

Eating Can Be a Strain

OBJECTIVES

Students demonstrate how objects of different sizes can be most effectively gathered. They show the feeding methods of *baleen* and toothed whales.



MATERIALS

per student group:

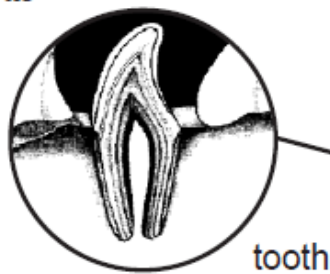
- 9" x 12" x 3" pan, tub, or other container
- 9" pocket comb
- food strainer or sieve
- small aquarium net or sieve
- fork
- toothpick
- pair of tongs
- water
- parsley flakes or chopped grass
- sliced, cooked carrots
(Canned carrots work well.)

Background information for adult

Baleen whales such as blue and gray whales feed by filtering food from the water with baleen. Baleen plates in these whales' mouths are somewhat triangular and arranged like teeth in a giant comb. The inner edge is frayed, and the fringes form a dense mat inside the whale's mouth. Some baleen whales feed by swimming while holding their mouths wide open. Others open their mouths, gulp in a huge amount of water, and then close their mouths, forcing the water out through the baleen. Small fishes and invertebrates such as krill get trapped in the fringed mat. After the water is gone, the whale swallows its meal. Baleen is made of keratin, the same material in our hair and fingernails.

Toothed whales such as dolphins and killer whales don't chew. They have teeth adapted for ripping and gripping food — not for chewing it. Toothed whales

swallow their food whole or in large chunks. Most eat fish but some also eat invertebrates such as crabs or squid. Killer whales eat fish, seals, sea lions, and occasionally other whales.



killer whale

Experiment

- Using the information on page 18, introduce the two types of whales and how they feed.
 - ◆ Explain that toothed whales have teeth to catch and tear their food. Have students rub their tongues over their teeth. Which teeth work best for biting? Which teeth work best for chewing?
 - ◆ Describe baleen whales' stiff plates of hairlike baleen, which filter food from the water. Have students feel their hair. Baleen is stiffer than our hair – it feels more like our fingernails. Baleen, hair, and fingernails (collecting carrots). Which work best? Which tools work in a way similar to a toothed whale's teeth? Can they describe what is happening?
- Fill containers halfway with water.
- Sprinkle parsley flakes in baking dish. The parsley flakes represent krill, a small shrimp-like ocean invertebrate. Many baleen whales eat krill, which they strain from the water with their baleen. Ask students to experiment with the tools they have to see which are best for "capturing krill" (collecting parsley flakes). Which work best? Which tools work in a way similar to a whale's baleen? Can they describe what is happening?
- Next drop several carrot slices into the water. The carrot represents fish and other larger prey animals. Toothed whales use teeth to catch fish and other prey. Have students experiment with their tools to see which are best for "capturing fish"
- Discuss how an animal's adaptations help it survive in its environment. Would a killer whale be able to eat krill? Would a blue whale be able to catch and eat large fishes?
- Ask students to hypothesize if baleen or teeth would be a better adaptation for eating each of the following foods:

cake sprinkles	vegetables
whole fruit	spaghetti
alphabet soup	bread
sunflower seeds	noodles
cheese sandwich	hot dogs
small candies	pizza

Read through the experiment and do as much or as little as you like. Have fun.