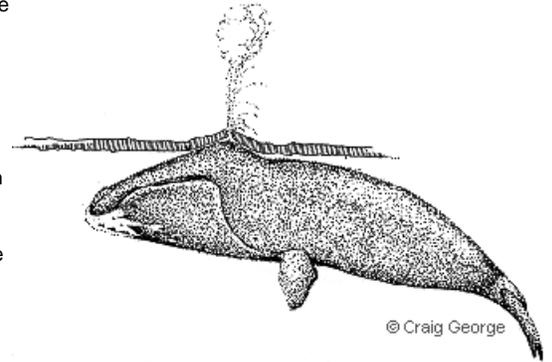


Bowhead Whale

Bowhead whales (*Balaena mysticetus*) are the most ice adapted of the large whales spending their entire lives near sea ice in the Bering, Chukchi, and Beaufort Seas. Bowheads are the most important subsistence species, both culturally and nutritionally, for northern and northwestern Alaska coastal villages. The Inupiat name for bowhead is *agviq* and in Siberian Yup'ik it is *aghveq*.

General description: Bowheads belong to a group of whales called mysticetes, which are whales that have baleen instead of teeth. The toothed whales belong to a group called odontocetes. Bowheads are large, rotund whales that are much less streamlined than most other baleen whales. Bowheads can reach 60 ft (18.3 m) and weigh more than 120,000 pounds (54,500 kg). Adaptations for living in arctic and subarctic waters include very thick blubber, up to 1.5 feet (0.5 m), which is used for insulation, energy storage, and padding. Paired blowholes, characteristic of mysticetes, are located at the peak of their large head and they use their blubber padded skulls for breaking ice. The elevated position of the blowholes allows them to breath in small holes in the ice. Bowheads have the largest mouth and head in the animal kingdom and it takes up about one-third of their body length. The upper jaw is arched upward forming the bow-shaped head that distinguishes bowheads from other whales and gives them their name. Bowheads have short, wide flippers and their flukes are very broad, equaling one-third of the body length.



Adult bowhead whales are black with varying amounts of white on their chin, belly, and tail. The white patches plus scars, which are also white, sometimes make it possible for researchers to identify individuals from photographs taken during aerial surveys. Their skin is smooth and nearly free of external parasites.

Food habits: The primary food for bowhead whales is zooplankton called krill and includes shrimp-like invertebrates (copepods and euphausiids) that are mostly less than 1 inch long (25 mm). Bowheads feed by swimming with their mouths open and zooplankton is strained out of the water by the baleen. Each bowhead has two racks of baleen plates that hang down on each side of the upper jaw. Each rack has about 330 individual pieces of baleen. The shortest plates are in the front and back of the mouth and the longest ones hang down in the middle. The baleen plates are made up of a horn-like substance and may be up to 13 feet (4 m) long. The inner margins of the baleen plates are fringed with long fine hairs that act as a filter to sieve food out of the water.

Bowheads feed at all depths, from the surface to the bottom and they feed under the ice as well as in open water. Bowheads usually feed as individuals but groups are sometimes seen feeding together in echelon formation. The large size of the head and the lack of a streamline shape to the body suggest that bowheads may procure adequate amounts of food by swimming slowly filtering the water as they go. A satellite telemetry study conducted by the Alaska Department of Fish and Game, however, has identified areas where bowheads spend days or weeks where they are probably feeding on concentrations of prey. It is thought that bowheads feed in the Chukchi and the Beaufort Seas but little is known about how much feeding occurs in the Bering Sea during winter.

Life history: Mating probably occurs during late winter and spring in the Bering Sea. The gestation period is 13 to 14 months. Unlike most baleen whales that migrate to temperate or tropical waters to calve, bowhead whales calve in the icy waters of the Bering Sea between April and early June during or just prior to a northward migration into the Arctic Ocean. Bowhead calves are about 14 feet (4.3 m) long, weigh about 2,000 pounds (907 kg) and are gray at birth. Females have a calf every 3 to 4 years.

Bowheads grow quickly while suckling and reach about 26 feet (8 m) during their first year; they grow much more slowly after weaning. Female bowheads become sexually mature at 43 feet (13 m), which probably occurs at 15 years of age or older. The maximum size for bowheads is about 60 feet (18.3 m) and over 120,000 pounds (54,500 kg).

Aging bowheads has been difficult, however recent information and aging techniques indicate that bowheads may live to be 150 to 200 years old. Ivory and stone harpoon heads last used in the late 1800's have been recovered from five bowheads harvested in the last 25 years. Examination of special molecules in eye lenses that change in a predictable way over time and the number of scars in ovaries that result from reproductive events also indicate a lifespan of over 150 years.

Seasonal movements: Bowhead whales winter in open water areas within the pack ice called polynyas and along the southern edge of the ice. In March and April, most bowheads are thought to migrate along leads in the ice through the Chukchi Sea to summering areas in the Beaufort Sea; a 3,600 mile (5800 km) round trip. They travel offshore across the Beaufort Sea and arrive in Canadian waters from mid-May through June. Bowheads spend the summer in the Canadian Beaufort Sea, and then migrate west along the continental shelf of the Beaufort Sea to Point Barrow from August through October. From Barrow, they cross the Chukchi Sea and travel south along the Russian coast, passing through the Bering Strait by November. There are indications that some bowheads may be staying in the northern Chukchi Sea in summer because whales are showing up at Barrow in July before the whales coming from the Canadian Beaufort arrive. Some have been seen on the Russian side in summer as well.

Behavior: Bowheads travel long distance through heavy ice and if no open water is available they find the thinnest ice in the area and push it up with the top of their head, breaking the ice to form a breathing hole. Other whales following behind will use the same places instead of breaking new holes. Bowheads can break ice at least 2 feet (0.6 m) thick this way.

Bowheads usually swim slowly, 2 to 4 miles per hour (3–6 km/hr) but they are capable of bursts of speed of 13 miles per hour (21 km/hr). When migrating, dives generally last from 6 to 17 minutes before surfacing for a series of four to nine blows. Dives of up to 33 minutes have been recorded.

Bowhead whales are very vocal and produce a variety of sounds to communicate while traveling, feeding, and socializing. Some bowheads "sing" long songs during migration. The same song is sung by whales following long behind the first groups suggesting some connection among the groups. Bowheads breach, tail slap, and spy-hop for unknown reasons that could be related to sexual displays. Sexual activity occurs between pairs and in groups of several males with one or two females and has been seen in the Bering and Chukchi Seas along the spring migration route.

Population size: Before commercial whaling, there were more than 50,000 bowhead whales worldwide. Between the 1600s and 1800s, the eastern arctic stocks of bowheads (the stocks in Canadian and Greenland waters) were reduced from over 30,000 animals to less than 1,000. The Bering Sea stock (the stock in Alaska) originally numbered about 18,000 whales and was greatly reduced in the 1800s and early 1900s. All bowhead whale stocks are listed as 'endangered' under the Endangered Species Act and as 'depleted' under the Marine Mammal Protection Act. The Bering Sea stock, however is recovering and increasing at about 3% per year; the current population estimate is about 10,500 whales.

Predators, hunting and other mortality: Killer whales and humans are the only major predators of bowheads. Scars from killer whale teeth and ship propellers are sometimes found on their backs and flukes. A few bowheads die from becoming wrapped in fishing gear lines, however not much fishing occurs in bowhead habitats. Oil spills are a serious potential danger to bowheads and their zooplankton prey.

Bowheads have been a favored whale for hunting for at least 2,000 years because they produce large quantities of oil, baleen, meat, and muktuk (skin with blubber); because they are slow and nonaggressive; and because they float when they are killed.

The Alaska Eskimo Whaling Commission (AEWC) has cooperatively managed bowheads with the National Marine Fisheries Service since 1981. The AEWC also works with the International Whaling Commission to establish a harvest quota that allows for limited aboriginal subsistence whaling. This five-year harvest quota was recently renewed during 2008 and allows for up to 67 strikes per year to be divided among the 10 Alaska whaling villages. A few strikes per year are also shared with Russia. Alaska Eskimo whalers use handheld weapons and small boats to pursue bowheads during the spring and fall.

Text: Lori Quakenbush

Illustration: Craig George

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