

Voyager



For kids of all ages

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Longest Journey

By Nan Criqui

How far can you swim? Each year gray whales swim more than 12,000 miles—a distance greater than four trips across the United States from San Francisco to Boston. By the end of its life, the average gray whale will have logged enough miles to take a trip to the moon and back. That's a long way to swim!

No problem for a fish, you say? But gray whales aren't fish; they are mammals like us, and their amazing annual trip is the longest migration known for any mammal.

Why do they do it? Traveling so far lets gray whales take advantage of two very different worlds. The cold, rough waters of the northern Pacific and Arctic Oceans are home to a huge population of the small bottom-dwelling animals these mammoth travelers eat. But the warm, calm lagoon waters of Mexico's baja peninsula are an ideal spot for the birth and care of baby gray whales.

Twice each year some 20,000 gray whales move along the west coasts of Canada, United States, and Mexico. Their route follows the coastline, and pods of whales can often be spotted from shore by the unique heart-shaped "blow" of air and water they make when surfacing to breathe.

Living close to humans has been both a curse and a blessing for these animals. Thoughtless harvesting of whales in the 1800s and 1900s almost wiped out the species. Although still in danger, gray whales are now protected by international laws, and they have become a favorite of many thousands of Pacific-coast whale watchers.



From Ice Floes to Club Med and Back

Gray whales spend about seven months of each year traveling. On the map, find the narrow channel of water that separates Russia from the United States. This is the Bering Strait, which joins the Bering Sea of the northern Pacific with the Chukchi Sea of the Arctic Ocean. This area is the gray whales' summer home.

Beginning in October each year, as arctic days get shorter and colder, and food becomes less abundant, the entire population of gray whales heads south. Their journey takes them to the lagoons of Mexico's baja peninsula 6,000 miles away. Two or three months later they travel again, swimming back north to their arctic feeding grounds.

The warm waters of Magdalena Bay, and the lagoons Ojo de Liebre (Scammon's Lagoon), Guerrero Negro, and San Ignacio make ideal nurseries for baby whales. Adult female grays give birth to a baby every other winter in these shallow waters. By midwinter, the lagoons are filled with playful calves and watchful cows.

Farther from shore, juvenile whales roughhouse and young adults carry out mating rites. Whales may throw themselves up out of the water and fall back with a huge splash (breaching), pop their heads straight up vertically to look around (spyhopping), or stick their tails into the air and slap the water's surface, making a loud splash (lobtailing). It has been said that they sometimes windsurf by sticking their huge tail flukes up in the air and letting themselves be moved along by the currents and winds.

All in all, summer is a good time for gray whales.

The Mustached G

Although not the largest of whales, gray whales are really BIG. Adults weigh about 35 tons and average 45 feet long. A large man might be 6 feet tall and weigh 180 pounds. An average gray whale would be almost 400 times heavier than this man and eight times longer than the man is tall. In fact, a gray whale's tongue alone weighs as much as 14 large men!

Whales are divided into two groups depending on how they eat. Some have teeth; others, like the gray whale, have baleen. Baleen looks a bit like a big, bristly mustache that hangs in rows from the upper jaw on both sides of the whale's mouth. It is not hair, however, but tough, overlapping plates made of the protein keratin, the same stuff as your fingernails.

How do these whales use baleen to eat? If you saw an area of seafloor covered with big shallow craters, would you think, "whale bites"? Probably not. But this is just what a gray whale feeding area looks like. Gray whales eat small animals that live buried in the mud of the seafloor. A huge gray turns on its side, mouth



Lobtailing shows off a gray's barnacle-covered tail flukes.



A gray whale's head makes up one-fifth of its total length.

giants



Left, Baleen up close.
Above, An open-mouthed whale shows off its baleen.

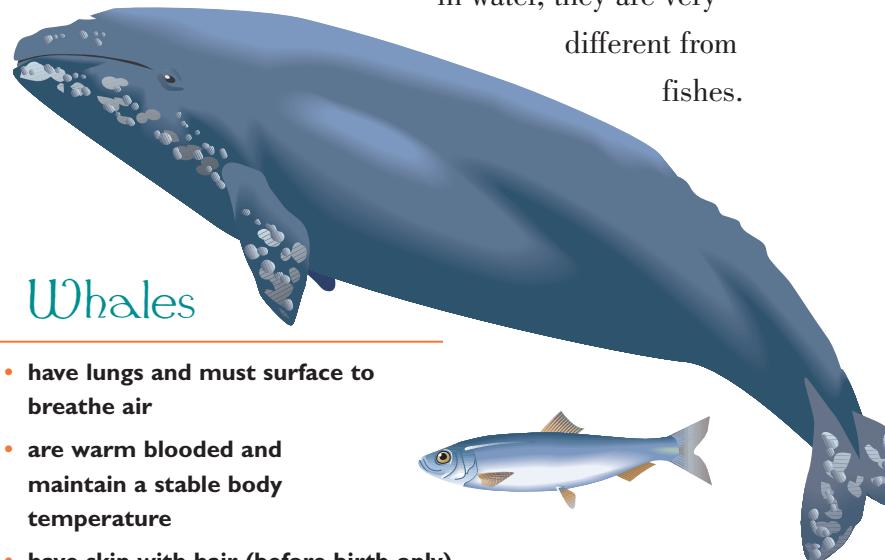
open, and swims along the bottom, sucking up muck like a vacuum cleaner on a very dirty carpet. Then it uses its 2,500-pound tongue to press the sand, mud, and water through its baleen, leaving a bunch of tasty sand-dwelling creatures trapped in its mouth. Lunch is served!

Not surprisingly, gray whales eat a lot. During the five months they spend in their arctic feeding grounds, each whale may eat up to 67 tons of food. (That's more than 500,000 quarter-pound hamburgers.) Fortunately, their winter feeding grounds are huge and rich with food. In some areas, there may be 3,000 amphipods—the shrimplike animals that grays eat—in a square foot of seafloor. Life isn't just one big banquet, however. Gray whales eat very little during their southern migration, and may go without food for several months.

Newborn gray whales aren't dainty either. Whale calves weigh about 2,000 pounds and are 15 feet long at birth. A calf will drink up to 50 gallons of its mother's milk each day for the first several months of its life. If you drank three glasses of milk every day, it would take you almost seven months to drink as much as a baby gray whale drinks in a day. And whale milk is 50 percent fat! (The milk a human mother provides for her baby is 2 percent fat.) You'd eat a lot too, however, if you needed an eight-inch layer of fat under your skin to stay warm in the freezing arctic waters.

Why Whales Aren't Fishes

Whales belong to a group of mammals, called cetaceans, which also includes porpoises and dolphins. Even though whales live their entire lives in water, they are very different from fishes.



Whales

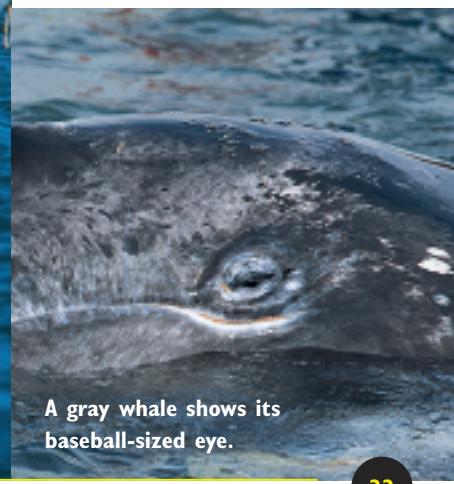
- have lungs and must surface to breathe air
- are warm blooded and maintain a stable body temperature
- have skin with hair (before birth only)
- give birth to live young
- nurse their young
- have four-chambered hearts



Whale watchers photograph a spyhopping gray whale.

Fishes

- have gills that can take oxygen from water
- are cold blooded (except for tunas and some sharks) with a body temperature that changes with their surroundings
- have scale-covered bodies
- usually lay eggs and do not give milk
- have two-chambered hearts



A gray whale shows its baseball-sized eye.

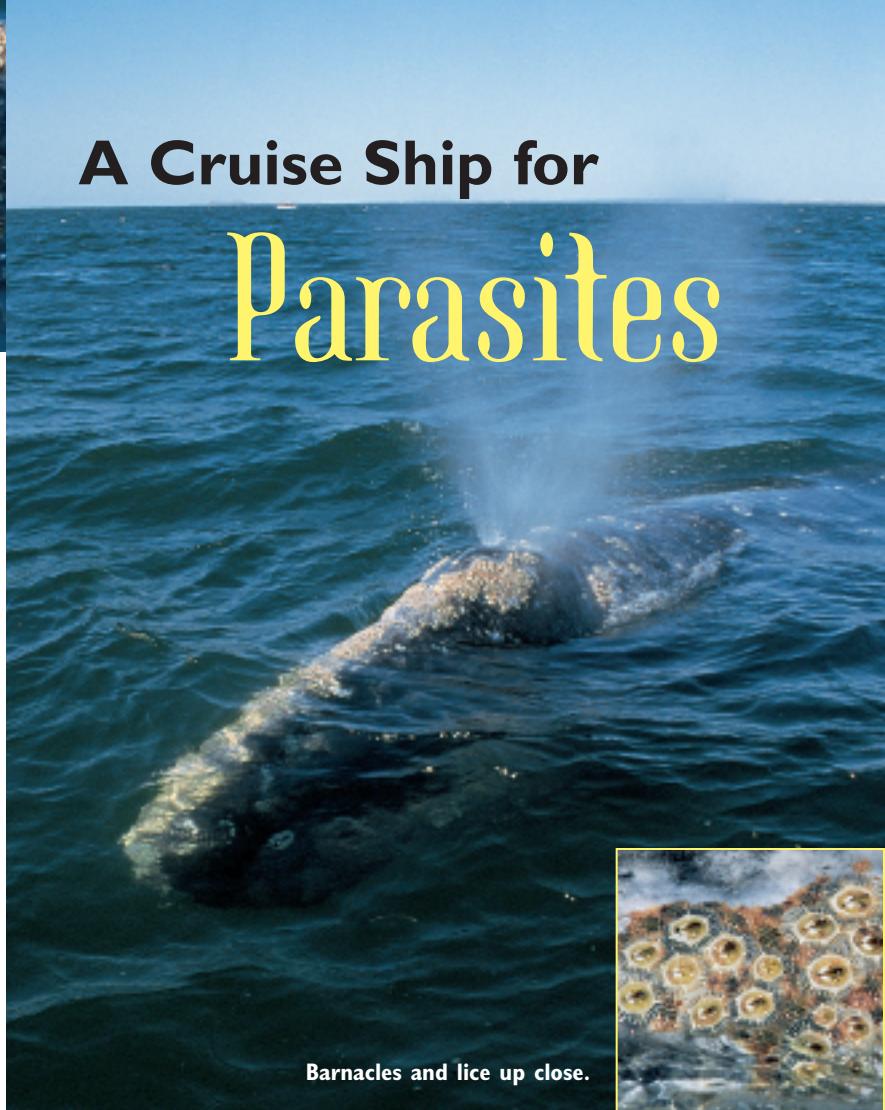


Gray whales are home to a load of hitchhiking parasites.

Barnacles attach to the skin of a baby whale shortly after its birth, and they ride along with "their" whale for life. From inside small volcano-shaped shells, barnacles stick out feathery feet to capture plankton from the passing seawater. A mature gray whale may carry thousands of barnacles.

Three different species of whale lice also get a free ride on gray whales. These small creatures are amphipods and are related to the amphipods that gray whales eat. The whale lice, however, eat whales, feasting on their dead or damaged skin.

Clumps of bright white barnacles and brilliant orange whale lice make individual gray whales easy to recognize. Each whale has a unique pattern of these freeloading voyagers.



Barnacles and lice up close.

ACTIVITY

Dressing for the Arctic

How do gray whales stay warm in the frigid waters of the Pacific northwest and the Arctic Ocean? Like humans, whales are warm-blooded animals. You or I certainly couldn't spend months swimming in near-freezing waters.

Gray whales come dressed by nature to withstand the cold. They have an eight-inch layer of fat, called blubber, beneath their skin. This blubber layer functions like a very warm overcoat and protects the whales from the cold.

Try this activity to understand the function of blubber.

You will need

- a large, thick plastic bag
- lard or solid shortening
- a pair of rubber or plastic gloves
- a container of ice
- a large bowl filled halfway with water

Follow these steps:

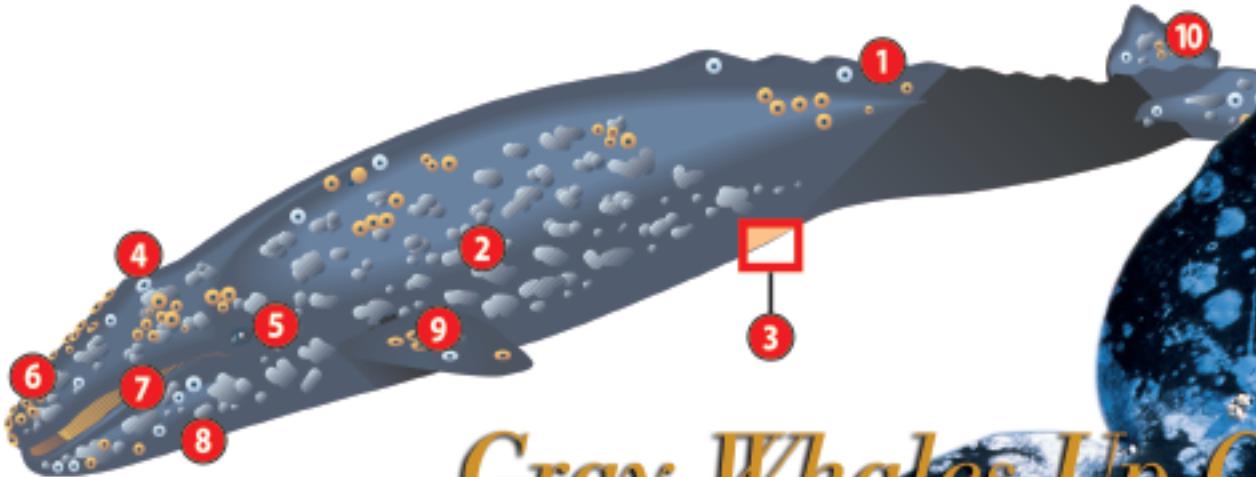
1

Put lots of ice cubes in the water.

You want the water very cold because this will be the Chukchi Sea.



Thanks to the Birch Aquarium at Scripps and to Debbie Zmarzly, science specialist, for this activity. Aaron, her son, performed this experiment.



Gray Whales Up Close

Can you identify these gray whale features?

- 1 Dorsal hump and ridges
- 2 Gray skin covered with barnacles and whale lice
- 3 8 inches of blubber (fat) beneath the skin
- 4 2 blowholes that connect directly to lungs
- 5 Baseball-sized eyes
- 6 Hairy bristles on snout and head
- 7 130 to 180 sheets of baleen hanging from upper jaws
- 8 Expandable throat groves
- 9 Paddle-shaped flippers
- 10 Horizontal tail flukes

Visit the Birch Aquarium at Scripps between December 31, 2002 and March 31, 2003 and arrange to go on a whale-watching cruise with Birch Aquarium naturalists. There's nothing like seeing a whale in the wild. Call 858/534-FISH for more information.

2

Fill the plastic bag with eight inches of shortening. This will be your blubber layer. We call this the "blubber bag."

3

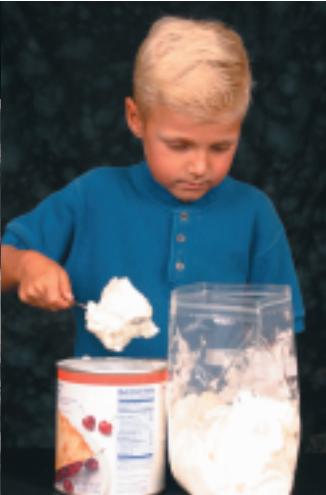
Put on one glove and make a dent in the center of the blubber bag. You want your entire hand covered by the shortening, just like the whale's body is surrounded by blubber.

4

Place the hand that is in the blubber bag into the icy water. Be careful not to let water into the bag.

5

Now put a glove on your other hand. Then place this hand in the icy water. Notice how cold this hand gets. Which hand got cold the quickest? The hand without the blubber, right?



Results

Blubber is an excellent barrier against the cold water. It insulates and protects gray whales, just like the shortening protected your hand in the icy water. Blubber is also lighter than water, so it helps whales float.