_satellite.html).

In 1996, 1997, and 1998, biologists tracked movements of 25 Harlequin Duck drakes using satellite telemetry. This technique consists of fitting birds with radios that transmit signals to satellites, which in turn relay information to biologists. In other words, the Harlequin Ducks are captured, fitted with a transmitter, released, and then tracked on a daily basis from the biologist's office.

This study led to the discovery of new facts on Harlequin Duck movements and distribution, in particular the existence of two distinct populations of Harlequin Duck in eastern North America. Satellite telemetry work conducted in 1996-98 determined that Harlequin Ducks breeding in northern Québec and northern Labrador actually moult and winter along the south-west coast of Greenland. Conversely, Harlequin Ducks wintering in Atlantic Canada and/or along the eastern seaboard of the United States breed and/or moult in southern Québec, Labrador, and insular Newfoundland.

The exact distribution of the two Harlequin Duck populations during the breeding season is still unknown. There may be a breeding ground overlap somewhere in Labrador and/or along the Québec North Shore, but this is still to be determined. As a result, eight (8) male Harlequin Ducks were fitted with satellite transmitters in Maine, USA (Isle au Haut area) in early April, 2001, and an additional five (5) transmitters were deployed on male harlequins already on their breeding rivers in central Labrador in mid-May, 2001. In this manner, biologists hope to document the northern limit of the breeding range of the Eastern North American wintering population.

While contributing to a more complete understanding of movement patterns throughout the Harlequin Duck annual cycle, the Department of National Defence also wishes to determine intra-seasonal movement, as well as home range size of Harlequin Ducks during the summer months. This research will assist ongoing mitigation efforts concerning Harlequin Ducks within the low-level flying zone in south-central Labrador and northeastern Québec.

The thirteen (13) birds fitted with transmitters were all males. Two examples of the maps generated by such studies which illustrate the movements of individual birds are reproduced from the Quebec CWS website and presented here (see Figures 4-4 and 4-5 on page 45). Figure 4-4 illustrates the movements of the Harlequin Duck fitted with transmitter #12127 in Maine while Figure 4-5 maps the travels of the Harlequin Duck carrying transmitter #33096 which it was fitted with in Labrador.

For more information (Maine Project):

- Michel Robert, Species at Risk Biologist, Canadian Wildlife Service, Québec Region.
- Glen Mittlehauser, Biologist, Coastal Maine Biological Research Station.
- Guy Fitzgerald, Veterinarian, Union Québécoise pour la Réhabilitation des Oiseaux de Proie

For more information (Labrador Project):

- Tony Chubbs, Department of National Defence, Goose Bay, Labrador
- Perry Trimper, Biologist, Jacques-Whitford Environment

Chapter 4: IBA Species Information

- Peter Thomas, Species at Risk Biologist, Canadian Wildlife Service, Atlantic Region
- Todd Shury, Shury Veterinary Services.

Partners (Maine Project):

- SCF-Québec (Michel Robert);
- Hydro-Québec (Pierre Lamothe);
- Union québécoise pour la réhabilitation des oiseaux de proie (Dr. Guy Fitzgerald);
- Coastal Marine Biological Research Station (Glen Mittlehauser);
- Maine Department of Inland Fisheries and Wildlife (Brad Allen et al.).

Partners (Labrador Project):

- Department of National Defence (Tony Chubbs, Gary Humphries, Goose Bay Office);
- Jacques-Whitford Environment Limited (Perry Trimper, Kathy Knox);
- Canadian Wildlife Service-Atlantic Region (Peter Thomas);
- Shury Veterinary Services (Dr. Todd Shury);
- Universal Helicopters Newfoundland and Labrador (Lorne Pike).

4.3. Voisey's Bay

Under contract to Voisey's Bay Nickel Company Limited, Jacques Whitford Environment Limited collected wildlife data for the purpose of the Voisey's Bay Mine/Mill Environmental Impact Statement. The study area used for seabird observations overlaps more or less directly with the area of coastline and islands near Nain designated as the Nain Coastline IBA Site (see Table 2-1 on page 10). This study area is illustrated in Figure 4-6. Although Voisey's Bay is outside the area covered by this document, Harlequin Ducks breeding there may stage or moult at some of the sites covered in this document. It is important that IBAs not be treated in isolation of one another. The marine birds using the IBA sites covered here are migra-

tory and demand a broad perspective on the part of those engaged in marine bird conservation. The IBA sites designated for the area covered by this document must not be thought of as sufficient tools for conserving the bird populations that use them.

Also, shipping associated directly with the Voisey's Bay Project has the potential to affect the IBA sites covered by this document as they would be enroute and passed by any increase in industrial shipping between the Nain area and Goose Bay and/or the Nain area and the Strait of Belle Isle. The Environmental Impact Assessment for Voisey's Bay did not include these areas in the proposed shipping lane so the potential effects have not been formally assessed and are undetermined.

The data on seabirds collected during the breeding season and reported in the Avifauna study for the proposed Voisey's Bay Mine and Mill referred to above was collected by helicopter during three days in July of 1996. The data reported does not distinguish between breeding and nonbreeding birds and there is almost no information on the distribution within the study area of the birds observed. The area surveyed is the area through which shipping to and from the Voisey's Bay site would occur should the project proceed.

In addition to coastal marine bird observations, Jacques Whitford Environment Limited also conducted inland surveys for breeding Harlequin Ducks and other waterfowl. Figures 4-7 and 4-8 show maps from the Voisey's Bay 1996 Environmental Baseline Technical Data Report on Avifauna illustrating a sample of the type of data collected on Harlequin Ducks breeding within the Voisey's Bay study area (Jacques Whitford, 1997). See also Chapter 7. "Voisey's Bay" on page 86.

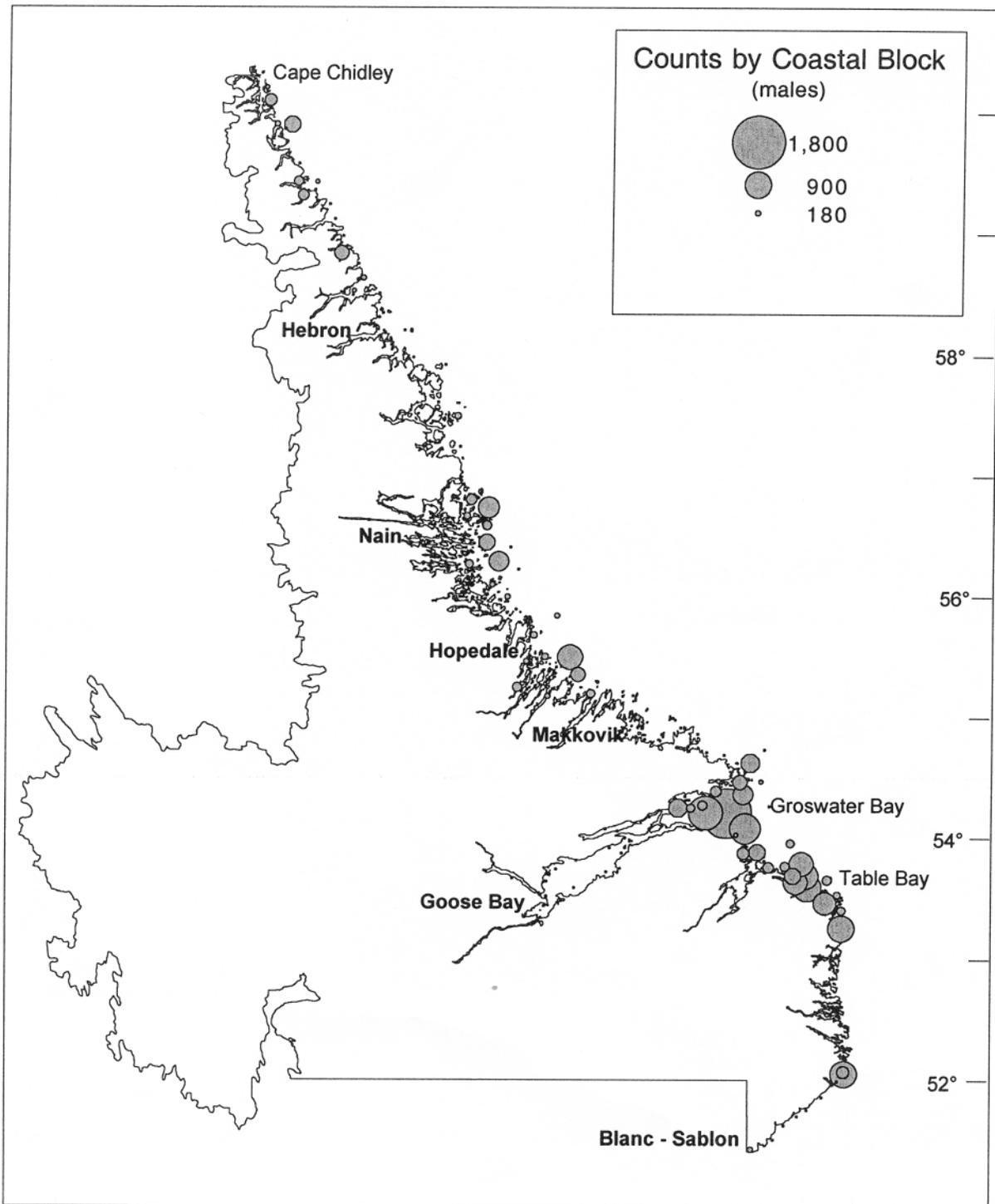


Figure 4-1: Numbers of male Common Eiders counted on 1994 aerial survey of Labrador (from Gilliland, 2000)

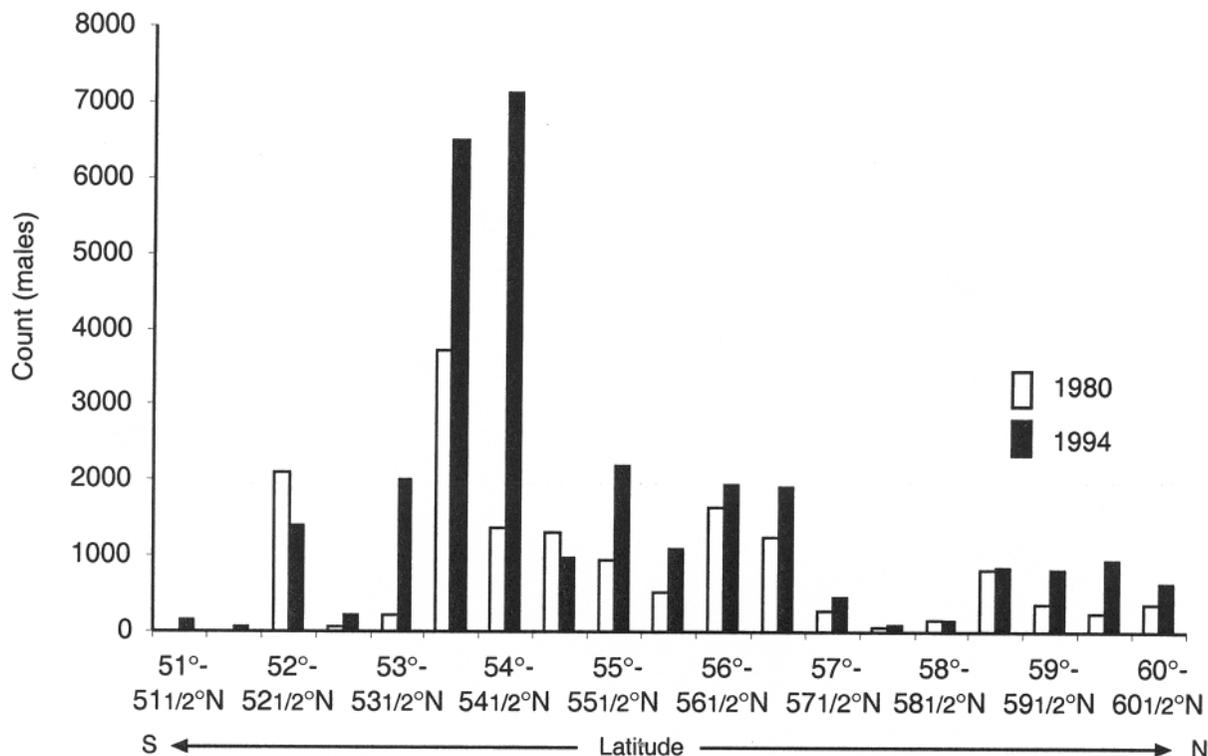


Figure 4-2: Numbers of male Common Eiders counted on surveys of the Labrador coast in 1980 and 1994. Counts are summarized by 1/2 degree latitude (from Gilliland, 2000)

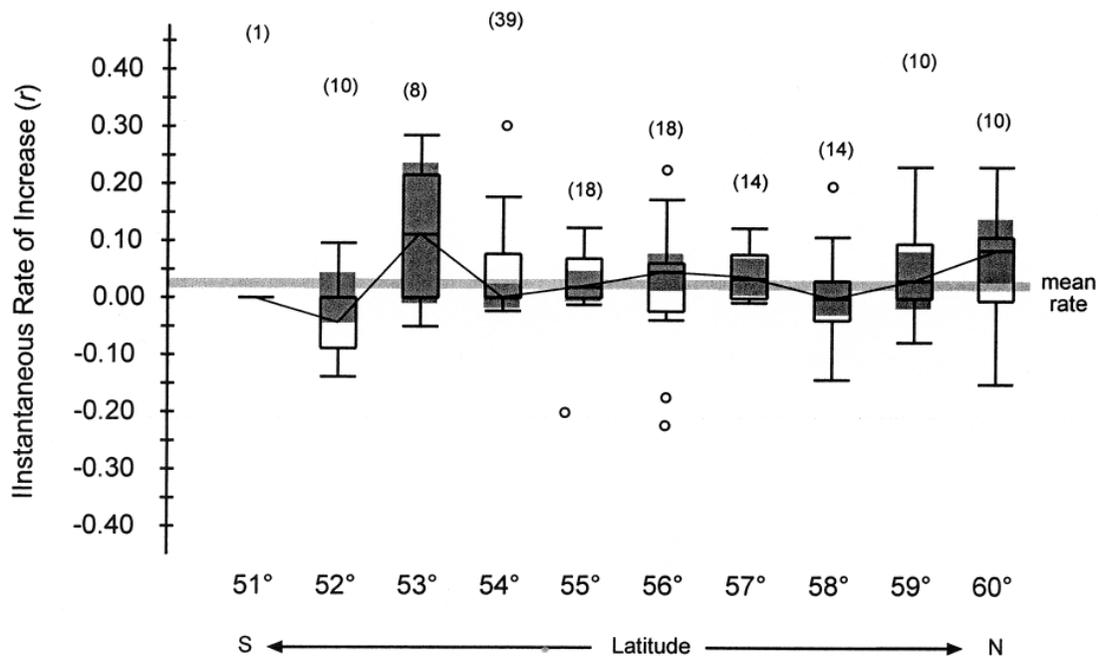


Figure 4-3: Estimated growth rates (percent per annum) for Common Eiders breeding along the Labrador coast from 1980 to 1994 (from Gilliland, 2000)

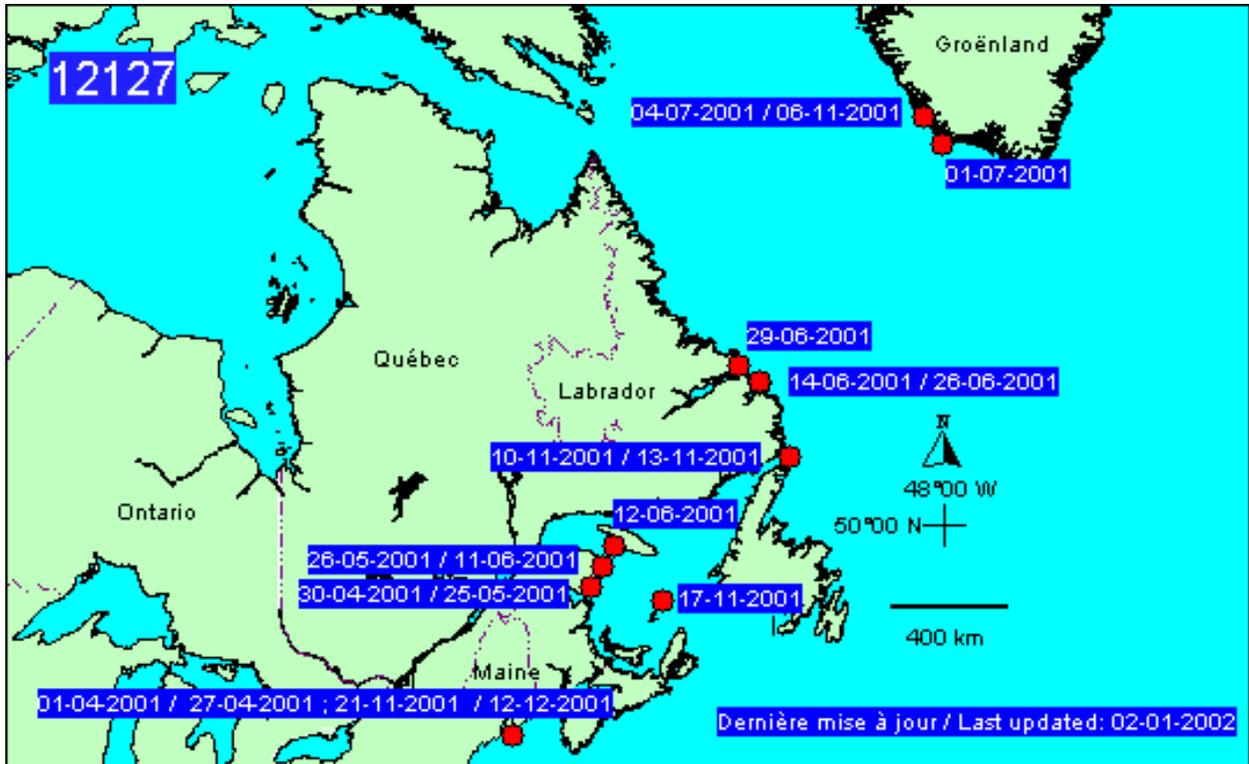


Figure 4-4: Movements of a Harlequin Duck fitted in Maine with a satellite telemeter (http://www.qc.ec.gc.ca/faune/sauvagine/html/hd_satellite.html).

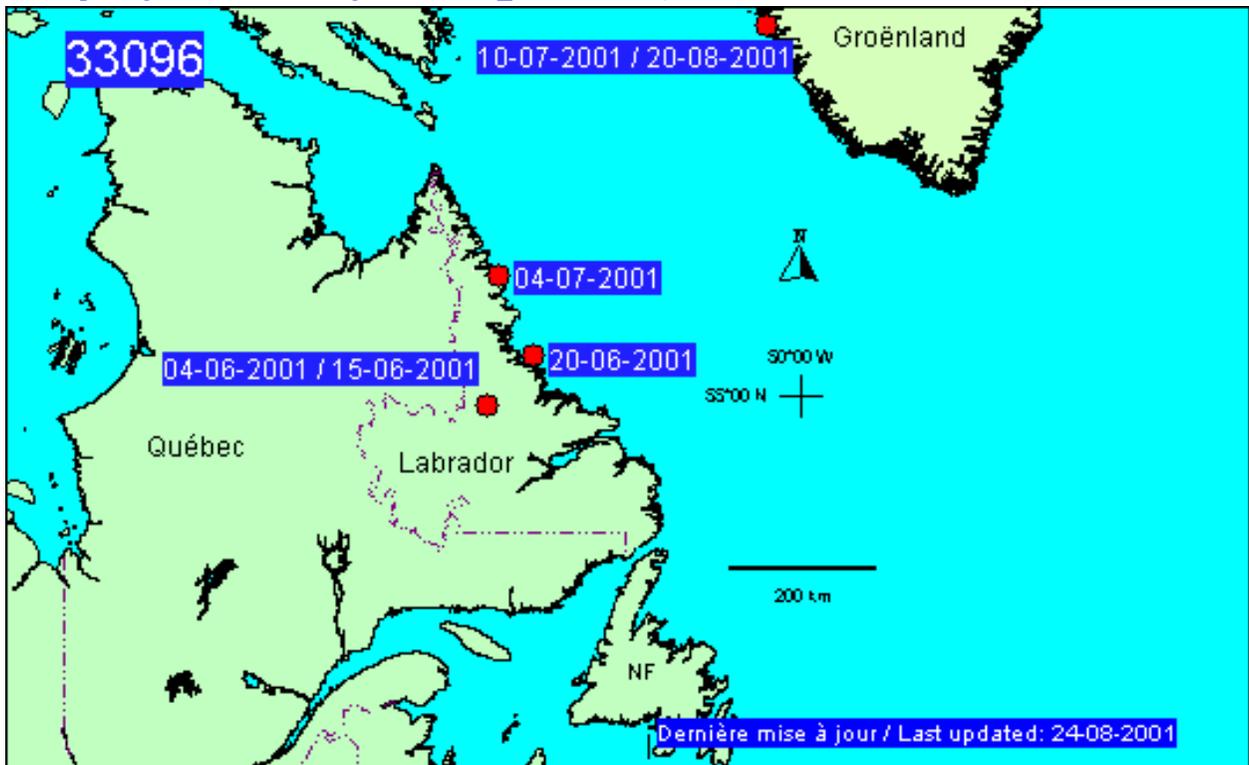


Figure 4-5: Movements of a Harlequin Duck fitted in Labrador with a satellite telemeter (http://www.qc.ec.gc.ca/faune/sauvagine/html/hd_satellite.html).

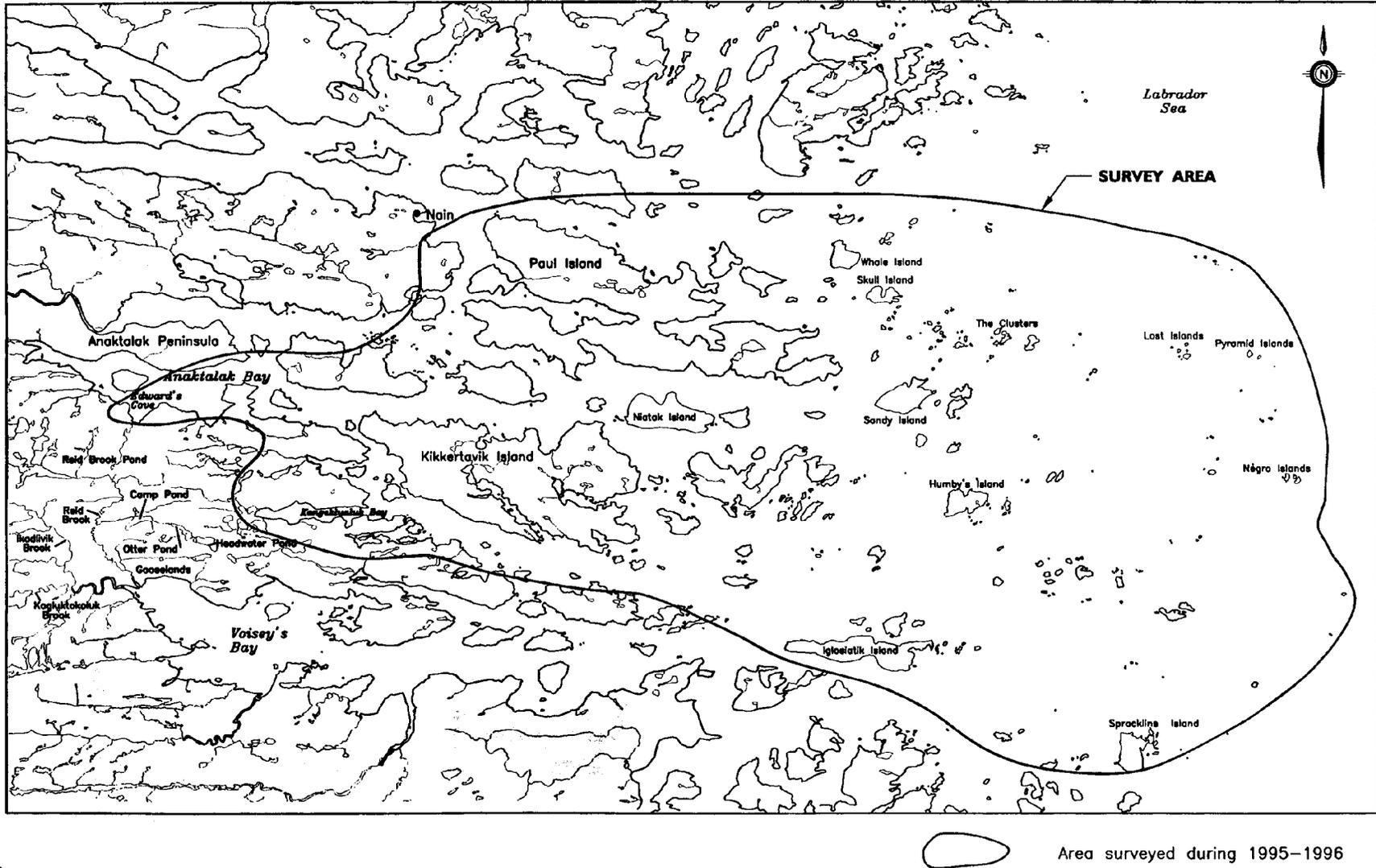


Figure 4-6: Aerial seabird survey Coverage, Labrador, 1995-1996: reproduced from Figure 2.6 Jacques Whitford Environment Limited Project No. 1048, 1996 Voisey's Bay Avifauna Technical Data Report, November 18, 1997

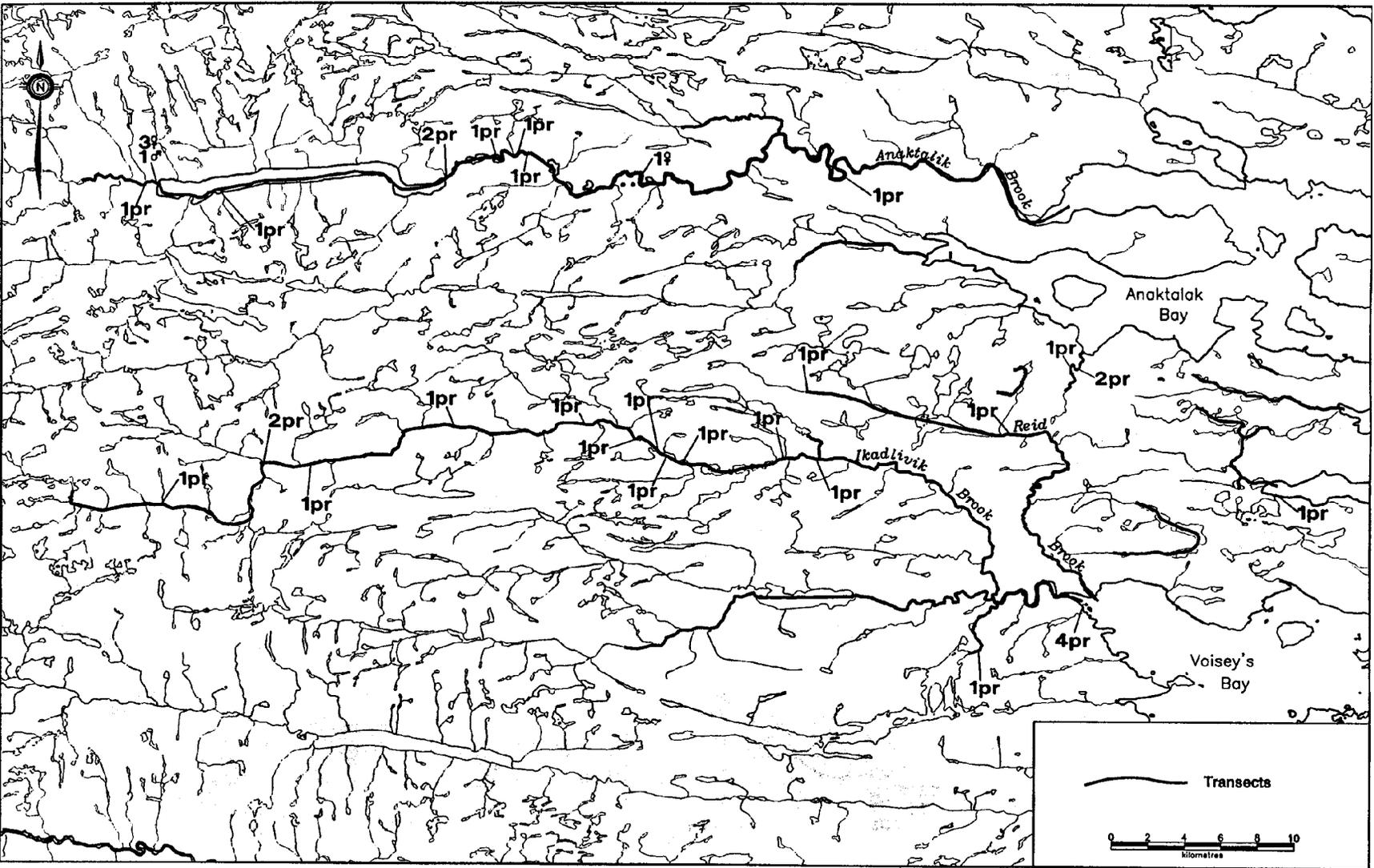


Figure 4-7: Harlequin Duck observations, Voisey's Bay area, 02-05 June 1997: reproduced from Appendix D Harlequin Duck Survey Results 1997, Jacques Whitford Environment Limited Project No. 1048, 1996 Voisey's Bay Avifauna Technical Data Report, November 18, 1997

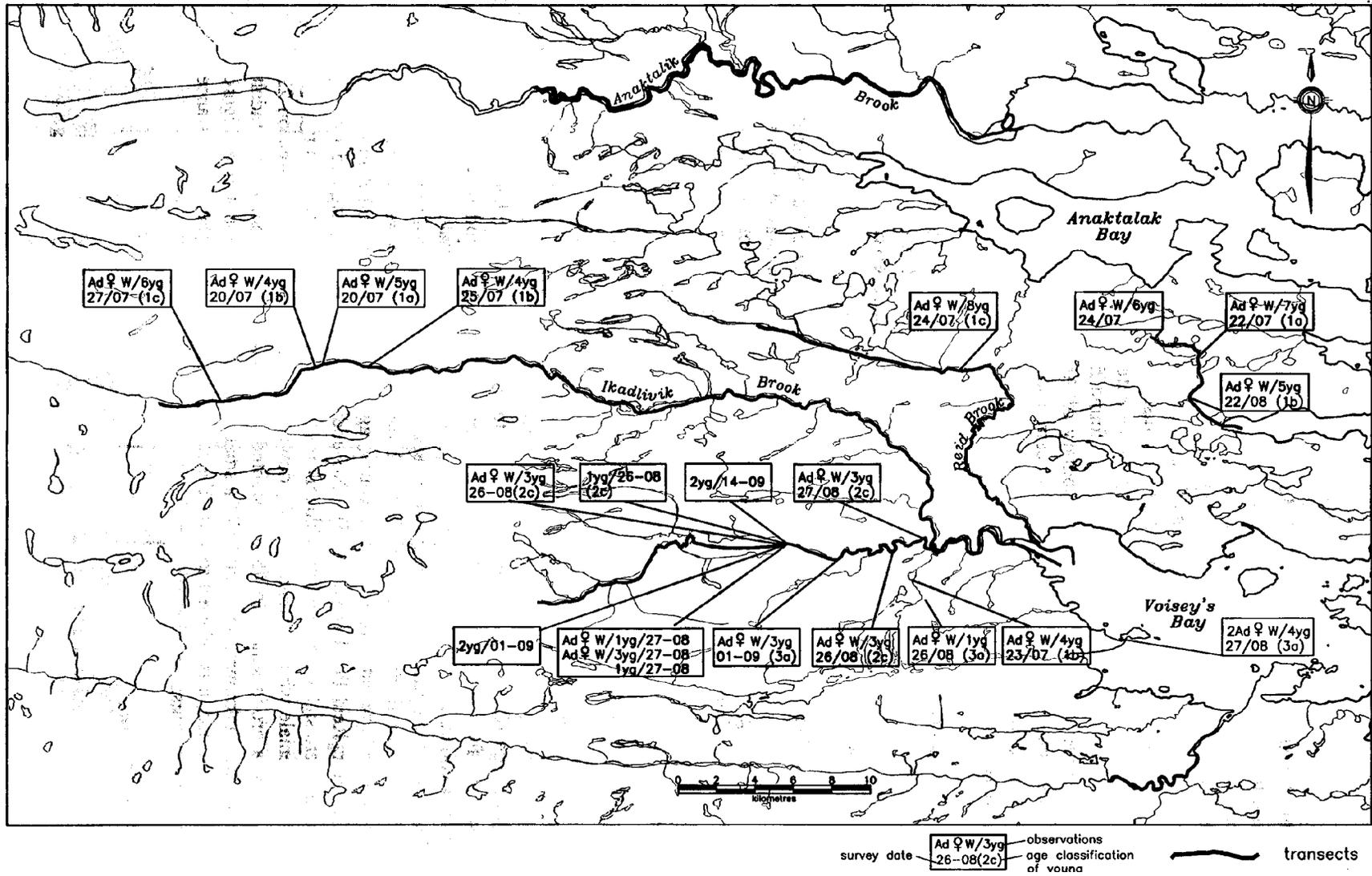


Figure 4-8: Observations of Harlequin Duck broods Voisey's Bay, Labrador, 1996 reproduced from Figure 2.3 Jacques Whitford Environment Limited Project No. 1048, 1996 Voisey's Bay Avifauna Technical Data Report, November 18, 1997

4.4. Harlequin Duck

by Joel Heath

Latin name: *Histrionicus histrionicus*

Local names: Lords and ladies, white-eyed diver, lady bird, sea mice, squeakers, rock duck

Inuktitut: Ingganimiut; mitik/kutsiutik

Innu-aimun: Nutshipaushtukueshish

Harlequin Ducks are a small sea duck of the Northern Hemisphere. These small, robust ducks breed on fast-flowing mountain streams and moult and winter along coastal sites in rocky intertidal zones. Their ability to forage in strong river currents and in raging ocean surge is unrivalled while the striking alternate plumage of the males has captured the hearts of naturalists and scientists alike and led to several dignified local names for this species, such as Lords and Ladies.

Populations in eastern North America have until recently been classified as endangered. They are currently listed as a species of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Habitat loss due to degradation of aquatic ecosystems and to hydro-electric developments threatens breeders, while oiling, illegal hunting and disturbance jeopardize wintering populations.

Distribution

Harlequin Ducks may be found breeding and wintering from Iceland and southern Greenland to eastern North America (from the south eastern states to northern Labrador and Quebec), Southern North America (from the South western states to Alaska and the Aleutian Islands) and north eastern Asia. Winter distributions are restricted to marine coastal regions, while breeding birds occupy both inland and coastal rivers.

In eastern North America, the majority of the wintering population is found off the coast of Maine, with significant populations occurring in New Brunswick and Nova Scotia and at Cape St. Mary's, Newfoundland. Moulting locations in



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Labrador include the northern tip of Labrador, St. Peter's Bay, the Gannet Islands and in Groswater Bay: Tumbledown Dick Island, Stag Island, and Herring Island. Locations in Newfoundland include Stearin Island (Gros Morne National Park), Grey Island, and a few individuals may moult at Cape St. Mary's. The majority of breeding activity occurs throughout Labrador and north eastern Quebec with significant numbers also breeding on the Northern Peninsula of Newfoundland.

Life History

Harlequin Ducks form pair bonds during the winter months at coastal sites. Migration to breeding rivers begins in April. Unpaired and immature birds usually continue on to molting grounds while pairs move up-river, where the female will select a nest site. Timing of laying depends on spring melt conditions, but usually occurs between mid-May and early July. Males depart the breeding grounds with the onset of incubation by the female, and migrate to molting sites. Hatching occurs between late June and July. A maximum of one brood is produced per year, consisting on average of five or six chicks. The proportion of the population that successfully breeds each year may be highly variable. Young leave the nest within 1-2 days of hatching and are led by the female to foraging areas. The female remains with the brood throughout August after which she either abandons the ducklings or leads them downstream before beginning to molt. Birds then reunite at wintering sites between October and November.

Feeding Ecology

In winter, Harlequin Ducks forage by diving in rocky intertidal regions, capturing a variety of small invertebrate species including amphipods and snails. Foraging usually occurs extremely close to shore, a niche which may serve to avoid competition with a variety of other sea duck species that often co-habit wintering areas. Fish roe may also be an important food source when available. In summer, on inland rivers Harlequin Ducks feed in fast flowing, turbulent river stretches with high densities of aquatic invertebrates. Black fly larvae are a primary food source, but a variety of benthic and emerging insects are likely important.

Habitat Requirements

Harlequin Ducks show high return rates to specific wintering, molting and breeding sites between years. Winter and molting sites share similar characteristics. Coastal rocky shorelines and headlands are preferred and often foraging occurs in shallow water (<10 m deep) over the kelp communities of rocky outcrops and sunkeners. Birds are often seen hauling out of the water onto boulders or areas of rocky shoreline. Ongoing research in Newfoundland suggests that the availability of haul out sites may be a critical component of winter habitat. Topographic features of a bay that provide a variety of foraging and haul out sites, which allow protection from the most prevalent wind and sea state conditions, may be particularly important.

Fast flowing sections of coastal and inland rivers are important areas for breeding Harlequin Ducks. Recent and ongoing research in Labrador indicates that stream sections used by Harlequin Ducks are of higher gradient and velocity, have larger substrates and greater numbers of instream boulders and islands than unused areas. Instream islands may provide important nesting areas, and both islands and exposed boulders may be important to resting birds. Riparian zones include greater proportions of alders and overhanging vegetation which may provide important cover for the young during early brood rearing. Higher abundances of

benthic invertebrates are usually found in used areas. Narrow rivers of low acidity may also be important. Ongoing analysis of long term survey data in northern Labrador indicates that predation by raptors may be a significant factor that determines distribution and local population dynamics of Harlequin Ducks in this region.



Suggested Reading

Robertson, G. J. and R. I. Goudie. 1999. Harlequin Duck (*Histrionicus histrionicus*). The Birds of North America, No. 466 (A. Poole and F. Gill, Eds.). The Birds of North America, Inc., Philadelphia, PA.

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Goudie, R. I. 1984. Comparative ecology of Common Eiders, Black Scoters, Oldsquaws, and Harlequin Ducks wintering in southeastern Newfoundland. The University of Western Ontario.

Adams, P.A. 1999. Time-activity budgets of Harlequin Ducks (*Histrionicus histrionicus*) moulting at the Gannet Islands, Labrador. Bachelor's thesis, Memorial University of Newfoundland, St. John's

4.5. Common Eider

Latin name: *Somateria mollissima*

Local names: Ducks, Eider, Eider Duck, Sealbird (first winter drakes), Black Duck (females), Sea Duck; Shore Duck; Canvasback (male)

Inuktitut: Mitik

Innu-aimun: Missap

The largest, most marine and relatively well studied of seaducks, the Common Eider is the duck of ducks for Newfoundland and Labrador, as codfish was the fish of fish. Eiders also share with the ill-fated northern cod a vulnerability to over-optimistic harvesting strategies. Over-hunted in the past and still hunted throughout its range by subsistence and sport hunters, harvests of Common Eider have been increasing and may exceed sustainable levels.

Distribution

Common Eiders have a circumpolar distribution. In eastern North America these birds breed from Nunavut down through Labrador, Newfoundland and the Maritimes as far south as Massachusetts. The southern race *Somateria mollissima dresseri* breeds from Maine to Hamilton Inlet on the Labrador coast while the northern race or subspecies, *Somateria mollissima borealis* breeds from northern Labrador to Baffin Island. Although some eiders spend the winter in Labrador around Hamilton Inlet and the Strait of Belle Isle most winter around Newfoundland, in the Gulf of St. Lawrence and further south.

Spring migration, when birds return from wintering areas to breeding grounds, runs from March and April for the earlier nesters and into June for Arctic birds. Some populations and immature birds do not migrate. The migrating birds mostly follow the coast with some land crossings such as across the Avalon Peninsula of Newfoundland. Migrating flocks can number in the thousands. In June and July shortly after the females have started incubating the eggs, the adult males, immature birds and non-breeders migrate to moulting sites. Breeding females follow later. In October and November those birds that migrate for the winter do so. At

this time the more northerly breeders often supplant southerly birds, the more northerly breeders wintering in the breeding areas of the southerly birds. Many of the birds wintering in Newfoundland and Labrador are arctic breeders.



In heavy ice or late spring years very large collections of eiders can form in open water such as the outer coast or southern bays of Newfoundland and Labrador. These events can be associated with heavy adult mortality from starvation.

Breeding Biology

Eiders in Newfoundland typically lay about 4 eggs and incubate them for about 26 days. Roughly 85% hatch successfully and the ducklings reach flying age between 55 and 70 days. Eiders don't breed until they are at least two years of age and most wait to reach three or four years old. This pattern of maturity which is typical of sea ducks is delayed compared with many other duck species which breed in their first year.

While eider hens may fatten up when they first arrive on the breeding grounds in spring and after nesting, while sitting on the nest they move or less fast. Only the female incubates the eggs. This makes nesting an energetically stressful time for eider hens and they need to conserve their energy during this time. Disturbing nesting Eiders causes them to expend energy when they can ill afford it and can potentially affect breeding success.

In marine systems the most important thing may be finding suitable nest sites. To avoid mammalian predators the ground nesting eiders usually use islands and in many areas these are in limited sup-

ply. Eiders often nest in close association with gulls although they do like nest sites with some cover where gulls don't like to go. The gulls usually nest in the perimeter of the colony and the hens and ducklings have to pass through them when fledging. Most mortality due to predation occurs in the first 10 days of life. Common Eiders often combine their broods to form congregations of ducklings accompanied by "aunts", or non-breeding females.



Feeding Ecology

Eiders usually dive to the bottom in shoal water to collect prey items (invertebrates, mollusks, crustaceans and echinoderms) much of which they then bring to the surface to eat. Feeding in the intertidal zone and a love of mussels brings eiders into conflict with shellfish aquaculture.

Habitat Requirements

Eiders are famous for nesting in large congregations. Perhaps the largest contemporary North American colony (Ile Bicquette, St. Lawrence estuary) supports more than 10,000 breeding pairs. Eiders breed mainly on coastal islands although some birds nest on freshwater islands. Although nesting hens can drink salt water they prefer access to fresh water. Shallow bays with an abundance of seaweed within which to find prey make good brood rearing habitat. In addition to breeding in aggregations, wintering flocks of eiders can also be quite large. The main requirement while breeding is relief from disturbance. Otherwise, as with all

marine birds what eiders need is an ocean free of pollution and a healthy prey base.

Suggested Reading

Goudie, R.I., G.J. Robertson, and A. Reed. 2000. Common Eider (*Somateria mollissima*). In The Birds of North America, No. 546. (A. Poole and F.Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

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Bishop, C. A. (1971). Helminth parasites of the common eider duck (*Somateria mollissima* L.) in Newfoundland and Labrador. Dept. of Biology, Memorial University of Newfoundland

Goudie, R. I. (1984). Comparative ecology of common eiders, black scoters, oldsquaws and harlequin ducks wintering in southeastern Newfoundland.

LeGrow, K. H. (1999). Distribution of marine birds in relation to water masses and fronts in the Strait of Belle Isle, northwestern Atlantic Ocean. Environmental Science Programme, Memorial University of Newfoundland.

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Ryan, P. C. (1985). Abundance and distribution of benthic invertebrates and their occurrence in the diet of Common Eiders (*Somateria mollissima*) at Brierly Head, Cape St. Mary's, Newfoundland. Dept. of Biology, Memorial University of Newfoundland.

Thornton, P. A. (1979). Dynamic equilibrium: settlement, population and ecology in the Strait of Belle Isle, Newfoundland, 1840-1940.

4.6. Razorbill

by Mark Hipfner

Latin name: *Alca torda*

Local name: Tinker

Inuktitut: Saviatsojak

The Razorbill is a stocky, robust seabird widely distributed through boreal and low-Arctic Atlantic waters. Closely related to the murre, but far less numerous, Razorbills share with these two species a suite of ecological and demographic traits, but they differ markedly in others, especially their nesting habits. The Razorbill is also the closest living relative of the Great Auk (the original “penguin”), and like its much larger, flightless cousin, was historically persecuted very heavily by humans for eggs, meat, and feathers. Greatly reduced in numbers by early in the 20th century, even locally extirpated, Razorbills were spared the fate of the Great Auk, which had been driven to extinction by the middle of the 19th century. Over the last 20-25 years, Razorbill populations have increased quite dramatically within their limited North American range. While this is an encouraging sign, the long-term welfare of the species is far from secure because of grave, anthropogenic threats to northwest Atlantic ecosystems.

Distribution

The bulk of the world Razorbill population breeds in Iceland. From there, colonies stretch to the east through Jan Mayen, the Faeroe Islands, the British Isles, France, Germany, Denmark, Norway, Sweden, and Finland, and as far as extreme northwestern Russia. In the northwest Atlantic, Razorbills breed in small to medium-sized colonies scattered through w. Greenland, Hudson Strait, Labrador, Newfoundland, the islands of St.-Pierre and Miquelon, the estuary and Gulf of the St. Lawrence River, and south through Nova Scotia and New Brunswick to Maine. The centre of the northwest Atlantic breeding distribution is in southern Labrador and the lower North Shore of the Gulf of the St. Lawrence. The North American population is estimated at about 40,000 breeding pairs, or about 7% of the total world population. The largest colony in North America is located at the Gannet Islands,



Labrador, where about 12,000 pairs breed. In Newfoundland, largest numbers breed on islands of the Witless Bay Seabird Sanctuary, at Funk Island, and at Cape St. Mary's. There is little recent information on population sizes and trends at important colonies in Newfoundland, although populations appear to have increased in recent years at those where such information is available (Gull Island, Cape St. Mary's). In winter, Razorbills mainly move south of their breeding range into ice-free, coastal waters. In North America, largest numbers are found in shoal areas of the Gulf of Maine and outer Bay of Fundy, although they are occasionally recorded as far south as South Carolina and Florida. Relatively few Razorbills remain in Newfoundland waters in winter, but they become more common in the spring (April and May) as they return to breed.

Breeding Biology

Razorbills employ a life-history strategy that is typical of marine birds. Young Razorbills first visit breeding colonies when 2 or 3 years of age, and first breed when 4 or 5 years old. They use a wide variety of habitats for nesting, including crevices between boulders, fissures and cracks in rock faces, and even burrows dug out of soft soil by Atlantic Puffins. Most use enclosed nest sites, which offer protection from avian predators includ-

ing Great Black-backed Gulls, Herring Gulls, and Ravens. However, a few nest on narrow, open-topped cliff ledges, sometimes among murrens. Unlike murrens, most Razorbills build nests of small stones and other matter, and they never breed in physical contact with their neighbours. They typically breed in loose aggregations that number from a few pairs to a few thousand pairs. Only in Iceland do they breed in immense colonies that rival murre colonies in size.

The timing of egg-laying is influenced by oceanographic conditions, beginning 4-6 weeks earlier at southerly colonies in boreal waters (mid-May in the Gulf of Maine) than at northerly colonies in low-Arctic waters (mid-to-late June in Labrador). Razorbills lay a single egg that is about 30% heavier than predicted for the size of the adult bird. Both parents share equally in incubating the egg, which hatches in about 35 days. Both parents also share equally in delivering to nestlings about 3 or 4 meals a day, each consisting of 1-8 fish, which are carried back to the nest site held crosswise in the bill. The chick leaves the nest site after about 20 days, accompanied by its male parent and weighing only about 30% of adult mass, to complete its development at sea. This unusual chick-rearing strategy is employed only by Razorbills and murrens. Normally, about 75% of Razorbill pairs successfully raise a chick to nest departure; older, more experienced pairs are much more likely to succeed than are younger, less experienced pairs. Of those young birds that survive to nest departure, about 30 or 40% will then survive to join the breeding population 4 or 5 years later. The vast majority of these young birds return to breed at the colony where they themselves were raised, and once they begin breeding, they generally return year after year to breed at the same site and with the same partner.

Feeding Ecology

Like all members of the family Alcidae, Razorbills are wing-propelled divers that catch their prey, mainly schooling fish, by underwater pursuit. In North American waters, important prey species include sandlance, herring, and capelin, varying with location and season. Adult Razorbills supple-



ment their diets with a variety of crustaceans, as well as polychaete worms. While most dives undertaken in pursuit of prey are less than 20 metres deep, Razorbills are capable of descending to 100 metres or more. They forage mainly where prey is likely to be predictable and concentrated, often at fronts and upwellings, and usually in relatively shallow waters within 20 or 30 km of breeding colonies. In winter, they forage mainly in shallow-water shoal areas, often over a sandy seabed.

Habitat Requirements

Razorbills breed mainly on rocky islands situated in coastal and continental-shelf waters, although they are more likely than the other large alcids to breed in brackish waters such as the St. Lawrence estuary. Most breeding colonies are free of mammalian predators, but arctic and red foxes and even polar bears occasionally reach colonies and cause considerable damage. In migration, Razorbills mainly use coastal and continental-shelf waters, and they depend on predictable aggregations of prey in important wintering areas. Human activities pose serious threats to Razorbills and their habitats. Large, but unknown numbers are drowned when they become entangled in fishing gear, and some are killed incidentally during the annual turr hunt around Newfoundland. However, the most serious threat comes from oil pollution; Razorbills are considered to be among the most vulnerable of all seabirds to oil pollution. North American Razorbill populations appear extremely vulnerable, because they congregate in large numbers in critical habitats situated on major shipping lanes (such

as the Gulf of St. Lawrence, and Gulf of Maine). Razorbills are also extremely sensitive to human disturbance. As a result, there is concern about the integrity of many Razorbill breeding colonies as activities such as recreational use, aquaculture, and timber harvesting increase.

Suggested reading

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- Gaston, A.J., and I.L. Jones. 1998. *The Auks*. Oxford University Press, New York.
- Nettleship, D.N., and T.R. Birkhead (eds.) 1985. *The Atlantic Alcidae*. Academic Press, London.

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- Hearne, E. P. (1999). Effect of tour boat activity within an ecological reserve on the behaviour of three Atlantic alcids: common murre (*Uria aalge*), razorbills (*Alca torda*), and Atlantic puffins (*Fratercula arctica*). Dept. of Biology. Memorial University of Newfoundland
- Hipfner, J. M. (2000). Egg production in the thick-billed murre (*Uria lomvia*) and razorbill (*Alca torda*): a life-history perspective. Faculty of Science. Memorial University of Newfoundland
- Rowe, S. (1998). Variation in breeding-site characteristics in relation to adult quality in the Razorbill, *Alca Torda*. Dept. of Biology. Memorial University of Newfoundland

4.7. Atlantic Puffin

Latin name: *Fratercula arctica*

Local names: Parrot, Sea Parrot, Hatchet Face, Baccalieu Bird.

Inuktitut: Siggolutuk; kingutuk

Innu-aimun: Muneikutan

Distribution

Atlantic Puffins are a North Atlantic species. In fact, although one of four species of puffins the Atlantic Puffin is the only one that lives in the North Atlantic. They are one of the most common seabirds in the northern hemisphere.

Atlantic Puffins mostly nest on islands around Iceland, Norway, the Faeroe Islands, British Isles, and eastern Canada. They breed in North America from northern Maine in the United States to the Canadian Arctic. In winter they move offshore where their distribution is poorly known.

Breeding Biology

Puffins spend the winter at sea. Once they have reached breeding maturity at 4 or 5 years of age puffins return to the same breeding colony each spring to lay a single egg. The timing of their spring arrival at the breeding colony depends on ice and weather conditions. Younger birds will visit the breeding colony as well but show up later than the breeders. Once present at the colony, puffins engage in a distinct cycle of colony attendance. The numbers of puffins at the colony varies up and down both within a given day and over a period of several days. People have often visited large puffin colonies and been surprised to find few birds there. At the same spot a few days later or at a different time of day one might witness large numbers of puffins standing around next to their burrows, or flying *en masse* in figure-eights above the colony.

Puffins incubate their single egg for about six weeks. If an egg is lost, a replacement egg is sometimes laid within 2 to 3 weeks, although Puffins are not as good replacement egg layers as murre and razorbill are. When hatched, puffin chicks are covered with down but still get brooded

by the parents for the first week. After the first week the parents are able to leave the chick alone in the burrow while they forage. At this stage the burrow provides adequate protection for the chick, an advantage over cliff nesting birds whose chicks are exposed when unaccompanied by a parent. Depending on feeding conditions, after five to ten weeks the chick will leave the burrow and fly out to sea alone. The chick usually leaves the colony under cover of darkness. By September both chicks and adults have mostly abandoned the colony until the following spring.



Feeding Ecology

Puffin parents deliver whole prey to their chicks in their bill. The number of feeds per day varies, depending on the kind of prey being fed to the chick. If spawning capelin are available fewer meals are delivered than if the chick is being fed an assortment of small juvenile fish.

Habitat Requirements

Puffins nest almost exclusively on islands where they are relatively protected from predation by terrestrial predators. They raise their chicks underground either by digging a burrow in turf or finding tunneling within rock piles. Puffins nest in high densities and most colonies have a surplus of suitable habitat into which colonies can expand. They prefer to nest near the perimeter of islands. Sloped areas can support higher nesting densities than flat ground where tunnels run directly under the surface.

Once mated, puffins will usually return to meet the same mate and occupy the same burrow from year to year. Fidelity to a breeding colony is high and development of new colony locations is uncommon. The breeding site fidelity of puffins underscores the need to maintain attractive breeding conditions at existing colonies.

The most common cause of breeding failure is desertion by the adults. Birds disturbed while incubating are particularly sensitive and likely to desert their egg. Most colonies manage to produce chicks from three quarters or more of the breeding pairs, but instances of catastrophic breeding failures have occurred. The causes for such breeding failures have included food shortages as occurred in northern Norway in the 1970s and disturbance from tourism.



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4.8. Common Murre

by Gail Davoren

Latin name: *Uria aalge*

Local names: Turr, Baccalieu bird

Inuktitut: Appak

The Common Murre is a long-lived (> 20 years) diving marine bird that breeds in colonies at higher densities than any other bird species. Murres typically nest in large colonies. For instance, 80% of the northwest Atlantic population breeds on Funk Island, which is also one of the largest colonies in the World. Juvenile murres have a low survival rate (12 – 47%) during their first winter at sea, compared to the high annual survival rate of breeding adults (~ 90%).

Distribution

The Common Murre has a circumpolar distribution, breeding in the northern hemisphere within the boreal to low arctic zone. In the northwest Atlantic, murres breed commonly from the Bay of Fundy and the Gulf of St. Lawrence to central Labrador, with the highest breeding numbers in eastern Newfoundland. Birds typically winter offshore with most found in boreal waters. In the Pacific, murres winter in southern California and southern Japan and in the Atlantic murres winter south to Georges Bank. In Newfoundland, murres typically move north to the Labrador banks in August and September (during post-nuptial moult). By December, most of these individuals have moved south, where they are commonly found off Nova Scotia and the New England states (uncommon south of Cape Cod, Massachusetts). On a large spatial scale (100 km), murre distribution coincides with capelin distribution.

Breeding Biology

Murres typically reach sexual maturity around 3 years of age and begin breeding between 3-6 years of age. The extent to which birds return to their natal colony to breed is unclear, but breeding at the natal colony and dispersal to other colonies has been documented. Murres are monogamous in that they nest with the same pair year after year. Once a



pair is established, they return to the same nest site in subsequent years. Murres do not build nests, but rather lay eggs on exposed rock. Murres vigorously compete to occupy and maintain these small 20 cm by 20 cm sites and the care of both parents is essential for successfully rearing a chick.

In Newfoundland, murres return to breeding colonies in April. Adults begin attending and defending nest sites during this time. In May, pairs begin to copulate and a single egg is laid in early June. If a pair loses an egg early in incubation, it may be replaced approximately 2 weeks later. Both parents incubate eggs alternately for equal amounts of time (~ 12 hour shifts) for 1 month. Eggs typically hatch in early July. Chicks are brooded continuously at the colony for approximately 3 weeks by both parents, where one parent remains at the colony with the chick while the other departs the colony on a foraging trip (~ 4 hours). After each foraging trip, a parent delivers a single fish to the chick. Parents deliver 3 – 5 fish to the chick per day, varying between 30 – 60 g of food. Chicks leave the colony

at up to 25% of adult body mass (250 g). Upon colony departure, chicks are unable to fly or feed themselves and, thus, are accompanied by the male parent at sea for 2 - 3 months (August – October). The female parent typically attends the nest site for another two weeks after the chick has fledged. The above chronology is representative of southern breeding colonies in Newfoundland (e.g. Cape St. Mary's, Witless Bay). Breeding is delayed farther north (Funk Island and Gannet Islands: lay eggs mid - late June).



Feeding Ecology

Murres dive underwater to collect small schooling fish, using their wings to propel them through the water. They can dive up to 200 m but typically search and capture prey in the top 20 - 50 m of the ocean. They have a smaller wing area than most other bird species, due to the compromise in wing design between underwater and aerial flight. Consequently, flight requires a lot of energy.

In Newfoundland, adults primarily eat capelin (*Mallotus villosus*) and deliver capelin to their chicks during the breeding season. Capelin is believed to be one of the most important fish species in the northwest Atlantic due to its biomass dominance as a forage fish species. Therefore, seabirds align their chick-rearing periods with the inshore spawning activities of capelin. One exception to this is murres breeding at the Gannet Islands, where they currently deliver a higher proportion of benthic fish, such as blennies and daubed shannies, to their chicks. Capelin was more abundant around the Gannet Islands prior to the 1990s and this was reflected in a higher proportion

of capelin in chick diets. This dietary shift in the 1990s was not accompanied with changes in breeding success. During the winter, murre diets incorporate both fish and crustaceans.

Murres often feed in large aggregations and there is growing evidence that they use memory to locate capelin at sea. In Newfoundland, murres tend to congregate at sea in high densities (200-300 birds/km) where capelin aggregations are highly dense and predictably found (e.g. Mobile Bay, Cape Freels North, Wadham Islands). These same areas appear to be important among years and are also often good fishing grounds. The concentration of murre and human fishing effort in these areas poses a conflict, whereby murres are often entangled in fishing gear, especially gill nets.

Habitat Requirements

Murres generally require offshore islands that are free from mammalian predators and human disturbance. This species breeds both on cliff-ledges and flat-ground. The flat-ground colonies hold the highest densities of nests (> 10 birds/m²) and are the highest quality habitats because they offer maximum protection from nest-predators. Nest predators include Great Black-backed and Herring Gulls, which eat eggs and chicks at the colony. Human disturbance causes parents to fly off their nest sites, during which chicks and eggs can be knocked off ledges or into nest sites of neighbours.

Murres typically forage within 100 km of their breeding colony. The close proximity of good foraging areas to the colony is important because the travel time between the colony and foraging areas limits the amount chicks can be provisioned. If foraging sites are farther from the colony or prey abundance is low in one year, parents may not work harder to maintain provisioning rates, thereby lowering chick growth. This behaviour compromises the survival of the chick, but ensures that adults survive to breed in future years and may increase the number of young produced over the lifetime of a pair. This, however, also results in years of poor recruitment to the breeding population.

Murres spend the majority of their year at sea, except for 3 months when they return to land to breed during the summer. While at sea, murres spend the majority of their time sitting on the water, due to the high energy required to fly. Owing to the considerable time that murres spend sitting on the water, this species is highly vulnerable to oil pollution at sea. In addition, adults lose and regrow their flight feathers after they depart the breeding colony, leaving them flightless at sea for 45 – 50 days in August - October. During this period, adult males are also accompanied by their flightless chick. Consequently, food supplies must be abundant and reliable during this flightless period, in order to simultaneously moult and feed their young at sea successfully.



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4.9. Black Scoter

Latin name: *Melanitta nigra*

Local names (from Montevecchi & Tuck 1987): Black Diver, Little Black Diver, Butter-bill Coot, Sleepy Diver, Butter-nosed Diver, Whistling Diver, Diver

Inuktitut: Ingiulitsiutik

Innu-aimun: Shashteship; mitshikutan

Although one of the most vocal of waterfowl, the lives of Black Scoters are not well understood. Dispersed breeding habits in remote subarctic landscapes and perceived low economic value has not encouraged the research necessary for a fuller understanding of this species. Breeding populations in both eastern and western North America are thought to be declining, especially in the east.

This medium sized diving duck is distinguished from the other two scoters in profile by its rounded rather than sloped forehead. The adult male is all black with a striking orange patch at the base of the bill and is easily identified. Adult females however are easily confused with other female scoters. The female scoter has a rounder head than the others and a pale face contrasting with a dark crown without white patches on the face.

Distribution

Unlike the Surf Scoter which breeds only in North America, the Black Scoter breeds across northern Eurasia as well. The North American breeders are thought to form two separate populations, one in the west breeding mainly in Alaska and one in the east with its center of breeding distribution in northern Quebec. Confirmed breeding observations are rare but observations of adult birds early in the nesting season over an area stretching from the island of Newfoundland north through the Quebec-Labrador peninsula suggest the breeding range may be huge.

After breeding, birds migrate out to coastal moulting sites and following moult they migrate south



for the winter. Males migrate earlier than the females and young.

Black Scoters winter south of their breeding range along both coasts of North America. The eastern population spreads itself out from insular Newfoundland south to northern Florida.

Breeding Biology

The spring return of birds to breeding grounds around May can occur quite suddenly. Pair formation is not well documented but thought to occur on the wintering grounds. Black Scoters produce only one brood per breeding attempt. On the Quebec-Labrador peninsula 8-9 eggs are laid in a grass lined depression on the ground near a suitable pond or lake starting around the first week of June. Once the last egg is laid the female incubates the clutch of eggs alone and the male leaves the scene for the coast shortly thereafter. Little is known about the persistence of pair bonds from year to year.

Ducklings hatch covered with down and eyes open. They leave the nest to feed on their own soon after their down is dry. The mother watches over ducklings for 1-3 weeks, abandoning them before they can fly. Little is known about the behavior and ecology of these young birds or their parents. Nor is much known about the lifespan and variation in annual breeding success and adult mortality of Black Scoters.

Feeding Ecology

Adult Black Scoters eat mostly mollusks and crustaceans with their fresh water diet during the breeding season is composed mostly of aquatic insects and invertebrates. They are diving ducks feeding in open waters and avoiding dense aquatic vegetation. The ducklings eat a lot of insect larvae before moving to the marine environment.

Habitat Requirements

Breeding Black Scoters resemble Surf Scoters in that they seem to prefer shallow rocky lakes of less than 10 hectares. In winter their preferences in Newfoundland seem to overlap with those of Harlequin Ducks. In winter, both species occupy coastal waters with rock ledges, with harlequins feeding closer to shore than the Scoters. Further south in the eastern wintering range (on the American eastern seaboard) higher concentrations of Black Scoters are found in association with sandy beaches than with rocky headlands.

Moulting sites can host thousands of birds in one place and time. For example 89,000 male Black Scoters were once counted on the west coast of James and Hudson bays over a two day period. Such aggregations of flight impaired birds moulting their feathers are extremely vulnerable to marine oil pollution or energetic stress if disturbed at this time.

Increased hunting pressure on Black Scoters is thought to be related to increased restrictions on the hunting of the historically more popular hunted species of dabbling ducks. As a long-lived bird with low annual duckling production this species is quite vulnerable to increases in the number of adult birds dying.

A potential change to habitats used by Scoters that could threaten them is increased coastal aquaculture which can destroy local habitat directly and also displace birds indirectly through perceived competition and intolerance for seaducks near shellfish aquaculture sites. The Quebec-Labrador Peninsula where they breed is the location of a military low level flight training zone.

Suggested reading (and main source for this brief biography)

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4.10. Surf Scoter

Latin name: *Melanitta perspicillata*

Local names (from Montevecchi & Tuck 1987):
Bottle-nosed Diver (Cartwright), Bald Coot, Black
Diver, Bellarge, Pied Duck, Surf Duck

Inuktitut: Suglutuk

Innu-aimun: Mitshikutan/Papukutshat

This large colorfully billed black seaduck breeds on Labrador lakes. In coastal environments it can be seen in large numbers while staging and moulting and in fewer numbers wintering off the coast of insular Newfoundland. Unlike the White-winged and Black Scoters which also breed elsewhere in the world, the Surf Scoter breeds and winters only in North America. However, even though endemic to North America, it is only in the past twenty years that much of the Surf Scoters ecology has been documented (for example see Morrier et al. 1997). Even though so little is known about the ecology of Surf Scoters there is concern that hunting mortality is too large to be sustainable and population dynamics while poorly understood are a subject of concern.

The Surf Scoter is a large diving duck (about 1 kg) resembling Black and White-winged Scoters in general appearance. Surf Scoters have very sloped foreheads unlike the rounded ones of the Black Scoter. The absence of white on the wings distinguishes them from the White-winged Scoter whose forehead is similarly sloped. Males are black, females brown with males bigger than females. The adult male has quite a colorful bill and at rest the combination of bill pattern with distinctive white patches on the head distinguish the adult male from other scoters it may be seen with. The female is distinguished from the other two scoter species by the flattened forehead profile and heavier bill.

Distribution

Indigenous to North America Surf Scoters breed in both northeast and northwestern parts of Canada and also in Alaska. On the Quebec-Labrador peninsula breeding range is presumed to extend from Lake Nantais in northern Quebec south to Lake

Saint-Jean, Quebec, west to James and Hudson bays and east to the coast of Labrador. However, exact breeding distribution is not well known. These birds have secretive breeding habits and distribute themselves widely throughout suitable habitat. Much of this habitat is sparsely populated by potential observers and not extensively surveyed. In addition female Surf and White-winged scoters can be confused by those that do see observe breeding individuals. Nonbreeders are more coastal in the summer and birds observed along the coast in summer in the Maritimes and southward are likely immature/nonbreeding birds.

Atlantic coast birds winter in this province in small groups along the east and southeast coasts of insular Newfoundland. They also winter off Nova Scotia and New Brunswick and down the eastern seaboard with greatest numbers between New Jersey and Virginia. Increasing but still small numbers show up in northwestern Europe.

Moulting birds are observed in northern Labrador up to Saglek Fjord. However, there is little known about moulting locations and the ecology of their use.

Spring migration is sudden and related to the opening of frozen lakes. Fall migration is less defined with males, females and young following different schedules from different starting points depending on whether they have been breeding, moulting or staging.

Breeding Biology

Indigenous to North America, Surf Scoters breed on both sides of the continent. Pairs arrive on rocky shored shallow lakes of the boreal forest already paired from the wintering grounds. On the Quebec-Labrador peninsula they lay only one clutch of eggs containing in the neighbourhood of six to nine eggs. These are incubated for around a month by the female only. After hatch the female alone tends the young who can feed themselves as soon as they reach water. The mother usually abandons the young before they can fly. It takes about 55 days for the young to achieve flight after

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which they migrate to fall staging and wintering grounds independently of the adults.

First breeding is thought to occur at an age similar to Eider ducks at about 2-3 years old. Adults of breeding age are suspected not to breed every year. Annual productivity potentially varies greatly from year to year due to the degree of active breeding effort and survival of young. Years when the environment is unforgiving can see the production of no young from many nests. Most ducklings that die do so in the first 2 weeks of life and local weather conditions during this period are thought to play a large role in survival.

Feeding Ecology

Adult birds eat mussels and clams when on salt water as well as seasonally available fish eggs. On freshwater breeding sites they consume freshwater invertebrates and duckling food includes benthic invertebrates, roundworms, amphipods, bugs, beetles, mayflies, flies, dragonflies, spiders and leeches, clams, mussels and oysters. Where the introduced zebra mussel is available they are eaten by the adult surf scoters in addition to other mollusks and crustacea. Most mussels consumed are young of the year. Most dietary information has been obtained from the stomachs of birds shot by hunters.

Habitat Requirements

Surf Scoters nest on shallow rocky-shored lakes and ponds of less than 10 hectares and avoid fast and deep water. Little is known about actual habitat requirements although like all seaducks they require relatively undisturbed sites free of oil pollution for moulting. Because of a tendency to nest in single pairs or less frequently in small groups of pairs on a given fresh water body, populations require vast areas of suitable breeding sites through which to distribute themselves for nesting.

In the nonbreeding season these birds aggregate and so are vulnerable in ways that all flocking seabirds are in winter to marine oil pollution and disturbance. Surf Scoters occasionally drown in

fishing nets and their love of mussels puts them in potential conflict with mussel farmers.

Increased hunting pressure on Surf Scoters is thought to be related to increased restrictions on the hunting of the historically more popular hunted species of dabbling ducks. As a long-lived bird with low annual duckling production this species is quite vulnerable to increases in the number of adult birds dying. Decreased ratio of immature birds to adults observed in the Atlantic Flyway since the 1960s is a cause for concern.

The main change to habitats used by Scoters that may threaten them is increased coastal aquaculture which can destroy local habitat directly and also displace birds indirectly through perceived competition and intolerance for seaducks near shellfish aquaculture sites. A large portion of their breeding grounds are flown over during the breeding season by NATO allies conducting low-level flight training over the Quebec-Labrador Peninsula.

This account adapted from the following source:

Savard, J.-P. L., D. Bordage and A. Reed. 1998. Surf Scoter. In: A. Poole, and F. Gill (Eds.) *The Birds of North America*. The Birds of North America Inc, Philadelphia

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5. Other Elements of Interest

5.1. Other Birds

The following tables summarize some of the available information on other seabirds present at the

designated marine bird IBA sites in this part of Labrador. These species are no less important than the so called IBA species whose numbers met the criteria required to trigger IBA site designation (see Table 3-1 on page 13 for a list of these other species responsible for triggering IBA site status).

Quaker Hat Island

Table 5-1: Other Seabirds at Quaker Hat Island

Species	Season ¹	Number	Source ²
Atlantic Puffin	B, 1978	2,100 active nests	CWS-SCD
Common Murre	B, 1978	650 active nests	CWS-SCD

1. B = Breeding

2. Canadian Wildlife Service - Seabird Colony Database

Northeast Groswater Bay

Table 5-2: Other Seabirds in the Northeast Groswater Bay Area

Colony	Species	Season ¹	Number	Source ²
Herring Islands	Common Murre	B, 1978	4,150 active nests	CWS-SCD
Herring Islands	Leach's Storm-Petrel	B, 1978	5 active nests	CWS-SCD

1. B = Breeding

2. Canadian Wildlife Service - Seabird Colony Database

South Groswater Bay Coastline Area

Table 5-3: Other Seabirds in the South Groswater Bay Area

Colony	Species	Season ¹	Number	Source ²
South Duck Islands	Great Black-backed Gull	B, 1978	15	CWS-SCD
South Duck Islands	Herring Gull	B, 1978	20	CWS-SCD
Tinker Harbour	Great Black-backed gull	B, 1978	2	CWS-SCD
Tinker Harbour	Tern <i>spp.</i>	B, 1978	10	CWS-SCD

1. B = Breeding

2. Canadian Wildlife Service - Seabird Colony Database

Tumbledown Dick and Stag Islands

Table 5-4: Other Seabirds Breeding on the Tumbledown Dick and Stag Islands

Colony	Species	Season ¹	Number	Source ²
Little Tumbledown Dick Island	Great Black-backed Gull	B, 1978	33	CWS-SCD
Stag Island	Common Eider	B, 1961	present	CWS-SCD

1. B = Breeding

2. Canadian Wildlife Service - Seabird Colony Database

The Backway

Table 5-5: Counts of Other Seaducks in the Backway (CWS Coastal Block ID = 922) as Reported in Gilliland & Lewis, 1999

Species	Season	Number
Black Scoter	September 1980	191

Cape Porcupine and the Adjacent Marine Area

Table 5-6: Counts of Other Seaducks in Trunmore Bay (CWS Coastal Block ID = 911) as Reported in Gilliland & Lewis, 1999

Species	Season	Number
Common Eider	June 1980	5
“	September 1980	15
“	June 1994	405
“	August 1998	50
Black Scoter	September 1980	7

Gannet Islands**Table 5-7: Other Seabirds Breeding at the Gannet Clusters**

Species	Season	Number	Source¹
Black Guillemot	1983	35 pairs	CWS-SCD
Black-legged Kittiwake	1978	3 active nests	CWS-SCD
“	1983	54 active nests	CWS-SCD
Leach's Storm-Petrel	1978	15 active nests	CWS-SCD
“	1983	14 pairs	CWS-SCD
Northern Fulmar	1983	13 pairs	CWS-SCD
Thick-billed Murre	1983	964 pairs	CWS-SCD

1. Canadian Wildlife Service - Seabird Colony Database

Table 5-8: Other Seabirds Breeding at Outer Gannet Island

Species	Season	Number	Source¹
Black Guillemot	1983	5 pairs	CWS-SCD
Black-legged Kittiwake	1978	48 active nests	CWS-SCD
“	1983	61 active nests	CWS-SCD
Northern Fulmar	1983	3 pairs	CWS-SCD
Great Black-backed Gull	1983	10 pairs	CWS-SCD
Thick-billed Murre	1983	441 pairs	CWS-SCD

1. Canadian Wildlife Service - Seabird Colony Database

Bird Islands**Table 5-9: Other Seabirds at Bird Islands**

Species	Season	Number	Source¹
Common Murre	B, 1978	3,150	CWS-SCD
Leach's Storm-Petrel	B, 1978	3 active nests	CWS-SCD

1. Canadian Wildlife Service - Seabird Colony Database

Table Bay

Table 5-10: Counts of Other Seaducks in Table Bay (CWS Coastal Block ID = 900) as Reported in Gilliland & Lewis, 1999

Species	Season	Number
Common Eider	June 1980	120
“	September 1980	0
“	June 1994	557
“	August 1998	0
Black Scoter	September 1980	191

5.2. Bird Aggregations and Local Nutrient Cycles

Islands where marine birds nest in large numbers concentrate the birds’ bodily wastes. Guano is rich in nutrients. In Newfoundland and Labrador, the breeding seasons for marine birds overlap with rain and fog which washes the guano into the sea. Large bird colonies are perennial suppliers of nutrients to the local marine environment.

Bob Hooper of Memorial University has dove beneath the waters around several large seabird colonies in Newfoundland. In the mid 1980s he compared the abundance of underwater life around the perimeters of a large seabird colony with comparable zones without nesting birds. He asked whether the nitrogen and phosphorus from seabird guano was fertilizing the near shore underwater environment.

What Hooper found under the water next to seabird colonies was a jungle (Hooper pers. comm.). Biological activity by kelp in this zone was elevated, taking up all the nutrients washing off the island so that only a short distance away from the island high levels of nutrients were no longer apparent. Seaweeds around the breeding island were growing at twice the rate of those at comparable sites without birds. In addition to more kelp, there were an order of magnitude more primary grazers like amphipods and snails than at comparable sites without birds.

In association with the increased kelp and grazing life were juvenile and adult fish feeding on the amphipods and snails and increased densities of sea urchins. Run-off from the large seabird colonies that Hooper visited creates oases of underwater life around the colony.

Marine birds cycle and redistribute nutrients. Their influence on marine nutrient and energy cycles is poorly understood. However, conserving sites where birds aggregate may affect other marine life indirectly and benefit fish populations and fisheries by contributing to fish survival and recruitment.

5.3. Geology

The following text is reproduced from the website for the Traveller's Guide to the Geology: A project of the Geological Association of Canada- Newfoundland Section. The excerpts are from an introduction to the *Newfoundland and Labrador Traveller's Guide to the Geology* (Colman-Sadd and Scott, 1994).

100. "The Quaker Hat"
About two hours after leaving Smokey northbound, the ship passes an isolated island shaped like a broad-brimmed Quaker hat, complete with a black band around the base of the crown. The band is a sill of gabbro, which intrudes the rest of the "hat", composed of Early Proterozoic granitic rocks. When the ship's horn sounds, clouds of birds

(mainly turrs, a Newfoundland term for murre) rise into the air.

(<http://www.geosurv.gov.nf.ca/gacmap/LAB.html#98>)

97. Porcupine Strand, North Strand

Between Packs Harbour and the entrance to Groswater Bay, a magnificent white sandy beach stretches for 35 km south and north of Cape Porcupine. The normal track of the ship is 10 km offshore from the southerly section (the Porcupine Strand), but less than 5 km from the North Strand. The beach sand is derived from sand and gravel depos-

ited inland in front of retreating glaciers about 10,000 years ago. Black sand beds in the beach deposits consist of magnetite, ilmenite and other heavy minerals concentrated by storm action. The black sand is being assessed for possible commercial production of titanium and garnet. If quantity and concentration are high enough, the valuable minerals could be extracted by placer mining methods, and the remaining sand replaced.

(<http://www.geosurv.gov.nf.ca/gacmap/LAB.html#97>)

Chapter 5: Other Elements of Interest

6. Land Ownership and Use

The entire area of Labrador covered by this document is subject to or adjacent to land claims by the LIA, the Innu Nation and the Labrador Métis Nation (see Figures 1-1 on page 3, 1-2 on page 4 and 1-3 on page 5 for maps of Land Claim areas). Due to this fact, Land ownership and use is currently under assessment and detailed consultation

with the above groups is required to properly describe land ownership and use for this area.

The main land use activities in the area of relevance to marine birds are commercial shipping, local vessel traffic, hunting and egg collecting and growing interest in marine based eco-tourism. There is some potential for a Tidal Power Project to be developed in the area near the Backway IBA site (see Figure 6-1).

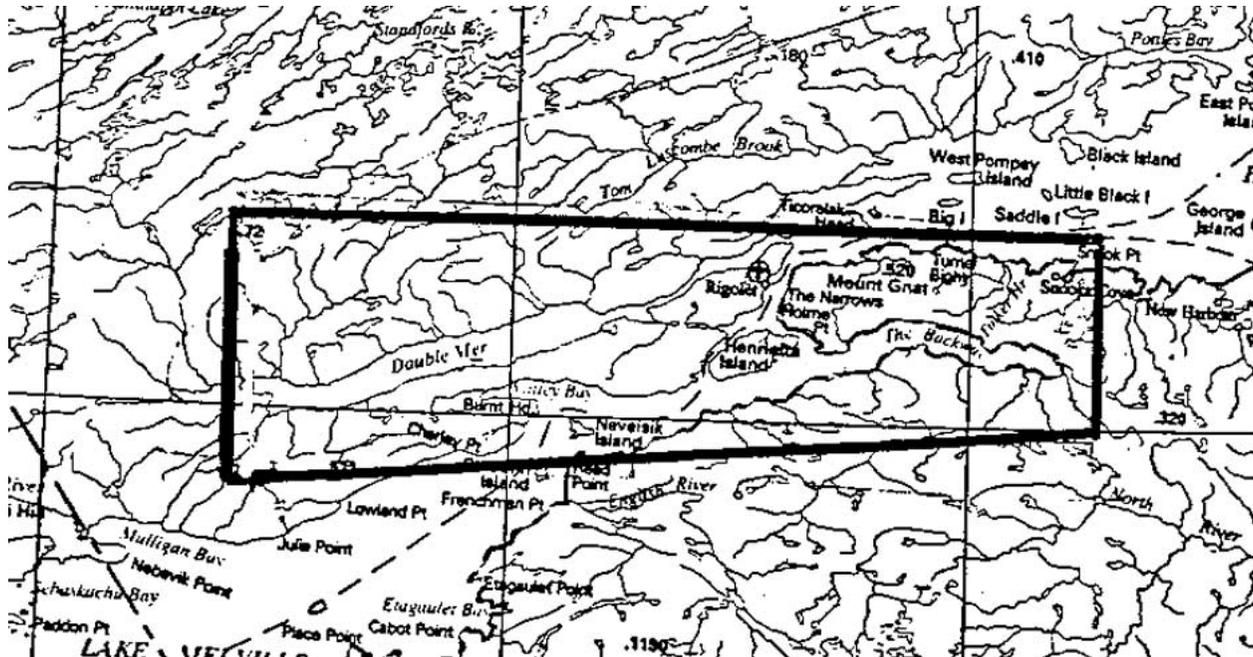


Figure 6-1: Map of Potential Tidal Power Development Area reproduced from Schedule 5-A of the *Agreement-in-Principle Between the Inuit of Labrador and Her Majesty the Queen in Right of Newfoundland and Her Majesty the Queen in Right of Canada* Initialled on May 10, 1999 as it appears on the URL: (<http://www.gov.nf.ca/laa/claimsaip/liaaip.htm>)

Shipping

Although not subject to the Great Circle Route Shipping that passes through the Strait of Belle Isle, the mid coast of Labrador and the Groswater Bay area are subject to regular commercial shipping during the non-ice season (Figure 6-2).

A seasonal coastal ferry docks at several ports along the coast and enters Groswater Bay to dock at Goose Bay. Freighters bring goods to coastal communities and into Goose Bay throughout the ice-free shipping season. Plans to increase logging in Labrador and to develop a mine at Voisey's Bay could significantly increase the commercial shipping activity along the coast while plans for National Parks for the Torngat Mountains in northern Labrador and the Mealey Mountains could significantly increase recreational coastal vessel traffic of both a commercial and non-commercial nature.

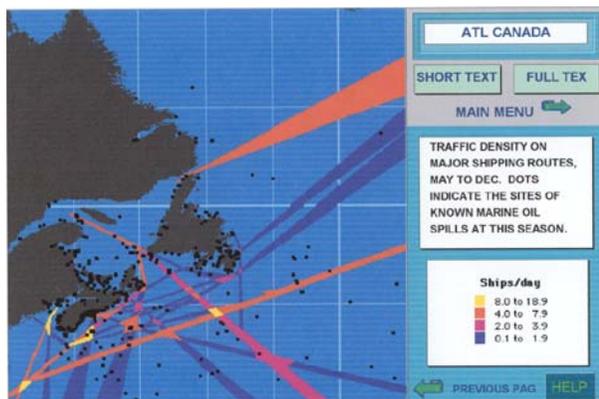


Figure 6-2: Map reproduced from *The Gazetteer of Marine Birds in Atlantic Canada* (Lock et al., 1994) showing shipping routes of the Northwest Atlantic

The Gannet Islands has the provincial designation of Ecological Reserve. Areas north of Cartwright and south of Groswater Bay are adjacent to the proposed Mealey Mountains National Park. The provincial Interdepartmental Land Use Committee (ILUC) has designated Groswater Bay as a Sensitive Wildlife Area.

With regard to the proposed National Park in the Mealy Mountains the following, slightly dated information, is reproduced from the Canadian Nature Federation's website:

*Mealy Mountains National Park, Labrador
(Natural Region #21 "East Coast Boreal Region")*



Figure 6-3: Map reproduced from Canadian Nature Federation website showing in brown the general area proposed as the Mealey Mountains National Park

One of the longest standing proposals, a national park in Labrador's Mealy Mountains was first suggested in the early 1970s, and established as a preferred candidate site in 1976. Three years of planning and consultations occurred before public concern and opposition from Aboriginal peoples shelved plans for the park. With local communities and the Labrador Innu now onside, the time is ripe to move ahead. Promises to resurrect this long dormant park proposal have been made repeatedly by the federal and provincial governments over the last eight years, but the parties have yet to announce an agreement to launch studies that would determine the feasibility of the park.

The Mealy Mountains rise dramatically from the shores of Lake Melville in southeastern Labrador. Reaching heights of over one kilometre, they are an island of arctic tundra surrounded by boreal forests and coastal seascapes. The mountains are home to some of Labrador's best wetlands and salmon habitat, and features one of North America's finest wild rivers, the Eagle River. The rugged

Canadian Shield landscape is also a haven for a small resident caribou herd, along with moose, black bear, osprey, bald eagles and the endangered eastern population of the harlequin duck. Coastal waters harbour six species of seals and 16 species of cetaceans including the white beaked dolphin, and blue, Sei, humpback, Minke, and killer whales. On occasion, polar bears can be seen on the pack ice or on offshore islands. Traditional hunting grounds for the Labrador Innu, Inuit, and Métis peoples, the proposal site also

hosted the Vikings, as evidenced by a gravesite dated circa 1000 AD.

Plans are already in place for the Trans-Labrador Highway, for which possible routing threatens to cut through the proposed national park area, fragmenting the forest ecosystem. The Mealy Mountains will also soon be facing development pressures from logging, mineral exploration, and road construction.

(<http://www.cnf.ca/wanted/mealy.html>)

7. Conservation Concerns

7.1. Vulnerability of Moulting Seaducks

Birds are defined by their ability to fly. One reason the Great Auk was so vulnerable to over-harvesting and ultimately to extinction was precisely because Great Auks were flightless birds. Flightless birds are vulnerable birds. The only flightless birds remaining in our waters today are only temporarily incapable of flight. These include the thousands of moulting sea ducks that depend on places like Trunmore Bay to renew their feathers in peace.

While duck plumage is beautiful, warm and functional, feathers do wear out. Most ducks wear two plumages in the course of a year and twice a year they shed all their feathers and grow in new ones. Plumage renewal is called moulting. Depending on the size of the moulting bird it cannot fly for a period of two to four weeks.

Moulting consumes energy. Extra energy is needed to build the new feathers, but also to compensate for the loss of optimum insulation while feathers are in flux. To reduce insulation demands the birds may not dive through the cold water to feed as much while moulting. Eating less only complicates the energetic balancing act that moulting represents.

The moulting period follows breeding. Male seaducks are the first to leave the breeding area to begin their moult. The females moult later, waiting until after their ducklings are independent. The whole process is usually over for everyone by September or October.

Seaducks select special sites for moulting and return to them year after year. It is thought that birds first learn where to go by following adults. Continuity is therefore potentially crucial in maintaining knowledge of where suitable sites for moulting are located. These sites are specially selected for their ability to help birds conserve their energy during a demanding physiological period. If seaducks are not able to put the proper reserves into the building of new plumage their later survival may be compromised. Males sport competi-

tively gorgeous breeding plumages and their breeding performance can be undermined by an inferior feather building investment.

Moulting seaducks are “sitting ducks”. Because they can not fly they are extremely vulnerable to illegal hunting, oil pollution and to the loss of precious energy that responding to disturbance consumes. Moulting sites must provide seaducks with protection from predation and thermal stress. Open waters adjacent to offshore islands are ideal for this purpose. These habitats are not found everywhere and so the chosen moulting sites may host thousands of birds at once. Not only are the individuals vulnerable, but by aggregating, significant portions of the population may be vulnerable together.

It is critical for seaduck conservation that moulting seaducks be protected from hunting, oil pollution and disturbance. Hunting season dates for seaducks are set to eliminate the possibility of hunting moulting ducks but noncompliance with hunting regulations can be a problem. Even if only a few ducks in a moulting patch are shot, the cost is far greater because of the energetic cost of having disturbed thousands of other birds at a time when they can least afford it.

The Migratory Bird Act makes it illegal to harass any migratory bird. Deliberately disturbing moulting birds is already against the law. Most people however, do not intend to harass birds. Disturbance usually happens by accident, through ignorance of the consequences for the birds. With increasing recreational marine traffic from far-flung areas to the waters off Newfoundland and Labrador and/or by residents with inadequate knowledge of, or respect for marine bird ecology, the potential for both intentional and unintentional disturbance increases.

One way to protect moulting areas associated with IBA sites is through time area closures, much like those used in fishery management. Time area closures would place areas off limits to marine traffic of all kinds during the moulting period. In this way noncompliance is also more easily detected and deterred.

7.2. Vulnerability of Breeding Birds

Seaducks

Common Eiders are the only seaducks nesting at any of the IBA sites covered here. When Eider hens are nesting they also fast. Leaving the nest only rarely for a drink of fresh water, eider hens sit and hope they have enough energy stored to get through the nesting period after which they will feed again. If a hen is disturbed off the nest she consumes energy that she can ill afford at that time. The hen's strategy is not to consume unnecessary energy. Disturbing nesting eiders can therefore have significant effects on the ability of the hen to sustain her nesting effort.

Eiders also often nest in association with gulls that prey on their eggs and ducklings. Predation opportunities are enhanced if the hen leaves the nest. Much of the predation of eggs by gulls observed by people is likely a direct result of the observer's presence having created an ideal predation opportunity for the gull. Not only can disturbing eiders off their nests waste their precious energy reserves, but vulnerability of the nest contents to predation is also increased.

Cliff Nesting Seabirds

Many marine birds congregate to breed in large numbers on coastal islands or cliff faces. Colonial nesters are vulnerable as a consequence of their social breeding habits. Many bodies in one place at a given time means an increased vulnerability to localized events such as oil spills.

Cliff nesting birds are also vulnerable to disturbance. When birds are flushed from their nests they may knock eggs into the water or predators like gulls and ravens may swoop in and take advantage of the unguarded nest to consume the exposed contents.

In addition it must be remembered that true seabirds only come to land during the breeding season

and seabird breeding colonies are an important site for social interactions in the birds year. Disturbing these social behaviors can affect pair formation, parental attendance and have a variety of indirect effects on breeding success that may not be immediately obvious or easily measured (Hearne 1999).

7.3. Harvesting

Management Regime

The Canadian Wildlife Service (CWS) of Environment Canada has responsibility for the management of migratory birds. Harvesting mortality of marine birds is regulated with reference to the Migratory Bird Act.

The CWS equivalent of the Canadian Department of Fisheries and Oceans' (DFO's) Stock Status Reports is the CWS Migratory Birds Regulatory Report published in the fall. This annual Report contains population and other biological information which is used as the scientific basis for management decisions. This report is followed in December by another annual report, "Proposals to Amend the Canadian Migratory Birds Regulations" and both Reports are publicly distributed to provide opportunity for public input into changes in hunting regulations. In the July that follows publication of these two earlier reports, a third report called "Migratory Game Bird Hunting Regulations in Canada" is issued. Hunting regulations for the upcoming season are contained in the annual July report (CWS, 2001a).

On the island of Newfoundland the open season for hunting sea ducks (Oldsquaw, eiders, and scoters) in all coastal zones is from the fourth Saturday of November to the last day of February with a daily bag limit of six birds. After the first Monday in February not more than three of the six birds may be eiders. It is not legal to have more than 12 seaducks in possession at one time and after the first Monday in February not more than six may be eiders. It is illegal to hunt Harlequin Ducks at any time.

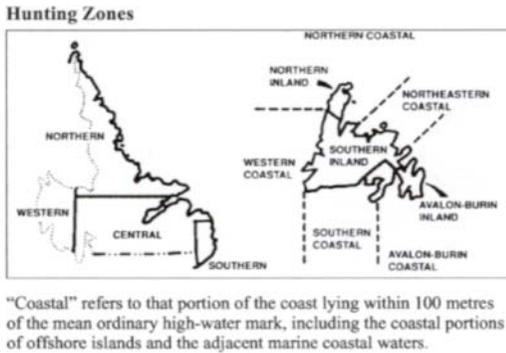


Figure 7-1: Map showing Migratory Bird hunting zones adapted from Migratory Birds Hunting Regulations, 2001 (<http://www.cws-scf.ec.gc.ca/pub/summ/nfld.pdf>)

In Labrador, the open season schedule varies by area (see Figure 7-2.).

Migratory game bird harvest levels are estimated through national harvest surveys and only in certain cases, species-specific surveys (CWS 2001b). Adult birds are worth more in terms of reproductive potential and proven ability to survive than young birds so it is of interest to know what age class of birds are harvested by hunting.

Eiders and turrs (Common and Thick-billed Murres) are the most commonly hunted marine birds. These birds have life history strategies that make them vulnerable to relatively small increases in the amount of adults dying each year. The population depends on adults living a long time in order to reproduce themselves, as the birds do not mate until they're several years old and then either have very few young each year or successfully rear very few young each year. Low productivity and inherent variability in annual reproductive success is countered by the fact that birds that survive to adulthood, live long lives. If the population loses too many of its older experienced breeders, the reproductive potential of the remaining breeders is less than their numbers would indicate as older birds are more successful in raising chicks.

These life history traits of marine birds make adult mortality rates the most important influence on population health, much more so than the survival of eggs or chicks. Waterfowl management is shifting towards a new realization that seaducks can not tolerate the same levels of harvesting as other waterfowl and several seaduck populations are in decline, possibly due to managed over-harvesting (Goudie et al. 1994, Gilchrist et al 2001).

OPEN SEASONS IN LABRADOR (No open season for Harlequin Ducks)

Area	Ducks (other than Harlequin Ducks and eiders), geese, and snipe	Eiders
Northern Labrador Zone	First Saturday in September to second Saturday in December	Last Saturday in September to second Saturday in January
Western Labrador Zone	First Saturday in September to second Saturday in December	No open season
Southern Labrador Zone	Second Saturday in September to third Saturday in December	Fourth Saturday in November to last day of February
Central Labrador Zone	First Saturday in September to second Saturday in December	Last Saturday in October to last Saturday in November and first Saturday in January to last day of February

BAG AND POSSESSION LIMITS IN LABRADOR

Limits	Ducks (other than mergansers, Harlequin Ducks, eiders, and scoters)	Mergansers, scoters, and eiders	Geese	Snipe
Daily bags	6	6(a)	5	10
Possession	12	12(b)	10	20

(a) After the first Monday in February not more than three may be eiders.
 (b) After the first Monday in February not more than six may be eiders.

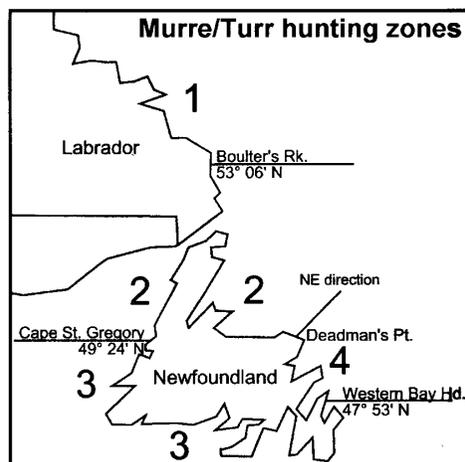
Figure 7-2: Table showing Migratory Bird hunting seasons and bag limits, adapted from Migratory Bird Hunting Regulations, 2001 (<http://www.cws-scf.ec.gc.ca/pub/summ/nfld.pdf>)

The Turr Hunt

The following is reproduced verbatim from the Migratory Game Bird Hunting Regulations in Canada (Canadian Wildlife Service Waterfowl Committee, 2001a)

The Migratory Birds Convention was signed by Great Britain (on behalf of Canada) and the

United States of America in 1916. The purpose in concluding the Convention was to prohibit in the two countries the indiscriminate taking of birds, their nests and eggs. Particular problems that were curbed by this agreement were large scale commercial and sport hunts, as well as the taking of birds for the millinery trade.



OPEN SEASONS ON THE ISLAND OF NEWFOUNDLAND AND IN LABRADOR (Murre/Turrs)

Area	Murres
Zone No. 1	September 1 to December 15
Zone No. 2	October 9 to January 23
Zone No. 3	November 24 to March 9
Zone No. 4	November 2 to January 7 and January 29 to March 9

BAG AND POSSESSION LIMITS ON THE ISLAND OF NEWFOUNDLAND AND IN LABRADOR (Murre/Turrs)

Limits	Murres
Daily Bags	20
Possession	40



REPORT YOUR MIGRATORY BIRD BANDS:
CALL 1-800-327-BAND (2263)



Figure 7-3: Turr Hunting districts adapted from Proposal to Amend the Canadian Migratory Birds Regulations: CWS December 2001

The Convention protected most bird species, controlled the harvest of others, and prohibited the commercial sale of all species. The Convention created three categories of migratory birds: game birds (such as ducks, geese, cranes), insectivorous birds (perching birds such as robins, sparrows, wrens, and woodpeckers), and non-game birds (such as loons and seabirds, including murre). The Convention also established a closed season, with limited exceptions, on the hunting of migratory game birds from March 10 to September 1 throughout Canada and the United States.

The hunting of murre is a long established tradition in Newfoundland and Labrador, where the

birds have been taken for subsistence purposes for hundreds of years. However, because murre are considered non-game species under the Migratory Birds Convention, the murre hunt became inconsistent with the Convention when Newfoundland joined Confederation in 1949. Beginning in 1993, murre hunt seasons and bag limits were established for conservation purposes through a special Administrative Order under the Migratory Bird Convention Act.

In order to address the gap in the Convention with respect to the murre hunt, as well as to resolve other issues, Canada negotiated amendments to the Migratory Birds Convention, known as the

Parksville Protocol, in 1995. Under the terms of the Protocol, the harvest of murre by residents of Newfoundland and Labrador is authorized and will be controlled at sustainable levels in much the same manner as waterfowl harvesting is currently regulated. However, there are some differences.

Under the new regulations, which came into effect for the 2000-2001 hunting season, murre may be hunted from a boat under power. At the current time, there is no plan to require the use of non-toxic shot for murre hunting. If there are demonstrated valid concerns about public health or the effects of secondary ingestion, the mandatory non-toxic shot requirement would be considered in future.

Finally, CWS reviewed the need to require all murre hunters to purchase a Migratory Game Bird Hunting Permit. Without the Permit there is no direct way of knowing how many people hunt murre or how many birds are taken, elements that are important to any game management program to provide assurance against over-harvest and to ensure the continuation of the hunt into the future. Recognizing the importance of harvest data gathered from permit holders, CWS introduced a requirement for murre hunters to purchase a Migratory Game Bird Hunting Permit beginning in either the 2001 hunting season. The total cost of the Permit is \$17.00, which includes the mandatory Canadian Wildlife Habitat Conservation Stamp (\$8.50). As this is the same Permit that is presently required to hunt ducks, geese and snipe, a large percentage of murre hunters would not be affected. Wildlife Habitat Canada has agreed that additional funds derived from the sale of the Stamp to murre hunters will be earmarked for management and applied research activities related to murre conservation.

If you have any comments, please contact the Canadian Wildlife Service, 6 Bruce St., Mount Pearl, NF A1N 4T3 (709-772-5585 or 709-535-0601; E-mail: cws.nfandlab@ec.gc.ca).

Hunting Behavior

Hunting itself, while fatal to individual birds, if done respectfully on the proper scale is not a threat to bird populations. On the contrary, subsistence hunting has the potential to create and maintain an ecological perspective and provide people with rewarding relationships with the rest of nature. Excessive or incompetent harvesting however can pose a serious threat to bird populations and is often the cause of population declines.

Embedded shot studies and band recoveries of American Common Eiders in Newfoundland and Labrador support the contention that these populations are heavily hunted. Fifty-four percent and 39% of breeding females examined at colonies in Labrador and Newfoundland, respectively, had embedded shot (P. Hicklin and W.A. Barrow 1997, unpub.)

(Excerpt from CWS, 2001b)

7.4. Fishery Interactions

Incidental Catch of Seabirds by Fisheries

Few fisheries catch only what they want. Many non-targeted species are captured accidentally. While seabirds are common victims of bycatch in some fisheries (e.g. Piatt and Nettleship 1987), there has been almost no study in Newfoundland and Labrador of the extent and preventability of this source of marine bird mortality.

An estimated 30,000 seabirds were drowned in inshore gillnets on the southeast coast of insular Newfoundland over a four year period in the early 1980s. 89% were Common Murres, 6% Atlantic Puffins and 3% Greater Shearwaters (Piatt *et al.* 1984, Piatt and Nettleship, 1987). 97% of the birds were caught in either cod or salmon gillnets with very few in cod traps or flounder gillnets. Most of the diving auks (murre and puffins) were caught within 40km of seabird breeding colonies.

Anecdotal information suggests that Common Eiders are caught in the inshore lumpfish fishery and Razorbills have been killed in the inshore salmon fishery off the coast of Labrador near the Gannet Islands (Chardine, 1998). During the

1980s, the annual mortality due to fishery bycatch alone was estimated by Piatt and Nettleship (1987) as 9.3% for Funk Island Northern Gannets, 12.4% for Newfoundland Razorbills, 5.7% for Witless Bay Common Murres, and 16.3% for Cape St. Mary's Common Murres. For seabird populations which count on very low levels of adult mortality these levels are extremely high and if maintained would lead in some cases to population declines.

Since the collapse of Northern Cod and various levels of moratoria on cod and salmon fishing, much of the traditional gillnet fishing around seabird breeding colonies has been on hold. Before the 1992 cod moratorium, DFO and CWS began to launch a co-operative program with fishermen to reduce seabird bycatch in cod gillnets through gear experimentation (Chardine, 1998 and http://www.grida.no/caff/tr1_itr1.htm#canada). While the moratorium on cod fishing put this program on hold, the lull in seabird bycatch near breeding colonies is an excellent time to develop communications between the relevant parties.

The incidental death of seabirds in fishing gear is a world wide problem. While this issue has not been talked about either very much or very openly in this province, it has been a high profile issue elsewhere. Much can be learned from the experience of other jurisdictions. The Australian Fisheries Management Authority (AFMA) convened a task-force resulting in the launch in June 2000 of a Commonwealth Policy on Fisheries Bycatch and recently added relevant material on seabirds to their web site (<http://www.afma.gov.au>).

Perception of Top Predators as Our Competitors for Prey Species

Human fisheries overlap with other top predators in our interest in marine prey. This has led to a widely held public perception that fish not eaten by other predators would increase the potential catch by humans. In Newfoundland and Labrador this perception has generated formal proposals and a heated public lobby for a cull of harp seals. The assumption is that reducing the population of seals would increase the rate of recovery of northern cod and mean more fish for human fisheries. The fish

not eaten by the seals we kill will be caught by the fishery.

This model assumes that there are no other fates for those fish saved from seal predation than to be caught by people and that there are no relevant indirect effects from reducing seal predation on the rest of the food web. In a complex food web such as that of the Northwest Atlantic, there is no way to reliably predict the outcome on cod numbers of reducing the number of seals and the opposite of the desired effect is quite possible (Yodzis, 2001).

The false logic and purely competitive perspective behind proposals to cull seals to save fish could be extended to marine birds. If one categorizes fish eaten by predators as "fish loss" one sees that, for example, in the North Sea, birds account for greater "losses" than mammals. Other fish, however, account for far more "fish loss" than either birds or mammals (Yodzis, 2001). The level of predation exerted by other fish should signal the naiveté of proposals to save fish by culling seals. There are no such proposals to cull fish to save fish. This linear misinterpretation of marine trophic dynamics has captured the public's imagination and given the right circumstances, the argument could be extended to seabirds. In some places it already has (e.g. cormorants).

Marine conservation is mainly a question of managing our own behavior. We are unlikely to successfully engineer the marine ecosystem for our benefit by controlling population levels of other species. Fostering ecological wisdom on such politically hot topics as culling seals to save cod is an ecological literacy challenge. How we deal with this challenge has implications for seabirds and marine ecology in general.

Indirect Effects of Fishing Through Habitat Destruction

Some fishing practices alter physical habitat. Bottom trawling and scallop dredging for example, disturb the benthic environment, flatten the structural complexity of habitat such as deep-sea corals and can destroy kelp beds. The fishing methods of sixty-five footers dragging for scallops includes the use of rakes modified by rows of steel teeth and

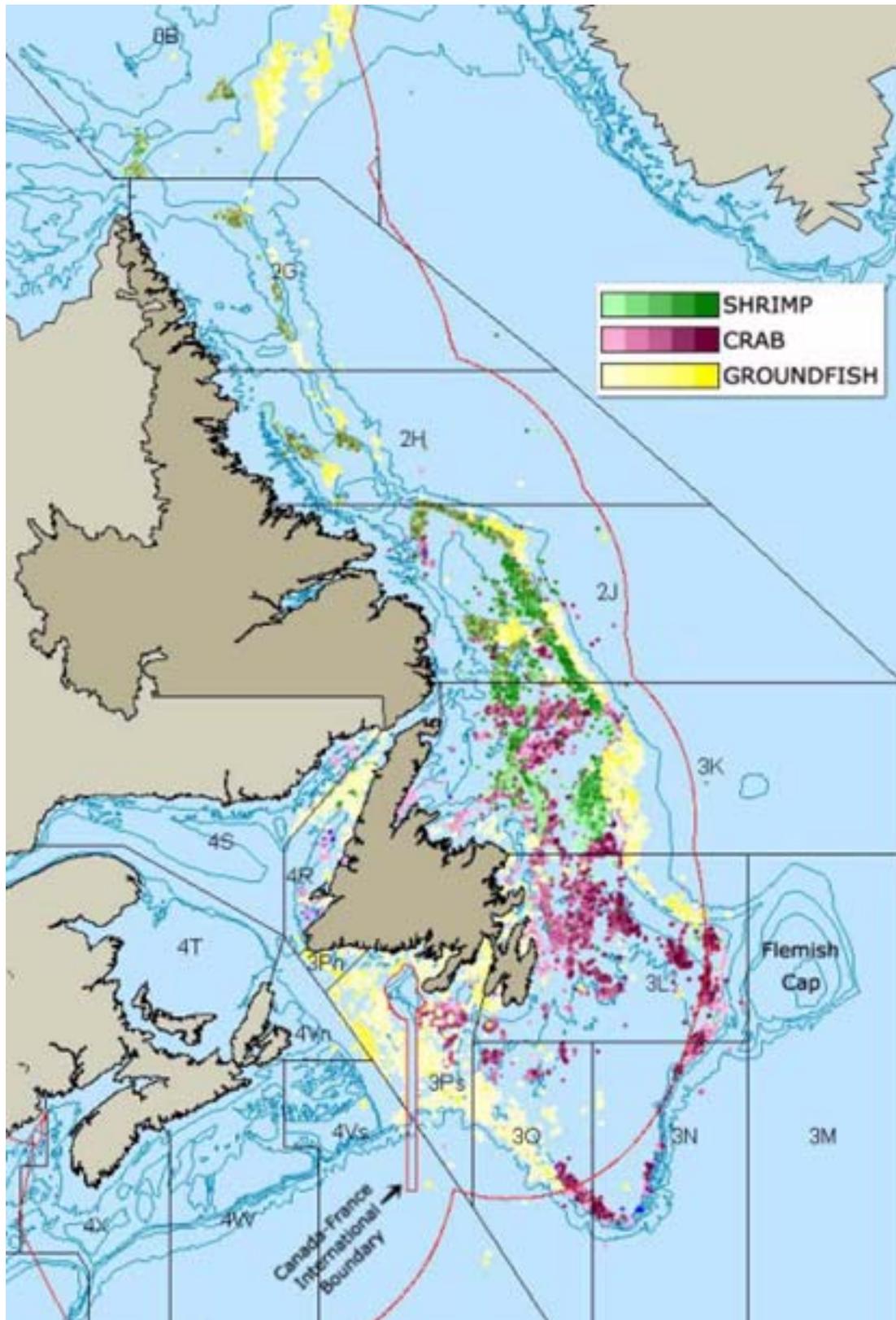


Figure 7-4: Map showing NAFO Fishing Area boundaries and other fishing information by species, adapted from DFO website (<http://www.nfl.dfo-mpo.gc.ca/fm/maps/fishingareas.htm>)

weights designed to push the teeth into the benthos. This method is summed up by one marine scientist with the phrase “If I wanted to destroy the ecology of the Grand Banks I couldn’t think of a better way.” (Hooper pers. comm.).

Seabirds are only the most obvious (to us) group of organisms in a complex marine food web. As top predators in the system they are an indirect measure of the health of the marine community. Without an adequate supply of good quality habitat for juvenile fish to develop in, there are less of everything else that depends on eating fish and the productivity of the whole system, is undermined. In this way, seabird conservation is very directly connected to the conservation of benthic habitat.

Fishing methods have not been subjected to environmental assessment and there are rancorous debates among gear sectors and others over the ecological effects of one gear type or practice compared with another. These debates are entering the court system. In 2001, the Ecology Action Centre (EAC) based in Halifax, Nova Scotia began taking the Department of Fisheries and Oceans to court. They argue that the reopening of George’s Bank to the use of dragging gear violates the Fisheries Act by dramatically altering the seabed and harming the myriad life forms that depend on it for their survival and should be subjected to environmental assessment.

7.5. Disturbance

Marine Vessel Traffic

Marine vessel traffic brings with it two problems for marine birds and IBAs. Depending on their route and operational behavior, boats can bring disturbance to moulting and/or breeding birds as well as potential oil pollution.

There is quite a lot of commercial shipping and other vessel traffic in this part of Labrador and there is potential for significant increases in this activity within the next few years. A seasonal coastal ferry runs from the south, into Goose Bay. Happy Valley-Goose Bay is a major destination port in Labrador during the ice-free period. Increasing industrial shipping is expected along the

outer Labrador coast and possibly also into Lake Melville if and when the development of a Mine/Mill at Voisey’s Bay proceeds (see “Voisey’s Bay” on page 86). The development of industrial forestry in Labrador also has the potential to affect shipping activity, as would development of the Lower Churchill hydro power project.

Recreational boating and other localized traffic around the IBAs can potentially disturb breeding and moulting birds.

Tourism

This area of Labrador attracts increasing numbers of tourists. With the proposed establishment of The Mealy Mountains National Park, coastal traffic associated with tourism is likely to increase. Already there are some commercial cruise lines with cruises to the coast of Labrador. The coast of Labrador has always been a “destination” for the adventurous yachting community, particularly from the United States. This is likely to increase as is the activity of sea kayaking. The activity of small private yachts and sea kayaks, even on a modest scale, has the potential to create a great deal of unpredictable disturbance for breeding and moulting marine birds. Natural curiosity and a desire and/or need to go ashore on offshore islands can bring this form of traffic into the midst of breeding or moulting birds. Unless informed about the possible consequences of their behaviour, such visitors have the potential to naively cause significant disturbance to the birds they are naturally attracted to viewing at closer range.

Tourism is ancient and there is something inherently attractive about the notion of peoples traveling to visit others, sharing their experiences of the world and collecting new perspectives from travel. However, the recent escalating commercialization of travel and the scale and manner in which it has developed is cause for concern.

A recent study on Gull Island, Witless Bay found that among the Auks, Razorbills were especially sensitive to disturbance from the passage of tour boats and that other recreational vessels such as kayaks caused even greater disturbance. (Hearne, 1999). This study was done from an island which

has been subjected to extensive tour boat activity for a number of years and it is possible that many of the birds have habituated to the tour boats. It is not known how applicable the results of this study would be to the more remote alcid breeding colonies covered by this document: Quaker Hat Island, the islands in Northeast Groswater Bay, the Gannet Islands and Bird Islands.

The IBA Program

Increased awareness of the beauty or importance of a place sometimes has the undesired effect of increasing visitation. Increased awareness of the vitality and importance of areas important to marine birds is one of the objectives of the IBA Program. However, in the context of socio-economic conditions which favour the proliferation of tourism ventures in the absence of a plan to safeguard moulting and breeding seabirds from disturbance, in some cases, the IBA Program may have the potential to do more harm than good.

The IBA Program must be aware of its potential to increase the vulnerability of sites requiring minimal disturbance by raising their public profile. The use of Cape St. Mary's and the Witless Bay Ecological Reserves as advertising centerfolds and tourist attractions has set an example of seabird tourism that is not sustainable at most other sites. The tourism market applies pressure to get ever closer to wildlife and with increasing frequency. For sites that have no legal protective status, this may create problems for the birds. The summer tourism season overlaps with the period when breeding seabirds are on land to raise their young and are at their most vulnerable. While this makes it incredibly easy for tourists to target them, the temptation to exploit this attraction can cause birds undue disturbance and undermine their potential breeding success.

This is of special concern in this area where there are numerous very important sites for marine birds with no formal protection and about which little is known and for which up to date population estimates are lacking.

7.6. Marine Oil Pollution

Seabirds and Oil

Seabirds and oil do not mix. Oil ruins feather structure and impairs their insulation value. The bird's buoyancy may be affected and by preening the oiled feathers, the oil may be ingested causing further internal problems. The internal and indirect effect of oil pollution such as suppressed immune response are not treated by removal of the external fouling. Rehabilitation of oiled marine birds is largely ineffective (Briggs et al., 1997; Anderson et al., 1996; Eppley & Rubega, 1996). It is not feasible to save oiled birds except through prevention; and preventive efforts must be applied at the scale at which marine birds move through the landscape.

The migratory nature of seaducks and the migratory and pelagic habits of some seabird species limit the effectiveness of simply protecting the small IBA sites delineated for their breeding and moulting needs. Marine birds by definition do not spend much time on land. Their fate is firmly tied to our success in reducing marine oil pollution on a large scale. The territory of some of the birds using the IBA sites in this part of Labrador includes areas to the south subject to heavy marine vessel traffic and offshore oil activity. For example, seaducks moulting in this part of Labrador may winter in Placentia Bay and auks breeding here may winter on the Grand Banks near Hibernia and other offshore oil activity. By forcing us to recognize the large scale at which marine birds live, these birds have the potential to unite communities of people from a variety of geographical locations to prevent marine oil pollution.

Ship-source Oil Pollution

There are two main sources for chronic ship source oil pollution, namely oily bilge water and oily ballast water. Both are dumped in Newfoundland waters illegally to a greater extent than in some comparable regions such as British Columbia. The difference is thought to lie in operator attitude and enforcement levels (Canadian Coast Guard, 1998). Labrador is more remote than southern Newfoundland and the opportunity for vessels to pollute unobserved may be large. The first phase of the

Prevention of Oiled Wildlife Project estimated that 60,000 to 100,000 seabirds are killed each year off Newfoundland shores due to ship-source oil discharges. That estimate has since been increased and is restricted to the Southeast coast of Newfoundland where beached bird surveys are done on a regular basis (F. Wiese pers comm.). There are no such surveys in place on the Labrador coast.

Oily bilge water. Motorized vessels burn fossil fuels and generate waste products in the course of their operation. For example, a 12,000 gross ton container vessel might generate an average of 2,800 litres of oily waste a day (Kiash and McCarter, 1997 in Canadian Coast Guard, 1998). Under the Shipping Act it is legal for the vessel to discharge this waste oil into the ocean only after diluting it to 15 ppm or less. This concentration of oil does not leave a visible sheen on the water surface. Therefore, if a sheen is visible on the water surface then the concentration of oil present exceeds the legal 15 ppm limit. If onboard facilities are unable to treat the waste it can be stored and off-loaded in port for treatment on shore. Unfortunately, in Newfoundland ports, onshore facilities for treating vessel waste oil are inadequate or expensive. Oily bilge water is frequently dumped undiluted into the sea.

Oily ballast water. The other source of marine oil pollution comes from the discharge of contaminated ballast water. Vessels with multiple storage compartments for fuel or oil cargo may manage rough sea conditions by filling empty compartments with seawater as extra ballast. This water is then contaminated with oil and when no longer needed as ballast is often discharged without treatment into the sea.

Voisey's Bay

There is the potential for a major industrial development in Northern Labrador, the proposed development of a mine and mill at Voisey's Bay. The alteration and loss of harlequin breeding habitat and changes to shipping and potential for increased disturbance and oiling of marine birds along the Labrador coast is one of the biggest challenges facing IBAs in this area.

The Voisey's Bay Nickel Company (VBNC) proposes to mine nickel, copper and cobalt from the chosen site (see Figure 7-5 for map of the site). Ore would be processed into concentrates in a mill onsite producing waste tailings of finely ground rock which would be stored under water in two tailings basins made from existing lakes. Product would be shipped out from Edward's Cove to another, to be determined, location for further processing. Shipping would begin as seasonal and evolve towards year-round.

Shipping between the site and the, as yet undetermined, mine product destination would pass many if not all of the seabird breeding islands and seaduck moulting sites designated as marine bird IBAs in the area covered by this document. However, these sites were not included in the Environmental Assessment done on shipping for the Voisey's Bay proposal (Environmental Assessment Panel, 1999).

The following is reproduced from the Environmental Assessment Panel's Report on the Proposed Voisey's Bay Mine and Mill Project.

13.1 Seabirds and Coastal Waterfowl

VBNC chose an assessment area for seabirds and coastal waterfowl that encompassed coastal areas from northern Labrador to the south and west of Lake Melville. VBNC estimated that the breeding population in this area contribute 63 percent of the geese, 25 percent of the dabbling ducks and 55 percent of the diving ducks migrating annually along the Atlantic Flyway. The area around Nain is described as the second most important seabird breeding area, representing about 13 percent of the Labrador population; an estimated 20,500 pairs of birds breed between Voisey's Bay and Anaktalak Bay and east to the offshore islands. The species involved include common murres, Atlantic puffins, guillemots, scoters, eiders and gulls. Whichever shipping route to Edward's Cove was chosen, the route would pass numerous important breeding colonies of seabirds. In addition, millions of thick-billed murres and dovekies migrate along the offshore areas in the fall.

VBNC stated that the largest potential effect on these birds would be the risk of a major oil spill. Such a spill, depending on the time of the year and the spill location, could foul breeding areas, cause oiling that could kill many breeding birds and affect many birds that stage in the area each fall. The surrounding environment could take years to recover from such an event. The Labrador Inuit Association (LIA) and Environment Canada agreed with this assessment but also emphasized the risk presented by chronic oil spills. They recommended that VBNC enlarge the assessment area to consider the entire shipping route, once the destination port has been chosen. VBNC disagreed, stating that the assessment area is large enough to encompass all Project waterfowl interactions but small enough to avoid diluting study results.

Noise from shore-based Project activities and from shipping activities near nesting sites could threaten breeding birds. There is evidence that breeding populations of some species - especially common eider, black duck, scoters, guillemots and terns - have declined during the past 20 years. One possible cause has been the decrease in food supply, especially capelin. Other factors include the use of snowmobiles and speedboats, which gives harvesters greater access to birds and increases noise disturbance; increased recreational harvesting; and environmental hazards along the Atlantic Flyway. VBNC quotes various studies that associate noise and disturbance with lower breeding productivity, but it concludes that predictable noise levels below 90 kBA have little effect and lead to habituation.

The Panel concludes that great care must be taken to protect this large and important breeding and staging area for waterfowl. It agrees that assessing the impact of Project-related shipping well beyond the Landscape Region would not be useful, due to the cumulative effects of other shipping activities. However, Project-related shipping would be a critical aspect of potential Project effects on waterfowl in the Nain area and an important part of the cumulative effects on birds along the shipping route off Labrador. Measures must be put in place to monitor these effects and to ensure that chronic or accidental effects do not sig-

nificantly contribute to stress on seabird populations.

Recommendation 62

The Panel recommends that VBNC, in consultation with Environment Canada, LIA, the Innu Nation and other interested parties, develop and implement an environmental protection and emergency response plan for seabirds and waterfowl that clearly identifies all potential Project interactions and ensures adequate protection of these areas. These plans should include consideration of all sea ducks and seabirds that migrate through the area and that come into contact with the shipping route.

Recommendation 63

The Panel recommends that VBNC, in consultation with Environment Canada and LIA, develop a vessel oily waste management plan that includes

- procedures for identifying all potential sources of chronic, relatively small discharges of oil, as well as large oil spills;
- an explicit zero-discharge goal for chronic oil pollution originating from Project vessels;
- best management practices designed to achieve zero discharge, to be reviewed regularly; and
- provisions for adequate, land-based reception facilities for oily wastes from Project vessels, at both Edward's Cove and at the reception port, including a disposal plan for such wastes.

Recommendation 64

The Panel recommends that VBNC, in consultation with Environment Canada and LIA, develop a monitoring program to evaluate the effects of noise and disturbance from passing vessels on breeding colonies. Based on the results of this program, VBNC should if necessary, develop and implement additional mitigation measures that may involve alternate shipping routes (these are addressed in Recommendation 37).

13.2.1 Harlequin Ducks

.....The EIS and Additional Information stated that the baseline information on harlequin duck distribution in the Project area came from various sources. These included a 1984 study by the Canadian Wildlife Service (CWS), a 1997 study by the Department of National Defence (DND), Aboriginal knowledge, and a series of surveys carried out by VBNC. The VBNC surveys included nine aerial surveys of breeding pairs in 1995-1997, three aerial and ground brood surveys in July and August 1996, and three aerial surveys of coastal areas in 1995 and 1996. At the hearings, VBNC provided additional information from an aerial and a ground survey carried out in 1998. The assessment area included the upstream portions of rivers that run through the Claim Block. Peak numbers in the area were 32 breeding pairs in 1997. This represents approximately 20 percent of the known individuals from Labrador surveys and 8 percent of the estimated 1988 eastern population. VBNC expects the project to displace 2 to 3 breeding pairs from the area of the North Tailings Basin and 1 to 3 pairs from Little Reid Brook, due to noise and human presence during construction.

Loss of Habitat

Environment Canada said harlequin ducks have a high adult survival rate and low breeding productivity. The population estimates are based largely on the number of individuals that winter at a very limited number of favoured locations along the eastern seaboard. If the high survival rate is accurate, then the low growth rate of the population must be the result of low productivity, thus making nesting habitat critical. Environment Canada therefore stated that a better understanding of the extent to which habitat limits the harlequin duck population is needed to assess the immediate and long-term consequences of the Project, and its contribution to cumulative effects. It also indicated that the effectiveness of a habitat replacement or relocation program would depend on the loyalty of breeding birds to nesting sites.

The most evident and irrevocable loss of harlequin duck habitat would take place in the brook that drains the North Tailings Basin. This brook is one

of the most productive harlequin duck breeding areas in the area (20 percent of broods). Environment Canada stated that disturbance and the loss of invertebrate populations caused by damming lake outflow would likely render the brook unsuitable for harlequin ducks even after it is rehabilitated. It strongly recommended that VBNC eliminate the North Tailings Basin by backfilling the open pit or using an alternative lake (Option 5).

Environment Canada also commented that VBNC made little attempt to identify the extent to which harlequin ducks use coastal areas, and that it should carry out extensive surveys to ensure that environmental protection and emergency response plans take sensitive coastal habitats into consideration.

VBNC states that the Project would probably result in a net loss of habitat; however, this loss does not appear to be a critical limiting factor for this population. The company predicts that breeding pairs would move to adjacent habitat, with the possible but not inevitable loss of one breeding season. Temporary loss of productivity in the North Tailings Basin area would not have a significant effect. VBNC indicates that the proposed phased approach to tailings disposal in the North Tailings Basin would give the company an opportunity to examine mitigation measures to ensure that brooding pairs are placed in alternate habitat without loss of production.

VBNC stated that the program to examine harlequin duck distribution has lasted four years and will continue. In addition, coastal habitat has been surveyed and harlequin ducks were encountered only once. While the availability of suitable habitat does not appear to be a limiting factor, VBNC would work with other stakeholders to identify and implement mitigation measures to relocate harlequin ducks within the Claim Block. If necessary, it would consider creating or restoring habitat.

Additional Breeding Disruption

VBNC indicated that other factors could potentially disrupt the breeding productivity of harlequin ducks.

The company would need to install culverts across several streams to provide road access to port and tailings facilities, but harlequin ducks do not swim through culverts. VBNC states that harlequin ducks have not been observed along any of the streams to be crossed. It would consider installing bridges if it found harlequin ducks near a stream crossing.

In accordance with the precautionary approach, Environment Canada recommends that, when VBNC is designing and siting roads and other facilities parallel to a watercourse, the company be required to maintain a minimum buffer distance of 100 m in areas that could provide breeding or brooding habitat for harlequin ducks. VBNC would work with CWS to identify places requiring a buffer and would leave room for buffers where practicable.

Genetic Studies

Participants also discussed the importance of defining to which population the birds breeding near Voisey's Bay belong: the one that winters in Greenland or the one that winters on the eastern seaboard. This would help parties identify the potential cumulative threats to the eastern population. Environment Canada recommended that VBNC be required to undertake a study, using telemetry or genetics, to determine the population affinity of the birds in the Voisey's Bay area.

VBNC believes that CWS can best answer the population question and that the question is not an appropriate component of the monitoring framework. The Panel agrees that it would be best if CWS scientists did such a study, in conjunction with VBNC's monitoring program. The Panel notes that, according to reports from the Cheviot Project, such research should be done cautiously. Researchers tried radio telemetry at that site, but monitors fixed to feathers were lost when the birds molted. Surgical implantation of the transmitters apparently led to bird mortality.

Conclusions and Recommendations

The Panel concludes that the Project would place an additional cumulative burden on harlequin ducks and could permanently remove breeding habitat. No existing legislation prevents this removal of habitat or requires habitat replacement.

The Panel notes, however, that the first three aspects of the recovery strategy, described in the National Recovery Plan for the Harlequin Duck in Eastern North America (RENEW Report No. 12, March 1995), are as follows:

- scientific research into reproductive, feeding and behavioral ecology;
 - population monitoring, including sex and age ratios; and
 - habitat protection, including an assessment of factors that affect habitat quality.
- The Panel believes that VBNC could provide important data to the recovery program from its ongoing monitoring programs and research into mitigation measures. In addition, VBNC could make research in the Landscape Region invaluable to the success of the recovery program by providing financial or logistical support to CWS scientists. Such aid could well result in the development of practical measures to replace habitat, both in the assessment area and elsewhere, well beyond the two to three breeding sites that the Project would place at risk.

In addition, DND and others continue to evaluate the effects of low-level flying on the harlequin duck population. The number of breeding pairs recorded as part of that monitoring program suggests the breeding population may have been underestimated. Additional work will be carried out in relation to the proposed hydro developments on the lower Churchill River. Combining the results of that research with research from the Project could well provide an understanding of the population dynamics of the harlequin duck that will be vital to success of population recovery efforts.

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Recommendation 65

The Panel recommends that VBNC develop an ongoing research and monitoring program for harlequin ducks in the Project area, in consultation with the Canadian Wildlife Service and other interested parties, to better understand the physical, biological and chemical attributes of harlequin duck habitat and to refine an effective mitigation and monitoring strategy.

Recommendation 66

The Panel recommends that VBNC incorporate the following measures into its environmental protection plan in order to protect harlequin ducks and their habitat:

- *construction standards and procedures that require bridges instead of culverts for crossings of waters frequented by harlequin ducks (harlequin duck nest surveys should be carried out 100 m upstream and 100 m downstream of each potential stream cross-*

ing site to ensure a minimum separation zone);

- *design standards that ensure appropriate buffer zones between roads and streams that provide harlequin duck habitat, where physically achievable; and*
- *procedures to control dust and noise in critical habitat areas.*

Recommendation 67

The Panel recommends that VBNC collaborate with Environment Canada, the Department of National Defence, the Province of Newfoundland and Labrador, and other relevant parties to integrate the methodologies and results of VBNC's on-site harlequin duck monitoring program with those of other monitoring programs or studies related to present, proposed or future developments in Labrador, to ensure valid assessment of the cumulative effects of the Project, including shipping activities.

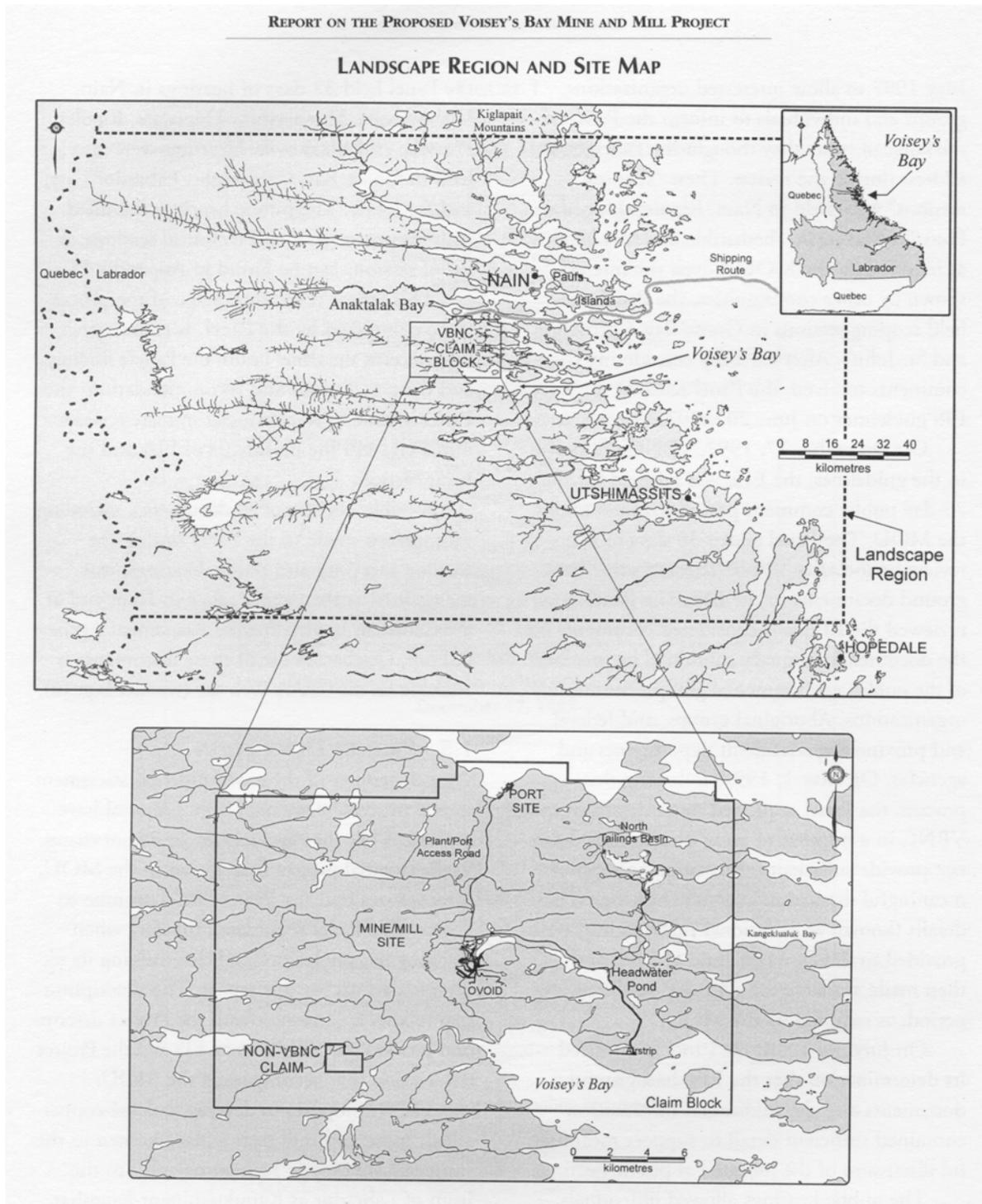


Figure 7-5: Map of Proposed Voisey's Bay Mine and Mill Project from the Environmental Assessment Panel Report March 1999

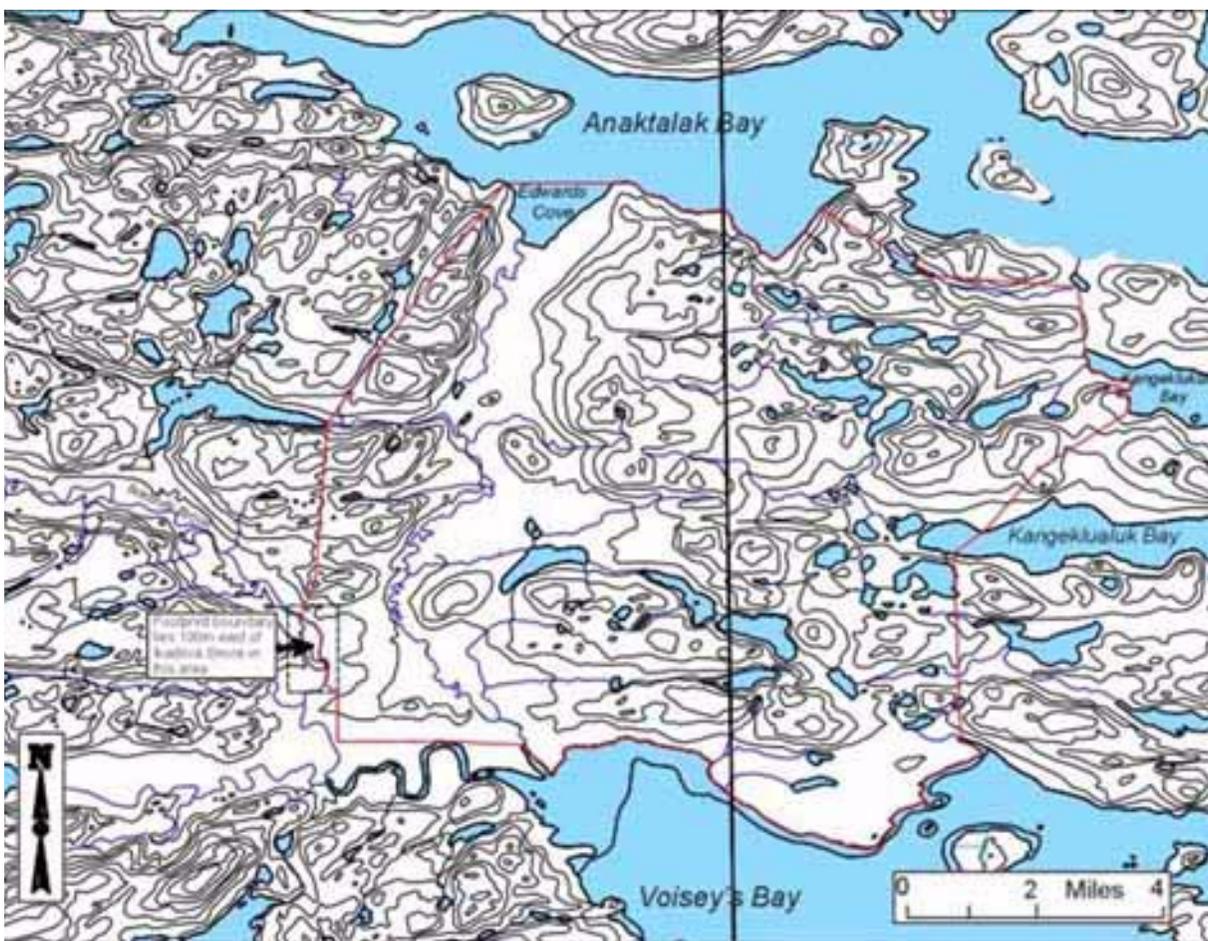


Figure 7-6: Map of proposed location for Voisey's Bay Mine/Mill Project

Offshore Oil & Gas

Offshore oil and gas activity in Newfoundland and Labrador is over-seen by the Canada-Newfoundland Offshore Petroleum Board (CNOBP). The CNOBP has a mandate to facilitate offshore oil and gas exploration and development as well as regulate the industry for the protection of the public interest. The CNOBP therefore may find itself, by design, in a conflict of interest over which objective should take priority. The public interest is affected by the costs and benefits associated with industry activity. The predicted costs of relevance to seabird conservation include contamination of the food web, sub-lethal and lethal effects of chronic operational marine pollution, incineration of birds attracted to offshore platform gas flares and risk of accidental spills of oil and other pollutants.

While the Hibernia, Terra Nova and White Rose Environmental Impact Assessments and Public Review Panels singled out marine birds as the ecosystem component most vulnerable to offshore oil and gas activity, a huge information gap persists regarding estimates of the numbers of marine birds that breed in the province and/or moult or winter in waters off our shores. The area of the Grand Banks where offshore oil and gas activity is concentrated overlaps with areas of seabird feeding concentrations. In addition, much of the oil from the Grand Banks is shipped in tankers to the transshipment facility at Whiffen Head, Placentia Bay. In winter these shipments pass through Placentia Bay IBA sites of importance to wintering seaducks, perhaps some of the same sea ducks that breed and/or moult during the summer in this part of Labrador.

Labrador itself, is a quiet spot in the offshore oil and gas activity currently ongoing in the province. There is no local activity directly adjacent to any of the IBA sites so far confirmed for this area. However there is some history of exploration activity offshore. See Figure 7-7.

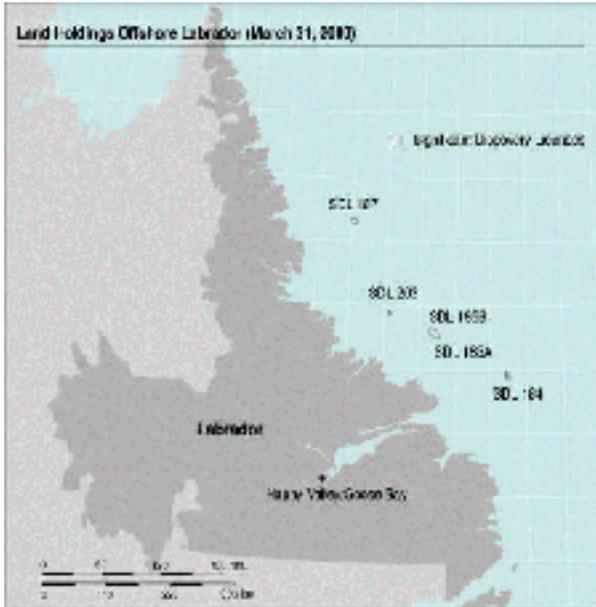


Figure 7-7: Exploration licenses held on the Labrador coast, adapted from CNOPB website (<http://www.cnopb.nfnet.com/>)

While there is no imminent development activity expected for the Labrador coast offshore sites the process by which the oil industry gains rights to an area is currently designed to minimize the influence of environmental considerations until development applications are applied for. By that time sufficient capital has been invested in moving a project forward that the question on the table is not “Should oil and gas activity occur in this area” but rather “how should oil and gas activity occur in this area”.

The environmental review of development applications in Newfoundland and Labrador’s offshore (i.e. Hibernia, Terra Nova and White Rose) has focused on questions of project design rather than the question of whether an area should be subjected to such activity in the first place. This is a conse-

quence of the current design of the Rights Issuance Regime by which industry acquires rights to offshore property.

The first potential at the moment for public input into what areas are subjected to oil and gas activity is when parcels of land are put up and bids invited from industry with an interest in acquiring exploration rights to the properties. The highest bidder wins. A condition of the lease is that exploration wells be drilled and a minimum amount of money be spent conducting exploration for commercially exploitable oil and gas deposits. This drilling activity and capital investment precedes any public environmental assessment process

For those birds that spend part of their year near offshore oil activity on the Grand Banks the current Waste Treatment Guidelines (which are currently under review) allow 15% by weight of oil associated with drill cuttings to be disposed of into the ocean. This 15% is not an instantaneous measure but a 48 hour weighted average. So sheens of oil lethal to birds can currently be created in compliance with the Waste Treatment Guidelines. The status quo therefore, does not prevent the legal discharge of operational waste containing concentrations of oil sufficient to kill seabirds.

Regarding the newer synthetic based drilling fluids (SBMs) and their effect on seabirds, the working assumption is that SBMs have the same physical “hole in the wet suit” effect as any oil based drilling fluid (OBMs). The purported low toxicity of SBMs thus becomes an academic point regarding potential seabird mortality in the cold water environment of the Northwest Atlantic. Regardless of any differences in toxicity, SBMs are potentially as lethal for seabirds frequenting oil installations as OBMs (D. Burley, pers. comm.).

7.7. Hydro-electric Development in Harlequin Duck Breeding Territory

In 1972 the Churchill Falls hydroelectric complex dramatically changed the face of Labrador when it diverted several major watersheds and flooded an area the size of 6,527km². On a map of Labrador the Smallwood Reservoir looks like an inland sea.

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The environmental affects of this massive alteration of the landscape are unknown.

In 1978 the Lower Churchill Development Act: An Act to Facilitate the Development of the Hydro-Electric Power Potential of the Lower Churchill River was signed. The Newfoundland and Quebec governments planned to expand the initial Churchill Falls project to the Lower Churchill River. In 1998 the Premiers of Quebec and Newfoundland announced that the two provincial utility companies were negotiating an agreement to construct the Lower Churchill project. It was to be the second largest hydro-electric generating station in the world.

The bulk of the power from the proposed Lower Churchill project would be sold throughout North America. The development of this project has potential to effect Harlequin Ducks nesting on affected rivers. A power line would transport power to insular Newfoundland with two others linking northern and southern Quebec

On November 10, 2000 provincial Energy Minister Paul Dicks confirmed that Quebec will not be a partner in developing Churchill Falls hydropower

and that the size of the project would have to be scaled back from one costing twelve billion dollars, to four billion. In July, 2001 Alcoa a large producer of primary aluminum and fabricator of aluminum and alumina, along with the Government of Newfoundland and Labrador, and Newfoundland and Labrador Hydro Corporation, undertook a joint feasibility review of developing the Lower Churchill Hydro Project and establishing aluminum processing facilities in the province. The future of the project is uncertain.

If the project were to proceed, some Harlequin Duck breeding habitat could be lost. Harlequin Ducks return to the same river to breed year after year. We do not know what breeding adults do if they lose their river. Some of the Harlequins moulting at sites such as the Gannet Islands may breed on rivers potentially affected by the Lower Churchill hydro-electric plans (P. Thomas pers. comm.). In addition, should the Lower Churchill project proceed in conjunction with an aluminium smelter in the area, industrial shipping activity would likely increase substantially as such an industrial complex could create spin-off developments resulting in significant increases in industrial activity around Lake Melville.

7.8. NATO Low Level Flight Training

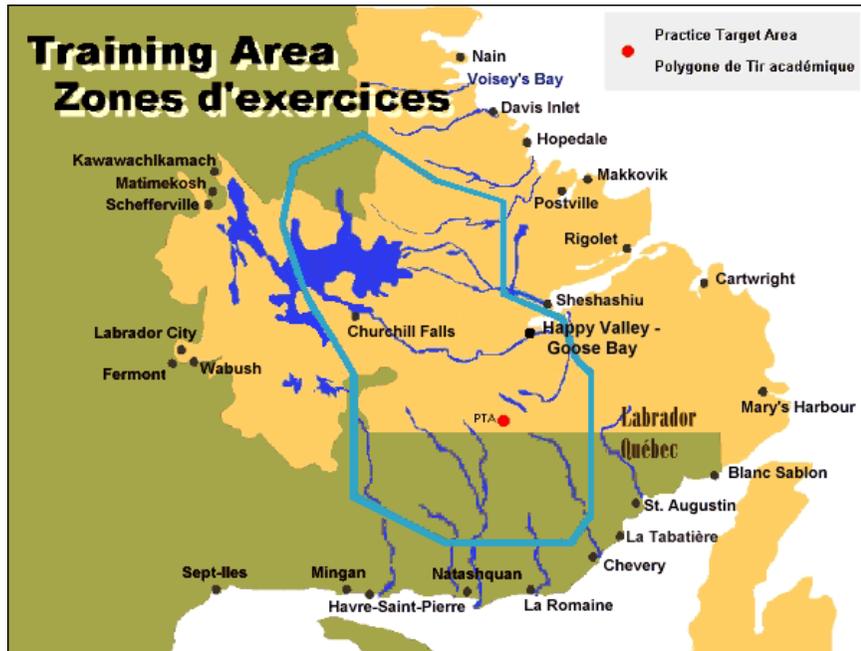


Figure 7-8: Map showing the outer boundaries of the NATO low level flight training area (see text)

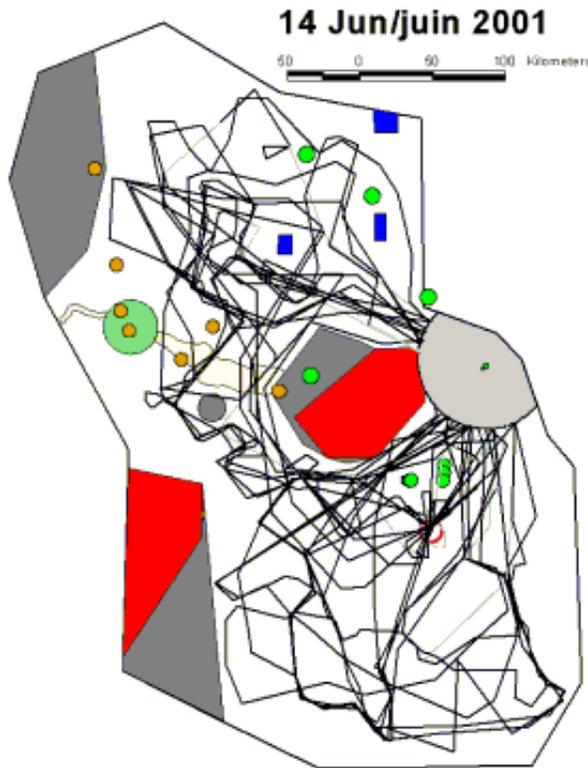


Figure 7-9: Example of a Flight Track Compliance Monitoring Map from DND website (see text)

Since the early 1980's the Department of National Defence (DND) has managed a low-level flight training program in Labrador on the Quebec/Labrador Peninsula. NATO allies use this program to train pilots by flying military jets at low altitude through an area of roughly 130,000 km² (see Figure 7-8 for location of flight training area). Some areas considered sensitive to disturbance by the flights are designated as exclusion zones (see Figure 7-9 for an example of a map indicating areas to be avoided by overflights on a given day).

Legend for sample Exclusion Zones depicted by Figure 7-9:

Low level flight tracks are shown in black; lighter colored tracks indicate higher altitudes and are therefore clear of any avoidance restrictions.

- Red = Caribou
- Orange = Raptors
- Blue = Waterfowl
- Green = Human
- Grey = Miscellaneous

The history of the military low level flight training program in Labrador has been controversial. Low level flight training overlaps both in time and space with breeding waterfowl. The impacts of conducting such activity over what is potentially the heart of the breeding grounds for eastern Canadian populations of Harlequin Ducks and scoters not to mention many other waterfowl, is unknown. Seaducks breeding in the interior of the Quebec/Labrador Peninsula migrate to coastal sites to moult and out of Labrador all together to spend the winter elsewhere. For this reason, sites designated elsewhere as IBA sites because of the importance of the sites to these ducks when staging, moulting or wintering must realize the greater ecological context within which a particular IBA is nested and connect the importance of a given IBA site to the needs of marine birds when they are elsewhere.

(http://www.goosebay.org/website/area_avoidance/avoidance_intro_e.html)

The following background summary is reproduced from the Mitigation Orders issued by the Chief of the Air Staff National Defense Headquarters July 2000:

Environmental and Assessment Review Process (EARP)

Background

In 1986, the Minister of National Defence (MND) requested the Minister of the Environment to conduct a public environmental assessment of both the existing training activity and the NATO training centre proposed for Goose Bay. The Federal Environmental Assessment and Review Office (FEARO) appointed a review panel to issue guidelines and conduct the review process. As the proponent, DND prepared an Environmental Impact Statement (EIS) which described the project, assessed the potential environmental effects and proposed appropriate mitigation measures.

An initial EIS released in 1989 was found unsuitable by the Panel as the basis to proceed to public hearings and was cited with 38 information deficiencies. Shortly thereafter, the MND established a Project Management Office in NDHQ with a mandate to usher the project through the review process and to promote a long-term allied commitment

to the facilities in Goose Bay. Although at the same time NATO cancelled the requirement for a NATO training base, DND opted to continue with the EARP with a view to ensuring that future Military Training would be conducted in an environmentally sound manner.

The revised 1994 EIS was accepted by the Panel, allowing public hearings to proceed throughout the region later that year. The Panel issued its report in February 1995 containing 58 recommendations, all of which were either fully or partially approved by Cabinet Committee and released as Government Decisions in May 1995. The most significant results included:

- approval of the training activity and its controlled growth;
- an independent environmental Institute; and
- reconfiguration of the training area

Before formally establishing the Institute, Government directed that a facilitator be appointed to further consult with all parties and issue a report of findings. In addition, before approving the extension of Foreign Military Training in Goose Bay, Government wished to review the results of the international negotiations for the renewal of the MOU which expired in 1996. Both these reports were submitted to Cabinet, resulting in a second series of Government decisions in December 1995 which approved the new MOU and addressed the specific recommendations of the facilitator regarding the structure and operation of the Institute.

The full document from which the above is excerpted can be viewed at the following website: (<http://www.goosebay.org/website/library/report/MOs.pdf>)

Recently the Institute for Environmental Monitoring and Research (IEMR) contracted the Société Duvetnor Ltée to critically review 14 technical documents and assess their usefulness in evaluating the impact of low level training flights on waterfowl populations. In its conclusions their report quoted the 1994 environmental impact assessment as stating that “the knowledge of water-

fowl in Labrador was less than adequate for waterfowl management as well as for mitigation of any effects of jet overflight.” Duvetnor concluded that this was still true in 2001. The review observed that most of the government or consultants reports that they reviewed did not meet the standards required to reach the primary peer-reviewed scientific literature. In discussing the difficulties of designing experimental designs for ecological research that would measure the effects on waterfowl of low level flights this review concluded that such designs were not possible to implement and therefore recommended an alternative but more realistic approach.

In this context, we favor a very different approach to the problem of mitigating impacts of these flights upon the waterfowl community. Using existing knowledge about the requirements of the various species in terms of habitat requirements and timing of the breeding season, it would probably be possible to pinpoint sensitive areas that should always be excluded from overflights without developing an experimental program whose outcome is questionable from the start. A precautionary approach in this context seems appropriate to us and is legitimate in view of the existing body of knowledge about the response of these animals to disturbance. (Duvetnor 2001)

http://www.iemr.org/pdfs/Duvetnor_eng.DOC

While DND and the IEMR are engaged with others in monitoring the effects of low-level overflights on wildlife it must be pointed out that flight track compliance monitoring is currently done on the basis of verbal reports filed by pilots on their return from each flight training exercise and flight track compliance is conducted by the proponent themselves. There is currently no independent verification process in place for monitoring flight track compliance data.

7.9. Forestry

Forestry operations have the potential to effect Harlequin Duck breeding habitat both directly through the removal of nesting sites and indirectly. Indirect effects can result from forestry induced changes to the hydrology of breeding rivers and increased disturbance in an area through the building of roads which increase access by humans. Plans to pursue industrial scale forestry in Labrador are anticipated to escalate over the next few years. In addition to the potential for habitat alteration, increased commercial forestry would likely be associated with an increase in shipping activity passing by the marine bird IBA sites covered by this document.

Chapter 7: Conservation Concerns

8. IBA Conservation Resources

This document aims to facilitate the building of partnerships for marine bird conservation activities at all levels: international, national, provincial, and local to conserve IBA sites for both the birds and the people that benefit from their continued existence. Following are some suggestions for sources of potential partners, funding and communication opportunities. For potential project ideas see Chapter 9. This information is in no way exhaustive. This document is intended as a starting point only. It is meant to evolve through amendment and review by those using it.

8.1. Organizations Delivering the IBA Program

BirdLife International (BL)

A pioneer in its field, BirdLife International (BL) is the first non-government organization dedicated to promoting worldwide interest in and concern for the conservation of all birds and the special contribution they make to global biodiversity. BirdLife operates as a worldwide partnership with one, or in Canada's case two, lead organizations in each country. These organizations provide a link to on-the-ground conservation projects that involve local people with local expertise and knowledge. Since 1993, lead organizations from more than 40 countries have become full BirdLife partners.

Countries with a BirdLife partner or partner-designate in the Americas include Argentina, Belize, Bolivia, Canada, Chile, Ecuador, Paraguay, the United States and Venezuela. Other countries with non-voting representative organizations include the Bahamas, Cuba, El Salvador, Honduras, Mexico and Uruguay.

The Canadian Nature Federation (CNF)

The Canadian Nature Federation is a national conservation organization with a mission to be Canada's voice for the protection of nature, its diversity, and the processes that sustain it. Initially established as the journal *Canadian Nature* by Reginald Whittemore in 1939, it evolved into a membership organization and became the Cana-

dian Audubon Society in 1948. After consulting with members, the Society assumed a broader conservation mandate and became the Canadian Nature Federation (CNF) in 1971.

The CNF is Canada's voice for the naturalist community and works closely with its provincial, territorial and local affiliated naturalist organizations, to directly reach 100,000 Canadians. The strength of CNF's grassroots naturalists' network allows it to work effectively and knowledgeably on national conservation issues that affect a diversity of ecosystems and human populations in Canada. The CNF also works in partnership with other environmental organizations, government and industry, wherever possible. The approach is open and cooperative while remaining firm in CNF's goal of developing ecologically sound solutions to conservation problems.

The CNF's approach is based on the philosophy that natural ecosystems are vital to humans and a healthy planet. The organization's conservation programs strive to protect Canadian biodiversity. Rather than focus on one species or one region, the CNF's programs ensure all types of landscapes, habitats, animals and plants are protected. Success comes from a two-pronged strategy of protecting vulnerable ecosystems and promoting ecologically sound land, water and wildlife management policies.

Long Point Bird Observatory (LPBO) and Bird Studies Canada (BSC)

Founded in 1960 to monitor bird migration, the Long Point Bird Observatory (LPBO) was the first observatory of its type in North America and is still the only one with year-round staff in Canada. LPBO is committed to involving Canadians in the conservation of birds and their habitats. LPBO conducts its national and international programs through Bird Studies Canada (BSC).

Since its founding, LPBO's program has grown and developed considerably. Its principle focus is still bird population monitoring and research on bird migration but the Observatory now runs many other programs as well, including education and province-, nation- and continent-wide surveys of

bird populations. Amongst these are the Canadian Lakes Loon Survey, Project FeederWatch, Christmas Bird Counts and educational and site survey work in Latin America, Ivory Coast and Malaysia. In addition, LPBO conducts research into other aspects of natural history and applied conservation management. The Observatory has a special interest in promoting the participation of amateurs and volunteers in research, believing that many people working together can accomplish a great deal more than could a few professionals working alone.

These philosophies made CNF and LPBO/BSC logical choices to become BirdLife International's Canadian partners in September 1993.

The Natural History Society of Newfoundland and Labrador (NHSNL)

The NHS is a province-wide organization whose primary interest is promoting the enjoyment and protection of all wildlife and natural history resources in Newfoundland, Labrador and surrounding waters. The NHSNL is a broadly based group with a well-established network of local contacts around the province. Approximately one third of members are avid birders, including ornithologists employed by Memorial University and by the federal and provincial governments. The Society sponsors a monthly lecture series, an outdoor program, publishes a quarterly journal (*The Osprey*), recognizes individual contribution to the well-being of the natural resources of the province through the Tuck-Walters award and the Wild Things Scholarship, and makes representations to municipal, provincial, and federal governments concerning projects and events that affect our natural environment as they arise. The Society was a lead intervener in the Terra Nova and White Rose offshore oil development environmental assessments, mainly due to their concern for the risks to seabirds. The Society continues to be a strong proponent of conservation and protection.

8.2. Labrador Aboriginal Organizations

The Labrador Inuit Association (LIA)

The LIA is a non-profit organization formed in 1973 and incorporated under Newfoundland law in

1975. The LIA is affiliated with the Inuit Tapirisat of Canada (ITC) and represents roughly 4,000 Inuit living mainly in the five coastal Labrador communities of Nain, Hopedale, Postville, Makkovik and Rigolet. In 1977 the LIA filed a statement of land claims with Canada. In June, 2001 the LIA, the Canadian and the Newfoundland governments signed the Labrador Inuit Land Claims Agreement-in-Principle (AIP).

The AIP provides for the Inuit to establish protected areas on lands where it has jurisdiction. Within the settlement area off Inuit lands the Inuit and government will establish protected areas (including marine protected areas) in the context of the co-management regimes established through the agreement.

Several of the sites designated as IBAs for marine birds covered in this document are within the LIA Land Claims area.

(<http://www.nunatsiavut.com>)

The Innu Nation

The Innu of Labrador live in the communities of Sheshatshiu and Utshimassit (Davis Inlet). They are represented politically by the Innu Nation, which first filed land claims with the Canadian Government in 1977. In 1990 the provincial and federal governments accepted the Innu Statement of Claim and in 1999 the three parties reached an agreement in principle on the next steps in the process. Several of the IBA sites covered here are adjacent to if not part of lands claimed by the Innu Nation.

The Innu Nation employs an environmental advisor and maintains a special involvement in following the development of low-level flight training by NATO allies in Labrador, the development of the Lower Churchill, National Parks, highways and forestry and Voiseys Bay.

(http://www.innu.ca/the_innu.html)

Labrador Métis Nation

Residents of Labrador descended from both Europeans and Inuit and living from Lake Melville south to the Strait of Belle Isle are known as Métis.

In 1982 the Canadian Constitution Act included Inuit, Indians (First Nations) and Métis as aboriginal peoples. The Labrador Métis Association was formed in 1985 to represent roughly 5000 members and in 1998 took the name Labrador Métis Nation. In 1991 the Labrador Métis Nation submitted a land claim to the Government of Canada. In 1998 the Department of Justice recommended that the Department of Indian Affairs and Northern Development (DIAND) reject the Métis claim. On February 24, 2001, an Ontario Court of Appeal recognized the Métis as a distinct people with constitutional rights comparable to other aboriginal groups. The Labrador Métis Nation land claim area includes all of the IBA sites identified here. (<http://www.labmetis.org/>)

8.3. Government Departments and Programs of Relevance to Marine Birds in Newfoundland and Labrador

8.3.1. Federal Government Departments

Environment Canada

Atlantic Region Sensitivity Mapping Program

The National Sensitivity Mapping Program (NSMP) was a Green Plan initiative established in 1991 and managed interdepartmentally. The need for improvement in marine spill response capability, in particular the development of a Canada-wide sensitivity mapping system, was documented in a number of government and public reviews undertaken following the EXXON VALDEZ and NESTUCCA oil spills. A coordinated program was required to develop maps of vulnerable resources in order that the Regional Environmental Emergency Team (REET) could respond quickly and effectively to marine pollution emergencies.

Each region in Canada manages their own sensitivity mapping program. These regional programs follow national standards developed through the national program in order to be consistent across the country.

The Atlantic Region program is primarily a computer based system offering a variety of coastal information useful to environmental responders

developing their clean-up and protection plans. A software interface has been developed to make the system more interactive with the user. In addition to digital data, paper atlases are also being prepared.

In order to facilitate the distribution of the Atlantic Region Sensitivity Mapping Program (ARSMP), Environment Canada Atlantic Region has become a licensed distributor of digital base maps. The ARSMP uses the Natural Resources Canada digital series of base maps at a scale of 1:50,000 and 1:250,000. Different scales are essential to represent specific information: the system uses 1:50,000 for accurate depiction of fish and shellfish habitats, human & biological resources, shoreline protection, etc. Maps at 1:250,000 and 1:1,000,000 are mainly used to show locations or to represent regional information such as mammal distributions.

Once all the base maps are available, data collection has become the next step: biological resources, physical and human-use resources, small craft harbour infrastructure plans & photos, videos of the Atlantic coastline taken from an helicopter, bird photographs, etc.

A user interface has been developed to provide a system which allows easy access to information with minimal training. The Atlantic region has been subdivided into 16 sub-regions. This allows the user and the computer to speed-up the process of searching for data. Once the user interface and the databases are integrated, each sub-region will have its own CD with all the information related to it. For example if there is a spill somewhere in region #3, the user can load this CD on a PC or a portable computer and access all the information desired.

(<http://www.ns.ec.gc.ca/>)

Canadian Wildlife Service (CWS)

The management of wildlife in Canada is shared by the federal, provincial, and territorial governments. The Canadian Wildlife Service of Environment Canada handles wildlife matters that are the responsibility of the federal government. These include protection and management of migratory

birds as well as nationally significant wildlife habitat. Other responsibilities are endangered species, control of international trade in endangered species, research on wildlife issues of national importance, and international wildlife treaties and issues. As part of its responsibility to manage migratory birds, the Canadian Wildlife Service consults with provinces and territories and issues annual migratory game bird hunting regulations.

By and large, provincial and territorial wildlife agencies are responsible for all other wildlife matters. These include conservation and management of wildlife populations and habitat within their borders, issuing licenses and permits for fishing, game hunting, and trapping, guidelines for safe angling and trapping, and outfitting policies See also Section "Management Regime" on page 78.

There are three Migratory Bird Sanctuaries in the province, Ile aux Canes / Green Island (150 hectares), Shepherd Island (16 hectares) and Terra Nova (870 hectares). There are no National Wildlife Areas in the province of Newfoundland and Labrador.

Gazetteer of Marine Birds in Atlantic Canada: An Atlas of Seabird Vulnerability to Oil Pollution

The Gazetteer is based on the Canadian database of seabird counts called PIROP (Programme Intégré de Recherches sur les Oiseaux Pélagiques) owned by CWS. It uses maps to graphically depict the distribution of seabirds in Atlantic Canada at various times of the year. Several of the figures in this document are images from the Gazetteer. The hardcopy version of the Gazetteer is out of print but there is a CD-Rom version available from Environment Canada in Dartmouth, N.S.

PIROP (Programme Intégré de Recherches sur les Oiseaux Pélagiques)

PIROP is a data collection scheme started by R.G.B. Brown of the CWS and Paul Germaine of the Université de Moncton in 1989. Most of the records in the PIROP database were generated by Brown over the course of his long career at CWS. Observations can be collected following the

PIROP methodology on ships of convenience by trained volunteers and there is huge potential to contribute to the monitoring of marine bird distributions by contributing to this database.

Other CWS Programs

For more information on bird related CWS activities visit the following page: http://www.cws-scf.ec.gc.ca/th02_e.cfm where, among others, you can visit the sites listed below.

Canadian Atlas of Bird Banding
Canadian Bird Banding Office
Canadian Bird Conservation Program
Canadian Bird Trends database
Canadian Bird Trends Newsletters
Canadian Landbird Monitoring Strategy
Committee on the Status of Endangered Wildlife in Canada - (COSEWIC)
CWS Migratory Birds Regulatory Report Series
Environmental assessment guideline for forest habitat of migratory birds
Hinterland Who's Who series
Migratory Bird Populations Division
Migratory Birds Convention Act and Regulations
Migratory Birds Environmental Assessment Guideline
North American Waterfowl Management Plan - (NAWMP)
Oil Pollution and Birds (Hinterland Who's Who)
Partners in Flight Canada
Pesticides and wild birds (Hinterland Who's Who)
Species at Risk
Wildlife Toxicology Division
Bird Trends - (Atlantic Region)
Endangered Species - (Atlantic Region)
Migratory Birds - (Atlantic Region)
Oil Spill Response Plan - (Atlantic Region)
Wildlife Smuggling - (Atlantic Region)

Department of National Defense, The Goose Bay Office, Ottawa

The Goose Bay Office (GBO) is a component of the Chief of the Air Staff at National Defence Headquarters in Ottawa, Canada. It is assigned the task of developing policy and ensuring proper management of the military training program and of

related environmental measures conducted from Goose Bay, Labrador.

(<http://www.goosebay.org/>)

Parks Canada

Marine Conservation Areas Program

Parks Canada is responsible for National parks and National Historic Sites. They are also responsible for establishing a national system of marine protected areas under the title National Marine Conservation Areas (NMCA) Program. Twenty-nine marine regions have been identified for representation. No NMCAs within Newfoundland and Labrador have yet been established.

In Labrador:

Two representative marine areas have been identified: Nain Bight and Hamilton Inlet. Selection of the preferred site for consideration as a possible national marine conservation area is the next step. (For details on the establishment process, see The NMCA Program.)

(<http://parksCanada.pch.gc.ca/nmca/nmca/atlantic/labrador/index.html#3>)

Gros Morne National Park Migration Monitoring Station

Located on the west coast of insular Newfoundland, this migration monitoring station is part of the Canadian Migration Monitoring Network supported by Bird Studies Canada and is the only such station in Newfoundland and Labrador. Operated by Parks Canada, the migration monitoring site is located in a spruce/tamarack bog and spruce headland. The operation here is fairly new (since 1998) and is still in the pilot phase.

Transport Canada Atlantic Region

Transport Canada is responsible for the following Marine Policy, Legislation and Regulations:

- Canada Marine Act
- Canada Shipping Act (CSA)
- Marine Safety Information
- National Marine Policy and Regulations
- Marine Acts and Regulations

- Harbours & Ports Annual Reports
 - Port State Control Annual Report
- (<http://www.tc.gc.ca/en/menu.htm>)

Canadian Marine Advisory Council (CMAC)

Transport Canada is also the home of the Canadian Marine Advisory Council (CMAC). CMAC is a forum for consultation with its stakeholders on safety, navigation, and marine pollution. The membership includes commercial shippers, fishers, recreational boaters, unions, other levels of government and other federal departments. CMAC is jointly coordinated and chaired by senior members of the Department of Transport, Safety and Security and the Department of Fisheries and Oceans, Canadian Coast Guard.

Fisheries and Oceans Canada; Science, Oceans and Environment Branch

DFO plays a central role in human interactions with the Northwest Atlantic. While their main focus has been to provide research and development support for commercial fisheries and they have no staff earmarked to think about marine birds, DFO could play a leading role in the maintenance of ocean and marine bird health and they are clearly mandated to do so. They also offer huge potential as a logistical resource.

The Science, Oceans and Environment (SOE) Branch provides scientific information on wild marine resources from Cabot Strait at the entrance to the Gulf of St. Lawrence eastward to Flemish Cap and northward to Davis Strait. They are also involved in aquaculture, environmental sciences, habitat protection and Oceans Act implementation through such things as Marine Protected Areas (MPA's) and Integrated Management (IM). The Branch's Hydrography Division produces marine navigation charts.

(<http://www.nwafc.nf.ca/sealane/index.htm>).

DFO operates several research vessels; the WIL-FRED TEMPLEMAN, a 50m stern trawler, the TELEOST, a 63m stern trawler, and a smaller vessel, SHAMOOK (23 m), used for inshore studies.

(<http://www.nwafc.nf.ca/sealane/Divisions/Oceans/index.htm>)

The Program for the Conservation of Arctic Flora and Fauna (CAFF)

CAFF aims to conserve the biodiversity and habitats of Arctic flora and fauna and to develop improved conservation management, laws, regulations and practices for the Arctic.

(<http://www.grida.no/caff/about.htm>)

CAFF Circumpolar Seabird Working Group (CSWG) CAFF Seabird Projects

The CAFF Circumpolar Seabird Working Group (CSWG) meets annually and publishes the Circumpolar Seabird Bulletin. The CSWG monitors population trends of several seabird species and has shown a general decline in murre and eider populations. The CSWG has identified the main causes

for steady population declines in some seabird species as heavy hunting pressure; mortality in commercial fishing operations; human disturbances at seabird colonies (development activities, shipping, tourism) and oil pollution.

The CSWG is developing a Circumpolar Seabird Colony Database to record and compare data and trends on shared species and to address basic population questions that cannot be answered relying solely on individual national databases. It will also allow the international importance of colonies to be determined and help predict impacts of human activities at a circumpolar scale.

The Seabird Group is designing a circumpolar seabird monitoring network to provide more accurate data on population, productivity, distribution and status of seabirds at the polar level. It will be built on current national monitoring efforts.

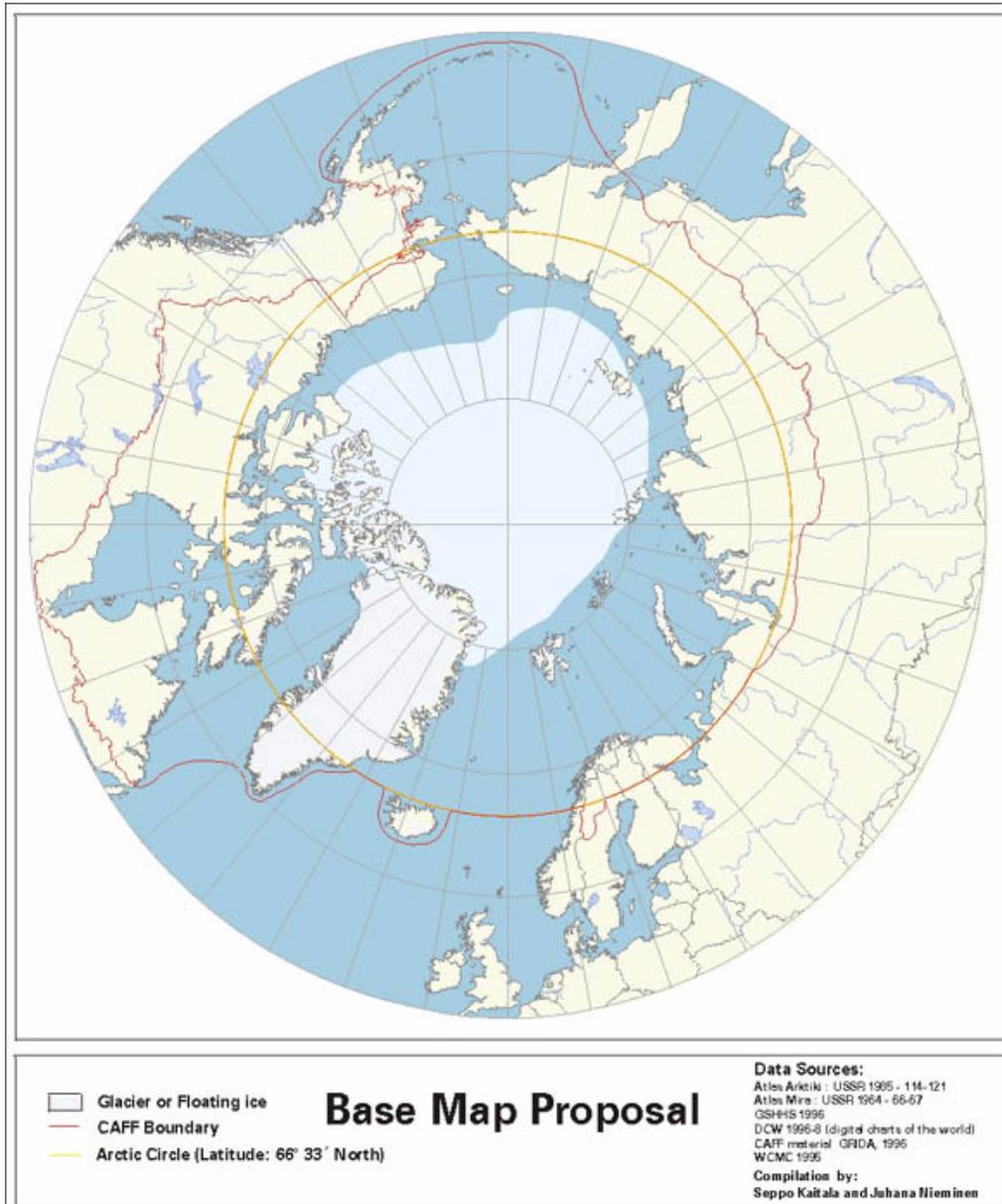


Figure 8-1: Map showing CAFF area boundaries adapted from CAFF website (<http://www.grida.no/caff/images/basemap.jpg>)

U.S. Geological Survey (USGS)

The Biological Resources Division (BRD) of the USGS is developing partnerships with countries around the globe to share biological data and information; develop and standardize methodologies for biological inventory, monitoring, and

research; and to offer training and technical assistance to facilitate scientific exchange. Emphasis is on collaboration with nations that share biological resources, have similar ecosystems, or are addressing conservation issues of importance to the United States.

(<http://biology.usgs.gov/>)



Figure 8-2: Map of Wilderness and Ecological Reserves in Newfoundland and Labrador (<http://www.gov.nf.ca/parks&reserves/map.htm>)

8.3.3. Provincial Government Departments

Department of Tourism, Culture and Recreation

Parks and Natural Areas Division

The Parks and Natural Areas division of the Department of Tourism, Culture and Recreation administers the Wilderness and Ecological Reserves Act. This provincial legislation allows for the creation of Wilderness Reserves. Several Ecological Reserves have been established for the protection of breeding seabirds. They include Bac-

calieu Island, Cape St. Mary's, Funk Island and the Witless Bay Islands Ecological Reserve.

(<http://www.gov.nf.ca/parks&reserves/witless.htm>)

Wildlife Division

The Rare Bird Data Collection project collects 'sighting' data both present and historical.

In 1999 the provincial Department of Forest Resources and Agrifoods launched the *Newfoundland Rare Plant Project*, a three year project to inventory rare plants. The project began on the

west coast of insular Newfoundland. There is no information currently available specific to the IBA sites reported on here.

Culture and Heritage Division, Newfoundland Museum

The Newfoundland Museum is part of the Culture and Heritage Division of the Department of Tourism, Culture and Recreation, Government of Newfoundland and Labrador. The three branches are the Newfoundland Museum on Duckworth Street, St. John's; the Southern Newfoundland Seamen's Museum, Grand Bank and the Mary March Regional Museum, Grand Falls/Windsor.

(<http://www.nfmuseum.com/museums.htm>)

The Cruiseship Authority of Newfoundland and Labrador (CANAL)

The Cruiseship Authority of Newfoundland and Labrador (CANAL) was incorporated on June 5, 1998, by an Act of the Province of Newfoundland and Labrador. The purpose of the Act was to establish an authority to promote and co-ordinate the development and operations of a cruiseship industry in the Province.

(<http://www.cruisefoundland.com/about.html>)

8.4. Non-Governmental Groups and Programs with Mandates Relevant to Marine Birds in Newfoundland and Labrador

Institute for Environmental Monitoring and Research (IEMR)

The Institute was established in 1995 in response to a recommendation by an independent Environmental Assessment Panel appointed to review military flight training at Goose Bay. Its purpose is to oversee the environmental effects of allied flight training conducted at the Canadian Forces Base at Goose Bay over areas of Labrador and Northeastern Québec.

The Institute is governed by a Board of Directors representing aboriginal and municipal groups in the region with interests in military training activities operated from 5 Wing Goose Bay. It has an

independent Chair and nonvoting members representing provincial and federal governments.

The IEMR has a mandate:

- *to focus on the protection of the environment, and within the concept of sustainable development, to support the viability of the military flight training program;*
- *to provide independent verification of environmental effects as well as expertise and advice in structuring adequate monitoring and mitigation measures; and to foster a level of trust among all groups affected by the military training program.*

In the event that studies show significant impacts are occurring that cannot be mitigated or justified, the Institute may recommend that appropriate action be taken to address the situation, including that military flying activities be limited or phased out.

The IEMR has been a part of two conferences, the proceedings of which along with other documents are available from their website. The Workshop on Traditional Ecological Knowledge and Western Scientific Knowledge was held September 10-11, 1997 in North West River and in August 2000, the Effects of Noise on Wildlife Conference was held.

(<http://www.iemr.org/home.html>)

See Figure 7-8 for a map showing the low-level flight training area.

The International Maritime Organization (IMO)

The International Maritime Organization is the United Nations' specialized agency responsible for improving maritime safety and preventing pollution from ships. IMO is the author of a treaty known as MARPOL 73/78 which covers accidental and operational oil pollution, pollution by chemicals, goods in packaged form and sewage and garbage.

(<http://www.imo.org/>)

Atlantic Cooperative Wildlife Ecology Research Network (ACWERN), Department of Biology, Memorial University of Newfoundland, St. John's

ACWERN graduate students do research focused on seabird ecology. In 1996, ACWERN began a long-term study of seabirds of the Gannet Islands, Labrador.

(<http://www.mun.ca/acwern/>)

Biopsychology Programme, Departments of Biology and Psychology, Memorial University of Newfoundland, St. John's

The Biopsychology Programme is an interdisciplinary graduate program focused on animal behaviour and behavioural ecology. There have been numerous studies by Biopsychology graduate students which focus on marine bird ecology.

(<http://www.mun.ca/biopsych/intro.html>)

Coasts Under Stress

Coasts under Stress is a five-year long (2000-2004) collaborative research initiative between Memorial University of Newfoundland, the University of Calgary and the University of Victoria and other North American partners. This project explores links between changes in society and the environment and the long term health of people, communities and their environment

The West Coast research will be focused between Vancouver Island (Port Alberni, Ucluelet) and north along the west coast and offshore Hecate Strait to Prince Rupert and Gwaii Haanas (Queen Charlotte Islands).

The East Coast research will be concentrated in the area between Stephenville and St. Anthony on Newfoundland's west coast and along the Labrador coast in the area between the Strait of Belle Isle and Cartwright.

(<http://www.coastunderstress.ca/home.html>)

Grenfell College Environmental Science Programme, Memorial University of Newfoundland, Corner Brook

This is an interdisciplinary programme of the natural sciences, specifically as they contribute to a greater awareness and understanding of the environment.

(<http://woodstock.swgc.mun.ca/envs/>)

Fish, Food and Allied Workers (FFAW/CAW)

The FFAW/CAW is a powerful force in Newfoundland and Labrador. Fishing is at the province's cultural and political core. Historically, fishing has been the principle source of interaction with the marine environment for many Newfoundlanders and Labradorians.

The FFAW/CAW membership could be a major force for marine conservation and efforts to engage the knowledge of the membership and their inherent interest in the marine environment could hold great potential for marine bird conservation.

(<http://www.ffaw.nf.ca/structure.html>)

Fisheries Resource Conservation Council (FRCC)

The Fisheries Resource Conservation Council (FRCC) was created in 1993 to form a partnership between scientific and academic expertise, and all sectors of the fishing industry. Together, Council members make public recommendations to the Minister of Fisheries and Oceans on such issues as total allowable catches (TACs) and other conservation measures for the Atlantic fishery. The Council is responsible for advising the Minister on Canada's position with respect to straddling and transboundary stocks under the jurisdiction of international bodies such as the Northwest Atlantic Fisheries Organization (NAFO). The Council also provides advice in the areas of scientific research and assessment priorities.

(<http://www.dfo-mpo.gc.ca/frcc/index.htm>)

Atlantic Canadian Conservation Data Center

Based in Sackville, New Brunswick, the Atlantic Canada Conservation Data Centre (ACCDC) assembles and provides information and expertise on species at risk and natural communities in Atlantic Canada, and undertakes field biological inventories, in support of decision-making, research and education.

(www.accdc.com)

Newfoundland and Labrador Environmental Network (NLEN)

The NLEN is a non-profit, non-government organization with a mandate to improve communication links and facilitate joint initiatives among groups and organizations in Newfoundland and Labrador which share a concern for the quality of the environment.

The NLEN facilitates communication in the province by: (a) holding provincial networking meetings; (b) publishing a provincial newsletter (Environment Network News); and (c) aiding groups and individuals to organize around environmental issues.

(<http://www3.nf.sympatico.ca/nlen/hlen.htm>)

NLEN Youth Caucus

Based in Corner Brook, the NLEN Youth Caucus is a non-profit, non-governmental organization dedicated to getting youth involved in environmental and other social issues.

(<http://www3.nf.sympatico.ca/nlen/index.htm>).

Protected Areas Association

The Protected Areas Association of Newfoundland and Labrador (PAA) works to establish protected natural areas in Newfoundland and Labrador. They are a non-profit association, and through research, planning and public education, work toward the completion of a network of representative examples of all the province's unique eco-systems. The PAA have had several projects related to marine protected areas resulting in publications listed on their website.

(<http://www.nfld.net/paa/>).

Atlantic Coastal Zone Information Steering Committee (ACZISC)

ACZISC membership is composed of organizations and agencies which have a mandate for, and can contribute to, the development and coordination of a regional coastal zone information infrastructure and the promotion of integrated coastal zone management initiatives. Membership currently includes the four Atlantic Provinces, seven federal departments, First Nations, the private sector and academia.

The private sector in Newfoundland and Labrador is represented by the Newfoundland and Labrador Association of Technology Industries. Private sector groups and individuals in Newfoundland and Labrador who would like issues to be considered by the ACZISC should bring these to the attention of Randy Gillespie, the NATI representative on the ACZISC. In addition, interested private sector personnel are encouraged to attend ACZISC meetings.

Representatives of community groups are encouraged to attend ACZISC meetings in their respective Provinces; currently there are no regional community associations.

(<http://www.dal.ca/aczisc/workplan>)

The ACZISC has produced a *Guide to Coastal Information in Atlantic Canada* and an *Atlantic Coastal Database Directory*.

(http://www.dal.ca/aczisc/acdd_bkd)

8.5. Key Groups and Organizations with Interests Relevant to Marine Birds Near the North Coast of Labrador

Torngâsok Cultural Centre

The Torngâsok Cultural Centre is an affiliate of the Labrador Inuit Association.

Torngâsok was formed in 1981 to promote, preserve, and protect Labrador Inuit language, customs, and culture. Some of its programs include Youth Inuktitut camps, Adult Inuktitut camps, a certified Interpreter/Translator program, a certi-

fied medical Interpreter/Translator program, and archaeological programs.

(<http://www.nunatsiavut.com/torngasok.html>)

Atlantic Policy Congress of First Nation Chiefs Secretariat

The Congress exists to research, analyze and develop culturally relevant alternatives to federal policies that impact on the Mi'kmaq, Maliseet and Passamaquoddy First Nation communities and peoples. The potential exists through the Marshall and Sparrow decisions for Mi'kmaq people to develop an interest in seabird harvesting. This may or may not be of relevance to sites in this region.

(<http://www.apcfn.ca/>)

Ducks Unlimited (DU)

Ducks Unlimited has been involved in various projects on the Labrador coast for many years.

Founded in 1938, Ducks Unlimited Canada is a private, non-profit organization dedicated to the conservation of wetlands for the benefit of North America's waterfowl, wildlife and people. To date they have secured and protected over 18 million acres of habitat and established nearly 6 thousand projects.

(<http://www.ducks.ca/aboutdu/index.html>)

Ducks Unlimited has a children's education program called Greenwings for which they produce two magazines. They have also developed educational curriculum materials for schools.

DU's research arm, the Institute for Wetland and Waterfowl Research (IWWR) was established in 1991 with a mission to "help guide the conservation of waterfowl and wetlands by developing and sustaining a premiere program of research and by educating professionals in wetland and waterfowl conservation biology".

A DU Newfoundland project of special interest that may have application to seaducks is the Geese in Space project. Using satellite technology to learn more about the Canada Geese of Newfoundland and Labrador, in 1999 DU tagged 22 geese with satellite transmitters. In 2000, 24 more geese

were tagged. Following the movements of the tagged geese has revealed important details about the birds migration patterns. The public can follow the routes of these geese by visiting the DU website.

(<http://www.ducks.ca/geese/index.htm>)

DU is currently developing a long term strategy for seaduck endeavors in Newfoundland and Labrador.

Eastern Habitat Joint Venture (EHJV)

EHJV is one of six Joint Ventures spawned across Canada as part of the North American Waterfowl Management Plan (NAWMP) to restore waterfowl populations to levels found in the 1970s. The EHJV was founded by the eastern provinces (Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland), CWS, Ducks Unlimited Canada, and Wildlife Habitat Canada.

While the EHJV has so far concerned itself mostly with municipal based stewardship programs for wetlands it is currently expanding to include seaducks and marine areas such as St. Peter's Bay in southern Labrador.

The Seaduck Joint Venture (SJV)

The Sea Duck Joint Venture was formed under the auspices of the North America Waterfowl Management Plan (NAWMP) to address declines in many North American seaduck populations.

(<http://seaduckjv.org>)

Development Associations and Associated Projects

Innu Development Limited Partnership (IED Enterprises Inc.)

With Western multi-nationals and Governments expressing great interest in exploiting the resources of Labrador, the Mushuau Innu Band Council and the Sheshatshiu Innu Band Council foresaw the need for a separate Innu economic entity capable of working at a regional level. In May 1998 Innu Development Limited Partnership or also known as IED Enterprises Inc., came into

existence through the combined efforts of the two Band Councils. Innu Development is a for-profit corporation registered in Newfoundland with its head office located on 6 Burnwood Drive in Happy Valley - Goose Bay, Labrador, Newfoundland, Canada.

(<http://www.iedinc.org/background.html>)

Newfoundland and Labrador Association Of Community Business Development Corporations Inc.

There are fifteen CBDCs in Newfoundland and Labrador. These are autonomous, not-for-profit corporations, which serve all regions of the province. Supported by Atlantic Canada Opportunities Agency (ACOA), they assist in the creation of small businesses, and in the expansion, modernization and stabilization of existing businesses.

The IBA sites covered by this document fall within the jurisdiction of the economic planning zone 1 and the Combined Councils of Labrador which is the umbrella organization for Labrador community councils and has its office at Forteau.

Labrador Inuit Development Corporation (LIDC)

The LIDC was incorporated under Canadian law in 1982 as the economic development arm of the Labrador Inuit Association (LIA). The mandate of the LIDC is to improve the living conditions of the Inuit by providing employment opportunities, with particular focus on traditional Inuit skills, and to promote education and training of Inuit to meet the requirements of today's labour market.

LIDC is 100 percent owned by the LIA, and the LIA is the sole shareholder. The LIDC Board of Directors are appointed by LIA and the Board meets three to four times per year and often consults by telephone conference calls. The management of day to day affairs of the corporation is the responsibility of the Managing Director and Assistant Manager who are supported by a staff of full time and part time employees.

(<http://www.nunatsiavut.com/lidc.html>)

Torngait Ujaganniavingit Corporation (Stone Quarries 100% owned by LIDC)

TUC has anorthosite quarries in Ten Mile Bay, Labrador and Igiak Bay near Nain

Pikalujak Fisheries Limited

(Shrimp Fishery 50% owned by LIDC)

*The fishery is based primarily on a single species, *Pandalus borealis* (Northern or pink shrimp), one of several cold water species of shrimp found north of latitude 40N in the Atlantic, Pacific and Arctic Oceans. A second species, *Pandalus montagui* (striped shrimp), is commercially less important and is fished in limited quantities in the Hudson Strait area.*

The northern shrimp fishery traces its history to the early 1970s when an exploratory fishing program confirmed the presence of shrimp stocks in the waters stretching southward from Baffin Island to the northeast coast of Newfoundland.

Central Labrador Economic Development Board Inc.

Mission Statement

The Central Labrador Economic Development Board is a publicly elected Board responsible for coordinating the creation of a Strategic Economic Plan with the people in the Upper Lake Melville area.

Our mission is to create self-sustaining economic communities which will strengthen the ability to produce and export goods and services. We appreciate our cultural diversity, and strive for equal opportunity, and the preserving of our pristine environment and community lifestyle.

(<http://www.central-labrador.nf.ca/communities.htm>)

Other Economic Development Information

For a listing of all economic zones within Labrador and community demographic profiles visit the following website:

(<http://www.hyron.nf.ca/Community%20Profiles.htm>)

Quebec-Labrador Foundation (QLF) Atlantic Center for the Environment

The Quebec-Labrador Foundation (QLF) exists to support the rural communities and environment of eastern Canada and northern New England, and create models for stewardship of natural resources and cultural heritage which can be applied worldwide.

Seabird Conservation Project, St. Mary's Island, Quebec: *Since 1977, QLF has been conducting a seabird conservation project on Quebec's Lower North Shore. To reverse the decline in seabird populations on island sanctuaries, QLF has involved school children and local communities through education and sanctuary management*

Rural Communities, *In 1996, the Atlantic Center for the Environment launched Beyond Borders, a program initiative to strengthen and inform community-based conservation in northern New England and eastern Canada. Focusing on rural communities, QLF provides a model for linking ecosystem management, economic development, and community action and leadership. On-site projects include technical assistance, training workshops and conferences, environmental education, publications, and exchanges.*

(<http://www qlf.org/>)

QLF offers internships, mostly in the summer and usually two to three months duration, to undergraduates, recent graduates, and graduate-level university students from Canada and the U.S. Internships include stipends and lodging and for most field positions, food expenses, and travel to and from program sites are covered. Examples of positions advertised for the summer of 2001 follow:

Seabird Research Assistants: Gannet Colony Restoration Project

April-September Location: Quebec North Shore
Conduct fieldwork for re-establishment of Northern Gannet colony on a remote island. Much time spent aboard boats, in rugged camping situations, long hours observing birds, and recording daily observations. Project may include rearing live gannet chicks. Written report and journal. Outreach and education to build local support among residents of nearby French-speaking communities.

Seabird Conservation Instructors

June-August Location: Quebec North Shore
For generations, residents of the Quebec North Shore have harvested seabirds for food and traditional activities. A conservation program, now in its 24th year, has been successful at working within the local culture to make sure that the harvest is sustainable and that designated areas are fully protected. Education activities for youth and the general public at a seabird sanctuary are an important component of this program. Design and lead field trips to observe and study birds, supervise locally-hired staff, oversee training operations and logistics, conduct community outreach, and keep field notes and other records.

Conservation Camp Instructors

June-August Location: Labrador; Teach natural history topics to youth and teens in remote island camp setting.

Curriculum Development in Wetlands Education

June-August, September - possible extension
Location: Montreal, Quebec or Ipswich, Massachusetts, possible work in Labrador

A person experienced in environmental education at the secondary school level will develop supplementary curriculum materials for secondary school use on wetlands education. Target audience will be schools in Newfoundland and Labrador. Program will build on an existing curriculum for primary schools. Associate will develop and test key concepts, lesson plans, and teaching guides. Concepts must be relevant to the Newfoundland and Labrador setting and to ongoing programs in

wetlands conservation and water quality monitoring.

The above internship descriptions serve to illustrate one kind of resource that QLF can offer to local conservation efforts. In particular, QLF has a history of seabird conservation projects. In the mid 1980s QLF co-produced a nine-part radio series with CBC Radio about the Quebec North Shore. They have had many projects on the Northern Peninsula and the coast of Labrador. Other bird related projects that QLF has experience with include the creation of a Checklist for Birds of the Quebec Lower North Shore.

QLF has a waste management project ongoing in Cartwright. They have also been involved in habitat enhancement for eiders in Table Bay.

Manomet Center for Conservation Sciences

Manomet's mission is to conserve natural resources for the benefit of wildlife and human populations. Manomet established the "Linking Wetlands and Communities" program among sites in Canada, U.S. and Mexico that share the same migratory birds at different times of the year and introduced thousands of regional schoolchildren to migration banding at Manomet.

8.6. Other Bird and/or Marine Web Sites and Educational Resources of Interest

Newfoundland Bird Sightings on the Internet

The Internet discussion group *nf.birds* is the local arena for discussion of bird sightings in the province. It is carried by most Internet service providers in the province and is also universally available on the web at <http://groups.google.com/> by entering "nf.birds" in the search box.

International Migratory Bird Day (IMBD)

IMBD exists to focus attention on the nearly 350 species of migratory birds that travel between nesting habitats in North America and non-breeding grounds in South and Central America, Mexico, and the Caribbean. IMBD is held on the second

Saturday in May. In 2001, IMBD falls on May 12. IMBD is the hallmark outreach event for Partners In Flight (PIF).

(<http://www.americanbirding.org/imbd/imbd-gen.htm>)

BirdLife International Seabird Conservation Programme

BirdLife International Seabird Conservation Programme: the primary role is the advocacy of seabird conservation issues to all relevant governments, non-government and intergovernmental organizations, as well as to the informed public. It is funded by the Royal Society for the Protection of Birds, the United Kingdom's Partner and is based at the University of Cape Town, South Africa within the Avian Demography Unit (ADU). The ADU conducts research in partnership with BirdLife South Africa, the national partner.

(<http://www.uct.ac.za/depts/stats/adu/seabirds/>)

Opportunities for Birders Volunteer Directory

Projects requiring the assistance of volunteer birders can advertise to attract them on this site. Also a good place to get ideas for bird monitoring and other projects. In addition, birders from this province seeking opportunities for experience elsewhere can find the information at this site required to get hooked up with existing projects. There are currently no listings for projects in Newfoundland and Labrador. The following are illustrative examples taken from the above website:

(<http://www.americanbirding.org/opps/voldiaa.htm>)

Breeding Bird Survey (BBS)

Location: Active in all Canadian provinces and territories. See listing under North America.

Project: Designed to detect and measure year-to-year and long-term changes in breeding bird populations. A standardized roadside survey run mainly by volunteers. Observers count all birds seen or heard at 50 three-minute stops along a designated 40-kilometer route.

Skills: Participants must be highly skilled in identification of birds by song and sight.

Chapter 8: IBA Conservation Resources

Commitment: Participants should expect to participate over a number of years. Routes are preferably run by the same observer each year.

Logistics: Participants use own vehicle. Many participants prefer to bring along an assistant for note-taking and timing.

Contact: Connie Downes, Canadian Wildlife Service, National Wildlife Research Centre, Hull, PQ K1A 0H3; 819/953-1425; fax 819/953-6612; email: Connie.Downes@ec.gc.ca

BC Coastal Waterbird Survey

Location: Coastal areas of British Columbia.

Project: THE BC Coastal Waterbird Survey (BCCWS), through a network of volunteers, regional organizers, naturalist groups, government agencies and non-government organizations, aims to monitor waterbirds in coastal areas of British Columbia. The Survey will provide data that will assess the annual changes and long-term trends in population size and distribution of coastal waterbirds, and will be used to conserve coastal waterbird populations and habitats in British Columbia. Participants are free to choose a survey site, or contact the BC Coastal Waterbird Survey Coordinator for help in choosing a survey site in their area.

When: Participants are asked to survey waterbirds at a designated survey site once a month with an emphasis from September to April.

Commitment: While we hope people will adopt a BCCWS site and continue to visit for years to come, we appreciate whatever efforts you can make.

Skills: Surveyors must be comfortable identifying all waterbird species that regularly occur in the survey area.

Contact: BC Coastal Waterbird Survey Coordinator, BC Programs, Bird Studies Canada, 5421, Robertson Rd., RR 1, Delta, British Columbia, V4K 3N2; 604/940-4696 or 877/349-BIRD; email: stephanie.hazlitt@ec.gc.ca

Migration Monitoring at the Atlantic Bird Observatory 3/01

Location: On two coastal islands off the southern tip of Nova Scotia. Approximately 250 km south of Halifax.

Project: Involves monitoring migratory birds through the use of banding, mist-netting, census,

and casual observations. Data collected contributes to larger scale efforts conducted by the Canadian Migration Monitoring Network.

When: Spring monitoring commences during the last week of April until the first week of June. Fall monitoring commences mid August and continues until 30 October.

Commitment: Minimum of one week, longer-term volunteers given preference.

Skills: Bird identification (sight and sound), mist-net extraction, and banding skills preferred but not necessary. Training is provided.

Logistics: Live on a remote island in a rustic cabin. Boat trips to the islands are provided. Volunteers must provide own transportation to the mainland wharf. Room and board provided for long-term volunteers (1 month or more), shorter term volunteers will pay small fee.

Contact: Trina Fitzgerald, Atlantic Bird Observatory, Biology Department, Acadia University, Wolfville, NS B0P 1X0; 902/585/1313; fax: 902/585/1059; email: abo@acadiau.ca

To list a Project:

American Birding Association welcomes submissions to the its Opportunities for Birders directory at any time. The current directory is posted here on our web site, and is regularly updated to include any new entries we receive throughout the year. The Directory lists bird-related volunteer opportunities in Canada, the United States and a few from Central and South America.

If your programs include bird-related field, office or other work that could benefit from those with birding expertise, don't miss out on the opportunity of a free listing of your projects in our Opportunities for Birders directory. Our 2001 directory included more than 650 projects from federal and state agencies as well as a variety of non-governmental organizations.

Open Air: Natural History Radio from Newfoundland and Labrador

The flagship community radio show of the Alder Institute, Open Air is broadcast weekly for one hour to the eastern Avalon of Newfoundland on CHMR-FM and to the world in Real Audio on the

Internet. Open Air is a magazine style radio program with a special focus on the natural history of the province and a great deal of material on birds and IBA related topics.

Radio programs and other audio projects are available for listening on the Internet in Real Audio from an audio archive maintained by the Alder Institute.

(<http://alder.nf.ca/openair.html>)

John Maunder's Newfoundland and Labrador Natural Sciences Website

The personal website of the Newfoundland Museum's Curator of Natural History. An invaluable source of natural history links for the province.

(<http://www.nfmuseum.com/nhistlnk.htm>)

The Newfoundland Bird Paintings of Roger Tory Peterson

This is a traveling exhibit from the Newfoundland Museum.

The 33 colour plates (the Great Auk plate was reproduced in black and white), along with an additional 39 pen and ink drawings, were done under contract to the Newfoundland Government. The rights to the original colour artwork were purchased by the government at the time of delivery, and the paintings now reside in the Newfoundland Museum, as part of the Museum's Natural History Collection. The traveling exhibit presents the 33 original watercolour paintings.

(<http://www.nfmuseum.com/peterson.htm>)

Climate Change Education Centre in Newfoundland

Climate Change can affect the status and distribution of marine birds and their prey and through changes in sea level alter the availability of breeding habitat, particularly for birds nesting at low elevations such as eider ducks.

The Government of Newfoundland and Labrador is planning to establish an information and coordination centre for climate change activities to give a

stronger awareness and understanding of the causes and implications of climate change and global warming. For information, access

(<http://www.gov.nf.ca/releases/2000/mines&en/1221n02.htm>)

Protocol for Monitoring Seabirds

A Report By The Marine Biodiversity Monitoring Committee (Atlantic Maritime Ecological Science Cooperative, Huntsman Marine Science Center) to The Ecological Monitoring And Assessment Network of Environment Canada by Antony W. Diamond. The report can be read online from

<http://www.cciw.ca/eman-temp/research/protocols/seabirds/intro.html> or obtained from the author, Antony Diamond.

Ecology Action Centre

The Ecology Action Centre has been an active advocate, protecting the environment since 1971. The Centre's earliest projects included recycling, composting, and energy conservation, and these are now widely recognized environmental issues. Currently we are focussing on Marine, Wilderness, Transportation, and Environment & Development Issues, with a connection to the School Ground Naturalization project.

(<http://www.chebucto.ns.ca/Environment/EAC/index.html>)

Bird Study Merit Badge

Scouting for Birds is a non-profit web site designed to promote Bird Study Merit Badge. While this is an American program it may be an appropriate model to adapt for use with whatever organized youth groups exist in a local area.

(<http://k2gw.tripod.com/birdstudy/index.html>)

Online Data Base of Canada's International Commitments, Commissioner of the Environment and Sustainable Development

Canada is a party to many international environmental agreements. This database provides users with key information about some of these. Agreements and the commitments found in them. For additional information see about the database.

(http://pubx.dfait-maeci.gc.ca/A_Branch/AES/Env_commitments.nsf/Homepage)

Interactive Web-Based Ecology Course

The University of Toronto introductory biology course has developed a suite of web based laboratory exercises which emphasize experimentation and hands-on skills, and which are designed to augment lectures on evolution, ecology, and behaviour. At the web site there is an online exercise exploring the conservation of the Whooping Crane. Users design a management program to save the endangered species and learn some conservation biology and population ecology along the way. This website could serve as a model for a more locally relevant project designed to learn about the population ecology of marine birds in Newfoundland and Labrador.

(<http://www.cquest.utoronto.ca/zoo/bio150y/cranes/>)

National Film Board of Canada (NFB)

Created in 1939, the National Film Board of Canada (NFB) is a public agency that produces and distributes films and other audiovisual works which reflect Canada to Canadians and the rest of the world.

The NFB, as the storehouse of a large part of the country's audiovisual heritage, in the form of a collection of over 10,000 titles, has always been and remains a cultural organization, while acting as an important catalyst of social change. It is also a centre of filmmaking and video technology and can pride itself on some of the most remarkable technical breakthroughs in film production.

From anywhere in Canada, a toll-free number, 1-800-267-7710, allows people to order directly films and videocassettes from the NFB.

Several years ago, as the NFB began to close its own audiovisual libraries, it initiated partnerships with public libraries to make video collections accessible at a local level. Furthermore, the NFB sought out other community organizations nation-

wide and provided them with favourable conditions so they could establish a core collection. Large video collections of NFB titles are available at most major Canadian public libraries. The NFB has also negotiated some agreements with independent distributors and its productions are available in many video stores, bookstores and department stores.

Many NFB films are designed specifically for classroom use, while others are ideal for enrichment purposes. This market represents 40% of all videocassette sales for the NFB. The NFB is a supplier of Canadian educational material to most Canadian school boards, to a wide number of secondary and elementary schools and some universities.

NFB Video Distribution Partners in Newfoundland:

Corner Brook Public Library
Sir Richard Squires Building
Corner Brook A2H 6J8
Tel.: 709 634-0013

Provincial Information and Library Resources Board
Arts and Culture Centre
St. John's A1B 3A3
Tel.: 709 737-2133

Among the NFB titles are several relating to marine birds and/or Newfoundland seabird colonies. A list of some relevant titles follows:

Season of the Eiders, 1999, 50 min 02 sec
Gannets of Bonaventure, 1978, 27 min 50 sec
Roger Tory Peterson: Portrait of a Birdwatcher, 1978, 57 min 40 sec
The Funks, 1977, 27 min 50 sec
Puffins, Predators and Pirates, 1976, 27 min 50 sec
The Winds of Fogo, 1969, 20 min 24 sec
Adventure in Newfoundland, 1964, 16 min 03 sec
Along Newfoundland's Shores, 1962, 7 min 13 sec
Newfoundland Sea Birds, 1961, 13 min 58 sec

8.7. The Newfoundland and Labrador Arts Community

The Craft Council of Newfoundland and Labrador

The Craft Council of Newfoundland and Labrador is a member-based organization that works to maximize the artistic and economic potential of the craft community of the province.

(<http://www.craftcouncil.nf.ca/about/profile.asp>)

The Labrador Craft marketing Agency (LCMA)

Now representing more than 60 craftspeople from this Northern part of our province, the LCMA has both retail and wholesale buyers on their client list.

(<http://www.craftcouncil.nf.ca/about/lcma.asp>)

The Newfoundland and Labrador Arts Council

“It is our creative ability that ensures our survival as a recognizable people and culture, and enables us also to contribute to the enrichment of the nation of which we form a distinctive part.” -G.M. Story

The Newfoundland and Labrador Arts Council is a nonprofit organization whose purpose is to foster the arts of the province by operating financial assistance programmes; providing services and resources; and by working with government and the community for development in the arts.

(<http://www.nlac.nf.ca/html/home.htm>)

Newfoundland Independent Filmmakers Cooperative (NIFCO)

NIFCO was founded in 1975 by a group of artists to tell Newfoundland's stories on film. NIFCO now has a complete 16mm production facility available to all members regardless of funding. The co-op is a production centre, a meeting place for filmmakers and offers Introductory filmmaking courses and a First Film Program for newcomers.

NIFCO's website is currently under construction:

(<http://enterprise.newcomm.net/filmcan/NIFCO.htm>)

8.8. Communication Opportunities

Local newspapers

The Labradorian: weekly produced in Happy Valley-Goose Bay

(<http://www.rb.nf.ca/labradorian/>)

The Aurora: weekly produced in Labrador City

(<http://www.rb.nf.ca/aurora/>)

Them Days

THEM DAYS Incorporated is dedicated to keeping the history of Labrador alive by documenting and preserving the “old ways and early days” of Labrador.

THEM DAYS was established to record, document, research and publish the oral, visual and written history of Labrador. THEM DAYS does this by conducting special projects of research, translation, consultation, maintenance of archival collections and production of publications on matters relating to Labrador history and culture. The Board of Directors for THEM DAYS manages the affairs of THEM DAYS Incorporated.

(<http://collections.ic.gc.ca/Labrador/home.html>)

OkalaKatiget Society

(Radio and Television)

The OkalaKatiget Society is an affiliate of the Labrador Inuit Association.

The OkalaKatiget Society (pronounced O-HALA-HA-TEH-GEET) provides a local, native communications service for approximately 4,500 people of the north coast of Labrador. Some of our mandates are: to preserve and promote the language and culture of the region's Inuit and Kablunaangajuit or settlers; to preserve and enhance the local Inuktitut language; to develop better communication by and between the people of Northern Labrador and more.

(<http://www.autochtones.com/nativetrail/city/Maritime.html#news>)

In March 2001, the OkalaKatiget Society received \$388,851 in funding from the Canada-Newfoundland Agreement for the Economic Development Component of the Canadian Fisheries Adjustment and Restructuring Initiative to enhance their broadcasting capacity.

The OkalaKatiget Society provides 20 hours of bilingual radio programming and four half-hour shows per month of television programming. The TV programming is distributed via the Aboriginal Peoples Television Network to all northern communities including those in the south via cable systems. (press release: <http://www.gov.nf.ca/releases/2001/indrural/0326n04.htm>)

The Osprey

Natural History Society of Newfoundland and Labrador: The Society publishes its journal "THE OSPREY" on a quarterly basis. (<http://www.nhs.nf.ca/>)

IBA News Canada

The IBA Program publishes a newsletter called IBA News Canada. (<http://www.ibacanada.com/newsletter/news.htm>).

Nature Canada

CNF publishes a magazine called *Nature Canada* about issues that affect the environment and what readers can do to help nature. (<http://www.cnf.ca/naturecanada/index.html>).

Quebec Labrador Foundation Compass

The QLF Magazine

8.9. Funding Sources

Important Bird Areas – Community Action Fund

The purpose of the Important Bird Areas Community Action Fund is to provide funding support for high-priority projects which contribute to the con-

servation of bird species and their habitats within an Important Bird Area. Emphasis of the fund is local conservation action.

All projects must be conducted within an officially recognized Important Bird Area (IBA), contribute to the conservation of the birds and habitats for which the site has been identified, and implement activities where a clear need is demonstrated (priority will be given to activities identified during a conservation planning process). A list of eligible IBA sites will be provided by the Canadian Nature Federation for each new funding cycle. Maximum annual grant is \$5,000. A 1:1 match is required, which may be cash, in-kind (eg. materials and/or volunteer time), or a combination of both. Matching funds must be in place prior to the disbursement of the first installment. Grants up to \$10,000 may be approved for exceptional projects where the proponent has secured a 2:1 cash match.

The IBA Community Action Fund provides grants to individuals or groups for high-priority IBA projects which contribute to the conservation of bird species and their habitats within an IBA. To be eligible for funding, the project area must:

- 1. be an officially recognized Important Bird Area, as identified by the Canadian Nature Federation and Bird Studies Canada;*
- 2. have a conservation/management plan either in progress or completed (priority will be given to those sites with an IBA conservation plan either in progress or completed).*

The IBA Community Action Fund will fund projects under the following three areas:

Conservation

- implementation of conservation actions where a clear need is identified (eg. activities identified in an IBA conservation plan or in other planning processes);*
- local monitoring programs;*
- habitat enhancement, rehabilitation or restoration projects.*

Education

- education programs designed to increase public*

- awareness of an Important Bird Area and its importance to bird conservation; IBA landowner awareness programs.

Research (lower priority)

- applied research on bird conservation (priority will be given to projects focusing on the bird species for which the IBA is important).

For more information visit: <http://www.ibacanada.com/ibacaf.htm>

Bird Studies Canada-The James L. Baillie Memorial Fund

The Baillie Fund aims to encourage field studies by amateur naturalists and to support projects which increase or disseminate knowledge of birds in their natural environment or contribute to their preservation. Priority is given to projects that enable enthusiastic amateurs and volunteers to put their interest to work to support conservation efforts or increase our knowledge of Canadian birds.

Individuals and organizations are both eligible for support. Most grants are between \$200 and \$3000 and they average about \$1000. Grants are awarded annually on a competitive basis, but multi-year support will be considered.

The Fund offers three types of grants:

Regular Grants support projects that involve research or education or that contribute to the preservation of Canadian birds.

Migration Monitoring Grants are awarded in support of a special program which began in 1994 to initiate and support migration monitoring stations (bird observatories) that monitor Canadian landbirds as part of the Canadian Migration Monitoring Network. The Baillie Fund is committed to

providing support for migration monitoring projects until the year 2003.

Student Field Research Grants are funded through the James L. Baillie Student Award for Field Research.

The Newfoundland and Labrador Arts Council

Craft Council of Newfoundland and Labrador

Scholarships and Study Grants are available, as are funds to support product development projects and public awareness programming. The Craft Council's Awards Committee also administers a Community Education Program which aims to strengthen the awareness of the value of craft to the community and the individual.

Since the mid-1970's, the Craft Council has been circulating and re-circulating a loan fund of \$25,000. As members repay existing loans, funds are re-lent to other members. Funds, to a maximum of \$3,000, are normally used for the purchase of supplies or equipment. For an application form, contact the Craft Council at info@craftcouncil.nf.ca (<http://www.craftcouncil.nf.ca/about/awards.asp>)

Environment Canada's Science Horizons Youth Internship Program

Environment Canada's Science Horizons Program is a collaborative effort with Canadian universities, the private sector and provinces and territories which offers promising young scientists and post-secondary graduates hands-on experience working on environmental projects under the mentorship and coaching of experienced scientists and program managers.

(http://www.ec.gc.ca/sci_hor/)

Community Services Council Newfoundland and Labrador

Mission Statement: The Community Services Council is an independent, voluntary organization dedicated to promoting social and economic well-being. It acts as a catalyst to enhance the voluntary sector and to bring together community organizations, governments and individuals in identifying needs and concerns. As a leading social planning and research organization, CSC, in collaboration with others, initiates analysis of critical issues, formulates policy objectives and develops strategies and services to improve human well-being.

Aboriginal Business Canada

Aboriginal Business Canada (ABC), a division of Industry Canada, was created to promote, support and grow Aboriginal owned and operated businesses. It helps to improve access to business financing, fund the purchase of management support services, and works to enhance the business climate for Aboriginal entrepreneurs.

ABC offers a wide range of direct-funded and non-funded business assistance. It supports the network of Aboriginal Capital Corporations (ACCs) in providing important community-based commercial lending services, and helps to improve the entrepreneurial climate through support of business conferences, studies, and information products. ABC also acts as an advocate for Aboriginal business in the government arena.

[\(http://www.abc.gc.ca/\)](http://www.abc.gc.ca/)

Canadian Aboriginal Economic Development Strategy (CAEDS)

CAEDS was created in 1989 to help native people with long-term employment through business development.

CEDOs: Community Economic Development Organizations are the main vehicles of investment. Created to help design and make investments in local ventures, CEDOs are accountable to their communities.

ROPs: Regional Opportunities Programs identify region-wide opportunities (mining, tourism, etc.)

through planning and leveraging other help programs. ROPs may not make direct investments.
<http://www.cibc.com/aboriginal/fapcanab.html>

Guaranteed Loan Program

This program is administered through Indian and Northern Affairs Canada (INAC). Its objective is to guarantee loans for unincorporated Indian and Band businesses on reserves needing financial aid from approved lending institutions. The program is available to any unincorporated Canadian Status Indian or Inuit individual and group, and other entities which are majority owned by Aboriginal people.

Community Business Development Corporation Programs

Community Business Development Corporations (CBDCs) today received a funding commitment of \$10 million to support the development of small- and medium-size enterprises in communities affected by the downturn in the groundfish industry in Newfoundland and Labrador.

Funding, through the Canada-Newfoundland Agreement for the Economic Development Component of the Canadian Fisheries Adjustment and Restructuring Initiative (EDC), was announced by Senator Joan Cook on behalf of George Baker, Minister of Veterans Affairs and Secretary of State for the Atlantic Canada Opportunities Agency (ACOA), Beaton Tulk, Minister of Development and Rural Renewal and Nick Hurley, president, Newfoundland and Labrador Association Community Business Development Corporations.

Funding available through CBDCs is complementary to other types of business funding: micro-lending through organizations such as the Newfoundland and Labrador Federation of Cooperatives and the Newfoundland and Labrador Organization for Women Entrepreneurs, ACOA's business development program, the Department of Development and Rural Renewal's Strategic Enterprise Development Fund, and commercial lending through banks.

The three-year \$81.25 million Canada-Newfoundland Agreement for the Economic Development Component of the Canadian Fisheries Adjustment and Restructuring Initiative (EDC) was signed on August 16, 1999. The agreement is designed to build upon the strategic plans and priorities of the Regional Economic Development Boards to improve the long-term economic climate in regions impacted by the downturn in the groundfish industry.

It is delivered federally by ACOA and provincially by the Department of Development and Rural Renewal. (from a Development and Rural Renewal News Release, March 13, 2000)
<http://www.gov.nf.ca/releases/2000/drr/0313n08.htm>

CBDCs provide Financial Assistance Programs For Small Business including the following three:

CBDC Financial Assistance.

The CBDCs offer financial assistance in the form of fully repayable small business loans to profit-oriented organizations wanting to start, expand or modernize a small business. The loans have a maximum limit of \$125,000. From the perspective of each CBDC, the jobs created should be filled by residents of that region. Each regional CBDC has its own specific eligibility and assessment criteria. The Board of Directors is made up by individuals from the communities served.

Self - Employment Benefit (SEB) Program

Human Resources Development Canada (H.R.D.C.) offers self-employment benefits to eligible individuals interested in starting their own business or purchasing an existing operation. In addition clients can also access free business training and counseling.

Young Entrepreneurs ConneXion - Seed Capital and Counseling Program

In partnership with the Atlantic Canada Opportunities Agency (A.C.O.A.), the CBDCs offer individuals under the age of 30, small business start-up

and expansion financing to a maximum of \$15,000. Up to \$2,000, by way of non-repayable contribution, is also available for training and business counseling.

Conservation Corps Green Teams

The vision of the Conservation Corps is that young people will lead change in environmental, economic and cultural development and ethics in Newfoundland and Labrador.

The mandate of Conservation Corps Newfoundland and Labrador is to provide young people with meaningful work, training and educational opportunities in the areas of environmental and cultural heritage conservation and enhancement and promote a strong conservation ethic in Newfoundland and Labrador.

The Conservation Corps solicits project proposals from community and corporate groups around the province, and provides assistance and advice in designing these projects. A Green Team project may be approved if the proposal meets the following criteria: it provides a meaningful work experience for youth; it is able to be carried out by a group of four young people in a 7-8 week time frame; and it benefits the community and surrounding environment. If a project is approved a partnership begins between the community group and the Conservation Corps.

<http://www.conservationcorps.nf.ca/html/green-team.htm>

Funding Guide Available from Environment Canada

Environment Canada's new funding guide entitled "The Green Source – A Quick Reference to Funding Sources for Environmental Projects by Non-Profit Organizations in the Atlantic Provinces" is now available at <http://www.atl.ec.gc.ca/community/resources.html#Fundraising>

The Guide includes over one hundred potential sources of assistance for projects. A paper copy can be obtained by phoning 1-800-663-5755.

Quebec Labrador Foundation, *Partners in Learning*

Partners in Learning is a Newfoundland Project that provides some funding perhaps best suited for oral history type projects.

The North American Commission for Environmental Cooperation (NACEC)

Migratory birds cross international boundaries and marine conservation is very much affected by the North American Free Trade Agreement. NACEC has a perennial funding offer through it's North American Fund for Environmental Cooperation (NAFEC).

For information, access <http://www.cec.org>

Canadian Museums Association Youth Employment Strategy

The CMA administers a number of youth employment programs funded under the Youth Employment Strategy of Human Resources Development Canada. The Young Canada Works in Heritage Institutions program creates summer jobs across Canada and the Youth International Internship Program places interns abroad.

(<http://www.museums.ca/anreport/pages/youth-strategy.htm>)

8.10. Electoral District and Political Representation

Effecting change on multiple levels of organization includes educating local politicians and their opposition about the issues. The following figures show details of federal and provincial political representation in Newfoundland and Labrador. For updated versions of these maps see:

<http://www.nfstats.gov.nf.ca/Maps/>

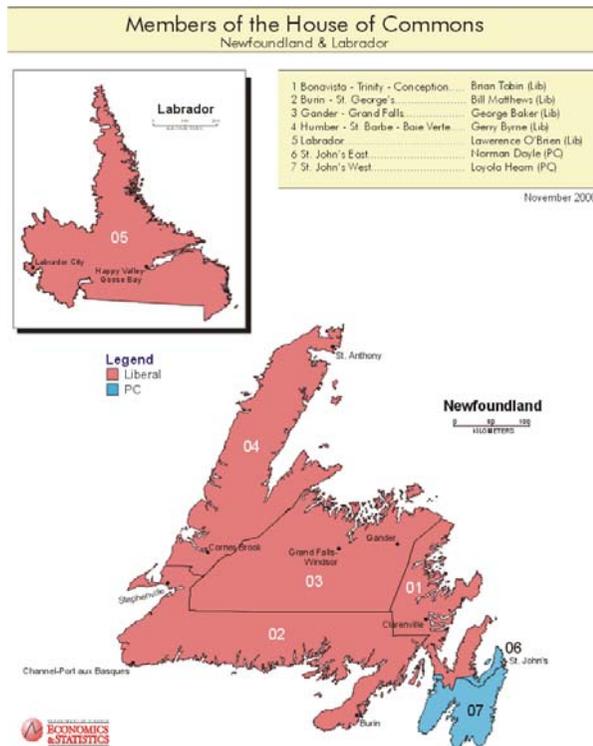


Figure 8-2: Map Showing Federal Political Representation in Newfoundland and Labrador

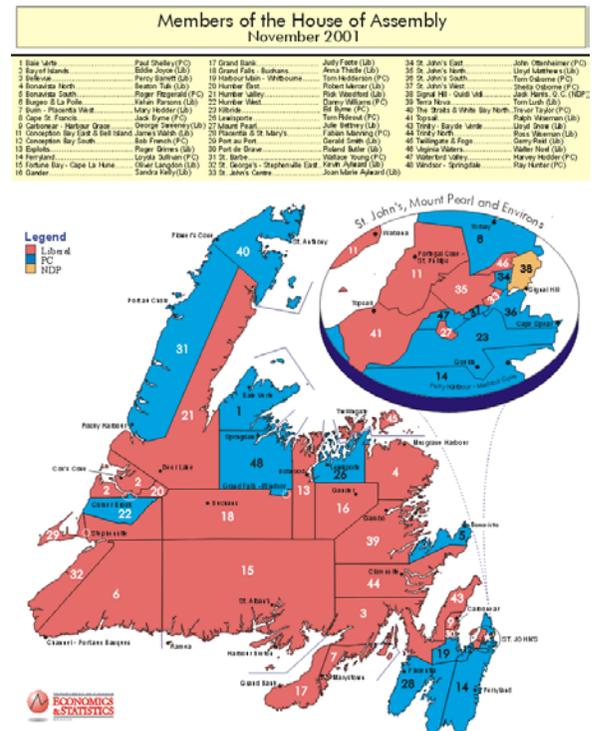
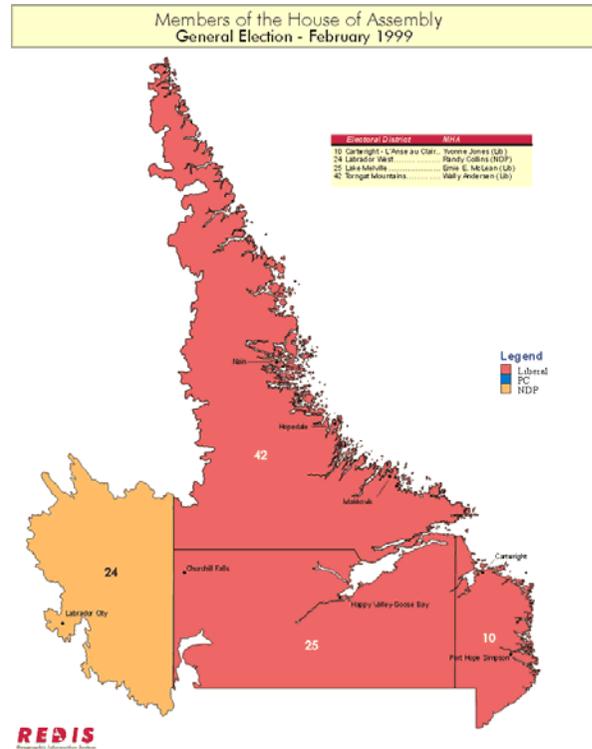


Figure 8-3: Map Showing Provincial Political Representation in Newfoundland and Labrador

8.11. Additional District Maps of Interest for Newfoundland and Labrador

The following figures reproduced from the Government of Newfoundland and Labrador website (<http://www.nfstats.gov.nf.ca/Maps/>)

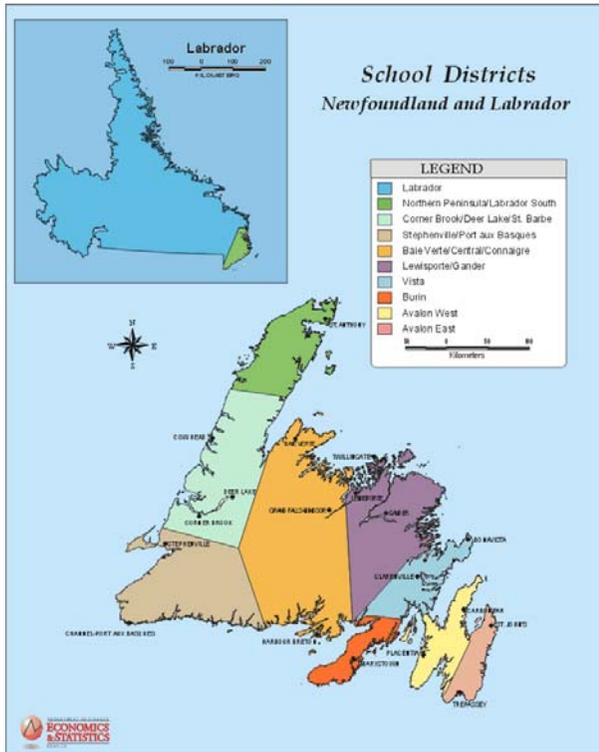


Figure 8-4: Provincial School Districts

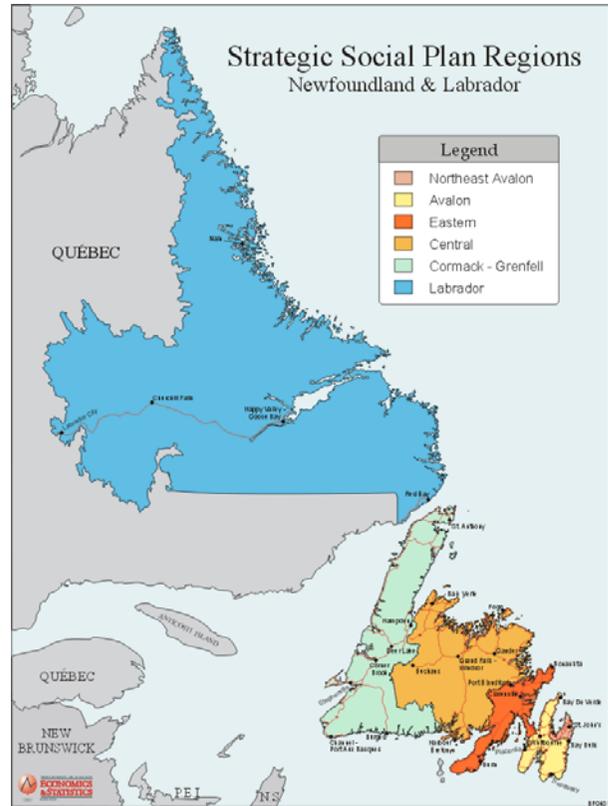


Figure 8-5: Strategic Social Plan Regions

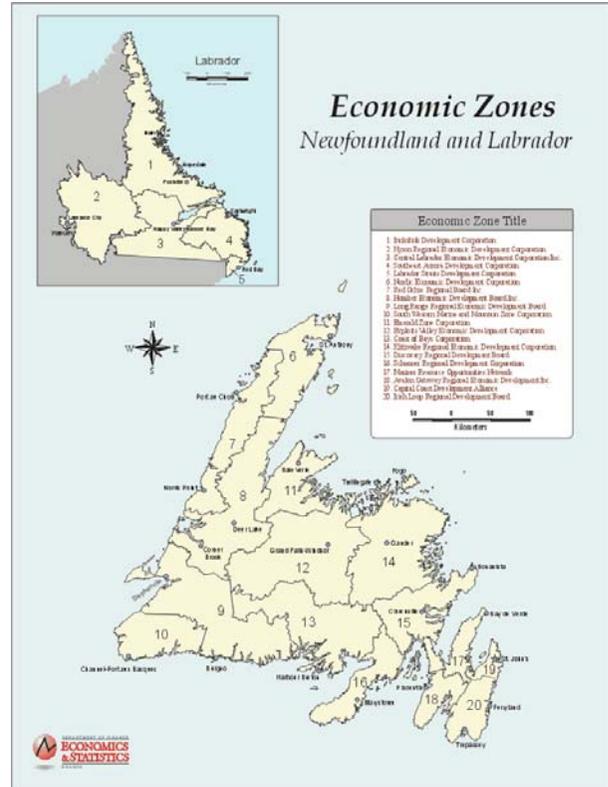


Figure 8-6: Economic Planning Zones

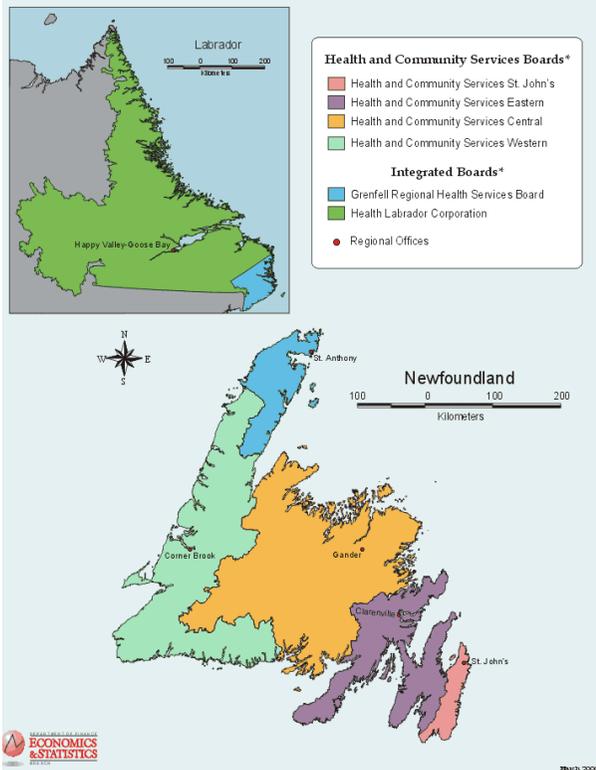


Figure 8-7: Health and Community Service Board Districts

9. What's Next: Recommendations

The following are some suggestions for projects that would involve people in efforts to 1. increase awareness of the threats faced by marine birds, 2. reduce existing threats and 3. prevent further threats. These projects could be pursued by the Labrador Inuit Association, Innu Nation, Labrador Métis Nation or other groups in consultation or association with them.

Elsewhere in this document are sources of ideas on potential partners, funding and communication opportunities. This information is in no way exhaustive. This document is intended as a starting point only. It is meant to evolve through amendment and review by those using it.

9.1. Respect Land Claims

Develop awareness of Labrador Land Claims and how all levels of government, federal, provincial and aboriginal, can collaborate to conserve areas of importance to marine birds during the interim period of negotiations preceding the settlement of Land Claims.

9.2. Suggestions for Research

PIROP (Programme Intégré de Recherches sur les Oiseaux Pélagiques) In consultation with CWS, develop a strategy to contribute to the PIROP database and if feasible form a plan to do so in a way that generates employment and career training opportunities for local people. This would involve training and placing observers on participating vessels and training existing mariners interested in collecting marine bird observations.

Local Knowledge. Develop programs to record and enhance local ecological knowledge

Population Monitoring

Explore the development of a variety of monitoring tools, either expanding on existing efforts or initiating new ones; for example:

- Christmas bird counts
- Beached bird surveys for oiled birds
- Banding programs
- Breeding bird surveys

9.3. Suggestions Specific to Moulting Seaducks

- Explore the feasibility of implementing time area closures for seaduck moulting sites.
- Develop awareness among the public and hunters concerning the needs of seaducks during their moulting period.
- Ensure that hazards to shipping in the vicinity of moulting sites are minimized to prevent accidental oil spills associated with vessel accidents.
- Explore the development of alternative travel routes for regular vessel traffic that currently pass close by the area.
- Make marine tour outfitters aware of the need to leave moulting seaducks undisturbed and increase awareness among potential marine tourists to the area of the importance of giving moulting birds a wide berth.

9.4. Suggestions Specific to Breeding Birds

- Develop public awareness concerning the needs and value of breeding marine birds.
- Ensure that hazards to shipping in the vicinity of breeding sites are minimized to prevent accidental oil spills associated with vessel accidents.
- Explore the development of alternative travel routes for regular vessel traffic that currently pass close by the area.
- Make marine tour outfitters aware of the need to give breeding seaducks and seabirds a wide berth and increase awareness among potential marine tourists to the area about the behaviors of breeding seabirds when disturbed.
- Create awareness around the need to provide for the long-term and systematic monitoring of all marine bird populations breeding, moulting and wintering in the waters off Newfoundland and Labrador.
- Explore the potential to initiate and maintain long-term population monitoring through breeding bird surveys and banding programs.
- Expand and update the Researcher's Guide to Newfoundland Seabird Colonies to include the coast of Labrador.
- Where harvests of breeding birds and/or eggs occurs, support studies to design sustainable harvesting methods and strategies

9.5. Suggestions for Education and Public Awareness

Oral History. Develop a series of Oral history projects to document the historical and contemporary relationships of people to marine birds and the marine environment.

School Curriculum. Explore development of educational curriculum materials on marine birds and their habitat requirements.

Extra-curriculum. Develop a series of extra-curriculum educational materials for a series of age groups and in a variety of media. For example:

- biologically informative coloring books for small children
- a series of locally relevant marine bird calendars
- locally specific laminated field “flash guides” of marine birds suitable for convenient use in pockets and aboard small boats

Youth Groups. Develop a marine bird program for use by local youth groups.

Birders Checklist. Develop a Birders Checklist for the area. For examples see the Checklist of the Birds of Insular Newfoundland and its continental Shelf waters by the NHSNL (<http://www.nhs.nf.ca/checklist.htm>) and a similar checklist developed by the QLF for the Quebec Lower North Shore. Develop a migrating bird checklist for distribution to the public.

Oil pollution. Develop relationships between people, schools and groups interested in the prevention of marine pollution from along the entire coast of Labrador.

CAFF Pamphlet. In consultation with CWS and CAFF, adapt the CAFF pamphlet “Seabirds and You: Sharing the Ocean” for local use.

At-Sea Field Guide. Develop a Field Identification Guide for observers at sea, possibly building on Brown et al. 1968.

Community Resource Directory. Collaborate with the Community Services Council to create a

guide to resources available to help those involved in community planning for marine conservation.

Audio, Theatre and Film. Explore the use of Audio, Theatre and Film as entertaining and literacy independent ways to distribute information. For example assist in the distribution of existing and develop new:

- web-based audio materials detailing the natural history of marine birds and marine ecology
- home-audio materials that entertain and educate the listener about the natural history of marine birds and marine ecology
- community and commercial radio exposure for marine bird conservation material
- locally relevant and contemporary theatre, films and videos relevant to marine bird conservation

9.6. Suggestions Specific to Harvesting

In consultation with the Labrador Inuit Association, the Innu Nation, the Labrador Metis Nation, other residents and the Canadian Wildlife Service develop research efforts and public awareness strategies designed to insure the long-term compatibility of human harvests with the health of bird populations.

- Develop a hunter awareness campaign focused on the identification of various seaduck and seabird species and an understanding of their breeding ecology
- Develop an awareness among hunters of the magnitude of preventable adult bird mortality that results from non-hunting sources such as fisheries bycatch and marine oil pollution
- Encourage communications between relevant parties on how to reduce preventable and undesired sources of bird mortality
- Develop a program to encourage hunters to report their sightings of other birds and wildlife

Science Outreach. Develop programs where those who do research on marine birds relevant to the area visit schools and other community venues to share the results of their work with local people.

Artist in Residence Program: Explore the potential of sponsoring artist visitation to areas expressly for the purpose of creating works about the birds

and/or relationships between birds and people. These residency periods could include visits to schools or offering artmaking workshops to communities in the summer or school year. For local models and potential partners see the artist in residence program at Gros Morne National Park and the Pouch Cove Foundation (<http://www.pouch-cove.org/visual.html>). Also explore the history of the MUN Extension Service which hosted an Artist in Residence program in several communities around the province in the 1970s. Nain was one of the communities included in the Extension Service program when it existed.

Migratory Connections. Explore the possibility of cooperative studies with communities that share the same migratory birds at different times of the year. For example eiders, Harlequin Ducks and murre are potential links to Greenland, the Canadian Arctic and the Eastern United States.

9.7. Suggestions Specific to the Fishery

Based on their observations of seabird bycatch in insular Newfoundland, Piatt and Nettleship (1987) recommended the following actions to reduce bycatch:

1. Regulation of the timing of use of gillnets so as to avoid critical periods, such as when Capelin swim inshore to spawn;
2. Restrictions on the use of gillnets in particularly sensitive areas, such as around major seabird colonies;
3. Use of bycatch quotas for seabirds much the same as is in place for fish bycatch.

John Chardine in a review of the problem made the following recommendations to improve institutional response to seabird bycatch in Canada.

Monitoring of seabird bycatch is needed in areas likely to experience problems such as near concentrations of seabirds at breeding colonies and offshore feeding areas.

Monitoring of seabird bycatch should become an integral part of activities of fisheries observers on vessels fishing in Canadian waters.

Canadian Wildlife Service and Department of Fisheries and Oceans should co-operate with fish-

ers and university researchers in the development of modifications to monofilament gillnets that would make them less prone to seabird bycatch. Net colour and the use of alarms may be promising avenues of work.

To raise the awareness of seabird bycatch as a conservation problem in some Canadian fisheries, an information/education program should be developed and directed toward fishers and Canadian fisheries management agencies.

Current knowledge of the spatial and temporal patterns of seabird bycatch should be incorporated into future fisheries regulations such that fishing effort is reduced during periods of the year, and at locations, when and where seabird bycatch is a significant problem.

The use of monofilament gillnets should be discontinued in areas where seabird bycatch is known to occur and is a particular problem, such as in the vicinity of seabird colonies.

The full report from which the above is drawn is available at http://www.grida.no/caff/tr1_itr1.htm#canada.

Fisheries Resource Conservation Council (FRCC). Engage the FRCC with reference to interpreting aspects of their mandate and how they apply to marine bird-fisheries interactions:

3.2 To develop a more profound understanding of fish-producing ecosystems including the inter-relationships between species and the effects of changes in the marine environment on stocks.

4.3 The Council may recommend any measures considered necessary and appropriate for conservation purposes such as TACs, closure of areas to fishing during specific periods, approaches to avoid catching sub-optimal sized fish or unwanted species, and restrictions on the characteristics or use of fishing gears.

Nautical Charts

Encourage development of efforts to improve the quality of nautical charts for the area to reduce hazards to shipping

9.8. Suggestions Specific to the Tourism Industry

Many of the above project ideas can be adapted for application to the tourism industry. In addition the following more focused suggestions are examples of projects that would specifically target this sector:

- Develop television and/or radio advertisements about the effects of disturbance on breeding and moulting birds.
- Develop a region specific pamphlet with suggestions on how to minimize the effects of touring on marine birds.

Marine Tour operators. Engage existing tour boat operators in public awareness efforts and provide them with specially produced materials such as audio natural history products to play on their vessel which will both entertain and inform them and their guests. Cartoon like coloring books for children could be designed to depict the effects of disturbance on birds.

9.9. Suggestions Specific to Marine Oil Pollution

- Start local beach surveys for marine oil.
- Plan the collection of baseline data to facilitate detection of changes in the future.
- Request Transport Canada contribute to a small vessel bilge awareness campaign in the area for residents and fisherman
- Establish what current levels of independent monitoring for ship source oil pollution are in place and consider if the level of surveillance provided is sufficient to deter the intentional illegal dumping of oily bilge and ballast water
- Encourage the provision of services for marine vessel operational waste treatment on shore.
- Initiate awareness campaigns around the environmental aspects of oil development and explore the broad scale connections between marine pollution on the Grand Banks, seabird species that winter there and those that breed in Northern Labrador. Also explore the broad scale connections between marine pollution near shore in Placentia Bay and the seaducks that winter there and seaducks that breed and/or moult in Northern Labrador
- Develop awareness around the regulatory regimes governing the exploration and development of both

onshore and offshore oil and gas in the province and how marine birds may be affected.

- Develop awareness around the Rights Issuance Regime for both onshore and offshore oil development and how it may interfere with the protection of areas for the conservation of birds and other marine life.
- Develop awareness around the need for independent monitoring of oil and gas activity.
- Develop awareness around the need for the Canadian Wildlife Service to involve itself more in independently monitoring the distribution of birds at sea and at breeding colonies and the effects on marine birds of both onshore and offshore oil activity and ship source pollution.

9.10. Suggestions regarding various Mega-Projects

Explore and seek independent critical review and contribute to increased public awareness and the need for government and proponent accountability to the public of the potential for the following mega-projects to affect birds using the IBAs covered by this document:

- Proposed Mine/Mill at Voisey's Bay and associated shipping; see also Panel Recommendations in "Voisey's Bay" on page 86
- DND managed Low-Level Flight Training
- Proposed Lower Churchill hydro electric development and associated road and powerline construction
- Industrial forestry and associated road construction and shipping
- Trans Labrador Highway and associated increased access for logging, hunting, housing development and tourism
- Mealey Mountains National Park and associated disturbance potential

9.11. Suggestions for Formal Protection

- Explore the various options for formally conserving these sites for the benefit of marine bird conservation.
- Contribute to public awareness of the protective options and the costs and benefits associated with each.
- Regardless of the protective status of a site, explore the development of Guardian programs for areas sensitive to disturbance.

9.12. Sea Duck Joint Venture

The Sea Duck Joint Venture Strategic Plan for 2001-2006 has a list of specific recommendations

that should be added to the above. Ways to dovetail relevant suggestions from above with the objectives and strategic plans of the Sea Duck Joint Venture should also be explored (see “Appendix II Sea Duck Joint Venture” on page 143).

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Appendix I Contacts

Caveat: The following is an incomplete list of contact information for people and groups of potential interest to any party pursuing conservation plans for marine birds in Labrador. It is not intended to be exhaustive and it does not presume a definite interest in being contacted by those listed. Rather it is meant as a start-up directory which users can annotate as they begin to develop a network of interested parties and collaborators.

Canadian IBA Program Partners

The Canadian Nature Federation
Suite 606, 1 Nicholas Street, Ottawa, Ontario, Canada K1N 7B7
1-800-267-4088
E-mail: cnf@cnf.ca

Bird Studies Canada/Études d'Oiseaux Canada
P.O. Box 160, Port Rowan, Ontario Canada N0E 1M0
Phone: 1-888-448-BIRD Fax: 1-519-586-3532
Email: generalinfo@bsc-eoc.org
URL: <http://www.bsc-eoc.org/bscmain.html>

Newfoundland IBA Partner

The Natural History Society of Newfoundland and Labrador
P.O. Box 1013
St. John's, NF A1C 5M3
E-mail: nhs@nhs.nf.ca
URL: <http://www.nhs.nf.ca>

Labrador Resources

Labrador Inuit Association
P.O. Box 70
(or 2 Morhardt St. for courier)
Nain, Labrador A0P 1L0
Telephone: (709) 922-2942
Fax: (709) 922-2931

E-Mail: winston@nunatsiavut.com
URL: <http://www.nunatsiavut.com>

Innu Nation
PO Box 119
Sheshatshiu, Labrador A0P1M0
tel: 709/497-8398
fax: 709/497-8396
URL: http://www.innu.ca/the_innu.html

Labrador Métis Nation (LMN)
P.O. Box 2164 Stn. "B"
Happy Valley-Goose Bay
Labrador, Canada
A0P 1E0
Phone: 709 896-0592
Toll-Free: 1-877-896-0592
Fax: 709 896-0594
Email: labmetis@hvgb.net

Labrador Inuit Development Corporation
P.O. Box 1000, Station "B"
(or 215 Hamilton River Road for courier)
Goose Bay, Labrador A0P 1E0
Telephone: (709) 896-5834
Fax: (709) 896-8505
E-Mail: lidc.hvgb@nf.sympatico.ca
URL: <http://www.nunatsiavut.com/lidc.html>

OKalaKatiget Society
P.O. Box 160
Nain, Labrador A0P 1E0
Telephone: (709) 922-2955
Fax: (709) 922-2293
E-Mail: nakit.oks@nf.sympatico.ca

Labrador Inuit Health Commission
P.O. Box 250
Nain, Labrador A0P 1L0
Telephone: (709) 922-2114
Fax: (709) 922-2216
E-Mail: ewinters@cancom.net
URL: <http://www.nunatsiavut.com/lihc.html>

Appendix I Contacts

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General Delivery
Nain, Labrador A0P 1L0
Telephone: (709) 922-2158
Fax: (709) 922-2863
E-Mail: torngask@cancom.net
Web Site: <http://www.nunatsiavut.com/torngasok.html>

Nanuk Development Corporation
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Appendix I Contacts

Appendix II Sea Duck Joint Venture

Following are selected excerpts from the Sea Duck Joint Venture Strategic Plan 2001-2006 (Sea Duck Joint Venture management Board, 2001). The complete report document from which the excerpts are taken is available on the Internet (http://seaduckjv.org/pdf/StratPlan2001_06.pdf).

Introduction

The fifteen species of sea ducks (Tribe Mergini) are the most poorly understood group of waterfowl in North America. Even the most basic biological information is unknown for some species. There are few reliable population indices or estimates of annual productivity for any species. Much of our knowledge is based on a very few, localized studies. Surveys are not adequately designed to accurately estimate the harvest of sea ducks.

Sea ducks, as a group, have evolved in relatively stable environments. Most species exhibit delayed sexual maturity, long life spans and low annual recruitment. For many reasons, the environments inhabited by sea ducks are changing; human endeavors are expanding in northern breeding areas and many traditional wintering areas are increasingly affected by urbanization and industrialization. Thriving gull and other predator populations are placing greater pressure on annual production of some species. Indirect factors, such as bioaccumulation of contaminants and climate change, could be negatively affecting survival and production in some populations; exposure to lead is a documented source of mortality. Only through a concerted effort to gain an understanding of how these factors interact can we hope to effectively conserve sea ducks.

History and Purpose of the Joint Venture

Sea ducks were given no special consideration under the 1986 North American Waterfowl Management Plan (NAWMP). Although few data were available, most populations were thought to be relatively stable. Since 1986, the eastern population of Harlequin Ducks has been listed as endangered

by Canada; Spectacled Eiders and the Alaska breeding population of Steller's Eiders have been listed as threatened by the United States.

Analysis of previous survey and harvest data, along with new surveys and studies conducted in the 1990's, indicates population declines in 10 of the 15 species of North American sea ducks. Federal, State, Provincial and NGO management agencies came together in 1997 to propose a Sea Duck Joint Venture (SDJV) to address these issues at a continental scale. The NAWMP Committee approved the SDJV in November 1998 as the best vehicle to coordinate the conservation of sea ducks. The organizational structure and functions of the SDJV are similar to other joint ventures under NAWMP and are described in Appendix A.

The SDJV will endeavor to address the needs for information about all 15 species of Mergini that occur in North America. Although the focus of the joint venture is sea duck populations in North America, partnerships with other circumpolar countries sharing these populations will be encouraged. Joint venture efforts will encompass issues related to both population dynamics and habitat quantity and quality.

Mission Statement

The SDJV promotes the conservation of North American sea ducks through partnerships by providing greater knowledge and understanding for effective management.

Goals

- *The SDJV facilitates and supports the development of knowledge and understanding critical to sea duck conservation in North America.*
- *The SDJV increases the profile of sea ducks within the conservation, industrial, and scientific communities.*
- *The SDJV develops a program to involve the partners and resources needed to accomplish sea duck conservation.*

Appendix II Sea Duck Joint Venture Strategic Plan

- *The SDJV promotes proactive conservation of sea ducks.*

Current Funding and Program Status

The SDJV has a long-term goal of developing new funding sources and increasing capabilities to cooperatively fund sea duck science projects. Although the SDJV currently does not have funds to sponsor extensive new research and monitoring programs, member organizations will look for opportunities to collaborate with partners to stimulate and amplify the advancement of sea duck science with available funds. The SDJV will promote its scientific agenda to meet information needs through three main avenues:

- *The SDJV members are committed to directing funds toward meeting SDJV information needs; by necessity, distribution of most of these funds may be constrained by legislative or policy mandates of member organizations;*
- *The SDJV will facilitate funding and support for work by partner organizations, with the expectation that funding contributions will have favorable matching and multiplier effects to increase science program benefits; and*
- *The SDJV will provide technical advice and assistance to cooperators who wish to contribute toward meeting SDJV science objectives with their own resources.*

Proposal and Endorsement Process

Project proposals will be the primary instrument by which the SDJV Management Board endorses and supports relevant scientific work on sea ducks. Until such time as funding is available on a competitive basis, the SDJV will use a simplified process to solicit and endorse sound and economical projects that address elements of its scientific agenda (i.e. Appendix B: Information Needs). The proposal process and format are found in Appendix C.

Communication and Marketing Goals

- *Increase public and stakeholder awareness and understanding of sea duck conservation issues.*
- *Facilitate the acquisition of resources (financial, partnerships) required to address key conservation issues.*
- *Increase the body of knowledge related to sea ducks through the participation of a broader range of participants.*
- *Promote the conservation of sea ducks and their habitat.*

Strategic Considerations

The approach to communications will reflect the following strategic considerations:

- *There are no dedicated SDJV funds for communications. Communication products and activities will depend upon the voluntary contributions of member agencies and partners.*

Sea Duck Joint Venture Strategic Plan 2001 - 2006
10• *Each partner should undertake to lead in the development and/or implementation of specific products and activities.*

- *Information relevant to a wide range of species and/or audiences will be required to increase awareness and understanding.*
- *Focused information (species/geographic) will be required for the development of partnerships and financial support.*
- *Initial efforts should focus on information products of wide application before moving to more specific marketing efforts.*
- *Communications with broad applications can be delivered in a centralized fashion, but more regional/local messages should be delivered through regional partners.*

Target Audiences

The target audiences for SDJV communications include:

- Legislators (National, State, Provincial)
- Judiciary and legal systems (fines and court settlements)
- Wildlife management agencies (National, State, Provincial, Co-management Boards)
- Environmental non-governmental organizations (ENGOs) that support sea duck, coastal and estuary habitat conservation
- Sport hunting organizations and individuals
- Subsistence hunting organizations and individuals
- Commercial/industrial organizations (petroleum producers and shippers, commercial fishers, tour operators, land developers) that share sea duck habitats
- General public

Key Messages

Key messages could include:

- Some sea duck populations are in serious decline; the status of most is unknown.
- Conservation of sea ducks requires coordinated efforts by many conservation agencies.
- The actions of individuals can make a difference.
- Sea ducks are shrouded in mystery, scientific uncertainty and are enigmatic to managers.
- Sea ducks are important to aboriginal communities for subsistence and cultural reasons.
- New threats are emerging - climate change, contaminants, and economic factors - which could be the cause of population declines.

- Some species range beyond North America. They are shared with Russia and Greenland.

FUNDING STRATEGIES

The Sea Duck Joint Venture, when fully operational, will require several millions of dollars annually over a period of at least ten years. This is due to the magnitude of the task in terms of data gaps, research needs, and the fact that sea ducks tend to be widely dispersed in remote locations for much of their lives. Studying them is difficult and expensive.

The Sea Duck Joint Venture will use four principle strategies to fund its activities:

Redirect Base Resources from a Broad Range of Partners

The SDJV is a partnership of Federal, State and Provincial governments, major non-government organizations, and individual researchers at universities and elsewhere. Each partner is committed to playing a meaningful role in the implementation of SDJV programs and is committed to make best efforts to redirect existing internal funds to SDJV priorities to the degree possible.

Seek Supplemental Appropriations

Government agencies have mandated responsibilities for the conservation of sea ducks and yet, in general, funds have not been dedicated to sea duck work by legislators. Given that the tasks outlined by the SDJV greatly exceed the capacity of government agencies to respond under existing budgets, opportunities will be sought to obtain additional appropriations.

Develop Corporate Partners

Certain industries operate within areas frequented by sea ducks and, in many cases, their operations can pose threats to sea ducks and habitats. These include merchant shipping; cruise ship operators; offshore oil and gas exploration and development; petroleum shipping; and aquaculture. The SDJV will approach industry associations and specific

corporations to seek support for implementation of specific programs. These approaches will be made in co-operation with major NGO partners to facilitate corporate recognition and tax benefits for industry.

Secure Court Awards for Environmental Damage

In the past, oil pollution, particularly that deriving from marine oil spills, has caused significant damage to sea ducks and their habitats. All too frequently, such spills are either deliberate or preventable, and court action has ensued. In both Canada and the United States, mechanisms are in place to direct court awards towards conservation efforts. In such instances, partners will work with enforcement staff and prosecutors to direct funds towards SDJV programming where this is appropriate.

APPENDIX B – INFORMATION NEEDS AND STRATEGIES FOR 20 POPULATIONS OF NORTH AMERICAN SEA DUCKS

Common Eider, Northern Race (*Somateria mollissima borealis*)

Population Size and Trends: Northern Common Eiders breed in the eastern Canadian Arctic, northern Québec, Labrador, and west Greenland. Thus, it is both logistically difficult and expensive to conduct breeding population surveys for this species. However, data on population size and trends throughout this range are needed to monitor the population and establish levels of sustainable harvest.

1. Periodically repeat surveys of eider breeding populations where historical data exist (e.g. south Baffin Island, Ungava Bay, west Greenland).
2. Initiate new surveys to establish baseline data throughout the breeding range. Locations include Frobisher Bay and Cumberland Sound, where large numbers of Common Eiders are thought to breed.
3. Develop new survey techniques (e.g. aerial surveys of drakes) and refine existing techniques.

4. Survey a sample of islands annually to quantify annual variation in colony size (e.g. non-breeding), long term response to perturbations (e.g. Polar Bear predation) and intra-colony movements within a region.

Population Definition/Delineation: The zone of contact between the Hudson Bay Eider and Northern Eider occurs in northern Hudson Bay. The zone between the Pacific Common Eider (*V-nigra*) and the Northern Eider is less clear. Further, the links between nesting areas and wintering areas (where harvest levels vary) is poorly known. This information is required to assess population size and trends, and the effects of harvest and other factors on population dynamics.

1. Use satellite telemetry and banding to determine affiliations between breeding, molting, and wintering areas in the Eastern Arctic and west Greenland.
2. Conduct offshore aerial and boat-based surveys to define boundaries and level of use of staging, molting, and wintering areas.

Population Dynamics: Very little information exists on annual productivity, survival, and recruitment. Although a project is underway on Southampton Island, a second is required to concurrently measure these parameters at other breeding sites.

1. Continue to quantify annual survival, productivity and recruitment of Northern Common Eiders at East Bay, Southampton Island, Nunavut.
2. Initiate a second study of survival, productivity, and recruitment at another major nesting area in the low eastern Canadian Arctic, perhaps in Frobisher Bay or along the south coast of Baffin Island where, (a) a study would be logistically feasible, (b) some baseline data already exist, and (c) where significant proportions of the Northern Common Eider ducks nest. Conduct regular winter surveys in west Greenland and Newfoundland/ Labrador to detect changes in population size, and sex ratios.

Establish several colony sites that are monitored concurrently each year. This would determine for the first time whether changes at colonies reflect

only regional variation during summer or instead changes in the population over the entire geographic range. The latter finding would suggest that any factors impacting large proportions of the population do so at wintering areas, where eiders originating from several nesting areas across the eastern Canadian Arctic congregate.

Population Ecology: Little is known about the factors that influence adult survival and reproductive success of Northern Common Eiders. This information is required to establish models that assess the sustainability of harvest, population trends, and the potential of a species to recovery from population declines.

1. Continue to study factors affecting breeding ecology and survival of Northern Eiders at East Bay, Southampton Island, Nunavut (Canadian Wildlife Service and University collaborators). These include predation, weather, ice conditions, contaminants, parasitology, nest site selection, and body condition of hens.

2. Establish a second research study, perhaps in Frobisher Bay or along the south coast of Baffin Island where, (a) a study would be logistically feasible, (b) some baseline data exist, and (c) where significant proportions of the Northern Common Eiders nest.

3. Initiate a study of winter ecology in southwest Greenland. Compare diet, survival, habitat use, and body condition across years, in different habitats (fjords vs. coasts), and among other Arctic eider populations. This study has been initiated by F. Merkel (Greenland Institute of Nature) in collaboration with the Canadian Wildlife Service.

Habitat requirements: During nesting, molting, brood rearing, and at over-wintering sites, Northern Common Eiders are vulnerable to disturbance and potentially, food shortages. Large concentrations of eiders may exist for several weeks at a single location, and these sites must be identified with the long-term view of formal marine habitat protection under the Oceans Act and the revised Canadian Wildlife Act. Research methods include boat-based and aerial surveys, and satellite telemetry. The latter technique has great potential, par-

ticularly in the Canadian Arctic and Greenland, where constrained logistics and extreme weather conditions often prohibit surveys.

1. Identify key molting, brood-rearing, and wintering areas in Arctic Canada and west Greenland. Quantify the key environmental and habitat factors that influence habitat selection and annual variation in habitat use.

2. Identify key nesting areas in Arctic Canada and west Greenland. Quantify key environmental and habitat factors that influence nest site selection, colony size, and annual variation in habitat use (e.g. island size, proximity to a mainland, and frequency of Polar Bear predation).

Harvest Assessment: Northern Common Eiders are known to be heavily harvested throughout their range, particularly in Greenland in winter where annual harvest estimates often exceed 100,000 birds (F. Merkel, Greenland Institute of Nature). Despite this, the influence of harvest on population dynamics remains poorly known.

Continue to monitor the subsistence and sport harvests of Northern Common Eider in Nunavut (i.e. Nunavut Harvest Study is ongoing), Newfoundland, Labrador, and west Greenland (i.e. harvest studies ongoing).

2. Assess sources and degree of bias in harvest reporting from each area, and establish correction factors to refine harvest estimates.

3. Assess crippling loss of eiders under various harvest scenarios (e.g. shot over pack ice, solid ice, from shore over open water, from boats etc.). Given their large size, fast flight, and often dense flocks, crippling loss is likely an important parameter in harvest assessment. Approximately 26% of Northern Eiders breeding in Hudson Strait and Foxe Basin carry imbedded shot (B. Barrow and G. Gilchrist, CWS).

4. Determine what proportion of Common Eiders harvested in Greenland breed in Canada. Preliminary examination suggests over 90% (F. Merkel, Greenland Institute of Nature).

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Parasites, Disease, Contaminants: There are few data on the levels of contaminants, parasites and disease in Northern Common Eiders. However, collections are feasible because this race is harvested by Inuit in Canada and Greenland throughout the year and across its range.

1. Compare levels of contaminants in recently collected Northern Common Eiders to museum specimens to determine if levels have increased over the past century.

2. Compare levels of contaminants found in Northern Common Eiders to other North American and eider populations. A recent pan-Arctic comparison (M. Wayland, CWS) suggests that the Northern Common Eider carries higher metal concentrations (e.g. cadmium) than either the Hudson Bay Race or the Western Arctic Race, and among the highest concentrations of any sea duck. The effect of these levels on reproduction and survival are not known, and require further study.

3. Compare parasite loads (i.e. parasite species present and number) found within Northern Common Eiders across the population, during different times of year, with other circumpolar Common Eiders and with other sea duck species. Such a comparison would provide insights into whether Northern Common Eiders are heavily parasitized. Preliminary studies (C. James, University of Guelph) indicate that nesting hens on Southampton Island are heavily parasitized, and that parasite levels vary considerably between individuals nesting within a colony. The effect of these levels on reproduction and survival are not known, and require further study.

Common Eider, Southern Race (*Somateria mollissima dresseri*)

Population Size and Trends: Estimates of the breeding population are based on uncoordinated surveys, using different techniques conducted over the last 25 years in different geographical areas. Published information indicates a stable or increasing population, but recent reports from Nova Scotia and Québec suggest regional decreases. Little information exists on the size of

the nonbreeding and subadult component of the population

1. Develop and implement a coordinated, standardized population survey throughout its range.

2. Conduct surveys to determine the status and location of nonbreeding and subadult eider.

Population Definition/Delineation: The present approach to manage this subspecies as one population unit may not be appropriate. Hunter band returns indicate female eiders from breeding colonies in different geographic areas use similar wintering areas. However, band returns from females recaptured on breeding colonies indicate there is no interchange between birds breeding in the Gulf of St. Lawrence, Maine, and New Brunswick and Nova Scotia. The extremes of the breeding range of *dresseri* are well known, but not the delineation of sub-populations. A genetic analysis of breeding populations in different geographic areas has not been conducted, although some blood samples have been taken.

1. Assess population genetic characteristics of breeding populations in different geographic areas of range.

2. Determine affiliations between breeding, molting and wintering areas.

Population Dynamics: Measures of nest/hatching success have been well studied and are available on this race throughout its range. However, with the exception of survival estimates of adult females and several localized studies on brood rearing and duckling survival, there are no data on many parameters of population dynamics.

1. Summarize available information on productivity and its geographic variability.

2. Determine reproductive success for this race in all major nesting areas.

3. Continue mark-recapture studies of adult female survival at multiple locations (declining vs. stable populations, if possible).

4. Estimate breeding propensity (percentage of hens attempting to breed in a given year) in declining vs. stable populations, if possible.

5. Estimate duckling survival from hatch through fledging and its geographic variability.

6. Estimate recruitment by marking older (2-6 weeks) ducklings in declining vs. stable populations, if possible.

7. Determine the survival rate of other age-sex cohorts of the population. Band adult males on molting areas. A study of marked birds is needed on both breeding and wintering areas.

8. Conduct regular winter surveys to obtain information on the size of the population.

Population Ecology: Breeding ecology is the most studied aspect of population ecology for this race. Additional localized studies have examined the birds on wintering areas. Important parameters necessary for their management have been largely neglected. There remain critical gaps in knowledge of ecology/life history of the population.

1. Study the molting ecology of adult males.
2. Study the molting ecology of adult females with and without young.
3. Study the ecology of subadults.
4. Study the ecology of wintering birds and its geographic variability.

Habitat requirements: With the exception of nesting, knowledge of habitat requirements is rudimentary or largely unknown.

1. Characterize and quantify the characteristics of habitats preferred by females with broods by geographic area.
2. Identify and characterize the habitat used by nonbreeders and subadults.
3. Identify and characterize molting sites of adult males.

4. Identify and characterize molting sites of adult females.

5. Quantify winter habitat use in relation to foods, tides and ice conditions.

Harvest Assessment: Harvest surveys for this race are imprecise and may not be adequate to model population effects of regulatory changes.

1. Evaluate current surveys for adequacy at estimating harvest levels.
2. Model the population to determine the impact of various harvest levels.
3. Determine if current restrictive measures are sufficient to maintain acceptable harvest rates.

Parasites, Diseases, Contaminants: Most data available are derived from other races.

1. Sample birds for contaminants, diseases and parasites.

Harlequin Duck, Eastern Population (*Histrionicus histrionicus*)

Population Size and Trends: Information on the size and trend of the eastern seaboard wintering population needs to be refined. Little is known of the size and trends of the Greenland wintering population.

1. Establish a monitoring program to better assess the size and trend of the eastern seaboard wintering population.
2. Determine the size of the Greenland wintering population.
3. Determine the trend of the Greenland wintering population.

Population Definition/Delineation: There seem to be two isolated populations in eastern North America, one that winters on the eastern seaboard and one that winters in Greenland. Preliminary genetic studies support this division, but better genetic

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studies are needed to establish the degree of genetic differentiation of the two populations.

1. Determine the boundaries between breeding birds from Greenland and the eastern seaboard wintering populations in Labrador and Québec.

2. Undertake a comprehensive genetic analysis of the various populations of Harlequin Ducks.

3. Determine affiliations of birds among breeding, molting and wintering areas; locate breeding areas of birds wintering in Nova Scotia and in Newfoundland

Population Dynamics: Basic population parameters are needed for the two eastern populations. There are no reliable data on survival rates of young and adults. The mechanisms of selection of molting areas and even wintering areas are not known.

1. Conduct studies of survival rates of adults and young.

2. Study reproductive success on various rivers and across years.

3. Obtain more accurate sex and age ratios for the various wintering areas (Maine, Nova Scotia, Newfoundland and other peripheral wintering areas).

Population Ecology: Breeding ecology of the eastern population is poorly documented. Little is known of the effects of weather, food availability and spring runoff on reproductive success.

1. Study factors affecting reproductive success.

2. Study dispersal behavior of young.

Habitat requirements: Important rivers for breeding remain to be located and characterized. Spring staging areas have not been characterized nor well identified

1. Identify and characterize rivers that are heavily used by Harlequin Ducks.

2. Identify and characterize spring staging areas.

3. Identify and characterize molting sites.

Identify and characterize important wintering sites.

Harvest Assessment: Hunting is not currently allowed by law. However, the amount of illegal hunting and of subsistence harvest is poorly documented.

1. Estimate the level of subsistence harvest in Canada and Greenland.

2. Educate local people living near major staging, molting and wintering areas about the status of the species to reduce accidental harvest.

Parasites, Disease, Contaminants: There is little information on body parasites. There is no information on the levels of contaminants in the eastern populations

1. Determine the level of contaminants in birds at major wintering sites.

2. Determine the level of contaminants in birds from Greenland

3. Compare contaminants levels in males and females.

Black Scoter (*Melanitta nigra*)

Population Size and Trends: The population seems to number in the hundreds of thousands for this species, but there is little quantitative information available to assess population size and trends. The number of Black Scoters breeding in Western Alaska appear to have declined, indicated by a decline in total scoters in surveyed strata where Black Scoters predominate. Similarly, the population wintering in the Atlantic Flyway seems to be declining.

1. Develop a population estimate through standardized surveys of scoter species.

2. Delineate and monitor numbers of breeding Black Scoters in Alaska and Canada.

3. Delineate and monitor numbers of wintering Black Scoters in Canada and the United States.

Population Definition and Delineation: There appear to be two geographic populations of Black Scoters that are separated by their breeding and wintering distribution; however, the delineation of these two populations is not well documented (identification of nearctic breeding areas and the molting areas, migration corridors, and wintering areas associated with birds from those breeding areas).

1. Assess and improve surveys of the breeding range of the Black Scoter.

2. Determine the molt areas of birds associated with various breeding areas.

3. Determine the migration corridors used between breeding, molting and wintering areas.

4. Determine wintering areas used by Black Scoters from various breeding areas.

5. Determine seasonal movements of non-breeding Black Scoters affiliated with breeding areas.

Population Dynamics: There are few data available on population dynamics for this species.

1. Determine survival rates of birds from various breeding areas.

2. Determine production rates of birds from various breeding areas.

3. Determine the age structure of breeding populations.

4. Develop a demographic model for the species.

Population Ecology: Studies of nesting ecology have been done in Québec, but larger and more geographically diverse studies are needed. In addition, breeding, molting, migration, and wintering ecology need to be better documented. Data have

been collected on food habits and feeding ecology in breeding and wintering areas, but additional studies are needed

1. Quantify the reproductive live history for the Black Scoter in the various breeding areas.

2. Assess the winter ecology for this species in the Atlantic and Pacific Coasts.

3. Assess the molting ecology for this species throughout its range.

4. Assess the breeding ecology for this species throughout its range.

5. Assess diets during the summer, migration and winter for this species throughout its range.

Harvest Assessment: The sport harvest is low in comparison with apparent overall population levels, but the accuracy of harvest estimates is poor. Subsistence harvest is poorly documented.

1. Assess and improve the surveys for sport and illegal harvest for this species.

2. Improve subsistence harvest estimates for Alaska and Canada.

Habitat Requirements: Breeding, molting and winter habitat needs are not well documented, although the location of many key areas have been documented.

1. Characterize the breeding habitat in Alaska and Canada, and identify the factors responsible for their selection.

2. Characterize the molting habitat in Alaska and Canada, and identify the factors responsible for their selection.

3. Characterize the wintering habitat in Alaska and Canada, and identify the factors responsible for their selection.

Parasites, Disease, and Contaminants: Little is known about parasites, disease, and contaminants in the Black Scoter.

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- 1. Screen Black Scoters for diseases and parasites on both the breeding and wintering areas.*
- 2. Determine contaminant levels, especially lead, on both the breeding and wintering areas.*

Surf Scoter *(Melanitta perspicillata)*

Population Size and Trends: The population seems to number in the hundreds of thousands for this species, but there is little quantitative information available to assess population size and trends. The numbers of Surf Scoters breeding in western Canada and perhaps Alaska are declining, as indicated by a decline in total scoter numbers where Surf Scoters predominate. Similarly, the population wintering in the Atlantic Flyway appears to be declining.

- 1. Develop a population estimate through standardized surveys of scoter species.*
- 2. Delineate and monitor numbers of breeding Surf Scoters in Alaska and Canada.*
- 3. Delineate and monitor numbers of wintering Surf Scoters in Canada and the United States.*

Population Definition and Delineation: Surf Scoters breed throughout the boreal forest, but appear to have larger nesting populations in western Canada, Alaska and Québec. Breeding in the midcontinent prairies has declined significantly. The current nearctic breeding range should be fully identified. Molt areas, migration corridors and winter areas associated with breeding populations also needs to be fully identified.

- 1. Assess and improve surveys of the breeding range of the Surf Scoter.*
- 2. Determine the molt areas associated with various breeding areas.*
- 3. Determine the migration corridors used between various breeding and wintering areas.*

- 4. Determine the wintering areas used by Surf Scoters from various breeding areas.*
- 5. Determine seasonal movements of non-breeding Surf Scoters affiliated with breeding areas.*

Population Dynamics: There are few data on the population dynamics of this species.

- 1. Determine production rates of birds from various breeding areas.*
- 2. Determine survival rates of birds from various breeding areas.*
- 3. Determine the age structure for various breeding populations.*
- 4. Develop a demographic model for the species.*

Population Ecology: Studies of nesting ecology have been done in eastern and western Canada, but larger studies are needed. In addition, breeding, molting, migration, and wintering ecology needs to be better documented. Data have been collected on food habits and feeding ecology in breeding and wintering areas, but additional studies are needed.

- 1. Quantify the reproductive live history for the Surf Scoter in the various breeding areas.*
- 2. Assess the winter ecology for this species in the Atlantic and Pacific Coasts.*
- 3. Assess the molting ecology for this species throughout its range.*
- 4. Assess the breeding ecology for this species throughout its range.*
- 5. Assess diets during the summer, migration and winter for this species throughout its range.*

Harvest Assessment: The sport harvest is low in comparison with apparent overall population levels. The level and composition of subsistence harvest is poorly documented. At present, estimates of sport and subsistence harvest are poor.

1. Assess and improve the surveys of sport and illegal harvest for this species.

2. Quantify subsistence harvest levels for Alaska and Canada.

Habitat Requirements: Breeding, molting and winter habitat needs are not well documented, although the location of many key areas have been documented.

1. Characterize the breeding habitat in Alaska and Canada, and identify the factors responsible for their selection.

2. Characterize the molting habitat in Alaska and Canada, and identify the factors responsible for their selection.

3. Characterize the wintering habitat in Alaska and Canada, and identify the factors responsible for their selection.

Parasites, Disease, and Contaminants: Little is known about parasites, disease, and contaminants in the Surf Scoter.

1. Screen Surf Scoters for diseases and parasites on both the breeding and wintering areas.

2. Determine levels of contaminants, especially lead, on both the breeding and wintering areas.

APPENDIX C - SEA DUCK JOINT VENTURE GUIDELINES FOR PROPOSAL SUBMISSION AND EVALUATION

Procedures for Proposal Submission

The Sea Duck Joint Venture (SDJV) currently does not have a pool of funds to sponsor new research and monitoring projects independent of its member agencies and organizations. The Joint Venture's role is to encourage and facilitate international and cross-flyway studies focusing on high-priority information needs for sea duck populations, as described in the Prospectus and Strategic Plan, available from the SDJV Coordination Offices. Consequently, the SDJV will receive proposals in two categories:

1. Endorsement Only - those that are seeking endorsement as an SDJV project, but not specifically requesting SDJV funds;

2. Endorsement and Funding - those partially-funded or unfunded projects seeking endorsement as an SDJV priority and the SDJV's assistance in locating financial cooperators.

Endorsement Only proposals will be accepted at any time, given full but expedited review by the SDJV Continental Technical Team, and forwarded promptly to the Management Board with an endorsement recommendation and priority designation. The Board may act outside their regular meeting schedule to expedite support for these pre-funded projects meeting SDJV priority concerns.

Endorsement and Funding proposals will require a full formal review by the SDJV Continental Technical Team and will be reviewed when they are received. Proponents should submit proposals at least one month before the next scheduled Board meeting to be considered for endorsement that year (contact an SDJV Coordination Office for dates of meetings).

Planning Assistance. In order to promote and assist the development of project concepts and proposals, interested parties are encouraged to contact members of the SDJV Continental Technical Team to explore priority topics of research, the status of ongoing programs and prospects for cooperative efforts. The Coordination Offices can help facilitate communication and provide a list of current projects in North America.

SDJV Coordination Office SDJV Coordination Office

Canadian Wildlife Service U.S. Fish and Wildlife Service
17 Waterfowl Lane, P.O. Box 6227 1011 East Tudor Road
Sackville, New Brunswick Anchorage, Alaska 99503
Canada E4L 1G6 USA
(506) 364-5013 (907) 786-3569

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Proposal Format

Proposals should be complete and concise, but no more than 10 pages in length and should include the following:

1. *Cover Page:* Project title, Principal Investigator name(s) and affiliation, proposal category, key words, and date.

2. *Problem/Issue Statement:* What is the problem or issue addressed by the proposed work, in relation to the SDJV priorities? (see the Strategic Plan) - 50 words.

3. *SDJV Population(s) Targeted*

4. *Justification:* Combine more information and literature review here. What new information will be generated? How will it solve the problem? Maximum 1 page.

5. *Objectives or Hypotheses:* Objectives should be specific, clear and concise. Both null and alternate hypotheses should be stated.

6. *Scope and Location:* Provide a description of the proposed study area, camp locations, and staging sites. Does the project encompass an appropriate portion of the population range and involve relevant jurisdictions to address the stated problems/issues?

7. *Experimental Design:* Planned methods including statistical treatments. This section is critical to determining scientific soundness.

8. *Anticipated Output:* List expected products or data sets.

9. *Management Implications:* What is the significance of the work to management of the populations concerned?

10. *Relationship to Other Projects:* Describe the relationship of the proposed work to other projects, in terms of complementary scientific objectives, direct collaboration and/or shared resources.

11. *Literature Cited:* as appropriate.

12. *Personnel:* Briefly describe the role and responsibilities of each key staff position in the study and append a current curriculum vitae for the principal investigator(s).

13. *Logistical Requirements:* State needs for camp facilities, aircraft support, or other special resources, including dates needed (for assessment of potential cooperative efforts and shared support).

14. *Schedule:* Beginning date, milestones, completion date.

15. *Budget:* One page (as an attachment) including personnel requirements, operating expenses, capital costs, and administrative or overhead charges. Summarize annual costs and total project costs (multi-year). List all funds currently secured for the project, funds applied for, and cooperators.

16. *Letters of Commitment:* Attach any letters of commitment from funding cooperators, endorsements or other documentation in support of the proposal.

Progress and Final Reports

Annual progress reports are required for all projects endorsed by the SDJV and should be sent to an SDJV Coordination Office. These should be 5-10 pages in length and **MUST** be prefaced by an abstract (half-page). For ongoing projects, be sure to describe accomplishments to date (including publications), confirm the need for continuing support, and explain changes in the project since endorsement. Serious problems with project implementation should be identified. The following questions should be answered by the report:

1. Was the work carried out as planned? Explain variances.

2. Is the work on schedule? Explain variances.

3. Are the results being used in management?

4. Is partner support still committed?

A final completion report is expected for each endorsed project.

Send progress and final reports and requests for consideration of continuing support to an SDJV Coordination Office by 1 November each year. A list of publications arising from the endorsed project would be appreciated.

Evaluation of Proposals

The Continental Technical Team will evaluate proposals in a timely manner and may request more information or clarification of content. The Team may provide authors critical comments on objectives and methods, make suggestions for improvement, and point out potential opportunities to

coordinate with other projects. Evaluation of each proposal will focus on the following critical questions:

- 1. Does the proposal address an SDJV population(s) or identified issue?*
- 2. What is the Strategic Plan Information Needs rank? A low score on this question may affect the likelihood of funding support or may lead to a request for more justification.*
- 3. Is the proposal scientifically sound? (clear and specific objectives, sound design, realistic schedule, achievable products, investigator's experience and record of accomplishments) A low score on this question will lead to rejection or a request to revise and resubmit.*

