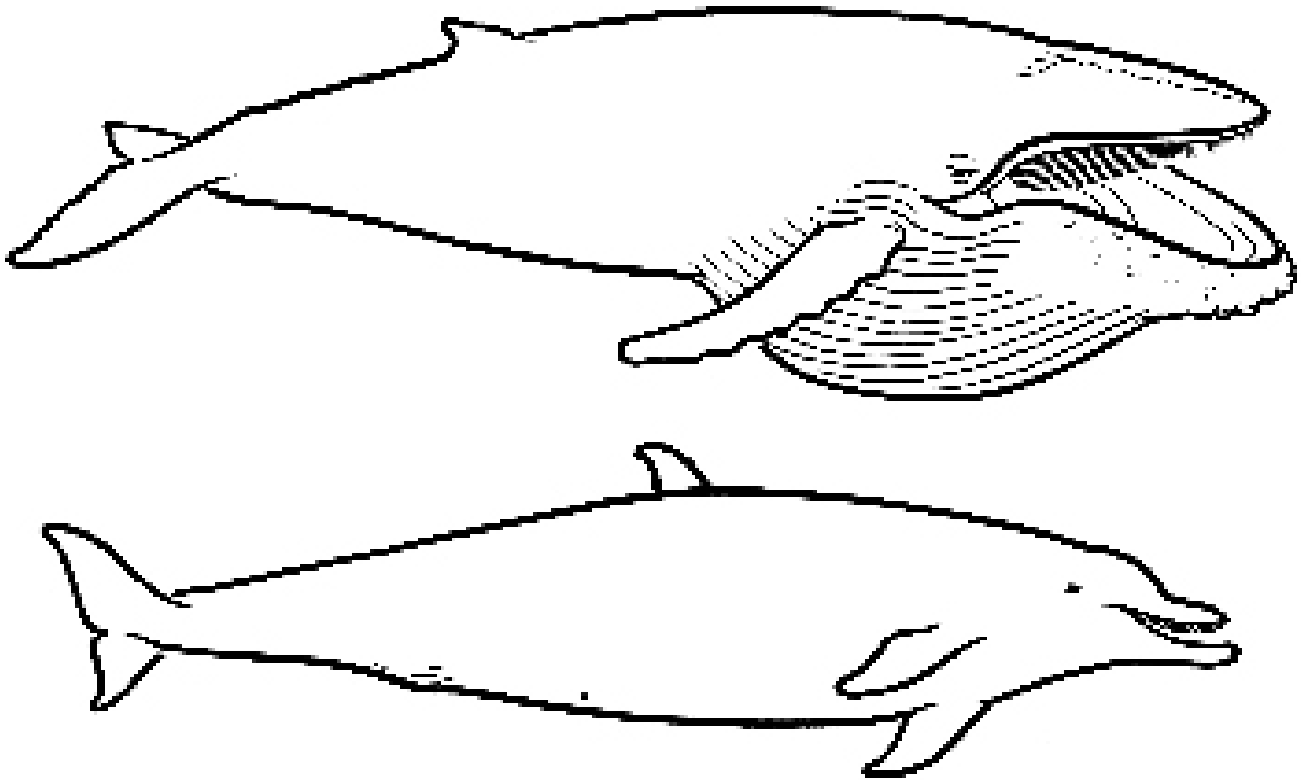


Name _____

Date _____

Student Worksheet #4

Read through each adaptation of the whale. Label each on the illustration. Draw the blow holes on the whale and the dolphin in the correct locations. Compare the whale and dolphin. Do all adaptations apply to both?



Adaptations

Body size—The large size of the whales provides the following advantages:

- Protects them from predators such as sharks and killer whales.
- Helps them retain body heat. This is due to a large volume (body core) in relation to a smaller surface area where heat is lost.
- Blubber stores energy, adds to the size, and helps with heat retention. Many whales feed for only 4 to 5 months and rely mostly on blubber reserves the rest of the year.

Blowholes (Nostrils)—Openings to the respiratory system (nostrils) are located on top of the head, which is the first part of the animal to break the surface of the water.

Body shape—Streamlined body shape to reduce drag as it moves through the water makes it more energy efficient.

Front flippers—The forelimbs of baleen whales are called flippers. They are used for swimming and turning and may be used by some species to herd food items for feeding.

Flukes—Each lobe of the tail is called a fluke. The flukes have no bones, just muscle and connective tissue. Whales sweep their tails up and down to swim through the water.

Baleen—Baleen is made of the same material as fingernails and hair. It is an adaptation for filter feeding. Baleen grows throughout the whale's lifetime; the terminal end continually wears off.

Blubber—Thick layer of fat that stores energy and helps retain body heat in cold waters.

Feeding adaptations

Baleen whales are skimmers, gulpers (also called lunge feeders), and suckers. Toothed whales are chompers.

Skimmers include the right whale family, whose members are the right and bowhead whales. These whales often feed near the surface, with their mouths open to filter out small organisms called copepods and euphausiid (krill) for food. Skimmer baleen will be fine and feathery, as these whales are only filtering krill or copepods from the water.

Suckers include the gray whale family. When feeding, gray whales roll on their sides with their mouths parallel to the ocean floor. They pull their huge tongues into the back of their mouths, sucking huge amounts of mud, and everything in the mud, into their mouths. The mouthful of mud and water is pushed through the baleen to filter out the amphipods. Baleen for this method of feeding will be tough, thick, and durable, as these whales must filter mud and sand.

Gulpers are the rorqual whales. These whales have throat grooves that expand when they are feeding and their mouths are filled with water. Their feeding behavior is also referred to as lunging, as they propel through the water to gather food. The water is gulped then forced through the baleen, filtering out krill and small fish. This baleen will be tougher than skimmers but not as thick and tough as sucking baleen.

Chompers are toothed whales that catch squid and fish. Killer whales are the only toothed whales that hunt seals and sea lions—and even other whales—for food. All their teeth are sharp and pointed; they have no flat teeth for grinding, like the molar teeth of cows.

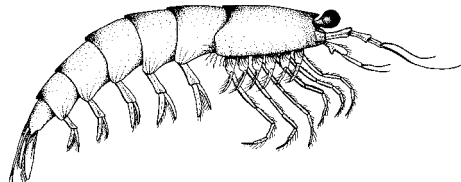


Dr. Bruce Mate holding gray whale baleen.

Favorite whale foods



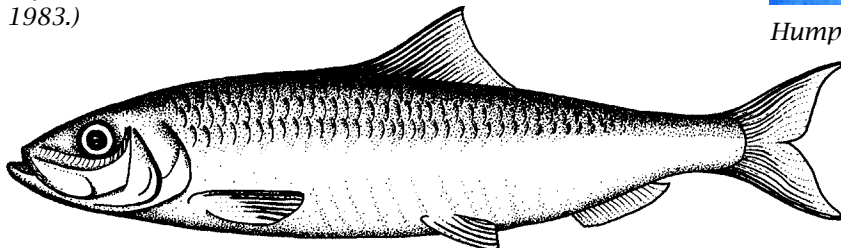
Amphipod
(*Amphelisca macrocephala*).
Actual size: 2.2 cm.
(After Dickinsen 1983.)



Krill (*Euphasia superba*). Actual size: 6.2 cm. (Illustration by Laura Hauck.)



Humpback feeding (gulping or lunge method)



Herring (*Clupea harengus*). Actual size: up to 33 cm. (Illustration by Laura Hauck.)