

YOU CAN'T GROW HOME AGAIN

4-5TH GRADE
SOCIAL STUDIES, SCIENCE

Learning Goals: Students will be able to describe how lemurs positively impact the environment and how non-sustainable harvest methods threaten the survival of lemurs and other plant and animals species.

Students will be able to:

- Describe the important role that lemurs play in growing and maintaining a healthy forest by pollinating plants and spreading seeds

LESSON DESCRIPTION

Students throw a ball to simulate pollination and seed dispersal by lemurs. The activity demonstrates the negative impact of clearing forest on wildlife, pollination, and important ecological processes.

- Describe how lemurs, plants and other animals are affected when rainforest is cut down
- Identify sustainable alternatives to clear-cutting
- Identify the impact that slash and burn agriculture techniques and clear-cutting have on lemurs and other forest species

Materials needed:

- Large open area, gym or playground
- 1 soft foam ball for every 3-4 students

45 MIN

DISCOVERING LEMUR COMMUNITIES

ACTIVITY

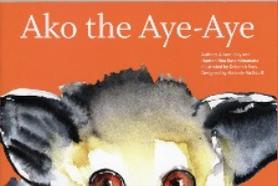
1. In a large defined area, such as a gym or playground, have students spread out so that everyone is approximately the same distance apart.
2. Explain to the students that they represent trees in a rain forest in Madagascar. Their roots (feet) are planted in the ground and cannot move.
3. Explain that some animals, including lemurs, birds, bats and insects, travel from tree to tree looking for food. Some are fruit-eaters, others eat pollen or nectar found in flowers. As they travel, the fruit eaters spread seeds in their scat (waste). Pollen and nectar eaters help plants grow by spreading pollen

FOR BACKGROUND INFORMATION SEE:

DISCOVERING LEMUR COMMUNITIES

MAKING A DIFFERENCE FOR LEMURS

DISCOVERING MADAGASCAR'S PEOPLE AND PLACES



**FEATURED BOOK:
AKO THE AYE-AYE**

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as they travel from flower to flower. These animals are called pollinators. In the forests of Madagascar lemurs spread seeds and act as pollinators. Students will toss the ball from person to person to simulate the lemur's activities as s/he jumps from tree to tree searching for food. The "lemurs" can only travel to the tree that is closest. Remind the students that they are rooted to their spot and cannot move their feet. Explain that if a ball hits the floor the lemur doesn't survive and is out of the game. If a tree doesn't get a lemur to visit it, that tree won't survive, because the flowers won't be pollinated and the seeds will not be dispersed. Let students play for 3-5 minutes.

4. After the students have a chance to play under these conditions, explain that some local farmers are coming in to clear a section of the forest. Instruct all of the students that are in the middle section of the game area to sit down. Only the players on the far right and far left edges of the playing field should remain. Explain that when an area is cleared in this manner it can only be farmed for 2-4 years before the soil no longer has the nutrients it needs to support crops and the land is abandoned. Instruct the students that are still standing to replicate the lemur's feeding process again by tossing the ball to the closest person. Since they have to toss the ball across a larger area, fewer lemurs will survive.

5. Explain to students that this time seeing the damage caused by clearing forest, the farmers will now use more sustainable harvest methods. They will only clear a small part of the forest and make sure that the clearing is surrounded by growing forest. To represent this, instruct only 3-4 students in the very middle to sit down, while the remaining students continue the game.

6. Explain that people, realizing the value of trees in the forest, have planted seedlings to replace the trees that have been harvested. To represent this, instruct all students rejoin the game.

ANALYTICAL WRITING

Lemurs play an important role in the forest. Think about the important roles that humans play in our environment. What are some things that humans can do to help their environment? In what ways can we hurt our environment?

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WRAP-UP

Afterward discuss the differences between the three games. Which harvest method had the biggest impact on lemurs, plants and other forest species? Which harvest method had the least impact?

Some plants in Madagascar have seeds that are so big they require large animals like black and white-ruffed lemurs to transport them. What would happen to these plant species if black and white-ruffed lemurs went extinct? What would happen to the other animals that depend on these plants for food and shelter?

OUTDOOR EXTENSION

First, have students research pollinators in the ecosystem of their local community. Once they have researched the different types of bees, birds, butterflies and other wildlife that serve as pollinators, head out to a nearby park or schoolyard garden and identify them. Have students keep a list of what types of pollinators they observe at the park or garden and what they observe on a lawn. How are they different? With the wide use of pesticides and people's preference for lawns and aversion to insects, many important pollinators are becoming less prevalent. This affects food and commercial crop production as well as impacting other wildlife and the overall health of ecosystems.

ZOO EXTENSION

During a zoo visit, students observe animals and identify pollinators. Many zoos have insect exhibits or demonstration bee hives. Many zoos feature botanical gardens and have horticultural staff. Determine before your visit if there are any garden tours or educational opportunities to discuss the role of pollinators. Look for pollinators across different taxa (invertebrates, birds, mammals, etc). Make a note of any educational signs or exhibits that are related to pollination.

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EVALUATION

Assess the student's involvement in the activity and discussion. Have students research and describe local pollinators and evaluate their responses.

THIS ACTIVITY MEETS THE FOLLOWING NATIONAL AND FLORIDA EDUCATION STANDARDS

FLORIDA STATE STANDARDS

4th Grade Science

SC.4.L.16.1

SC.4.L.17.4

5th Grade Science

SC.5.L.17.1

5th Grade Social Studies

SS.5.C.2.5

NATIONAL SCIENCE STANDARDS

4th Grade Science

Characteristics of organisms
Transfer of energy (food chains)
Organisms and environments
Changes in environments
Form and Function

5th Grade Science

Structure & function in living systems
Reproduction and heredity
Regulation and behavior
Populations and ecosystems
Diversity & adaptations of organisms
Populations, resources & environments
Natural Hazards
Risks and Benefits
Evolution and equilibrium (adapting to environmental changes)
Form and Function
Transfer of Energy (Food Chains)

NEXT GENERATION NATIONAL SCIENCE STANDARDS

5th Grade: Matter and Energy in Organisms and Ecosystems (5-LS2-1)

Middle School: Interdependent Relationships in Ecosystems (MS-LS2-5)

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