Atlantic Canada Key Sites

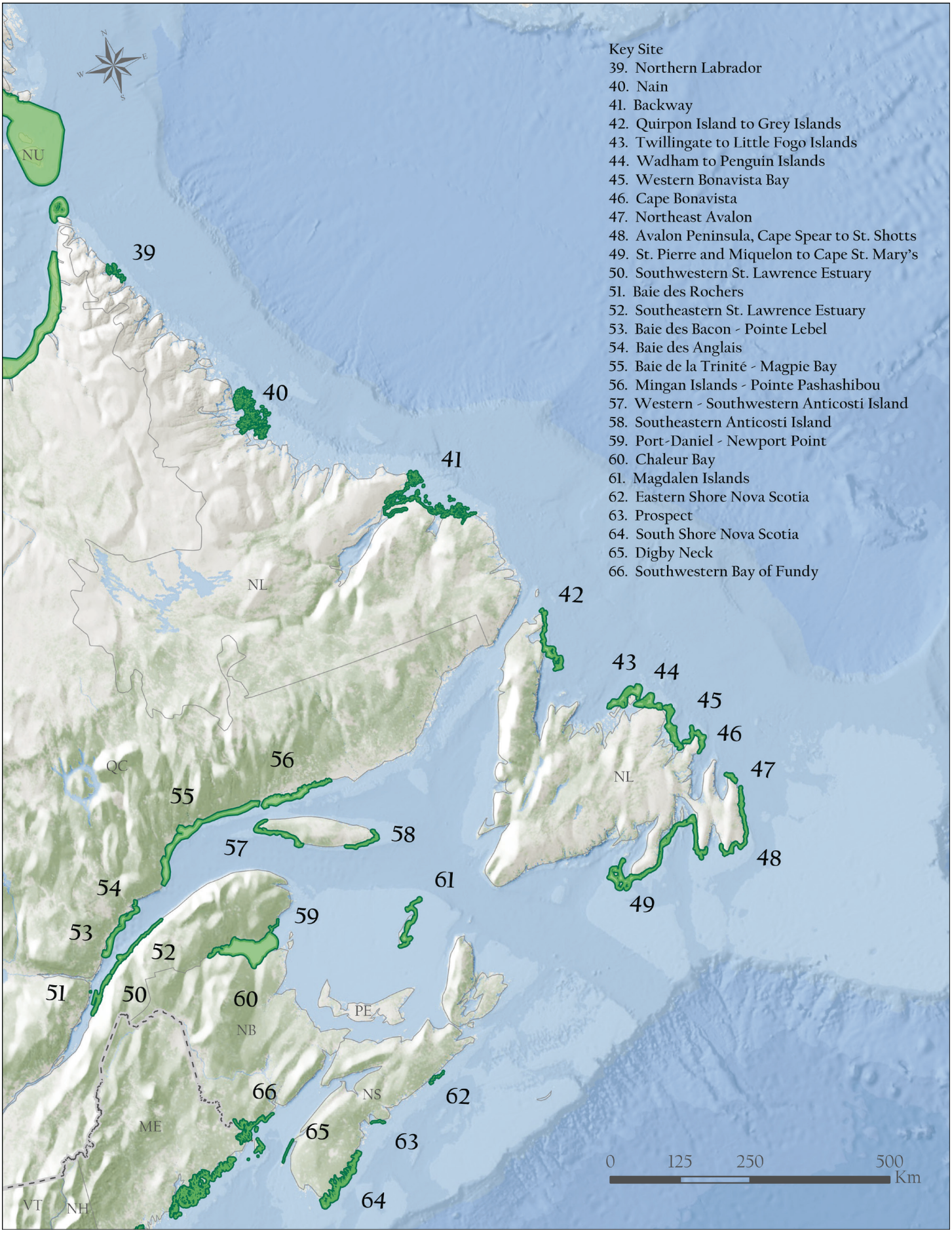


Figure 7. Key habitat sites for sea ducks in Atlantic Canada.

Key Site 39: Northern Labrador, Newfoundland and Labrador

Location: 59°20'46"N, 63°32'54"W

Size: 108 km^2

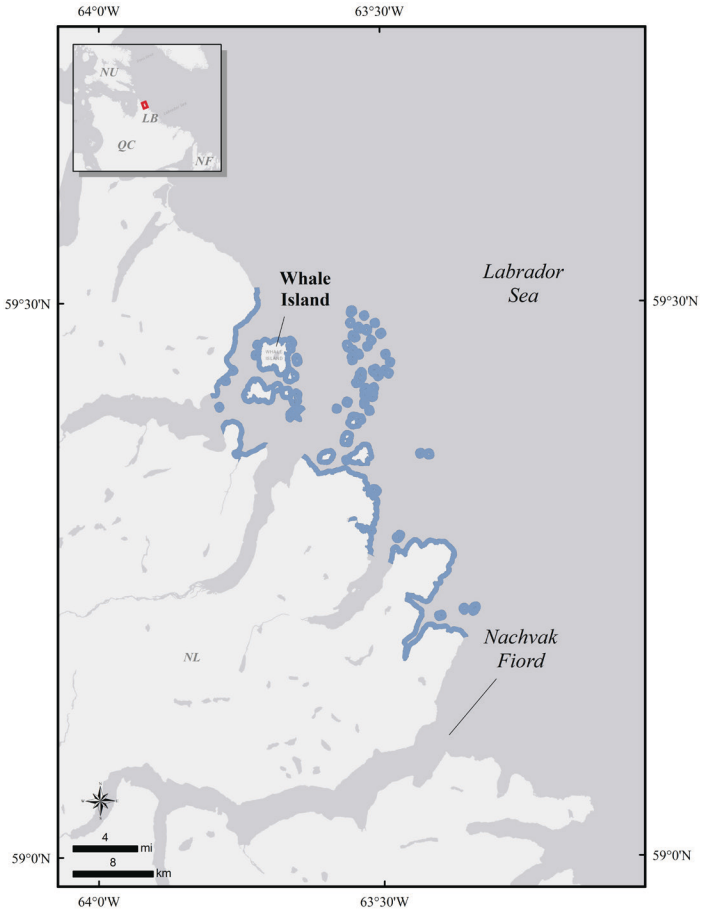
Description: The Northern Labrador key habitat site is located along the Atlantic coast of Nunatsiavut, Labrador, in the province of Newfoundland and Labrador, Canada. The key site is along the northernmost coast of Labrador, which provides important habitat for several species of sea ducks, bird Species at Risk, and concentrations of colonial sea birds encompassing 15 Important Bird Areas (IBAs; Bird Studies Canada 2015).

The Northern Labrador key site encompasses coastal and offshore areas extending from coastal areas near Whale Island in Seven Islands Bay to Nachvak Fiord. It is fed by numerous rivers flowing eastward from the Torngat Mountains. The coastline of MBU 10 is composed of estuaries, islands, bare rocky areas, mudflats, rocky shoreline, and sandflats (Environment Canada 2013). The key site consists of an extensive network of islands that form a classical skerry coast along a deep fjord system that extends seaward for about 25 km (Gilbert et al. 1984). Protected coastlines consist of broad areas of intertidal flats strewn with large boulders, whereas more exposed outer coasts consist of mostly steeply sloped bedrock. Water temperatures are cold, with maximum values of about 4.7°C in August (Gustajtis 1979) although they may reach as high as 6.5 to 7.0°C in shallow waters (Gilbert et al. 1984). The mean tidal amplitude is about 1.7 m.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is most important to Eastern Harlequin Duck (*Histrionicus histrionicus*) in June, breeding Northern Common Eider (*Somateria mollissima borealis*) between June and late August, and molting Surf Scoter (*Melanitta perspicillata*) in mid-August.

Harlequin Duck can be found along the majority of the Labrador coast from June to September, and the



northern coast of Labrador appears to be an important staging area for birds that are moving between eastern Canada and Greenland (see Brodeur et al. 2002). Two hundred and fifteen pre-molting adult males were detected in the Seven Islands Bay area on July 2, 1994 (Gilliland et al. 2002). This was the largest known concentration of Harlequin Ducks in eastern North America, representing approximately 5.4% of the eastern North America population (NAWMP 2012). Surf Scoters occur in the site (Lock 1986) but numbers are uncertain.

Within the Northern Labrador key site, Common Eider nest on many of the offshore islands (a maximum of 452 male Common Eiders were detected in June 1994 (S. Gilliland unpublished data); accounting for undetected females, the total abundance of eiders using the site at this time is closer to 904. Numbers drop off rapidly by September, with a total of 121 birds detected in September 1980 (A. Lock unpublished data), suggesting that this region is not an important molting area for Common Eider. A maximum of 802 scoters were detected at the key site in September 1980, with counts of 662 Surf Scoter

and 140 White-winged Scoter (Canadian Wildlife Service 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 when birds are flightless. Preliminary observations suggest sea ducks may be sensitive to disturbances during molt (Frimer 1994, O'Conner 2008) and that sea ducks may be particularly sensitive to marine vessel and aircraft traffic. Scoters are ranked second among Anatidae on the oil vulnerability index (King and Sanger 1979, Daigle and Darveau 1995). Scoters are also vulnerable to heavy metals contamination (Savard et al. 1998).

Potential Conflicts: During the establishment of the Torngat National Park, two properties containing rich deposits of garnet sands at the Iron Stand, located 6 km north of the key site, and a third property located at Seven Islands Bay, which is within the key site, were excluded from the park. There are no current plans to develop the sites, but they have a rich source of garnets, which are used in industrial abrasives.

With the establishment of the Torngat National Park, and increased cruise ship activity in the Arctic (Lasserre and Têtu 2015), there may be new sources of anthropogenic disturbances in this region that may have negative impacts on molting sea ducks. Chronic or major oil spills could have large impacts on birds and habitat here (Bird Studies Canada 2015) and oil spills are considered a growing threat with increased oil and gas exploration in MBU 10. There is a continued risk of fishing gear entanglement (Environment Canada 2013). Inuit hunting and egg collecting on the islands within the key site has an unknown but likely minimal impact on birds and their habitat.

Status: This key site is part of Bird Conservation Region 3 (Arctic Plains and Mountains), as well as Marine Biogeographical Unit (MBU) 10 (Newfoundland-Labrador Shelves). The Seven Islands Bay Important Bird Area encompasses the key site and extends along the Labrador coast from Kangardluaksuk Bay to Nachvak Fiord (Bird Studies Canada 2015). The site also intersects the Torngat Mountains National Park, which includes the coastline and intertidal areas of the mainland and islands down to the mean low-low tide level. The key site also falls within the Labrador Inuit Settlement area, and as of 2019 the marine component of the settlement area is being considered as an Indigenous marine protected area by the Nunatsiavut and Canadian governments.

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Surf Scoters. Photo: Tim Bowman.

Key Site 40: Nain, Newfoundland and Labrador

Location: 56°20'7"N, 61°10'33"W

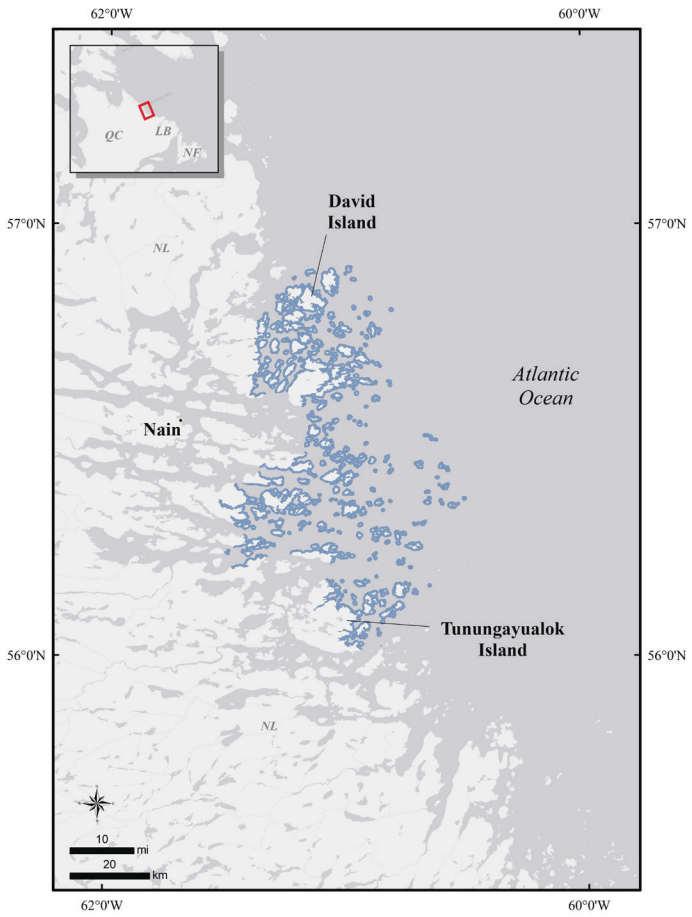
Size: 900 km^2

Description: The Nain key site is located along the Atlantic coast of Nunatsiavut, Labrador, in the province of Newfoundland and Labrador, Canada. The key site is along the northern coast of Labrador, which provides important habitat for several species of sea ducks, bird species at risk, and concentrations of colonial sea birds encompassing 15 Important Bird Areas (IBAs; Bird Studies Canada 2015).

The Nain key site encompasses coastal and offshore areas within Labrador Inuit lands near the town of Nain, extending from David Island to Tunungayualok Island. It is fed by numerous rivers flowing eastward from the Torngat Mountains. The key site consists of an extensive network of islands that form a classical skerry coast along a deep fjord system that extends seaward for about 80 km (Gilbert et al. 1984). Protected coastlines consist of broad areas of intertidal flats strewn with large boulders, whereas more exposed outer coasts consist of mostly steeply sloped bedrock. Water temperatures are cold with maximum values of about 4.7°C in August (Gustajtis 1979) although they may reach as high as 6.5 to 7.0°C in shallow waters (Gilbert et al. 1984). The mean tidal amplitude is about 1.7 m.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is most important to molting Surf Scoter (*Melanitta perspicillata*) and breeding Northern Common Eider (*Somateria mollissima borealis*), primarily between June and late August. Todd (1963) first reported large numbers of molting Surf Scoter and lesser numbers of White-winged Scoter (*Melanitta deglandi*) and Black Scoter (*Melanitta americana*) along the Labrador coast. Surveys by Lock (1986) in 1980 and by Gilliland in 1994, 1998, and 1999 (Canadian Wildlife Service unpublished data) estimated more than 20,000 and 41,000 scoters, respectively, and 14,000 and 27,000



Common Eider, respectively, along the Labrador coast in June. Abundance of scoters peaked in mid-August, with a maximum of 57,000 and 55,000 birds detected in August 1998 and 1999, respectively. Along the Labrador coast, there is remarkable consistency in the location of scoter flocks among years, with highest concentrations occurring around Nain and Backway key sites where molting birds coalesce into very large flocks.

Within the Nain key site, scoters begin arriving in late May. Numbers increase in June to between 3450 and 9164 birds and reach more than 19,000 birds by mid-August (with a maximum of 19,837 scoters detected in August 1999). Dispersal from molt sites begins in late August and the majority of birds leave by early September (664 birds detected at the Nain site in September 1980; S. Gilliland unpublished data).

Surf Scoter is the predominant species of scoter on the coast of Labrador during the molt period, comprising 80 to 90% of birds, with the remainder being Black Scoter and White-winged Scoter (Gilliland and Savard 2021). It is not known why scoters prefer

these areas over other areas of coastal Labrador. Scoters specialize on mollusks during molt (Bédard et al. 1997; Savard et al. 1998), and these areas likely have substrate and bathymetry favorable for mollusks (S. Gilliland unpublished data).

Common Eiders use the Nain site for breeding and nest on many of the islands in the key site (Lock 1986, Savard et al. 1999). A maximum of 3729 male Common Eider were detected in June 2006; accounting for undetected females, the total abundance of birds using the site at this time is closer to 7458. Numbers drop off rapidly by September (a total of 81 detected in September 1980), suggesting that this region is not an important molting area for Common Eider. Birds breeding here could molt along Anticosti Island where large numbers of molting eiders have been found (Rail and Savard 2003).

A total of 40 presumably premolt Eastern Harlequin Ducks (*Histrionicus histrionicus*) were detected in coastal areas around Nain in late June 1994. Subsequent surveys did not detect molting individuals, however, it is possible that a few birds do molt here (Gilliland et al. 2002).

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 when birds are flightless. Scoters are ranked second among Anatidae on the oil vulnerability index (King and Sanger 1979, Daigle and Darveau 1995). Scoters are also vulnerable to heavy metals contamination and hunting (Savard et al. 1998).

Potential Conflicts: The shipping route for the Voisey Bay nickel deposit passes near large molting aggregations of scoters, and preliminary observations suggest scoters may be sensitive to this type of disturbance during molt (O'Connor 2008). Also within the key site are the shipping lanes into Nain, which are used by the Labrador Coastal Service and increasingly by cruise ships. Chronic or major oil spills could have major impacts on birds and habitat here (Bird Studies Canada 2015). Oil spills are considered a growing threat with increased oil and gas exploration in Marine Geographic Unit 10 and there is also a continued risk of fishing gear entanglement (Environment Canada 2013). Inuit hunting and egg collecting in the islands southeast of Nain has an unknown but likely minimal impact on birds and their habitat.

Status: This key site is part of Bird Conservation Region 7, Taiga Shield and Hudson Plains, as well as the Marine Geographic Unit 10, Newfoundland-Labrador Shelves. Two IBAs have been designated within this area, including the Nain Coastline IBA (located along the Labrador coastline from the western and northern edges of Paul Island, Humbys Island to the south, and Dog Island to the north) and the Offshore Islands Southeast of Nain IBA (southeast of Nain, including Pyramid, Barbican, the Castle, Negro, Ukallik, Kidlit, and Nunaksuk Islands) (Bird Studies Canada 2015).

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Key Site 41: Backway, Newfoundland and Labrador

Location: 54°5'22"N, 56°54'50"W

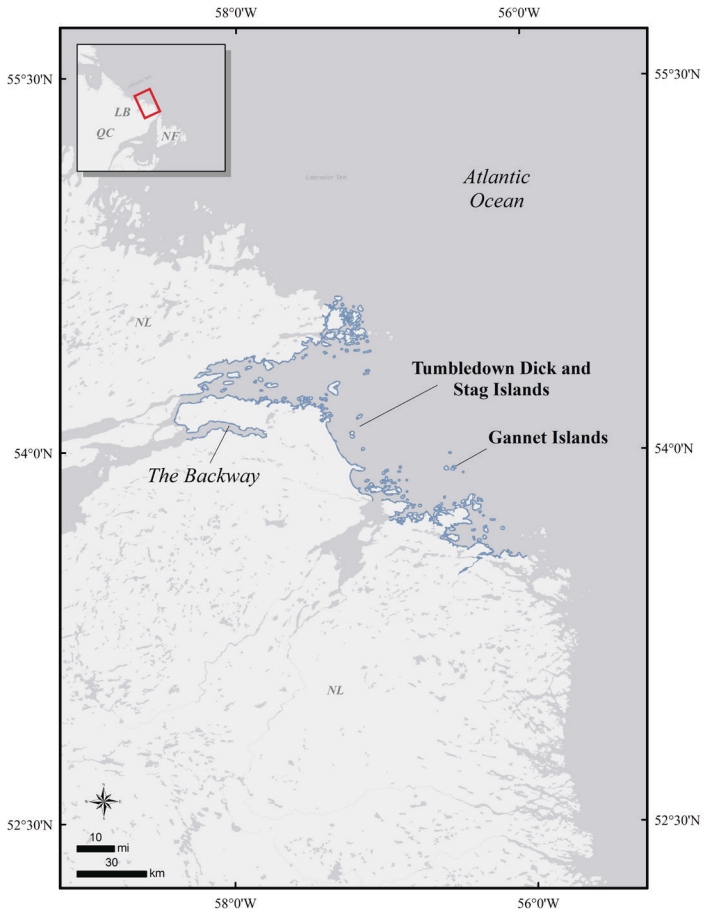
Size: 828 km^2

Description: The Backway key site is located along the Atlantic coast of Labrador in the province of Newfoundland and Labrador, Canada. The northern part of this key site is in Nunatsiavut (Fish Cove Point and north) and the southern part (The Strand, etc.) is in Nunatuviut. The Labrador coast provides important habitat for numerous congregatory bird species, bird species at risk, and concentrations of colonial seabird and waterfowl species comprising 15 Important Bird areas (IBAs; Bird Studies Canada 2015), 10 of which intersect the Backway site.

The Backway key site encompasses coastal and offshore areas with Labrador Inuit Lands and Labrador Inuit Settlement Areas from Chance Island and Holton Island at the northern extent to Indian Tickle in the south, and extending inland to include Groswater Bay, Hamilton Inlet, and the Backway. It is fed by numerous rivers. It is also part of Bird Conservation Region (BCR) 8 (Boreal Softwood Shield), as well as the Marine Biogeographic Unit (MBU) 10 (Newfoundland-Labrador Shelves). Coastal habitat in MBU 10 includes estuaries, islands, bare areas, mudflats, rocky shoreline, saltmarshes, and sandflats (Environment Canada 2013).

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is most important to molting Surf Scoter (*Melanitta perspicillata*), breeding Common Eider (*Somateria mollissima*), and molting Harlequin Duck (*Histrionicus histrionicus*) primarily between June and late August. The key site occurs at the approximate boundary between the breeding ranges of Northern (*S. m. borealis*) and American (*S. m. dresseri*) Common Eiders (Mendall 1980). Todd (1963) first reported large numbers of molting Surf Scoter and lesser numbers of White-winged Scoter (*Melanitta deglandi*) and Black Scoter (*M. americana*) along the Labrador coast. Surveys by



Lock (1986) in 1980 and by Gilliland in 1994 (unpublished data) found more than 20,000 and 41,000 scoters, respectively, and 14,000 and 27,000 Common Eider, respectively, along the Labrador coast in June. Abundance of scoters peaked in mid-August, with a maximum of 57,000 and 55,000 birds detected in August 1998 and 1999 (Gilliland unpublished data), respectively. There is remarkable consistency in the location of scoter flocks among years, with highest concentrations occurring around Nain and Backway key sites where molting birds coalesce into very large flocks.

Within the key site, scoters begin arriving in late May. Numbers of birds increase to 5500 to 17,900 birds in June and have reached a maximum of about 38,000 scoters by mid-August in 1998. During the molting period, concentrations of scoters are highest in the Backway (a maximum of 36,500 scoters in August 1999), between North Point and Cape Porcupine (a maximum of 5211 scoters in August 1998), and Table Bay (a maximum of 2603 scoters in August 1998). Dispersal from molt sites begins in late

August, with many birds leaving by early September (a maximum of 10,479 and 10,853 birds detected at the Backway key site in September 1980 and September 2001, respectively; Gilliland unpublished data). The number of scoters in the Backway IBA is the largest ever recorded in eastern Canada (Bird Studies Canada 2015).

Surf Scoter is the predominant species of scoter, comprising between 80 to 90% of birds on the coast of Labrador and in the Backway key site during the molt period, with the remainder comprising Black and White-winged Scoter (Gilliland and Savard 2021). Scoters specialize on mollusks during this part of the annual cycle (Bédard et al. 1997, Savard et al. 1998), and they are commonly observed feeding in the surf within a few meters of shore (Bird Studies Canada 2015).

Common Eider breed at the Backway site, particularly on the many islands in Groswater Bay and the outer coast of the key site (Lock 1986, Savard et al. 1999). A maximum of 13,314 male Common Eiders were detected in June 1994; accounting for undetected females, the total abundance of birds using the site at this time is estimated at 26,628. Numbers drop off rapidly by September (a total of 31 males detected in September 1980), suggesting that this region is not an important molting area for Common Eider. Birds breeding here could molt along Anticosti Island, where large numbers of molting eiders have been found (Rail and Savard 2003).

The Gannet Islands, Tumbledown Dick Island, and Stag Islands regions of the Backway key site are three of the most important regions in North America for molting Eastern Harlequin Ducks, supporting at least 5.6% of the continental population in August: Gannet Islands, 166 birds in August 1999; Tumbledown Dick Island, 55 birds in August 1998; Stag Islands, 47 birds in August 1998 (Gilliland et al. 2002).

Sensitivities: Sea ducks are sensitive to degradation of their staging, molting, and foraging habitats. Human disturbance such as boating can have negative effects on birds, particularly while birds are foraging or during the molting period when birds are flightless. Scoters are ranked second among Anatidae on the oil vulnerability index (King and Sanger 1979, Daigle and Darveau 1995). Scoters are also vulnerable to heavy metals contamination and hunting (Savard et al. 1998).

Potential Conflicts: Marine transportation of goods and petroleum products through the Lake Melville area is probably the greatest potential threat. Small illegal oil discharges and large accidental oil spills could have major impacts on birds and habitat here (Bird Studies Canada 2015). Oil spills are a growing threat with increased oil and gas exploration in MBU 10, and there is also a continued risk of fishing gear entanglement (Environment Canada 2013). Inuit hunting and egg collecting in the islands southeast of Nain has an unknown but likely minimal impact on birds and their habitat.

Status: Ten IBAs have been designated within this area: Gannet Islands, Quaker Hat Island, Goose Brook, Northeast Groswater Bay, South Groswater Bay Coastline, Bird Island, Cape Porcupine, Tumbledown Dick Islands, and Stag Islands. Backway and Table Bay provide breeding habitat for all alcid species occurring in eastern Canada (Bird Studies Canada 2015) and include important nesting areas for Common Eider. The site also includes the Gannet Island Ecological Reserve (both marine and terrestrial zones), which protects the largest Razorbill colony in North America and the largest and most diverse seabird colony in Labrador (Bird Studies Canada 2015).

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Key Site 42: Quirpon Island to Grey Islands, Newfoundland

Location: 51°11'55"N, 55°40'1"W

Size: 1045 km^2

Description: This key site is located off the Great Northern Peninsula along the eastern coast of Newfoundland. The northern end of this key area begins at the southeastern edge of the Strait of Belle Isle around Quirpon Island, extends south encompassing the Fishchot Islands, and continues south to include the Grey Islands. Most of the area is exposed to the open Atlantic Ocean to the east. The Fishchot Islands are a chain of small isolated rocks and low rocky islands located 15 km north of Croque. The Grey Islands (Bell Island and Groais Island) are located approximately 20 km east of Conche. Bell Island (88 km^2) is located to the south of the smaller, uninhabited Groais Island (41 km^2). Both Bell and Groais islands have areas of forested hills, rocky shores, and coastal bluffs. The ocean in this area is covered with sea ice during winter, though prevailing westerly winds often create open water around the eastern side of the Fischot Islands and Bell Island.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for incomplete detection, either by applying species-specific visibility correction factors estimated for surveys specific to this area, or from visibility correction factors estimated from other similar areas and surveys (see Bordage et al. 1998).

Biological Value: This key area is predominately important to Common Eider (*Somateria mollissima*) but also supports other sea duck species. The Fischot Islands provide important habitat for wintering eiders (NF008; IBA Canada website). During winter, eiders congregate in areas of open water, which may vary among years, or within a winter depending on the extent of sea ice cover. Eiders forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000). Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 1575 Common Eiders in 2015 to 70,970 in 2012. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 37,515 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020). About 90% of the eiders that overwinter in this area are Northern Common Eiders (*Somateria mollissima borealis*), with the remaining being American Common Eiders (*Somateria mollissima dresseri*) and small numbers of King Eiders (*Somateria spectabilis*) (Gilliland and Robertson 2009). This represents about 6% of the continental population of *S. m. borealis* (NAWMP 2012). The Grey Islands host a breeding population of American Common Eiders (*Somateria mollissima dresseri*) and are also important for the northern *borealis* eider subspecies during winter (NF010; IBA Canada 2021). The Grey Islands are a key molting site for Harlequin Ducks (*Histrionicus histrionicus*) (Gilliland et al. 2002). Several thousand wintering eiders congregate in the open water leads around the Grey Islands (NF008; IBA Canada 2021). The islands south of Bell Island support the largest known colony of nesting Common Eiders (at least 1000 pairs) on insular Newfoundland (NF010; IBA

Canada website). The number of eider nests in the Bell Island South Coast area increased from 12 in 1975 to 350 in 1988 and to 1291 in 2001 (Government of Canada 2019).

Sensitivities: Waterfowl are sensitive to human disturbance, mostly small vessel or ship traffic. Common Eiders aggregate in dense flocks in this area and can be susceptible to hunting pressure and oil spills. Unintentional introduction of invasive species in this area could influence food resource availability and quality. The largest breeding colony of Common Eiders in insular Newfoundland was located in Isle aux Canes which is part of the Grey Islands Archipelago. The colony has had periodic visits by polar bears, and Arctic and red fox which results in years of complete nest failure. More recently, bald eagles have taken up year-round residency and not only disrupt breeding, but local hunters have reported that the presence of eagles has resulted in nocturnal feeding of eiders using the archipelago in winter (S. Gilliland pers. comm.).

Potential Conflicts: There is relatively little shipping traffic within the key site, but just to the north of this key site, the Strait of Belle Isle is a busy shipping route linking North America to Europe. The Fischot Islands are known to local hunters as a winter Common Eider congregation area (NF008; IBA Canada website). There is a history of duck hunting on the northern end of Groais Island, although the magnitude of the harvest is unknown (Russell and Fifield 2001). The age, sex, and subspecific composition of Newfoundland's hunted Common Eider population is not well quantified (Gilliland and Robertson 2009).

Status: The Fischot Islands are designated as an Important Bird Area. The area off the southern coast of Bell Island is included in the Southern Grey Island Migratory Bird Sanctuary and is protected from hunting year-round (NF010; IBA Canada 2021). Two federal Migratory Bird Sanctuaries were established in 1991 off the coast of Bell Island: Shepherd Island and Isle aux Canes. Together, these two sanctuaries provide one of the largest breeding site for Common Eider in Newfoundland (Government of Canada 2019). The northern coast of Groais Island is also designated as an IBA and provides both breeding and wintering habitat for eiders. The Canadian Wildlife Service is responsible for managing these IBAs.

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Key Site 43: Twillingate to Little Fogo Islands, Newfoundland

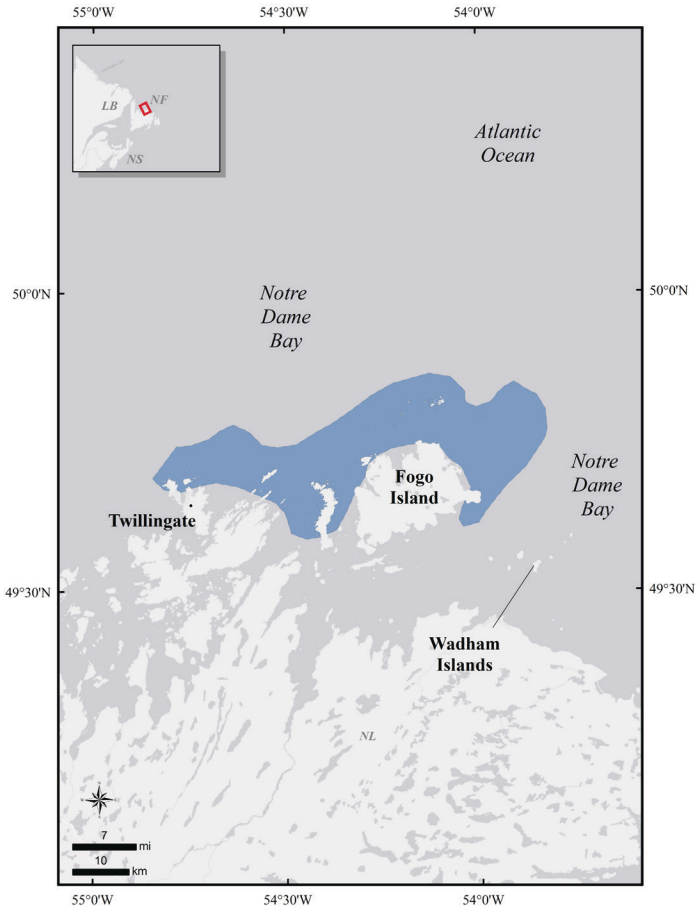
Location: 49°45'2"N, 54°19'9"W

Size: 955 km^2

Description: This key site is located in Notre Dame Bay on the northeast coast of Newfoundland. The key site begins at the New World Islands, approximately 5 km northwest of the town of Twillingate, stretches east across the Change Islands, encompasses the Little Fogo Islands (an archipelago with over 100 small islands), and covers about half of the coastal waters around Fogo Island. The irregular coastline in this area is scattered with small settlements and fishing villages. There are numerous low rocky islands, shallow waters, and isolated rocks and shoals throughout the area.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size, following methods developed by Bordage et al. (1998).

Biological Value: This key area is predominately important for wintering Common Eider (*Somateria mollissima*). Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 10,707 individuals in 2003 to 96,583 individuals in 2012. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 27,725 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020). About 90% of the eiders that overwinter in this area are Northern Common Eider (*Somateria mollissima borealis*), with the remaining being American Common Eider (*Somateria mollissima dresseri*) and small numbers of King Eider (*Somateria spectabilis*) (Gilliland and Robertson 2009). This represents about 16% of the continental population of Northern Common Eider (NAWMP 2012). During winter, Common Eiders congregate in areas of open water, which can change over space and time. Common Eiders forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000). Common Eiders wintering near the Wadham Islands Important Bird Area (15 km southeast of Fogo Island) may shift among foraging areas within this key area



depending on ice conditions and location of open water. Breeding Common Eiders in the Little Fogo Island area are believed to be birds that are unable to migrate due to injuries sustained during the hunting season but are still capable of breeding (S. Gilliland pers. comm.).

Other sea duck species that use this area include Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks and, depending on sea ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al. 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality. Oil spills, both catastrophic and chronic, can have severe impacts on sea ducks. There is historical documentation of oil spills affecting Common

Eiders and other waterbird species in the inshore waters of southeastern Newfoundland (Wiese and Ryan 2003, Robertson et al. 2014).

Potential Conflicts: Nearby areas have a history of poaching, though in recent years it is believed that illegal hunting has decreased (NF013; IBA Canada 2021). Boat traffic in the area may cause disturbance and added risk of oil spills. Vessels operating at night in the sea ice in this area use high-intensity lighting, and operators have reported collisions with eiders that have damaged vessels and killed eiders. Any future increase in commercial fishing quotas may increase boat traffic in the area. Future increases in water temperature due to climate change could threaten the biological diversity of prey species that are critical to wintering sea ducks.

Status: There are no designated Important Birds Areas or sanctuaries in this area, although the eastern end is adjacent to other protected seabird areas (Wadham Islands and Funk Island). This key area is part of the Fogo Shelf Ecologically and Biologically Significant Area (Wells et al. 2017) and considered a top-priority Special Marine Area site for future conservation (CPAWS 2019). Most of the islands in the key site are under provincial ownership, with some private inholdings.

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Key Site 44: Wadham to Penguin Islands, Newfoundland

Location: 49°31'0"N, 53°48'12"W

Size: 658 km^2

Description: This key site is located in Notre Dame Bay on the northeast coast of Newfoundland, between Fogo Island and the town of Cape Freels North. The Wadham Islands consist of seven islands (Peckford, Green, White, Copper, Duck, James, and Outer Wadham Islands) with numerous rocky shoals. The larger islands are vegetated with shrubs and grasses and the small islands are low with rocky terrain.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This key site is predominately important for wintering Common Eider (*Somateria mollissima*). Winter surveys conducted in this area by the Canadian Wildlife Service (CWS) produced estimates ranging from 7784 individuals in 2015 to 54,411 individuals in 2003. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 27,800 individuals were estimated in this area (CWS Waterfowl Committee 2020). About 90% of the eiders that overwinter in this area are Northern Common Eiders (*Somateria mollissima borealis*), with the remaining being American Common Eiders (*Somateria mollissima dresseri*) and small numbers of King Eiders (*Somateria spectabilis*) (Gilliland and Robertson 2009). This represents about 9% of the continental population of Northern Common Eiders (NAWMP 2012). During winter, eiders congregate in areas of open water, which can change over space and time. Adults forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).

Other sea duckspecies that use this area include Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks, and depending on sea ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al. 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality. Oil spills, both catastrophic and chronic, can have severe impacts on sea ducks. There is historical documentation of oil spills affecting Common Eiders and other waterbird species in the inshore waters of southeastern Newfoundland (Wiese and Ryan 2003, Robertson et al. 2014).

Potential Conflicts: Nearby areas have a history of poaching, though in recent years it is believed that illegal hunting has decreased (NF013; IBA Canada 2021). Boat traffic in the area may cause disturbance and added risk of oil spill. Vessels operating at night in the sea ice in this area use high-intensity lighting, and operators have reported collisions with eiders that have damaged vessels and killed eiders. Any

future increase in commercial fishing quotas may increase boat traffic in the area. Future increases in water temperature due to climate change could threaten the biological diversity of prey species that are critical to wintering sea ducks.

Status: This key area contains one Important Bird Area (IBA), the Wadham Islands and Adjacent Marine Area IBA (IBA Canada 2021). This IBA is considered globally significant for congregatory species, including waterfowl and colonial waterbirds. This key site is part of the Fogo Shelf Ecologically and Biologically Significant Area (Wells et al. 2017) and considered a top priority Special Marine Area site for future conservation (CPAWS 2019). Most of the islands in the key site are under provincial ownership, with some private inholdings.

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Key Site 45: Western Bonavista Bay, Newfoundland

Location: 48°55'19"N, 53°33'32"W

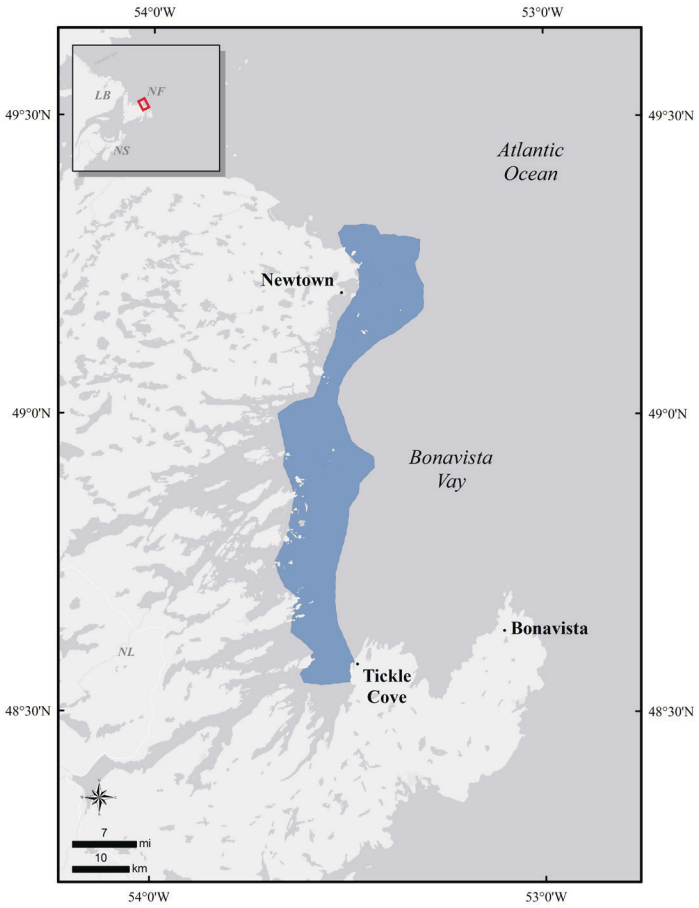
Size: 879 km^2

Description: This key site is located along the western side of Bonavista Bay on the northeast coast of Newfoundland, an area that provides important habitat for numerous congregatory bird species, including colonial birds and waterfowl, and bird species at risk. It includes several Important Bird Areas. This key site begins near the town of Tickle Cove and continues north to Cape Freels North near Newtown. The area contains open sea, coastal cliffs, rocky shores, coves, shoals, and islands.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This key site is primarily important for migrating and wintering Common Eider (*Somateria mollissima*) from late fall through April. In this region, fall migration occurs in October and November and waterfowl numbers reach peak abundance by mid-December (Goudie et al. 2000). Winter surveys conducted in this area by the Canadian Wildlife Service (CWS) produced estimates ranging from 8700 individuals in 2009 to 49,000 birds in 2012. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 18,282 individuals were estimated in this area (CWS Waterfowl Committee 2020). About 90% of the eiders that overwinter in this area are Northern Common Eiders (*Somateria mollissima borealis*), with the remaining being American Common Eiders (*Somateria mollissima dresseri*), along with a few King Eiders (*Somateria spectabilis)* (Gilliland and Robertson 2009). This represents about 6% of the continental population of Northern Common Eiders (NAWMP 2012). During winter, eiders congregate in areas of open water, which can change over space and time. Adults forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).

Other sea duck species that use this area include Long-tailed Duck (*Clangula hyemalis*), Common



Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks, and depending on sea ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality.

Potential Conflicts: Nearby areas have a history of poaching, although in recent years it is believed that illegal hunting has decreased (NF013; IBA Canada 2021). Boat traffic in the area may disturb birds and increase the risk of oil spills. Vessels operating at night in the sea ice in this area use high-intensity lighting, and operators have reported collisions with eiders that have damaged vessels and killed eiders. Any future increase in commercial fishing quotas may increase boat traffic in the area.

Status: The site intersects the Cape Freels Coastline and Cabot Island IBA, which is considered globally significant for waterfowl concentrations and continentally significant for congregatory species. It is adjacent to the Terra Nova National Park IBA, which is nationally significant for two restricted-range terrestrial species (IBA Canada 2021). The site also intersects the Eastport Marine Protected Area established for protection of American Lobster and species at risk (e.g., Atlantic wolffish; *Anarhichas lupus*). Most of the islands in the key site are under provincial ownership, with some private inholdings.

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Key Site 46: Cape Bonavista, Newfoundland

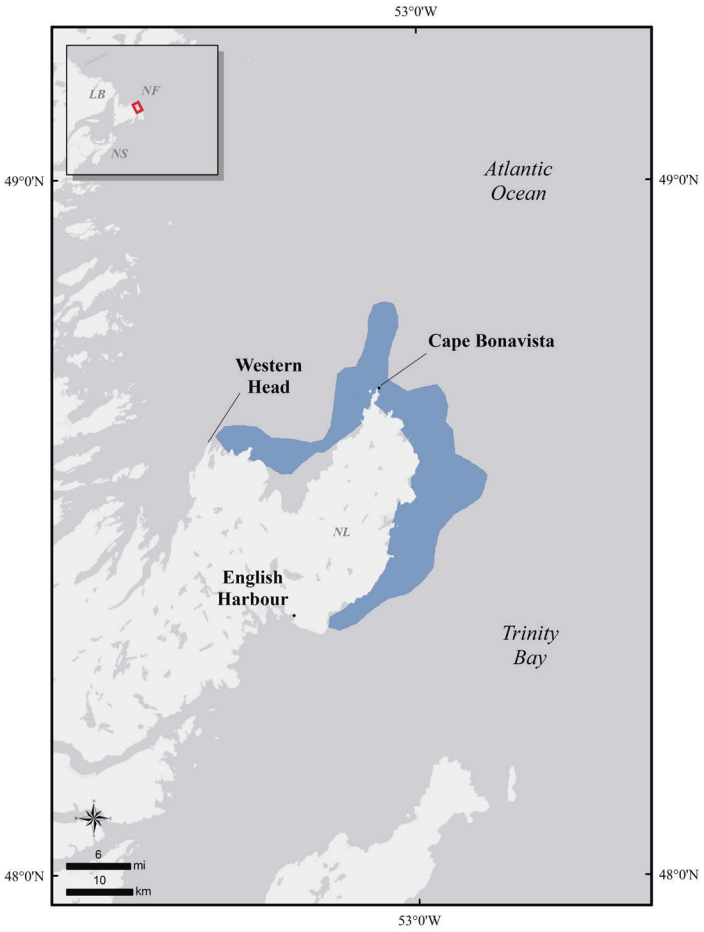
Location: 48°39'52"N, 53°0'17"W

Size: 504 km^2

Description: This key habitat site is located around the northern end of the Bonavista Peninsula in eastern Newfoundland. The Newfoundland coast provides important habitat for numerous congregatory bird species and bird species at risk and includes several Important Bird Areas. The key site begins east of the town of English Harbour and continues around the peninsula, ending past the town of Keels near Western Head. Bonavista Bay lies to the northwest of Cape Bonavista, and the open Atlantic Ocean lies to the north and to the east. The area contains open sea, coastal cliffs, rocky shores, coves, shoals, and islands.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This key site is primarily important for migrating and wintering Common Eider (*Somateria mollissima*) from late fall through April. In this region, fall migration occurs in October and November and sea ducks reach peak abundance by mid-December (Goudie et al. 2000). Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 2507 individuals in 2012 to 44,180 individuals in 2015. Use of the site is affected by sea ice, and over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018) an average of 16,815 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020). About 90% of the eiders that over-winter in this area are Northern Common Eider (*Somateria mollissima borealis*), with the remainder being American Common Eider (*Somateria mollissima dresseri*) and small numbers of King Eider (*Somateria spectabilis*; Gilliland and Robertson 2009). This represents about 7.2% of the continental population of Northern Common Eiders (NAWMP 2012). During winter, eiders congregate in areas of open water that can change over space and time. Eiders forage primarily on benthic invertebrates, including intertidal and subtidal mollusks



(especially blue mussels *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).

Other sea duck species that use this area include Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to disturbance from small vessel and ship traffic. Wintering eiders aggregate in dense flocks, and, depending on sea ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality.

Potential Conflicts: Nearby areas have a history of poaching, though in recent years it is believed that illegal hunting has decreased (NF013; IBA Canada Website). Boat traffic in the area may cause disturbance and increase the risk of oil spills. Vessels navigating at night in the sea ice in this area use

high intensity lighting and operators have reported collisions with eiders, which have damaged vessels and killed eiders. Any future increase in commercial fishing quotas may increase boat traffic, and potentially disturbance, in the area.

Status: The site lies adjacent to Dungeon Provincial Park. No Important Bird Areas intersect the site.

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Key Site 47: Northeast Avalon, Newfoundland

Location: 47°45'21"N, 52°40'16"W

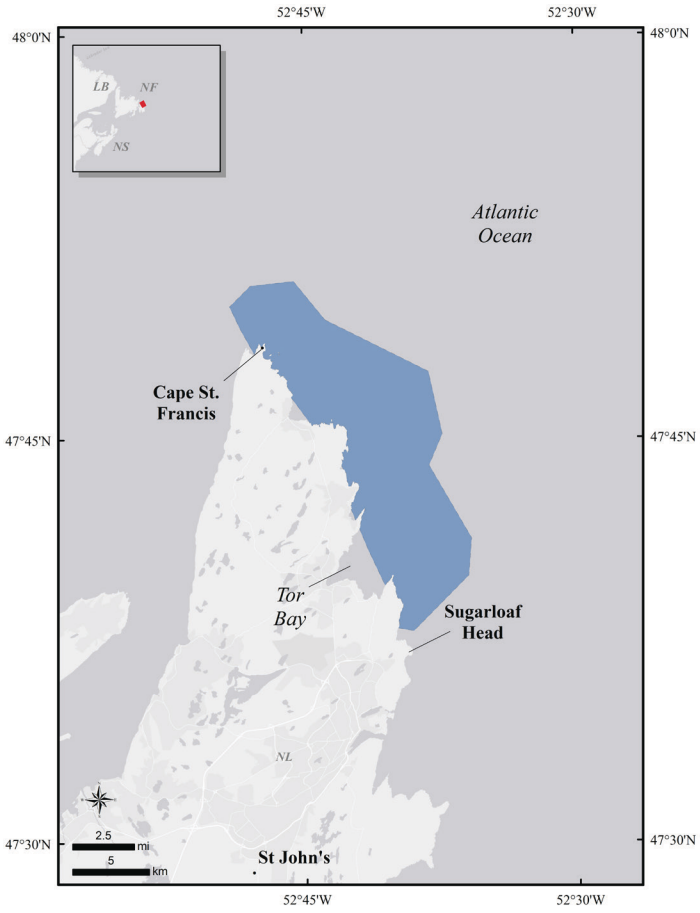
Size: 157 km^2

Description: This key site is located at the northern end and eastern side of the Avalon Peninsula in southeast Newfoundland. The southern edge of the key area begins near the coast at Logy Bay (approximately 25 km north of the capital city of St. John's) and continues north and northwest to Cape St. Francis at the northern tip of the peninsula. Conception Bay lies to the west and the open Atlantic Ocean to the east. The area has numerous coves, shoals, and offshore rocks, and sea ice is present during most winters. The area is part of the Northern Grand Banks marine ecoregion where cold waters of the Labrador Current mix with warm waters of the Gulf Stream. The Grand Banks are one of the richest fishing grounds in the world (Park and Mercier 2014).

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This area is primarily important for wintering Common Eiders (*Somateria mollissima*). Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 3589 individuals in 2012 to 41,189 individuals in 2015 (Canadian Wildlife Service Waterfowl Committee 2020). Over six years of winter survey data (surveys were conducted in 2003, 2006, 2009, 2012, 2015, and 2018), an average of 15,557 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020).

Historical data suggest that about 75% of the eiders wintering in this area are Northern Common Eider (*Somateria mollissima borealis*) with the remaining being American Common Eiders (*Somateria mollissima dresseri*) and small numbers of King Eiders (*Somateria spectabilis*; Gilliland and Robertson 2009). This represents about 5.6% of the continental population of Northern Common Eiders (NAWMP 2012). Flocks of up to 5000 eiders (approximately 1.7% of the *borealis* subspecies) have been observed



in the waters off Cape St. Francis prior to spring migration (Russell and Fifield 2001).

Other sea duck species that use this area include Harlequin Duck (*Histrionicus histrionicus*), Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks and, depending on sea ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al. 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality. Oil spills, both catastrophic and chronic, can have severe impacts on sea ducks. There is historical documentation of oil spills affecting Common Eiders and other water bird species in the nearshore waters of southeastern Newfoundland (Wiese and Ryan 2003, Robertson et al. 2014).

Potential Conflicts: Heavy shipping traffic into St. John's Harbor may increase the risk of disturbance and oil spills, and bird collisions with vessels in this area.

Status: There is one Important Bird Area (IBA) in this key area: Cape St. Francis IBA (IBA Canada 2021). This IBA is considered continentally significant for congregatory species including Common Eider.

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Key Site 48: Avalon Peninsula, Cape Spear to St. Shotts, Newfoundland

Location: 46°59'46"N, 52°51'17"W

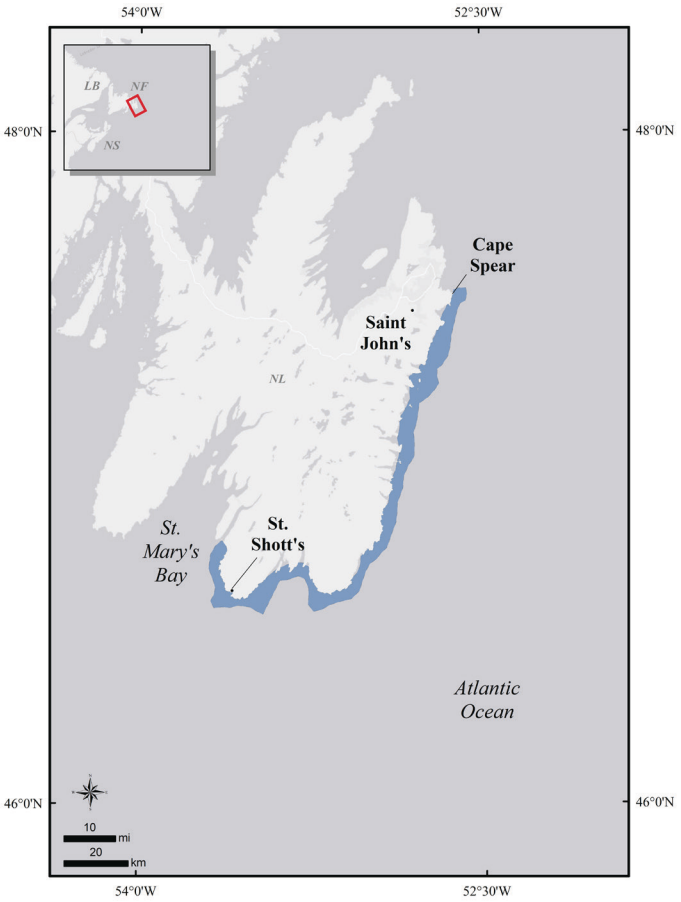
Size: 791 km^2

Description: This key area is located along the south and east coast of the Avalon Peninsula in southeastern Newfoundland. The southern boundary begins near the town of St. Vincent's-St. Stephen's-Peter's River, encompasses the southern end of the Avalon Peninsula around the towns of St. Shott's and Cape Race, then continues north to the town of Cape Spear. The coastal area has numerous coves, inlets, islands, and harbors with adjacent rocky shores and open ocean. Land cover on the islands ranges from coniferous forest to grassy meadows to rocky shores and barrens. The area is part of the Northern Grand Banks marine ecoregion, where cold waters of the Labrador Current mix with warm waters of the Gulf Stream. The Grand Banks are one of the richest fishing grounds in the world (Park and Mercier 2014).

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This key area is primarily important for migrating and wintering Common Eiders (*Somateria mollissima*). Winter surveys conducted in this area by the Canadian Wildlife Service (CWS) produced estimates ranging from 13,047 individuals in 2012 to 43,840 individuals in 2015 (Canadian Wildlife Service Waterfowl Committee 2020). Over six years of winter survey data (surveys were conducted in 2003, 2006, 2009, 2012, 2015, and 2018), an average of 20,430 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020).

Historical data suggest about 75% of the eiders wintering in this area are the northern subspecies (*Somateria mollissima borealis*) with the remainder being the American subspecies (*Somateria mollissima dresseri*) and small numbers of King Eiders (*Somateria spectabilis*; Gilliland and Robertson 2009). This represents about 6% of the continental population of Northern Common Eiders (NAWMP 2012). During the winter of 1987, a large flock of



12,000 *borealis* eiders was observed at the edge of pack ice around Mistaken Point, although counts in the 1990s estimated fewer than 1000 eiders (NF024; IBA Canada Website). Up to 1000 King Eiders winter in the area of Witless Bay (Government of Newfoundland and Labrador 1994). Harlequin Ducks (*Histrionicus histrionicus*) overwinter along the coast at Cape Spear, Cape Race, St. Shott's, and Black Rocks near Chance Cove (eBird 2020).

Other sea duck species that use this area include Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta americana*), White-winged Scoter (*Melanitta deglandi*), Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks and, depending on sea-ice conditions, hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al. 2009). Unintentional introduction of invasive species in this

area could influence food resource availability and quality. Oil spills, both catastrophic and chronic, can have severe impacts on sea ducks. There is historical documentation of oil spills affecting Common Eiders and other waterbird species in the inshore waters of southeastern Newfoundland (Wiese and Ryan 2003, Robertson et al. 2014). Sea ducks can be susceptible to vessel strikes, particularly in poor weather conditions.

Potential Conflicts: Oil spills from large ships and oil production facilities are a threat in the eastern part of this key area due to its proximity to busy shipping routes and the offshore production areas on the Grand Banks. Any future raising of commercial fishing quotas may increase boat traffic in the area.

Status: There are three Important Bird Areas (IBAs) in this key area: Cape Pine and St. Shotts Barren IBA, Mistaken Point IBA, and Witless Bay Islands IBA. Witless Bay is also a Provincial Ecological Reserve that is closed to shooting and protects the largest colony of Atlantic Puffins in eastern North America (NF002; IBA Canada Website).

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Key Site 49: St. Pierre and Miquelon to Cape St. Mary's, Newfoundland

Location: 47°2'39"N, 55°5'42"W

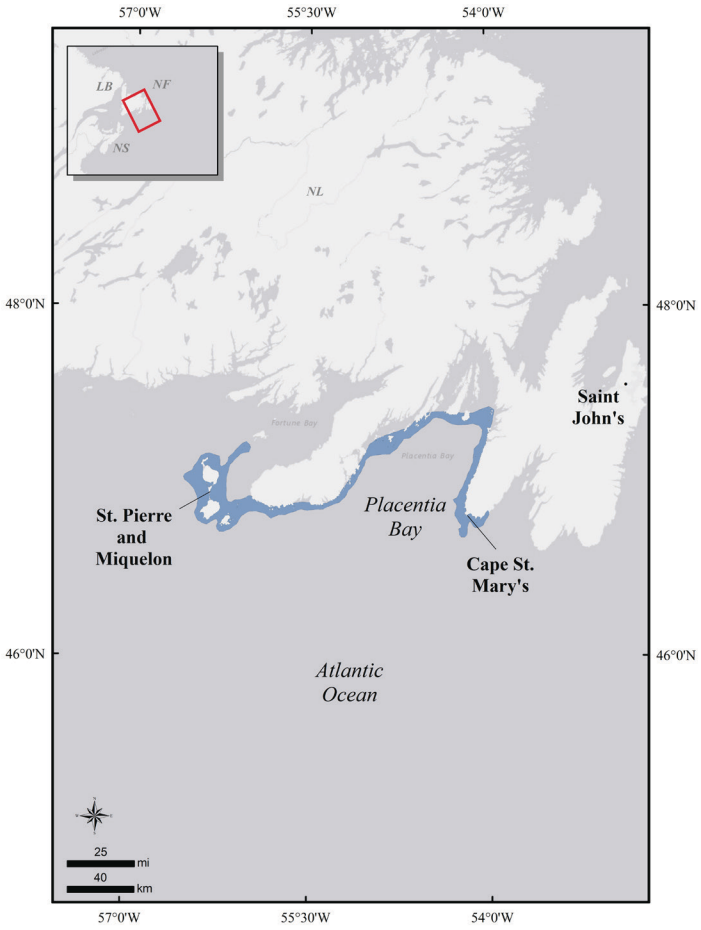
Size: 2408 km^2

Description: This key area is located along the south coast of Newfoundland. The western edge of the area begins at the islands of St. Pierre and Miquelon, France, continues east-northeast along the southeast coast of the Burin Peninsula toward Rock Harbor, encompasses Jude Island and a portion of Placentia Bay, then continues south along the west coast of the Avalon Peninsula, ending beyond Point Lance. This area has numerous coves, harbors, islands, and islets with adjacent open ocean. Land cover on the islands ranges from rocky and nonvegetated to grassy with low shrubs.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for observer error in flock size estimation following methods developed by Bordage et al. (1998).

Biological Value: This area is important for migrating and wintering Common Eiders (*Somateria mollissima*) and Harlequin Ducks (*Histrionicus histrionicus*). Winter surveys conducted in this area by the Canadian Wildlife Service (CWS) produced estimates ranging from 23,698 eiders in 2006 to 7107 eiders in 2009 (CWS unpublished data). Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 15,705 individuals were estimated in this area (CWS Waterfowl Committee 2020). About 90% of the eiders that overwinter in this area are Northern Common Eiders (*Somateria mollissima borealis*), with the remaining being American Common Eiders (*Somateria mollissima dresseri*) and small numbers of King Eiders (*Somateria spectabilis*; Gilliland and Robertson 2009). This represents about 4% of the continental population of Northern Common Eiders (NAWMP 2012). During winter, eiders congregate in areas of open water, which can change over space and time. Adults forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).

The Cape St. Mary's/Point Lance area is one of the most important sites in North America for overwintering Eastern Harlequin Ducks, supporting up to 4% of the eastern North America population (a maximum of 156 birds estimated in February 8–14, 2007; CWS unpublished data). Black Scoters (*Melanitta americana*) and Long-tailed Ducks (*Clangula hyemalis*) also use the Cape St. Mary's area during spring and fall migration (Goudie and Ankney 1988).



Other sea duck species that use this area include Surf Scoter (*Melanitta perspicillata*), White-winged Scoter (*Melanitta deglandi*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*) (eBird 2020).

Sensitivities: Waterfowl can be sensitive to small vessel and ship traffic. Wintering eiders aggregate in dense flocks, and hunting pressure can be intense in this area (Gilliland and Robertson 2009, Gilliland et al. 2009). Unintentional introduction of invasive species in this area could influence food resource availability and quality. Oil spills, both catastrophic and chronic, can have severe impacts on sea ducks.

There is historical documentation of oil spills affecting Common Eiders and other waterbird species in the inshore waters of southeastern Newfoundland (Wiese and Ryan 2003, Robertson et al. 2014). Sea ducks can be susceptible to vessel strikes, particularly in poor weather conditions.

Potential Conflicts: Placentia Bay is a busy shipping route and has year-round oil-tanker traffic to and from an oil refinery at Come by Chance. A nickel processing plant in Long Harbour and associated ship traffic in the area are potential sources of pollution (NF028; IBA Canada 2021). Oil spills, illegal oil discharge, and pollution are risks in this area. Commercial fishing vessels operate in much of the coastal area (Russell and Fifield 2001).

Status: There are seven Important Bird Areas (IBAs) in this key area; Miquelon Island (northeast coast) IBA, Grand Columbier Island IBA, Green Island IBA, Middle Lawn Island IBA, Corbin Island IBA, Placentia Bay IBA, and Cape St. Mary's IBA (IBA Canada 2021). There is also a Provincial Ecological Reserve at Cape St. Mary's. St. Pierre and Miquelon and Grand Columbier Island are in French territory but are included in the Canadian IBA program due to close proximity to Canadian territory and lack of coverage by other IBA programs (NF034; IBA Canada 2021).

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Key Site 50: Southwestern St. Lawrence Estuary (Kamouraska–Trois-Pistoles), Quebec

Location: 47°51'58"N, 69°34'16"W

Size: 496 km^2

Description: This key site measures about 75 km by 10 km along the south shore of the upper estuary of the St. Lawrence River, Quebec, between Kamouraska and Trois-Pistoles. It contains many islands, including the Kamouraska Islands, Île aux Fraises, Les Pèlerins, Île aux Lièvres, Île Blanche, Île aux Pommes, and Île aux Basques, most of which fall within the Estuary Islands National Wildlife Area (Appendix 1). While some islands are nearshore, others are 10 to 12 km offshore in the St. Lawrence Estuary. Île aux Fraises, Île aux Lièvres, and Île Blanche are separated from the south shore by a channel with depths of less than 20 m.

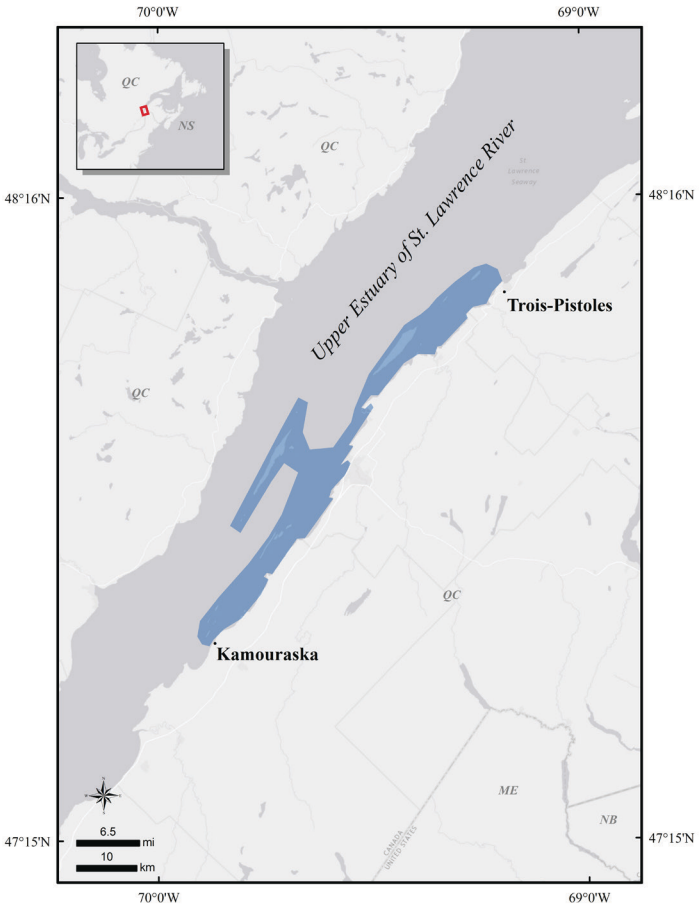
The southwestern St. Lawrence Estuary is situated where fresh water from the St. Lawrence River intermixes with saltwater from the Gulf of St. Lawrence. It is characterized by semidiurnal tides of 5 to 6 m amplitude. The coast has a low profile and is bordered by a wide littoral terrace less than 10 m deep; extended mudflats become exposed at low tide. There are numerous salt marshes in the key site.

Coastal waters generally freeze in midwinter, but ice is usually thin in that portion of the estuary, and icebreakers maintain the main shipping lane between the Gulf of St. Lawrence and the St. Lawrence Seaway.

The largest city bordering the key site is Rivière-du-Loup (population about 18,000). Many touristic villages are dispersed along this portion of the south shore of the St. Lawrence Estuary.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should be treated as minimum estimates.

Biological Value: American Common Eider (*Somateria mollissima dresseri*) is the primary sea duck species in this key site. Thousands breed on



the islands, and many eiders breeding in other parts of southern Quebec transit through the key site during spring and fall migration, to and from wintering areas further south.

During the breeding season, 10,000 to 15,000 Common Eider pairs nest in colonies on islands in the key site, approximately 15% of the continental breeding population of *S. m. dresseri*. Four islands host 87% of pairs in the key site: Île aux Fraises, Îles du Pot à l'Eau-de-Vie, Île Blanche, and Île aux Pommes (Joint Working Group on the Management of the Common Eider 2004, Lepage 2019). Successful breeding females and ducklings leave breeding islands soon after hatch and move either south along the estuary shore (Gauthier and Bédard 1976, Diéval et al. 2011) or along Île aux Lièvres (Falardeau et al. 2000) where foraging areas abound and avian predation (mainly gulls) is less severe. The shoreline of the key site includes large stretches of rocky substrates with macrophytes harboring invertebrates on which the

ducklings feed. During brood-rearing, 30 to 97% of the broods' diet consists of gastropods (*Littorina* spp.; Cantin et al. 1974).

During spring migration, Common Eiders, scoters (*Melanitta* spp.), and mergansers (*Mergus* spp.) use the area, including the Passe de l'Île aux Lièvres (channel) where herring spawn in some years, providing abundant food (Falardeau et al. 2000). Local breeders and transient eiders arrive in the key site from late April to early May. Counting locally breeding eiders plus a portion of the eiders that breed along Quebec's north shore, it is likely that more than 40,000 eiders pass through the key site in spring (C. Lepage, Canadian Wildlife Service, pers. comm.). Scoters (mostly Surf [*M. perspicillata*], but also Black [*M. americana*]) are present in the second half of May (Lamb et al. 2020). Scoters number 2500 to 5000 individuals, but with regular turnover, total use is likely higher (Canadian Wildlife Service unpublished data).

Some breeding females molt onsite in late summer to early fall. Hundreds of Surf Scoters gather in early July in the Passe de l'Île aux Lièvres prior to molt (Falardeau et al. 2000), and small flocks of goldeneyes (*Bucephala* spp.) and Red-breasted Mergansers (*Mergus serrator*) molt in the key site during July and August (Canadian Wildlife Service unpublished data).

During late summer and through fall, Common Eiders *dresseri* remain abundant, with individuals from other breeding areas joining local birds before migrating to wintering sites along the coasts of Nova Scotia and New England. Eiders may remain in the estuary until December or January (S. Gilliland pers. comm.). Surf Scoters also stage in the key site in the fall, with some passing through in late August to early September and others staying through October (SDJV 2015, Lamb et al. 2020, Canadian Wildlife Service unpublished data).

In winter most of the coastal waters in this key site are frozen; however, up to 235 Barrow's Goldeneye (*Bucephala islandica,* from the eastern population listed as of "special concern" by the Committee on the Status of Endangered Wildlife in Canada) and 115 Common Goldeneye have been observed in ice-free areas around Pointe de l'Anse Double at Île aux Lièvres and by Îles du Pot à l'Eau-de-Vie (Robert et al. 2003).

Sensitivities: Recent reductions in ice and increased frequency and severity of storms in the St. Lawrence Estuary will likely increase erosion and coastal flooding episodes in the key site (Conseil du Saint-Laurent 2018). It is predicted that by 2060, due to sea level rise, nearly 80% of the coastal ecosystems of the south shore of the upper St. Lawrence Estuary will be affected by coastal squeeze (i.e., a narrowing of the marsh or intertidal zones), likely leading to the degradation or loss of these ecosystems (Conseil du Saint-Laurent 2018). This could affect benthic communities, including particularly important foods for sea ducks, such as blue mussels (*Mytilus edulis*) or gastropods (Diéval et al. 2011). Adverse weather conditions (e.g., precipitation and high winds) during the hatch for Common Eider may decrease duckling survival (Joint Working Group on the Management of the Common Eider 2004, Diéval et al. 2011). Breeding females and foraging broods are very sensitive to disturbance from recreational boating and kayaking around breeding islands (Bolduc and Guillemette 2003) as well as from people harvesting sea products near some islands. Predation of Common Eider ducklings by Great Black-backed and Herring gulls is substantial in some years. Overall duckling survival is generally low, with less than 15% of class IA ducklings produced on breeding areas subsequently observed on foraging sites along the St. Lawrence Estuary's south shore (Diéval 2006). The irregular presence of Red Fox (*Vulpes vulpes*) on islands often results in temporary abandonment of colonies by breeding female eiders; however, the Société Duvetnor usually controls foxes on several of the major colonies. Avian cholera outbreaks regularly strike eider colonies on the south shore; the last large outbreak was in 2002 and killed nearly 20% of females breeding in the St. Lawrence Estuary (Joint Working Group on the Management of the Common Eider 2004). Generally, water quality in this part of the St. Lawrence is poor due to wastewater from municipalities or remote residences and the presence of agricultural activity; anthropogenic bacterial contamination leads to regular harvest closures for softshell clams and mussels (Working Group on the State of the St. Lawrence Monitoring 2015).

Potential Conflicts: The St. Lawrence River is one of the most important and heavily travelled waterways in North America. Marine traffic is expected to increase in the future (MTQ 2021),

which will likely increase the risk of pollution (e.g., chemical or oil spills), disturbance, and bird collisions with vessels. The Port of Gros-Cacouna, situated within the key site, has been identified for development of several new marine facilities (e.g., gas terminals, marina, cruise ship port). Tourist and recreational activities, including sea kayaking around the islands, are popu- lar within this key site and despite being prohibited, some tourists land on islands during the nesting season (Environment Canada 2014). The area has also been identified as having high potential for development of shellfish aquaculture, and harvest of urchins and seaweed occurs in the area, which may disturb eiders during the brood-rearing and molting periods (Diéval et al. 2011, Savard and Lepage 2013) and degrade foraging habitat. Eiderdown is collected commercially on most of the islands in the key site, but permit holders must follow strict directives (Bédard et al. 2008) to protect eider females and broods.

Status: The Estuary Islands National Wildlife Area (Appendix 1) was established in 1986 by Environment Canada to protect important nesting sites for migratory birds, particularly colonial sea birds and especially Common Eider. This national wildlife area comprises about 10 islands or portions of islands, including the Kamouraska Islands, Les Pèlerins, Île aux Fraises, and Île Blanche. The Société Duvetnor collects eiderdown throughout the estuary and uses profits from the sale of down for the conservation, public awareness, and research programs on Common Eiders in the lower St. Lawrence Estuary. In addition, Société Duvetnor owns several islands (Île aux Lièvres, which is designated as a Quebec's Réserve de biodiversité projetée [planned biodiversity reserve], two of the five islands in the Les Pèlerins Archipelago, and both of the islands in the Îles du Pot à l'Eau-de-Vie archipelago). While the three other islands of the five that form the Les Pèlerins Archipelago belong to Nature Conservancy Canada, the Société Duvetnor manages all islands of this archipelago. Île aux Basques Migratory Bird Sanctuary includes Île aux Basques which, along with waters within 500 m of the island, is owned by the Société Provancher. The Île aux Pommes, privately owned, is designated a natural reserve. The islands in the center of the St. Lawrence Estuary within the key site (Île aux Fraises, Île aux Lièvres, Îles du Pot à l'Eau-de-Vie, and Île Blanche) lie within the Saguenay–St. Lawrence Marine Park (provincial status). At the coastal limit of the key site, Baie de L'Isle-Verte National Wildlife Area, the L'Isle-Verte Migratory Bird Sanctuary, and the Site ornithologique du marais de Gros-Cacouna (Cacouna marsh birdwatching site) are also under jurisdiction of Environment Canada. The Parc Côtier Kiskotuk is a linear coastal park of about 30 km from Cacouna to L'Isle-Verte. The Société d'écologie de la batture du Kamouraska owns approximately 2 km of coastal habitat on the Saint-André's flats. Forty-two Aquatic Birds Concentration Areas, a Quebec government designation, cover about 90% of the coastline of this key site, including that of the islands and those along the mainland (*Aires de concentration d'oiseaux aquatiques*; MDDELCC 2018). The key site includes nine Important Bird Areas; six of them are on islands, mostly due to their importance to seabird colonies (QC042, QC043, QC046, QC047, QC048, QC49, QC050, QC052, QC055; IBA Canada).

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Key Site 51: Baie des Rochers, Quebec

Location: 47°57'26"N, 69°48'4"W

Size: 2 km^2

Description: The Baie des Rochers lies on the north shore of the St. Lawrence upper estuary, about 15 km north of Saint-Siméon, Quebec. This bay is approximately 2.4 km^2. A wooded island lies in the center of the bay, and its rocky shores and mudflats are exposed at low tide.

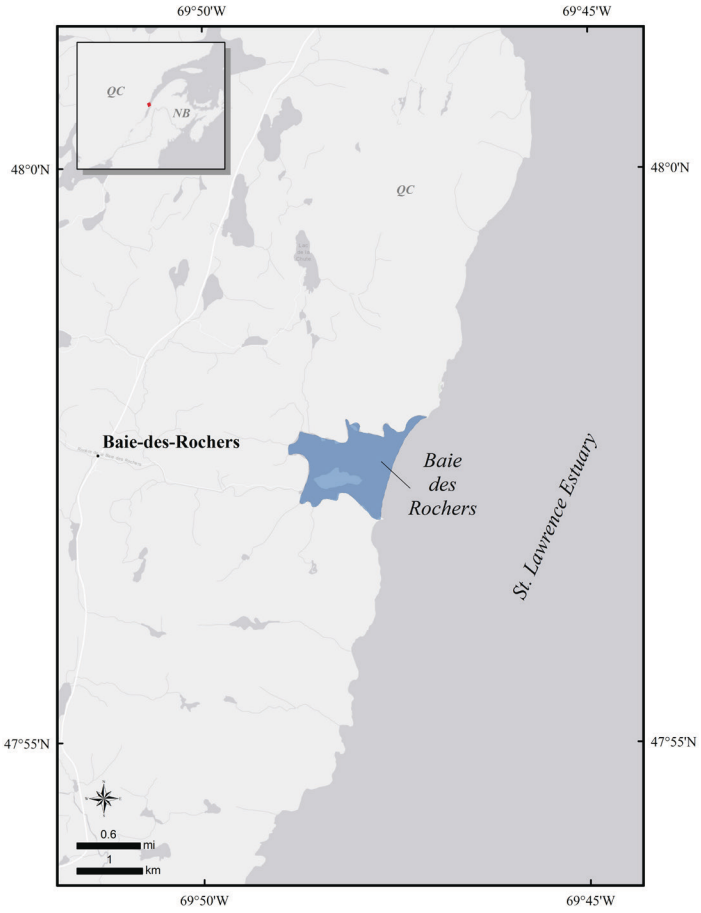
In winter, due to wind patterns and tides, the outer portion of the bay usually freezes while the interior of the bay remains ice-free. This bay also periodically fills with wind driven pack ice.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is second most important wintering site for eastern Barrow's Goldeneye (*Bucephala islandica*), which are listed as a species of special concern (Environment Canada 2013). The site supports about 10% the eastern Barrow's Goldeneye population during winter. From early December to late April, up to 600 individuals may be found in the ice-free waters of the bay (Robert et al. 2003). Shallow water, intertidal areas, and river mouths are important habitats for Barrow's Goldeneyes, where they tend to use hard-bottom habitats (Ouellet et al. 2010) and feed on *Littorina* spp. and *Gamarus oceanicus* associated with extensive stands of rockweed (Laforge 2010).

During winter, 30 to 200 Common Goldeneyes (*Bucephala clangula*) use this site (Robert et al. 2003).

In late April and early May, migrating sea ducks stage at this site, with daily counts of up to 300 Common Eiders (*Somateria mollissima*), 60 Surf Scoters (*Melanitta perspicillata*), 50 Black Scoters (*Melanitta americana*), 40 Common Goldeneyes, 80 Common Mergansers (*Mergus merganser*), and 600 Red-breasted Mergansers (*Mergus serrator*) (Robert et al. 2003).



Sensitivities: Habitat deterioration or alteration of ecological processes underlying the food chain is of concern. Food resource availability and quality could be influenced by pollution. In very cold winters, landfast ice can cover most of the bay or during periods of strong southerly winds dense pack ice can restrict feeding areas available for forging.

Potential Conflicts: Oil spills could be detrimental, particularly during winter, given the highly clustered distribution of Barrow's Goldeneyes at this site. Human disturbance associated with recreational boat traffic or hikers along coastal trails may displace birds, although much of this activity occurs in summer and fall rather than winter when use by sea ducks is greatest. There are numerous recreational facilities surrounding the bay, including a municipal park with a wharf and boat ramp (Appendix 1).

Status: The Baie des Rochers lies within the Saguenay–St. Lawrence Marine Park (federal-provincial status) and is also recognized as an Aquatic Birds Concentration Area (*Aire de concentration*

d'oiseaux aquatiques; MELCC 2018). The key site has also been identified as a Canadian Important Bird Area, mostly because of its importance to wintering Barrow's Goldeneye (IBA Canada 2021).

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Barrow's Goldeneyes. Photo: Tim Bowman.

Key Site 52: Cap Marteau–Matane (Southeastern St. Lawrence Estuary), Quebec

Location: 48°32'44"N, 68°24'12"W

Size: 489 km^2

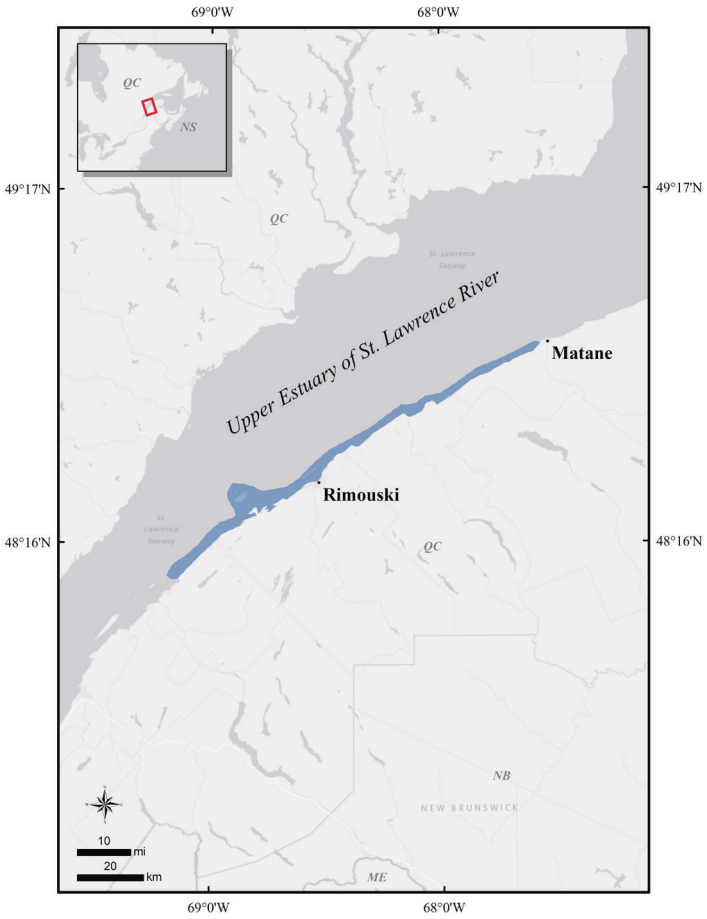
Description: This key site covers the shoreline and subtidal areas for 140 km along the south shore of the Lower Estuary of the St. Lawrence River, Quebec. It extends from Cap Marteau eastward to Matane, and includes Bicquette Island (17 ha), a forested island with rocky shore about 8 km offshore. The key site has a shallow, gradually sloping shoreline with substrates that vary from mud in the western section to bedrock in the eastern section. Rimouski is the largest city in the key site and there are also many smaller touristic villages along the south shore of the St. Lawrence Estuary.

This portion of the estuary is generally frozen during the winter or covered by wind-driven pack ice in winter; however, icebreakers maintain the shipping lane between the Gulf of St. Lawrence and the St. Lawrence Seaway.

Precision and Correction of Abundance Estimates Presented: Visual estimates of molting scoters have been photo-corrected (Rail and Savard 2003). Otherwise, abundance numbers presented for this key habitat site have not been adjusted to account for incomplete detection or other biases and should, therefore, be considered minimum estimates of population size.

Biological Value: This key site supports continentally significant numbers of breeding Common Eiders (*Somateria mollissima dresseri*), spring and fall staging Barrow's Goldeneyes (*Bucephala islandica*), as well as molting and staging scoters (*Melanitta* spp.).

The largest Common Eider colony in North America is on Bicquette Island, Quebec. From 1997 through 2001, the colony averaged 12,300 ± 900 nests (Canadian Wildlife Service unpublished data), but numbers were reduced through a severe avian cholera event in the St. Lawrence Estuary in 2002. The size of the colony has been slowly increasing between 2002 and 2019 (Giroux et al. 2021) with an average colony size of 5000 ± 480 nests between 2014 and 2018 (Canadian Wildlife Service unpublished data). There are 800 to 1000 Common Eider nests on La Razade d'en Haut and La Razade d'en



Bas (Duvetnor unpublished data), two rocky islands about 2 km offshore, and another 350 nests on smaller islets (BIOMQ 2018), resulting in about 15% of the continental population of *S. m. dresseri* breeding within the key site. The extensive intertidal areas along the mainland coast are rich in marine invertebrates and are the primary brood-rearing area for Common Eider (Diéval et al. 2011). During this critical period, the ducklings' diet consists of 30 to 97% gastropods (Littorina spp.; Cantin et al. 1974). The area around Matane also supports nonbreeding and failed breeding female and molting male Common Eiders. rapidly leave Bicquette Island after hatching to flee heavy gull predation and move to the south shore where foraging areas abound and avian predation diminishes (Diéval et al. 2011). During this critical period, the ducklings' diet consists of 30 to 97% gastropods (*Littorina* spp.; Cantin et al. 1974).

During spring migration, maximum counts of about 3000 Common Eiders and about 3000 scoters (*Melanitta* spp.) have been observed in the key site (Canadian Wildlife Service unpublished data).

These counts greatly underestimate the use of the key site by migrating sea ducks, because large portions of the Common Eider and Atlantic populations of scoters pass through this region in spring (Lamb et al 2020, Lamb et al. 2021). As many as 30,000 Common Eiders and 30,000 to 50,000 scoters may pass through the site (C. Lepage, Canadian Wildlife Service, pers. comm.). Smaller numbers (a few dozen) of Red-breasted and Common mergansers (*Mergus serrator* and *M. merganser*) and Common Goldeneyes (*Bucephala clangula*) also transit through the key site (Canadian Wildlife Service unpublished data). About 800 Barrow's Goldeneye, whose eastern population is listed as a species of special concern by the Committee on the Status of Endangered Wildlife in Canada, stage during spring in a few spots in the key site, including Anse à Mercier, Rocher Blanc, and Baie Mitis (Robert et al. 2003, Bourget et al. 2007); individuals may be observed on site as early as late February (or as soon as intertidal areas become ice-free, depending on yearly conditions) until late April or early May (Bourget et al. 2007, Savard and Robert 2013).

Scoters also molt in the key site: about 12,000 individuals were estimated in this part of the estuary during an aerial survey in 1998, most of which were thought to be Surf Scoters (Rail and Savard 2003). These molting birds were concentrated from Cap Marteau and the Razade islands to Cap à l'Orignal. White-winged Scoters (*M. fusca*) also molt in July and August in the key site, including the Razade islands, Saint-Simon-sur-Mer, and Anse à Mercier (SDJV 2015, Lepage et al. 2020).

From late summer through late fall, Common Eiders occur in the key site, with dozens to hundreds seen at Anse à Mercier, Baie Mitis, Anse du Petit Mitis, and Sainte-Flavie (Robert et al. 2003). Hundreds of Common Goldeneyes, Long-tailed Ducks (*Clangula hyemalis*), and Red-breasted Mergansers also frequent the key site during late summer and fall (Robert et al. 2003, Bourget et al. 2007).

Barrow's Goldeneyes arrive during the first two weeks of October, with 400 to 500 using the areas at Anse à Mercier, Baie du Ha! Ha!, Baie Mitis, and Anse à Capelans up to late December (Robert et al. 2003) or until they are forced out by ice conditions (Bourget et al. 2007).

Many Surf Scoters and White-winged scoters also stage in the key site during fall, most from late September to early November (SDJV 2015, Lamb et al. 2020). Some White-winged Scoters molt and stage in the key site, arriving in early July and leaving in late fall (Lepage et al. 2020). Among the preferred fall staging sites are the Razade islands, Saint-Simon-sur-Mer, Anse à Mercier, offshore Havre du Bic, offshore Île Saint-Barnabé, and Baie Mitis (Canadian Wildlife Service unpublished data). Groups of 3000 to 4000 Surf Scoters have been reported at Anse à Mercier in October 2001 (Robert et al. 2003).

Sensitivities: The south shore of the St. Lawrence Estuary is vulnerable to coastal erosion and subsidence as a consequence of recent reductions in ice cover on the St. Lawrence and the higher frequency and severity of winter storms (Conseil du Saint-Laurent 2018). This will likely affect littoral characteristics and benthic communities important to sea ducks. Common Eider colonies are vulnerable to avian cholera outbreaks in the St. Lawrence Estuary: a significant outbreak in 2002 killed nearly 20% of breeding females (Joint Working Group on the Management of the Common Eider 2004). Great Black-backed Gulls take large numbers Common Eider ducklings as they depart the colony on Bicquette Island. The impact of gull predation on annual production from the colony is unknown but may limit the colonies' potential to recover from cholera. Breeding females and foraging broods are very sensitive to disturbance from recreational boating and kayaking (Bolduc and Guillemette 2003). There is also disturbance and loss of habitat associated with harvests of sea urchins and rockweed. In warm years (expected more often due to global warming), blooms of phytoplankton in the St. Lawrence increase the risk of toxic algal blooms which has resulted in mortalities of Common Eiders (Starr et al. 2017).

Water quality in this part of the St. Lawrence is compromised due to anthropogenic bacterial contamination, consumption softshell clams and mussels is regularly closed because of human health risks (Working Group on the State of the St. Lawrence Monitoring 2015).

Potential Conflicts: The St. Lawrence River is among the world's most important commercial

waterways, linking the Atlantic Ocean to the Great Lakes. There is an ever-present risk of oil spills due to the high volume of marine traffic, and traffic will likely increase given the 2015–2030 Quebec Maritime Strategy for the St. Lawrence system (MTQ 2021). Harvesting of sea urchins and rockweeds, and potential mussel farming, can create conflicts with locally foraging eider broods and molting eiders (Diéval et al. 2011, Savard and Lepage 2013). There are high levels of use of the coastline by recreational boaters and kayakers, and although visitation of migratory bird colony islands is prohibited during the nesting season, there are disturbances caused by some uninformed recreationists who visit colonies. Eiderdown harvest is allowed on Bicquette Island by permit only, which requires the holder to follow strict guidelines to limit disturbance of eider females and broods (Bédard et al. 2008).

Status: Large portions of the key site are under some level of protective status. Biquette Island is part of the Estuary Islands National Wildlife and the Pointe-au-Père National Wildlife Area, coastal areas that support thousands of migratory birds during their migration and nesting periods. Île aux Basques Migratory Bird Sanctuary includes two of the Razade Islands, which are owned by the Société Provancher. The Quebec Parc National du Bic protects 33.2 km^2 of terrestrial and marine habitats between Saint-Fabien and Le Bic. The marine section of the park encompasses several bays that become large tidal flats at low tides. There are also 44 Aquatic Birds Concentration Areas, designated by the Quebec government, cover almost all the coastlines within this key site, including islands (*Aires de concentration d'oiseaux aquatiques*; MELCC 2021). Finally, four Important Bird Areas are found in the key site, including one for Bicquette Island and one for the Razade islands, due to their importance for colonial breeding Common Eiders and other birds (QC040, QC041, QC045 and QC046; IBA Canada 2021).

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Key Site 53: Baie des Bacon–Pointe Lebel, Quebec

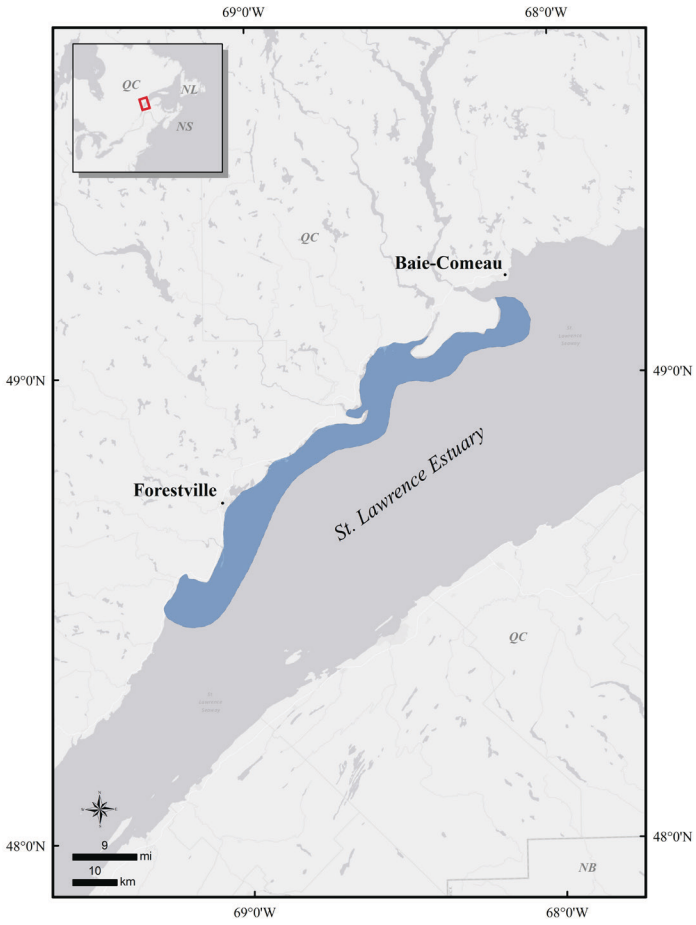
Location: 48°52'18"N, 68°42'7"W

Size: 913 km^2

Description: This key site stretches along the north shore of the St. Lawrence Estuary, Quebec, from the Baie des Bacon west to the Pointe Lebel, at the eastern end of the Manicouagan Peninsula. About 140 km long, it extends 5 to 12 km offshore. There are large areas of shoal water over sandy plateaus, including the Baie de Mille-Vaches, the section from Pointe à Boisvert to the mouth of the Portneuf River, the area nearby the Île Patte de Lièvre, the section from Baie des Plongeurs to the mouth of the Betsiamites River, the Papinachois sector, and the Baie aux Outardes.

Precision and Correction of Abundance Estimates Presented: Visual estimates of scoters and eiders from spring and molting surveys (Rail and Savard 2003) have been photo-corrected. Otherwise, abundance numbers presented for this key habitat site have not been adjusted to account for incomplete detection or other biases and should, therefore, be treated as minimum estimates.

Biological Value: This key site hosts tens of thousands of sea ducks during spring staging, molting, and fall staging (Lamb et al. 2020). During spring migration, scoters are by far the most numerous sea ducks transiting or staging. Conservative estimates of 15,000 Black Scoters (*Melanitta americana*) and 65,000 Surf Scoters (*Melanitta perspicillata*) can be extrapolated to this key site based on numbers found in a larger survey region in 1998 (Rail and Savard 2003); the sector within the key site with the greatest abundance was observed from Îlets Jérémie to Pointe Lebel, with an estimated 40,000 scoters. Based on estimates from wintering scoter surveys along the Atlantic coast (Silverman et al. 2012), we can estimate that at least 25% of the entire eastern population of Surf Scoters and at least 10% of the eastern population of Black Scoters pass through this key site during spring. The migration in this portion of the St. Lawrence Estuary peaks on May 8 to 10, with Black Scoters passing about a week earlier than Surf Scoters (Falardeau and Savard 2003). There may be spawning sites for Atlantic Herring near the mouths of the Rivière aux Outardes and Manicouagan



River that influence distribution of scoters in spring (MDDEFP 2013). White-winged Scoters (*Melanitta deglandi*), Long-tailed Ducks (*Clangula hyemalis*), and Barrow's Goldeneye also use this key site (SDJV 2015, Meattey et al. 2018, Lamb et al. 2020, Lepage et al. 2020), but numbers are unknown.

About 3500 Common Eiders (*Somateria mollissima*) and hundreds of Common Goldeneyes (*Bucephala clangula*), Common Mergansers (*Mergus merganser*), and Red-breasted Mergansers (*Mergus serrator*) have also been reported during spring aerial surveys in the key site (Canadian Wildlife Service unpublished data).

The Baie des Bacon–Pointe Lebel key site includes Common Eider (*S. m. dresseri)* breeding colonies on Île Laval (about 1700 nests) and islands in the Ragueneau area (1400 nests) (2020 counts; Duvetnor unpublished data), which together likely represents about 3% of the total *S. m. dresseri* population.

During the molting period, about 10,000 to 12,000 Surf Scoters and 4000 to 5000 White-winged Scoters use the key site (Lepage and Savard 2013). Scoter

abundance is especially high from Pointe à Boisvert to Île Patte de Lièvre and from Cape Colombier to Pointe aux Outardes (Rail and Savard 2003; Lepage and Savard 2013). Nonbreeding male scoters arrive first, as early as June, and there is a build-up of birds with breeding males arriving in July and breeding females arriving from August to mid-September (SDJV 2015; Lepage et al. 2020). Flightless scoters may be found in this key site over a three-month period (Lepage et al. 2020). Black Scoters are seen in very small numbers during that period (Rail and Savard 2003). Common Eiders also molt in the key site: nearly 10,000 birds have been estimated far offshore in the Baie de Mille-Vaches, as well as 3000 birds from Pointe aux Outardes to Pointe Lebel (Rail and Savard 2003). Important areas for hundreds of molting goldeneyes and mergansers occur a few kilometers offshore of the mouth of Rivière aux Outardes and Manicouagan River (J.-P.L. Savard, Canadian Wildlife Service pers. comm.). Two of five radio-tagged female Barrow's Goldeneyes molted at the mouth of the Rivière aux Outardes and stayed there from early August to late October or early November (Savard and Robert 2013).

This key site is also important during fall migration and fall staging (Lamb et al. 2020). For instance, a high proportion of the eastern Surf Scoter population is thought to stage in the St. Lawrence Estuary during that period (SDJV 2015, Lamb et al. 2019, Lamb et al. 2020). Given the importance of this key site relative to the entire estuary, it is likely that 150,000 to 175,000 Surf Scoters must be passing through (C. Lepage, Canadian Wildlife Service, pers. comm.). White-winged and Black scoters are far less numerous during fall staging, with estimated combined numbers of 20,000 to 30,000 (Canadian Wildlife Service unpublished data). Approximately 12,000 to 15,000 Common Eiders are also believed to use the key site during fall (S. Gilliland pers. comm.). A few thousand each of Long-tailed Ducks, goldeneyes (mostly Common Goldeneye), Common and Red-breasted mergansers, as well as a few dozen Harlequin Ducks (from the eastern population of special concern) have also been reported during irregular fall aerial surveys over the key site (Canadian Wildlife Service unpublished data).

Sea ducks that regularly overwinter in the key site include Common and Barrow's goldeneyes, Red-breasted Mergansers, and Long-tailed Ducks, about 1000 to 1500 each (Canadian Wildlife Service unpublished data). Barrow's Goldeneyes have been reported in small numbers in the Baie de Mille-Vaches and in the Forestville sector (Robert et al. 2003), but they can form groups of 250 to 500 individuals in the Pointe aux Outardes–Pointe Lebel section, often at Pointe Paradis (Canadian Wildlife Service unpublished data).

Sensitivities: Prey densities, primarily softshell clam (*Mya arenaria*), are among the highest in Quebec (MDDEFP 2013). Availability and quality of food resources could be influenced by shellfish overharvesting, pollution, ice conditions in winter, environmental events (e.g., breaking waves, storms, and shoreline erosion; DFO 2017). Human disturbance from commercial softshell clam harvesting activities can displace foraging sea duck flocks from prime feeding locations. Flightless molting sea ducks are especially sensitive to disturbance (O'Connor 2008).

Potential Conflicts: Softshell clams are exploited by commercial and recreational harvesters in the key site. Although commercial harvest is regulated by the Department of Fisheries and Oceans Canada, there was a high level of harvest on the upper north shore in 2000, followed by a reduction until 2009, but several areas in the key site (e.g., Pointe à Boisvert and Pointe de Mille-Vaches) have not yet recovered (DFO 2017). Maritime traffic is expected to increase in the St. Lawrence Seaway (MTQ 2021); this comes with a concomitant increased chance of pollution (e.g., chemical or oil spills), and bird collisions with vessels. Disturbance associated with small vessel and all-terrain vehicles on the beach remains a potential conflict, especially for molting sea ducks. Aboriginal harvest of sea ducks (scoters, Long-tailed Ducks and eiders) in spring and fall within this site is low (R. Cotter, Canadian Wildlife Service, pers. comm.).

Status: The eastern portion of the key site is proposed as the Manicouagan Aquatic Reserve (MDDEFP 2013). If adopted, this reserve would extend from the mouth of the Betsiamites River to the mouth of the Manicouagan River. Almost all coastlines within the key site have been designated as Aquatic Birds Concentration Areas (*Aires de concentration d'oiseaux aquatiques*; MELCC 2018). The Waters of Île Patte de Lièvre Important Bird Area lies within the key site and was identified as an IBA primarily because of its importance for staging and molting scoters (QC151; IBA Canada 2018).

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Key Site 54: Baie des Anglais, Quebec

Location: 49°13'3"N, 68°7'10"W

Size: 36.4 km^2

Description: The Baie des Anglais is located on the north shore of the St. Lawrence lower estuary, immediately northeast of Baie-Comeau, a municipality with approximately 10,000 residents.

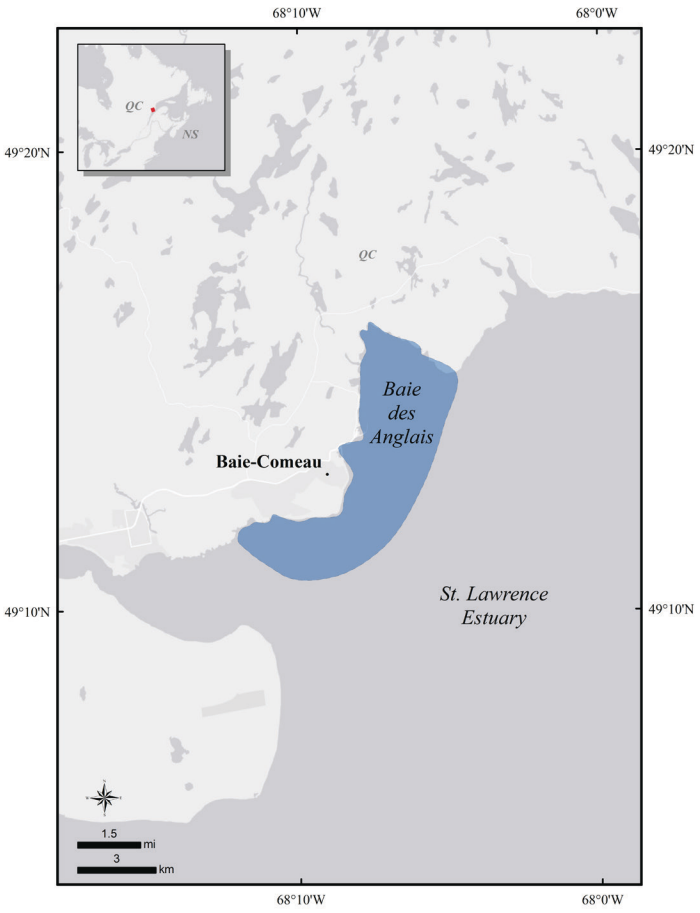
The mouth of the bay stretches about 3.5 km from Pointe Saint-Gilles in the east to the mouth of Manicouagan River in the west. The west side of the bay is heavily industrialized with North America's largest aluminum smelters and grain transfer terminal. Baie-Comeau also has a deepwater port and a nautical club. The mouth of the small Rivière aux Anglais' lies in the west-northwest of the bay.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is the most important wintering site for eastern Barrow's Goldeneye (*Bucephala islandica*), which are listed as a species of special concern (Environment Canada 2013). The site supports about 15% of the eastern Barrow's Goldeneye population during winter. From early November to late April, up to 1,000 individuals may be found in the ice-free waters of the bay (Robert et al. 2003). Barrow's Goldeneyes mostly occupy the littoral zones to the west of Pointe Saint-Gilles and between Pointe Saint-Gilles and the areas near the Baie-Comeau wharf, as well as the vicinity of the mouth of the Rivière aux Anglais (Robert et al. 2003).

Other sea ducks overwintering in the Baie des Anglais include up to 3000 Common Goldeneyes (*Bucephala clangula*), 500 Common Mergansers (*Mergus merganser*), and 2000 Red-Breasted Mergansers (*Mergus serrator*) (Robert et al. 2003, Canadian Wildlife Service unpublished data).

During spring, the key site also attracts many migrating sea ducks, including Common Eider (*Somateria mollissima*), Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta americana*),



Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye, Common Merganser, and Red-Breasted Merganser (Robert et al. 2003; Canadian Wildlife Service unpublished data).

There are few data on the occupancy of the key site at other times of the year; however, it is plausible that there are numerous sea ducks present during the molting and the fall migrating periods. For instance, 2000 Common Eiders and 2000 Surf Scoters have been reported by birders in September and October, respectively (Regroupement Québec Oiseaux et al. 2018).

Sensitivities: Availability and quality of food resources could be influenced by pollution. Given the regular marine traffic in this key site (e.g., ferries), human disturbance is also of concern.

Potential Conflicts: Because of the industrial activities in this bay and significant marine traffic, including ferries and cruise ships, there are increased chances of water pollution (e.g., oil spills,

chronic contamination). For instance, the Baie des Anglais is known to be one of the most severely PCB-contaminated sites in eastern Canada due to past releases from nearby industrial plants; however, contaminants in Barrow's Goldeneye using the site have been assessed and levels were generally low and not of toxicological concern (Ouellet et al. 2012). That said, risks of contamination exist. Human disturbances (e.g., recreational boating), and bird collisions with vessels, also present potential conflict.

Status: The southwest part of the key site has been recognized as an Aquatic Birds Concentration Area (*Aire de concentration d'oiseaux aquatiques*; 578 ha; MELCC 2021). Part of the Baie des Anglais is also designated as a Canadian Important Bird Area, principally because of its crucial importance to the wintering population of Barrow's Goldeneyes (QC082; IBA Canada 2021).

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Key Site 55: Baie de la Trinité–Magpie Bay, Quebec

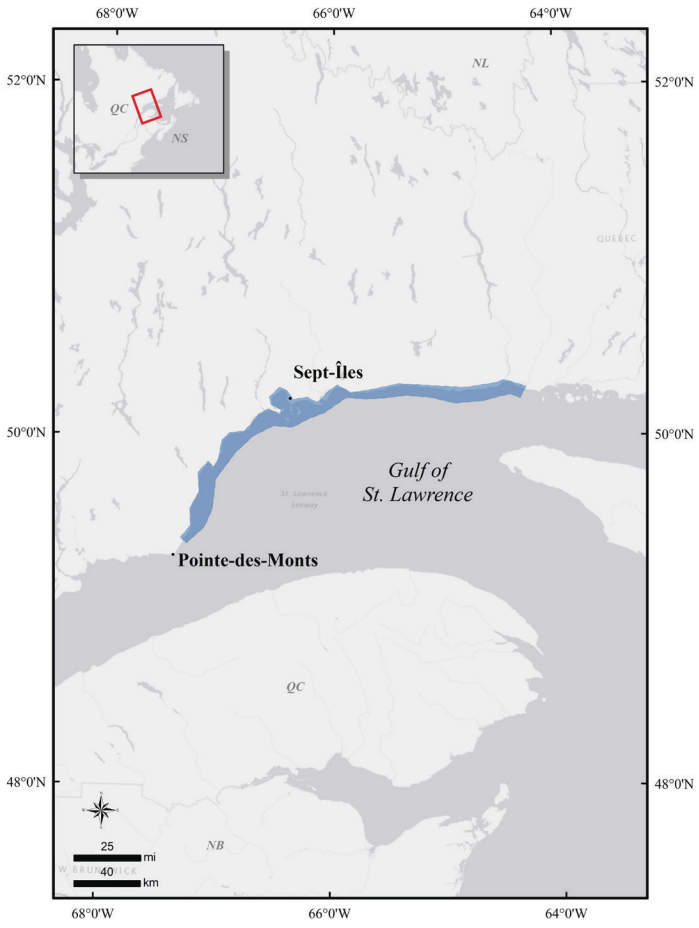
Location: 50°14'8"N, 65°56'27"W

Size: 2603 km^2

Description: This key site is a 270 km coastal stretch along the north shore of the Gulf of St. Lawrence in Quebec, from Baie de la Trinité to Magpie Bay. The key site includes Baie des Sept Îles and the seven nearby islands that form a natural barrier at its entrance. Several large rivers (Sainte-Marguerite, Moisie, Sheldrake, and Magpie) empty into the gulf within the key site. The sea bottom is sandy in most of the key site and supports high densities of invertebrates. There is also a mix of supralittoral flats, salt marshes, mud flats, and eelgrass beds.

Depending on coast orientation, wind exposure, and winter severity, coastal waters generally freeze in late January and February, but small polynyas usually remain around some of the seven islands.

Several villages and towns are spread out along this coast; the largest town is Sept-Îles, with approximately 22,000 inhabitants.



Precision and Correction of Abundance Estimates Presented: Visual estimates of scoters and eiders from spring and molting surveys have been photo-corrected (Rail and Savard 2003; Bolduc and Savard 2011). Otherwise, abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates are thus minimum estimates.

Biological Value: This key site supports large concentrations of scoters, eiders, Long-tailed Ducks, goldeneyes, and mergansers that stage at this site during spring migration. For example, about 80,000 Surf Scoters (*Melanitta perspicillata*) and 35,000 Black Scoters (*Melanitta americana*) have been recorded in the key site in spring (Rail and Savard 2003). These counts do not account for turnover rates thus the number of sea ducks that use the site is much greater. Most of the Atlantic populaltion of the three scoter species funnels through the St. Lawrence Gulf and Estuary (Lamb et al. 2020, Lamb et al. 2021, Lepage et al. 2020) during spring, and 50% of scoters counted in the St. Lawrence Gulf and Estuary are found in the key site (Rail and Savard 2003); hundreds of thousands of scoters likely transit through this site. Daily estimates of 3500 to 4000 Common Eiders, 1000 Long-tailed Ducks, 500 Red-breasted and Common mergansers (*Mergus serrator* and *M. merganser*), and 200 Common Goldeneyes (*Bucephala clangula*) are typical for this section of the Gulf of St. Lawrence in spring (Canadian Wildlife Service unpublished data). White-winged Scoters (*Melanitta deglandi*) are less abundant. Hundreds of individuals of two populations of special concern, eastern Barrow's Goldeneye (*Bucephala islandica*) and eastern Harlequin Duck (*Histrionicus histrionicus*), are also present during spring migration and may represent a substantial proportion of their relatively small populations.

This key site includes two known Common Eider breeding colonies, representing about 3% of the total *dresseri* population. There are approximately 4120 nests on Île aux Œufs, 2 km offshore southeast of Pointe-aux-Anglais, and 380 nests on Corossol Island Bird Sanctuary, one of the seven islands in the Baie des Sept Îles (2019 counts; Duvetnor unpublished data).

During the molting period, this section of the St. Lawrence hosts more than 12,000 Common Eiders (Bolduc and Savard 2011). Scoters, goldeneyes, and mergansers likely molt in this key site too.

Sea ducks transit through this key site during fall migration, and some spend one or two months there (September and/or October; SDJV 2015, Lepage et al. 2020, Lamb et al. 2020, Lamb et al. 2001) before migrating to more southerly wintering grounds. Groups of 1000 birds have been estimated at some localities in the key site for each of Surf and White-winged scoters, Red-breasted Mergansers, and Common Eiders (RQO et al. 2018). Long-tailed Ducks, goldeneyes, and Common Mergansers have also been reported during occasional fall aerial surveys in the area (Canadian Wildlife Service unpublished data).

Sea ducks regularly overwinter in the polynyas of the key site, including 11,800 Common Eiders (CWS Waterfowl Committee 2022), Long-tailed Ducks, and goldeneyes.

Sensitivities: Pollution and climate change could affect the availability and quality of food resources. For example, warming waters are projected to reduce the extent of ice and the length of the ice-free season for shoreline between Sept-Îles and Moisie and may accelerate coastal erosion (Bernatchez et al. 2008). The littoral erosion, paired with the lesser extent of ice in winter, could affect benthic communities, particularly clam beds that attract sea ducks (DFO 2017). Birds are also subject to disturbance from industrial and marine activities in the Baie des Sept Îles.

Potential Conflicts: Large industrial ports are located at Port-Cartier and Sept-Îles. The deepwater port in Sept Îles is the most important iron ore handling port in North America and has two important nearby mining facilities. These sites are potential sources of industrial contamination and oil spills. In 2013, 450,000 liters of bunker oil were spilled in the Port of Sept-Îles during a transfer between tanks. An estimated 5000 to 8000 liters reached the bay, covering about 5 km of coastline. Eelgrass beds and salt marshes were partially covered in oil, and about 100 birds were oiled and died. Maritime traffic will increase in the St. Lawrence Seaway given the Quebec maritime strategy for 2020–2025 (MTQ 2021), leading to a higher risk of pollution (e.g., chemical or oil spills), disturbance, and bird collisions with vessels.

Status: The Corossol Island Migratory Bird Sanctuary lies within this key site. Almost the entire coastline of the key site has been designated as Aquatic Birds Concentration Areas by the Quebec government (*Aires de concentration d'oiseaux aquatiques*; MELCC 2021). Baie des Sept-Îles and the seven islands also constitute an Important Bird Area, due to their importance to seabird colonies and for migrating Surf and Black scoters (QC162; IBA Canada 2021).

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Key Site 56: Mingan Islands–Pointe Pashashibou, Quebec

Location: 50°11'28"N, 63°16'28"W

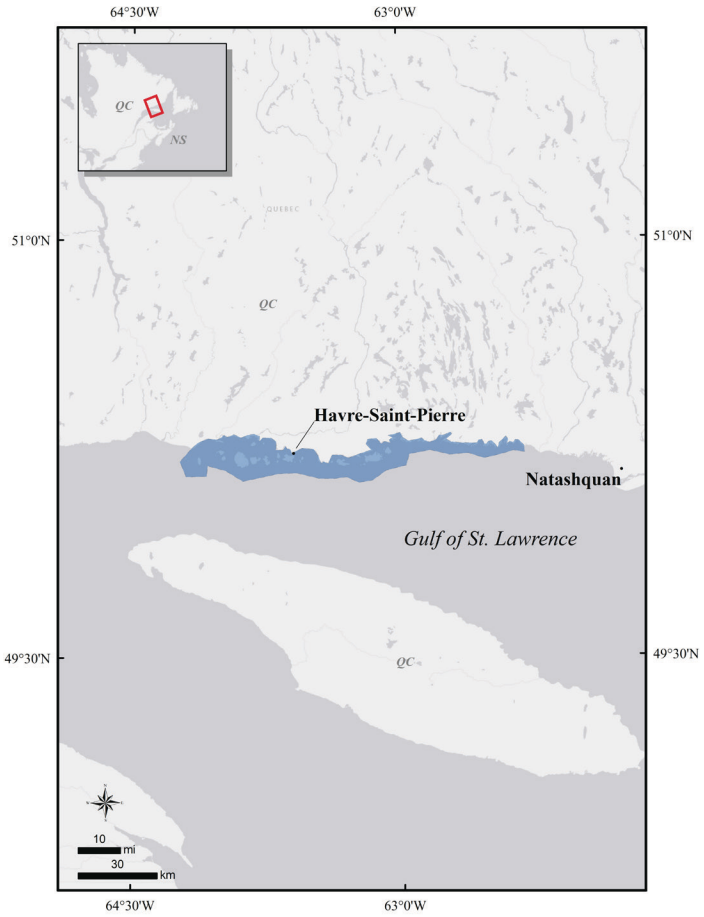
Size: 1328 km^2

Description: This key site represents a 150 km-long stretch of coastline along the north shore of the Gulf of St. Lawrence that is entirely within the Mingan Archipelago National Park Reserve. In its western half, from about Longue-Pointe-de-Mingan to 20 km west of Baie-Johan-Beetz, this key site encompasses a huge plateau of limestone bedrock consisting of 47 islands, most of which are forested, and islets, rocks, cays, and shoals. Most of the islands in the western half are located 1 to 6 km offshore. In its eastern half, from about 20 km west of Baie-Johan-Beetz to Pointe Pashashibou, the coast is mostly flat, granitic, and includes deep bays as well as numerous small islands, islets, and rocky shoals, most of which are more than 1 km from coast; terrestrial features consist mainly of rocky outcrops, mosses, and lichens.

Climate on the north shore is characterized by cold, long winters and short, cool summers. Waters around all the islands are biologically rich due to cold water upwellings, bringing great amounts of nutrients to the surface. The shoreline is generally locked up in land-fast ice during the winter, with areas of open water within the Mingan Archipelago and pack ice in surrounding waters. The largest village in the key site is Havre-Saint-Pierre (about 3000 inhabitants).

Precision and Correction of Abundance Estimates Presented: Abundance estimates for scoters and eiders from spring and molting surveys (Rail and Savard 2003, Bolduc and Savard 2011), and the winter surveys for Common Eider, have been adjusted to account for observer error in flock size estimation and incomplete detection following methods developed by Bordage et al. (1998). Otherwise, abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should be treated as minimum estimates.

Biological Value: This key site is of high value for American Common Eiders (*Somateria mollissima dresseri*), which breed on the islands in large numbers during summer, and for Northern Common Eiders (*S. m. borealis*) that winter in the Mingan Archipelago. Both subspecies overlap for a few weeks in spring and fall. In spring, *S. m. dresseri* arrive in the key site from more southerly wintering grounds and *S. m. borealis* leave the area for more northerly breeding grounds; in fall, the opposite movement occurs, *S. m. borealis* replacing *S. m. dresseri* on site, so that there are Common Eiders present almost all year long in this key site.



In 2008, 2150 Common Eider nests were estimated on heath-covered islands and 4200 nests on forested islands of the western half of the key site (Troutet 2015, Troutet and Samson 2015). In 2010, 2135 nests were counted in the eastern half of the site (Y. Troutet, Parks Canada, pers. comm.), excluding two migratory bird sanctuaries that hosted 1650 nests and 3000 nests in 2015 (Canadian Wildlife Service unpublished data). Therefore, a rough estimate of at least 13,000 pairs breed in this key site; this corresponds to approximately 10% of the continental breeding population of *S. m. dresseri*. Two islands within the key site are of particular importance for breeding

Common Eiders, Innu and Fantôme, with 100 nests per hectare and 66 nests per hectare, respectively (Troutet and Samson 2015). A few pairs of Common Goldeneye (*Bucephala clangula*) and Common and Red-breasted mergansers (*Mergus merganser* and *M. serrator*) also nest near shallow ponds on the islands (Quebec Breeding Bird Atlas 2018).

Use of the key site during winter varies within and among years depending on the extent of sea ice cover. Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 23,131 Common Eider in 2009 to 55,226 in 2003. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 41,105 Common Eider were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2022).

Subspecies composition of wintering Common Eiders includes *borealis*, *dresseri*, and hybrid *borealis-dresseri*, but predominantly *borealis* (Canadian Wildlife Service unpublished data). Birds from the *borealis* population occupy the site for up to six months, from December until May (Mosbech et al. 2006). Long-tailed Ducks (*Clangula hyemalis*) are also seen in winter in groups of a few dozen to a few hundred. Red-breasted Mergansers, Common Goldeneyes, and King Eiders (*Somateria spectabilis*) are present in smaller numbers (Canadian Wildlife Service unpublished data).

During spring and fall migration, this key site supports large numbers of sea ducks (Lamb et al. 2020), especially Common Eiders, scoters, Long-tailed Ducks, and Red-breasted Mergansers. In spring, aerial surveys conducted between 2004 and 2010 provided minimal estimates of abundance within the key site: 11,500 eiders, 2800 scoters (*Melanitta* spp.), 800 mergansers (*Mergus* spp.), 400 Long-tailed Ducks, and more than 200 goldeneyes (*Bucephala* spp.) (Canadian Wildlife Service unpublished data). These counts do not account for turnover rates and the number of birds that use the site are much greater. Surf Scoters (*Melanitta perspicillata*) stage there in the fall (SDJV 2015, Lamb et al. 2020).

The key site is also an important molting area. More than 10,000 male Common Eiders molted there in August 2010 (Bolduc and Savard 2011). Other sea duck species using the key site in July and August include a few hundred each of Red-breasted Merganser, Surf Scoter, and White-winged Scoters (*M. fusca* and *M. perspicillata*; RQO et al. 2018). A few Harlequin Ducks (*Histrionicus histrionicus*), a species of concern, have been reported during fall around the Mingan Islands (RQO et al. 2018).

Sensitivities: Climate change could change vegetation characteristics on nesting islands (Parks Canada 2011). Abundant food resources allow for high seasonal use by sea ducks in this portion of the Gulf of St. Lawrence. Changes in these food resources (e.g., range shifts or local extinctions) could affect the entire food web; for example, blue mussels (*Mytilus edulis*) in the Gulf of Maine have already experienced a decrease of more than 60%, partly due to the increasing sea temperature (Sorte et al. 2017). Also, stretches of coast along the Gulf of St. Lawrence face erosion attributed to climate change, mostly related to reductions in ice cover (Bernatchez et al. 2008). Eiders nesting on heath-covered islands are more vulnerable than eiders breeding on forested islands because they are more exposed to wind and cold, predators, and poaching (Parks Canada 2011). Breeding and molting sea ducks are subject to disturbance from recreational boating and kayaking in the Mingan Islands; when disturbed, Common Eider crèches become more vulnerable to avian predators (Bolduc and Guillemette 2003). Aboriginal traditional eider egg collection occurs in portions of this key site.

Potential Conflicts: The port of Havre-Saint-Pierre receives large ships and barges as well as cruise liners; there is also an ilmenite ore terminal in the port. An oil spill happened in this port and the surrounding areas in April 1999: only 49 tons of bunker C were spilled from an ore carrier but local meteorological conditions aggravated the situation and many dozens of kilometers became oiled; about 1000 spring-staging Common Eiders were killed (Roberge and Chapdelaine 2000). Risks of aquatic pollution (e.g., chemical or oil spills), as well as disturbance and bird collisions, would undoubtedly increase as maritime traffic in the St. Lawrence Seaway increases, as proposed through the Quebec maritime strategy for 2020–2025 (MTQ 2021). This key site falls within a national park reserve that hosts about 35,000 visitors from June to August each year (Parks Canada 2011). Recreational boating and kayaking is an important activity within the National Park which disturbs eiders during the brood-rearing and molting periods. Poaching of seabird eggs and of ducks (mostly eiders)

has decreased due to increased surveillance by park personnel but remains a threat in this part of the Gulf of St. Lawrence.

Status: The Mingan Archipelago National Park Reserve (under Parks Canada), covers this entire key site. There are Migratory Bird Sanctuaries at Betchouane Archipelago (462 ha of islands and 500 m of surrounding marine waters) and the Watshishou Migratory Bird Sanctuary (10,673 ha; 90% water and 10% rocky outcrops). Both were established in 1925 to protect nesting areas for Common Eider and seabird colonies. Twenty-five Aquatic Birds Concentration Areas, designated by the Quebec government, cover about 75% of the coastline of this key site (*Aires de concentration d'oiseaux aquatiques*; MELCC 2021). There are eight Important Bird Areas included in this key site, mostly for their importance to seabird colonies (QC066, QC072, QC073, QC074, QC076, QC078, QC149, and QC159; IBA Canada2021).

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Common Eiders wintering in sea ice. Photo: Christine Lepage.

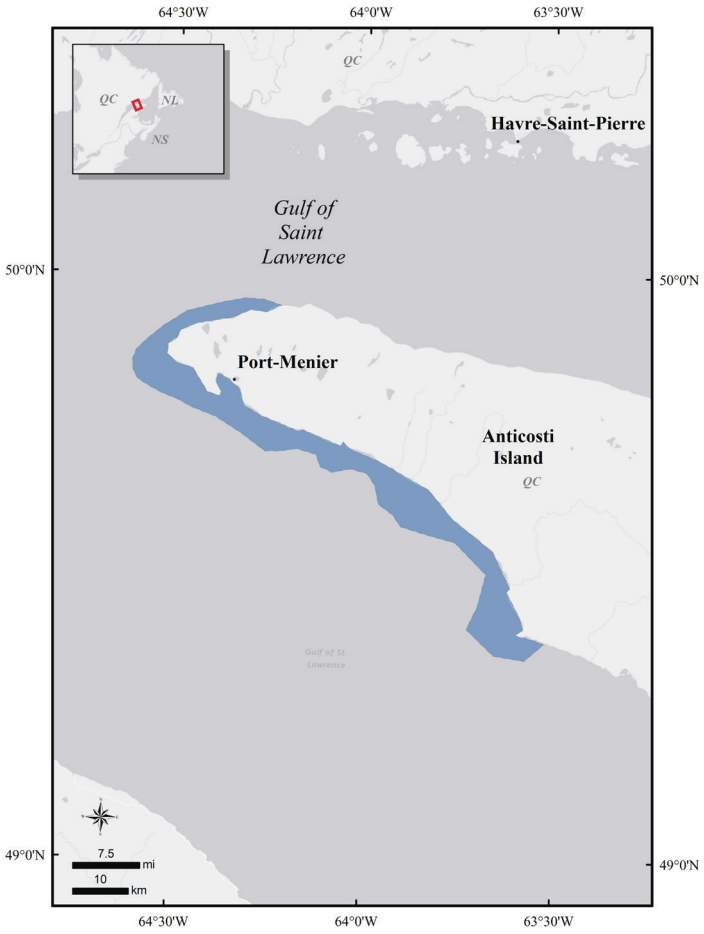
Key Site 57: Western–Southwestern Anticosti Island, Quebec

Location: 49°41'40"N, 64°3'51"W

Size: 630 km^2

Description: Anticosti Island is a 222-km-long island situated at the intersection of the St. Lawrence Estuary and the Gulf of St. Lawrence where it empties in the Atlantic Ocean. The key site consists of waters adjacent to the west and south coasts of the island, from Cap-de-Rabast north to Sud-Ouest Point, a coastal stretch approximately 130 km long by 5 km wide. Anticosti Island has an overall low topography, and the south side presents very gradually sloped underwater limestone plateaus. Several large but shallow rivers (e.g., Jupiter, à la Loutre, Sainte-Marie, Bec-Scie, aux Canards) along the south side of Anticosti empty into the gulf. Anticosti Island has only one village, Port-Menier, with about 250 inhabitants.

Coastal waters generally freeze in winter, but a few areas remain ice-free at both ends of the island where currents and winds usually prevent icing. Large stretches along the south shore also remain ice-free some years, depending on winter severity.



Precision and Correction of Abundance Estimates Presented: Visual estimates of scoters and eiders from spring and molting surveys have been photo-corrected (Rail and Savard 2003, Bolduc and Savard 2011). Numbers of birds from the Common Eider winter survey have also been photo-corrected, unless stated otherwise. Otherwise, abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Thus, they should be treated as minimum estimates.

Biological Value: This key site is particularly important to sea ducks during the molting and wintering periods. Large contingents of male Common Eiders (*Somateria mollissima dresseri*) spend the molting period at the edge of the extensive underwater plateaus of Anticosti Island; 35,000 and 25,000 Common Eiders were estimated in the key site from surveys conducted in 1998 and 2010, respectively (Rail and Savard 2003, Bolduc and Savard 2011). Use of the key site during winter varies within and among years depending on the extent of sea ice cover. Winter surveys conducted in this area by the Canadian Wildlife Service produced estimates ranging from 4505 individuals in 2018 to 29,044 individuals in 2012. Over six years of winter survey data (2003, 2006, 2009, 2012, 2015, and 2018), an average of 12,216 individuals were estimated in this area (Canadian Wildlife Service Waterfowl Committee 2020).

Female Common Eiders molt in the key site. Ground and boat surveys in the key area in July and August 2005 found 3000 molting Red-breasted Mergansers (*Mergus serrator*; Lepage 2013), 2000 molting Surf Scoters (*Melanitta perspicillata*; Lepage and Savard 2013), and 150 molting Harlequin Ducks (*Histrionicus histrionicus*, a species of special concern in eastern Canada; Lepage et al. 2015).

Northern Common Eiders (*S. m. borealis*) are present from early December to late May (Mosbech et al. 2006). Also present during this period are a few hundred Long-tailed Ducks (*Clangula hyemalis*), Red-breasted Mergansers, and Common and Barrow's

goldeneyes (*Bucephala clangula* and *B. islandica*). A few King Eiders (*Somateria spectabilis*) can usually be observed mixed in with Common Eider flocks (Canadian Wildlife Service unpublished data).

Aerial surveys conducted during spring 2004 to 2010 reported only about 200 Common and Red-breasted mergansers in the key site (Canadian Wildlife Service unpublished data). In fall, molting *S. m. dresseri* can stage at this site from late October to early November before migrating to more southerly wintering grounds along the Atlantic coast. This site is also used as a fall staging stopover by *S. m. borealis*.

Sensitivities: Common Eiders feed almost exclusively on blue mussels (*Mytilus edulis*) during molt and winter, and the potential decline of this food resource could have major consequences. For instance, a mussel decrease of more than 60% in the Gulf of Maine has been attributed in part to increasing sea surface temperature (Sorte et al. 2017).

Potential Conflicts: Although Anticosti Island does not have any major ports, thousands of ships and barges pass by yearly. The St. Lawrence Seaway is one of the busiest waterways in North America, therefore, there is a risk of oil spills, disturbance, and bird collisions in this key site. This risk may increase given the intention of the Quebec government to increase maritime traffic in the St. Lawrence Seaway (MTQQ 2021). Given the large numbers of molting and wintering sea ducks using this key site, any gill net fisheries could result in significant by-catch casualties.

Status: There are four Aquatic Birds Concentration Areas, a provincial designation, giving a certain level of protection to about 60% of the coastline of this key site (MELCC 2021).

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Key Site 58: Southeastern Anticosti Island, Quebec

Location: 49°3'5"N, 61°54'8"W

Size: 368 km^2

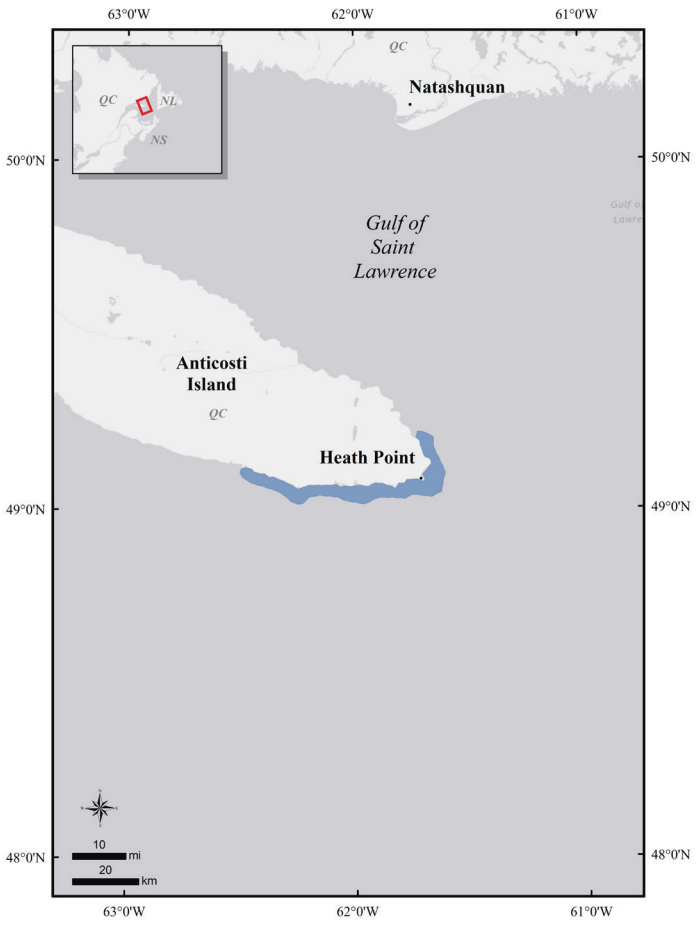
Description: The 222-km long Anticosti Island is situated at the intersection of the St. Lawrence River and the Gulf of St. Lawrence, which empties in the North Atlantic Ocean. The key site is a 75-km long by 5-km wide stretch of coastal waters from Dauphiné Point to Falaise aux Goélands along the south and east coasts of the island. This stretch of water consists of extensive underwater limestone plateaus and includes the mouth of a few large but shallow rivers (e.g., Dauphiné, Bell) that empty into the Gulf.

Coastal waters may freeze in winter depending on winter severity, but strong currents and winds usually prevent complete icing at Heath Point, which typically has ice-free patches.

Precision and Correction of Abundance Estimates Presented: For the Common Eider winter survey, numbers have been photo-corrected. Otherwise, abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should therefore be treated as minimum estimates.

Biological Value: This key site is an important Common Eider (*Somateria mollissima borealis*) overwintering area. Other sea ducks that frequent this key site during winter include Long-tailed Duck (*Clangula hyemalis*), Red-breasted Merganser (*Mergus serrator*), and Common Goldeneye (*Bucephala clangula*). Some King Eiders (*Somateria spectabilis*) are often present within Common Eider flocks (Canadian Wildlife Service unpublished data).

Use of the key site by breeding sea ducks has not been documented (Quebec Breeding Bird Atlas 2018) and use during molt and spring is apparently light. Common Eiders (*S. m. dresseri*) transit through this key site (Lamb et al. 2020), but numbers are not known. Aerial surveys conducted in the second half of May 2004–2010 along the St. Lawrence River documented daily totals of about 600 Long-tailed Ducks, 200 Common and Red-breasted mergansers, 200 Common Goldeneyes, and 100 scoters



(*Melanitta* spp.) (Canadian Wildlife Service unpublished data).

Sensitivities: Because Common Eiders forage almost exclusively on blue mussels (*Mytilus edulis*) during winter, variation in numbers of this benthic prey could affect numbers of eiders using the key site.

Potential Conflicts: Given that the St. Lawrence Seaway is one of the busiest waterways in North America and that thousands of ships and barges pass by Anticosti Island yearly, the risk of oil spills, disturbance, and ship strikes in this key site are of concern. By-catch in gill net fisheries is also a concern.

Status: The entire coastline of this key site designated as Aquatic Birds Concentration Areas recognized by the Quebec government (MELCC 2021). On the adjacent land, the Réserve écologique de la Pointe-Heath was established mostly to protect the numerous peatlands.

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Key Site 59: Port-Daniel–Newport Point, Quebec

Location: 48°11'28"N, 64°49'58"W

Size: 55 km^2

Description: This key site lies at the northeast mouth of Chaleur Bay along the south coast of the Gaspé Peninsula, Quebec. It extends from Port-Daniel-Ouest to Newport Point and measures about 40 km long by 3 to 5 km wide. Baie de Port-Daniel includes several coves, points, and cliffs. Two small rocky islets, named Les Îlots, are important to sea ducks. Coastal cliffs are made of sedimentary rocks that erode easily, and the sea bottom varies from coarse sand to sand mixed with fine sediments. There is an estuarine lagoon (170 ha) in Baie de Port-Daniel with eelgrass beds. On lands adjacent to the key site, human density is low (about 2200 residents) and most of the landscape is rural.

Generally, Chaleur Bay is protected from winds and in summer experiences a warmer microclimate relative to adjacent areas of the Gulf of St. Lawrence. The pelagic zone is one of the most productive in the Gulf of St. Lawrence due to the abundance of zooplankton. Ice usually starts to form in late December and breaks up in mid- to late March in that section of the Chaleur Bay. However, in years with mild weather, some coastal areas remain ice-free year-round.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented have not been adjusted to account for incomplete detection or other biases. Abundance estimates are thus minimum estimates of population size.

Biological Value: This key site's primary importance is because of the year-round presence of Harlequin Duck (*Histrionicus histrionicus*), whose eastern population is listed as of "special concern" by the Committee on the Status of Endangered Wildlife in Canada. Spring staging scoters (*Melanitta* spp.) also abound in the area. Blue mussels (*Mytilus edulis*) and softshell clams (*Mya arenaria*) are abundant prey available to sea ducks there (Gagnon 1997, Perry and McAloney 2005).

In February, counts of Harlequin Ducks ranged from 40 in 2009 to 275 most recently in 2020 (Robert 2013, Canadian Wildlife Service unpublished data).

Harlequin Ducks are usually present at Pointe du Sud-Ouest near Port-Daniel, and at Pointe au Maquereau. Other sea duck species present in small numbers during winter include Barrow's Goldeneye (*Bucephala islandica*), Common Goldeneye (*Bucephala clangula*), Red-breasted Merganser (*Mergus serrator*), and Long-tailed Duck (*Clangula hyemalis*) (Canadian Wildlife Service unpublished data).

The Port-Daniel–Newport sector has been identified as a spring staging area of great importance to Harlequin Ducks, which breed regionally in inland rivers (Robert et al. 2008, Quebec Breeding Bird Atlas 2018). Counts of 30 to 35 individuals are frequent in March and April (RQO et al. 2018, Canadian Wildlife Service unpublished data), although actual numbers of individuals may be greater because Maine wintering birds also pass through in spring (Robert et al. 2008). Hundreds of Common Eiders (*Somateria mollissima*), scoters (mostly Black and Surf scoters [*Melanitta americana* and *M. perspicillata*]), Long-tailed Ducks, and Common Mergansers

(*Mergus merganser*) also transit on a regular basis along this coast in April and May, as well as dozens of Common Goldeneyes and Red-breasted Mergansers (Lamb et al. 2020, Canadian Wildlife Service unpublished data). Overall, the total number of sea ducks using the key site during spring migration may be 15,000 to 20,000 individuals (C. Lepage, Canadian Wildlife Service, pers. comm.).

Les Îlots, two small rocky islets near Newport, host one of the few small colonies of Common Eiders (*Somateria mollissima dresseri*) along the south coast of the Gaspé Peninsula; 570 pairs bred there in 2018 (BIOMQ 2019). Common Goldeneye and Common Merganser nest near the mouth of the Port-Daniel River (Quebec Breeding Bird Atlas 2018).

Small Common Eider, Common Merganser, and Red-breasted merganser molt there (Quebec Breeding Bird Atlas 2018), but the key site is an important molting location for Harlequin Duckswith 56-86 individuals counted in 1989, 2003, and 2004 (Langlois 2006, Gilliland et al. 2002, S. Gilliland, Canadian Wildlife Service unpublished data). In late August, some female Harlequin Ducks with broods move downriver from breeding areas on the Gaspé Peninsula and reach the sea in Chaleur Bay, including the Port-Daniel and Newport sector (Brodeur et al. 2008). About 100 Harlequin Ducks are present by late August and numbers remain relatively stable until mid-October (Langlois 2006). Smaller numbers of other sea duck species may molt there, including Common Eider and Common and Red-breasted merganser (Quebec Breeding Bird Atlas 2018).

Nearly 300 Harlequin Ducks congregate there between mid-October and mid-November (Langlois 2006). This represents at least 9% of the population wintering in eastern North America (COSEWIC 2013) but likely more considering probable turnover among individuals. Scoters are far less abundant during fall than spring; groups of 1000 Red-breasted Mergansers, 200 Common Eiders, and 150 Common Goldeneyes have been observed during fall (Canadian Wildlife Service unpublished data).

Sensitivities: This key site lies in a portion of the Gaspé Peninsula subject to bacterial contamination of coastal waters from municipal wastewater and agricultural runoff. Consequently, local shellfish have high concentrations of toxins, and human harvest of softshell clams and mussels is often prohibited (Working Group on the State of the St. Lawrence Monitoring 2015). This is also of concern for sea ducks that feed on these shellfish.

Potential Conflicts: There are concerns that Chaleur Bay will become polluted from sulfur dioxide released in the atmosphere by the new McInnis cement factory at Port-Daniel-Gascon. Because Harlequin Ducks are of special concern and are present almost all year in this key site, and because they are very site-faithful, coastal development (aquaculture and fisheries) and human use (boat traffic, recreational activities), particularly near the mouth of the Port-Daniel River, could be detrimental to the species.

Status: Six Aquatic Birds Concentration Areas, established by the Quebec government, cover about half the coast within the key site, including Les Îlots (*Aires de concentration d'oiseaux aquatiques*; MELCC 2021). The Shigawake-Newport Important Bird Area, occupying most of the key site, was established largely based on the great numbers of sea ducks during spring migration and the year-round presence of the eastern Harlequin Duck (QC031; IBA Canada 2021).

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Key Site 60: Chaleur Bay, New Brunswick and Quebec

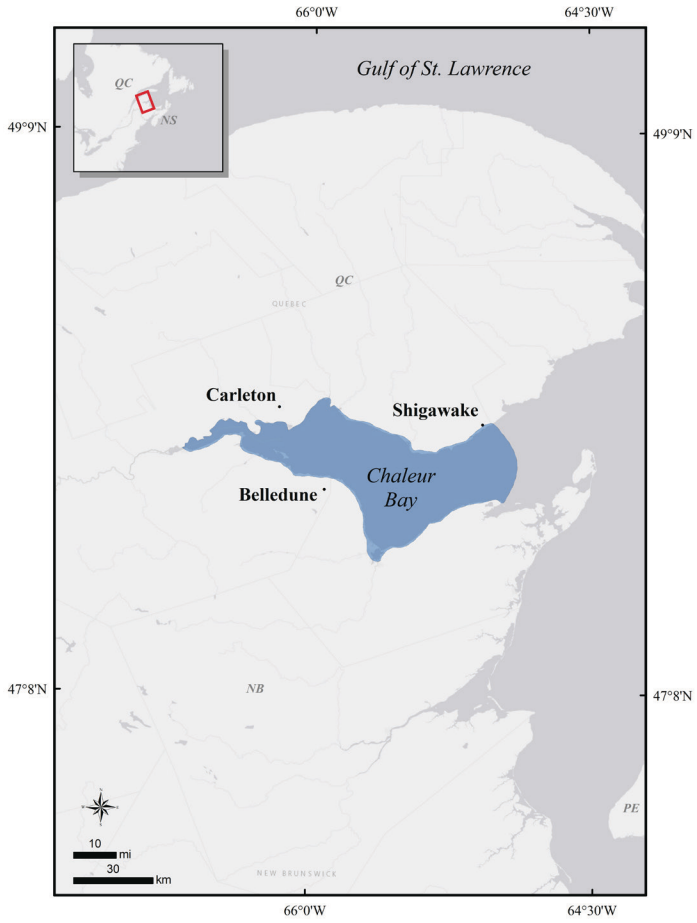
Location: 47°58'37"N, 65°45'37"W

Size: 3300 km^2

Description: Chaleur Bay is the largest bay in the Gulf of St. Lawrence, lying between the provinces of New Brunswick and Quebec. This key site extends east in New Brunswick from Campbellton towards Caraquet and in Quebec from Listuguj to Shigawake. Several large rivers empty into the bay, including the Restigouche, Nepisiguit, Matapédia and Cascapédia rivers. This site includes a few islands, with the largest being Heron Island, a recognized important colonial nesting waterbird site (IBA Canada website).

Precision and Correction of Abundance Estimates Presented: Estimates of Black and Surf scoters from aerial surveys have been photo-corrected. Other estimates of sea ducks during spring migration are based on shoreline transects surveyed by helicopter, without any visibility correction factor applied, and should therefore be considered minimum estimates.

Biological Value: This site is important to several species of sea ducks, especially during spring migration (Lamb et al. 2020). It is of particular importance to the Atlantic population of Black Scoters (*Melanitta americana*) because most adults are thought to stage there for two to three weeks before moving to northern breeding grounds (SDJV 2015, Lamb et al. 2021, Bowman et al. 2021). Indeed, Black Scoters are the most common scoter species staging at this site (representing more than 90% of scoters), with an estimated 53,200 individuals on a given day (McAloney et al. 2005). However, this estimate only provides a daily snapshot, considering that most of the Atlantic population passes through Chaleur Bay during the spring migration period (SDJV 2015, Lamb et al. 2021). Telemetry data suggest that areas of highest use by sea ducks occurs on the Quebec side of the bay along the Escuminac shore and in Cascapedia Bay and around the west side of Heron Island on the New Brunswick side. They use this site to feed on blue mussel (*Mytilus edulis*), Baltic clam (*Macoma balthica*), and herring spawn (Perry and McAloney 2005). Data collected as part of the Sea Duck Joint Venture's Atlantic and Great Lakes Sea Duck Migration Study show that birds arrived



as early as April 27, with a mean arrival date of May 2. Mean departure date was May 11, although some birds delayed departure until June 15 (n = 47; Gilliland et al. unpublished data). An earlier study found the migration peak for scoters in the Chaleur Bay occurred on May 3 (Falardeau and Savard 2003).

This site is also important to Surf Scoter (*Melanitta perspicillata*) during spring migration; 3300 individuals have been estimated on a given day from aerial surveys (McAloney et al. 2005), but considering the bird turnaround during migration, more Surf Scoters obviously use this area (Lepage et al. 2015). Based on satellite telemetry, the Belledune–Pointe-Verte sector is frequented by White-winged Scoters (*Melanitta deglandi*) at this time of year (SDJV 2015). Additional sea duck species staging at this key site during spring migration include Long-tailed Duck (*Clangula hyemalis*), Common Merganser (*Mergus merganser*), and Red-breasted Merganser (*Mergus serrator*); at least 10,000 individuals of each species has been estimated, along with about 5000 Common Goldeneyes (*Bucephala clangula*) (Canadian Wildlife Service unpublished data).

During the breeding season, 131 pairs of Common Eider (*Somateria mollissima dresseri*) were counted on Laviolette Island in the Saint-Omer Migratory Bird Sanctuary in June 2018 (BIOMQ 2019). Scattered pairs of Common Goldeneyes, Hooded Mergansers (*Lophodytes lophodytes*), and Common Mergansers nest near the mouth of large rivers on the south shore of the Gaspé Peninsula (Quebec Breeding Bird Atlas 2018), adjacent to the key site. Red-breasted Mergansers historically bred along this shore as well, but no evidence of recent breeding was noted during field work in 2010–2014 (Quebec Breeding Bird Atlas 2018).

This bay is also used as a regular wintering area for a component of the eastern population of the Barrow's Goldeneye, a species of special concern. The Quebec coast of Chaleur Bay annually hosts about 10 to 14% of the wintering population (Environment Canada 2013; Canadian Wildlife Service unpublished data).

Sensitivities: Food resource availability and quality (e.g., blue mussels, herring spawn) could be influenced by pollution as well as by aquaculture.

Potential Conflicts: Disturbance associated with boat traffic remains a potential conflict. The development of a petroleum handling facility at the port of Belledune, New Brunswick, will result in increased boat traffic and risk of oil spills. Conflicts exist with aquaculture, particularly near Carleton where scoters feed at mussel farms during spring migration. Predation of mussel lines has led growers to deter birds and to seek measures to protect their installations (Richman 2013). Because aquaculture sites are often established in natural sea duck feeding areas, hazing activities can exclude birds from some of their traditional, important, feeding sites.

Status: The key site includes the Saint-Omer Migratory Bird Sanctuary along the north shore of the bay; this sanctuary was mostly designated to protect nesting colonial birds, such as gulls and eiders (ECCC 2017). There are four Important Bird Areas identified within the bay, including the Restigouche River Estuary, which was identified because of its importance to Black Scoters. The other three sites—Heron Island, Banc de Carleton, and Pokeshaw Rock—are important for colonial nesting water birds (e.g., Double-crested Cormorant, *Phalacrocorax auritus*) (IBA Canada website). The province of Quebec has also identified 20 *Aires de concentration d'oiseaux aquatiques* disseminated along the Chaleur Bay north shore (90.5 km^2 of coastline; MELCC 2021).

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Key Site 61: Îles de la Madeleine (Magdalen Islands), Quebec

Location: 47°31'14"N, 61°35'37"W

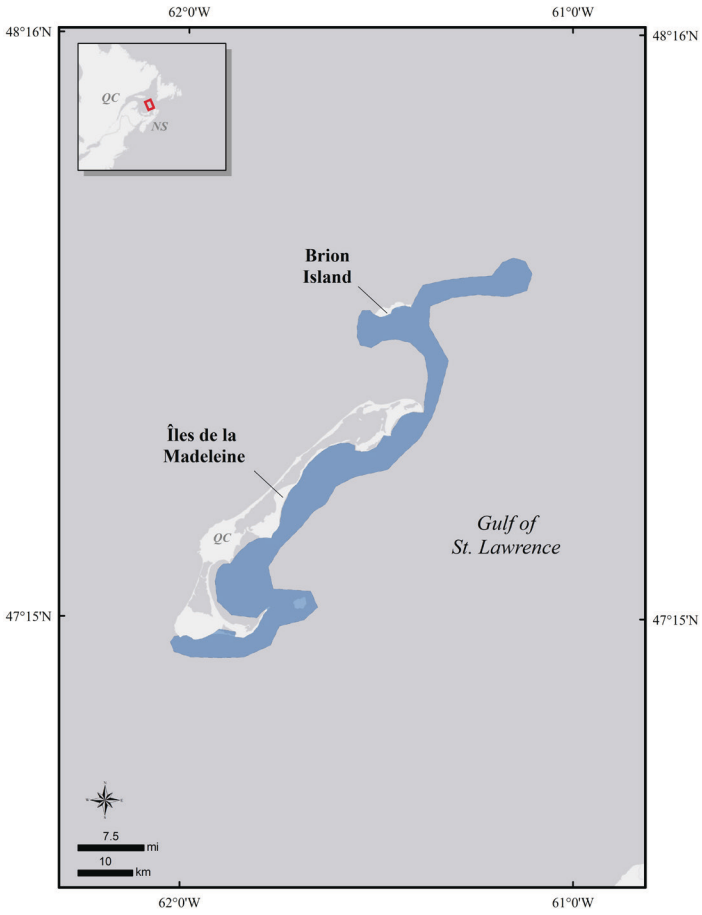
Size: 729 km^2

Description: The Îles de la Madeleine, unofficially known as the Magdalen Islands, are in the southern part of the Gulf of St. Lawrence, Quebec, Canada. More precisely, this small, isolated archipelago lies on an undersea ridge named the Magdalen Shallows, between the Gaspé Peninsula (Quebec) and Cape Breton Island (Nova Scotia), about 120 km north of Prince Edward Island and 150 km southwest of Newfoundland. It is made up of six or seven (disputably) inhabited islands linked by either bridges or dunes, and of four other islands, including Brion Island, separated from the principal group. Several other tiny islands and rocks are also included in the archipelago. About 12,000 inhabitants live on the archipelago. The sand substrate is omnipresent on the islands: tombolos, sand bars, spits, and dune systems occupy most of the landscape. The key site consists of a narrow stretch of water, about 200 km long, to the east and south of the principal group of islands, as well as southeast of Brion Island and around the Rochers aux Oiseaux (Bird Rocks); the latter is situated about 30 km northeast of the principal group of islands. The key site also includes shorelines of islands and rocky shoals adjacent to the nearshore waters.

The Îles de la Madeleine are situated next to the Laurentian Abyss (> 300 m deep), where benthic invertebrate diversity and primary productivity is high with upwelling and mixing of water (UQAR 2014). The vast water masses that surround the archipelago create a moderate climate, with currents that keep large stretches of water ice-free during winter.

Precision and Correction of Abundance Estimates Presented: Estimates of eiders counted during the Common Eider winter survey have been photo-corrected, unless stated otherwise. Otherwise, abundance estimates presented have not been adjusted to account for incomplete detection or other biases. Therefore, abundance estimates should be treated as minimum estimates.

Biological Value: This key site is one of the most important Common Eider (*Somateria mollissima*)



overwintering areas in eastern Canada. A triennial winter Common Eider survey in the Gulf of St. Lawrence estimated 12,000 to 19,000 eiders in the key site in 2006–2015 (photo-corrected; four surveys), and a 2018 survey provided a preliminary visual estimate of 32,400 birds in ice-free waters (Canadian Wildlife Service unpublished data). Depending on annual ice conditions, birds forage in large groups near Brion Island, from south of Île de l'Est to south of Pointe-Basse, in the Baie de Plaisance, around Île d'Entrée, and south of Île du Havre Aubert (Canadian Wildlife Service unpublished data). Based on measurements of heads collected in the key site during the 2016–2017 hunting season (n = 248), 90% of wintering Common Eiders were from the *dresseri* population, 4% *borealis*, and 6% intergrade *borealis-dresseri* (Canadian Wildlife Service unpublished data). Also reported during the winter Common Eider survey in February 2013 were 125 White-winged Scoters (*Melanitta deglandi*) and 80 Surf Scoters (*Melanitta perspicillata*) east of Brion Island (Canadian Wildlife Service unpublished data). A few King Eiders (*Somateria spectabilis*) were

also observed among Common Eider flocks. Groups of dozens to hundreds of Common Goldeneyes (*Bucephala clangula*), Long-tailed Ducks (*Clangula hyemalis*), and Red-breasted Mergansers (*Mergus serrator*) are regularly seen along the shores during winter (Fradette 1992, RQO et al. 2019); their presence and numbers depend on the annual ice conditions around the archipelago. Long-tailed Ducks are also present far offshore (Canadian Wildlife Service unpublished data) since they can dive to 60 m deep to feed on pelagic prey. Up to 10 Harlequin Ducks (*Histrionicus histrionicus*) from the eastern population, listed as of special concern by the Committee on the Status of Endangered Wildlife in Canada, have been reported during winter at a few spots along the principal group of islands (RQO et al. 2019).

Due to the strategic position of the Îles de la Madeleine in the middle of the Gulf of St. Lawrence, many ducks transit through during spring and fall migrations (Lamb et al. 2020). Peak eider abundance occurs in mid-March, and birds are seen until May (Fradette 1992). Common Goldeneye, Long-tailed Duck, and Red-breasted Merganser are common in spring; for instance, thousands of Long-tailed Ducks are observed in the coastal zone, including the Baie de Plaisance (Fradette 1992). Surf and White-winged scoters are rare migrants during spring (Fradette 1992), contrary to fall. Up to 62 Harlequin Duck were observed at Old Harry Point in 2012 (RQO 2019).

In fall, Common Eiders pass through the archipelago and some remain there for the winter. Long-tailed Ducks increase in abundance from mid-October to mid-December (Fradette 1992). Scoters migrate through the key site at the end of September and in October, with White-winged Scoter more abundant than Surf Scoter (Fradette 1992). Black Scoters (*Melanitta americana*) have also been reported during fall in groups of up to 300 individuals, but less frequently and apparently later (i.e., from mid-October to December) (RQO et al. 2019).

Few sea ducks currently breed in or adjacent to the key site (Quebec Breeding Bird Atlas 2018; but see Fradette 1992 and Munro 1996).

There is little documentation of sea ducks molting in the key site. However, in the past groups of thousands of nonbreeding White-winged Scoters were observed in the Baie de Plaisance and south of the Île du Havre aux Maisons in late June to early July, with some birds staying well into the molting period (Fradette 1992). Birders recently reported groups of 100 to 250 White-winged Scoters in July and August scattered throughout the archipelago (RQO et al. 2019).

Sensitivities: Climate change processes are increasing coastal erosion in the Îles de la Madeleine: 68% of the coast is being affected. In addition, winter ice cover and ice season length are decreasing in the Gulf of St. Lawrence, and the frequency and severity of winter storms are predicted to increase in the future, further exacerbating coastal erosion (Bernatchez et al. 2008). By 2060, coastal erosion is predicted to affect 81% of the coast due to storms, subsidence, and increased sea level (Bernatchez et al. 2012). Availability and quality of food resources for sea ducks could be influenced by shellfish overharvesting, pollution, biogeographic dynamics, environmental events (e.g., winter storms), and ice conditions in winter.

Potential Conflicts: Oil pollution is a concern due to the proximity of the Îles de la Madeleine to the main shipping route to and from the St. Lawrence Seaway. Illegal oil dumping (e.g., bilge wastes) and accidental spills threaten the fragile islands' ecosystem. For instance, in 1970, the barge Irving Whale spilled bunker oil between Prince Edward Island and the Îles de la Madeleine, oiled about 5000 Common Eiders, and contaminated 35 km of the archipelago's coasts (Brown and Lock 2003). As recently as 2016, bags of contaminated sand, collected during cleanup, were found buried in some of the Îles de la Madeleine dunes.

Overfishing could disrupt the food chain and affect sea duck food resources, particularly bivalves. Aquaculture is also active in the key site (see Appendix 1); as of 2016, there were four producers for blue mussels, scallops, and oysters, as well as developmental activities to grow algae commercially (Bourque 2016). Most aquaculture operations are set up in lagoons, but there is one offshore site in the Baie de Plaisance where Common Eiders overwinter. Studies have been conducted to try to mitigate predation of cultivated mussels by Common Eiders, as some local producers lost their entire crop. The Quebec government wishes to increase sea product exports under a durable framework according to the 2018–2025 bio-food strategy (MAPAQ 2018). Coastal

habitats on the Îles de la Madeleine are subjected to important recreational activities (e.g., all-terrain vehicles on beaches) that can disturb breeding ducks and displace local foraging and migrating flocks.

Status: Pointe de l'Est National Wildlife Area, situated at the northeastern tip of the principal group of islands, was created in 1978 by Environment Canada and covers an expanse of dunes, barrens, and ponds. It was designated to protect important habitats that serve as staging areas for migratory birds. The Bird Rocks Migratory Bird Sanctuary (650 ha), declared in 1919 by the Canadian government, lies approximately 30 km north of the principal archipelago, near Brion Island, and consists of three main rocky islands: the Rocher aux Oiseaux and two smaller rocky islands together known as Rochers aux Margaulx. Waters within 1 km of the islands are included in the sanctuary. Most of Brion Island is protected as an ecological reserve, managed by the provincial government; it is host to 166 bird species, of which more than half breed locally. There are two Aquatic Birds Concentration Areas, one in the principal group of islands and the other near Brion Island (*Aires de concentration d'oiseaux aquatiques*; MELCC 2021). Nine Important Bird Areas overlap the Îles de la Madeleine key site, but two are more relevant to sea ducks, namely the Brion Island and the Rochers aux Oiseaux IBAs (IBA Canada website). The Îles de la Madeleine and surrounding waters are proposed for a Protected Marine Area, both by the federal and provincial governments, due to the abundance of wildlife and high biodiversity there (see UQAR 2014).

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American Common Eiders. Photo: Christine Lepage.

Key Site 62: Eastern Shore, Nova Scotia

Location: 44°53'26"N, 62°11'55"W

Size: 45 km^2

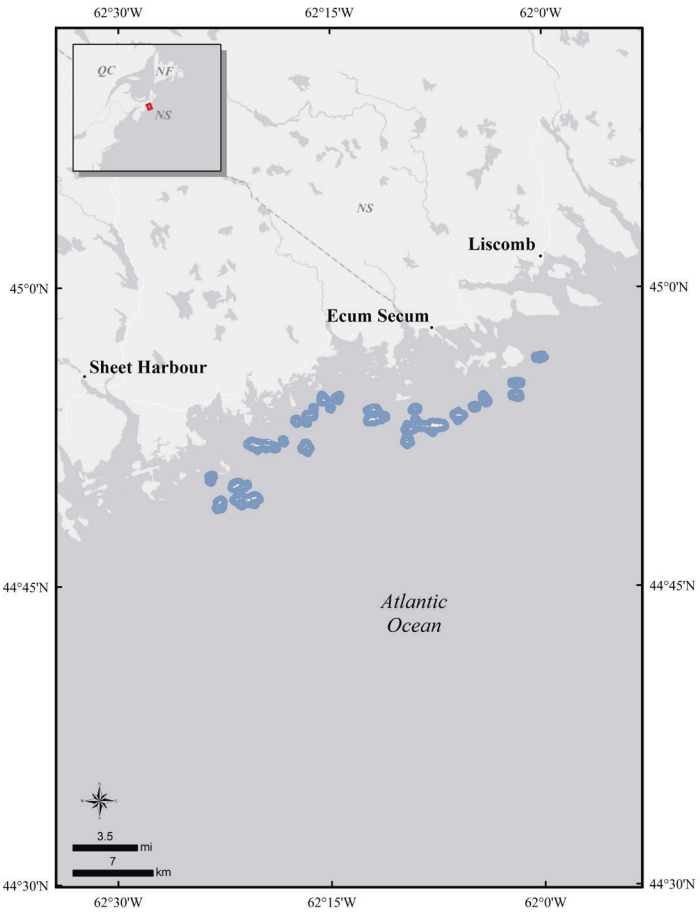
Description: Nova Scotia is the easternmost province in Canada's Maritime Provinces, bordered by the Gulf of Maine to the southwest and the Atlantic Ocean to the south and east. The Eastern Shore key habitat site is located along the eastern shore of Nova Scotia and includes offshore islands and ledges from Southern Island and Pumpkin Island off Beaver Harbour northeast to Seal Ledges off Barren Island near Liscomb. The site includes several additional islands and ledges, including Harbour Islands, Bird Islands, Gunning Rocks, Halibut Islands, Dogfish Ledge, White Islands, Bowens Ledge, Little White Island, The Nightcap, and Gull Rock.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is predominantly important to overwintering Eastern Harlequin Ducks (*Histrionicus histrionicus*) but also supports wintering and breeeding American Common Eider (*Somateria mollissima dresseri*) and other sea duck species.

Harlequin Ducks breed in only a very small number of rivers in the Maritime Provinces (Stewart et al. 2015) and no molting sites have been found here (Boyne 2008). However, a third of the eastern North American population winters in Nova Scotia and New Brunswick (Boyne 2008). During winter, Harlequin Ducks use shallow, coastal rocky shorelines at exposed headlands and over subtidal ledges where suitable prey (primarily marine invertebrates including crabs, amphipods, and gastropods) is found and may use boulders, rocks, and shorelines as haul outs (Robertson and Goudie 1999, Gutowsky et al. 2019). Birds primarily stay very close to shorelines but can roost on open water farther from shore at night (Robertson and Goudie 1999).

Winter occupation has been documented in the region since at least 1966 (Boyne 2008), but surveys primarily since 1994 by boat, plane, and helicopter



have identified a number of locations where birds regularly congregate between December and April (Bird Studies Canada 2015, Gutowsky et al. 2019, Canadian Wildlife Service unpublished data).

February/March surveys of the Eastern Shore site by boat and helicopter between 2001 and 2015 have detected at least 156 Harlequin Ducks per survey, with an approximately equal number of males and females. A maximum of 647 birds was detected on March 18, 2005, representing approximately 16% of the eastern North American population of Harlequin Ducks (NAWMP 2012). Because aerial surveys can cause birds to flush early, stay close to shore, and flock in tight groups, they tend to underestimate bird abundance (Boyne 2008); therefore, maximum abundance at this site is likely higher. The highest concentrations of birds occur near ledges and islands south of Sutherland Island, around Big Harbour Island, and from around Big Halibut Island to Seal Ledges.

Other sea duck species found here in winter include American Common Eider (100 to 500

birds; Canadian Wildlife Service unpublished data), Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta americana*), Long-tailed Duck (*Clangula hyemalis*), Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), and rarely, Barrow's Goldeneye (*Bucephala islandica*) and Hooded Merganser (*Lophodytes cucullatus*) (Bird Studies Canada 2015, eBird 2019).

The numerous islands in this area provide nesting habitat to declining numbers of breeding American Common Eider. Within the Eastern Shore Island Wildlife Management Area, their numbers have declined from approximately 2000 breeding pairs in 1977 to about 1000 pairs in 2013–2016 (Province of Nova Scotia unpublished data).

Sensitivities: Waterfowl are sensitive to human disturbance, mostly small vessel or ship traffic, during winter. Food resource availability and quality could be influenced by industrial, urban, and agricultural pollution and by invasive species.

Potential Conflicts: Disturbance and collisions associated with small vessel and ship traffic remains a potential conflict. Chemical and oil spills and water contamination from several sources, including shipping, urban, industry, and agriculture might be of concern. Despite a ban on hunting of Harlequin Ducks, some are still shot by hunters who misidentify birds as other species or lack vigilance when hunting. Coastal development can disturb birds or their habitat as shoreline development can occur near coastlines where birds haul out (Boyne 2008). There is growing interest in eco-tourism which may disturb nesting and brood-rearing eiders (e.g., kayakers approaching nesting islands and broods).

Status: The majority of the site falls within the Eastern Shore Islands Wildlife Management Area which protects nesting habitat critical for various species of colonial nesting birds (Province of Nova Scotia 2018). The area is also part of Bird Conservation Region 14, Atlantic Northern Forest and Marine Biogeographic Unit 11, Scotian Shelf and Bay of Fundy (Environment Canada 2013). It also intersects the Eastern Shore Islands Important Bird Area—including inshore islands between Clam Harbour and Ecum Secum—an area that supports high numbers of Common Eider in spring migration, breeding, and fall migration and thousands of scoters during spring migration (Bird Studies Canada 2015). The site also intersects the Eastern Shore Archipelago Ecologically or Biologically Significant Area (delineated based on uniqueness, aggregation, and fitness consequences criteria; Hastings et al. 2014).

Two protected areas intersect or lie adjacent to the site, including the Eastern Shore Islands Wilderness Area and Liscomb Point Provincial Park. In 2018, the region between Clam Bay and Barren Island was designated by Fisheries and Oceans Canada as the Eastern Shore Islands Area of Interest to conserve and protect habitat for marine species and nesting and foraging grounds for many colonial seabirds and shorebirds, including Harlequin Ducks.

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Harlequin Ducks. Photo: Tim Bowman.

Key Site 63: Prospect, Nova Scotia

Location: 44°28'53"N; 63°52'19"W

Size: 20 km^2

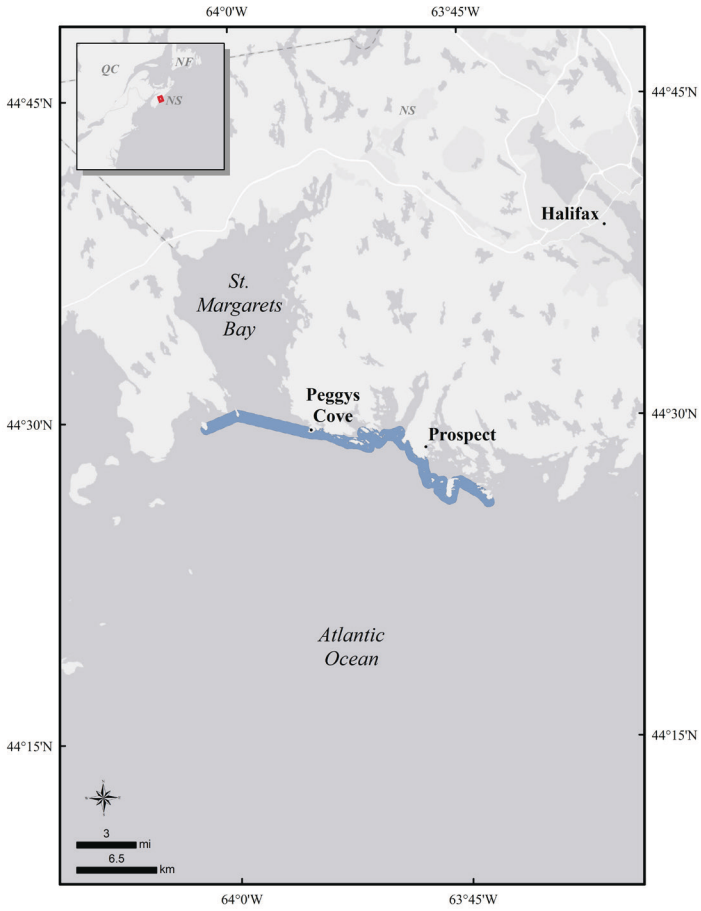
Description: Nova Scotia is the easternmost province in Canada's Maritime Provinces, bordered by the Gulf of Maine to the southwest and the Atlantic Ocean to the south and east. The Prospect key habitat site is located along the south shore of Nova Scotia and includes coastal and island shorelines extending from Gravel Island near Aspotogan to Marrs Island near Terrence Bay. The site includes several islands such as Betty Island, Duck Island, Hopson Island, and Dover Island.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is predominantly important to overwintering Eastern Harlequin Duck (*Histrionicus histrionicus*) but also supports wintering American Common Eider (*Somateria mollissima dresseri*) and other sea duck species.

Harlequin Ducks breed in only a very small number of rivers in the Maritime Provinces (Stewart et al. 2015) and no molting sites have been found here (Boyne 2008); however, a third of the eastern North American population winters in Nova Scotia and New Brunswick (Boyne 2008). During this period, birds use shallow, coastal rocky shorelines at exposed headlands and over subtidal ledges where suitable prey (primarily marine invertebrates including crabs, amphipods, and gastropods) is found. Harlequin Ducks may use boulders, rocks, and shorelines as haul outs (Robertson and Goudie 1999, Gutowsky et al. 2019). Birds stay very close to shorelines but can roost on open water farther from shore at night (Robertson and Goudie 1999).

Winter occupation by Harlequin Ducks has been documented in the region since at least 1966 (Boyne 2008), but surveys primarily since 1994 by boat, plane, and helicopter have identified a number of locations at which birds regularly congregate between December and April (Bird Studies Canada 2015, Canadian



Wildlife Service unpublished data, Gutowsky et al. 2019, Nova Scotia Lands and Forestry [NSLAF] unpublished midwinter survey data).

Surveys of the Prospect site by boat and helicopter in February and March between 2002 and 2015 have detected at least 57 birds per survey, comprising an approximately equal number of males and females. A maximum of 182 birds was detected on an aerial survey on March 6, 2013. Waterfowl often flush or dive in response to disturbance caused by the aircraft, resulting in relatively low detection rates relative to ground-based surveys and therefore underestimates of abundance (P. Thomas unpublished data). Hence the actual abundance at this site is likely at least 200 birds, representing approximately 5% of the continental population (NAWMP 2012). The highest concentrations of birds occur between Peggy's Cove and Marr's Island.

Other sea duck species found here in winter include American Common Eider (400 to 600 birds; Canadian Wildlife Service unpublished data; NSLAF unpublished midwinter survey data), Surf Scoter

(*Melanitta perspicillata*), Black Scoter (*Melanitta americana*), White-winged Scoter (*Melanitta deglandi*), Long-tailed Duck (*Clangula hyemalis*), Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), Hooded Merganser (*Lophodytes cucullatus*) and, rarely, Barrow's Goldeneye (*Bucephala islandica*) (Bird Studies Canada 2015, eBird 2019).

Sensitivities: Waterfowl are sensitive to human disturbance, mostly small vessel or ship traffic, during winter periods. Food availability and quality could be influenced by industrial, urban, and agricultural pollution and invasive species.

Potential Conflicts: Disturbance, collisions, and contamination associated with small vessel and ship traffic remains a potential conflict. Chemical and oil spills and water contamination from several sources, including shipping, urban, industry, and agriculture might be of concern. Presence of a shipping route to Halifax could increase the risk of oil pollution and spills. Despite a ban on hunting of Harlequin Ducks, some are still shot by hunters that misidentify birds as other species or lack vigilance when hunting. Coastal development can disturb birds or their habitat as shoreline development can occur very near coastlines and where birds haul out (Boyne 2008).

Status: The west end of the site intersects the St. Margaret's Bay Ecologically or Biologically Significant Area (Hastings et al. 2014). Three protected areas lie onshore, immediately adjacent to the site, including West Dover Provincial Park, the Dr. Bill Freedman Nature Reserve, and Rogue's Roost Wilderness Area. This area is part of Bird Conservation Region 14 (Atlantic Northern Forests) and Marine Biogeographic Unit 11 (Scotian Shelf and Bay of Fundy of Nova Scotia) (Environment Canada 2013).

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Key Site 64: South Shore, Nova Scotia

Location: 43°45'41"N, 64°56'17"W

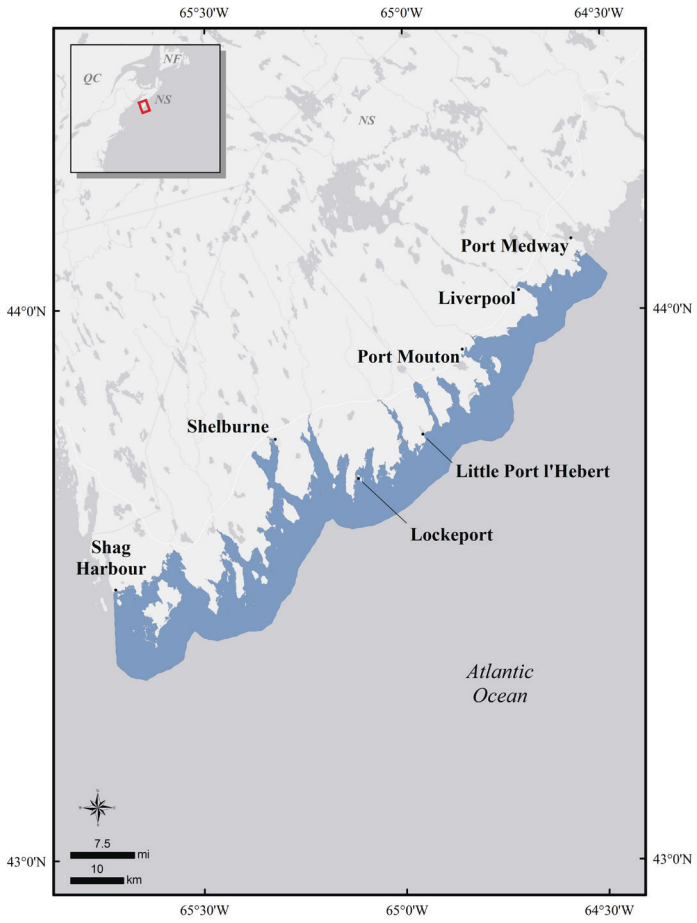
Size: 1357 km^2

Description: Nova Scotia is the easternmost province in Canada's Maritime Provinces, bordered by the Gulf of Maine to the southwest and the Atlantic Ocean to the south and east. The South Shore key habitat site is located on the south shore of Nova Scotia, extending from Shag Harbour in the south, northeast to Port Medway. It encompasses coastal areas, islands, and many estuaries, harbors, and bays around Cape Sable, Barrington, Lockeport, Port Mouton, and Liverpool. Several rivers flow into the area, including the Barrington River, Clyde River, Roseway River, Sable River, Tidney River, Mersey River, and the Medway River.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted to account for incomplete detection, either by applying species-specific visibility correction factors (VCF) estimated for surveys specific to this area, or from VCFs estimated from other similar areas and surveys (Canadian Wildlife Service unpublished data, Nova Scotia Department of Lands and Forestry unpublished data).

Biological Value: This site is predominantly important to molting American Common Eider (*Somateria mollissima dresseri*) from August to early September and to overwintering Eastern Harlequin Ducks (*Histrionicus histrionicus*).

Common Eider: Common Eider can be found on Nova Scotia's Atlantic and Bay of Fundy coasts throughout the year. During the breeding season, eiders nest in colonies along marine coasts, primarily on islands, islets, and narrow points of land (Goudie et al. 2000). Nesting islands are typically uninhabited by people and have rocky shorelines (Milton et al. 2016). During July and August, while females incubate, males congregate in large molting flocks along the Atlantic coast (Milton et al. 2006) primarily in the general area of nesting colonies, although farther offshore (Goudie et al. 2000). Fall migration occurs in October and November and peak abundance of eiders is reached by mid-December (Goudie et al. 2000). Adults forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).



During the molting period, the number of Common Eiders at the site exceeded 20,000 birds in 2001 and 2002. A total of 21,045 and 23,730 birds were detected in August and September 2001, respectively, between Clark's Harbour and West Berlin. Photo-interpreted counts from an August 2002 aerial survey detected 38,830 birds, of which less than 1.5% were female (Milton et al. 2006). This represents between 7% and 13% of the continental population of American Common Eider in 2001 and 2002, respectively (NAWMP 2012). During the molting period, flocks of eiders are fairly evenly distributed throughout the site, with the highest concentrations of eiders variable annually but usually focused in offshore areas between Clark's Harbour and Kejimkujik National Park Seaside Adjunct. There has been a considerable decline in eider abundance at the site since 2002, with 11,275 birds detected in August 2008 and between 200 and 4415 birds

between 2014 and 2017 (Canadian Wildlife Service unpublished data, Nova Scotia Department of Lands and Forestry unpublished midwinter survey data).

Common Eider winter at the site between December and April (eBird 2019), and winter (January to March) eider surveys by the Canadian Wildlife Service and Nova Scotia Department of Lands and Forestry have detected between 645 and 5381 overwintering eiders (Canadian Wildlife Service unpublished data, Nova Scotia Department of Lands and Forestry unpublished midwinter survey data).

Harlequin Duck: Harlequin Ducks breed in only a very small number of rivers in the Maritime Provinces (Stewart et al. 2015) and no molting sites have been found here (Boyne 2008); however, a third of the eastern North American population winters in Nova Scotia and New Brunswick (Boyne 2008). During this period, birds use shallow, coastal rocky shorelines at exposed headlands and over subtidal ledges, where suitable prey (primarily marine invertebrates including crabs, amphipods, and gastropods) is found. They may also use boulders, rocks, and shorelines as haul outs (Robertson and Goudie 1999). Birds primarily stay very close to shorelines but can roost on open water farther from shore at night (Robertson and Goudie 1999).

Winter occupation by Harlequin Duck has been documented in the region since at least the 1960s (Boyne 2008), but surveys primarily since 1994 by boat, plane, and helicopter have identified a number of locations at which birds regularly congregate between December and April (Bird Studies Canada 2015, Canadian Wildlife Service unpublished data, Nova Scotia Department of Lands and Forestry unpublished midwinter survey data, Gutowsky et al. 2019) (Appendix 1).

January through March surveys of the Little Port L'Hebert site by boat and helicopter between 2002 and 2019 have detected at least 78 Harlequin Ducks per survey (Canadian Wildlife Service unpublished data, Nova Scotia Department of Lands and Forestry unpublished midwinter survey data). A maximum of 224 birds was detected on March 6, 2013, representing approximately 5.6% of the continental population (NAWMP 2012). Because aerial surveys may cause birds to flush early, stay close to shore, and flock in tight groups, they tend to underestimate bird abundance (Boyne 2008); therefore, maximum abundance at this site is likely higher. The highest concentrations of Harlequin Duck occur from Hardings Island to L'Hebert Rocks and around Ram Island.

Other species. Other sea duck species found here uncommonly during August and early September include Hooded Merganser (*Lophodytes cucullatus*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta americana*), and White-winged Scoter (*Melanitta deglandi*) (Bird Studies Canada 2015, eBird 2019). Other species found here in winter include Surf Scoter (*Melanitta perspicillata*), Black Scoter, White-winged Scoter, Long-tailed Duck (*Clangula hyemalis*), Bufflehead (*Buecephala albeola*), Common Goldeneye (*Bucephala clangula*), Common Merganser, Red-breasted Merganser, and rarely, Barrow's Goldeneye (*Bucephala islandica*) and Hooded Merganser (Bird Studies Canada 2015, eBird 2019).

Sensitivities: Waterfowl are sensitive to human disturbance, particularly small vessel or ship traffic, during winter periods. Food resource availability and quality could be influenced by industrial, urban, and agricultural pollution and invasive species. Because Common Eider aggregate in dense flocks, they can be susceptible to hunting pressure, disease, predation, oil spills, vessel collisions, and pollution.

Potential Conflicts: Commercial fisheries, aquaculture, and rock weed harvesting might reduce habitat quality and quantity. Harvest in Nova Scotia has declined dramatically from 10,000 to 15,000 Common Eiders in the early 1990s to fewer than 1000 per year since 2011 (Canadian Wildlife Service 2017), but harvest along the Atlantic coast is still above a sustainable limit at approximately 18,000 annually (2011 to 2014 average; Canadian Wildlife Service 2017). Disturbance associated with small vessel and ship traffic remains a potential conflict. Chemical and oil spills and water contamination from several sources, including shipping, urban, industry, and agriculture, might be of concern. Coastal development could reduce habitat quantity and quality in near-shore areas. For example, Little Port L'Hebert is currently undergoing heavy summer home development. Common Eider food availability is a growing concern as large declines in blue mussels (*Mytilus edulis*) have been reported in the Gulf of Maine (Sorte

et al. 2016). High mortality of female Common Eider at breeding islands within the site could be caused by high rates of mammalian and avian predators, some of which is the result of human activity such as mink farm escapes (Milton et al. 2016). Despite a ban on hunting of Harlequin Ducks, some are still shot by hunters who misidentify birds as other species or lack vigilance when hunting.

Status: This area is part of Bird Conservation Region 14, Atlantic Northern Forest, and Marine Biogeographic Unit 11, Scotian Shelf and Bay of Fundy (Environment Canada 2013). The site intersects four Important Bird Areas: Eastern Cape Sable Island, South Shore (Barrington Bay Sector), South Shore (Roseway to Baccaro), South Shore (Port Joli Sector), and Kejimkujik National Park Seaside. It is adjacent to the Bon Portage Island Important Bird Area. The site also intersects five Ecologically or Biologically Significant Areas: Port Joli and Surrounding Areas, Green Point to Ram Island, Southwest Scotian Shelf, Cape Sable Island, and Medway Harbour (Hastings et al. 2014).

Numerous protected areas lie within or immediately adjacent to the site, including six land trusts or conservation easements, one national park, two nature reserves, and five provincial parks.

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American Common Eiders. Photo: Tim Bowman.

Key Site 65: Digby Neck, Nova Scotia

Location: 44°27'47"N, 66°8'57"W

Size: 29 km^2

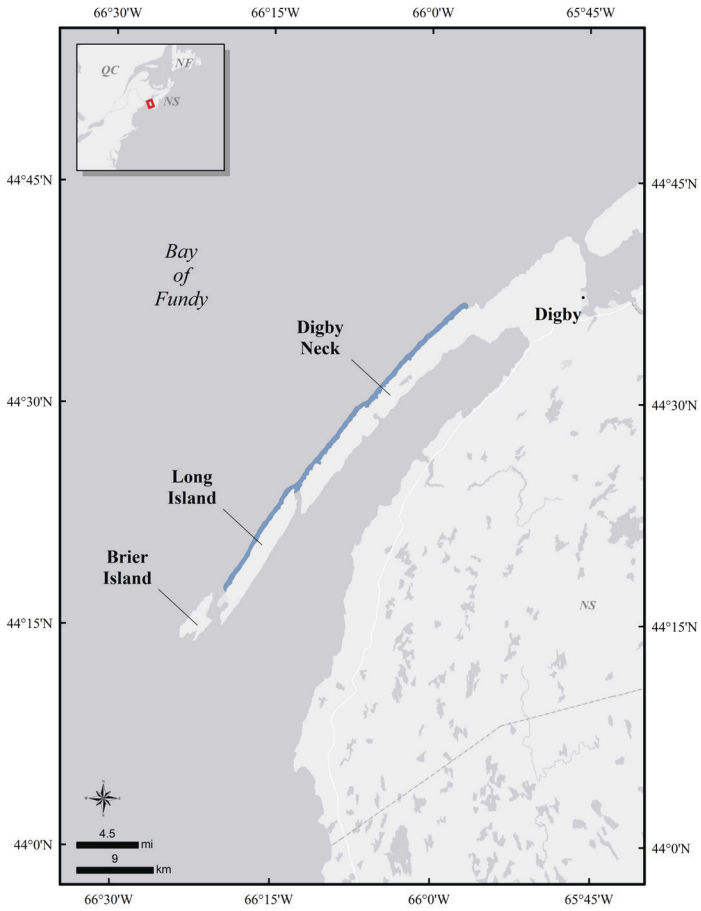
Description: Nova Scotia is the easternmost province in Canada's Maritime Provinces, bordered by the Gulf of Maine to the southwest and the Atlantic Ocean to the south and east. The Digby Neck key habitat site is located along Nova Scotia's northwest Bay of Fundy coastline and includes rocky shorelines encompassing the majority of the seaward side of Long Island and Digby Neck.

Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: This site is predominantly important to overwintering Eastern Harlequin Ducks (*Histrionicus histrionicus*) but also supports wintering American Common Eider (*Somateria mollissima dresseri*) and other sea duck species.

Harlequin Ducks breed in only a very small number of rivers in the Maritime Provinces (Stewart 2015) and no molting sites have been found here (Boyne 2008); however, a third of the eastern North American population winters in Nova Scotia and New Brunswick (Boyne 2008). During winter, Harlequin Ducks use shallow, coastal rocky shorelines at exposed headlands and over subtidal ledges where suitable prey (primarily marine invertebrates including crabs, amphipods, and gastropods) is found and where Harlequin Ducks may use boulders, rocks, and shorelines as haul outs (Robertson and Goudie 1999, Gutowsky et al. 2019). They primarily stay very close to shorelines but can roost on open water farther from shore at night (Robertson and Goudie 1999).

Winter occupation has been documented in the region since at least 1966 (Boyne 2008), but surveys primarily since 1994 by boat, plane, and helicopter have identified a number of locations at which birds regularly congregate between December and April (Canadian Wildlife Service [CWS] unpublished data, Nova Scotia Department of Lands and Forestry



unpublished midwinter survey data, Bird Studies Canada 2015, Gutowsky et al. 2019).

January through March surveys of the Digby Neck site by boat and helicopter between 2003 and 2019 have detected at least 48 birds per survey with approximately equal numbers of males and females. A maximum of 295 Harlequin Ducks were detected during a helicopter survey on March 7, 2013, representing approximately 7.4% of the Eastern North America population (NAWMP 2012). Aerial surveys can tend to underestimate bird abundance because they cause birds to flush early or stay close to shore and flock in tight groups (Boyne 2008); therefore, maximum abundance at this site is likely higher. Up to five Harlequin Ducks have also been observed during winter, adjacent to the Digby Neck key habitat site around Brier Island and Peter Island.

Other sea duck species found here in winter include American Common Eider (300–600 birds; CWS unpublished data), Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta Americana*), White-winged Scoter (*Melanitta deglandi*),

Long-tailed Duck (*Clangula hyemalis*), Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Red-breasted Merganser (*Mergus serrator*), and rarely, Barrow's Goldeneye (*Bucephala islandica*) (Bird Studies Canada 2015, eBird 2019).

Sensitivities: Waterfowl are sensitive to human disturbance, particularly small vessel or ship traffic, during winter periods. Food availability and quality could be influenced by industrial, urban, and agricultural pollution and invasive species.

Potential Conflicts: Chemical and oil spills and water contamination from several sources, including shipping, urban, industry, and agriculture, are a concern. Despite a ban on hunting of Harlequin Ducks, some are still shot by hunters that misidentify Harlequin Ducks as other species or lack vigilance when hunting. Coastal development can disturb birds or degrade their habitat as shoreline development can occur very near coastlines and where birds haul out (Boyne 2008).

Status: This area is part of Bird Conservation Region 14, Atlantic Northern Forest and Marine Biogeographic Unit 11, Scotian Shelf and Bay of Fundy (Environment Canada 2013). At its southwest end the site intersects the Brier Island and Offshore Waters Important Bird Area, which supports high concentrations of seabirds and is one of the most important areas for Red-necked and Red Phalaropes in North America, and the Brier Island, Digby Neck Ecologically or Biologically Significant Area (EBSA; based on uniqueness, aggregation, and fitness consequences criteria; Westhead et al. 2013). Two protected areas lie onshore immediately adjacent to the site: Central Grove Provincial Park and Boar's Head Conservation Lands.

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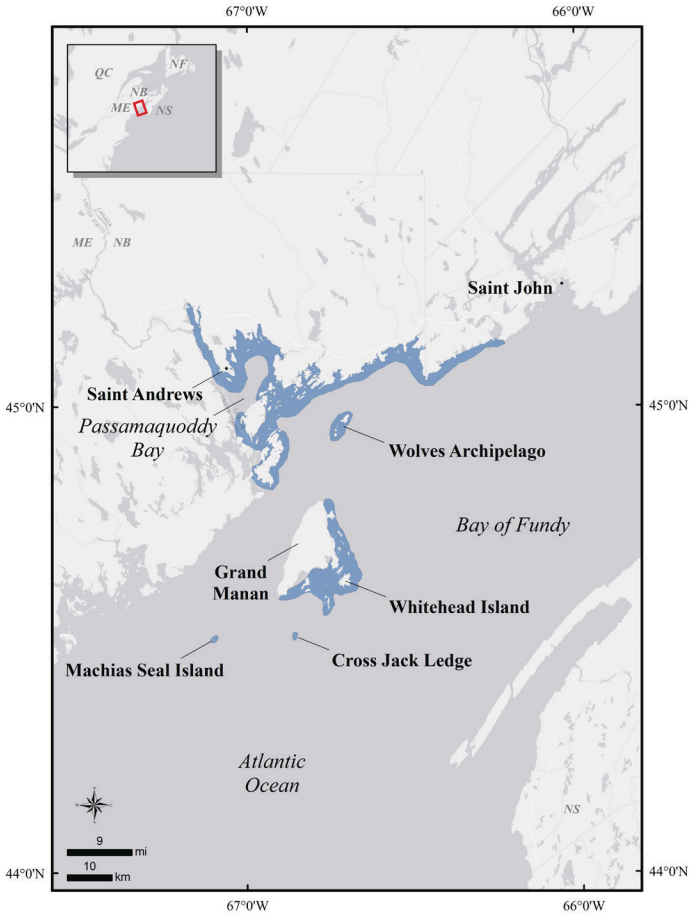
Key Site 66: Southwestern Bay of Fundy, New Brunswick

Location: 45°1'46"N, 66°51'57"W

Size: 611 km^2

Description: The Southwestern Bay of Fundy key habitat site is located on the southwest coast of New Brunswick between Grand Manan Island in the south to St. Andrews in the northwest, and Musquash Estuary to the northeast. It encompasses coastal areas, islands, and many estuaries, harbors, and bays around Machias Seal Island, Cross Jack Ledge, Grand Manan, Whitehead Island, the Wolves Archipelago, Saint George, Black's Harbour, and Maces Bay. Several rivers flow into the area, including the St. Croix River, Digdeguash River, Magaguadavic River, New River, and the Musquash River.



Precision and Correction of Abundance Estimates Presented: Abundance estimates presented for this key habitat site have been adjusted only for Common Eider (*Somateria mollissima dresseri*) to account for incomplete detection, by applying species-specific visibility correction factors estimated for surveys estimated from other similar areas and surveys. A VCF of 1.42 was applied to Common Eider counts and was calculated from a visual versus photo interpretation (Bordage et al. 1998). No adjustments were made for counts of Harlequin Duck. Because aerial surveys may cause birds to flush early or stay close to shore and flock in tight groups (Boyne 2008), maximum abundance of Harlequin Duck at this site is likely greater than reported counts.

Biological Value: This site is predominantly important to overwintering American Common Eider and Eastern Harlequin Ducks (*Histrionicus histrionicus*) from late fall through March.

Common Eider can be found in the southern Bay of Fundy throughout the year. During the breeding season, eiders nest in colonies along marine coasts, primarily on islands, islets, and narrow points of land (Goudie et al. 2000). During July and August eiders, primarily males, congregate in large molting flocks, as they do along the Atlantic coast (Milton et al. 2006), usually in the general area of nesting colonies but farther offshore (Goudie et al. 2000). Fall migration occurs in October and November, and most wintering areas reach peak abundance by mid-December (Goudie et al. 2000). Adult eiders forage primarily on benthic invertebrates, including intertidal and subtidal mollusks (especially blue mussels, *Mytilus edulis*), crustaceans, and echinoderms (Goudie et al. 2000).

During the wintering period (mid-February surveys), Common Eider abundance at this site reached 24,774 birds in 2006, representing approximately 8.3% of the continental population of American Common Eider (NAWMP 2012). More recent numbers are lower, with 8835 and 10,937 observed in 2012 and 2016, respectively, although 18,201 birds were observed in 2018. During winter, flocks concentrate along the coastline; highest concentrations of birds vary among years but are usually along the western part of Grand Manan Island, in Passamaquoddy Bay, and Maces Bay.

This site is important for breeding Common Eider, although they have experienced declines of about 3% per year over a long term (K. Connor, New Brunswick Department Natural Resources

unpublished data). Male Common Eider counts for The Wolves Archipelago were 709 in 1998 and declined to 129 and 132 males in 2014 and 2017, respectively (Canadian Wildlife Service New Brunswick unpublished data). Grand Manan Archipelago also supported breeding populations of Common Eider estimated at more than 3300 pairs in 2001 (Ronconi and Wong 2003) but with recent declines. Male counts for the entire key site for the years 1996–2000 included approximately 4000 males, but 2014 and 2017 counts included 2285 and 1990 males, respectively (Canadian Wildlife Service New Brunswick unpublished data).

American Common Eiders appear to be declining in the southern part of their breeding and wintering range in New Brunswick, Nova Scotia, and Maine (Noel et al. 2021), including at this site. Potential causes of decline include Wellfleet Bay virus (Ballard et al. 2017); increasing predator populations on breeding grounds, including mink, river otter, bald eagles, and greater black-backed gulls (Canadian Wildlife Service 2017); large, long-term declines of their preferred prey, blue mussels, in the Gulf of Maine (Sorte et al. 2017) and within this key habitat site (Canadian Wildlife Service 2017).

This site is also continentally important for the eastern North American population of Harlequin Ducks. Harlequin Ducks breed in only a very small number of rivers in the Maritime Provinces (Stewart 2015) and no molting sites have been found here (Boyne 2008); however, a third of the eastern North American population winters in Nova Scotia and New Brunswick (Boyne 2008). During winter, Harlequins use shallow, coastal rocky shorelines at exposed headlands and over subtidal ledges where suitable prey (primarily marine invertebrates including crabs, amphipods, and gastropods) is found. They may also use boulders, rocks, and shorelines as haul outs (Robertson and Goudie 1999, Gutowsky et al. 2019). They may roost on open water farther from shore at night (Robertson and Goudie 1999).

Surveys since 1994 by boat, plane, and helicopter have identified a number of locations at which Harlequin Ducks regularly congregate between December and April (Bird Studies Canada 2015; Canadian Wildlife Service unpublished data, Gutowsky et al. 2019). The highest concentrations of Harlequin Ducks occur off The Wolves Archipelago, White Head Island, Cross Jack Ledge, and Machias Seal Island (Appendix 1). A maximum of 229 Harlequin Ducks were detected across the key site on March 6, 2013, representing approximately 5.7% of the eastern population (NAWMP 2012).

Other sea duck species found here during winter include Hooded Merganser (*Lophodytes cucullatus*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), Surf Scoter (*Melanitta perspicillata*), Black Scoter (*Melanitta americana*), White-winged Scoter (*Melanitta deglandi*), Long-tailed Duck (*Clangula hyemalis*), Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), and Barrow's Goldeneye (*Bucephala islandica*) (Bird Studies Canada 2015, eBird 2019). This site is also a major spring migration corridor for sea ducks, especially for scoters. Spring survey average estimates (1996–2004) were 175,254, 89,708, and 5896 for Black, Surf, and White-winged Scoters respectively (Bond et al. 2007).

Sensitivities: Waterfowl are sensitive to human disturbance, particularly small vessel or ship traffic, during winter. Food availability and quality could be influenced by industrial, urban, and agricultural pollution and invasive species such as European green crab (*Carcinus maenas*), which feed on traditional waterfowl foods such as mollusks, worms, and small crustaceans. Because Common Eiders aggregate in dense flocks, they can be susceptible to hunting pressure, local environmental threats, and disease outbreaks.

Potential Conflicts: Commercial fisheries, aquaculture, and rockweed harvesting might reduce habitat quality and quantity (Bird Studies Canada 2015). Sport hunting along the Atlantic Coast is estimated at 18,000 Common Eiders (2011–2014 average), which is below the estimated sustainable harvest (Canadian Wildlife Service 2017). Disturbance and bird collisions associated with small vessel and ship traffic remain a potential conflict. The impact on birds from whale-watching and seabird-watching boat operations from Grand Manan is unknown. Chemical and oil spills and water contamination from several sources, including shipping, urban, and industry are of concern. Coastal development could reduce habitat quantity and quality in near-shore areas or on shorelines where Harlequin Ducks haul out (Boyne 2008). The existing shipping route to

Saint John, New Brunswick, increases the risk of oil pollution and spills. Contaminants from the Point Lepreau Nuclear Plant in New Brunswick and other industrial sources could threaten bird survival or degrade habitat quality. Despite a ban on hunting of Harlequin Ducks in eastern Canada, some are still shot by hunters that misidentify Harlequin Ducks as other species or lack vigilance when hunting.

Status: This area is part of Bird Conservation Region 14, Atlantic Northern Forest, and Marine Biogeographic Unit 11, Scotian Shelf and Bay of Fundy (Environment Canada 2013). The site intersects four Important Bird Areas (IBAs; IBA Canada 2021): Point Lepreau/Maces Bay, The Wolves Archipelago, Quoddy Region, and Grand Manan Archipelago. It falls immediately adjacent to the Machias Seal Island, Manawagonish Island and Saint's Rest Marsh, and Beach IBAs. It also intersects four Ecologically or Biologically Significant Areas (EBSAs): Machias Seal Island, Southwest Grand Manan, The Wolves, White Island, and the Whole of Quoddy Region (Westhead et al. 2013).

The site includes both Grand Manan and Machias Seal Island Migratory Bird Sanctuaries (managed by Environment and Climate Change Canada [2021]) as well as Musquash Estuary Marine Protected Area (managed by the Department of Fisheries and Ocean [2021]).

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