

Baleen Scene



Grades: 1-5

NGSS: 4.LS1.1: From Molecules to Organisms: Structures and Processes

Subject: Physical Structures

Habitats

Nutrient Density

Food Chains

Anatomy

Feeding Behavior

Materials: Container for Water

Sand

Small Beads

Combs with varied space

between the teeth

Background

Whales are the largest mammals alive today, and the largest known to have ever existed. Blue whales are the largest species of whale, larger than the largest land animal (African Elephant) and the largest shark. There are two types of whale -- baleen and toothed. The key difference between them is the way they feed and what they have inside their mouth. Toothed whales, like sperm whales, killer whales, and dolphins, represent almost 90% of all types of whale, and are accomplished hunters. They eat fish, sharks, seals, sea turtles, octopuses, squid, and sea birds.



Baleen whales are generally huge and are filter-feeding specialists, straining enormous volumes of seawater through the baleen plates which sieve and retain little sea creatures in huge quantities. They feed on plankton and krill, a small shrimp-like crustacean (crustaceans are animals like crab and lobster, that have three body segments and are covered with an exoskeleton).

Baleen is made of keratin, the same material human fingernails and hair is made of, and forms a kind of spaghetti strainer in the whale's mouth. The whale scoops up a mouthful from the bottom of the sea, the sand and water strain out through the baleen, and only the krill are left. Blue whales eat 900–2,400 pounds of these tiny krill every day to support their 30-ton bodies.

Activity

1. Create a demonstration for students or have them create their own simulations, to better understand how baleen capture food for the whale. In this activity, the combs represent the baleen and the beads represent the krill.
2. To prepare, put a layer of sand in the bottom of your container. Fill with water about an inch above the sand line. Place some beads in the sand. The beads represent the krill.
3. Using a selection of different combs, try to scoop up some of the beads. Be sure to go under the sand and sieve out the sand in order to "capture" the beads.
4. Observe what happens. Which combs allowed you to get the most beads? Look at photos of baleen to see how much it does or doesn't look like a comb. What else could you have used in your simulation besides combs and beads? Ask the kids if they would like to eat all their food this way.

Discussion

Natural selection is the process by which the organisms best adapted to their environment survive and reproduce. In other words, all organisms have adapted over time to be equipped with the best tools to help them survive. Ask your students what other tools they can think of that animals have to help them navigate their environment (echolocation, camouflage). You can expand the activity by repeating it with tape over half of the comb. The sand and beads will be harder to separate. Explain natural selection to your students, then ask them if the whale in the second demonstration is more or less likely to survive.



This activity is excerpted from the Teacher's Guide to:

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