

The Kids' Times:

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Bowhead Whale



NMFS File Photo

Bowhead whales must come to the surface to breathe and eat.

How did the bowhead whale get its name?

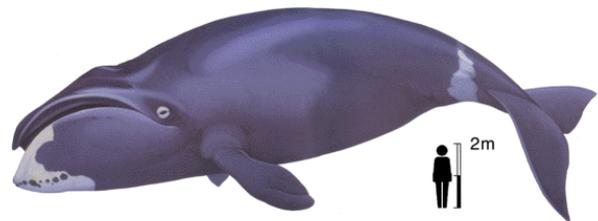
The bowhead whale gets its name from its high, arched lower jaw that looks like an archer's bow. The scientific name, *Balaena mysticetus*, means whale (*balaena* and *cetus*) and moustached (*mysti*). The bowhead whale is also known as the Greenland right whale.

What do they look like?

Bowhead whales are large blue-black colored whales. They have a white area on their lower jaw (the chin patch) and white spots on their belly. The differences in the coloration of the chin patch helps to identify individuals. There is also a grayish-white band just in front of their **fluke**. Adult bowheads grow to about 45-60 feet (14-18 m) long and weigh 150,000 to 200,000 lbs (75-100 tons). Bowhead **calves** are 13-15 feet (4 to 4.5m) in length, weigh 1 ton (907kg), and are blue-gray colored at birth.

The bowhead whale is most easily recognized by its very large, triangular head, which takes up nearly one-third of the total body length. This head is used to break through Arctic ice. The mouth is as long as the head. Bowhead whales can break through 2 feet (60 cm) of ice to breathe! There are two **blowholes** at the highest point of the head, behind a ridge, which sends a V-shaped **blow** many feet up in the air when bowheads **spout**. When bowhead whales swim all that can be seen is the whale's triangular head and its rounded back above the surface. Bowhead whales have no **dorsal fin**, unlike most other **cetaceans**.

Bowhead whales are **baleen** whales, which means they do not have teeth, but baleen plates instead. They have long flat plates (230-360) made of a fingernail-like material called **keratin** that hang down inside their mouth. The whale takes a very large amount of water into its mouth, and then pushes it out again. As the water is forced out of the mouth, the plates act like a sieve and trap the **krill**.



www.whales.org

According to the National Center for Health Statistics, the average weight of an adult male in the U.S. is 180 lbs (82 kg). Therefore, it would take 1,111 men to equal the weight of an adult male bowhead whale.

Where do they live?

Bowhead whales live exclusively in Arctic and sub-Arctic waters. In fact, the farthest south that bowhead whales are found is in the Sea of Okhotsk, Russia. This is the only place on earth where bowheads and trees can be seen at the same time! Bowheads live around pack ice, often in shallow water. Bowheads have a 2-foot (0.6 m) layer of blubber to help protect them from the freezing waters.

How long do they live?

Recent research suggests bowhead whales may live beyond 100 years!

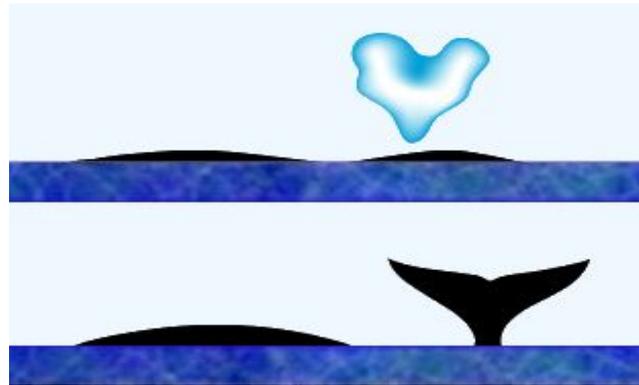
What do they eat?

The diet of a bowhead whale consists mainly of krill and **copepods**, but they can eat a variety of other **invertebrates**. Inuit hunters in Alaska have identified more than 60 **species** in the stomachs of bowhead whales. Bowhead whales are skim feeders. Like the right whale, the bowhead whale skims the water with its mouth open.

How do they behave?

Like many baleen whales, bowhead whales are often solitary (rarely seen in **pods**). Any associations with other bowheads last only a few hours or days.

Not much is known about bowhead behavior in the late fall and winter because the ice and arctic darkness make it very difficult for people to observe the whales. In the spring, the whales migrate to warmer waters with the mothers and **calves** last to leave the Arctic. Juveniles and adults often feed in different areas during the summer.



The top drawing shows a bowhead whale swimming on the surface. The bottom drawing shows the whale about to dive.

Bowhead whales normally swim 2-7 miles per hour (mph) (3-11 km/hr), but they can get up to 10-12 mph (16-19 km/hr) when they are in danger. If they are feeding, they will swim slower, usually 1.2-2.5 mph (2-4 km/hr). Bowheads can dive for up to an hour, but usually they limit their time underwater to 4-15 minutes at a time. They can reach a maximum depth of 500 feet (152 m).

Female bowhead whales have calves every 3-4 years. The whales mate in late winter and early spring. The **gestation period** is approximately 13-14 months, so the calves are usually born during the northward spring migration.

The bowhead calves are born tail first, like other cetaceans, near the ocean surface. They are born with a thick layer of blubber, which helps them survive the freezing water. A newborn calf will instinctively swim to the surface with its mother's help within 10 seconds of its birth. There it will take its first breath. A bowhead calf can swim on its own within 30 Minutes of birth. After that, the calf will spend between 9-12 months drinking its mother's milk.

Who are the predators?

Humans were the main predators of bowhead whales. Bowheads may be attacked by killer whales.

How many bowheads are in the ocean?

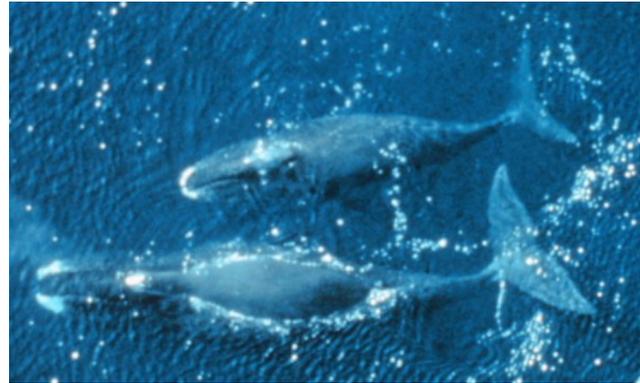
There are five **populations** of bowhead whales, and all but one are highly endangered. The Sea of Okhotsk population size is unknown, but probably only numbers a few hundred animals. Whalers in the former Soviet Union hunted this population until the 1960s. The whales in the Hudson Bay-Fox Basin and Davis Straight-Baffin Bay may also only number a few hundred animals. The population closest to **extinction** is the Spitsbergen population. The only group of whales that is steadily increasing is in the Bering/Chukchi/Beaufort seas (northern Pacific Ocean). Scientists estimate there are more than 8,000 animals, and the numbers keep increasing.

Why are they in trouble?

Commercial whaling for bowheads began around 500 years ago and continued into the early 1900s, devastating whales. Bowhead whales were hunted for their oil and baleen. A single whale could yield 100 barrels of oil and 1,500 lbs (680 kg) of baleen. People now use petroleum instead of whale oil and spring steel instead of baleen. Today, bowhead whales may be still threatened by loss of food sources, climate changes, ship collisions, entanglements, noise, and pollution.

What is being done to help bowhead whales?

Bowhead whales are protected by the U.S. government under the Endangered Species Act and Marine Mammal Protection Act. The International Whaling Commission also



NOAA File Photo

Bowhead calves and mothers stay together for up to a year.

outlawed commercial whaling of bowheads in 1946; it has been illegal to hunt bowhead whales ever since. Only Inuit peoples (Alaska natives) are legally allowed to hunt a small number of whales per year for food and oil. Bowhead whales are a source of food for Inuits, and the yearly hunt is part of their traditional lifestyle.

What sounds do bowhead whales make?

Bowhead whales make a wide range of sounds that are probably important for their survival in the wild. Scientists do not know exactly what these sounds are used for and what sex and age whales produce all the calls. When bowhead whales are migrating around the Arctic Ocean between feeding and reproductive times of the year, they are very vocal and also make slapping, splashing sounds. They make a complex series of patterned sounds that, like the complex sounds made by humpback whales, are called "songs". Most songs have fairly short (~ 1 s) parts that sweep in frequency between about 50 and 400 Hz (very low to very high). Bowheads also call back and forth to one another sometimes in vocal exchanges (or "duets") that can include repeated calls over long periods of time. Sounds made by bowhead whales as they migrate past monitoring stations in Alaska have been used in some clever experiments as a way of counting the number of passing whales (see <http://birds.cornell.edu/BRP/BowheadCensus.html>).



NMFS File Photo

The dual **blowholes** of the bowhead whale make a V-shaped **spout**.

New advances in computer processing have improved these kinds of sound monitoring ("passive acoustic") studies. While bowheads do not use sonar (**echolocation**) to find their prey like dolphins and other baleen whales do, some scientists have observed bowheads making sounds while moving under ice, which might be used in finding their way around in the dark.

You can find bowhead whale sounds on the web at :

<http://birds.cornell.edu/BRP/SoundsBowheadWhale.html>

(Courtesy of Dr. Brandon Southall and Logan Southall)

Glossary:

Baleen: Overlapping plates that hang from each side of the upper jaw of certain species of whales

Blow: The spout of air, water, and mucus when a whale surfaces to breathe

Blowholes: Holes, on the top of a whale, through which it exhales breath

Cetaceans: Whales, dolphins and porpoises

Calf(ves): Newborn whales, dolphins, or porpoises

Copepod: Small crustacean

Dorsal fin: Fin on the back of whales, dolphins, porpoises, or fishes

Extinction: The worldwide absence of a species

Echolocation: Sonar; Ability of an animal to understand its location based on the reflection of a sound it has produced

Fluke: End of a whale's tale

Gestation period: Time a baby spends inside its mother's womb before birth

Invertebrate: An animal without a backbone

Keratin: A substance like fingernails

Krill: Tiny, shrimp-like animals

Pod: A group of whales, dolphins, or porpoises

Population: Distinct group of animals within a species that mate only within their group

Species: A group of animals with common characteristics and genetic make-up that interbreed

Spout: Exhale breath



NOAA's National Marine Fisheries Service
Office of Protected Resources
www.nmfs.noaa.gov/pr/
Molly Harrison 2005