

5.3.5.2 Waterfowl, Loons, and Grebes

Waterfowl and loons have varied diets and foraging strategies, which are listed below in Table 5.5.

Table 5.5: Foraging Strategy and Diet for Waterfowl and Loons in the Labrador Shelf Area

Species (Group)	Foraging Strategy	Diet	Source
Order Anseriformes (Ducks and Geese)			
Canada Goose	Grazing	Grasses, sedges, grains, and berries	Mowbray <i>et al.</i> 2002
American Black Duck	Dabbling	Aquatic insects, crustaceans, mollusks, and fish	Longcore <i>et al.</i> 2000
Green-winged Teal	Dabbling	Aquatic insects, seeds of grasses, and sedges	Johnson 1995
Common Eider	Diving	Mollusks, crustaceans, echinoderms	Goudie <i>et al.</i> 2000
King Eider	Diving	Mollusks, crustaceans, echinoderms	Bustnes and Erikstad 1988
Harlequin Duck	Diving	Mollusks, crustaceans, barnacles, fish roe	Goudie and Ankney 1986
White-winged Scoter	Diving	Mollusks, crustaceans, insects	Brown and Frederickson 1997
Black Scoter	Diving	Mollusks, crustaceans	Bordage and Savard 1995
Surf Scoter	Diving	Mollusks, crustaceans	Vermeer 1981
Long-tailed Duck	Diving	Mollusks, crustaceans	Robertson and Savard 2002
Barrow's Goldeneye	Diving	Insects, mollusks, crustaceans	Eadie <i>et al.</i> 1995
Common Goldeneye	Diving	Insects, mollusks, crustaceans	Eadie <i>et al.</i> 1995
Red-breasted Merganser	Pursuit diving	Fish, crustaceans	Titman 1999
Common Merganser	Pursuit diving	Fish, crustaceans	Mallory and Metz 1999
Hooded Merganser	Pursuit diving	Fish, aquatic insects, crustaceans	Dugger <i>et al.</i> 1994
Order Gaviiformes (Loons)			
Red-throated Loon	Pursuit diving	Fish, crustaceans, mollusks, insects	Barr <i>et al.</i> 2000
Common Loon	Pursuit diving	Fish, crustaceans, leeches	Barr 1973

The Labrador Shelf is often used by waterfowl as a staging area for migratory purposes, while migrating south from northern climes, or migrating from inland freshwater areas to open water for winter. Species which use this area for migratory purposes include the Canada Goose (*Branta Canadensis*), American Black Duck (*Anas rubripes*), Harlequin Duck (*Histrionicus histrionicus*), the three scoter species, Long-tailed Duck (*Clangula hyemalis*), Common Goldeneye (*Bucephala clangula*), Barrow's Goldeneye (*Bucephala islandica*), three merganser species and both loon species.

Canada Geese, which are an important hunting resource on the coast of Labrador, use the coastal estuaries of Labrador during migration mainly for staging. Both the Harlequin Duck and the scoter species breed in interior freshwater and return to saltwater for the remainder of the year. Harlequin Duck males quickly return to the ocean after breeding on rapid mountain streams. A study on Surf Scoters (*Melanitta perspicillata*) in Quebec showed that most males stayed only for approximately three weeks on the breeding grounds. This relatively early departure of males from the breeding areas emphasizes the importance of salt water habitats for these birds. Both of these species are gregarious when they return to the marine environment so populations may be especially vulnerable to perturbations during this time.

The Common Eider is a large seaduck with a circumpolar distribution that is known to occur in the Labrador Shelf. The bird is gregarious, travelling and feeding in flocks numbering from tens to thousands. Because of the flock size, the Common Eider is vulnerable to large-scale disturbances. There are seven subspecies of Common Eiders, two of which, (*borealis* and *dresseri*) occur in the Labrador Sea. The Labrador coast is a zone of interbreeding for the northern *borealis* and the southern *dresseri* (Chaulk *et al.* 2005). Each subspecies of this bird exhibits distinctive traits, *e.g.*, late nesting is typical of the *borealis* subspecies; large clutch sizes are typical of the *dresseri* subspecies (Robertson *et al.* 2001). Knowledge regarding eider population sizes and trends along the Labrador coast is limited, as is the amount of interbreeding between subspecies and nesting ecology. Eider numbers are believed to have suffered declines in the past due to overhunting (Goudie 1989); although more recent research indicates that breeding eider populations in Labrador are showing positive growth (Chaulk *et al.* 2005).

Eider nest estimates vary from year to year and among sites. Chaulk *et al.* (2006) found significant differences in nest densities among archipelagos and across years. The number of nests on the coast of Labrador has shown strong positive trends since the early 1990s and there are several breeding colonies off the coast of Labrador with the highest nest densities found around Nain.

5.3.6 Marine Mammals

A total of 21 marine mammals, including 14 cetaceans, six seals, and the polar bear, occur in the Study Area.

5.3.6.1 Cetaceans

Humpback whale (*Myaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata*) and sei whale (*Balaenoptera borealis*) are the three most common baleen whales that use the Study Area for migrating, feeding, or breeding. Blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*) and bowhead whale (*Balaena mysticetus*) are other baleen whales found in the area, but have designations under COSEWIC or SARA, and are therefore further discussed in Section 5.4. Figure 5.13 shows the sighting records of cetaceans in the Study Area. A list of all cetacea found in and around the Study Area is shown in Table 5.6, including population abundance numbers and time and life history in the area where data exists.

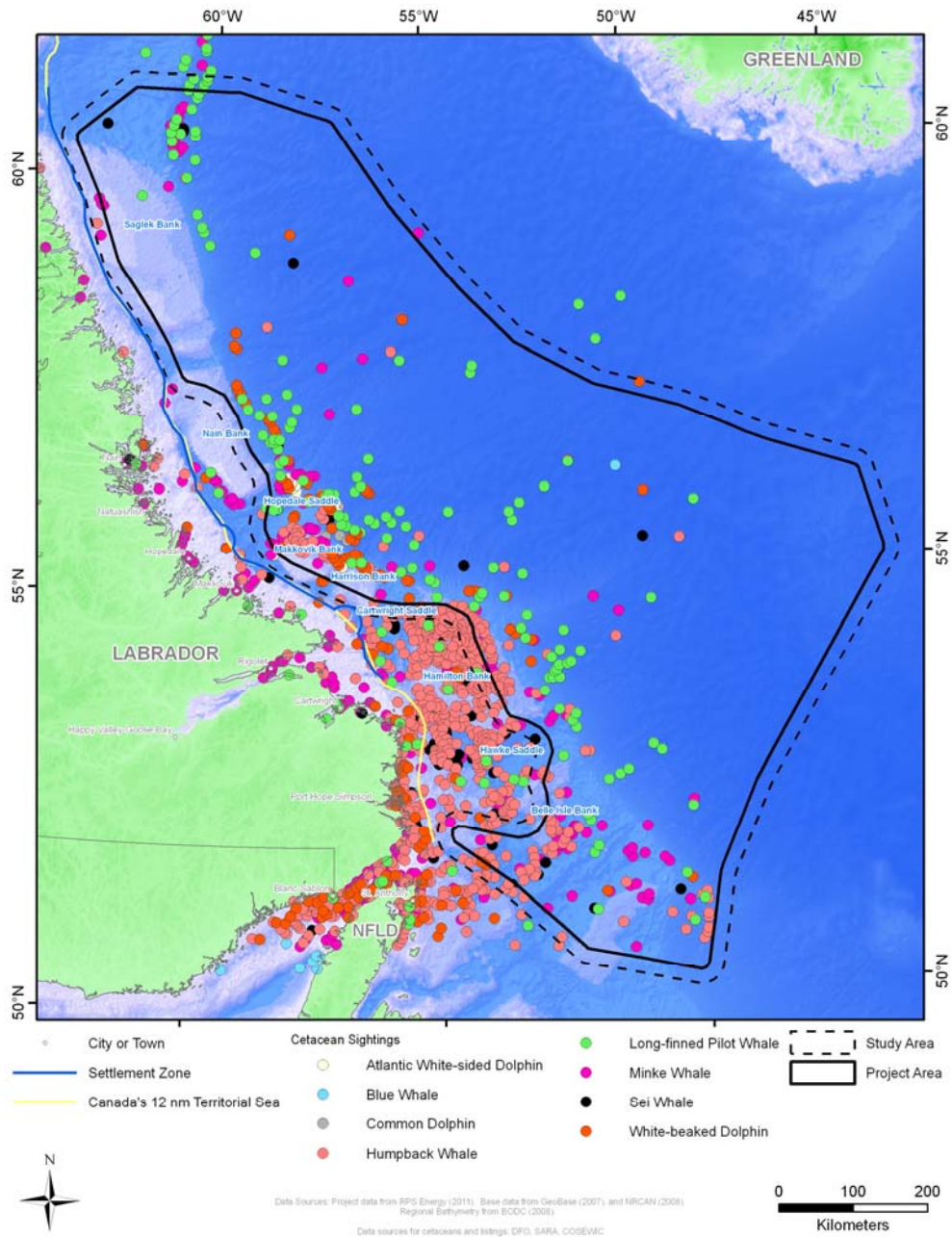


Figure 5.13: Sighting Records of Cetaceans in the Study Area

Table 5.6: Cetaceans and Pinnipeds Located Within the Study Area

Species	Distribution in Study Area	Habitat in Study Area	Migration
Fin whale	Common Year-round, but mostly summer	Coastal, shelf and slope waters	North-south seasonal Calving or breeding ground unknown
Humpback whale	Common Year-round, but mostly May-October	Coastal and shelf waters	Between temperate to high latitude summer feeding grounds and low latitude breeding grounds
Minke whale	Common Year-round, but mostly May-September	Coastal and shelf waters	Between northern feeding grounds and southern calving grounds
Blue whale	Rare Year-round, but mostly spring-summer	Coastal and shelf waters	Coastal and offshore waters from high latitude during feeding season
Sei whale	Uncommon May-September	Coastal and shelf waters	North-south seasonal between high latitude feeding grounds and southern latitude calving and wintering grounds
Beluga whale	Rare Winter	Coastal, estuaries and bays	
Killer whale	Uncommon Year-round, but mostly June-October	Coastal	Not documented
Long-finned pilot whale	Common May-September	Coastal and slope waters	No north-south seasonal migration Some seasonal inshore-offshore migration
Northern bottlenose whale	Common Year-round	Slope waters	

Species	Distribution in Study Area	Habitat in Study Area	Migration
Sperm whale	Uncommon Year-round, but mostly summer	Slope waters Feeding, Most likely only males	Females and calves range small, males migrate between northern latitudes and tropical/subtropical mating grounds
Harbour porpoise	Uncommon Year-round, but mostly spring-fall	Coastal Summering	Poorly understood
Atlantic white-sided dolphin	Common Year-round, but mostly June-October	Coastal, shelf and slope waters	Unknown
White-beaked dolphin	Common Year-round, but mostly June-September	Coastal and shelf waters	Not understood
Sowerby's beaked Whale	Rare Summer	Slope waters	unknown
Harbour seal	Uncommon Year round	Coastal Historical data indicates St. George's Bay as a whelping area	Sedentary, with some adults taking long migrations
Harp seal	Common Year round but mostly winter – spring	Feed in November and December Ice whelpers, pelagic	Migratory and pelagic, summers high Arctic and winters off Newfoundland and Labrador coasts, and Gulf of St. Lawrence
Hooded seal	Common Year round, mostly winter - spring	Ice whelpers in March, pelagic	Migratory and pelagic, summers in Arctic and winters in eastern Canada
Grey seal	Rare Summer and fall	Coastal, pelagic	Seasonal for moult, feeding and breeding
Bearded Seal	Uncommon Year round	Coastal, pelagic	Occasional migration on ice
Ringed Seal	Common Winter-spring	Landfast ice	

An additional three species may very occasionally enter the Study Area or were historically abundant on the Labrador Shelf, including the bowhead whale (*Balaena mysticetus*), North Atlantic right whale (*Eubalaena glacialis*), and Atlantic walrus (*Odobenus rosmarus rosmarus*). Although thought to be historically common throughout the Strait of Belle Isle and Labrador Sea, bowhead whales now only rarely range as far south as the northern coast of Labrador as a result of depletion during industrial whaling (COSEWIC 2009a). Individuals occurring in northern Labrador likely represent either the Davis Strait or Hudson Bay stocks of the eastern Canada-west Greenland population, considered *special concern* by COSEWIC, but have no status under SARA. North Atlantic right whales, considered *endangered* on Schedule 1 of SARA and by COSEWIC, became severely depleted by commercial whalers and are thought to have once ranged into coastal Labrador.

Atlantic walrus are considered *extirpated* from Nova Scotia to Labrador, where they historically occurred (COSEWIC 2006a). Currently they are found in the eastern Canadian Arctic, and considered rare south of Hebron-Okak Bay on the Labrador coast (COSEWIC 2006a). Thus, the available information suggests that it is very unlikely that any of these three species occur in the Study Area.

Fin Whale (*Balaenoptera physalus*)

The fin whale, *Balaenoptera physalus*, is the second largest baleen whale. On the east coast of Canada, North Atlantic fin whales migrate northward during the summer months to foraging areas off the Labrador and Scotian shelves (Sergeant, 1977). Fin whales may occur off Labrador year round (COSEWIC 2005), but are more likely to occur near-shore during the summer. Sightings of fin whales in Labrador waters are mainly near-shore (COSEWIC 2005). This species is considered one of “Special Concern” by SARA and COSEWIC (2005).

Sei Whale (*Balaenoptera borealis*)

The sei whale, *Balaenoptera borealis*, is a large baleen whale that inhabits deep offshore waters (Gambell 1985, COSEWIC 2003). Sei whales prefer temperate waters and although, historically, the sei whale was hunted in the Davis Strait/Labrador Sea region in the months of May and June, this appears to represent the northernmost extent of its range. The survey is expected to begin mid to end of June with mitigations in place, any possible observations will be recorded.

Humpback Whale (*Megaptera novaeangliae*)

The humpback whale, *Megaptera novaeangliae*, is a medium-sized baleen whale that has been sighted in both offshore and inshore waters of The Labrador Sea (COSEWIC 2003). Humpback whales may occur within the proposed project area, although their abundance is expected to be low. Humpback whales have seasonal migrations from high-latitude feeding areas in the summer (i.e., Canadian waters) to low-latitude breeding and calving grounds (COSEWIC 2003). Humpbacks are common along the Labrador shelf, with primary feeding areas concentrated along the shoreline from Hudson Strait to the southern coast of Newfoundland (COSEWIC 2003). As their abundance in the project area is low, it is not expected that this species will be encountered during the survey.

Blue Whale (*Balaenoptera musculus*)

The blue whale, *Balaenoptera musculus*, is globally distributed. In North America, there are two stocks of blue whales, the eastern and western. In the North Atlantic, the eastern stock's range is from Greenland to eastern Canadian waters. They inhabit both coastal and offshore waters off Newfoundland during the summer months and are likely within the Labrador Shelf area in late winter (Sears and Calambokidis 2002), here they are often found feeding in aggregations at shelf edges, where up welling results in high concentrations of krill. Blue whale observations (1975-2004) near the Labrador Shelf are illustrated in Figure 5.14. Blue Whale populations are considered "Endangered" by COSEWIC (2002) and SARA (2011, on-line registry). As the Blue Whale is very rare in the Labrador Shelf, it is not expected that this species will be encountered.

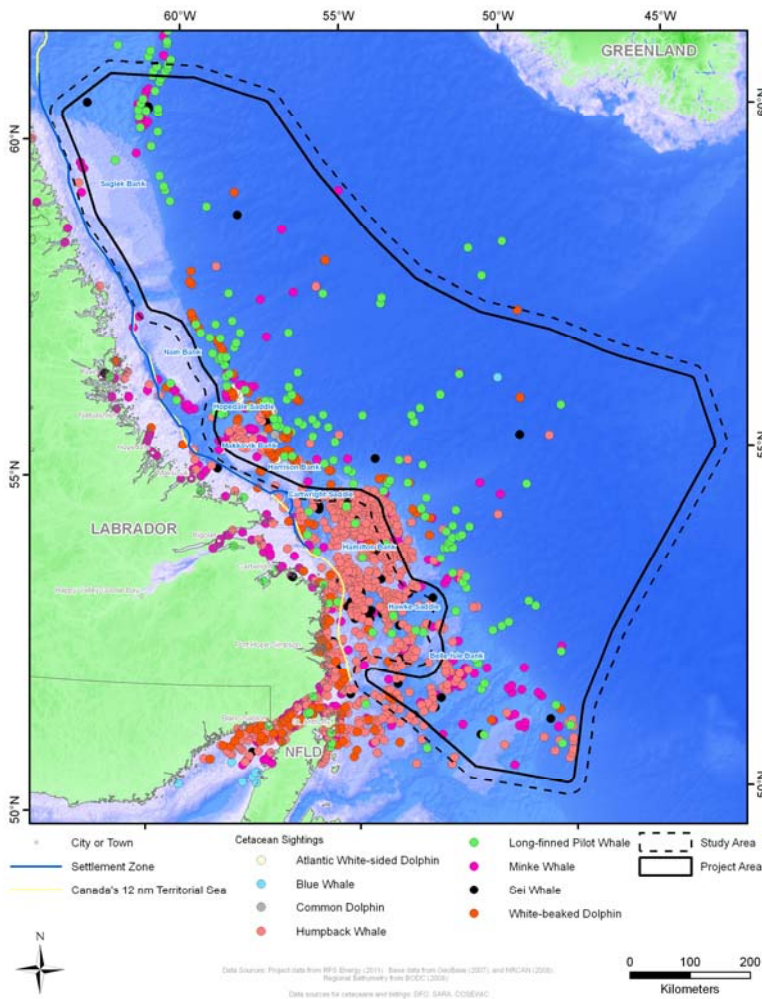


Figure 5.14: Cetacean Sightings

Minke Whale (*Balaenoptera acutorostrata*)

Minke whales (*Balaenoptera acutorostrata*) occur worldwide and are the most common of the baleen whales. Minkes arrive in the inshore waters of Newfoundland and Labrador in April. Most stay only for the summer and fall, as late as October or November; however, some individuals remain into the winter. Minke whales are common in shallow water, less than 200 m deep, but may also occur offshore in deeper waters. They are often solitary in the western North Atlantic, but may occur in groups of two or three.

Although the population is considered abundant and number in the thousands along the North American coast, there are currently no overall estimates of the minke whale population in the western North Atlantic (Labrador Shelf SEA Section 4.9.1.2 (Sikumiut 2008)).

Bowhead Whale (*Balaena mysticetus*)

The bowhead whale, *Balaena mysticetus* (or Greenland right whale), was once abundant in the eastern Canadian waters. The Davis Strait Baffin Island Population is most likely to have individuals that may frequent habitat near the Labrador Shelf Bowhead whales (*Balaena mysticetus*) and are distributed throughout most of their known historic range except for the Strait of Belle Isle area and presumably throughout the Labrador Sea where they are not regularly observed (DFO 2006b). Occasionally, dead bowheads have washed up along the Newfoundland and Labrador coast in recent years and likely would have died nearby rather than being carried down from the Arctic.

Evidence suggests that they get occasional juvenile stragglers but there are no common sightings of bowheads in this area now (DFO 2006b). The bowhead whale has a nearly circumpolar distribution in the Northern Hemisphere. Bowheads occur in marine waters and in conditions ranging from open water to thick, extensive (but unconsolidated) pack ice. They are able to break thick ice (over 20 cm) to breathe and can navigate under extensive ice fields (George *et al.* 1989). Five populations have been identified, based mostly on physical barriers to their movement (COSEWIC 2005b).

Population is most likely to have individuals that may frequent habitat near the Labrador Shelf. All populations were depleted in the early twentieth century due to commercial whaling and estimates of the eastern Canadian Arctic populations now range between 2,611 to 9,633. Once bowheads arrive on their summering grounds, their primary activity is feeding (Thomas 1999). Thus, habitat requirements during this time would depend on the distribution of their primary food source (zooplankton), primarily on euphausiids, copepods, or benthic invertebrates. Their Arctic Environment has led to unique adaptations, such as increased longevity and late maturity, energy storage capability, and a sophisticated acoustic sense for ice navigation and long range communication (COSEWIC 2005b). Bowheads are slow swimmers, averaging speeds of 4.50 ± 1.22 km/h during their fall migration and approximately 4.0 km/h (COSEWIC 2005b) during their spring migration.

Bowheads are among the more vocal of baleen whales (Clark and Johnson 1984) and it has been suggested that calls may function to maintain social cohesion of groups and monitor changes in ice conditions (COSEWIC 2005b). Bowheads may use the reverberations of

their calls off the undersides of ice floes to help them orient and navigate (Ellison et al. 1987; George *et al.* 1989). Both eastern Canadian Arctic bowhead whale populations have been designated as threatened by COSEWIC (COSEWIC 2005b).

Beluga Whales (*Delphinapterus leucas*)

Beluga whales (*Delphinapterus leucas*) are circumpolar in distribution. Prior to the 1950s, belugas were common along the northern Labrador coast in summer and along the Labrador coast as far south as Nain (Sergeant and Brodie 1969) (Figure 5.15). More recently, beluga sightings in this area have become rare and the Labrador Inuit Association only receives reports of approximately a dozen sightings per year (COSEWIC 2004). In the summer, it can be found in the warm shallow bays and estuaries of large rivers, whereas in the fall (mid-September) it migrates south to over-winter amongst the pack ice, in leads and polynyas, where open water provides access to air (Doidge and Finley 1993, DFO 2002, NAMMCO 2005, COSEWIC 2004). During this period, belugas will frequent specific river estuaries and glacier fronts (COSEWIC 2004). Due to the beluga's summertime preference for shallow warm estuarine waters, it is unlikely that it would be encountered offshore at this time where the majority of the seismic activity will take place. COSEWIC (2004) and SARA both have determined that the Ungava Bay beluga population that occurs south of 60° N along the Labrador coast is one that is endangered.

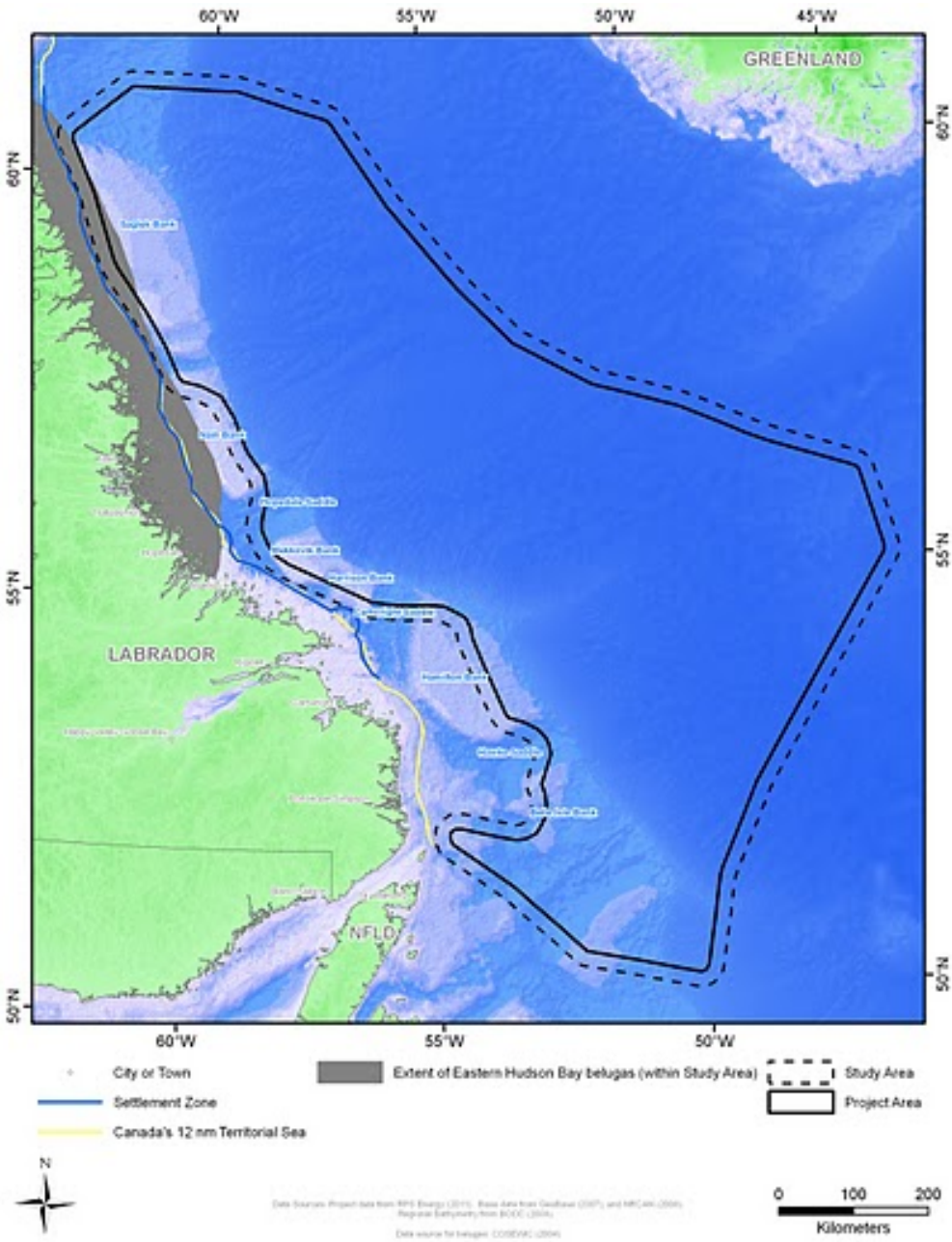


Figure 5.15: Extent of Eastern Hudson Bay Belugas

Harbour Porpoise (*Phocoena phocoena*)

There are three sub-populations of harbour porpoises (*Phocoena phocoena*). The subspecies present along the Atlantic coast of Canada is *Phocoena phocoena phocoena*. In the western Atlantic, the harbour porpoise range from Cape Hatteras to Upernavik, Greenland (Read 1999, COSEWIC 2006) and there is evidence of separate subspecies: Gulf of Main/Bay of Fundy, Gulf of St. Lawrence, Newfoundland/Labrador, and West Greenland (Gaskin 1984, 1992). In eastern Canada, the porpoise may be found as far north as Cape Aston, Baffin Island (~70°N) (Gaskin 1992). No harbour porpoise surveys have been conducted in Labrador, by-catch and incidental observation data suggest that they occur in southern Labrador as far north as Nain (COSEWIC 2006). In May 2003, COSEWIC designated the harbour porpoise Special Concern. Their general distribution and range is presented in Figure 5.14.

Killer Whale (*Ornicus orca*)

Although uncommon in Atlantic waters, they have been recorded in all areas, including Nova Scotia, Gulf of St. Lawrence, Labrador, Hudson Bay and the Canadian Arctic. Killer whales are generally found in near-shore areas where they search for prey such as seals (Leatherwood *et al.* 1976) and juvenile bowhead whales (Finley 2001).

Sowerby's Beaked Whale (*Mesoplodon bidens*)

Sowerby's beaked whales (*Mesoplodon bidens*) are endemic to the North Atlantic. However, their distribution, abundance, and biology is generally not well known. The northern limit of confirmed sightings and strandings in Canadian waters is Notre Dame, Newfoundland, however it is expected this species may extend further north into the Labrador Shelf area. Their habitat is thought to be deep water and the Continental Shelf and slopes. Nearshore sightings are generally very rare (C-NLOPB 2008, COSEWIC 2007). This species is one of "Special Concern" by COSEWIC (2007) and SARA (on line registry information).

Long-finned Pilot Whale (*Globicephala macrorhynchus*)

Long-finned pilot whales (*Globicephala macrorhynchus*) are commonly seen in small pods of approximately 10 to 20 individuals. Long-finned pilot whales have been sighted in the offshore waters of Labrador from May to July (Abend and Smith 1999) and are common off the southwest coast of Newfoundland during the summer (Kingsley and Reeves 1998). They are frequently observed along shelf breaks, offshore, but may occur coastally as well. They commonly come close to shore, especially if squid are abundant in the area. The long-finned pilot whale has not been assessed by COSEWIC and is not listed under SARA [Labrador Shelf SEA Section 4.9.2.1 (Sikumiut 2008)].

Atlantic White-sided Dolphin (*Lagenorhynchus acutus*)

Atlantic white-sided dolphins (*Lagenorhynchus acutus*) number in the hundreds of thousands in the North Atlantic (Reeves *et al.* 1999). Distinct sub-populations of Atlantic white-sided dolphins may occur in the Gulf of Maine, Gulf of St. Lawrence and Labrador Sea (Palka *et al.* 1997). They are often seen in groups of 50 to 60 individuals and groups of several hundred may occur. Their primary food is squid and herring. The Atlantic white-sided dolphin has not

been assessed by COSEWIC and is not listed under SARA [Labrador Shelf Study Section 4.9.2.2 (Sikumiut 2008)].

5.3.6.2 Pinnipeds

Harp Seal (*Phoca groenlandica*)

The harp seal (*Phoca groenlandica*) population in the Northwest Atlantic was estimated to be approximately 5.9 million and has been stable since 1996 (DFO 2005c). The harp seal summers in the Canadian Arctic and Greenland (DFO 2005c). In the fall most of the seals migrate southward either to the Gulf of St. Lawrence or to the area off southern Labrador and northern Newfoundland where they give birth in late February or March (DFO 2000c, DFO 2005c). A substantial proportion of the harp seals pupping in Newfoundland and Labrador would be located in the southern portion of the Study Area. Pups are nursed for approximately 12 to 14 days on the ice and then disperse to areas throughout the northernmost Gulf of St. Lawrence, northeastern Newfoundland and southern Labrador. Some individuals may remain in southern waters throughout the summer; however, the majority of the population migrates north to summer feeding grounds in Hudson Bay, Baffin Island, and northwestern Greenland (DFO 2000c). Harp seals are common in the Study Area.

Ringed seal (*Phoca hispida*)

The ring seal (*Phoca hispida*), is a common seal within the Labrador Sea region (MacLaren, 1958). The immature ringed seals may move offshore during open water season, but the adults will stay around the islands and within the bays and fjords (MacLaren, 1958). Consequently, they are unlikely to be encountered in large numbers during the seismic survey that will take place in the summer.

Collections of traditional knowledge (in Nain 2007 and Rigolet 2007) and from information contained in *Our Footprints Are Everywhere* (Brice-Bennett 1977) suggest that ringed seals are hunted within the Labrador Shelf. Areas of importance for the ringed seals included areas from Hare's Ears and The Highlands to Back Bay; Groswater Bay in The Channel area; Double Mer; area around Drunken Harbour Point and the Advalik Islands; Napartok Bay; Hebron Fjord; Saglek Fjord; Kangalaksiorvik Fjord; Okak Bay; Tasiuyak Bay; Mugford Bay; Anchorstock Bight; Aulatsivik Island area; Tunungayualok Island; Nain Bay; Voisey's Bay; Tikkoatokak Bay; Webb Bay; Anaktalak Bay; Areas around Hopedale; Flowers Bay to Island Harbour Bay; and the Turnavik Islands (Brice-Bennett 1977, C-NLOPB 2008).

Bearded Seal (*Erignathus barbatus*)

Bearded seal, *Erignathus barbatus*, are often seen hauled out on inshore pack ice (Stonehouse, 1985). This species prefers shallow coastal waters where the benthos is rich in hard-shelled crustaceans and molluscs, their principal prey (Stonehouse, 1985). It is expected that very few bearded seals will be encountered during the seismic program in this southern portion of the survey.

Harbour seals (*Phoca vitulina*)

Harbour seals (*Phoca vitulina*) are a common seal that occur within coastal and insular habitats around North Atlantic and Pacific regions. Generally, harbour seals occur in habitats that are sea-ice free all year or where their coast haulout and rookery sites are clear of sea-ice during the breeding season (Burns 2002). The coastal species *Phoca vitulina* (Harbour seal) is generally associated with regions of up welling and tidal action or out on the floe edge (Mansfield 1967), and are not often observed far offshore where seismic activity will occur in the Labrador Sea. Harbour seals in the eastern Atlantic region occur over a latitude range from 30°N to 80°N.

Areas of importance for the harbour seals and the local communities within the area included: Tunungayualok Island and area; Shoal Tickle; Big Bay; Flowers Bay; Kikkektak and Ivjogiktok Islands; Okak Bay; Tasiuyak Bay; Amitok Island; Illuviktalik Island; Iglusuaktaliak Island; Tikkigaksuk Peninsula; Napartok Bay; Seal Bight; Cod Bag Harbour; Shark Gut Harbour; Saglek Fjord; Kaipokok Bay; Big Brook; Jeanette Bay (including Sandy Cove); and Jako's Bight (Brice-Bennett 1977).

Hooded seal (*Cystophora cristata*)

Hooded seals (*Cystophora cristata*), are not commonly observed in the Labrador Sea (Sergeant and Hay 1978, Sergeant 1977). This species is generally associated with heavy pack ice (Sergeant 1974), and their presence would extend until ice break-up. It is unlikely they will be encountered during the scheduled period of seismic exploration in the offshore area of the Labrador Sea, as seismic surveys will take place in ice-free waters.

Grey seals (*Halichoerus grypus*)

The Northwest Atlantic stock of grey seals (*Halichoerus grypus*) occurs primarily in the Gulf of St. Lawrence, off Nova Scotia and in Newfoundland and Labrador. Although the population is centered in the Gulf of St. Lawrence, grey seals may be present along the Labrador Shelf in the summer and fall. Information gathered by Brice-Bennett (1977) suggests that although grey seals are present, they are not frequently hunted within the Labrador Shelf Area. Areas in which hunting may occur included areas around Tunungayualok Island and near Tasiuyak Bay (Brice-Bennet 1977).

5.3.6.3 Polar Bears (*Ursus maritimus*)

Polar bear (*Ursus maritimus*) distribution and range is discussed above. Due to the distance offshore area of > 40 km from shore they are not likely to be encountered since they are most likely to be around coastal areas foraging for food.

5.3.7 Sea Turtles

Sea turtles are uncommon in the northern offshore waters of Labrador; however, they may be present in summer and fall. Species of turtles that may occur in the Study Area include the Leatherback Turtle (*Dermochelys coriacea coriacea*), and the Atlantic Loggerhead (*Caretta caretta*). The Leatherback Turtle is considered "endangered" and is included in Schedule 1 of SARA. The Atlantic Loggerhead has recently been assessed by COSEWIC

and ranked as “endangered” as well, but has not yet been added to Schedule 1 of SARA. Both of these species are discussed further in Section 5.4.

5.3.7.1 Leatherback Turtle

Leatherback turtles, *Dermochelys coriacea*, may be in the Study Area during active seismic data collection. Leatherbacks occur annually in Atlantic Canadian waters to forage, with the majority of turtles present between June and November; they do not nest in Canada (Atlantic Leatherback Turtle Recovery Team 2006, O’Boyle 2001). Bleakney (1965) documented the occurrence of leatherbacks in eastern Canada and his analysis of 26 records of leatherbacks in this region (1889-1964) suggested a seasonal, rather than accidental, movement of the species into the cold waters of the northwest Atlantic. Recently, research by James and Herman (2001), James *et al.* (2005a, 2005b) supported the conclusion that leatherbacks regularly enter temperate waters off eastern Canada. Leatherback occurrences in Canadian waters peak during August-September; however, there are records for leatherbacks in Canadian waters for many months of the year (McAlpine *et al.* 2004). Leatherbacks have been recorded off the coasts of Nova Scotia (*e.g.*, Bleakney 1965; James *et al.* 2005a, 2005b), Newfoundland (*e.g.*, Goff and Lien 1988, Lawson and Gosselin 2003), and Labrador (Threlfall 1978). However they are very rare north of 54° (C-NLOPB 2008) and a recent report by Ledwell and Huntington (2006) indicated that of the number of Leatherback turtles recorded through the Release and Strandings Program, none were in the area where proposed seismic profiling will take place. This sea turtle has been assessed by SARA and COSEWIC (2001) as a species with a status of Endangered. It is anticipated that the Leatherback turtle could potentially be in the Study Area, but based on information above it may be unlikely that they be encountered. None the less, mitigation measures are being followed and all sightings will be recorded.

5.3.7.2 Atlantic Loggerhead Turtle

Atlantic loggerhead sea turtles (*Caretta caretta*) are the most common sea turtle in North American waters and the largest hard-shelled sea turtles in the world (Ernst *et al.* 1994). They are found from coastal areas to more than 200 km out to sea. The North American population is declining, and has been estimated to be between 9,000 and 50,000 adults (Ernst *et al.* 1994). Information from fishery bycatch suggests the loggerhead is present in waters on and east of the 200-m isobath off the Grand Banks (captures peak in September), where there is a high concentration of their prey species (Witzell 1999) [Labrador Shelf SEA Section 4.8.16.2 (Sikumiut 2008)].

5.4 SPECIES AT RISK

The Project Area is not known to contain any sensitive areas or critical habitats for species listed on Schedule 1 of SARA. Notwithstanding this, 11 SARA-listed species (*eg.*, on Schedule 1) have been identified that have a natural range or distribution that falls within the Study Area. Included are three species of cetacean, three fish species, one species of sea turtle, and four marine birds (Table 5.7). Details of these species including a review of known spatial and temporal distribution, abundance, and life history traits relevant to the Study Area are provided in and discussed further in the following sections.

5.4.1 Species Listed Under the Species at Risk Act and COSEWIC

The purpose of SARA is to prevent species becoming extirpated, endangered or extinct; allow for the recovery of extirpated, endangered or threatened species; and manage species of special concern to prevent them from becoming endangered or threatened. The official list of wildlife and plant species at risk (extirpated, endangered, threatened, or of special concern) in Canada is provided in SARA's Schedule 1. Species on this list are legally protected from being killed, captured and/or having any critical habitat destroyed.

Under Section 32 of the SARA, killing, capturing and destruction of critical habitat of extirpated, endangered and threatened species, listed under Schedule 1, is prohibited. These prohibitions do not apply to those listed as special concern. Recovery strategies are required for endangered, threatened and extirpated species and management plans are required for special concern species. SARA is administered by Environment Canada, Parks Canada and DFO.

COSEWIC develops prioritized candidate lists of species needing assessment, manages the production of species status reports, and holds meetings at which species are assessed and assigned to risk categories. COSEWIC uses the best available information relevant to assessing a species' risk of extinction or extirpation, which it may obtain from any credible source of knowledge of the species and its habitat. The evaluation process is independent and transparent, and the results are reported to Canadian Endangered Species Conservation Council and the public. COSEWIC's Candidate List is a compilation of species in Canada that have yet to be assessed and are suspected of being at some risk for extinction or extirpation thereby indicating those species that have priority for assessment. A COSEWIC status ranking is provided for each SAR in Table 5.7.

Table 5.7 SARA Schedule 1-listed Species within the Study Area

Common Name	Scientific Name	SARA Risk Category	COSEWIC Status
Marine Mammals			
Blue Whale	<i>Balaenoptera musculus</i>	Endangered	Endangered
Fin Whale	<i>Balaenoptera physalus</i>	Special Concern	Special Concern
North Atlantic Right Whale	<i>Eubalaena glacialis</i>	Endangered	Endangered
Reptiles			
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered	Endangered
Fish			
Atlantic Wolffish	<i>Anarhichas lupus</i>	Special Concern	Special Concern
Northern Wolffish	<i>Anarhichas denticulatus</i>	Threatened	Threatened
Spotted Wolffish	<i>Anarhichas minor</i>	Threatened	Threatened
Birds			
Harlequin Duck	<i>Histrionicus histrionicus</i>	Special Concern	Special Concern
Ivory Gull	<i>Pagophila eburnea</i>	Endangered	Endangered
Barrow's Goldeneye	<i>Bucephala islandica</i>	Special Concern	Special Concern
Eskimo Curlew	<i>Numenius borealis</i>	Endangered	Endangered

Sources: Species at Risk 2010a; COSEWIC 2011.

Notes:

1. Harbour Porpoise (*Phocoena phocoena*) is listed under COSEWIC as Special Concern, and under SARA as Threatened under Schedule 2
2. Sowerby's Beaked Whale (*Mesoplodon bidens*) is listed under COSEWIC as Special Concern, and under SARA as Special Concern under Schedule 3

5.4.1.1 Marine Mammals and Reptiles

Blue Whale

The Blue Whale (*Balaenoptera musculus*) is found globally and occurs in most of the world's oceans (COSEWIC 2002). The Atlantic population of Blue Whales frequent waters off eastern Canada. During spring, summer, and fall, these whales occur along the north shore of the Gulf of St. Lawrence and off eastern Nova Scotia and in summer are also observed off the southern coast of Newfoundland and in the Davis Strait, between Baffin Island and Greenland (COSEWIC 2002; Beauchamp *et al.* 2009). The Blue Whale typically migrates south in winter, but some may remain in the St. Lawrence during years with little ice cover. Between 20 and 105 individuals are observed annually in the Gulf of St. Lawrence in photo identification studies, though the actual size of the Atlantic population is not known, it is unlikely that the number of mature animals in the population exceeds 250 individuals according to expert's estimates (Beauchamp *et al.* 2009).

Historically, commercial whaling carried out in the Atlantic reduced the population by about 70% (Beauchamp *et al.* 2009). Because of the small size of the population, activities affecting even a small number of individual whales can have a significant impact on the species' survival in the Atlantic. Among the threats described in the recovery plan, those that represent a high risk include anthropogenic noise which causes a degraded underwater acoustic environment and alters behaviour, and food availability. Medium risk threats include

persistent marine contaminants, collisions with ships and disturbance caused by whale-watching activities (Beauchamp *et al.* 2009).

Recent sightings within the Study Area have been sporadic, with most sightings made in the Gulf of St. Lawrence, and off the southwest and south coasts of Newfoundland. It should be noted, however that the distribution maps in the recovery strategy for the population, indicate an area of known occurrence on the east coast of Newfoundland, which overlaps with the Study Area (Sears and Calambokidis 2002 as cited in Beauchamp *et al.* 2009).

Fin Whale

The Fin Whale (*Balaenoptera physalus*) is found in all oceans of the world and generally makes seasonal migrations from low-latitude wintering areas to high-latitude summer feeding grounds.

The locations of the wintering grounds are poorly known. Summer concentrations in the western North Atlantic are in the Gulf of St. Lawrence, on the Scotian Shelf, in the Bay of Fundy, and in the nearshore and offshore waters of Newfoundland and Labrador (COSEWIC 2005). Here, the species is generally associated with low surface temperatures and oceanic fronts with high concentrations of prey, and can be found from close inshore to well beyond the shelf break. The defining characteristics of preferred breeding grounds for Fin Whales are less known (COSEWIC 2005).

Efforts to estimate the size of the population have been confounded by the extensive range of this species and the potential confusion with Sei Whales (*Balaenoptera borealis*). The expense associated with large-scale surveys is a significant limiting factor, particularly in the more remote, offshore waters off Newfoundland and Labrador. There are no complete population estimates for the western Northwest Atlantic Region but partial estimates are available for Newfoundland and Labrador of between 459 and 2,654 in 2003 (Lawson 2006 as cited in C-NLOPB 2008). However, no substantial evidence of trends is available.

The primary limiting factors and threats to the population include population depletion due to past whaling activities, entrapment in ice, collisions with shipping traffic, displacement from anthropogenic noise, pollution and climate change (COSEWIC 2005). Fin Whales may occur within the Study Area year-round, but higher frequency of summer sightings of this species in nearshore areas suggests that Fin Whales are more likely to occur closer to the coast (COSEWIC 2005).

North Atlantic Right Whale

The North Atlantic Right Whale (*Eubalaena glacialis*) is a large (up to 17 m) whale, generally black in colour with occasional white belly patches and no dorsal fin (COSEWIC 2003a). Right whales were once common in temperate waters of the Western Atlantic but were seriously depleted by whaling (COSEWIC 2003a). In 2003, the population of North Atlantic Right Whales was estimated at about 322 animals (COSEWIC 2003a), while more recent

estimates suggest the current population numbers about 350 animals (Brown *et al.*, 2009). North Atlantic Right Whales are protected and listed as “endangered” under Schedule 1 of SARA.

Since whaling ended, the most obvious threats to the current population are vessel strikes and entanglements in fixed fishing gear (Brown *et al.*, 2009).

The potential for *Eubalaena glacialis* to be present in the Study Area is very low. Distribution maps identify the Study Area as a “rare right whale sighting location”.

Leatherback Turtle

The Leatherback Turtle (*Dermochelys coriacea*) completes extensive seasonal migrations northward to forage and southward to nest thereby having a distribution more widespread than any other marine turtle species (ALTRT 2006).

Adult turtles occur annually in Atlantic Canadian waters to forage, with the majority of turtles present between June and November. Peak occurrences in Canadian waters occur during August-September but there are records for most months of the year (McAlpine *et al.* 2004 as cited in ALTRT 2006). Leatherbacks have been recorded off the coasts of Nova Scotia, and Newfoundland and Labrador, including within the Study Area (ALTRT 2006).

In recent years, the population has been undergoing a severe global decline (> 70 % in 15 years). The species is currently considered nationally endangered (COSEWIC 2001a) and globally critically endangered by the International Union for the Conservation of Nature (IUCN). A long lifespan, very high rates of egg and hatchling mortality, and a late age of maturity makes this species unusually vulnerable to even small increases in rates of mortality of adults and older juveniles (ALTRT 2006). In Atlantic Canadian waters, the highest identified potential threats to the Leatherback include entanglement in commercial fishing gear, vessel collision from recreational boating, ship traffic, marine pollution, and oil and gas exploration and development (ALTRT 2006).

5.4.1.2 Fish

Wolffish

Of the four species of wolffish that inhabit Canadian waters, two species [Spotted Wolffish (*Anarhichas minor*) and Northern Wolffish (*Anarhichas denticulatus*)] have been designated by SARA due to significant declines in biomass. Assessments by COSEWIC have indicated that over three generations the abundance of these two species had declined by over 90% and that the extent of distribution has also decreased (COSEWIC 2001b; 2001c). A third species, the Atlantic Wolffish (*Anarhichas lupus*), has been assessed by COSEWIC as a species of “special concern”, suggesting that it is particularly sensitive to human activities or natural events but is not endangered or threatened at this time (COSEWIC 2000). Although *A. lupus* is at a lower designation, the species also underwent a decline as great as that

observed for the two threatened species over the northern part of its range (Northeast Newfoundland and Labrador Shelf) (COSEWIC 2000).

The Northern Wolffish (Figure 5.16) and the Spotted Wolffish are primarily distributed on Newfoundland's Grand Banks and areas to the north, while *A. lupus* has a wider distribution in the Gulf of St. Lawrence, Scotian Shelf, Bay of Fundy and Georges Bank, where the other two species are rare. The Northern and Spotted Wolffish are estimated to be one million and 2.7 million individuals, respectively (Canning & Pitt 2006 as cited in C-NLOPB 2008). A large decline in wolffish numbers was observed between 1980 and 2001 in the Labrador Shelf SEA Area, particularly in the mid-1990s (Kulka *et al.* 2007).

While all three species have undergone substantial declines during the 1980s and 1990s, the causes of their decline remain uncertain (Kulka *et al.* 2007). The effects of bottom trawling activities on wolffish habitat, the discharge of bilge and ballast water, and pollution from land-based sources may all be contributors to the species' decline, though further investigation into these factors is necessary. The importance of effects mitigation during offshore exploration activities has also been underlined in the recovery and management strategies for these three species.

All three species are likely to be found within the Study Area, though all three are expected to be found at varying depths. Northern Wolffish are generally found in a wider range of depths than the others (38m-1504m), but are most heavily concentrated at depths between 500m and 1000m. Habitat for Spotted Wolffish ranges from 56m-1046m, however this species is more commonly found at depths ranging from 200m to 750m. Atlantic Wolffish prefer shallower waters, and can be found nearshore and up to 918 m, with a preferred depth range between 150m-350 m.

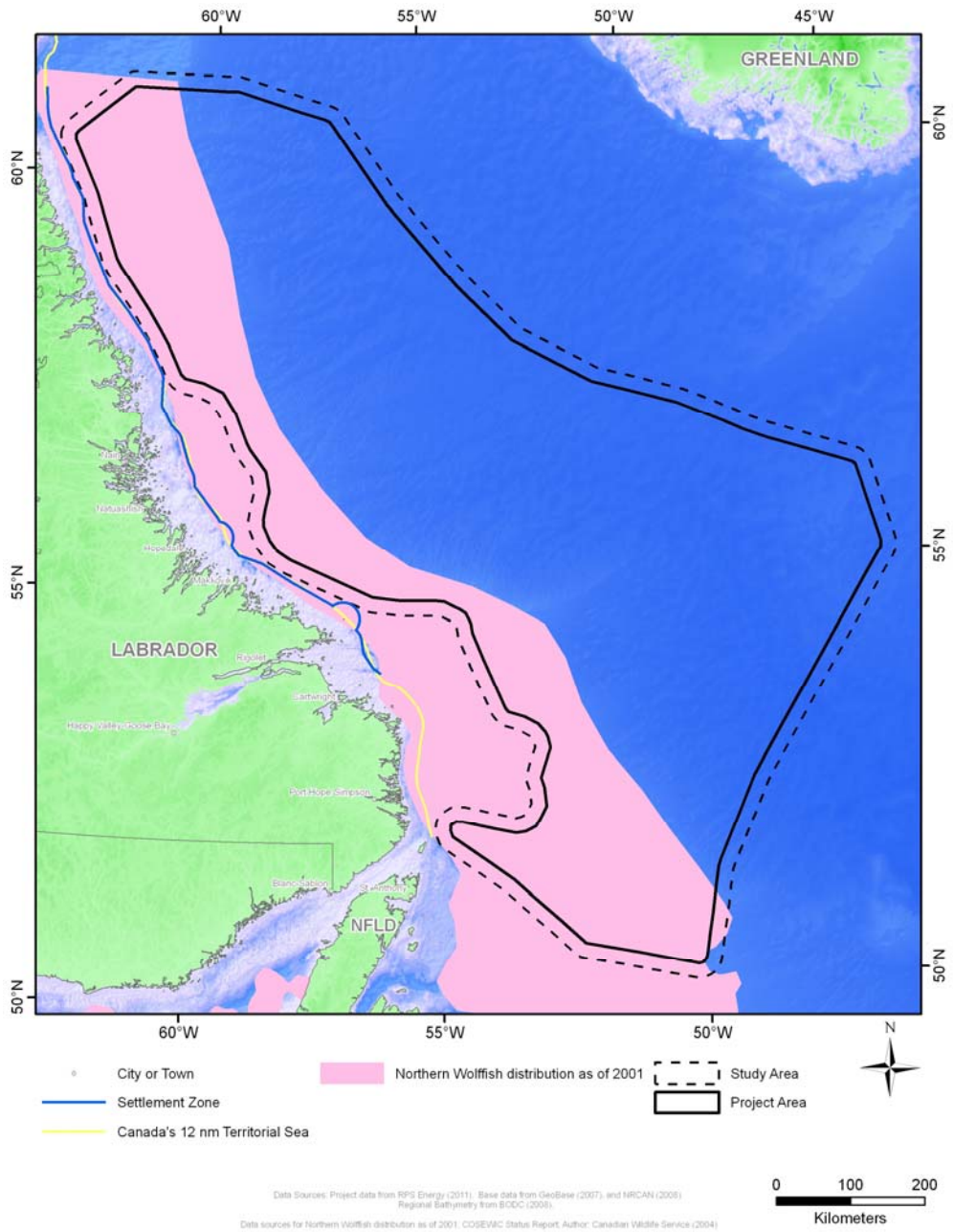


Figure 5.16: Northern Wolffish Distribution as of 2001

5.4.1.3 Birds

Harlequin Duck

The Harlequin Duck (Eastern population) (*Histrionicus histrionicus*) breeds on inland rivers and streams from northern New Brunswick north to Nunavut, and winters in coastal areas from Newfoundland, south to Maryland, as well as southwest Greenland. Wintering habitat consists of rocky coastline, exposed headlands, and subtidal ledges and the species is also regularly associated with offshore islands (Environment Canada 2007a). This species has been sighted at several nearshore and offshore locations within the Study Area, and is known to have breeding and moulting sites in the area as well, specifically at the Gannet Islands (Figure 5.17) (Environment Canada 2007a).

Population trends are not available for the breeding population of eastern North America; however, local Aboriginal knowledge from Innu elders of Utshimassit suggests that Harlequin Duck populations in central Labrador declined considerably in the 1980s and early 1990s (Environment Canada 2007a). Declining numbers are mostly attributed to overhunting and habitat destruction from hydroelectric developments. By-catch is also a threat, as Harlequin Ducks are often caught in gill nets used within various fisheries (Environment Canada 2007a). In the wintering and moulting locations, entanglement in fishing nets, aquaculture, illegal/accidental harvesting, boating activities, and chronic and catastrophic oiling are potential threats (Environment Canada 2007a).

Harlequin Ducks are listed provincially as “vulnerable” and are also protected under the *Migratory Birds Convention Act* (MBCA).