

Whale Tails

Make a Whale Blowhole in a Bottle

Materials

Empty 2L plastic pop bottle
Balloon
Straw
Plasticine
Bowl for catching water



Procedure

1. Make a hole in the bottle, just large enough to fit the straw, about 12 cm from the bottom of the bottle.
2. Insert the straw into the bottle and on the outside of the bottle seal the hole with plasticine.
3. Fill the bottle 3/4 full of water.
4. Place the bottle on a flat surface with the open end of the straw over a bowl.
5. Blow up the balloon and place it on the neck of the pop bottle.
6. Watch what happens.



The science behind this experiment ...

The air pressure inside the balloon is greater than the pressure in the bottle so air will move from the balloon to the bottle in order to reach a state of equilibrium. This forces the water out through the straw. When a whale forces water out of its blowhole, it uses air to do so. Some air and water come out of the hole when a whale breathes out. When a whale breathes in it just takes in air.

Why doesn't the ocean freeze around a whale?



Question: Why doesn't the ocean freeze around a whale?

Note: The Ocean has a salinity of 3.5%. You will create this same solution.

Materials

- 2 tsp. (5g) table salt
- 400 ml tap water
- 2 bowls of equal size
- Freezer
- Plasticine shaped like a small whale (optional)
- Tape
- Marker

Procedure

1. Using 2 bowls of equal size, measure 200 ml of water and pour it into one bowl. Repeat for the second bowl.
2. Label one bowl "water" and one bowl "salt water" by writing on masking tape and affixing to the bowls.
3. Measure two teaspoons of salt (2 tsp = 5 grams). Pour the salt into the bowl labeled salt water and stir until dissolved.
4. Place one plasticine whale into each bowl and freeze both bowls for 2 hours.
5. Remove the bowls from the freezer and observe what happens.

The Science behind this experiment...

When a solute is dissolved in a solvent, the freezing point of the resulting solution is lower than that of the pure solvent. This phenomenon is known as freezing point depression. In this case, salt is the solute and water the solvent. Water normally freezes at 0°C. But when salt is added, the freezing point is lowered because of the dissolved particles. The more dissolved salt there is in solution, the lower the freezing point will be, until the maximum freezing point depression is reached, around -21°C.

Exciting Humpback Whale Facts



A Humpback whale and her calf wave goodbye with their tails off of the coast of Provincetown, Cape Cod.



A Humpback whale and her calf swimming off of the coast of Maui, Hawaii.

1. Humpback whales migrate from Polar Regions, where they stay in the summer, to the tropics in the winter.
2. Humpback whales breathe through blow holes. They come to the surface of the water to breathe and can hold their breath for 45 minutes.
3. Humpback whales can live up to 50 years, but 35 to 40 years is their typical life expectancy.
4. Adult humpbacks can eat up to a ton of food a day.
5. Barnacles attach to the whale's flippers and head. Many barnacles fall off in warm water during their winter stay in the tropics.
6. Male whales like to show off to female whales, by slapping their fins, tails and jumping out of the water. This is called a breach and makes a huge splash.
7. Female and male whales make sounds, but only the male humpback whales will sing.
8. Humpback whales like to eat certain types of fish: krill, herring, capelin, sand lance and mackerel.
9. Sharks and Orcas can be predators of humpback whales.
10. Baby humpbacks are born in the tropics and migrate with their mothers to colder waters.