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Harbour Seal

Phoca vitulina

Photo credit: Andreas Trepte

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There are five subspecies of the harbour seal (*Phoca vitulina*):

- Western Atlantic harbour seal (*Phoca vitulina concolor*)
- Insular seal (*Phoca vitulina stejnegeri*)
- Pacific harbour seal (*Phoca vitulina richardii*)
- Eastern Atlantic harbour seal (*Phoca vitulina vitulina*)
- Ungava Seal (*Phoca vitulina mellonae*)

Hauling out in large groups during breeding season, but otherwise solitary animals of the sea, harbour seals are very well adapted to the water. They are streamlined, but have blubber for energy and insulation, and they even rise to the surface to breathe in their sleep. Their liquid, dewy eyes are more than simply cute—the oily film helps them to see underwater.

Characteristics

Harbour seals, also known as common seals or spotted seals, are recognizable on sight. Their latin name can be translated as 'sea dog'. They resemble earless dogs when they stick their heads out of the water. Their coats vary from grey to brownish grey with black spots, rings, or blotches. Some individuals have spots that are so closely packed together that from a distance they appear to be solidly black. Though seals moult yearly, their coat pattern is unique to individual animals and can be used for identification purposes. Darker patches tend to appear on their backs rather than or their bellies, which is a function of counter shading commonly found on marine animals. Their dorsal side is darker so they blend into the surrounding water when viewed from above, providing a measure of protection from visual predators.

Adult males are 150 to 180cm (60 to 70 inches) in length, and can weigh 50 to 105kg (110 to 230 lbs), depending on the subspecies. The largest harbour seals tend to be found in Japan. Adult females are smaller than males, ranging 120 to 150cm (47 to 59 inches), and 45 to 87kg (100 to 192 lbs). The average lifespan is 25 to 30 years for females, and 20 years for males.

Behaviour

The harbour seal is a marine mammal that lives in cold and temperate waters. They are pinnipeds, a lineage of terrestrial animals that returned to the sea. Seals move awkwardly on land by shuffling their bodies, but in the water, their bodies have adapted to make them excellent, graceful swimmers and divers. They are sometimes described as fat torpedoes. Their bodies are streamlined, but house a lot of blubber for insulation and energy. They have v-shaped nostrils and no external ear flaps.

Special adaptations allow harbour seals to live in the water. Many of these have to do with oxygen. First, they breathe out before diving to reduce buoyancy. To compensate, they have a high blood-to-volume ratio so a large amount of oxygen can be carried in the blood instead of in the lungs. High myoglobin levels allow them to carry more oxygen in their blood and tissues. A dive reflex keeps seals from breathing at inopportune times. As soon as its face is submerged, this reflex causes it to hold its breath, slow its heartbeat, and reduce circulation to all organs except the heart and brain. Seals can even sleep underwater, surfacing subconsciously to breathe.

Harbour seals have various methods of sensing the world around them. They have excellent sight and hearing. To see underwater, seals have an oily film secreted over their eyes. Mothers can also locate pups by their smell. Their whiskers can serve as tactile sensors, and can sense changes in water pressure.

Harbour seals are not very vocal. Males produce calls named roars during the breeding season, which are a sign of territoriality. Mothers can distinguish the calls of their own pups from those of others.

Habitat

Harbour seals can be found in the colder waters of the north Pacific, north Atlantic, and Arctic oceans. In the Pacific, they are found from Hokkaido, Japan in the east up to the Aleutian Islands and Alaska in the north, and to California in the south. In Europe, they are found in the waters around Britain, Iceland, the Baltic Sea, the Barents Sea, and the North Sea. They are also found on the east coast of North America from Florida up to Ellesmere Island in the Canadian Arctic.

These mammals tend to stay within 20km (12 miles) of the shore. Depending on food availability, some migrate seasonally, while some stay in the same area year-round.

Harbour seals are opportunistic feeders; they will eat almost anything they can find. Their diet includes various forms of crustaceans, molluscs and fish. They will even venture upstream into freshwater lakes in search of food. A seal will eat 3 to 5kg (6.6 to 11 lbs) of food a day.

Life Cycle

Females are sexually mature after 2 to 5 years. Males take longer, maturing at 5 to 6 years. Female seals are cows and males are bulls. Cows will typically birth one pup a year. During mating season, which is shortly after the weaning of last year's pup, males will put on aquatic displays and vocalizations. Bulls are serial polygamists, mating with several females each season. Competition and mating occurs in the water. Mating season requires a lot of energy; males can lose up to 25% of their body weight from competing for, and breeding with, mates. Gestation is 10 to 11 months, including a 2-month delay before the fertilized egg is implanted in the female’s uterus.

The time of birth is variable by region, but pups are generally born between late June and September. Birthing takes place out of the water. In the north, seals can give birth on the ice. In other areas, seals will haul out in groups on rocky and protected shores. Harbour seals normally do not live in groups. They aggregate during breeding season for protection.

Newborn pups are relatively large, usually 13 to 14% of the mother's weight. They can swim and dive within hours after birth, but require practice to build stamina. Pups grow rapidly in the first month, gaining much needed fat as they learn to hunt. Nursing and maternal care is only 4 to 8 weeks in duration. After that, pups leave their mothers and depend on fat stores for survival while hunting skills are developed.

Threats

Top predators of seals are orcas, sharks and polar bears. Pups are vulnerable to grizzly and black bears, coyotes, foxes, and large birds of prey.

Harbour seals are currently globally widespread and abundant, but because they live so close to shore, they often encounter humans and human activity. In some instances, they are seen as a source of competition for commercial

fisheries, and are shot by fishermen. They will also get caught in commercial fishing nets and drown. Oil spills and slicks cause fur to become matted and useless in insulating the animal. Seals may die of hypothermia, or accidentally ingest the toxic chemicals when cleaning their fur. Parasites and pollution are other known problems. Through biomagnification, harmful pollutants accumulate in animal tissues. Seals are 20 to 35% fat, and many of the pollutants are fat-soluble. When the fat stores are burned for energy, these toxins flood the animal's system, causing liver and kidney damage, and eventual death. Parasite issues arise from sewage and aquaculture.

What We Can Do To Help

There are a few simple steps to help protect harbour seals and many other animals as well. One is to make informed choices for buying seafood. A link is available in the bibliography to the Monterey Bay Seafood Watch website. It provides lists of seafood, and their recommendations for the best sustainable seafood choices. It is best to avoid buying fish that is farmed in open nets because they tend to have detrimental effects on the wild animals around them, spreading parasites or polluting the surrounding water.

Keeping the environment clean is imperative to ecosystem health. Participation in events such as the Great Canadian Shoreline Clean Up is an excellent way to help the environment. Some daily things that also help include driving less, and using garbage receptacles for all litter, even cigarette butts. Cigarette butts comprise of the majority of garbage collected in shoreline cleanups because it is easy to forget that even small items can pollute the earth.

Bibliography

Monterey Bay Seafood Watch website:

http://www.mbayaq.org/cr/seafoodwatch.asp

Fact Guru website:

http://www.csi.uottawa.ca:4321/animals/index.html#harbourseal_table

Jaap's Marine Mammal Pages website:

http://ourworld.compuserve.com/homepages/jaap/harbseal.htm

Coastal Research and Education Society of Long Island website:

http://www.cresli.org/cresli/seals/hbrseals.html

Oceanlink website:

http://oceanlink.island.net/oinfo/seals.html

Memorial University of Newfoundland website:

http://www.osc.mun.ca/seals/harbour.html

Pagophilus.org website:

http://www.pagophilus.org/harbour.html