



Oily Otters

Meets 5th Grade California Science Content Standards – 3a and 3d (see Standards Key)

California Visual Art Standard 2.6 - Use perspective in an original work of art to create a real or imaginary scene.

Taking It Further - California Visual Art Standard 2.5 - Assemble...a mixed media two-dimensional composition that reflects unity and harmony and communicates a theme.

Animal to Draw for Art Contest – sea or river otter

Writing prompt for the sentence of the back of the student's drawing – Describe how an oil spill affects an otter.

Objective - For students to observe how difficult it is to clean up oil spills and get the oil out of the water cycle. Oil in the environment is harmful to many animals and plants and can kill many living things.

Time – 20-30 mins

Background –

Otter fur has been prized by humans for hundreds of years; in fact they were nearly hunted to extinction for their fur. Sea otter fur is the thickest of any animal—there are 600,000 to 1 million hairs per square inch. For perspective, humans have an average of only 100,000 hairs on their whole head! It is important for all otters to keep their individual hairs clean. If the fur isn't clean, it gets matted and otters can die from getting too cold, called hypothermia.

One of the most serious problems facing the well-being of otters is the threat of an oil spill in the ocean or oil runoff into rivers. Oil is one of the most common pollutants in our water. Most of the oil gets into the environment when oil tanks on ships are rinsed while at sea or from cars that leak oil onto the street. If excess oil gets into streams, lakes, or oceans, as in an oil tanker spill, it can be harmful to otters and many other animals.

The reason this is such a serious threat to sea otters is that they do not have a thick layer of blubber for insulation like other marine mammals have; instead they depend on their thick fur to protect themselves from the cold water. They spend a large portion of each day grooming or rubbing their bodies, which forces air bubbles into the fur closest to their skin, acting as insulation to keep them warm.

When otters come into contact with an oil spill, the oil coats and mats their fur, making grooming extremely difficult. Some otters can survive a light encounter with oil, but a heavy dose can cause hypothermia and death because they are unable to clean their fur. Additionally, if oil is in their fur as they groom they will swallow it. Since oil is toxic, or poisonous, it can cause liver and kidney failure, and severe damage to their lungs and eyes all of which can result in death.

In this activity you will try several ways to clean up an oil spill. These ways are similar to the ones used by clean-up crews in real life spills.

Vocabulary –

Hypothermia – dangerously low body temperature

Materials -

- one large bowl
- one measuring cup
- water
- cooking oil
- different dishwashing detergents
- paper towels or a piece of cloth
- sponges
- string

Directions -

1. Fill half of the bowl with water.
2. Measure 1/4 cup of oil and pour into the bowl of water.
3. Gently shake the bowl to create "waves". Did the oil and the water mix?
4. Now try to clean up the oil using: Paper towel or cloth.
5. Use string to make a border around the oil and try to drag the oil to one side of the bowl.
6. Use the sponge to try to soak up the oil.
7. Try to clean up the oil with each kind of detergent.

Questions for discussion –

What method seemed to work the best at cleaning up the oil? How could that work on a larger spill in a natural habitat?

Resources

“Tarka the Otter” by Henry Williamson

“The Exciting Adventures of Hydra & Muste Otter: Life in the Big Sea” by George Kingston

Other otter books - <http://www.goodreads.com/shelf/show/otter>

Otter activities - <http://seaotters.org/pdfs/curriculum.pdf>

Otter Spotter Citizen Science Project: <http://blogs.kqed.org/science/2013/06/18/river-otters-in-the-marine-headlands/>

<http://otterspotter.com/>

http://www.biokids.umich.edu/critters/Lontra_canadensis/

Taking it further -

Each day, a wild sea otter must eat about 25% of its body weight just to stay alive. If a sea otter doesn't eat, it will lose weight and may starve very quickly. You may want to share the story of a rehabilitated otter pup who went missing on a Thursday night at 14.5 pounds. When it was found Sunday morning, it weighed only 10.5 pounds. It had lost 28% of its body weight in only 60 hours! You could have your students use their own weight to determine how much weight they would lose if they lost 28% of their total body weight.

Conservation Action – Don't flush kitty litter down toilets! Cat feces is one source of a parasite that survives sewage treatment and ends up in the ocean where it can kill sea otters.

Sources:

<http://www.epa.gov/owow/nps/kids/ducksbackoil.html>

<http://www.seaotters.org/>