10.0 BIRDS

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The Hudson Bay marine ecosystem provides resources of critical importance to migratory waterfowl and shorebirds. Hudson Bay has the effect of funnelling southward migrating species of Arctic shorebirds and waterfowl into James Bay. With its rich coastal marshes, wide tidal flats, and extensive eelgrass beds, James Bay is one of the most important stopping places for migrating Arctic-breeding shorebirds and waterfowl in North America. It is matched only by the Copper River delta and Bristol Bay in Alaska and, for shorebirds, by the upper Bay of Fundy. These birds, particularly the geese and ducks, have sustained, and continue to sustain, important subsistence harvests by Inuit and Cree. These harvests are discussed is Section 14.6.

The history of ornithological research in the Hudson Bay and James Bay dates back to the 1700's. Birds were a vital food of the early explorers and traders who often kept an accurate record of their observations or collected specimens. Indeed, the endangered (or possibly extinct) Eskimo curlew, *Numenius borealis* (Forster),

was first described from specimens collected at Fort Albany; the blue morph of the snow goose, sandhill crane, sora, Hudsonian godwit, red phalarope, red-necked phalarope, northern harrier, whimbrel, horned grebe, and gyrfalcon were also first described from specimens collected in the Hudson Bay region--many of them by early employees of the Hudson's Bay Company (Houston 1983). Despite the long history of research, there are a number of gaps in our knowledge of this region's bird fauna. Most studies have examined coastal areas during spring, summer and/or fall, and geographical observations of the seasonal occurrence and breeding of birds are skewed somewhat by the intensive bird watching activity at Churchill, Manitoba. We do not know to what extent birds use offshore waters, overwinter in open water areas, or even what bird species inhabit long stretches of coastline.

At least 133 species of swimming birds, shorebirds, raptors, and scavengers frequent offshore, inshore, intertidal, or salt marsh habitats of the Hudson Bay marine ecosystem (Appendix 4). Few of these species are year-round residents; most arrive about the time of ice break-up and depart before freeze-up. The area provides coastal breeding habitat for at least 102 species, including many that are primarily Arctic breeders--some of which are rarely seen in breeding condition outside the Arctic Islands. It also provides vitally important feeding, staging, and/or moulting habitats for many resident and transient species. An examination of Godfrey's (1986) Birds of Canada reveals that many small woodland birds also breed along the shores of James Bay, particularly southern James Bay, and nowhere else along Canada's Arctic coast.

Waterfowl and shorebird use of eelgrass beds and coastal wetlands, including salt marshes and tidal flats, is discussed in Sections 6.4 and 6.5. The coastal wetland habitats are protected by a number of migratory bird sanctuaries and parks. Maps and descriptions of these areas are provided in Chapter 12.

The following sections provide brief descriptions of the bird species that use the waters and shores of the Hudson Bay marine ecosystem. The text is based on Snyder (1957), Todd (1963), Godfrey (1986), Cadman et al. (1987), and Alsop (2002) and to improve its readability other references used have only been cited where they add significantly to the information. A more extensive list of references is cited in support of Appendix 4, which summarizes the regional distribution and breeding of each species, and provides scientific names.

10.1 F. GAVIIDAE: Loons

Loons are large swimming birds that are often seen on open water. They dive frequently, swim well under water, and can stay submerged for long periods in the pursuit of fish, which make up a large part of their diet. Loons are awkward on land and seldom come ashore except during nesting. They have spectacular courtship and distraction displays during the breeding season. Three loon species: red throated, Pacific, and common, breed near the coasts and are present during the open water season while a fourth, the yellow-billed loon, is a casual visitor that breeds further to the north and west (Appendix 4).

The red-throated loon is an Arctic breeding species that is common and numerous along the mainland and island coasts of Hudson Bay coast, but uncommon in James Bay. Northern migrants pass through Churchill between 10 and 15 June, sometimes in hundreds, and in some years flocks of 30 to 40 remain at the river mouth (Taverner and Sutton 1934; Jehl and Smith 1970). The migrants nest along the mainland and island coasts of Hudson Bay and James Bay, mostly north of the treeline beside small, often coastal, tundra ponds. Some of the more southerly breeding reports are from near Cape Henrietta Maria and South Twin Island, in James Bay. Adults nesting near the coast often feed at sea while immature migrants spend all summer on salt water--yearlings of the other loon species are not known to migrate to the breeding grounds. Young and adults move to the sea once the young can fly. Unlike the other species, the red throated loon can take off from land and moults in autumn--instead of winter or spring. It is also more sociable and may be observed in groups at good feeding areas or in migratory flocks. Red-throated loons are seldom seen at Churchill after mid-Sepember, but some linger later on or near Hudson Bay, since a flock of 30 was seen flying towards the Bay on 20 October 2000 (Chartier 1994 cited in MARC 2003).

The Pacific loon, formerly included with the Arctic loon, is another Arctic breeding species. Its summer range and breeding distribution in this region are similar to those of the red-throated loon, but the species may be more common in western than eastern Hudson Bay. Northern migrants appear in the Belchers and in ice leads off Churchill in mid-May, and by mid-June hundreds may be congregated near the mouth of the Churchill River (Jehl and Smith 1970; MARC 2003). An estimated 10,000 of these loons passed northward near Churchill on 8 June 1980 (MARC 2003). Breeding adults favour larger lakes than the red-throated loon, both near the coast and inland. They frequently forage in coastal salt water and tend to favour more offshore waters than the red-throated loon. Young and adults move to the sea once the young can fly and often congregate in loose flocks.

The common loon has a more southerly distribution and is less apt to feed at sea than the other species, but will fish off the edge of marine shoals. It breeds on islands or along shores of lakes or rivers, mostly south of the treeline. It is common in southeastern Hudson Bay and James Bay, but less so further north and west. The species occurs on Southampton Island, but apparently is not common on the islands in northern Hudson Bay.

Red-throated and Pacific loons generally winter off the British Columbia coast, and rarely are seen in the southern interior of Canada. The Twin Islands are some of their most southerly breeding habitat. Common loons are common throughout most of southern Canada. Cree and Inuit hunters In Quebec and Ontario harvest loons, mainly red-throated and common, for food (JBNQNHRC 1982, 1988; Berkes et al. 1992) (see Section 14.6).

10.2 F. PODICIPEDIDAE: Grebes

Grebes are "tailless" waterbirds with smaller, shorter bodies than loons and, usually, straighter necks. Like loons, they are excellent swimmers and divers with legs attached far back on the body that make them awkward on land. Unlike loons they have lobbed toes, not fully-webbed ones, and their tail feathers are vestigial. Pied-billed grebe and horned grebe breed along the southwestern coast of Hudson Bay and near Moosonee, and may forage in coastal waters. Both species are rare summer visitors to the region but are widely distributed in southern Canada.

10.3 F. PROCELLARIIDAE: Fulmars

The northern fulmar is a rare but regular visitor to southern James Bay in late fall (McRae 1992). Twenty of these seabirds were seen at Netitishi Point--between Hannah Bay and Moose Factory, in 1981; three more were seen east of Hannah Bay at East Point in 1985. It has also been observed at northern Coats Island (Gaston and Ouellet 1997).

10.4 F. HYDROBATIDAE: Storm-petrels

Storm-petrels are small birds that spend most of their lives at sea and ordinarily come ashore only to nest. Their flight is swallow-like and close to the water, following the ups and downs of the waves. Leach's storm-petrel was a casual summer visitor near Kuujjuarapik in 1982. It is commonly found along Canada's southern seacoasts.

10.5 F. PELECANIDAE: Pelicans

These large, piscivorous birds typically feed in freshwater and live well south of Hudson Bay and James Bay. However, a single American white pelican was found dead near Hannah Bay, the southernmost tip of James Bay, in late June 1944 (Lewis 1944), and a few have wandered north to the mouths of the Churchill and Nelson rivers along the Manitoba coast (MARC 2003).

10.6 F. SULIDAE: Gannets

Gannets are large, long-winged birds with massive tapered bills. They catch fish by diving headlong into the sea from a height of about 30 m (MARC 2003). An immature northern gannet was seen at Netitishi Point late in the fall of 1981--probably driven south from Hudson Strait or northern Hudson Bay by storm winds (McRae 1992), and an adult was seen at Churchill on 17 June 1989 (MARC 2003).

10.7 F. PHALACROCORACIDAE: Cormorants

These fish-eating, water birds have wettable wings that enhance their diving ability (MARC 2003). The double-crested cormorant is a summer visitor to the Manitoba coast, where it may feed in coastal waters. The species is a common breeder in southern Canada east of British Columbia. Perhaps the only cormorant colony on the Arctic coast has been reported at Way Rock, a small rocky islet off Boatswain Bay near the southern tip of James Bay (Lewis and Peters 1941; Todd 1963; see also East 1938). Birds from this colony ranged widely in search of food. The present status of this colony is unknown.

10.8 F. ARDEIDAE: Herons and Bitterns

Five Ardeid species that visit this region in summer may forage in coastal salt marshes, the American bittern; the great blue, little blue, and tricolored herons; the snowy egret; and the black-crowned night heron. The American bittern ranges north to Kuujjuarapik on the east coast of Hudson Bay and to Churchill on the west coast. It is a common breeder in marshy habitats along the Ontario coast of James Bay and also breeds on Charlton Island, along the Quebec coast north to Chisasibi, and in marshy habitats along the south coast of Hudson Bay from Cape Henrietta Maria west to Churchill. The great blue heron is often seen at the mouth of the Moose River, where breeding is suspected, and has been reported at Eastmain. A stray was observed at the murre colony on northern Coats Island in 1991 (Gaston and Ouellet 1997). The snowy egret is an accidental visitor along the Ontario coast north to the mouth of the Attawapiskat River and at Churchill. In summer, the American bittern, great blue heron, and black-crowned night heron are common and widespread in southern Canada, while the egret is a rare non-breeding wanderer throughout southern and central Canada. The black-crowned night heron and little blue heron are accidental visitors to the Manitoba coast; the latter is rare in southern Canada (MARC 2003).

10.9 F. ANATIDAE: Geese, Swans, and Ducks

At least 35 Anatid species breed along the coasts and frequent coastal marine habitats in summer, and a few overwinter (Appendix 4). Some species are colonial and can be very numerous in suitable habitats. Large areas of the Hudson Bay and James Bay coasts provide critically important habitat for migrating and moulting North American waterfowl (Curtis and Allen 1976). Waterfowl are very important to the regional economy, both for subsistence and to attract sport hunters. Their harvest is discussed further in Section 14.6.

During the breeding season most of these waterfowl frequent low-lying, sometimes hummocky, moist to wet vegetated tundra near lakes or coastal river mouths. The eiders are exceptions and often nest on low-lying rocky coasts and islands, especially where mussel beds and reefs provide feeding grounds. After the young hatch they often congregate in flocks along the coasts. Along the Ontario coast, the greatest numbers of dabbling ducks occur in fall, for all species, while divers are often most numerous in summer--numbers of the latter decline in fall largely due to the departure of the black scoter (Ross 1982).

Most of the species are also common spring and fall coastal migrants in this region and in southern Canada, but the eiders are rare inland or in southern Canada except along the east coast. The coastal marshes of James Bay provide an important food resource for geese spring and fall (Rae 1888; Wypkena and Ankney 1979; Thomas and Prevett 1982). Some waterfowl, such as tundra swan, can be seen on open water at the edge of ice floes when they first arrive while others, such as snow goose, frequent coastal river mouths and marshes

during migration. While Canada and snow geese migrate northward in early to mid breakup, brant generally arrive in late May or early June when most of James Bay is open. The ducks and geese prefer areas of James Bay and Hudson Bay that are characterized by wide coastal marshes with an emergent zone of *Puccinella phryganodes* and a variety of vegetational associations leading to freshwater inland fens (Martini et al. 1980b). The considerable impacts these birds have on vegetation and sediments are discussed in the Section 6.5. Species such as northern pintail and greater scaup frequent coastal marine waters outside of the breeding season. Others, including the common and king eider, also frequent coastal marine waters during the breeding season. Common eiders are sometimes found well offshore.

10.9.1 Geese

Five species of geese visit James Bay and Hudson Bay: the Canada goose, snow goose, brant, Ross' goose, and greater white-fronted goose (Appendix 4).

The Canada goose breeds in large numbers though at low densities, in inland marshy areas along the coasts and on the islands of Hudson Bay and James Bay. Nesting initiation dates depend upon weather and can vary by at least a month. On Akimiski Island, for example, nest initiation began as early as 22 April in 1998 and as late as 25 May in 1996 (Leafloor et al. 2000). Numerous studies have been conducted on the growth and development of eggs and goslings (e.g., MacInnes 1962; MacInnes and Misra 1972; MacInnes et al. 1974; Moser and Rusch 1989; Leafloor et al. 2000)

The Canada goose frequents coastal marshes during migration and is a numerous spring and fall transient, particularly along the James Bay coasts (Curtis 1973a+b). There is a northward moult migration of some 30,000 geese past Cape Churchill and the McConnell River to the Thelon River in June (Davis et al. 1985). Its timing varies with the weather and the numbers vary with the previous year's breeding success since most of the moult migrants are immatures. John Rae (1888) described the arrival of the Canada goose at Moose Factory as follows:

> *"This is the earliest of the spring water-fowl migrants, and makes its appearance at Moose, with extreme regularity, on the 23rd of April. So much is this the case that during my ten years stay there, we had a goose at our mess dinner table on St. George's day, first seen and shot on that day; and this I learnt had been the case for a long series of years previously."*

In the Belchers and on Akimiski Island the Canada goose makes extensive use of saline habitats and is characterized by very large salt glands that develop to cope with the high salt intake (Jones and Hanson 1983).

Canada geese that belong to five management populations summer along different stretches of the coastline and winter in different areas of southern Canada and the United States (Figure 10-1). Geese from the Atlantic population that summer in the Belchers and along the Quebec coast, winter along the Atlantic coast from New England to South Carolina (Hanson and Currie 1957; Malecki and Trost 1990; Menkens and Malecki 1991). The number of breeding pairs in this population declined to 29,000 in 1995 and had rebounded to 156,937 ± 12,273 (SE) in 2003 (Dickson 2000; CWS Waterfowl Committee 2003). Geese from the Southern James Bay population that nest on Akimiski Island and along the southwestern coast of James Bay winter from southern Ontario and Michigan to Mississippi, Alabama, Georgia, and South Carolina. In 2003, a spring survey of Akimiski Island and the adjacent lowlands of James Bay produced a population estimate of 106,511 Canada geese. Increasingly large numbers of moult-migrant temperate-breeding Canada geese are moving into this area and into eastern Hudson Bay, where they contribute to high gosling mortality by competing with them for food (Abraham et al. 1999b). Late summer gosling mortality may be a limiting factor in annual productivity of Canada geese on Akimiski Island (Leafloor et al. 1996, 2000). Geese from the Mississipi Valley population that summer along the coast from the Attawapiskat River to the Nelson River winter largely in Wisconsin, Illinois, western Kentucky and Tennessee (Craven and Rusch 1983; Tacha et al. 1988; CWS Waterfowl Committee 2003). The spring population estimate in 2003 was 477,000 geese. Geese from the Tall Grass Prairie population that nest on the Nunavut

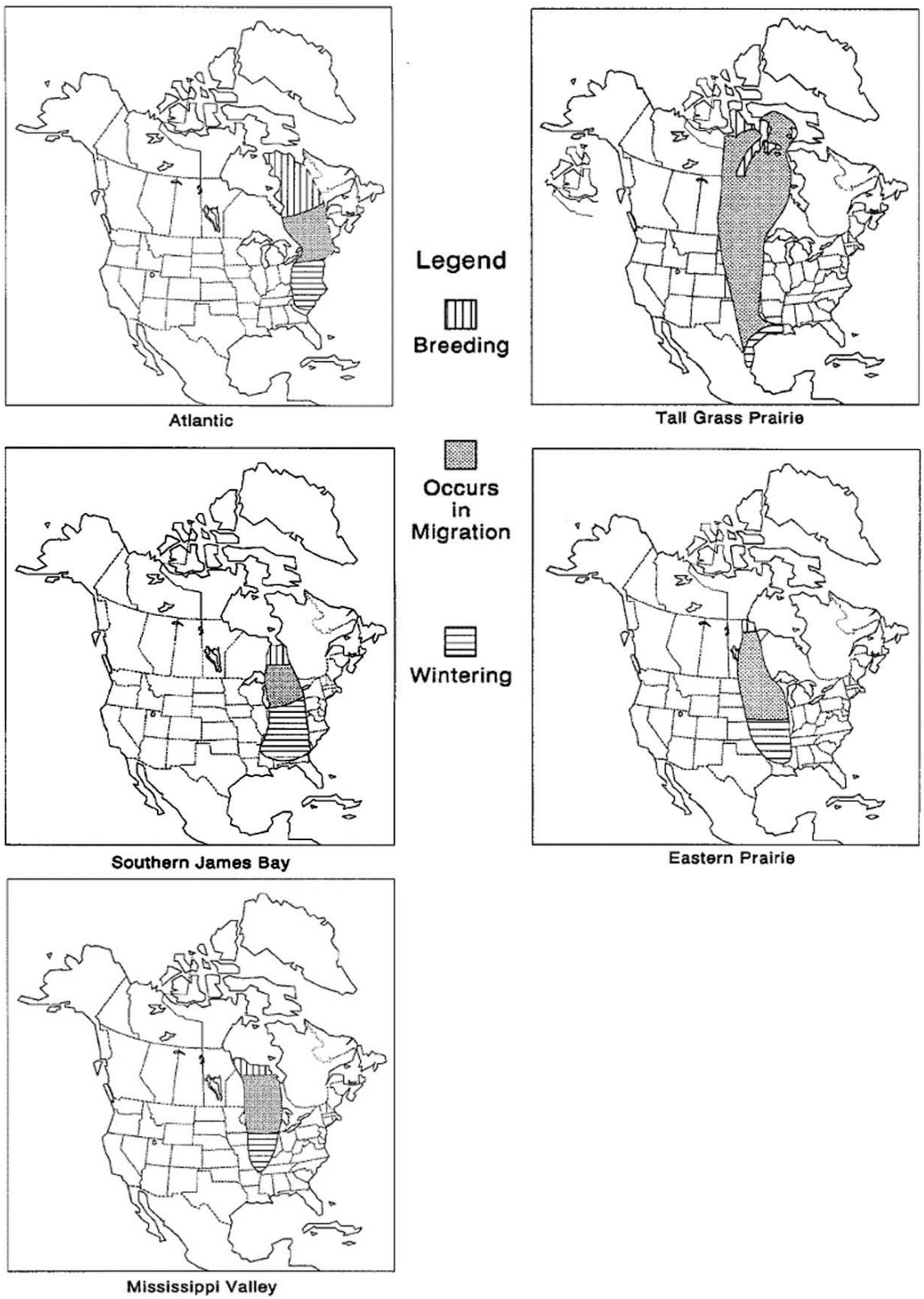

Figure 10-1. Breeding and wintering areas and migration routes of Canada goose populations that nest along the coasts of Hudson Bay and James Bay (from CWS Waterfowl Committee 2003, p. 61-63.)

mainland coast of Hudson Bay from the McConnell River northward, and on Southampton Island winter in Oklahoma, Texas, and northeastern Mexico. Surveys during the brooding period in 2003, resulted in a population estimate of about 100,000 breeding birds. This population is prone to year-class failures; in 1992, 1996, and 1999 almost no young were produced. Geese from the Eastern Prairie population that nest along the Manitoba coast west of the Nelson River winter in Manitoba, Minnesota, and Missouri. In 2003, the spring population was estimated at 229,200 ± 33,500 (95%CI), similar to most years since the mid-1980s. The mean expected lifespan of these geese may be declining (CWS Waterfowl Committee 2003).

The Atlantic, Southern James Bay, Mississipi Valley, and Tallgrass prairie populations likely are composed primarily of the interior subspecies of the Canada goose, *Branta canadensis interior* (Dickson 2000). The Eastern Prairie population consists mainly of the cackling goose *B. hutchinsii* and may include some of the lesser Canada subspecies *B. c. parvipes*.

The coasts of Hudson Bay support over 50% of the eastern Arctic breeding population of the lesser snow goose, *Chen caerulescens caerulescens*, which has increased significantly in the past 30 years (MacInnes and Kerbes 1987; Reed et al. 1987; CWS Waterfowl Committee 2003). Indeed, between 1970 and 1999 there was geometric growth of the mid-continent population of the lesser snow goose, which breeds in the Canadian Arctic and traditionally wintered in the coastal marshes of the Gulf States (Jefferies et al. 2003). This increase was coincident with the increased application of nitrogen to southern farmland and high crop yields, and the widespread availability of agricultural foods has subsidized the energy requirements of these geese for migration and reproduction (Jefferies 2000; Jefferies et al. 2003, 2004). The presence of refugia from hunting on the migration routes, a decline in the harvest rate, and climatic changes that may have caused an anomalous cold area on Baffin Island and a southward shift in nesting locations may also have contributed to population increases along the Hudson Bay coast. Large breeding colonies are dotted along the Hudson Bay coast and the species is locally very numerous, so much so that overgrazing is degrading their prime salt marsh habitats at La Pèrouse Bay, in the McConnell River Migratory Bird Sanctuary, and elsewhere. This problem is discussed in Section 6.5 and has led to the introduction of spring hunts in an attempt to check population growth and avoid a population crash (see also Section 14.6). The current cull may be higher than the replacement rate (Jefferies et al. 2003).

On Southampton Island, the number of nesting lesser snow geese increased from 155,480 birds in 1973 to 720,000 in 1997, and the nesting area expanded (CWS Waterfowl Committee 2003). Large colonies are located at Ell Bay, west of the Boas River, on the Boas River delta, at Bear Cove, and East Bay (Reed et al. 1987) (Figure 10-2). On the Hudson Bay lowlands, surveys conducted between 1996 and 2001 show a decline in the number of pairs nesting in the area between La Pèrouse Bay and Cape Henrietta Maria from a 1997 high of 430,000. In 2003, the breeding population at Cape Henrietta Maria was estimated at 128,000 pairs, a considerable increase from the 1973 estimate of 59,200 breeding adults. Another large population is situated in the Arviat area and partially protected by the McConnell River Migratory Bird Sanctuary (Figure 12-12). In summer, it is common to see adult geese waddling through Arviat trailing their broods. There is also a small breeding colony on Akimiski Island, which increased from less than 200 breeding pairs in 1974 to about 1500 pairs in 2001, and was about the same in 2003 (Abraham et al. 1999a; CWS Waterfowl Committee 2003).

During migration, the entire Foxe Basin population of the lesser snow goose, estimated in 1997 at 1.77 million birds (CWS Waterfowl Committee 2003), stops to rest and feed at marshes on the west coast of James Bay (Gillespie et al. 1991). Nesting in the James Bay and Hudson Bay region begins as soon as bare ground emerges from the melting snow, typically early May to early June (MARC 2003). Numerous studies have been conducted on the growth and development of eggs and goslings (e.g., Ankney and Bisset 1976; Ankney 1980, 1982; Prevett and MacInnes 1980; Williams et al. 1993; Skinner et al. 1998; Badzinski et al. 2001, 2002a+b). Between 1951 and 1986, nest initiation and hatch dates of both lesser snow geese and Canada geese nesting along the Hudson Bay coasts became progressively earlier, possibly in response to climatic amelioration (MacInnes et al. 1990).

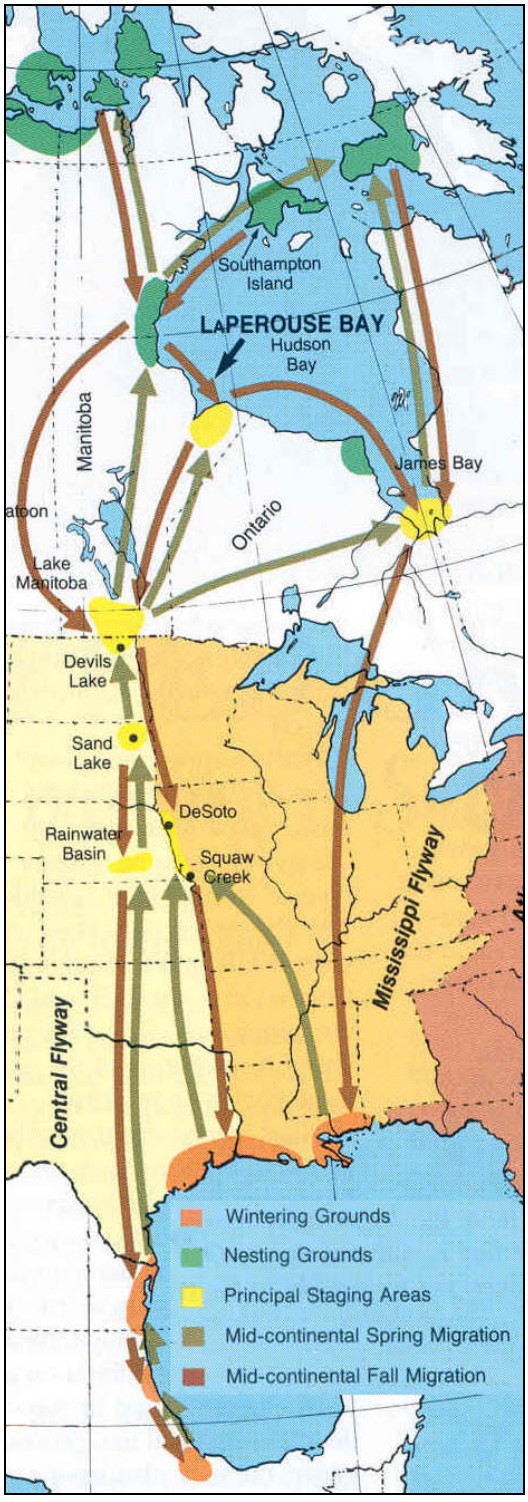

Figure 10-2. Flyway routes and wintering and breeding areas in North America for populations of lesser snow geese that summer along the coasts of Hudson Bay and James Bay (adapted from Johnson 1996a, p. 21).

Inuit and Cree observed changes in the migratory patterns of both Canada and snow geese in Hudson Bay and James Bay, ca. 1984 to 1992 (McDonald et al. 1997). More geese of both species migrated further inland from the east coast of James Bay enroute to Hudson Strait and the Arctic. The Canada geese apparently took a more direct route over the La Grande reservoir than the snow geese. At York Factory, where fall migrating Canada geese used to follow the coastline, they began to arrive from the bay, land at Marsh Point, and then head west. Ivujivik, which historically had few snow geese, was overflown by many large flights. Both Inuit and Cree maintain that wind is an important determinant of whether geese follow an inland or coastal migration route. After nesting and moulting, geese in the Cape Henrietta Maria area historically moved inland to feed and then up the southwestern coast of Hudson Bay before migrating south through Hannah Bay. They began to move inland earlier in the 1980s and more remained there to feed until their southward fall migration.

The brant is a saltwater species that breeds widely in the Arctic Islands and along the coastal mainland of the Northwest Territories and Nunavut, nesting on well-vegetated, low-lying coastal tundra. There are small breeding colonies near river mouths along the Kivalliq coast from the McConnell River northward to Chesterfield Inlet, on Southampton and Coats islands, and on Cape Fullerton. The brant colony at the Boas River on Southampton Island supports an estimated 1000 nesting pairs, and constitutes a significant portion of the eastern Arctic breeding population of the Atlantic subspecies, *Branta bernicula hrota* (Müller)(A. Reed, CWS St. Foy, pers. comm. 1991). This colony is at or near the southern limit of the species' breeding range.

Brant migrating to and from their breeding grounds graze extensively on beds of eelgrass along the coasts of James Bay in spring and fall (late September-early November)(Ettinger et al. 1995; Reed et al. 1996a). The distribution of these eelgrass beds is shown in Figure 6-6 of the Plants Chapter, which also discusses their use by waterfowl. During the fall migration over 50% of the Atlantic brant population may use these habitats (Thomas and Prevett 1982). The area south of Roggan River is of national importance because of its extensive eelgrass beds which provide critical feeding habitat for up to 20,000 brant, many thousands of Canada Geese, and numerous ducks--principally black duck, in the fall (Curtis and Allen 1976). Many thousands of brant pass through southern James Bay (e.g., Netitishi Point) on their way south in late fall (McRae 1992). They follow a relatively narrow migration corridor through Quebec enroute to and from their wintering grounds along the Atlantic coast of the United States.

The Ross' goose breeds mainly in the Queen Maud Gulf Bird Sanctuary in the central Arctic, but smaller breeding colonies are found along the west coasts of James Bay and Hudson Bay and

on Southampton Island. Nesting has been documented at Akimiski Island, La Pèrouse Bay (Ryder and Cooke 1973), McConnell River (MacInnes and Cooch 1963), and on the Boas River delta of Southampton Island (Cooch 1954). In the late 1990s surveys produced an estimate of 40,000 Ross' geese at the McConnell River colony (CWS Wildife Committee 2003). In 2002, up to 2,250 pairs may have nested at Cape Henrietta Maria (Abraham 2002). The species is uncommon in eastern James Bay and has not been reported from the Belchers or the Quebec coast of Hudson Bay.

The greater white-fronted goose is an uncommon to rare, spring or summer transient in western James Bay, southeastern Hudson Bay, and from Churchill northward along the Kivalliq coast. It also occurs on Southampton and Coats islands, likely on enroute to breeding grounds that extend inland from the Kivalliq coast north and west to the Queen Maud Gulf coast and Mackenzie Delta. The species is not common on coastal marine waters, but is a common spring and autumn transient in central Canada. Breeding has been reported in the Repulse Bay area (Snyder 1957).

10.9.2 Swans

The tundra swan is an Arctic-breeding species that was extirpated from the southern shores of Hudson Bay during the early years of the fur trade and is now re-occupying its former range (Heyland et al. 1970; Lumsden 1975, 1984a+b). It breeds throughout coastal areas of the region but is not common along the Kivalliq coast or numerous in general. Small tundra ponds are seldom inhabited by more than one breeding pair. Tundra swans can be seen on open water at the edge of ice floes when they first arrive at Hudson Bay. The trumpeter swan is a rare, non-breeding summer visitor to the Churchill area (MARC 2003).

10.9.3 Dabbling ducks

The northern pintail is the only surface-feeding (dabbling) duck that breeds and is common throughout James Bay and Hudson Bay. (Appendix 4). It frequents coastal mudflats, tidal ponds, and brackish ponds in summer (Ross 1984). Moulting flocks of up to 300 pintail have been observed on brackish coastal ponds along the northern coast of Ontario in late summer (Prevett in Ross 1982). Flocks of up to 5,000 migrants occur at the mouth of the Moose River in late September and early October (Lewis and Peters 1941).

The green-winged teal, American black duck, mallard, and American widgeon are common breeding species in James Bay and along the Ontario coast of Hudson Bay, but are increasingly rare north of the treeline. Only the first two species occur offshore on the Belchers. The blue-winged teal and northern shoveler are also common breeding species along the western coast of James Bay but are uncommon to rare elsewhere within the treeline and absent further north. The gadwall is a rare summer visitor to James Bay and Churchill, while Eurasian widgeon have only been reported from the Churchill area.

The green-winged teal is generally seen in dense flocks on the mudflats beside streams and river mouths, or inland on brackish ponds (Ross 1984). Over 10,000 birds were seen during the fall migration near Chickney Point on 14 September 1978. The black duck is very common in eastern James Bay, where it tends to occur around river mouths and estuaries, usually in more saline habitats (Reed et al. 1996b; Figure 10-3). It feeds extensively on mudflats when invertebrates are exposed by the falling tide, and on eelgrass that is exposed at particularly low tides. The black duck is particularly numerous in August and September when females join the males and non-breeding females along the coast. The American widgeon and blue-winged teal occur and breed largely in southern and western James Bay, where they are common and locally abundant. The American widgeon is present in large numbers only in autumn migration, when it is seen most often on brackish water habitat associated with stream mouths, including mudflats and goose meadows (Ross 1984). The preferred habitat of the northern shoveler appears to be fresh or brackish ponds contained by beach ridges or at the back of the coastal marsh. The mallard and blue-winged teal are the least common of these species in saltwater habitats.

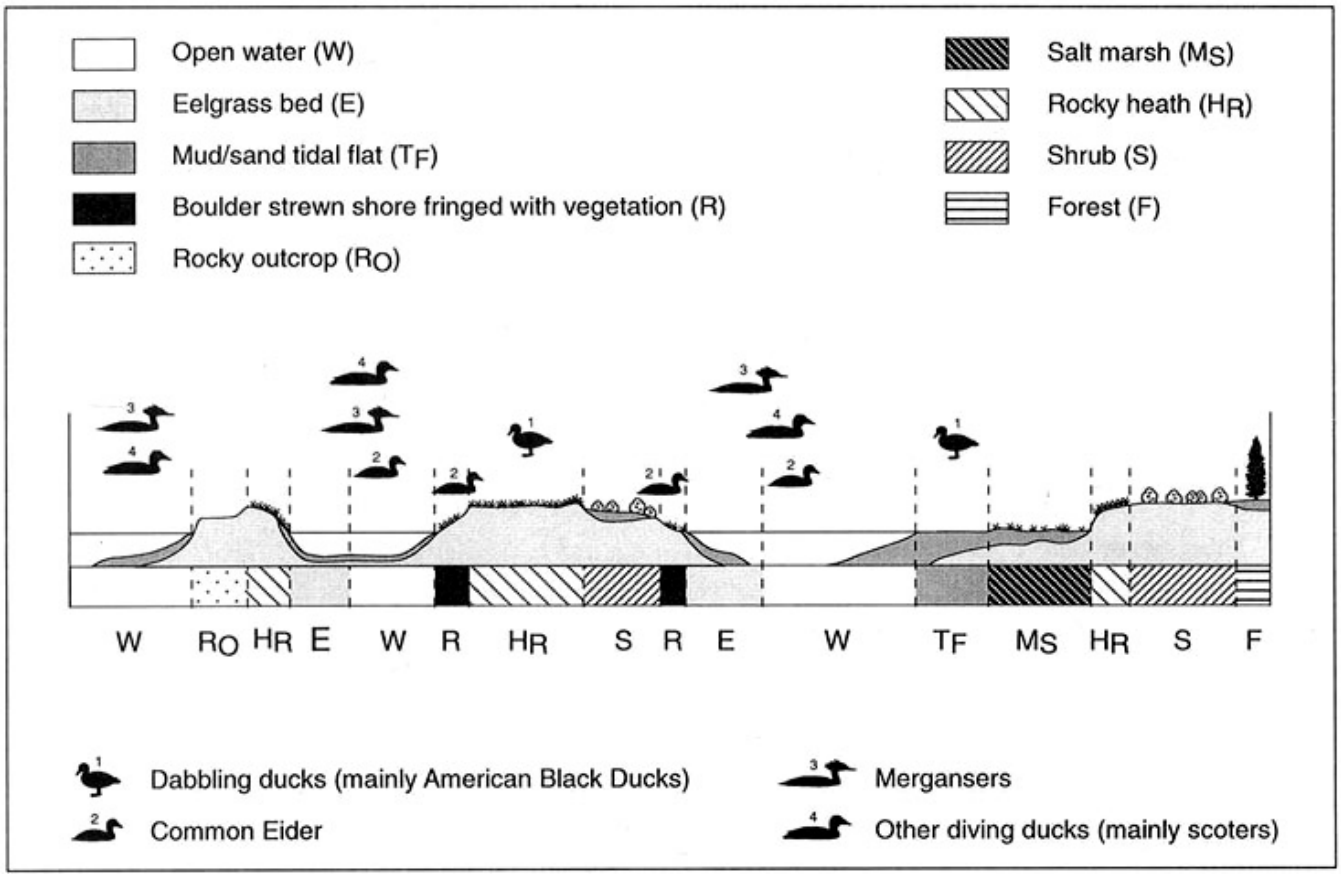

Figure 10-3. Use of habitats of the northeast coast of James Bay by ducks (from Reed et al. 1996b).

10.9.4 Eiders

The Hudson Bay subspecies of the common eider, *Somateria mollissima sedentaria* Snyder, lives year round in Hudson Bay and James Bay. Nakashima and Murray (1988) have provided an excellent, thorough overview of eider biology in this region, based on both scientific surveys and Inuit knowledge. These studies have been followed up by those of Robertson and Gilchrist (1998) and Gilchrist and Robertson (1999, 2000). The common eider feeds almost exclusively on blue mussel (*Mytilus edulis*) (A. Reed, CWS, Ste. Foy, pers. comm. 1992), and typically occurs in summer in open water or along rocky shores (Figure 10-3). It breeds locally and commonly (colonial) along low-lying, tundra, or rocky coasts throughout Hudson Bay and James Bay. The presence of a fox can severely limit eider nesting success on smaller islands.

In the mid-1980's the breeding population in eastern Hudson Bay was estimated at 83,000 birds--most of which occurred in southeastern Hudson Bay (Nakashima and Murray 1988). These birds overwinter in Hudson/James Bay where open water and shallow depth coincide (Sutton 1932; Snyder 1941, 1957; Freeman 1970a+b; Schmutz et al. 1983; Abraham and Finney 1986; Nakashima and Murray 1988). Inuit report that they are present, sometimes in quantity, at almost every ice edge that is accessible from Sanikiluaq in winter, and in a number of polynyas (Figure 5-7; Nakashima 1988). In the winter of 1991-92 eiders were found frozen into areas where, historically, the water has remained open in winter (P. Kattuk, Mayor of Sanikiluaq and Z. Novalinga, Sanikiluaq Environmental Committee, pers. comm. 1993). The Inuit attributed these kills to decreases in the area's winter currents (MacDonald et al. 1997). Subsequent scientific studies estimated that the number of nesting eiders declined 75% from 1985-88 to 1997 decline in the number of nesting eiders (Robertson and Gilchrist 1998). This raised serious conservation concerns, because eider populations are sensitive to reductions in adult survival and subsistence hunters harvest this population throughout the year.

Overwintering concentrations of eiders have been reported near the Belchers (Freeman 1970a+b; MacDonald et al. 1997; Gilchrist and Robertson 2000), at Cape Henrietta Maria and in shore leads along the west coast of Hudson Bay (Abraham and Finney 1986), and offshore Churchill (MARC 2003). Manning (in Bray 1943) also reported eiders "probably *sedentaria*" overwintering off Cape Fullerton. In March of 1998 and 1999, large flocks of common eiders (200-12,500 birds) were seen along landfast ice edges around the Belcher Islands, and small groups occurred in some polynyas (Gilchrist and Robertson 2000).

The king eider is uncommon but widely distributed in James Bay and Hudson Bay. It breeds primarily in the Arctic, but does nest along the James Bay and Hudson Bay coasts. Unlike common eiders, which often breed in colonies, king eiders are solitary nesters (MARC 2003). Most of the eastern king eiders winter between Greenland and New England, but a few remain with common eiders on Hudson and James bays (Gilchrist and Robertson 2000).

Both eiders frequent coastal marine waters throughout the breeding season, and common eider are sometimes found well off shore.

10.9.5 Mergansers

Three species of these piscivorous, diving ducks feed in the estuaries and coastal waters of James Bay and Hudson Bay in summer (Figure 10-3). The red-breasted merganser is common along the coasts of James Bay and southwestern Hudson Bay, less so north of the treeline. It nests on the ground and breeds widely in the region, typically near freshwater streams and lakes. Males, after early summer, and non-breeding birds frequent coastal marine waters. Flocks of 50-200 birds, presumably moulting, are often found on the Churchill River and Hudson Bay in midsummer (Jehl and Smith 1970). The species abundance may have declined dramatically in the Churchill area since the 1940s (MARC 2003). The common and hooded mergansers have more southerly distributions and nest in tree cavities. The former is uncommon or absent in western and northern Hudson Bay, but common elsewhere. It typically nests further south and inland from the coast. The hooded merganser is a rare, non-breeding visitor to James Bay and the Churchill area.

10.9.6 Other diving ducks

Long-tailed duck (formerly oldsquaw) breed throughout the region (Appendix 4). They arrive at Churchill as early as ice conditions permit and by late May can be observed courting in leads on the Bay (Jehl and Smith 1970). The most southerly breeding populations of this species are found at Cape Henrietta Maria, and on Akimiski, Bear, Grey Goose, and South Twin Islands in James Bay. In the Churchill area, nests are found most commonly on islands in freshwater tundra ponds or lakes, but also in upland tundra, marshes, and even spruce forest—usually within 10 m of water and sometimes grouped together (Allison 1975b as cited in MARC 2003). Flights of over 500 long-tailed ducks pass through southern James Bay in late fall, where over 10,000 birds can sometimes be seen in a single day (McRae 1992; Abraham and Wilson 1997). They have been seen at Churchill on the 3rd of November 1963 (MARC 2003), and at Moosonee on the 4th of December 1994 (Abraham and Wilson 1997). Flocks of long-tailed ducks (100-500 birds) were common in polynyas near the Belcher Islands in March of 1998 and 1999 (Gilchrist and Robertson 2000). Some individuals also overwinter on open water of James Bay (Godfrey 1986).

Greater and lesser scaup and common goldeneye breed, and typically are common, along the southern and western coasts of James Bay and the southwestern coast of Hudson Bay. The greater scaup is uncommon but also breeds along the mailand coast of southeastern Hduson Bay and Nunavut, north to Rankin Inlet. It is most common in western James Bay, and is one of the commonest breeding ducks at Churchill (Jehl and Smith 1970). The lesser scaup and ring-necked duck breed largely in southern and western James Bay. The former is common and locally abundant, the latter uncommon. Occasionally, the common goldeneye is common on the Churchill River estuary (Jehl and Smith 1970).

The surf, white-winged, and black scoter are also common on the Belchers and along the coast from southeastern Hudson Bay west to Churchill. In the Belchers and along the Quebec coast of Hudson Bay these species typically are non-breeding transients. Surf and white-winged scoters nest on the Twin Islands, along the east coast of James Bay, and inland from the western James Bay and southeastern Hudson Bay coasts. Non-breeding and post-breeding male scoters are common on coastal waters during the summer, and this region provides very important moulting habitat for the species (A. Reed, CWS, Ste. Foy, pers. comm. 1992) (Figure 10-3). Indeed, Ross (1983) counted 42,600 moulting male black scoters along the northern James Bay coasts between Ekwan Point and Hook Point and another 16,700 at Cape Jones. In July 1977, 43,700 moulting male black scoter were seen on Hudson Bay near the mouth of Shell Brook, Ontario (Ross 1983). Some of these birds may winter on the Bay. While the black scoter is the most common diving duck along the Ontario coast (Ross 1982), it breeds inland and has not been reported to breed along the coasts (Ross 1983; Savard and Lamothe 1991). The black scoter may overwinter in small numbers in James Bay (Ross 1983). All three scoters are common along the Atlantic and Pacific coasts of Canada, but only the white-winged scoter is common in central Canada.

The harlequin duck occurs mainly along the Atlantic and Pacific coasts and is a rare summer visitor to Hudson Bay and James Bay. It has been reported from Churchill and is uncommon but nests in the Richmond Gulf area (Lac Guillaume Delisle). The species may be more common along the Quebec coast of the region (A. Reed, CWS Ste. Foy, QC, pers. comm. 1992). The Atlantic population has been designated “Special Concern” by COSEWIC, on the basis of its population small size and tendency of the species to congregate in relatively large groups when mating and wintering, which makes it succeptible to catastrophic events such as oil spills (http://cosewic.gc.ca).

Bufflehead, Barrow's goldeneye, canvasback, redhead, and ruddy duck are rare summer visitors. Most have only been reported from southern James Bay and/or the Churchill area. Buffelhead and canvasback have nested at Churchill.

10.10 F. ACCIPITRIDAE: Ospreys, Eagles, Hawks, and Harriers

Accipiters make limited use of the Hudson Bay and James Bay coasts. Osprey, northern harrier (marsh haw), sharp-shinned hawk, and bald and golden eagles hunt or scavenge along the coast on occasion, while northern goshawk and rough-legged hawk generally hunt inland--all are summer residents and widely distributed in southern Canada. Only the northern harrier, which preys on shorebirds and waterfowl, is a common ground nester in the coastal salt marshes of Hudson Bay and James Bay. Northern harriers arrive at Churchill in May and migrate southward through the area from mid-August to mid-September (MARC 2003). The other species may nest on coastal cliffs or in trees on occasion. At Churchill, rough-legged hawks apparently nest wherever the can find an elevated spot, on the grain elevator, discarded oil drums, the rocket launching gantry, the garbage incinerator, and even on the shipwrecked Ithaca (MARC 2003). Southward migrating northern harrier, northern goshawk, and rough-legged hawk are common in late fall in the Hannah Bay area of southern James Bay (McRae 1992).

10.11 F. FALCONIDAE: Falcons

Four falcons hunt shorebirds and waterfowl along the coasts of James Bay and/or Hudson Bay. The merlin and peregrine falcon, breed and hunt along the coasts of Hudson Bay and James Bay in summer, while the gyrfalcon is a year-round resident of Nunavut and northern Quebec, and an occasional late fall migrant or winter visitor to the southwestern coast of Hudson Bay and James Bay. The prairie falcon is a rare summer visitor to the Churchill area.

The merlin generally nests in trees, but will occasionally nest on cliffs or on the ground. It occurs north to Manitounuk Sound along the east coast of Hudson Bay, and to the southern Kivalliq in the west. The species is most abundant during migrations of shorebirds and other small birds on which it feeds.

Peregrine falcon populations have been depleted severely by the effects of DDT, which they accumulate from their prey. They breed in areas with high to moderate relief along the Hudson Bay coast of Manitoba, Nunavut, and northern Quebec and on Southampton, Coats and the Belcher and Nastapoka islands (see also Fyfe 1969; Albright and Doidge 1992). Nests are situated on cliff ledges, often near seabird colonies. Peregrines inhabiting coastal areas in summer prey on shorebirds, seabirds, and small mammals, which they kill with a blow from their feet following a spectacular dive (Fleck 1981; Court et al. 1988). The species is uncommon to rare along the James Bay coast during breeding season but southern James Bay is a favorite resort in the fall, when migrating shorebirds and ducks are abundant. Todd (1963) identified peregrines in this region as *Falco peregrinus anatum*. This subspecies has been designated as "Threatened" by COSEWIC.

Figure 10-4. Peregrine falcon near Rankin Inlet (photo credit D.B. Stewart).

There is a dense, productive population of the more northerly distributed subspecies of peregrine falcon, *F. p. tundrius,* on coastal cliffs and islands near Rankin Inlet on the Kivalliq coast (Court et al. 1988, 1989) (Figure 10-4). COSEWIC lists this subspecies as "Special Concern". These birds arrive on the breeding grounds in mid-May from wintering areas as far south as Uruguay. Production has fluctuated around the mean of ~30 fledglings produced per year (Setterington 2004). The population has relatively low pesticide residues and high reproductive success, but there is still measurable pesticide-related egg thinning and between 1981-6 about 10% of the breeding pairs failed due to egg breakage (Court et al. 1990). A decade later, there had been little improvement in the pesticide loads (Johnstone et al. 1996). The birds were still accumulating organochlorine pesticides on their wintering grounds and from aquatic prey taken in North America. In 2003, there were 25 active nests within an 18 km^2 radius of Rankin Inlet and 26 chicks were fledged (Setterington 2004). The area has one of the highest and best-known concentrations of peregrines in the world and should be considered for protection (M. Bradley, GNWT Renewable Resources, Arviat, pers comm.; R. Bromley and C. Shenk, GNWT Renewable Resources, Yellowknife. pers. comm.). Peregrines also nest further north in the vicinity of Scarab Point and nearby Rabbit Island, to the south toward Whale Cove, and offshore on Marble Island.

Mature gyrfalcons are the only raptors that are permanent residents of Nunavut (Fleck 1981). They breed near the Hudson Bay coast in Kivalliq and northern Quebec, and on Southampton, Coats, and Mansel islands but are not common or abundant. Nests are situated on inaccessible cliff faces, and when they are located in coastal areas the falcons prey primarily on seabirds, which they attack from the air. Overwintering adults remain close to the nesting area and prey on ptarmigan or hares. Gyrfalcons arrive in southern James Bay in late October, where they patrol the coast in the East Point and Netitishi Point areas (McRae 1992).

10.12 F. RALLIDAE: Rails, Gallinules, and Coots

Rallidae are predominantly marsh birds. Three species near the northern limits of their distributions, the yellow rail, sora, and American coot, are summer residents along the James Bay and southwestern Hudson Bay coasts. Yellow rail and sora are common in some locales, and breed in the tidal marshes of James Bay and southern Hudson Bay west to Churchill. Indeed, the Hudson Bay coast may be the breeding "stronghold" of the yellow rail in Ontario (Cadman et al. 1987). The sora also breeds along the Quebec coast north to Kuujjuarapik. The American coot is an uncommon visitor to the southern tip of James Bay, where it may breed, and is rare but nests at Churchill. All three are common breeding species across most of southern Canada.

The yellow rail has been designated a species of “Special Concern” in Canada by COSEWIC. The relatively small population is declining due to loss of its limited wetland wintering habitat in the southern United States by land drainage and, to a lesser extent, degradation of its summer breeding habitat by goose overgrazing. Further decline could go undetected because of the secretive nature of the species.

10.13 F. GRUIDAE: Cranes

Sandhill cranes are summer visitors to the southern and western coasts of James Bay and Hudson Bay, from Boatswain west and north. They have also been reported from the Belchers and Southampton Island. While widely distributed, these birds are seldom abundant. They nest in marshy low-lying areas and sometimes eat young snow geese or scavenge fish remains left by fishermen (Mallory 1987). Cranes pass Churchill going north in May and going south in September (Jehl and Smith 1970).

The crane population of the Hudson Bay Lowland was extirpated in the 19th century. The area was likely re-colonized by birds from the west that do not follow the migration route of the former population through southern and central Ontario. Crane sightings were rare on surveys of the James Bay coast between 1950 and 1970, however the population began to increase rapidly in the 1970's. This trend continued and, in the early 1980's, over 200 cranes were sighted along the Ontario coast between Ekwan Point and Hook Point in a single day (Abraham in Cadman et al. 1987).

10.14 F. CHARADRIIDAE: Plovers

The American golden-plover, killdeer, and semipalmated plover summer and breed along the shores of Hudson Bay and James Bay, while the black-bellied plover is a common non-breeding transient in James Bay that breeds on the shores of northern Hudson Bay. The use of coastal habitats in western James Bay by black-bellied and semipalmated plover is discussed further in the Section 6.5. Plovers do not overwinter in the region. Several American avocets (*Recurvirostra americana* Gmelin) have strayed to Churchill, but the species typically feeds at the edge of fresh, rather than salt water.

The black-bellied plover is a truly Arctic shorebird that nests on Southampton Island and further to the north, typically on dry gravel ridges or wetter tundra. It is a common species in spring and fall on the flats and pebbly beaches of southern James Bay where it finds suitable feeding and resting grounds. The species migrates northward along the mainland coasts from late May through mid-June and returns southward from mid-August through early October. The spring migration from coastal northeastern United States appears to be mainly to the muddy coastal flats, pools, beaches, and sandbars of James and Hudson bays. Historically, the black-bellied plover was very abundant on the Hudson Bay coast, where Hearne and others hunted it extensively for food (Manning 1952). The average number consumed annually at York Factory over a 5-year period ca. 1860, was 2480.

The American golden-plover breeds at Cape Henrietta Maria, from Churchill northward along the west coast of Hudson Bay, and on Southampton Island. These areas are near the southern limit of the species’ breeding range, but it is becoming an increasingly common breeder in the Churchill region (MARC 2003).

American golden-plovers tend to prefer drier habitat than the black-bellied plovers but are also found along coastal shores and beaches. The species' "run-stop-peck" feeding pattern makes it an attractive "watchdog" for shorebirds such as dunlin and short-billed dowitcher that feed by probing, and the species are often closely associated (Byrkjedal 1987). Migrants pass northward through Churchill in late May and early June and more return southward from mid-August through mid-September (Jehl and Smith 1970). Twomey (1938 cited in Todd 1963) saw about 75 birds at Eskimo Harbour in the Belchers on 26 August. They are regular but uncommon autumn transients along the west coast of James Bay. The American golden-plover undertakes a remarkable 4,000 km non-stop migration in the fall from the rich feeding areas around Hudson Bay over the Atlantic Ocean to South America (Figure 10-5).

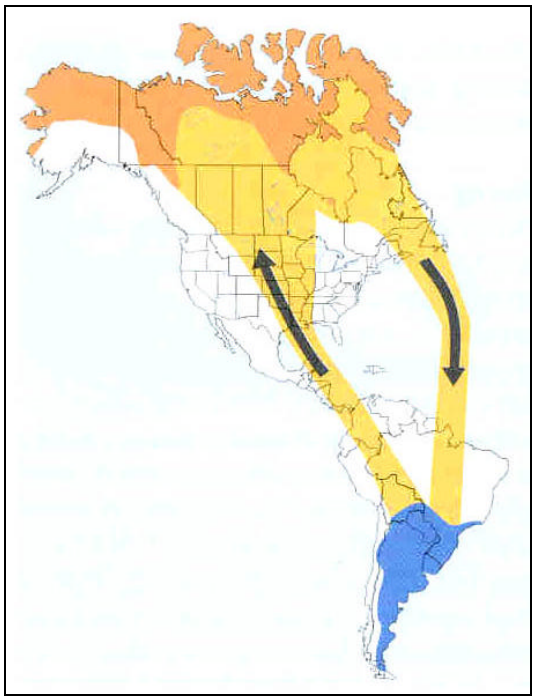

Figure 10-5. Migration path of the American golden-plover (from Elphick et al. 2001, p. 264)

The semipalmated plover breeds, and is common and numerous, in low-lying coastal areas of Hudson Bay and James Bay. It frequents salt mud flats and beaches, and nests in shallow depressions in the sand, gravel, moss, or dead seaweed. Along the seashore these birds eat small molluscs, marine worms, small crustaceans, and eggs of marine animals. Migrants arrive in the Churchill area in late May and by early August most adults have left the area; young begin migrating southward in mid-August and a few remain into September (Taverner and Sutton 1934; Jehl and Smith 1970). Semipalmated plovers are spring and fall transients throughout most of southern Canada and also breed in the maritimes.

The killdeer breeds along the southern and western coasts of James Bay and Hudson Bay from Boastwain Bay west to Churchill. This is the northern edge of its breeding range in central Canada. The species is seen occasionally along coastal beaches or in salt marshes.

10.15 F. SCOLOPACIDAE: Sandpipers, Phalaropes, and allies

Species of this family of shorebirds exhibit a wide range of sizes and colors; most are gregarious and frequent shores and marshy areas (Snyder 1957; Godfrey 1986). Twenty-five species breed along the coasts and frequent coastal or offshore habitats during the summer, and several are spring and/or fall transients--none overwinters (Appendix 4). Many of these shorebirds make a direct flight from James Bay to the Atlantic seaboard or, in the case of Hudsonian godwit, to South America. They require fat built up from feeding along the James Bay coast to fuel them on the flight (Martini et al. 1980b). This coastal ecosystem provides resources of critical international importance for the Hudsonian godwit and red knot (Morrison 1983). The endangered Eskimo curlew was reported from near Hannah Bay in 1976 (Hagar and Anderson 1977).

10.15.1 Species with wide breeding distributions

The semipalmated sandpiper, least sandpiper, and red-necked phalarope have wide breeding distributions along the coasts of James Bay and Hudson Bay. During breeding season they frequent mostly coastal areas that have moist to wet vegetated tundra, and sometimes salt marshes or higher, drier areas with low vegetation.

The semipalmated sandpiper has a wide breeding distribution in Arctic and Subarctic Canada, and nests along the coasts of James Bay and Hudson Bay, except perhaps on Mansel Island and on low-lying coastal sections. Most semipalmated sandpipers along the west coast of James Bay feed on the shortgrass salt marsh

(*Puccinellia phryganodes*), where they prey on dipteran larvae (Martini et al. 1980b) (see also Section 6.5). At Churchill, the males arrive about 24 May to establish breeding territories, and are followed a few days later by the females (MARC 2003). The first eggs are laid between 7 and 23 June and hatch in late June or early July. Wet, coastal sedge meadow is the preferred nesting habitat. Once the most abundant breeding shorebird near Churchill, the nesting frequency of the semipalmated sandpiper has declined dramatically since the 1930's, for reasons that are uncertain (MARC 2003). The adults migrate southward in great numbers along the west coast of James Bay in the latter half of July enroute to the northern coast of South America (Hope and Shortt 1944; Morrison 1983). Some flocks may contain up to 5000 birds. The least sandpiper is a common breeder across Subarctic Canada and on the mainland shores of Hudson Bay south of Chesterfield Inlet in the west and Inukjuak in the east, but rarely on the Belchers or the islands of northern Hudson Bay. The red-necked phalarope breeds along reaches of coastline throughout the region, and across northern Canada. It is a swimming shorebird that migrates over the open ocean and coastal waters and comes inshore mainly to weather storms. It is rare in the interior. Flocks of over 1000 young red-necked phalarope have been observed on large ponds near Churchill in August (Jehl and Smith 1970).

10.15.2 Species near the northern limit of their breeding range

Species that are at the northern limit of their breeding range in the Hudson Plains or Taiga Shield coastal ecozones of Hudson Bay or James Bay coast (Figure 4-12), include the greater and lesser yellowlegs, solitary and spotted sandpipers, whimbrel, Hudsonian and marbled godwits, short-billed dowitcher, Wilson's snipe, and Wilson's phalarope. These species sometimes forage in coastal habitats and generally have widespread breeding distributions in the subarctic and/or to the south, often across Canada. Most are common on coastal mud flats and beaches during their migrations, and sometimes in salt marshes. They favour well-defined zones of marsh or flats for feeding and resting, and resource partitioning on the basis of habitat or food type or size is apparent throughout the James Bay shorebird community (Figure 6-8) (Martini et al. 1980b).

The southwest coast of Hudson Bay from Cape Henrietta Maria north to Rankin Inlet is one of two disjunct breeding areas in Canada for the whimbrel, the other being in the Mackenzie Delta region. Flocks of whimbrels normally arrive at Churchill in late May (Jehl and Smith 1970). Breeding is common at Churchill and La Pèrouse Bay, with peak hatching in late June and early July (MARC 2003). Whimbrels also have been reported on Southampton Island during the breeding season. Small flocks begin to migrate southeastward along the Hudson Bay coast in the third week of July, with numbers peaking in August, and few in September. Birds from the Hudson Bay subspecies or population spend the winter on the Atlantic and Gulf coasts of the Americas (Morrison et al. 2001).

The western coast of James Bay and southern coast of Hudson Bay provide resources of critical international importance for the Hudsonian godwit (Morrison 1983). The species is dispersed through central Canada during its spring northward migration but the autumn migration is concentrated in a narrow lane down the west coast of Hudson and James bays. Small northward-migrating flocks begin arriving at Churchill in late May (Jehl and Smith 1970). The main body of southward-migrating adults reaches the coasts of James Bay in late July and August (see also Hope and Shortt 1944). The migrants settle in large groups on tidal flats to feed and build up fat reserves before departing in late August for South America. The most spectacular discovery was of an estimated 10,000 Hudsonian godwit north of the Albany River in 1974 (Morrison and Harrington 1979). This represents about 30% of the species' Atlantic coast and South American wintering population, and makes the area one of critical importance for the species (Curtis and Allen 1976). Young-of-the-year gather on the west coast of James Bay in early September and depart from mid-September to early October. Both adults and young appear to fly nonstop from James Bay to South America. The Hudsonian godwit is uncommon except on the breeding grounds and main migration route. The species' breeding range is poorly known, but it does nest in the Cape Henrietta Maria area and along the northern coast of Manitoba from York Factory to Churchill.

The importance of the region to the remaining species varies. The Wilson's snipe, known until recently as the North American race of the common snipe (MARC 2003), has a widespread breeding distribution along the coasts of James Bay and southern Hudson Bay. Like geese, it makes extensive use of brackish marsh habitat (Martini et al. 1980b). The species normally reaches Churchill in late May or early June, and some individuals remain until early October (MARC 2003). The greater yellowlegs has a similar breeding distribution but is common further north along the Quebec coast and offshore on the Belcher Islands. The spotted sandpiper breeds on mainland coasts north to Richmond Gulf and is uncommon further north. It is more common in coastal freshwater than marine habitats. The lesser yellowlegs and short-billed dowitcher also breed along the coasts of James Bay and the southwestern coast of Hudson Bay. The lesser yellowlegs is an abundant fall migrant in southern James Bay. The short-billed dowitcher is a regular spring and fall transient along the west coast of James Bay, and a locally plentiful autumn migrant along the Hudson Bay coast where it feeds along the edge of mud flats or sedge meadows. A population of marbled godwit, nests on Akimiski Island and along the nearby mainland of western James Bay. This is unusual since the species normally nests on the prairies. The solitary sandpiper breeds but is not abundant along the coasts of James Bay and southwestern Hudson Bay. It is present at Churchill from the end of May until late August (MARC 2003). Wilson's phalarope is an uncommon species that normally nests in central North America, but occasionally nests along the west coast of James Bay.

10.15.3 Species near the southern edge of their breeding range

The remaining species breed mainly in the Arctic. Some also nest on the tundra along the northwestern coast of Hudson Bay and/or on the northern islands, which are near the southern limits of their breeding range. The dunlin breeds along coasts from eastern James Bay west and north to Southampton and Coats islands. It is a common spring migrant along the Hudson Bay coast from late May to mid-June, and up to 700 birds sometimes congregate at Bear Cove, near ChurchillI in June. Most breeding adults leave Churchill by mid-July, whereas juveniles remain until September (MARC 2003). The species moults before migrating south so both juveniles and adults remain along the James Bay coast until mid-September (Morrison 1991). The pectoral sandpiper breeds at Cape Henrietta Maria, along the Kivalliq coast, and on Southampton and Coats islands. It is an uncommon spring migrant at Churchill in June, enroute to the Arctic, and returns southward from early July through early September. The red phalarope breeds along the Kivalliq coast, the northern coast of Quebec south to Ivujivik, and on Southampton, Coats, and Mansel islands. Like the red-necked phalarope, it is a swimming shorebird that migrates over the open ocean and coastal waters and comes inshore mainly to weather storms. It is a rare visitor to southern James Bay and migrates mainly along the Atlantic and Pacific coasts.

Ruddy turnstone, red knot, sanderling, and white-rumped sandpiper are common migrants along the coasts of Hudson Bay and James Bay. Flocks of over 10,000 ruddy turnstones arrive at Churchill in late May to mid-June (MARC 2003). These are the largest concentrations of the species recorded in Canada. Most continue northward. Small flocks are observed at Churchill from mid-July through mid-September. Up to 7,000 red knots, representing 10-20% of the South American wintering population, settle on the extensive sandflats of southern James Bay to feed enroute from the Arctic to the Atlantic coast and then to South America (Morrison and Harrington 1979; Morrison and Ross 1989; Morrison et al. 1991) (see also Section 6.5). Many red knots skirt the west coast of Hudson Bay on their way north (MARC 2003). The species has specialized habitat requirements and is easily disturbed. The sanderling is a common spring migrant along the coast near Churchill enroute to its breeding grounds in the Arctic. The spring migration at Churchill peaks about 10 June, and the fall migration extends from mid-July to mid-September, with flocks of several hundred in late-July (Jehl and Smith 1970). The purple sandpiper is unusual among these species in that it also breeds along the Quebec coasts of James Bay and southeastern Hudson Bay, and on the Belchers. It migrates mainly east of Hudson Bay along the coasts and seldom strays far from salt water. The white-rumped sandpiper is a fairly common spring migrant along the coast near Churchill from late May through early June (MARC 2003). The species frequents wet, sandy areas and mudflats, often feeding belly-deep in water. The fall southward migration at Churchill extends from late July to October, and can be impressive. Three thousand white-rumped sandpipers were seen there on 9 October 1986.

Baird's, buff-breasted, and stilt sandpipers migrate mainly through the interior west of Hudson Bay and are less common migrants along the coasts. During migration, these shorebirds favour a variety of coastal habitats, often including mud flats, muddy shores, beaches, and sometimes seaweed-covered rocks. The Baird's sandpiper is less inclined to feed in water than most other sandpiper species. It is a common spring migrant at Churchill between 24 May and 24 June but is uncommon to rare during the fall migration, which extends from mid-July to mid-October (MARC 2003). The stilt sandpiper is more common in coastal freshwater habitats. It arrives in the Churchill area in late May and early June. The species breeds along the southern coast of Hudson Bay from Cape Henrietta Maria west to the McConnell River. Most adult females leave Churchill by 12 July and males by 20 July; the juvenile migration peaks in early August. The number of stilt sandpiper nests in the Churchill area appears to have declined substantially since the 1930's. The buff-breasted sandpiper is not known to breed along the Hudson Bay or James Bay coast. Its main northward migration route is west of Churchill, but strays occur there in mid-June (MARC 2003). The little stint is uncommon to rare and has only been reported from southwestern James Bay. It does not breed in this region.

10.16 F. LARIDAE: Jaegers, Gulls, and Terns

Jaegers are graceful, gull-like, predatory seabirds that often rob gulls and terns for food. They spend most of the year on the ocean but nest on the Arctic tundra. The parasitic jaeger breeds on the islands and along the coasts of Hudson Bay, the Pomeranian jaeger along the Quebec coast of Hudson Bay and on Southampton Island, and the long-tailed jaeger there and along the Kivalliq coast. All three occur along the southeastern coast of Hudson Bay. They have wide Arctic breeding distributions, and migrate and winter mainly at sea along the Pacific and Atlantic coasts. Parasitic jaegers arrive at Churchill in late May or early June and leave by mid-September (MARC 2003). Pomeranian and long-tailed jaegers are rare or absent in James Bay.

Of the gull species, only the herring gull breeds along coasts throughout Hudson Bay and James Bay in summer. Pairs nest singly or in colonies, often with other gulls or terns, and frequent coastal waters. The herring gull is a common breeder and/or transient throughout southern Canada. It arrives at Churchill and Richmond Gulf as early as late April and leaves Moosonee area by early November. Individuals have remained in the Churchill area until 11 December (Jehl and Smith 1970).

Iceland, glaucous, and Sabine's gulls breed along the northern coasts of Hudson Bay, and widely in the Canadian Arctic. The glaucous gull also breeds on the Belchers and along the southeastern coast of Hudson Bay from Richmond Gulf northward. It generally nests in colonies on cliffs and some individuals winter in Hudson Bay, although most winter along the Atlantic and Pacific coasts. Thayer's gull (*Larus thayeri* Brooks) is treated here as a subspecies of the Kumlein's race of the Iceland gull (*L. glaucoides kumlieni*), with which it interbreeds in cliff-nesting colonies on Southampton and Coats islands (Gaston and Decker 1985; Gaston et al. 1986). Twomey reported the Iceland gull (in Todd 1963) from Ney Island in the Belchers in late May 1938, and a dead specimen was found south of Cape Henrietta Maria (Peck 1972). The Sabine's gull often nests with Arctic terns on low, wet coastal tundra, and is a rare fall visitor to James Bay. Glaucous and Iceland gulls migrate and generally winter along the Atlantic and Pacific coasts, while the Sabine's gull migrates and winters along the Pacific coast. These species frequent coastal waters outside the breeding season, and are rarely seen in the interior of Canada.

The number of herring and glaucous gulls nesting in the Belcher Islands declined between 1985-88 and 1997 (Gilchrist and Robertson 1999). The causes of these declines are unknown but the reproductive success of these gulls may have declined in response to a 75% decline in the region's nesting eider population, since eider eggs and young are an important food source for gulls during the breeding season (see also Robertson and Gilchrist 1998).

Ross's and ivory gulls are rare spring visitors to Hudson Bay and James Bay. The Ross's gull will nest at Churchill (Chartier and Cooke 1980) and occurs in summer at the McConnell River in the Kivalliq. The species usually nests in the Canadian high Arctic and in Siberia, may overwinter at Arctic polynyas, and is rare in southern

Canada. The ivory gull may occur more widely and in both summer and winter, but breeds further north. The Ross's gulls has been designated "Threatened" by COSEWIC, on the basis that very few individuals occur in Canada where they breed in very few places (two known sites), and that recolonization could be slow if these sites were abandoned (http://www.cosewic.gc.ca). The ivory gull has been designated "Special Concern" by COSEWIC, on the basis that there are few in Canada and, in summer, the species is susceptible to human activities and disturbance. During the rest of the year, its tendency to congregate makes it vulnerable to oil pollution.

The great black-backed gull, which breeds along the Atlantic coast, has apparently moved into southeastern Hudson Bay in recent years where it is an uncommon visitor to the Quebec coast (Savile 1950; A. Reed, CWS, Ste. Foy, pers. comm.) and occasional visitor to Churchill (MARC 2003). The California gull, which nests in western Canada, has been reported at Ekwan Point (OMNR 1991) and Churchill (MARC 2003). The glaucous-winged gull, which typically lives and breeds along the west coast of North America, also occurs accidentally at Churchill (MARC 2003). Breeding has not been reported along the coasts of Hudson Bay or James Bay for these species.

The Bonaparte's gull breeds at Churchill. It is a common breeder and transient south of the treeline in southern James Bay, and in western and central Canada. It arrives at James Bay in mid-May and departs by mid-October. Nests are built in the vicinity of muskegs, ponds, and lakes in coniferous woodlands. Post-breeders and non-breeders frequent coastal areas. The ring-billed gull is less common in southern James Bay. It breeds there and across southern Canada east of central British Columbia, generally in colonies and often with other gulls or terns. The species was first recorded at Churchill in 1968, and is now a common visitor with flocks frequently numbering 50-100 birds as the species' population and range expands (MARC 2003). The little gull and mew gull are rare in Hudson and James bays but do breed at Churchill (McRae 1984). The former is a European immigrant that breeds locally along the Hudson Bay coast at Churchill and Winisk and along the Great Lakes and St. Lawrence River. The latter breeds mainly in western Canada and is common along the British Columbia coast. Another European species, the lesser black-backed gull, has been observed at Churchill but is not known to breed in Canada. Laughing gull, Franklin's gull, and black-headed gull are rare accidental summer visitors to Churchill (MARC 2003). None of these species is known to overwinter in the region.

The black-legged kittiwake also occurs on the open waters of northern Hudson Bay in July and August, and occasionally at Churchill in early summer (Brown et al. 1975; Brown 1986; MARC 2003). It is not known to breed in the region.

Arctic, common, black, and Caspian terns are seasonal visitors to Hudson and/or James bays. Two other species, Forster's tern and white-winged tern, are rare accidental summer visitors to the Churchill area (MARC 2003). The former frequents primarily freshwater marshes, and the latter is a Eurasian marsh bird.

The Arctic tern breeds in suitable areas all along the coastline, and across northern Canada. It usually nests in colonies on islands or protected sand spits, in the vicinity of salt or fresh water where it can forage for food. The species is less common along the low-lying western coast of James Bay, which has few suitable breeding sites. Tern colonies are very common in the Long Island area of southeastern Hudson Bay (Nakashima and Murray 1988), and there was a colony of 10,000 in the Fox Islands (58°47'44"N, 93°34'57") near Churchill in 1930 (Taverner and Sutton 1934). Arctic terns forage in ice leads when they arrive from the south in mid-May (Jehl and Smith 1970; Evans and McNicholl 1972). They return south in late August and early September along the Atlantic or Pacific coasts to winter in the southern hemisphere, and are rarely seen in the Canadian interior. The number of Arctic terns nesting in the Belcher Islands declined between 1985-88 and 1997 (Gilchrist and Robertson 1999). The causes of these declines are unknown but might be related to egg gathering by Inuit from Sanikiluaq.

The common tern breeds on the islands and coasts of southern James Bay. It is distributed north to Comb Island along the eastern coast and occasionally visits Churchill. The species is common throughout much of southern Canada. The black tern also breeds locally along the southern and western coasts of James Bay from Attawapiskat River south to Moosonee, and occurs on North Twin Island. It is rare at Churchill where breeding was reported on the Fox Islands near Churchill in 1932 (Taverner and Sutton 1934). This report has since been questioned (MARC 2003). Both species primarily frequent freshwater.

The Caspian tern is an occasional summer visitor, near the northern edge of its range, along the Ontario and Manitoba coasts (see also Jehl and Smith 1970). It may breed on Akimiski Island, at the mouth of the Attawapiskat River, and near Winisk (Cadman et al. 1987). Like the Arctic tern, the Caspian tern will forage in coastal waters.

10.17 F. ALCIDAE: Auks, Murres, and Puffins

Birds of this family are excellent swimmers and divers. They eat a variety of marine fishes and invertebrates and come ashore only to breed. There are breeding colonies of black guillemots, thick-billed murres, razorbills (*Alca torda*), and Atlantic puffins (*Fratercula arctica*) on cliffs at the extreme northeastern corner of Hudson Bay, just north of the Hudson Bay marine ecosystem (Gaston et al. 1985, 1993; Cairns 1987a+b; Cairns and Schneider 1990; Gaston and Donaldson 1995; Donaldson et al. 1997; Chapdelaine et al. 2001; Gaston 2002). The black guillemot has a wider breeding distribution in the region and the dovekie occurs but is not known to breed. The razorbill winters from southern Labarador southward to the Canary Islands, but the other species winter in the breeding range where open water permits and are rare in south central and western Canada. They all breed primarily along the Atlantic coast.

The black guillemot nests in small colonies on steep shores at Cape Henrietta Maria, along the Quebec coast from Chisasibi northward; on the Twin Islands, the Belchers, and other islands in southeastern Hudson Bay; on Southampton and Coats islands; and along the Kivalliq coast south to at least Rankin Inlet (see also East 1938; Manning and Coates 1952; MARC 2003). It is one of the most abundant and characteristic seabirds along the coasts of Hudson and James bays and on the outer islands almost to the head of James Bay. Most of the lowland coastal habitat is unsuitable for black guillemot breeding, since the species prefers to lay its eggs on bare rock or loose pebbles. The black guillemot is a year-round resident of the Belcher Islands area, and also winters in leads offshore Churchill (MARC 2003).

The thick-billed murre is uncommon but has been reported at the Belcher and Nastapoka islands in summer. Large breeding colonies of these birds are located north of the Hudson Bay marine ecosystem on northern Coats Island (30,000 breeding pairs in 1990; Gaston et al. 1993) and in the Digges Sound area (300,000 breeding pairs in 1980; Gaston et al. 1985). Birds tagged at these colonies have been recovered mostly along the Newfoundland coast, but some are taken in Greenland or by local communities (Donaldson et al. 1997). Inuit report that the species winters in large numbers in areas of open water west of the Belchers. Inuit harvest guillemots and murres along the Quebec coast (JBNQNHRC 1988) and in the Belcher Islands (J. Pattimore, Iqaluit, pers. comm. 1986), and murres in the Repulse Bay area (Gamble 1988)(see Section 14.6).

The dovekie is not known to breed along the Hudson Bay or James Bay coasts but occurs commonly as a migrant, winter resident or summer non-breeder along the coasts of northern Hudson Bay (Brown et al. 1975). It has been reported in winter at Kuujjuarapik and Eastmain, where it may have been transported from the Atlantic coast accidentally by storms.

Three other Alcids, the common murre (*Uria aalge*), razorbill, and Atlantic puffin have been observed on rare occasions just outside the ecosystem boundaries at the north end of Coats Island (Gaston and Ouellet 1997) and, in the case of the latter two species, in the Digges Sound area (Gaston et al. 1985).

10.18 F. STRIGIDAE: Typical Owls

The Strigidae include all the owls except the barn-owls. The snowy owl and the short-eared owl breed and forage along the coasts of Hudson Bay and James Bay.

The snowy owl is one of the few birds that remain in the region year-round; unlike most other owls it is active in daylight--a necessity during the Arctic summer. The species' breeding distribution includes coastal habitats north of Inukjuak on the east side of Hudson Bay, north of Churchill on the west side, on Southampton, Coats and Mansel islands, and on the Belchers. While widespread, the snowy owl is not numerous--particularly in the south in summer. It nests on hummocky tundra and can sometimes be seen perched on a rock or knoll overlooking a coastal beach or tidal flat while hunting shorebirds, geese, ptarmigan, or lemming (Moser and Rusch 1988). During winters when lemmings are scarce, about every four years, the snowy owl migrates southward to find food. In the Belcher Islands, owls prey on eider ducks and are associated with large groups of eiders at polynyas in March (Gilchrist and Robertson 2000). They follow the eiders, which are responding to changing ice conditions, and take them when they are loitering on ice edges at night. Snowy owls will also take oldsquaw ducks directly from the water. Inuit occasionally harvest the snowy owl for food (JBNQNHRC 1988).

The short-eared owl is a seasonal visitor that breeds along the coasts of James Bay and Hudson Bay north to north of Richmond Gulf in the east and Chesterfield Inlet in the west. It is a medium-sized, buffy-white owl that can sometimes be seen over the ocean (Lewis and Peters 1941), or hunting in salt marshes. Like the snowy owl, it is active during the day but it is most active in the evening. The species is present at Churchill from late April to early November (MARC 2003). It has been designated species of “Special Concern” by COSEWIC. The main cause of concern is an important and well-documented decline in the past resulting from the loss of its preferred habitat due to agricultural development in the south (http://www.cosewic.gc.ca).

10.19 F. ALCEDINIDAE: Kingfishers

The belted kingfisher breeds along the James Bay coast, and along the Hudson Bay coasts north to Kuujjuarapik in the east and Churchill in the west (Lane and Chartier 1983; Cadman et al. 1987). They may occasionally forage in coastal waters and estuaries.

10.20 F. CORVIDAE: Jays, Magpies, and Crows

The American crow and common raven scavenge along the coasts of Hudson and James bays. The American crow breeds along the south coast of Hudson Bay from Cape Henrietta Maria to Churchill and along the southern and western coasts of James Bay. It winters in southern Canada. The common raven breeds along the coasts of Hudson and James bays, except perhaps on Coats and Mansel islands. Nest sites are often located on cliffs or in trees, near garbage dumps, or seabird colonies. Whimbrel eggs make up a substantial portion of the species’ diet in June and early July at Churchill (Jehl and Smith 1970). The common raven is one of the few species that winters in the region--often in coastal areas. Ravens have been observed along landfast ice edges around the Belcher Islands, in March, eating the remains of seals killed by Inuit or polar bears (Gilchrist and Robertson 2000).

10.21 F. ALAUDIDAE: Larks

The horned lark arrives in late April and departs by mid-October. It is a common summer breeder on treeless raised marine beach ridges along the Hudson Bay and James Bay coast. A favorite feeding place for the horned lark is at piles of kelp along the shore (Manning 1981). The species' abundance as a breeder on the coastal beaches makes it of interest to visitors. It breeds widely in Canada and winters in southern Canada and throughout the United States.

10.22 F. MOTACILLIDAE: Pipits

The American pipit is common along the shores of Hudson and James bays. The species generally arrives from the south in late May and departs from northern areas in mid- to late August. It breeds along the Quebec coast north of Paint Hills Bay, on the west coast of Hudson Bay from Cape Henrietta Maria north, on the small islands of James Bay north of Gasket and Weston Islands, and on the islands in Hudson Bay--except perhaps on Mansel Island. It is very common in southern James Bay during the fall southward migration in September. The American pipit nests on vegetated, usually sloping, rocky ground and frequents coastal shores, beaches, and mud flats during migration. The species breeds from the southern Barrens north to the middle Arctic, and in British Columbia and Newfoundland in southern Canada. It is a common spring and fall migrant throughout southern Canada.

10.23 SUMMARY

The Hudson Bay marine ecosystem provides resources of critical importance to migratory waterfowl and shorebirds. Hudson Bay has the effect of funnelling southward migrating species of Arctic shorebirds and waterfowl into James Bay. With its rich coastal marshes, wide tidal flats, and extensive eelgrass beds, James Bay is one of the most important stopping places in North America for migrating Arctic-breeding shorebirds and waterfowl. It is matched only by the Copper River delta and Bristol Bay in Alaska and, for shorebirds, by the upper Bay of Fundy. These birds, particularly the geese and ducks, have sustained, and continue to sustain, important subsistence harvests by Inuit and Cree (see Section 14.6). Despite the long history of research, there are a number of gaps in our knowledge of this region's bird fauna. Most studies have examined coastal areas during spring, summer, and/or fall. We do not know to what extent birds use offshore waters, overwinter in open water areas, or even what bird species inhabit long stretches of coastline.

At least 133 species of swimming birds, shorebirds, raptors, and scavengers frequent offshore, inshore, intertidal, or salt marsh habitats of the Hudson Bay marine ecosystem. The area provides coastal breeding habitat for at least 102 species, including many that are primarily Arctic breeders--some of which are rarely seen in breeding condition outside the Arctic Islands. It also provides vitally important feeding, staging, and/or moulting habitats for many resident and transient species.

Because of their geographical location and transitional character, James Bay and southern Hudson Bay support some of the most southerly examples of Arctic-breeding species, and some of the most northerly examples of southern-breeding species--both of which offer interesting opportunities for study. Despite a rich avifauna most species are common and numerous elsewhere in Canada--the Hudson Bay eider is a notable exception.

The distribution of birds in the ecosystem is determined largely by habitat availability and climatic factors, particularly temperature. Wide differences in coastal habitats and climates mean that species common in one area may be uncommon or absent in another. Low-lying rocky islands, wide tidal flats--often associated with wet lowland tundra, salt marshes, eelgrass beds, coastal cliffs, and open water (e.g., polynyas) are particularly important habitat. Biological oceanography is also important as it determines the local abundance of food for nearshore and offshore feeders.

Tidal flats in western James Bay, particularly north and south of the Albany River, provide resources of critical international importance for migrating Hudsonian godwit and red knot. In the fall, the knots and numerous other species of shorebirds make a direct flight from James Bay to the Atlantic seaboard or, in the case of Hudsonian godwit, to South America. They require fat built up from feeding along the James Bay coast to fuel them on the flight. During breeding season most of these shorebirds frequent coastal areas that have moist to wet vegetated tundra and sometimes salt marshes or higher, drier areas with low vegetation.

The islands and coasts of James Bay offer breeding, feeding, and/or moulting habitat to a wide variety of species, many of them near the limits of their breeding distributions. Akimiski Island in western James Bay supports the most southerly breeding colonies of lesser snow goose, Ross's goose, and oldsquaw; the Twin Islands in Eastern James Bay also support a variety of typically Arctic-breeding species. Way Rock in eastern James Bay supports perhaps the only breeding colony of the double crested cormorant on Canada's Arctic coast, and the American bittern is an unusually common breeder in the marshes of western James Bay.

Large areas of the Hudson Bay and James Bay coasts provide critically important habitat for migrating and moulting North American waterfowl. Waterfowl are also very important to the regional economy, both for subsistence and to attract sport hunters. Some species are colonial and can be very numerous in suitable habitats. At least 28 Anatid species breed along the coasts and frequent coastal marine habitats in summer, and a few overwinter. During the breeding season most of these waterfowl frequent low-lying, sometimes hummocky, moist to wet vegetated tundra near lakes or coastal river mouths. The eiders are exceptions and often nest on low-lying rocky coasts and islands, especially where mussel beds and reefs provide feeding grounds. After the young hatch they often congregate in flocks along the coasts.

The Canada goose breeds in large numbers, though at low densities, in inland marshy areas. It is a numerous spring and fall transient, particularly along the James Bay coasts. In the Belchers and on Akimiski Island, these geese make extensive use of saline habitats. They are characterized by very large salt glands, which develop to cope with the high salt intake. Many of the individuals marked at nesting areas in western James Bay winter in the Mississippi Valley, while those from the Belchers and the Quebec coast winter mainly along the Atlantic coast. Geese from Akimiski Island and southern James Bay apparently winter in the Tennessee Valley. Inuit and Cree have observed changes in the migratory patterns of both Canada and snow geese in Hudson Bay and James Bay.

The lesser snow goose breeds mainly in the Arctic and along the coasts of Hudson Bay. Its most southerly large breeding colony in Canada is located at Cape Henrietta Maria, and there is also a small breeding colony on Akimiski Island. During migration, the entire Foxe Basin population of over a million birds stops to rest and feed at marshes on the west coast of James Bay. The region supports over 50% of the eastern Arctic breeding population of the lesser snow goose, *Chen caerulescens caerulescens* Linnaeus, which has increased significantly in the past 30 years. Breeding colonies are dotted along the Hudson Bay coast and the species is locally very numerous, so much so that overgrazing is degrading their prime habitats at La Pèrouse Bay, in the McConnell River Migratory Bird Sanctuary, and elsewhere (see Section 6.5).

Rich and extensive beds of eelgrass along the northeast coast of James Bay provide food resources of critical North American importance to brant (see Section 6.4). The brant is a saltwater species that breeds in the Arctic and on Southampton Island, and is seldom seen in much of southern Canada. These geese graze extensively on beds of eelgrass along the coasts of James Bay in spring and fall (late September-early November). During the fall migration over 50% of the Atlantic brant population may use these habitats. The area of critical habitat south of Roggan River is nationally important, because of the extensive eelgrass beds which attract up to 20,000 brant, and also many thousands of Canada Geese, and numerous ducks--principally black duck, in the fall. Many thousands of brant pass through southern James Bay (e.g., Netitishi Point) on their way south in late fall. They follow a relatively narrow migration corridor through Quebec enroute to and from their wintering grounds along the Atlantic coast of the United States.

The Hudson Bay subspecies of the common eider, *Somateria mollissima sedentaria* Snyder, is unusual in that it lives year round in Hudson Bay and James Bay. It breeds locally and commonly (colonial) along low-lying, tundra or rocky coasts throughout this region, and feeds almost exclusively on the blue mussel (*Mytilus edulis*). In the mid-1980s the breeding population in eastern Hudson Bay was estimated at 83,000 birds. These birds winter where open water and shallow depth coincide. Inuit report their presence, sometimes in quantity, at almost every ice edge that is accessible from Sanikiluaq in winter, and in a number of polynyas. In the winter of 1991-92, many

eiders were found frozen into areas where the water usually remains open in winter. Inuit attributed these kills to decreases in the area's winter currents. Subsequent scientific studies estimated that the number of eiders nesting in the region declined by 75% between 1985-88 and 1997.

Two seabirds, the black guillemot and thick-billed murre, are harvested for subsistence. The black guillemot nests in small colonies on steep shores at Cape Henrietta Maria, along the Quebec coast from Chisasibi northward; on the Twin Islands, the Belchers, and other islands in southeastern Hudson Bay; on Southampton and Coats islands; and along the Kivalliq coast north of Chesterfield Inlet. It is one of the most abundant and characteristic seabirds along the coasts of Hudson and James bays and on the outer islands almost to the head of James Bay. Most of the lowland coastal habitat is unsuitable for black guillemot breeding, since the species prefers to lay its eggs on bare rock or loose pebbles. The black guillemot is a year-round resident of the Belcher Islands area. There are breeding colonies of thick-billed murres on cliffs in northeastern Hudson Bay. The species is uncommon but has been reported at the Belcher and Nastapoka islands in summer. Inuit report that murres winter in large numbers in areas of open water west of the Belchers.

A relatively dense, productive population of peregrine falcons nests on cliffs and islands along the Kivalliq coast near Rankin Inlet. The birds arrive on the breeding grounds in mid-May from wintering areas as far south as Uruguay. Nests are situated on cliff ledges, often near seabird colonies. Peregrines inhabiting coastal areas in summer prey on shorebirds, seabirds, and small mammals, which they kill with a blow from their feet following a spectacular dive. The population has relatively low pesticide residues and high reproductive success, but there is still measurable pesticide-related egg thinning. In 2003, there were 25 active nests and 26 young were fledged. The area has one of the highest and best-known concentrations of peregrines in the world and should be considered for protection. COSEWIC considers the subspecies to be of “Special Concern”.

Ross's and ivory gulls are rare spring visitors to Hudson Bay and James Bay. The Ross’s gull will nest at Churchill and occurs in summer at the McConnell River in Kivalliq. The species usually nests in the Canadian high Arctic and in Siberia, may overwinter at Arctic polynyas, and is rare in southern Canada. It has been designated as “Threatened” by COSEWIC. The ivory gull may occur more widely and in both summer and winter, but breeds further north. It has been designated a species of “Special Concern” by COSEWIC. The short-eared owl and yellow rail have also been designated species of “Special Concern” by COSEWIC.

The coastal wetland habitats are protected by a number of migratory bird sanctuaries and National and Provincial Parks (see Chapter 12). The Moose River, Hannah Bay, and McConnell River migratory bird sanctuaries, and Polar Bear Provincial Park, have been designated as Ramsar sites under the Convention on Wetlands of International Importance as Waterfowl Habitat (The Ramsar Convention). However, the areas of greatest value to shorebirds, north and south of the Albany River in James Bay, have not yet been afforded statutory protection. Fortunately, they are not under any immediate threat. The Canadian Wildlife Service considers the Sleeper, North Belcher, and Salikuit islands to be sensitive habitats on account of their large indigenous populations of Hudson Bay eider.