

*Chapter 7*

## **HUNTING FOR SECURITY: CHANGES IN THE EXPLOITATION OF MARINE BIRDS IN NEWFOUNDLAND AND LABRADOR**

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### **ABSTRACT**

North American wildlife exploitation, as exemplified in the seabird and seaduck hunts of Newfoundland and Labrador, was a basic means of food security in coastal communities. Patterns of need and exploitation changed radically since the arrival of Europeans who perceived abundant and inexhaustible wildlife populations. These perspectives often combined with adversarial approaches of securing livelihoods by “conquering” the wilderness and its aboriginal inhabitants. Unrestrained harvesting and notions of free public access were the antithesis of aristocratic land ownership in Europe that often denied people in need access to wildlife. The new North American ideals also ran counter to conservation initiatives such as hunting restrictions that were viewed as unacceptable government control.

Technological improvements in transportation and in fishing and hunting capabilities (e.g. longer ranging, faster vessels, automatic weapons) helped to secure food over larger spatial scales and to bolster larger economies. Improved technology also created breakpoints in wildlife exploitation that led to over-harvesting. Conservation legislation developed gradually, but lagged behind the decimations of many wildlife populations. The reality and often finality of overexploitation were realized slowly, though not usually heeded. In the case of marine birds, unsustainable cumulative mortality from hunting, fishing, and oil pollution eventually resulted in the implementation of comprehensive conservation laws and regulatory policies.

Through the twentieth century, hunting for food security shifted to essentially recreational forms of hunting. Yet many households in coastal communities still supplement (at times substantially) family provisions with wildlife. Overall, interest in

hunting is waning in Newfoundland and Labrador (and North America), due in large part to out-migration from coastal communities.

Non-consumptive uses of wildlife are of much benefit to coastal communities through ecotourism. Hunters, fishers, ecotourism operators, and others are involved in *Coasts Under Stress* participatory research to protect wildlife populations, to preserve and enhance critical marine habitat and to help sustain coastal communities. Interdisciplinary environmental approaches and educational outreach are integrating natural and social sciences and local ecological knowledge (LEK) in developing effective conservation policy (Jenkins 2003). As the footprint of human activity expands, wildlife and environmental conservation is a vital life-sustaining strategy.

## INTRODUCTION

Efforts to secure food and community survival are globally manifest in geographic associations between environmental resources and both ancient and current human settlements (Freuchen and Salomonsen 1958; Diamond 1997). For coastal communities, location and persistence have been determined by the availability, abundance, and predictability of edible marine animals and plants (McGhee and Tuck 1975; Harris 1990).

Owing to dependence on wildlife for survival, hunting methods and technologies were aimed at improving reliability, and efficiency, and ultimately on increasing food security. Improving technology restructured human exploitation. Relatively recent but rapid advances in the transportation of people and food and in fishing and hunting gear have in many instances deconstructed former relationships between humans, wildlife, and their environment. As well, some of the cultural, symbolic, and spiritual significance attributed to animals in earlier societies has been lost (Garibaldi and Turner 2004).

Marine bird populations in Atlantic Canada provide the medium with which we explore the socio-ecological restructuring of hunting and wildlife exploitation. As a window on these transformative patterns, we trace the changing dynamics and significance of seabird hunting in Newfoundland and Labrador, where this activity has been an integral aspect of coastal community subsistence for hundreds of years. Hunting has influenced marine bird populations and distributions, and community dependence on hunting has, in turn, challenged and shaped related government regulation and legislation. The Newfoundland murre hunt for thick-billed murre (or turrs *Uria lomvia*) and common murre (*U. aalge*) is a striking case in point. This hunt is the only legal non-aboriginal hunt of migratory seabirds in North America; its legality is essentially a term of Newfoundland's Confederation with Canada (Montevecchi and Tuck 1987).

Patterns of marine bird hunting changed radically through the twentieth century as consequences of (1) increased food security and reduced need, (2) patterns of exploitation, (3) improved technology, and (4) conservation science and policy. Our analysis of marine bird exploitation focuses on murre, common eiders (*Somateria mollissima*), and other seabird species, including the extinct great auk (*Alca impennis*). We explore how key influences evolved from antecedent conditions and how they affected avian populations and restructured seabird hunting in Newfoundland and Labrador. We assess how exploitation has influenced human food security, as well as efforts to protect and enhance marine bird populations.

## EARLY HUMAN INTERACTIONS WITH SEABIRDS

The ornamentation, jewellery and carvings of aboriginal peoples reflect the significance of the animals that they exploit (Figure 7.1; see also Garibaldi and Turner 2004). Seabirds, especially extinct flightless Great Auks, held considerable significance for prehistoric Maritime Archaic People and more recent but also extinct Beothuks (McGhee and Tuck 1975; Tuck 1976; Montevecchi and Tuck 1987). In eastern North America's largest prehistoric cemetery (~3,000 years before present [B.P.]) at Port aux Choix on Newfoundland's Northern Peninsula, Maritime Archaic People interred great auk beaks in human burials, apparent indications of the esteem with which they regarded these birds (Tuck 1976).

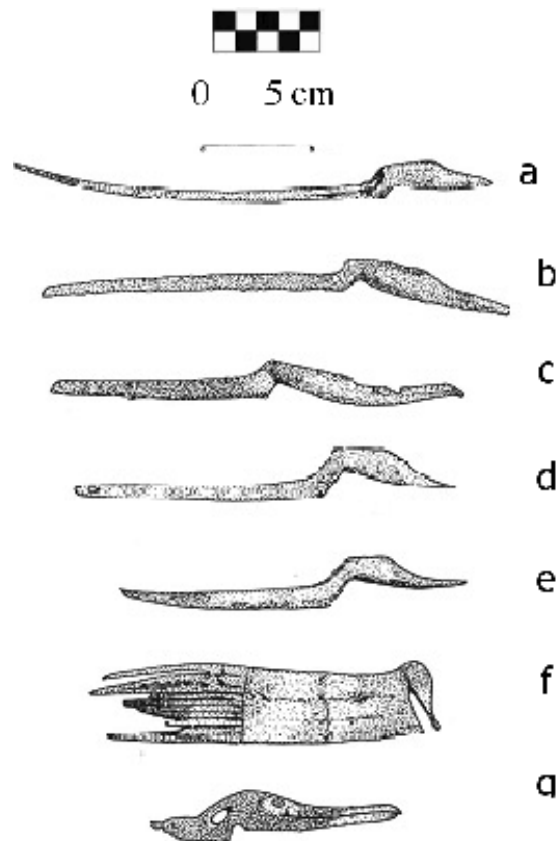


Figure 7.1. Avian effigies on pins and combs uncovered at the Maritime Archaic cemetery in Port aux Choix on Newfoundland's Northern Peninsula (Tuck 1976). Some are indicative of particular species and groups: loons (a, d, e), and mergansers or cormorants (crooked necks, hooked beaks—b, c, f, g). Figure drawn by M. Tuck (from Montevecchi and Tuck 1987)

Beothuks enjoyed great auk eggs, desirable for their large size (three times heavier than murre eggs), large yolks, and durability allowing for transport (Montevecchi and Kirk 1996). To get these eggs, they paddled ocean-going birch-bark canoes (Figure 7.2) across fifty kilometres of treacherous north Atlantic waters to the massive auk colony on the small rocky

outcrop of Funk Island off the northeast Newfoundland coast (Cartwright 1792; Howley 1915; Lysaght 1971). Owing to the risks and dangers involved in reaching Funk Island by canoe and to the relatively limited egg harvest that they could make, the Beothuks' impacts on great auks likely posed no long-term population effects.

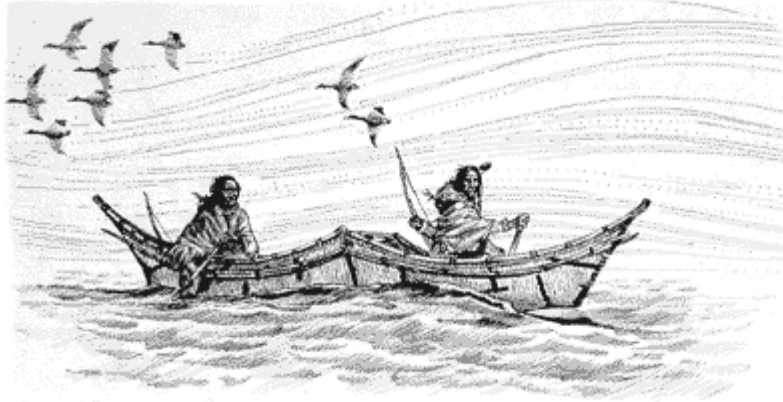


Figure 7.2. A Beothuk birch bark canoe designed with high mid-sides, bow and stern that may have made it more stable in rough seas. Reproduced by permission of the Department of Tourism, Culture and Recreation - Government of Newfoundland and Labrador. Artwork by David Preston Smith.

## **EUROPEAN PERSPECTIVES OF NORTH AMERICAN WILDLIFE AND ITS CONSEQUENCES**

Wildlife abundance was extraordinary during early Europeans' ventures into the New World. In the Norse saga of *Karlsefni* dating back to 1007, eiders are noted to nest so densely on islands near Vinland that it was difficult to walk about without breaking eggs (Peters and Burleigh 1951). In 1497, the explorer Giovanni Caboto (John Cabot) encountered an extraordinary abundance of cod and other fish and wildlife, opening the way for the eventual European settlement of Newfoundland and Labrador. Correspondingly, perspectives of wildlife abundance emphasized a false perception of their limitlessness in the face of human exploitation.

Early Europeans who visited North America hunted seabirds, and the large, flightless great auks provided them with an accessible source of fresh, nutritious meat rich in protein and fat (Montevecchi and Tuck 1987). These birds, and especially those on Funk Island were vital to the food security of early European mariners who, following arduous north Atlantic crossings of a month or longer, were often nutritionally stressed and protein deficient. European fishers and settlers continued to exploit the auks for food and bait.

The great auks were so abundant that mariners also exploited them as navigational markers of the New World fishing banks (Montevecchi and Tuck 1987). In what appears to be the first population estimate of seabirds in North America, Sir Richard Whitbourne (1622) wrote about the great auks' "infinite abundance . . . divinely provided for the benefit and

sustenance of man” (Figure 7.3). Unbeknownst to Whitbourne, he had also penned the species’ eventual epitaph.



Figure 7.3. Great auks (*Pinguinis impennis*), the last flightless birds of the Northern Hemisphere, extinct from over-harvesting

Overkilling appeared to be a *modus operandi* for survival. In his Labrador journal, Cartwright (1792) noted that he had killed eight polar bears in a single day and 1,500 eiders during migration from mid-April to May 1770. By the late nineteenth and early twentieth centuries, such excesses had nearly eradicated common eiders from the northeastern seaboard of North America (Goudie et al. 2000).

In North America, hunting practices and subsequent legislation surrounding them developed in New World ways. Actions were essentially socialistic antitheses of European laws that entitled land-owners strict control over access to wildlife (Lund 1980). Public domain and unchecked free access to wildlife were the unwritten laws of the land and sea. Yet these practices and perspectives did not apply to the aboriginal inhabitants, whose land rights were ignored or seized.

Public ideals ran counter to efforts at conservation. Such restrictive measures were perceived as impositions that would, as in the Old World, place access to wildlife under elitist rather than egalitarian control. The new settlers took an essentially adversarial approach in “conquering” the wilderness in which they found themselves. Within just three centuries of

unrestrained exploitation, the short-sighted nature of the new North American culture of exploitation was all too evident (Cartwright 1792; Mowat 1982; Montevecchi and Tuck 1987).

The over-killing of great auks provides a telling case such that these birds have come to be regarded as a global icon of the need for conservation. Great auks absorbed the uncontrolled “harvests” directed at them for about two and half centuries. They could not, however, rebound from over-exploitation in the species’ largest colony on Funk Island during the late 1700s. Commercial crews from nearby coastal communities camped on Funk Island, corralled the flightless auks, and slaughtered them excessively. Rather than for food, the auks were killed for their down and pin feathers that were used for bedding in mattresses and quilts.

Even at the time, Cartwright (1792) warned of the dangers of this unrestrained killing. Great auks, like many highly social marine (and terrestrial) birds and other wildlife, required large, robust populations to ensure their viability. The kills during the late 1700s fragmented and pushed the population below minimum viable levels and beyond resiliency (see Courchamp et al. 1999). Great auks were extinct by the early 1800s (Montevecchi and Kirk 1996). Because human over-exploitation caused this extinction, it is not completely facetious to imagine what populations of flightless birds might have done for current day ecotourism ventures on the eastern Canadian coast, as has been the case with penguins in the Antarctic.

Other hunted birds, including the Labrador duck (*Camptorhynchus labradorius*) and Eskimo curlew (*Numenius borealis*), also fell within the aim of market and commercial hunters. They soon followed the great auk’s fate (e.g. Gollop et al. 1986). Colonially nesting seabirds such as murre, puffins, terns, and eiders that concentrate in breeding colonies were particularly vulnerable to over-exploitation.

## SEASONAL CYCLE OF HUNTING AND HARVESTING

To secure year-round food supplies, residents of coastal human communities, particularly those in boreal and Arctic environments, relied on seasonal cycles of animal and plant availability (Freuchen and Salomonsen 1958). Seasonal hunts for seabirds and seals, and to a lesser extent ptarmigan (*Lagopus lagopus*, *L. mutus*) and hares (rabbits), provided coastal residents with needed sources of fresh meat. Besides seabirds and their eggs, abundant summer and early autumn food supplies included fresh fish, root vegetables (suited to short growing seasons and acidic soils) from family gardens, and a diversity of wild berries (e.g. blueberries, *Vaccinium* spp., partridgeberries, *V. vitis-idaea*; bakeapples, *Rubus chaemaemorus*; Omohundro 1994; Karst 2005). The primary seabird species hunted during winter included murre (especially thick-billed murre), dovekie (or bullbird, *Alle alle*), northern common eider (or shoreyer, *Somateria mollissima borealis*), long-tailed duck (or hound, *Clangula hyemalis*), scoter (or diver, *Melanitta* spp.), and razorbill (or tinker, *Alca torda*) (see Montevecchi and Wells 2006 for local Newfoundland names of birds). In summer, shearwaters (especially greater shearwater *Puffinus gravis*, and sooty shearwater, *P. griseus*; collectively referred to as bawks on the north coast of Newfoundland and as hagdowns on the south coast and in Labrador), Atlantic puffin (*Fratercula arctica*), black-legged kittiwake (or tickle-ace, *Rissa tridactyla*), common murre (or Baccalieu bird, *Uria*

*aalge*), southern common eiders (or shoreyers, *Somateria mollissima mollissima*), and other auks and gulls were hunted. In spring and early summer, eggs of eiders, auks, and gulls were collected at nesting colonies (Figure 7.4; Montevecchi and Tuck 1987), and some families raised gull chicks with a few domestic fowl that were slaughtered in autumn.

In winter, most of the seabirds present migrate into the region from nesting areas in the Canadian Arctic and Greenland. In summer, birds at breeding colonies on coastal islands were exploited, as were shearwaters that arrived in early summer from high-latitude colonies in the South Atlantic (Brown 1986). Thus local hunts in Newfoundland and Labrador have had, and continue to have, ocean-scale implications for seabird populations. Seabirds were, and are, shot from small open boats, whereas eiders and other seaducks were hunted from headlands that were accessed by walking or by dog sled. Dogs and floating “dog jiggers” with hooks were often used to retrieve fallen ducks on the water.

Until and even after the introduction and spread of household electricity and refrigeration in coastal areas during the 1950s and 1960s, murre and eiders were the most available and nutritious sources of protein during winter. Some families that depended on eiders for food would consume between 300 and 400 birds each year (Chaffey 2003). Supplies were often depleted during winter, especially when sea ice moved birds out of an area. In such circumstances, spring hunts for birds (and seals) and eggings were often life-saving exercises.

In some communities (e.g. on the southern Labrador coast) eiders were traditional table birds, whereas on the north coast of Newfoundland hunters took large numbers of both murre and eiders (see recipe below). Dovekies, small auks from Greenland, were taken in large numbers and often cooked up as “bullbird soup.”

#### Roast Turr or duck recipe

2 or 3 turrs/ducks	2 cups bread crumbs
1 tsp. savoury	1 tsp. poultry seasoning
1/4 cup melted butter	1 chopped onion
1/2 tsp. salt	1/4 tsp. pepper

Clean birds and drain. Stuff birds with dressing and skewer. Place in a pan and prick bird so that fat will drain off. After 1 hour in the oven at 300 degrees, drain off fat from pan and add some water and chopped onion. Cook some hours until tender, covered. Remove lid for last half hour, to brown skin. Serve with partridgeberry jam or jelly (from Various authors 1997 [*Five Hundred Years of Newfoundland Cookery*]).

Much of the fresh meat and other food was preserved as stores for the winter, when resources were less abundant and less accessible. People relied heavily on preserved foods, such as, salted fish and salted and bottled meat. Murre, eiders, ptarmigan (or partridge), hares, and seals were preserved by cooking and bottling or by freezing in outdoor sheds for later consumption beyond periods when fresh game was available. Eggs were often preserved in buckets of briny water or in barrels of sawdust. Fresh and preserved murre and eiders were traditionally bartered for other foods and services in communities or sold (Elliot 1991).

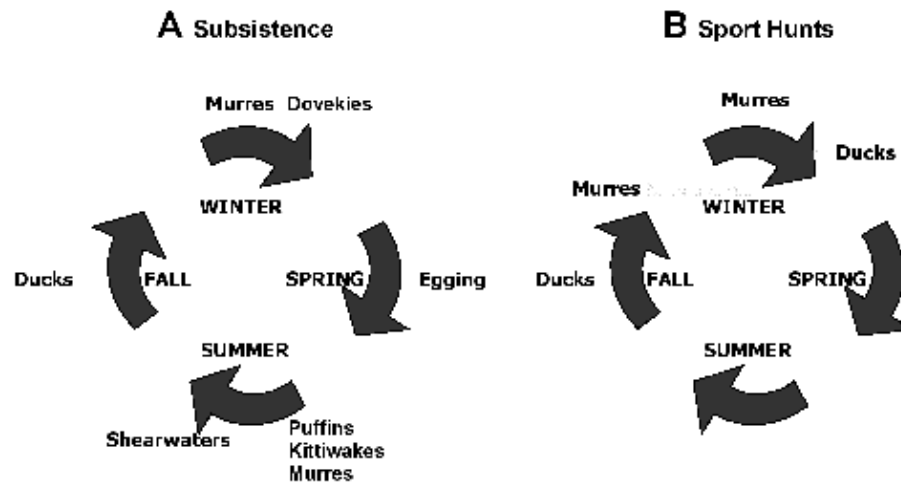


Figure 7.4. Past (A) and present (B) seasonal cycles of marine bird harvests

Fresh meat from seabirds was much more important for food security than as a supplement or a luxury in relatively isolated fishing communities. This quote from a Labrador hunter about eiders emphasized this necessity “There was times when . . . anything (food) else was pretty scarce . . . So . . . you used what you could get” (Chaffey 2003, 98). This need became very evident in the 1940s when the British Commission of Government in Newfoundland outlawed the hunting of seabirds during summer. This was the first prohibition of the hunting of shearwaters (bawks), favoured food birds that were abundant during summer fishing seasons (Montevecchi and Tuck 1987). Reaction from the coastal communities was vociferous and widespread. A poem, *The Shooting of the Bawks*, by Art Scammel from Change Islands on the northeast coast set the tone and became a rallying cry that engaged outport residents (see excerpts, below). Their reactions, emphasizing the need for the seabird hunt, resulted in a reversal of government policy. Such strong sentiments have carried over to the present and have influenced current hunting legislation in Newfoundland and Labrador.

Excerpts from *The Shooting of the Bawks*  
by Art Scammel

...

No doubt our wise Commissioners will formulate a plan,  
To furnish fresh for everyone who lives in Newfoundland.

...

For Mary dear I'll kill a bird in August, June or May,  
And if they put me in the pen, why there'll I'll have to stay,  
For men with children underfed, would rather far be sued,  
Than keep this bloody law that stops a man from getting food.

...

Now bawks have got a fishy taste as everybody knows,  
But they make a better diet boys than either hawks or crows.

...

There's many men in summer time who cannot buy salt meat,  
They have to trust for seabirds for something fresh to eat,



But if they keep this law that's passed, they will not get a taste  
Of bawk or noddy, tinker, tur, and not a tickleace  
(entire poem can be found in Montevocchi and Tuck 1987).

## **IMPROVEMENTS IN FOOD SECURITY: SHIFTING FROM SUBSISTENCE TO SPORT HUNTING**

Following Confederation with Canada in 1949, the government of Newfoundland and Labrador actively pursued consolidation of coastal communities through a resettlement program, the establishment of roads into isolated regions and a cash economy. This social and economic restructuring led to a gradual shift away from subsistence living in these communities. Services and amenities, such as household refrigeration, helped to secure protein during winter.

Consequently but gradually over the next three decades, the motivation to hunt shifted from being one of need to one of recreation and sport (Lund 1980). It took much longer in rural communities than in the urban centres of North America for hunting to assume the role of the mainly recreational activity that it is today. Though they are no longer essential foods, murre and eiders are still savoured by many Newfoundlanders and Labradorians as refreshing alternatives to processed and frozen foods that dominate most North American diets. Many coastal residents still supplement their diets with marine birds because they enjoy them and because they are traditional meals (i.e. cultural comfort foods; see Garibaldi and Turner 2004).

Hunting seabirds from open boats during winter is still popular in coastal Newfoundland and Labrador. Hunting, however, is a waning activity in Newfoundland and Labrador and throughout Canada where licences for seaducks and seabirds are decreasing at more than 5% per annum (A. J. Gaston pers. comm.). This decline is expected to increase as rural coastal communities are depopulating, following the closure of the fisheries for northern cod and Atlantic salmon off eastern Newfoundland and Labrador in the early 1990s. Egging is no longer practised in insular Newfoundland, though some members of native communities in Labrador still harvest eider eggs (Chardine 2001).

The shift to sport hunting also set the stage for a proliferation of conservation legislation and regulations. Many of these changes sharply curtailed utilitarian practices, such as the illegal selling of birds in an underground economy and market hunting. "Game" species were given considerable attention and protection. The consequences for wildlife exploitation and protection were pervasive, and sport hunters, such as those involved with the Partridge Forever Society in Newfoundland and Labrador and with Ducks Unlimited, actually played and are playing major roles in helping to protect wild bird populations.

## **INFLUENCES OF TECHNOLOGICAL CHANGE**

Technological development had, and continues to have, pervasive influences on the abundance, distributions, and even extinctions of many marine animals (Agular 1986; Steele et al. 1992; Hutchings and Myers 1994; Montevocchi and Kirk 1996; Kurlansky 1997; Burke

et al. 2002; Myers and Worm 2003; Springer et al. 2003). A recent example of improved hunting technology and the decimation of seabird breeding populations in Greenland can be found at [www.birdlife.org/news/2006/01/greenland.html](http://www.birdlife.org/news/2006/01/greenland.html). Complexity in marine food webs has been diminished (Pauly et al. 1998), leaving many animals vulnerable to further perturbation, such as those induced by climate change, and subject to severe population declines (Myers et al. 1995; Jackson et al. 2001; Stenhouse et al. 2002; Gasciogne and Lipcius 2004).

When eider hunters in Labrador began using snowmobiles to access coastal hunting sites (~1970), they could travel at least twenty kilometres further on hunting trips than when they travelled by foot. Many hunters considered that the greatest change in hunting capabilities occurred with the introduction of outboard motors in the late 1960s and 1970s (Table 7.1). Before extensive outboard motorboat (“speedboat”) use in the 1970s, hunters used rowboats (punts) and trap skiffs during eider and murre hunts. Speedboats enabled hunters to move faster (up to forty-five to seventy kilometres per hour), cover more area, “chase” birds and “round them up” in coves, and to generally hunt more efficiently, killing more birds in less time. The use of speedboats drove eiders and murres away from community shorelines. The net result was that not only could hunters travel farther to hunt, their improved transportation efficiency created circumstances that required them to go further to find birds. An analogous situation in terrestrial hunting has occurred during fall ptarmigan hunts, in which all-terrain vehicles (ATVs) have increased the efficiency and coverage of hunters, leaving the birds little spatial refuge in many areas of prime habitat. About a decade or so after the introduction of outboard engines, new fibreglass boats allowed hunters to move through the winter sea-ice, greatly increasing access to birds at sea (Table 7.1).

In recent years, many hunters have begun towing their boats on trailers from bays on the northeast coast to the southeast coast of Newfoundland, as open seasons and bird movements shift around the island during winter. These changes in hunter capability and activity influence marine bird behaviour and distributions on the Labrador and Newfoundland coasts, generally causing them to move further from human settlements and further from near-shore feeding sites, as well as to become more wary and flighty (Chaffey 2003).

**Table 7.1. Changes in marine bird hunting practices and technology during the twentieth century based on interviews with hunters**

Subject	Early 1900s	1940s-60s	1970s	1980s	1990-present
No. hunters Per capita	high	high	high- moderate	moderate	moderate
Boats	rowboats	trap skiffs/ inboard motors	wooden speedboats/ outboard motors	fiberglass speedboats/ outboard motors	fiberglass speedboats/ larger outboard motors
Shotguns	Muzzle loader	muzzle loader; break action	break action	bolt; pump action	semi- automatic
# eiders per family annually	?	50-400	50-300	50-300	10-60
Monetary cost of hunting	low	low	moderate	moderate	high

Sources: Elliot 1991; Chaffey 2003

Improved weaponry has also enhanced hunter capability. Before the early 1980s, many hunters used single-shot shotguns, such as a break action. These were rapidly replaced by pump action then semi-automatic shotguns that hold more cartridges and can be discharged more quickly. Federal hunting regulations stipulate that hunters using automatic rifles can only load three shells at once.

Hunting is only one source of human-induced mortality that seabirds and seaducks have to cope with in Newfoundland and Labrador. In the next section, we consider the others and the cumulative effects of these diverse sources of anthropogenic mortality.

## CUMULATIVE MORTALITY

Hunting migratory marine birds helped sustain coastal communities, but hunting and eggging in nesting colonies often carried severe consequences. The coastal breeding sites of many seabirds in Newfoundland and Labrador have been decimated since the arrival of Europeans (Montevecchi and Tuck 1987; Goudie et al. 2000). Fuelled by market demands for birds, eggs, and feathers for the millinery trade, the destruction of seabird colonies was widespread along the eastern North American coast (Forbush 1912; Gollop et al. 1986; Greenberg and Reaser 1995). Owing to public outcries in the U.S.A., the *Migratory Bird Treaty Act* (1916) was created to restrict the numbers of birds being killed and to protect vulnerable species. The legislation recognized the importance of international cooperation in protecting migratory species that moved across national borders.

Winter hunts also carried population consequences but these were less evident as migratory birds moved out of the area to distant colonies during the breeding season. The murre hunt still kills hundreds of thousands of thick-billed murres from the Canadian Arctic and Greenland annually (Elliot 1991). When cumulated with other sources of anthropogenic mortality from oil pollution and by-catch in fishing gear (Piatt et al. 1984; Montevecchi and Tuck 1987; Wiese and Ryan 1999; see also Wiese et al. 2004), these kills were assessed to be unsustainable (Elliot 1991). For example, estimates indicate that hundreds of thousands of seabirds including ducks are killed each year by illegal oily discharges from ships in the Northwest Atlantic (Wiese and Ryan 1999). Murres and other diving seabirds are also subjected to considerable mortality from entanglement and drowning in fishing gear, such as gill-nets (Piatt et al 1984; Piatt and Nettleship 1987; Montevecchi 2001). This mortality has become evident following the eastern Canadian ground-fishery closure in 1992 that resulted in the removal of many thousands of kilometres of gill-nets from the waters of Labrador and eastern Newfoundland (W. A. Montevecchi, unpublished data). Consequently, local breeding populations of diving seabirds are rebounding (Robertson et al. 2004) from this multi-decadal source of mortality. These increases do not however apply to the migrant murres and eiders from the Arctic that are targeted by hunters in Labrador and Newfoundland during autumn and winter.

Eider populations are being threatened and stressed by habitat losses associated with extensive mussel culture sites throughout the region. Mussel farms take over eider habitat sites and also at times attract the ducks to artificial food concentrations. The eiders and other seaducks are often viewed as competitors by mussel farmers who scare, chase, and at times

kill seaducks at mariculture sites (Montevecchi 2001). As aquaculture ventures replace wild fisheries (Fischer et al. 1997), these anthropogenic pressures will increase.

## THE EVOLUTION OF HUNTING REGULATIONS

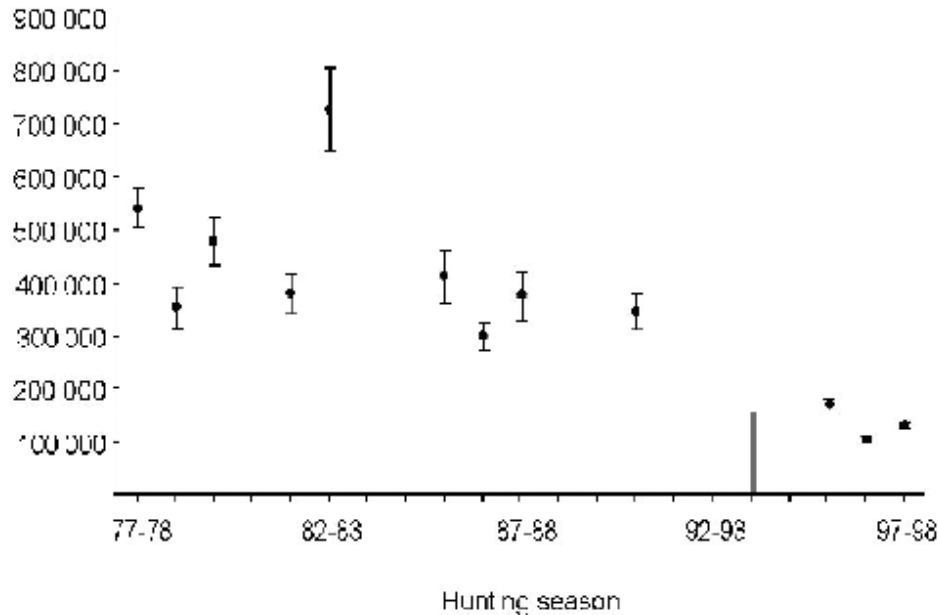
The first legislation for the protection of birds in what is now Canada was enacted by Newfoundland's colonial government in 1853 (Forster 1978). The *Act for the Protection of the Breeding of Wild Fowl in this Colony* stipulated total protection including the taking of eggs from 10 May to 1 September, with a maximum fine of £20, a huge sum at the time. This Act was replaced in 1859 with a more comprehensive one that made it specifically illegal to collect eggs from Funk Island and protected partridge (ptarmigan) and snipe (*Gallinago gallinago*) from 10 May to 10 August. Food security was also considered, as these acts exempted hunting out of necessity: "Nothing in this Act shall extend . . . to any poor Settler, who shall kill . . . Wild Fowl, for his own immediate consumption, or that of his family." The traditional right of coastal residents to procure birds for food (even during closed seasons) was upheld in one way or another as long as Newfoundland was a British colony and even after Newfoundland joined Canada (Montevecchi and Tuck 1987). The 1859 Act was amended in 1863 to prohibit the use of guns on Sundays, a prohibition that remained in effect through 2005, when it was modified to accommodate recreational outfitters and some "big game" hunters.

Following Newfoundland's confederation with Canada in 1949, federal hunting regulations and the Migratory Birds Convention Act, an international treaty with the U.S.A., soon came into play in Newfoundland and Labrador. The treaty between Canada and the United States for the protection of birds prohibited the hunting of migratory seabirds. Yet, because the winter murre hunt was related to family food security and also carried cultural significance (see Garibaldi and Turner 2004), the treaty was amended to allow any Newfoundland and Labrador resident to shoot murre for food—essentially making the hunt a term of confederation. It was illegal to sell murre, but without enforcement it was difficult to prevent it. Selling resulted in more murre being taken than were needed to secure family provisions. Also due to open hunting season, increasingly more adult birds were being taken later in the spring when they returned to breeding sites. Like many seabird species, murre are long-lived with delayed maturity and lay only one egg per year. Hence, their populations are highly sensitive to slight changes in adult mortality.

The cumulative mortality associated with the murre hunt, oil pollution, and entrapment in fishing gear appeared sufficient to make the hunt unsustainable (Elliot 1991). The first federal regulations to control the hunt were imposed in 1993. Daily bag limits were set at twenty birds per hunter, with possession limits of forty birds. Hunting seasons opened and ended earlier in Labrador, opening and closing progressively later in hunting zones along the north, east, and south coasts of Newfoundland. Murre hunters were by and large in agreement with the new regulations as many felt that the massive annual harvest of murre and the common practice of selling birds was making the hunt unsustainable (Elliot et al. 1991). The application of hunter or local ecological knowledge (LEK) has proved to be a valuable tool in wildlife management, often as an indicator of a need for further scientific scrutiny in

situations where over-exploitation and disturbance have gone undetected by scientists and regulators (Gilchrist et al. 2005).

In the 2003–04 season, all hunters were required to purchase and be in possession of a Migratory Game Bird Hunting Permit and Habitat Conservation stamp while hunting murre. Revenues raised by these “wildlife taxes” are to be used to support research and conservation. Mandatory hunting permits will also improve the ability of regulators to track the numbers of birds taken annually during the hunt. Hunter surveys indicate that substantially fewer murre are being killed as a result of these hunting restrictions (Figure 7.5).



Source: Chardine *et al.* 1999; see Elliot *et al.* 1991 for methods

Figure 7.5. Mean ( $\pm$  standard error) annual murre harvest estimates from hunter surveys beginning in 1977

## NON-CONSUMPTIVE USES OF BIRDS IN ECOTOURISM

With food security no longer an issue in most coastal communities, with greater restrictions on hunting, and with waning hunting activity, many people have turned to non-consumptive uses of marine birds and mammals. These activities include bird- and whale-watching, wildlife photography. Many participants focus on the ecological, ethical and aesthetic perspectives and values of wildlife for its own sake. Ecotourism is a rapidly growing economic sector in Newfoundland and Labrador. Unlike other highly localized economic drivers (e.g. a mining site), ecotourism revenues spread widely into rural and coastal communities, helping to support sustainable developments.

Ecotourism activities, like consumptive ones, also carry costs for wildlife, in terms of disturbance and displacement (Wang and Miko 1997). Comprehensive efforts are needed to

effectively prevent these (Isaacs 2000). Emphasis on key “game” species is being replaced by conservation perspectives that often focus on charismatic megafauna (e.g. puffins and whales) and rare species (e.g. harlequin ducks *Histrionicus histrionicus*; ivory gulls *Pagophila eburnea*) and also embrace biodiversity and the protection and inter-connectedness of habitats.

### CONSERVATION RESEARCH, EDUCATION, AND HABITAT ENHANCEMENT

Our *Coasts Under Stress* research focused on eider hunting and applied local ecological knowledge (LEK) to help understand historical and current trends in hunting and eider populations in southern Labrador. We worked with hunters to decipher long-term patterns and to develop conservation perspectives for robust eider populations. This research developed into a collaborative project with hunters and was co-sponsored by Environment Canada and Ducks Unlimited. Nest shelters were positioned and built on eider-nesting islands in St. Peter’s Bay (Figure 7.6). We developed and distributed information about the project with feedback questionnaires to all households in the local communities before project initiation. Throughout the course of our research, educational programs in the schools and for the general public complemented these initiatives to help integrate our activities into community traditions in order to enhance, promote and modify ongoing conservation activities and policies.



Figure 7.6. Eider nest shelter in St. Peter’s Bay Photo: J. Coffey.

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## SYNOPSIS

Hunting seabirds to secure food was a vital aspect of life in coastal communities in Newfoundland and Labrador through about the mid-twentieth century. These early hunts were sustainable because coastal settlements were small and widely dispersed, and because the technology at the time limited the spatial scale and killing capacity of the hunters. Subsequent improvements in engines, boats, and weaponry during the last half of the nineteenth century greatly increased the efficiency and foraging range of the hunters often resulting in overexploitation and disturbance. As the introduction of household electricity and the importation of food secured family provisions, hunting incentives shifted from necessity to recreation. Seabird hunting has been waning with the depopulation of coastal communities. Yet owing to cumulative human influences throughout marine ecosystems (e.g. Jackson et al. 2001; Burke et al. 2005; Montevicchi 2006), the conservation of marine birds and their habitat is compelling environmental concern. The non-consumptive exploitation of wildlife through ecotourism and the integration of local environmental issues and values in ongoing educational and public programs can be of great benefit in helping to sustain the viability and integrity of coastal communities.

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