BELUGA WHALES

A SEAWORLD EDUCATION DEPARTMENT PUBLICATION

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BELUGA WHALES

SCIENTIFIC CLASSIFICATION

A. Order—Cetacea.

1. Cetacea is a scientific order of large aquatic mammals that have forelimbs modified into flippers, a horizontally flattened tail, a nostril at the top of the head for breathing, and no hind limbs. Cetaceans include all whales, dolphins, and porpoises.
2. The word "cetacean" is derived from the Greek word for whale, *kētos*.
3. Living cetaceans are further divided into two suborders: the Odontoceti (toothed whales) and the Mysticeti (baleen whales).

B. Suborder Odontoceti.

1. Odontoceti is a scientific suborder of whales that have teeth. The word "odontocete" comes from the Greek word for tooth, *odontos*.

C. Family—Monodontidae.

1. The only other member of this whale family is the narwhal, another arctic species.
2. Family characteristics
   a. No dorsal fin.
   b. Small, broad pectoral flippers.
   c. Small, but distinct beaks.
   d. The seven neck vertebrae are not fused as they are in other whales.

D. Genus, species—*Delphinapterus leucas.*

1. The genus name *Delphinapterus*, means "dolphin without a fin." The species name *leucas*, means "white."
2. Other common names for the beluga include "white whale" and "belukha." They are also nicknamed "sea canaries" because of their vocalizations.

E. Fossil record.

1. Scientists believe that early whales arose 55 to 60 million years ago from (now extinct) ancient land mammals that ventured back into the sea.
2. Representatives from the modern family Monodontidae first appear in the fossil record 9 to 10 million years ago in the eastern north Pacific.

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DISTRIBUTION AND HABITAT

A. Distribution.

1. Beluga whales are entirely arctic and subarctic. They inhabit the Arctic Ocean and its adjoining seas, including the Sea of Okhotsk, the Bering Sea, the Gulf

of Alaska, the Beaufort Sea, Baffin Bay, Hudson Bay, and the Gulf of St. Lawrence.

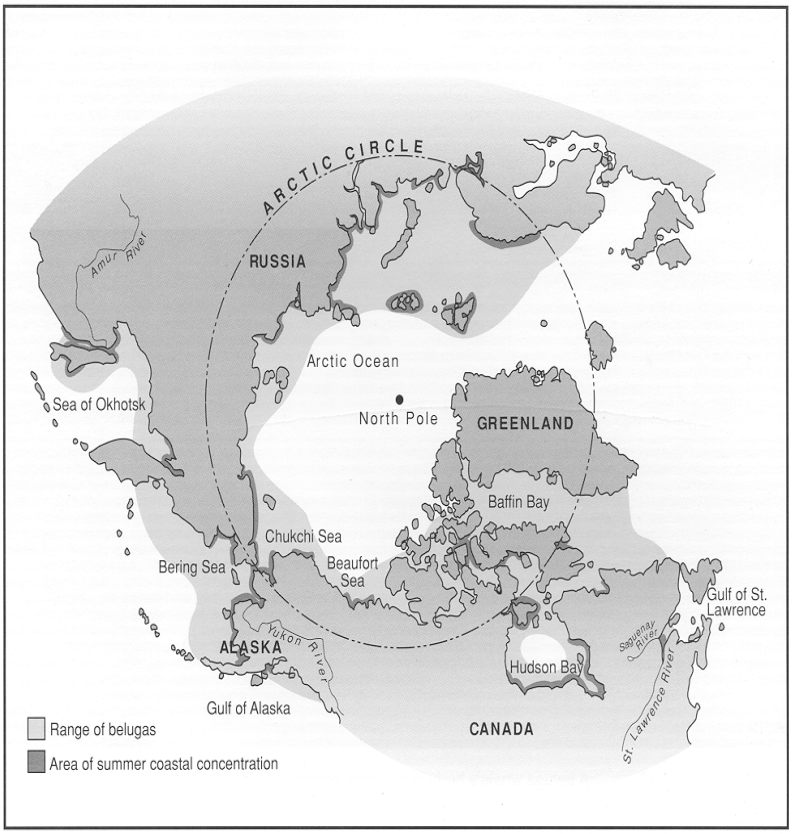
2. During certain times of the year belugas can be found in large rivers such as the Amur River of Russia, and the Yukon and St. Lawrence rivers of Canada. Belugas have been found 1,995 km (1,240 mi.) up the Amur River, and 965 km (600 mi.) up the Yukon.

B. Habitat.

1. Belugas swim among icebergs and ice floes in the icy waters of the arctic and subarctic, where water temperatures may be as low as 0°C (32°F).

2. Belugas are generally found in shallow coastal waters, often in water barely deep enough to cover their bodies. They may also frequent deeper waters.

3. In the summer many populations are found in warm-water estuaries and river basins.



Beluga whales are entirely arctic and subarctic. They inhabit the Arctic Ocean and its adjoining seas.

4. Belugas seem to be well adapted to both a cold ocean habitat and a warmer freshwater habitat.

C. Migration.

1. Some beluga populations make seasonal migrations while others remain in a relatively small area year-round.

2. Environmental conditions determine migration behavior.

    a. Most beluga whales migrate south as the ice pack advances in the autumn. One population summers in the Mackenzie River estuary of Northwest Territories, Canada, and migrates 5,000 km (3,105 mi.) southwest to coastal areas of the Bering Sea in the winter.

    b. Other populations of belugas migrate north in the autumn. Belugas that spend the summer in Hudson Bay estuaries migrate north into the open bay in the winter.

    c. Belugas may migrate to either shallower or deeper waters.

D. Population.

The world population of beluga whales is estimated to be about 60,000 to 80,000 (NMFS).

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PHYSICAL CHARACTERISTICS

A. Size.

1. Adults average 3 m (9.8ft.) in length.
2. Males average 3.4 to 4.6 m (11.2-15.1 ft.) and weigh about 1,500 kg (3,307 lb.).
3. Females average 3 to 4 m (9.8 to 13.1 ft.) and weigh about 1,360 kg (2,998 lb.).
4. Beluga whales reach full size at about 10 years.

B. Body shape.

A beluga whale's body is fusiform, but robust and stocky. It may have thick folds of blubber, especially along its ventral surface.

C. Coloration.

1. Calves are born dark gray to bluish or brownish gray and become darker after the first month. Thereafter they gradually become paler. This is caused by a reduction of melanin in the skin.
2. Adult belugas are yellowish-white to creamy white.
3. Belugas attain their white coloration upon reaching sexual maturity —their skin begins to change color at approximately age six and is nearly all white by age 13.

D. Pectoral flippers.

1. A beluga whale's forelimbs are pectoral flippers. Pectoral flippers have the major skeletal elements of the forelimbs of land mammals, but they're shortened and modified.
2. The skeletal elements are rigidly supported by connective tissue. Thick cartilage pads lie lengthwise between the bones of each digit. Connective tissue lies between the digits.

3. The pectoral flippers are small in proportion to the body. They're rounded, paddle-like, and slightly upcurled at the tips.
4. Beluga whales use their pectoral flippers mainly to steer and, with the help of the flukes, to stop.

E. Flukes.

1. Each lobe of the tail is called a fluke. A deep median notch separates the two flukes.
2. Flukes are flattened pads of tough, dense, fibrous connective tissue—completely without bone.
3. The flukes of beluga whales are distinctly curved along the trailing edges.
4. Longitudinal muscles of the back (both above and below the spine) and caudal peduncle move the flukes up and down.
5. Like the arteries of the flippers, the arteries of the flukes are surrounded by veins to help maintain body temperature.

F. Hind limbs.

1. All traces of hind limbs have disappeared except for two reduced, rod-shaped pelvic bones, which are buried deep in body muscle.
2. These reduced hind limbs are not connected to the vertebral column.

G. Dorsal fin.

1. Beluga whales lack a dorsal fin. Without a dorsal fin, they have less surface area for heat loss, and can more easily swim just below ice sheets to locate breathing holes.
2. The beluga has a dorsal ridge that runs from just behind the midpoint of the back to the tail flukes. The dorsal ridge may be notched, forming a series of small bumps, and may be dark gray.

H. Head.

1. Neck.

   The seven neck vertebrae of a beluga whale are not fused, as they are in most cetaceans. As a result, a beluga has greater mobility and flexibility in its neck.

2. Rostrum.

   Beluga whales have small, but distinct beaks.

3. Teeth.

   a. Belugas have eight to ten peg-shaped teeth on each side of both upper and lower jaws. Belugas have an average of 34 teeth.

   b. Teeth are adapted for grasping and tearing rather than chewing.

4. Melon.

a. The melon is a rounded structure on the dorsal surface of a whale's head, just in front of the blowhole. On beluga whales it is prominent and overhangs the rostrum. The melon is composed of lipids (fats).

b. A beluga's melon is generally more flexible compared to other whale species.

c. The melon probably facilitates sound production. It changes shape when the whale is producing sounds.

5. Eyes.

   A beluga whale's small, dark eyes are located behind the corners of the mouth.

6. Ears.

   Ears, located just behind the eyes, are inconspicuous openings with no external pinnae (flaps).

7. Blowhole.

   A single blowhole, located on the dorsal surface of the head, is covered by a muscular flap. The flap provides a water-tight seal.

   a. A beluga whale breathes through its blowhole.

   b. The blowhole is relaxed in a closed position. To open the blowhole, a beluga contracts the muscular flap.

I. Skin.

1. Like most other cetaceans, beluga whales lack hair as adults.

2. Unlike other cetaceans, which tend to generate and shed skin continuously, beluga whales appear to undergo a seasonal molt of the outer layer of skin. During the winter, the top layer of a beluga's skin may turn yellow, especially on its back and flippers. Rubbing on gravel river bottoms helps a beluga to shed this layer of skin.

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SENSES

A. Hearing.

1. Beluga whales have a well-developed, acute sense of hearing. The auditory cortex of the brain is highly developed.

2. A beluga whale can hear sounds in the range of 1.2 to 120 kHz, with a peak sensitivity of about 10 to 75 kHz. In comparison, the average hearing range for humans is about 0.02 to 20 kHz. In a study using two trained beluga whales in an open-ocean environment, scientists found that the sensitivity of a beluga's hearing does not change with depth.

3. Sound reception.

a. Most sound reception probably takes place through the lower jaw. A beluga may also receive sound through soft tissue and bone surrounding the ear.

b. The fat-filled lower jawbone appears to conduct sound waves through the jaw to bones in the middle ears. The lower jaw of toothed whales broadens and is hollow at the base, where it hinges with the skull. Within this very thin, hollow bone is a fat deposit that extends back toward the auditory bulla (earbone complex). Sounds are received and conducted through the lower jaw to the middle ear, inner ear, and then to hearing centers in the brain via the auditory nerve.

c. A beluga has small external ear openings, a few inches behind each eye. Each opening leads to a reduced ear canal and an eardrum. Some scientists believe that beluga whales receive sounds through these openings. Other scientists believe that a beluga whale's external ear openings are nonfunctional.

B. Eyesight.

1. Beluga whales have acute vision both in and out of the water.

a. A beluga's eye is particularly adapted for seeing in water. In air, certain features of the lens and cornea correct for the nearsightedness that results from the refraction (bending) of light rays as they go from water to air.

b. A beluga's retinas contain both rod and cone cells, indicating that they may have the ability to see in both dim and bright light. (Rod cells respond to lower light levels than cone cells do.) As with other whales, belugas lack short wave-length sensitive visual pigments in their cone cells indicating a more limited capacity for color vision than most land mammals.

2. Glands at the inner corners of the eye sockets secrete an oily, jellylike mucus that lubricates the eyes and washes away debris. This tear-like film may also protect the eyes from infective organisms.

C. Tactile.

Studies on belugas in zoological environments indicate that they seek out physical contact with other belugas.

D. Taste.

Biologists have noted sensory areas in beluga whale mouths that may function in taste.

E. Smell.

Olfactory lobes of the brain are absent in all toothed whales, suggesting that they have no sense of smell.

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A. Swimming.

1. In general, beluga whales are slow swimmers. They commonly swim about 3 to 9 kph (1.9-5.6 mph). They are, however, capable of sustaining a maximum speed of 22 kph (13.6 mph) for as long as 15 minutes.
2. Beluga whales are adapted to be highly maneuverable rather than high-speed swimmers.
3. Belugas can swim forward and backward.
4. Beluga whales often swim at depths barely covering their bodies.

B. Diving.

1. Beluga whales typically don't dive very deep, usually to about 20 m (66 ft.). Although they are not generally thought of as deep-diving marine mammals, belugas are capable of diving to extreme depths. Under experimental conditions a trained beluga whale repeatedly dove to 400 m (1,312 ft.) with ease, and one even dove to a depth of 647 m (2,123 ft.).
2. A typical dive usually lasts less than ten minutes, but belugas can stay submerged for more than 15 minutes.
3. All marine mammals have physiological adaptations for diving. These adaptations enable a beluga whale to conserve oxygen while it's under water.
    a. Beluga whales, like other marine mammals, have a slower heart rate while diving. A beluga whale's heart rate slows from about 100 to about 12 to 20 beats per minute during a dive.
    b. When diving, blood is shunted away from tissues tolerant of low oxygen levels toward the heart, lungs, and brain, where oxygen is needed.
    c. Beluga whales retain more oxygen in their blood than most mammals do. A beluga whale's blood volume percentage (5.5%) is higher than a land mammal's. One study found a female beluga to have 16.5 liters (17.4 qt.) of oxygen in her blood.
    d. The muscle of beluga whales has a high content of the oxygen-binding protein myoglobin. Myoglobin stores oxygen and helps prevent muscle oxygen deficiency.

C. Respiration.

1. A beluga whale breathes through a single blowhole, a modified nasal opening.
    a. The beluga whale holds its breath while under water.
    b. It opens its blowhole and begins to exhale just before reaching the surface of the water.
    c. At the surface, the whale quickly inhales and closes the muscular flap.

2. As a beluga whale exhales, seawater around the blowhole is carried up with the respiratory gasses. Seawater and the water vapor condensing in the respiratory gasses as they expand in the cooler air form the visible blow of a beluga whale. A beluga's blow is about 90 cm (35 in.) high.

3. Beluga whales have a breath-hold period that is longer than a human's, and they exchange more lung air with each breath.

D. Thermoregulation.

1. Beluga whales deposit most of their body fat into a thick layer of *blubber*—a thick layer of fat and fibrous connective tissue that lies just below the skin of most marine mammals. Blubber accounts for more than 40% of a beluga whale's weight. This blubber layer insulates the whale and streamlines the body. It also functions as an energy reserve.

2. A beluga whale's circulatory system adjusts to conserve or dissipate body heat and maintain body temperature.

   a. Arteries in the flippers and flukes are surrounded by veins. Thus, some heat from the blood traveling through the arteries is transferred to the venous blood rather than the environment. This countercurrent heat exchange aids beluga whales in conserving body heat.

   b. When a beluga whale dives, blood is shunted away from the surface of the skin. This decrease in circulation conserves body heat.

   c. To shed excess body heat, circulation increases in veins near the surface of the flippers and decreases in more insulated veins that lie deeper in the body core.

3. In the Mackenzie Delta region of the Canadian Arctic, river mouths of the delta are less than a mile from the edge of the ice pack. Belugas in this area can move from 0°C (32°F) pack ice to a 12°C to 18°C (54°–64°F) shallow estuarine habitat in less than one hour.

E. Sleep.

1. As in other toothed whale species, scientists have found that deep sleep in belugas occurs in only one hemisphere of the brain at a time.

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BEHAVIOR

A. Social structure.

1. Beluga whales live in groups called pods; a pod is a cohesive social unit.

   a. A pod may consist of 2 to 25 individuals; the average pod size is about 10.

b. A pod generally consists of males and females, though mothers with calves often form separate pods during the calving season. A single large male usually leads a pod.

2. Several smaller pods may join occasionally to form larger groups of 200 to 10,000 individuals. Such herds often form during migrations.

B. Social behavior.

1. Belugas are extremely social.

2. A pod of belugas hunts and migrates together.

3. Belugas may chase each other, either playfully or aggressively, and rub against each other.

C. Individual behavior.

1. One of the most common beluga behaviors is vocalizing.

2. During calving season, adult belugas at sea have been observed carrying objects such as planks, a seine net, and even a caribou skeleton on their heads and backs. Female belugas in zoological habitats have also been observed carrying objects, such as floats or buoys, on their heads and backs. Experts theorize that this interaction with objects may be surrogate behavior.

3. Belugas exhibit a great deal of curiosity toward humans and often swim up to boats.

4. Belugas do not exhibit as many aerial behaviors (jumping, breaching, etc.) as do dolphins and killer whales.

D. Stranding.

When swimming in shallow waters, belugas can become stranded at low tide. They generally survive until the next high tide and swim away unharmed.

E. Interaction with other species.

1. The beluga whales' habitat overlaps that of narwhals.

2. Belugas often migrate with bowhead whales.

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COMMUNICATION AND ECHOLOCATION

A. Why sound in the sea is important.

Beluga whales probably rely on sound production and reception to navigate, communicate, locate breathing holes, and hunt in dark or murky waters. Under these conditions, sight is of little use.

B. Sound production.

1. Toothed whales produce sounds for two overlapping functions: communicating and echolocating.

2. Beluga whales are extremely vocal. The frequency and large repertoire of their vocalizations earned them the nickname "sea canaries."

    a. At least 11 different beluga vocals have been documented, including high-pitched, resonant whistles and squeals; clucks; mews; chirps; trills; and bell-like tones.

    b. Beluga vocals can be heard above water and through the hulls of ships.

3. The larynx of toothed whales does not possess vocal cords.

4. Sounds are probably produced by movements of air between nasal sacs in the blowhole region. During sound production, a beluga whale's melon changes shape.

5. Scientific evidence suggests a general association between behavioral activity and the various types of vocals beluga whales use. For example, researchers have observed that beluga whales tend to emit more squawk-type calls during periods of social interaction than during alarm situations.

6. There is no evidence that beluga whales, or any other whales, use anything resembling human language.

C. Non-vocal communication.

Besides vocalizations, belugas may communicate through facial expressions and physical contact. Visual behaviors such as breaches, pectoral slaps (slapping a pectoral flipper on the water's surface), and lobtails (slapping flukes on the water's surface) are not as common in belugas as in some other whale species.

D. Echolocation.

1. The term *echolocation* refers to an ability that toothed whales (and some other marine mammals and most bats) possess that enables them to locate and discriminate objects by listening for echoes. Toothed whales echolocate by producing clicking sounds and then receiving and interpreting the resulting echo.

    a. Sound waves travel through water at a speed of about 1.6 km per second (1mile/second), which is four and a half times as fast as sound traveling through air. The sound waves produced by a beluga whale bounce off objects in the water and return to the beluga in the form of an echo. In one echolocation study, a single beluga produced signals with peak frequencies of 40 to 60 kHz in San Diego Bay, California, and 100 to 120 kHz when moved to Kaneohe Bay, Hawaii. The different frequencies were thought to be a response to the amount of ambient noise in the area.

    b. Beluga whales produce directional clicks in rapid sequences called trains.

    c. The click train passes through the melon. The melon acts as an acoustical lens to focus these sound waves into a beam, which is projected forward into the water in front of the whale.

d. The major areas of sound reception are the fat-filled cavities of the lower jawbones. Sounds are received and conducted through the lower jaw to the middle ear, inner ear, and then to hearing centers in the brain via the auditory nerve.

2. By this complex system of echolocation, toothed whales can determine size, shape, speed, distance, and even some of the internal structure of objects in the water. For belugas, echolocation is especially important for navigating under ice fields and locating breathing holes in the ice.

3. Studies show that beluga whales have a higher capability of echolocating in the presence of ambient noise than bottlenose dolphins.

4. Belugas are also able to receive and use surface-reflective echoes, which may aid them in navigating under an extensive ice pack.

5. Many of the details of echolocation are not completely understood. Research on echolocation is ongoing.

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FOOD AND FORAGING

A. Food preferences and resources.

Beluga whales are opportunistic feeders. They prey on about 100 different kinds of primarily bottom-dwelling animals. They eat octopus; squid; crabs; snails; sandworms; and fishes such as capelin, cod, herring, smelt, and flounder.

B. Food intake.

In zoological habitats belugas eat approximately 2.5% to 3% of their body weight per day, about 18.2 to 27.2 kg (40–60 lb.).

C. Methods of collecting food.

1. Belugas forage at or near the bottom of shallow water.

2. A beluga whale's flexible neck allows a wide range of motion while foraging the ocean floor. Observations suggest that belugas can produce suction and a strong jet of water with their mouths which, like that of walruses, may dislodge prey from the bottom.

3. Beluga whales also hunt schooling fishes. In groups of five or more, belugas herd fish into shallow water before attacking.

4. Beluga whales don't chew their food; they swallow it whole.

5. Researchers have found debris such as tree bark, plants, sand, stones, and paper in the stomachs of beluga whales, probably from foraging on the bottom.

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A. Sexual maturity.

Male beluga whales become sexually mature at about eight to nine years of age, and females at about four to seven years.

B. Mating activity.

1. Breeding generally takes place in March through May, about 10 months after calving.
2. Beluga whales breed in small bays and estuaries.
3. A single dominant male may mate with several females.

C. Gestation and Birth.

1. Gestation is about 14 to 15 months.
2. Calves are born March through September, depending on the region. Most are born May through July.
3. A female may give birth to a single calf every two to three years. Twins are rare.
4. Calves are born in bays and estuaries, where the water is relatively warm: about 10° to 15°C (50°–60°F).
   a. Deliveries can either be tail first or head first.
   b. The umbilical cord snaps during or soon after delivery.

D. Calf at birth.

1. Observers of wild beluga populations have estimated that beluga calves average 1.6 m (5.2 ft.) and weigh about 80 kg (176 lb.). Beluga whale calves have been born and successfully raised at SeaWorld parks. The average size of SeaWorld-born beluga calves is 1.5 m (5 ft.) and 54 to 64 kg (119–140 lb.).
2. At birth beluga calves are generally dark gray to bluish or brownish gray, becoming darker at about one month.
3. Like other whales, beluga calves swim at birth.
4. Young belugas learn survival behaviors by observing and mimicking adults in their pod.

E. Care of young.

1. Nursing.
   a. Like other mammals, a mother beluga whale nurses her calf. A calf suckles below the water from nipples concealed in abdominal mammary slits.
   b. The calf may begin nursing several hours after birth and then nurses at hourly intervals thereafter.
   c. According to research in zoological parks, the composition of beluga milk varies widely among individuals and fluctuates throughout the

nursing period. Beluga milk may average 28% milkfat, 11% protein, and 60.25% water. The milk yields approximately 92 calories per ounce.

d. Beluga calves are dependent upon nursing for the first year, until their teeth emerge. They then supplement their diets with shrimps and small fishes. Most calves nurse for 20 to 24 months.

2. Mothers with calves often form pods separate from males.

3. While most maternal behavior is probably instinctive, first-time mothers are inexperienced at nursing their calves. At SeaWorld, the experience level of some first-time mothers increased through training procedures that teach them to respond to nursing behavior prior to giving birth.

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LONGEVITY AND MORTALITY

A. Longevity.

Beluga whales probably live about 25 to 30 years.

B. Aging studies.

1. As a beluga whale ages, it periodically produces growth layer groups of dental material. Age can be estimated by examining a sliced section of tooth and counting these layers. These estimations are most accurate in young whales, before the tooth's pulp cavity fills in. Researchers are currently investigating new tooth-aging methods. Scientific evidence indicates that belugas may deposit up to two growth layer groups annually.

2. Researchers use size and coloration to estimate relative ages of belugas. Because immature belugas lighten as they approach maturity, paler belugas are likely to be older than darker ones.

C. Predators.

Killer whales and polar bears prey on beluga whale adults and calves.

D. Hunting by humans.

1. Beluga whales have been hunted for centuries.

a. Since ancient times, indigenous Arctic peoples of Canada, Alaska, and Russia have hunted beluga whales for their meat, blubber, and skin. Tanned beluga skin, often referred to as "porpoise leather," is the only cetacean skin thick enough to be used as leather.

b. In the 18th and 19th centuries, commercial hunting of belugas by Europeans and Americans caused a decline in the Canadian Arctic beluga population. In addition to using the meat and blubber, Europeans also used the beluga whales' fine melon oil to lubricate watches and machinery, and to illuminate lighthouses. From 1868 to

1911, Scottish and American whalers took more than 20,000 belugas in Lancaster Sound and Davis Strait.

c. In the 1930s belugas along the St. Lawrence River were killed by fishermen, who believed the whales were a threat to the fishing industry.

d. Arctic natives still subsistence hunt belugas for food and other raw materials. This practice is an important part of their culture, but there is some concern that the current harvest may be too high for the population to withstand. The annual harvest is about 200 to 550 in Alaska and about 1,000 in Canada.

E. Environmental hazards.

1. Industrial run-off in the St. Lawrence River has resulted in high levels of toxic chemicals such as polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT); and heavy metals such as lead, mercury, and cadmium in the water.

2. These toxins become more concentrated as they are passed up the food chain.

3. PCBs and DDT are *lipophilic*; that is, they are readily stored in animal fat. Heavy metals are generally concentrated in other body tissues including the liver, kidneys, and muscles.

4. These toxins are thought to be responsible for the deaths and strandings of many belugas in the St. Lawrence River. Levels of these toxins in St. Lawrence belugas were found to be as much as a hundred times higher than in Arctic belugas. These toxic chemicals may cause a decline in a beluga's immune system, making it susceptible to pneumonia, ulcers, cysts, lesions, tumors, and bacterial infections. Low birth rates in the St. Lawrence River may be linked to industrial pollution.

5. Oil exploration and hydroelectric development cause significant alterations to beluga habitats.

F. Disease.

As in any animal populations a variety of diseases can be responsible for beluga whale deaths. These include viral, bacterial, and fungal infections; skin diseases; tumors; heart disease; urogenital disorders; and respiratory disorders. Some of these disorders may be brought on or compounded by toxic contamination.

G. Entrapment in ice.

Beluga whales trapped by ice are often susceptible to predation by polar bears, starvation, and suffocation.

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A. The International Whaling Commission (IWC).

1. In 1946, 14 countries signed the International Whaling Convention for the regulation of whaling, forming the International Whaling Commission (IWC). The goal of the IWC is to manage whale stocks as a resource.
2. The IWC monitors whale populations through scientific advisory groups and coordinates and funds a variety of whale research.
3. In 1986, the IWC declared a moratorium on commercial whaling. The moratorium—which is still in effect—allows for the possibility of regulated commercial whaling in the future.
4. Currently, the IWC has no jurisdiction over small cetaceans.

B. IUCN/The World Conservation Union.

IUCN/The World Conservation Union is a worldwide conservation organization. This organization links together government agencies, non-government agencies, and independent states to encourage a worldwide approach to conservation. The beluga whale is listed in the IUCN/The World Conservation Union's *vulnerable* category (the species faces a high risk of extinction).

C. The Endangered Species Act, 1973 (ESA).

1. The Endangered Species Act of 1973 (ESA) is administered by the U.S. Departments of Interior and Commerce. It seeks to stop the extinction of wild animals and plants in the United States, other nations, and at sea.
2. In Alaska, about 375 beluga whales live in the northern part of Cook Inlet. This population is one of five populations in Alaska (and the U.S.). The Cook Inlet population has declined about 50% since 1994 and once ranged throughout Cook Inlet. Initially, the decline was linked to overhunting of belugas by humans. Yet, even with essentially no take of Cook Inlet belugas since 1999, the population has not recovered. The continued beluga decline may be due to
    - less salmon and other prey fishes available
    - diminishing habitat quality due to human development
    - oil and gas exploration, development, and production
    - pollution from industrial activities
    - an increase in killer whale predation on belugas
    - increased mortality from stranding
    - increased mortality from disease
3. Due to their very low population size and lack of recovery the Cook Inlet beluga population was listed as "endangered" under the U.S. Endangered Species Act on October 22, 2008.

D. Legal protection.

1. The U.S. Marine Mammal Protection Act (MMPA) of 1972 made it illegal to hunt or harass marine mammals in the U.S.

a. The primary objective of the MMPA is to maintain the health and stability of the marine ecosystem and to obtain and maintain an optimum sustainable population of marine mammals.

b. According to the MMPA, all whales in U.S. waters (baleen and toothed) are under the jurisdiction of the National Oceanic and Atmospheric Administration (NOAA).

c. The MMPA does allow for certain exceptions: native subsistence hunting; taking marine mammals for research, education, and public display; and taking restricted numbers of marine mammals incidentally in the course of fishing operations.

2. The Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) is an international treaty developed in 1973 to regulate trade in certain wildlife species. CITES protects all species of toothed whales. Beluga whales are listed in CITES Appendix II (species not currently considered threatened, but trade is regulated by CITES).

3. An isolated population of belugas in the St. Lawrence River has been legally protected since 1983. In 1988 the Canada Department of Fisheries and Oceans (DFO) and Environment Canada (a government agency that oversees national parks) implemented the St. Lawrence Action Plan.

a. The goal of the plan was to eliminate 90% of all industrial emissions in the St. Lawrence River by 1993.

b. Within 10 years emissions had been reduced by 96%.

c. As part of the plan, the St. Lawrence Vision 2000 Agreement partnered with the World Wildlife Fund and government and nongovernment experts to develop a beluga recovery plan that continues to protect and monitor the St. Lawrence beluga population and further restore their habitat.

E. Whale watching.

1. Whale watching expeditions bring people close to wild whales and help people learn about them.

2. The NOAA has developed "Marine wildlife viewing guidelines" to protect marine animals. Among other recommendations, the guidelines instruct whale watchers to keep their distance. Chasing or harassing animals, impeding their right of way, touching and feeding animals are not allowed.

F. Marine zoological parks.

1. Having beluga whales at marine zoological parks provides the opportunity for the public to learn about these animals and how human activities impact their survival.

2. In the protected environment of a marine zoological park, scientists can examine aspects of beluga whale biology that are difficult or impossible to study in the wild.

3. Dr. Brent Stewart from the Hubbs-SeaWorld Research Institute is studying the behavior and bio-acoustics of the Cook Inlet belugas and the physical and acoustic interactions between beluga whales and boats in the upper Cook Inlet near Anchorage, which seems to be an important breeding and feeding habitat for this population.

<BACK>

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