

T11.12 MARINE MAMMALS

There are twenty-one species of whales, dolphins and porpoises (cetaceans)¹, and six species of seals and walrus which occur in the waters around Nova Scotia (see Table T11.12.1). These mammals are important components of the marine ecosystem, feeding near the middle or top of the food chain. The large quantities of food (mainly fish) which they consume means they compete directly with people for a commercial resource.

Many whales are considered endangered, vulnerable or threatened because of their low population numbers and slow rates of reproduction. Walrus used to breed on Sable Island (District 890) and islands off Cape Breton but, hunted for their oil, had disappeared from our waters by the late 1800s.

Cetacean strandings occur occasionally in Nova Scotia, though more frequently these are of dead rather than live animals. Large whales are most often buried by the municipalities, with heavy equipment at the site where the whale has washed ashore. It is not known why groups of apparently healthy cetaceans strand, though it may be due to illness of one or more individuals within the group, or simply that the animals become disoriented in shallow in-shore waters. In recent years, mass strandings of Atlantic White-sided Dolphins and Atlantic Long-finned Pilot Whales have occurred in Cape Breton, and Atlantic Harbour Porpoises have occasionally stranded at low tide after swimming up rivers or entering herring weirs in the Bay of Fundy. A Northern Bottlenose Whale spent several days in Sydney River in 1992, before eventually stranding in Sydney Harbour.

Seals may haul out on ice or land to bask in the sun for extended periods, though healthy animals will not normally allow humans to approach too closely. When seals haul out near populated areas, caution is required, as seals will aggressively defend themselves and can bite humans and domestic pets.

CETACEANS

Whales, Dolphins and Porpoises

Whales, dolphins and porpoises fall into two groups, the baleen whales (Mysticeti) and the toothed whales (Odontoceti). Baleen whales use modified hairy plates (baleen) to sieve small fish and invertebrates from large volumes of water, while toothed whales are hunters and



Plate T11.12.1: Humpback Whale north of Brier Island (Unit 912). Humpback Whales can be identified by their irregular tail flukes. The Right Whale generally has a straighter tail fluke (see Plate H1.1.1 in *Habitats*). Photo: C. Haycock (BIOS)

grasp prey, such as fish and squid, which are then swallowed whole. Toothed whales also have a single external blowhole, while baleen whales have two blowholes. Baleen whales are further divided into two families: rorquals, with thin, streamlined bodies and expandable throat grooves, and Right Whales, which have thicker bodies and lack throat grooves. Baleen whales include the world's largest living animals—an adult Blue Whale may weigh more than 100 tonnes and reach a length of more than 25 m.

Cetaceans are most often identified on the basis of the shape and size of the blow; colouring and pigmentation; the presence, shape and size of the dorsal fin; and the shape of the tail flukes—though general behaviour and seasonal occurrence of the animal(s) also provide some clues.

COMMON NAME	SCIENTIFIC NAME	DISTRIBUTION
ORDER CARNIVORA (FAMILY PHOCIDAE - Seals)		
Grey Seal	<i>Halichoerus grypus</i>	Common on Atlantic Coast and Sable Island
Harbour Seal	<i>Phoca vitulina</i>	Common in all coastal waters and Sable Island
Harp Seal	<i>Phoca groenlandicus</i>	Present in Gulf of St. Lawrence, late winter to early spring
Hooded Seal	<i>Cystophora cristata</i>	Present in Gulf of St. Lawrence, late winter to early spring
ORDER CARNIVORA (FAMILY ODOBENIDAE - Walrus)		
Walrus	<i>Odobenus rosmarus</i>	Occasional straggler from arctic waters
ORDER CETACEA (SUBORDER ODONTOCETI - Toothed Whales)		
Striped Dolphin	<i>Stenella caeruleoalba</i>	Worldwide (tropical, subtropical and temperate); pelagic; Sable Is. strandings
Common Dolphin	<i>Delphinus delphis</i>	Widespread tropical warm-temperate waters. Pelagic, highly gregarious
Bottlenose Dolphin	<i>Tursiops truncatus</i>	Tropical to temperate waters, not common off NS (1993 stranding)
White-beaked Dolphin	<i>Lagenorhynchus albirostris</i>	Northern North Atlantic, from Cape Cod (spring) to Davis Strait
Atlantic White-sided Dolphin	<i>Lagenorhynchus acutus</i>	Northern North Atlantic (Cape Cod southern limit); in Gulf of St. Lawrence. Individual and mass strandings common in NS; seen with fin and pilot whales
Killer Whale	<i>Orcinus orca</i>	Worldwide year-round; migrate north in spring, uncommon off NS
Atlantic Long-finned Pilot Whale	<i>Globicephala melaena</i>	West Greenland to Cape Hatteras; in Gulf of St. Lawrence; large herds in inshore waters from June to November; mass strandings in Cape Breton
Atlantic Harbour Porpoise	<i>Phocoena phocoena</i>	Cold waters from Davis Strait to N. Carolina; common in coastal NS and Bay of Fundy in summer (entangles in herring weirs); hunted by M'ikmaq in past.
Risso's Dolphin	<i>Grampus griseus</i>	Tropical to temperate waters, Newfoundland south to Lesser Antilles
Beluga Whale	<i>Delphinapterus leucas</i>	Inshore species, confined to arctic/subarctic waters; population in Gulf of St. Lawrence (500); seen around Cape Breton, in Halifax Harbour, St. Margarets and Chedabucto Bays
Pygmy Sperm Whale	<i>Kogia breviceps</i>	Appears widely distributed based on stranding data; rarely seen at sea
Sperm Whale	<i>Physeter macrocephalus</i>	Widely distributed in deep waters (>180 m) of all oceans, females/calves in tropical/temperate waters, males migrate as far north as the Davis Strait
Northern Bottlenose Whale	<i>Hyperoodon ampullatus</i>	Cold temperate to arctic North Atlantic waters; favours deep waters from Rhode Island north to pack ice edge in Davis Strait (spring/summer); population in the Gully southeast of Sable Island is likely year round
True's Beaked Whale	<i>Mesoplodon mirus</i>	Little known; stranding data from Florida and St. Anne's Bay, Cape Breton.
Blainville's Beaked Whale	<i>Mesoplodon densirostris</i>	Wide tropical/temperate distribution; 1 stranding in Peggy's Cove
ORDER CETACEA (SUBORDER MYSTECETI - Baleen Whales)		
Minke Whale	<i>Balaenoptera acuterostrata</i>	From Gulf of Mexico north to pack ice, winters in temperate waters, migrates north past NS in May; concentration in Gulf of St. Lawrence in summer
Sei Whale	<i>Balaenoptera borealis</i>	Worldwide; two stocks in western North Atlantic, centred on Scotian Shelf and Labrador Sea; range from Labrador to Gulf of Mexico; pelagic
Fin Whale	<i>Balaenoptera physalus</i>	Worldwide; winter from ice edge south to Florida; summer from Cape Cod to Arctic Circle (often seen in Bay of Fundy, offshore NS, Chedabucto Bay)
Blue Whale	<i>Balaenoptera musculus</i>	Worldwide; Panama to Baffin Bay; occasional sightings (usually lone individual) offshore NS as whales migrate to/from summer feeding grounds in Gulf of St. Lawrence and southern Greenland
Humpback Whale	<i>Megaptera novaeangliae</i>	Widely distributed over shallow banks and in shelf waters, western N. Atlantic stock migrates past Bermuda to winter near tropics, off NS from spring to fall (Bay of Fundy, Cape Breton)
Right Whale	<i>Eubalaena glacialis</i>	Range from Nfld. to Florida; Bay of Fundy and Roseway Basin (SW of NS) important feeding/mating areas in summer/fall; winter round Bermuda

Table T11.12.1: Species of seals, whales and dolphins found in Nova Scotian waters.

Whales display a wide range of activities in coastal waters, including blowing, breaching (jumping clear of the water), spyhopping (raising the head from the water to look around), fluking-up (raising the tail flukes from the water), lobtailing (slapping the water with the flukes) and flippering (waving or slapping a flipper on the water).

Cetaceans travel singly or in groups, called pods, characteristic of the species. Toothed whales usually travel in pods of six to eight individuals, while Harbour Porpoises are usually alone or in pairs. Large pods of up to 2000 Saddleback Dolphins and 500 Pilot Whales and White-sided Dolphins have also been observed.

Like all other mammals, cetaceans are warm-blooded, breathe air and feed their young on milk. Because they are warm-blooded, unlike fish, they must spend a lot of energy maintaining body temperature when in cooler waters. Hearing is the most important sense for cetaceans. Besides communication and feeding, it has been suggested that their highly specialized systems of sound production may be important for navigation.

Seasonal Distribution

Cetaceans are highly mobile, and most species overwinter in warmer waters and exploit the biologically productive areas around Nova Scotia as a summer feeding ground. For species such as the Blue, Fin, Sei, Minke, Right, Humpback and Sperm whales, and dolphins and porpoises, which visit Nova Scotia in summer, the area is the coolest part of their range. For arctic and subarctic species such as Killer Whales and Northern Bottlenose Whales, Nova Scotia is the warmest part of their range. These whales migrate south in late summer and fall to remain in ice-free waters over winter; in spring and summer they appear to follow the retreating ice pack north. The Northern Bottlenose Whale population on the Scotian Shelf (Region 900), however, may represent a separate, non-migratory stock. Smaller numbers of Fin, Humpback, Pilot and Northern Bottlenose whales, and Harbour Porpoises are present throughout the year. In general, the number and variety of whales in our waters increases in the spring and remains highest throughout the summer months, which is the best time of year for whale watching.

In the Bay of Fundy (Unit 912), the whales most likely to be observed on whale-watching tours include Humpbacks, Fins, Minkes and, on occasion, Right whales. Along the northwest coast of Cape Breton (Unit 914), pods of Pilot Whales and Fin Whales may be observed from shore. Fin Whales, which are surpassed in size only by Blue Whales, can

be seen regularly from shore in late winter and spring, feeding on herring near the approaches to Halifax Harbour and in Chedabucto Bay (Unit 911). Minke Whales, which are our smallest baleen whales, are also occasionally spotted in these areas in late spring, but they are not as abundant as Fin Whales and are much less obvious. Fin Whales may be observed from shore all along the Atlantic coast of Nova Scotia wherever concentrations of herring or other schooling fish are found. Harbour Porpoise can be observed in inshore waters, with the largest reported concentrations in the Bay of Fundy and smaller numbers in the Northumberland Strait (Unit 914).

Feeding (see Table T11.12.2)

Most large whales eat about four per cent of their body weight per day while in summer feeding grounds, less in wintering areas. Smaller toothed whales, such as dolphins and porpoises, may consume ten per cent body weight per day.

Baleen whales feed on krill, copepods, squid and small schooling fish by swallowing or skimming. Usually a large mouthful of water and food is engulfed at one time, and the water is forced out through the baleen. Right Whales and occasionally Sei Whales feed by swimming at the surface with the mouth open, simultaneously sieving out food particles (skimming). Dense concentrations of prey organisms, often ten to 100 times higher than that found in surrounding areas, are required for baleen whales to feed effectively, and the distribution of whales in our waters is centred around these highly productive areas.

Toothed whales feed primarily on fish, though squid, octopus and larger crustaceans are also eaten. Killer Whales occasionally feed on seals, smaller whales or pelagic birds.

Reproduction

Cetaceans have extremely low reproductive potentials, which makes them particularly vulnerable to habitat or environmental change. Populations are thought to be separated into stocks, with individuals only moving between stocks when stocks are large or overlapping. For small, reproductively isolated stocks of cetaceans, recovery from harvesting or environmental damage is very slow. The number of Beluga Whales in the St. Lawrence estuary does not appear to be increasing despite the protection afforded them for several years. Right Whales, which occur in Nova Scotia waters, are also endangered—only about 325 identified individuals remain of the North Atlantic stock. The number of Humpback Whales appears to be increasing, though they are

BALEEN WHALES	
Blue Whale	euphausiids
Fin Whale	euphausiids, sand lance, mackerel, squid, herring, copepods
Sei Whale	euphausiids, copepods, fish, squid
Minke Whale	sand lance
Right Whale	copepods, euphausiids
Humpback Whale	sand lance, capelin, euphausiids
TOOTHED WHALES	
Sperm Whale	squid, cod, redfish, octopus
Northern Bottlenose Whale	squid, herring
Pilot Whale	squid, cod, mackerel, groundfish
Killer Whale	squid, cod, herring, groundfish, whales, seals, birds
Beluga Whale	fish, bottom invertebrates, squid
Blainville's Beaked Whale	mainly squid, fish
True's Beaked Whale	mainly squid, fish
Pygmy Sperm Whale	mainly squid, fish
DOLPHINS AND PORPOISES	
White-beaked Dolphin	squid, octopus, cod, herring, haddock, capelin, benthic crustaceans
Atlantic White-sided Dolphin	herring, smelt, silver hake, squid
Common Dolphin	fish, squid
Risso's Dolphin	mainly squid
Bottlenose Dolphin	shrimp, eels, catfish, menhaden, mullet
Striped Dolphin	fish, squid
Harbour Porpoise	herring, mackerel, cod, smelt, pollock, redfish

Table T11.12.2: Feeding modes and food preferences of Nova Scotia cetaceans.

	AGE*/LENGTH AT FIRST REPRODUCTION (YEARS OR METRES)	GESTATION PERIOD (MONTHS)	LACTATION PERIOD (MONTHS)	CALVING INTERVAL (MONTHS)
BALEEN WHALES				
Blue Whale	5–7 yr	10–11	6–7	2–3
Fin Whale	7–8 yr	11	6	2–3
Sei Whale	9 yr	11	6	2
Minke Whale	6(m)/7(f) yr	10	6	1
Right Whale	5–10 yr	12+	12	3–4
Humpback Whale	4–5 yr	10–11	10	2
TOOTHED WHALES				
Sperm Whale	7–13 yr	12–13	24	3–6
Northern Bottlenose Whale	6–7 yr	12	12	2–3
Pilot Whale	12(m)/6(f) yr	16	22	3–4
Killer Whale	–	12–16	24	4–7
Beluga Whale	5–8 yr	14	12	2–3
Blainville's Beaked Whale	9 yr	–	–	–
True's Beaked Whale	–	–	–	–
Pygmy Sperm Whale	–	9	12	1–2
DOLPHINS AND PORPOISES				
White-beaked Dolphin	–	10	–	–
Atlantic White-sided Dolphin	6–8 yr	11	18	–
Common Dolphin	5–7 yr	10–11	5–10	1.3–2
Risso's Dolphin	3 metres	–	–	–
Bottlenose Dolphin	10(m)/5(f) yr	12	12–18	2
Striped Dolphin	2.1 metres	12	9–18	3
Harbour Porpoise	3–4 yr	10.6	9	1
*(m)=males, (f)=females				

Table T11.12.3: Reproductive information on whales, dolphins and porpoises of Nova Scotia.

still considered endangered or threatened. Blue, Fin, Humpback, Minke, Right, and Sperm whales are all designated as protected species by the International Whaling Commission (IWC), and Harbour Porpoises are considered threatened.

Most species of whales take several years to reach sexual maturity. The gestation period ranges from ten to sixteen months, and normally only a single calf is born. Lactation lasts for six to ten months for baleen whales and twelve to twenty-four months for toothed whales. Calving intervals for most species are from two to three years, though it varies from one to seven years, depending on the species (see Table T11.12.3).

Natural mortality rates of whales are low but damage due to human activities is significant. Stranding data and recent studies on Right Whales show collisions with ships are responsible for a large proportion of whale deaths.

PINNIPEDS

Seals

Seals belong to a group of mammals known as pinnipeds, which means feather-, fin- or web-footed. Five species occur off Nova Scotia (see Table T11.12.1), all true seals of the Family Phocidae. Grey Seals and Harbour seals occur year round and are the most commonly observed seals, though they inhabit the shoreline only seasonally. These species haul out on land to breed along the Nova Scotia coast in winter and late spring, respectively. Harp and Hooded seals are less common and breed on the pack ice of the northwest Atlantic. Pups are born in mid-winter near the Magdalen Islands and off Newfoundland. Adults and pups from breeding grounds in the Gulf of St. Lawrence drift eastwards and are occasionally seen along the western shore or northern tip of Cape Breton Island. Ringed Seals may also be seen in Nova Scotia, although the species is circumpolar, and shore-fast ice north of southern Labrador is the closest breeding ground to Nova Scotia. Most Harp, Hooded or Ringed seals sighted around Nova Scotia are juveniles, feeding in our waters near the southern limits of their ranges.

Seals observed in Nova Scotia may be distinguished on the basis of physical characteristics, as well as seasonal occurrence and distribution. The pups of Grey and Harbour seals are born at different times of the year, and each species prefers a different environment in which to raise its young.

SPECIES ACCOUNTS

Grey Seal

The Grey Seal is often called a “horse-head” because of its long, arched, heavy muzzle, which is particularly noticeable on the adult male. When younger Grey Seals occur with Harbour Seals, the shape of the nostrils can sometimes be used as a more reliable field identification characteristic than the shape of the head. The nostrils of the Grey Seal tend to be parallel, with a gap at the bottom. The coat of an adult is variable, though females are generally lighter-coloured and more mottled than the heavy-shouldered, battle-scarred males. Adult males are also much larger than females: an average male is 225 cm long and weighs 300–350 kg; the average female is 200 cm long and weighs 150–200 kg.

Grey Seals in Nova Scotia belong to the western North Atlantic stock, which is one of three distinct breeding groups in the world, comprising approximately one quarter of the world Grey Seal population.² Breeding colonies occur at the Magdalen Islands (Deadman Island) in the Gulf of St. Lawrence; Amet Island in the Northumberland Strait (sub-Unit 521a); Hay Island and the Basque Islands off Cape Breton (District 870); Sable Island (District 890) Camp Island off the east coast of Nova Scotia (Unit 834); and the largest group on shifting, newly formed ice in the Northumberland Strait and St. Georges Bay (Unit 914) (see Figure T11.12.1).

Grey Seals are gregarious and form large breeding colonies on pack ice or on land in remote, wave-exposed sites. Females haul out shortly before giving birth, while adult males remain nearby and challenge rival males for dominance. The pups, which are born from late December to early February, remain on land for about 3–5 weeks following birth. They are weaned in 2–3 weeks, at which time the mother abandons them abruptly. The pups fast on the ice, or land, while moulting their white birth coats, before instinctively taking to the water, where they learn to feed on their own. Towards the end of the nursing period, the females become receptive to the waiting males and may mate several times with various partners. After mating, Grey Seals disperse widely from the breeding colonies, as do the young pups. Both pups and adults can be very vocal, with a variety of loud, quavering calls.

In May/June, Grey Seals haul out on land to moult. They are common along the coast from spring till autumn, feeding mostly where schooling fish occur and at the mouths of rivers. While their feeding habits are mostly coastal, they will also be found year round in offshore waters.

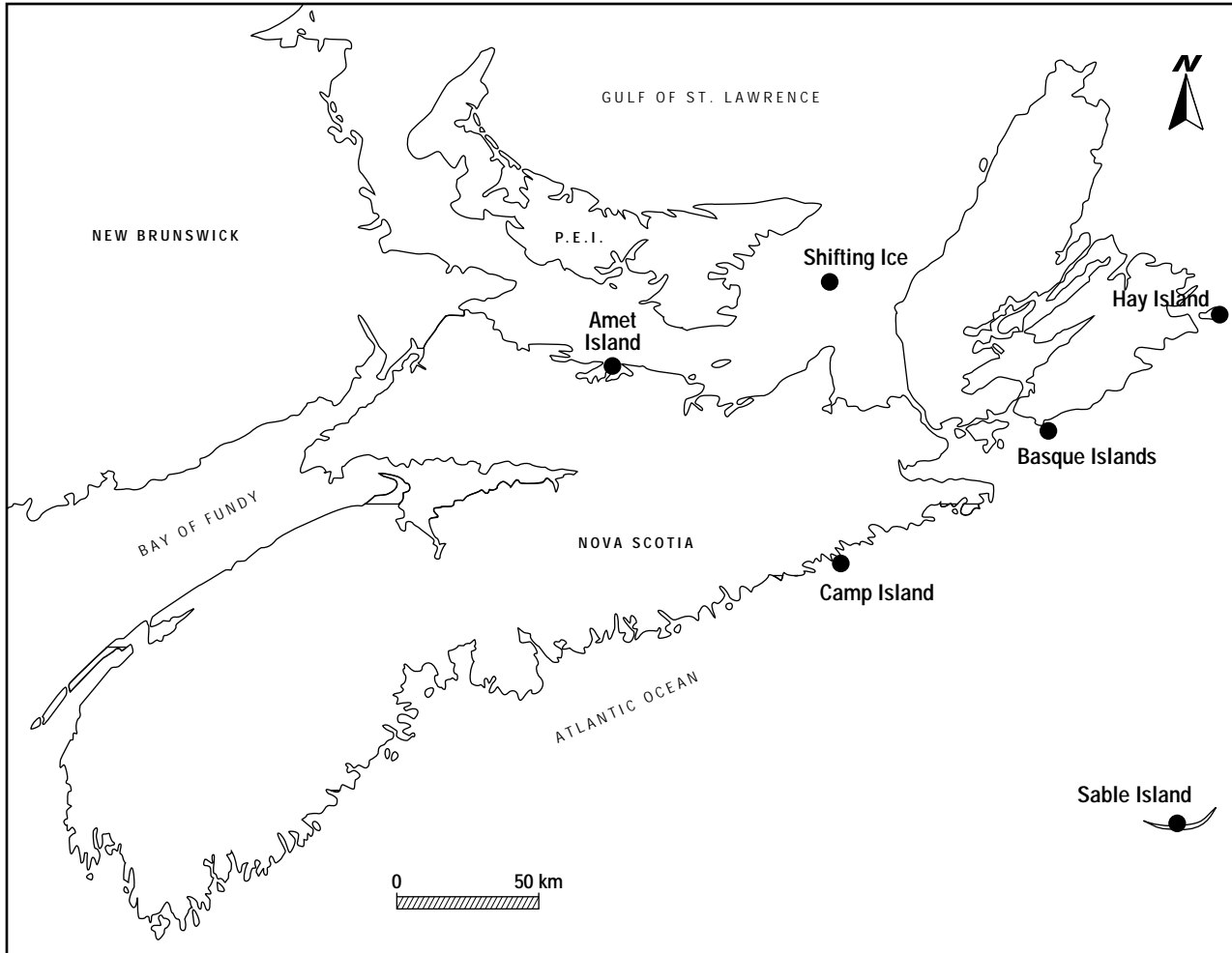


Figure T11.12.1: Major breeding colonies of Grey Seals.²

Harbour Seal

The Harbour Seal, which is also known as the Common or Spotted Seal, is much smaller and generally darker than the Grey Seal. The adult male, with a maximum weight of 110 kg, is only slightly larger than the female. The Harbour Seal has a more rounded head, a smaller, dog-like muzzle and V-shaped nostrils, and a more uniformly spotted coat than the Grey Seal.

The Harbour Seal population is thought to be stable or increasing, though estimates are difficult because the seals do not form large breeding colonies on land. Harbour Seals are found in small breeding groups in the quiet waters of sheltered bays and inlets. They can sometimes be found in fresh water, moving up estuaries into rivers and lakes, away from the sea. Their pups are often born at low tide on intertidal mud banks, sandbars or rock ledges, from

late April through June, peaking in late May. Within the Maritimes, most Harbour Seals are found on Sable Island and along the Atlantic Coast of Nova Scotia (Region 800).

The pup sheds its first coat in its mother's uterus and is born with the adult grey coat.³ Pups are ready to swim shortly after birth and are carefully tended by their mothers, who, if threatened, may carry their pups between their fore flippers or on their bellies. Pups are weaned after about a month, and mating occurs immediately afterwards. Throughout the summer, Harbour Seals continue feeding along the coast, following the inshore migrations of fish and hauling out occasionally to bask in the sun. Harbour Seals are the least vocal of all seals, and adults usually only snort, grunt or growl as threat displays.

Harbour Seals haul out on land to moult in early August and begin to move away from the coast in the

late fall. They are less frequently seen in winter, having moved further offshore to avoid the ice in frozen inlets. Harbour Seals do not appear to haul out when the air temperature is too low, preferring instead to remain in the water; this may also contribute to fewer sightings in the winter.

Harp Seal

Adult Harp Seals have a black face and a silver grey body, with a distinctive black wishbone or “harp” shape on their back. This characteristic marking does not develop until after they reach sexual maturity, and juveniles, which are most likely to be observed in Nova Scotia waters, are silvery grey with irregular black blotches. Adult males and females are roughly the same size, about 170 cm long and 130 kg. Harp Seal pups, or “whitecoats”, are born on pack ice off Newfoundland and the Magdalen Islands from late February to mid-March.⁴ This species gained international media attention in the controversy surrounding the annual seal hunt in Canadian waters.

Ringed Seal

The adult Ringed Seal has prominent grey-white rings, which may be separate or fused together, along its dark grey back. The belly is silver. Ringed Seals are relatively small and in Canada average 135 cm. White-coated pups are born in early April in birth lairs on shorefast ice north of southern Labrador. Juveniles, the stage most likely to be observed around Nova Scotia, may be identified as Ringed Seals by the short nose and ringed markings, in contrast to the “spots” of a Harbour Seal.

Hooded Seal

Adult male and female Hooded Seals have a bluish grey coat with irregular black blotches. Juveniles, the stage most likely to be observed around Nova Scotia, are called “bluebacks,” and are blue grey on their backs and silver grey on their sides and belly. The adult male hooded seal is easily identified by an inflatable sac, or “hood,” on top of the nose and forehead. The male can also inflate the nasal septum to form a large red balloon during aggressive behaviour. Male Hooded Seals are considerably larger than females, at 300 kg and 250 cm in length, compared to 160 kg and 220 cm for females. Hooded Seals, like Harp Seals, whelp on the pack ice off Newfoundland and in the Gulf of St. Lawrence in February and March.⁴ Hooded Seals have been noted to roam great distances.

Feeding Relationships

Seals are opportunistic feeders—the type of food eaten varies seasonally and probably reflects availability of prey rather than a particular food preference. Their diet consists mainly of fish, though invertebrates such as squid, crabs, molluscs and polychaetes are also eaten. Studies suggest that seals feed at between two and six per cent of their body weight each day. A population of 1000 harbour seals would eat about 675 t of fish yearly.

Atlantic Cod— <i>Gadus morhua</i>
Atlantic Herring— <i>Clupea harengus</i>
Atlantic Mackerel— <i>Scomber scombrus</i>
American Plaice— <i>Hippoglossoides platessoides</i>
Capelin— <i>Mallotus villosus</i>
Flounders— <i>Pleuronectidae</i>
Haddock— <i>Melanogrammus aeglefinus</i>
Lumpfish— <i>Cyclopterus lumpus</i>
Pollock— <i>Pollachius virens</i>
Atlantic Salmon— <i>Salmo salar</i>
Atlantic Sand Lance— <i>Ammodytes americanus</i>
Atlantic Saury— <i>Scomberesox saurus</i>
Silver Hake— <i>Merluccius bilinearis</i>
Skates— <i>Rajidae</i>
Rainbow Smelt— <i>Osmerus mordax</i>

Table T11.12.4: Fishes eaten by Grey Seals.

SPECIES	FOOD	%
Grey Seal	herring	28
	cod	26
	mackerel	18
	squid	17
	invertebrates	11
Harbour Seal	herring	24
	squid	20
	flounder	14
	alewife	7
	hake	6
	other	2
	invertebrates	27

Table T11.12.5: Food preferences of Grey and Harbour Seals.

Table T11.12.4 lists species of fish eaten by Grey Seals and Table T11.12.5 lists food preferences of Grey and Harbour Seals.

Seals are long-lived and have few natural predators. Grey and Harbour Seals (particularly pups) are eaten by sharks, though man has historically been the most important predator, harvesting them for meat, oil and skins. Harbour Seals may live for up to 25–30 years and Grey Seals for 30–35 years. The female generally lives longer than the male.

CULTURAL FACTORS

Both whale and seal populations have been affected by hunting in Nova Scotia (see T12.11). Today, whale watching has become an important economic resource in the province.



Associated Topics

T6.1 Ocean Currents, T6.2 Oceanic Environments, T11.14 Marine Fishes, T11.17 Marine Invertebrates, T11.18 Rare and Endangered Animals, T12.11 Animals and Resources

Associated Habitats

H1.1 Open Water, H2.1 Rocky Shore, H2.2 Boulder/Cobble Shore, H2.3 Sandy Shore

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