

Key Site 27: Western James Bay, Ontario, and Nunavut

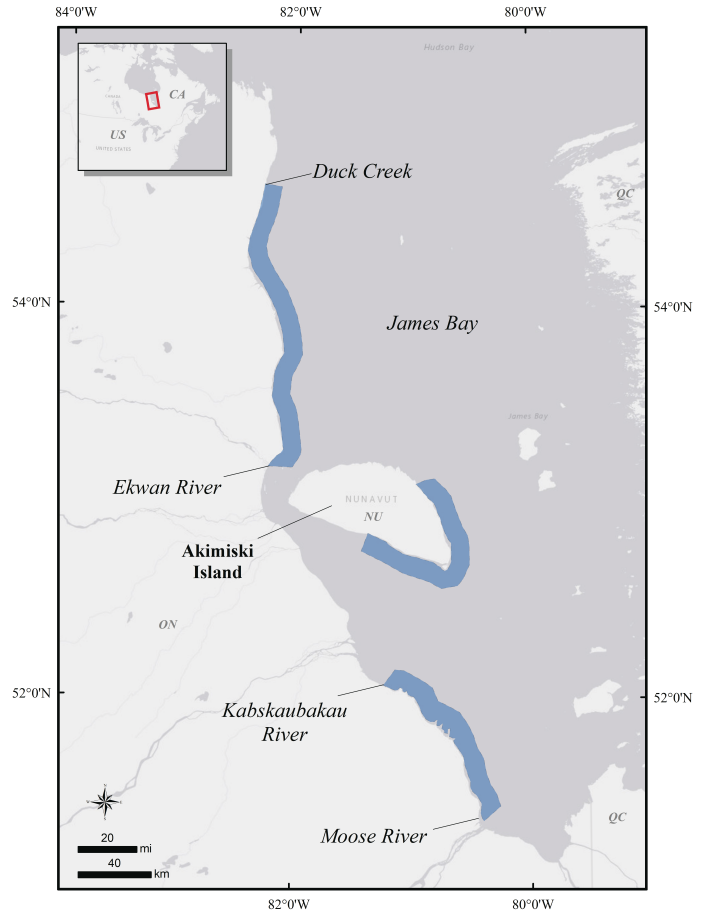
Location: 53°00'37"N, 81°16'5"W

Size: 4150 km²

Description: The nearshore and offshore marine habitats of western James Bay along the coastlines of Ontario and nearby (approximately 15 km) Akimiski Island (Nunavut) contain large seasonal concentrations of sea ducks. These habitats are adjacent to one of the most extensive wetland complexes in the world, the Hudson Bay Lowland. James Bay is a relatively shallow inland brackish sea with low range semidiurnal tides. The bay receives salt water from the Arctic and Atlantic oceans via the Fury and Hecla Strait and Hudson Strait and freshwater inputs via numerous streams and rivers; some of the larger in this area include the Lakitusaki, Opinnagau, Swan, Ekwan, Attawapiskat, Kapiskau, Albany, and Moose rivers (Stewart and Lockhart 2005).

Coastlines throughout this area are generally characterized by a seaward to landward progression of offshore and nearshore marine waters to subtidal flats grading to often extensive tidal mudflats, intertidal and supratidal salt marsh habitats, or coastal raised gravel/sand beach ridges (Martini et al. 1980). The relatively high rate of isostatic rebound occurring in this area continually causes the land along the James Bay coast and further inland to rise and become vegetated (Sella et al. 2007); over time this has led to the formation of an expansive complex of freshwater wetlands, typically bogs and fens, among the remnant low coastal beach features now vegetated with spruce and other boreal terrestrial plants or wetland-associated vegetation (Martini et al. 1980).

James Bay undergoes a complete cryogenic (ice) cycle each year, and this part of the bay has noticeable areas of open water or is ice-free from about late May to early December (Gagnon and Gough 2005). Ice typically begins to form along the coastlines of western James Bay in mid-to-late November, freeze-up occurs by late November to early December, and by mid-to-late December ice covers much of James Bay (Gagnon and Gough 2005, Stewart and Lockhart 2005), with the exception of a few leads and polynyas that remain ice-free throughout winter (Jonkel 1969, Gilchrist and Robertson 2000). Ice break-up typically occurs in mid-/late May south of Akimiski Island and early/mid-June elsewhere along the Ontario coast (Gagnon and Gough 2005, Stewart and Lockhart 2005). For more detail on the ocean-



ography, geomorphology, soils, sediments, climate, vegetation, and wildlife of James Bay, see Martini et al. (1980), Wilson and McRae (1993), Abraham et al. (2011), Abraham and Keddy (2005), Stewart and Lockhart (2005) and Martini (2017).

Precision and Correction of Estimates Presented: Molting scoter data were obtained between mid-July and mid-August in 2006, 2009, 2012, and 2013 during cruise-style, aerial surveys flown within about 15 km of the Quebec, Ontario, Manitoba, and Akimiski Island – Nunavut coastlines. Abundance estimates were obtained from digital images of flocks within which individuals were subsequently counted; if images were not taken or useable, visual estimates (based on a single observer) and regression techniques were used to obtain an estimate of individuals within observed flocks. No correction for visibility or other biases was applied to molting scoter data. See Ross and Abraham (2009), Ross et al. (2009), and Badzinski et al. (2013) for more detailed information about data collection and analytical methodologies applied to these datasets.

Biological Value: Relatively little information is available for sea duck abundance and distribution within the marine habitat of Hudson and James bays or the adjacent Hudson Bay Lowland, particularly during the spring migration and staging, breeding, and fall migration and staging periods (Ross 1982, 1983, 1987, Bordage and Savard 1995, Reed et al. 1996, Cadman et al. 2007, Abraham et al. 2008, Brook et al. 2012). Data used to identify key sites resulted from aerial photographic surveys flown during summer (mid-July to mid-August) of 2006, 2009, and 2012 undertaken periodically to monitor scoters undergoing remigial (wing feather) molt in James Bay and southern Hudson Bay ([Appendix 1](#)) (Ross and Abraham 2009, Ross et al. 2009, Badzinski et al. 2013; see Ross 1982, 1994 for earlier survey results). Satellite telemetry data from the Sea Duck Joint Venture (SDJV) Atlantic and Great Lakes Sea Duck Migration Study (Bowman et al. 2021, Lamb et al. 2021) have confirmed continued use of many previously known molting sites (Ross 1994, Ross et al. 2009). Satellite telemetry data also have provided insight into residence times of birds at specific areas, local movement patterns within and among molt sites, faithfulness of birds to specific sites from year to year, and spring and fall migration to, from, or through these areas (SDJV 2015).

The vast majority of scoters (>90 to 95%) observed in western James Bay appear to be Black Scoter (*Melanitta americana*), predominantly adult males (Ross 1994, Badzinski et al. 2013). Molting flocks of Black Scoter at these locales are commonly observed within the range of hundreds to thousands (occasionally 10,000 to 15,000) of birds. Surf Scoter (*Melanitta perspicillata*) and White-winged Scoter (*Melanitta deglandi*) appear to be less common but have been observed in relatively smaller numbers within flocks of Black Scoter or in species-specific flocks that number in the tens to hundreds of birds. It is unknown why scoters congregate in substantial numbers at these key sites to molt their wing feathers and/or remain until the fall migration, but it is presumably related to factors influencing the availability and abundance of preferred forage or prey species in the area, likely bivalves *Macoma* spp. or *Mytilus* spp. (Ross 1994, Reed et al. 1996).

Surveys of molting scoters were conducted within the marine habitat along the Ontario coastline in northwestern James Bay during mid-to-late July in 2006, 2009, and 2013 (Ross and Abraham 2009, Ross

et al. 2009, Badzinski et al. 2013). The majority of scoters were found between Duck Creek and the Ekwan River, where 46,570 (2006), 40,160 (2009), and 46,870 (2012) were observed throughout the area. Sites within this area with the largest congregations of scoters included the areas between Nowashe Creek and Swan River (25,947 in 2009, 13,905 in 2012) and Swan River and Ekwan River (16,119 in 2006, 27,388 in 2012).

Surveys of the marine habitat adjacent to Akimiski Island conducted in 2006, 2009, and 2012 determined there were 33,665, 21,850 and 31,393 scoters, respectively, along its southeastern and northeastern coastlines (Ross and Abraham 2009, Ross et al. 2009, Badzinski et al. 2013).

The most recent aerial photographic surveys of molting scoters were conducted during 2006, 2009, and 2013 in marine waters along the Ontario coastline of southwestern James Bay (Ross and Abraham 2009, Ross 1994, Ross et al. 2009, Badzinski et al. 2013). The vast majority of molting scoters occurred between the Moose and Albany rivers, where 9814 (2006), 44,935 (2009), and 47,106 (2013) total scoters were observed at several sites within the area during mid-to-late July. Sites with notable concentrations of birds included the areas between Big Piskwanish Point and Moose River (2009 = 17,496, 2012 = 45,478) and Halfway Point and Big Piskwanish Point (1977 = 8590, 2006 = 9416, 2009 = 27,439).

In addition to scoters, several other sea duck species use these sites at various times of the year, but specific estimates of abundance for these species are limited and available only from surveys conducted during the 1970s, 1980s, and 1990s (see Ross 1982, Canadian Wildlife Service unpublished data). Common Eiders (*Somateria mollissima sedentaria*), which are year-round residents of Hudson and James bays (Abraham and Finney 1986), have been observed during January to February in open-water leads in the ice off the Ontario coast near the juncture of Hudson and James bays at Cape Henrietta Maria (K. Abraham, pers. obs.). Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Long-tailed Duck (*Clangula hyemalis*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), Hooded Merganser (*Lophodytes cucullatus*), Black Scoter, Surf Scoter, and White-winged Scoter have been observed in varying abundances during

spring migration, fall migration, and summer molt periods in this part of the bay and at some of these sites (Wilson and McRae 1993, Abraham and Wilson 1997, SDJV 2015, Canadian Wildlife Service unpublished data, Ontario Ministry of Natural Resources and Forestry unpublished data).

Sensitivities: Sea ducks are sensitive to degradation of their staging, molting and foraging areas. Human disturbance can have negative effects on birds, particularly while foraging or during the molting period.

Potential Conflicts: Oil exploration, transoceanic shipping, and mining activities are potential sources of disturbance, habitat degradation, or pollution. Hydroelectric development (dams, etc.) on the bays or rivers within the adjacent mainland could affect the water regime and salinity that impact portions of the James Bay and Hudson Bay marine ecosystems. Impacts of climate change could change seasonal distribution (e.g., northward shifts in range) of birds and the distribution and abundance of sea duck forage species.

Status: Polar Bear Provincial Park, largely established to protect terrestrial and some marine habitat critical for the southern Hudson Bay population of polar bears, lies in the northeast corner of Ontario inland from the James Bay and Hudson Bay shorelines (Obbard and Walton 2004). There is a federal migratory bird sanctuary located along the eastern two-thirds of Akimiski Island coast; most of the island's coastline has been identified as a key migratory bird terrestrial habitat site by the Canadian Wildlife Service (Latour et al. 2008). The federal Shipsands Migratory Bird Sanctuary is located in the Moose River Estuary. Several important bird areas are designated within this part of James Bay, including Cape Henrietta Maria (lies within Polar Bear Provincial Park), Ekwan to Lakitusaki Shores (north half lies within Polar Bear Provincial Park), Akimiski Strait, Akimiski Island, Albany River Estuary and Associated Coastline, Longridge Point and Associated Coastline, Big Piskwanish Point, North Point (also a proposed Western Hemisphere Shorebird Reserve Network Site of International Significance), Moose River Estuary (also a Ramsar site Wetland of International Importance). For more information on individual important bird areas see site descriptions at <http://ibacanada.ca/>. A comprehensive list of protected areas in the Hudson Bay Lowland is found in Abraham et al. (2011).

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