

A Slick Operation



Objective

Students will be able to demonstrate and discuss the effects of oil on a bird's feathers and discuss a variety of ways humans might be able to remove it.

Background

Oil spills can be devastating for marine animals. Marine birds like penguins and pelicans rely on clean feathers for waterproofing and insulation. When fouled with oil, the birds try to clean their feathers. Sadly, the birds often die of starvation, of hypothermia, or from ingesting the toxic oil. Hubbs-SeaWorld Research Institute scientists have studied ways to clean oil from fouled marine animals. In this activity, your students perform a similar study.

Materials

- large clean feathers (three per student. Examples: gulls, ducks, parrots—from the beach, pet stores, local zoos, ponds, or craft stores)
- vegetable oil
- five large bowls
- water
- three types of detergent (preferably a mild hand soap, a powdered laundry detergent, a grease-cutting dishwashing detergent)
- paper
- pencils

Action

1. Fill the bowls with water. In the first bowl pour a slick of oil on the surface. Leave the second bowl as plain water. Label the other three bowls #1-3. Dissolve a tablespoon or two of one of the detergents in each bowl. Do not let the students see which solution is in which bowl. (They are secret or "mystery" solutions.)
2. Give each student three feathers and have them examine each feather's texture and weight. Have the students dip their feathers in the oil and then examine them. Discuss how oil changed each feather and the effects that oil might have on a bird.
3. Ask the students to hypothesize about ways to remove the oil.
4. Have the students try to wash off the feathers in the plain water. Ask them to describe what happens to the feathers.
5. Next, have the students try to wash their feathers off in each of the detergent solutions. They should try one feather per detergent. Ask the students to write down which detergent (solution #1, #2, or #3) worked the best. Let the students compare their results and record them on a chalkboard or other large writing surface.
6. Reveal the names of the detergents and show the containers they were in.
7. Discuss what would happen to a bird in an oil spill. Why are feathers important to birds? How do birds clean their feathers? What might happen if the bird ingested the oil?

Deeper Depths

Test other hypotheses that the students suggested to remove the oil. Try this experiment again, substituting materials such as leather, hair, or fur for feathers. Try different types of oils and detergents. Investigate why and where oil spills occur. What kinds of animals are found in these places?