

SURVIVAL SCENTS

4-5TH GRADE
SCIENCE

Learning Goals: The students learn that a lemur's most important sense is smell and they can describe its different uses.

Students will be able to:

- Experience how lemurs use their sense of smell to find food, troop mates and avoid predators
- Explain why lemurs need their sense of smell to survive

LESSON DESCRIPTION

Using scented oils and fragrances, students participate in an activity to locate and follow various scents that indicate troop mates, food, territorial borders and predators. They discuss the importance of different senses to different species and discover how lemurs use their sense of smell for communication.

Materials needed:

- 1 cotton ball per student
- Low-tack masking tape or painter's tape
- Rope or tape to mark the start of each trail
- Different colored felt pens or markers to indicate different colors per group
- Sticky notes; 3 different colors per group
- A variety of perfumes or scented extracts
- Kitchen sponges
- Re-closable plastic bags
- Paper cups and water

TWO 1 HOUR SESSIONS

INVESTIGATING LEMUR ADAPTATIONS

DISCUSSION

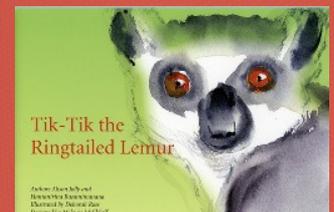
Review the five senses. Ask the students which sense they use least often, which sense they use most, and if they have ever observed animals, such as their family pets, using their senses. Based on their observations, which scents do they think their pets use most often?

Explain that lemurs rely on their sense of smell to identify their home range, or territory. They also use it to find food, communicate, find a mate, avoid other troops and detect predators and other dangers. Male ring-tailed lemurs will even fight for females or territory by having "stink fights" with their tails.

FOR BACKGROUND INFORMATION SEE:

INVESTIGATING LEMUR ADAPTATIONS

LEARNING ABOUT LEMUR LIFE



FEATURED BOOK:
TIK-TIK THE RING-TAILED LEMUR

ACTIVITY ONE - FIND YOUR TROOP MATES

SET-UP

Before the activity, select one scent for every group of 4 students. This will be the group's "signature scent." Choosing similar scents, such as vanilla and almond, will make this activity even more challenging. Other options include lemon, orange, peppermint, coconut, and cinnamon extracts, or essential oils like lavender or sandalwood.

Dab each scent lightly onto the cotton balls. Store each group's scented cotton balls in a separate, labeled plastic bag or plastic container to ensure the scents do not mix or evaporate before the activity starts. There should be 4 scented cotton balls per bag/container. Right before the activity (and out of view of the students) make small loops of masking tape, keeping the sticky side out, one for each student. With a felt pen or marker, draw a dot on each. Use a different color for each team, corresponding to a particular scent (for example, blue dots are covered with vanilla-scented cotton, red with cinnamon-scented cotton, etc.), then attach a scented cotton ball to each tape loop so the dot is hidden and it is not possible to see which group is which.

ACTIVITY

1. Tell students that they are going to become ring-tailed lemurs and use their sense of smell to find their troop mates. Ask each student to attach a masking tape loop to the back of their hand.
2. Use the masking tape to attach one scented cotton ball to each student. The student should be located so the student can turn his/her head to get a whiff of the scent. Secretly record which cotton ball each student has as they are attached.

ANALYTICAL WRITING

Lemurs have a strong sense of smell as do many humans. Think about life without your sense of smell. What changes would occur? How would you feel?

SURVIVAL SCENTS

4-5TH GRADE
SCIENCE

3. Once each cotton ball is attached, students should walk around sniffing the other students' cotton balls, looking for those with the same scent. These are their "troop mates."

4. Remind students that during the activity, they cannot talk to each other. However, they can nod or otherwise indicate "Yes, we have the same scent" or "No, I don't think we have the same scent."

If two participants think they have found a match, they can go around together looking for any others who might match. Allow 5-10 minutes for the participants to find their matches.

5. Once everyone has their match, confirm the results by removing the cotton ball and revealing the colored dot. If all dots match, they are correct. Record who is in what troop to prepare Activity Two.

ACTIVITY TWO - FOLLOW A SCENTED TROOP TRAIL

SET-UP

To make the Scent Stations: Cut the sponges into cubes about the size of a quarter. Place one set of 16 cubes into a small zip lock bag for each team. Just before the activity, place two capfuls of liquid extract and a tablespoon of water into each bag with the sponge cubes. Seal the bag and squeeze to saturate the cubes. You should have one bag of 16 scented sponge cubes for each troop/team of 4 students. The scents should match each troops "signature scent" from Activity 1.

Repeat the process until you have one scented bag per team. Complete the set-up with two additional sets of scents. One scent will represent food and the other, predators. Each team will need one "food" scented sponge (this will mark the end of the trail and that they have successfully found their food source) and two "predator" scented sponges. These will be placed along the trail and represent predators encountered as they search for food. Be sure to wash your hands between working with each scent to ensure the scents do not mix.

INVESTIGATING LEMUR ADAPTATIONS

SURVIVAL SCENTS

4-5TH GRADE
SCIENCE

Just before the students enter the room, set up a separate scent trail for each troop to follow. Use paper cups to hold the sponge cubes, and place 15 of the sponges from each troop's signature scent bag approximately 7 feet apart. Keep one sponge cube with each scent behind for teams to use as reference scents. Scent trails should overlap to make the activity more challenging. Set out a “food” scent station at the end of each trail. Set out two “predator” scent stations along each trail.

ACTIVITY

1. When students enter the room, group them with their other “troop mates” from Part 1. There should be 4 students per troop.
2. Give each troop a small set of sticky notes (3 different colors for each team) or use small pieces of scrap paper and have students color them. Explain that ring-tailed lemurs need to use their sense of smell to find food. However, during their search they will also need to stay within their territory and avoid predators. To do that, each troop will seek out the scent stations (scented sponges) that have their troop’s “signature scent” until they reach their food source.
3. Tell students to mark each correct scent station they encounter with a colored sticky note. They should mark predator scent stations that they encounter along the way with a different colored sticky note. The final color should be placed on the “food” scented station at the end of the trail.
4. Give each team an opportunity to smell the predator and food scents using the spare cubes. Give each team a zip-lock bag containing a cube with their troop’s “signature scent.” This can be used as a reference as they negotiate their scent trail.
5. Each troop team should start at the tape or rope line that indicates the starting point of their trail. They will then follow their team’s scent, marking each correct scent station with a sticky note. Remind team

INVESTIGATING LEMUR ADAPTATIONS

SURVIVAL SCENTS

4-5TH GRADE
SCIENCE

members that they may not move or touch the sponges while negotiating their scent trail and that they may refer back to their reference sponge to remember the scent they are seeking. Teams will complete their trail when they reach their food source.

WRAP-UP

After all the teams have completed their course check each one. Have groups collect sponges and other materials at the end of the activity. To prepare the sponges for reuse: Wash them in soapy water and rinse, then soak them in a pan of water containing a capful of bleach. Rinse the sponges thoroughly and let them dry. Complete the activity with a wrap-up discussion using the following questions to guide you:

- What sorts of problems, if any, did you have following the scent?
- Which scent was the easiest to recognize? Which was the most difficult?
- How do you think your sense of smell compares to a lemur's, a dog's, or a cat's? (A lemur's sense of smell is much better than humans. A cat's sense of smell is 14 times stronger than a human's and a dog's nose is about 10,000 times better than humans!)
- How do we use scents as humans? Do we mark our home ranges or territories? If so, how do we do it? (By using structures such as fences and border plantings to designate property lines.)

INVESTIGATING LEMUR ADAPTATIONS

EVALUATION

Ask students what lemurs use their sense of smell for and evaluate responses. Use questions in the Wrap-Up discussion to further assess student understanding.

THIS ACTIVITY MEETS THE FOLLOWING NATIONAL AND FLORIDA EDUCATION STANDARDS

FLORIDA STATE STANDARDS

4th Grade Science

SC.4.N.1.1

SC.4.N.1.4

5th Grade Science

SC.5.L.17.1

NATIONAL SCIENCE STANDARDS

4th Grade

Characteristics of organisms

Organisms and environments

Form and Function

Characteristics and changes in populations

5th Grade

Structure and function in living systems

Reproduction and heredity

Regulation and behavior

Populations and ecosystems

Diversity and adaptations of organisms

Populations, resources and environments

Natural Hazards

Risks and Benefits

Evolution and equilibrium

NEXT GENERATION NATIONAL SCIENCE STANDARDS

4th Grade Science Structure, Function, and Information Processing (4-LS1-1, 4-LS1-2)

Middle School Science Structure Function and Information Processing (MS-LS1-8)

INVESTIGATING LEMUR ADAPTATIONS