Protect the Primates

GRADE LEVELS	2nd-4th ; Standards for 3rd and 4th
SUBJECTS	Life Sciences; Cause and Effect
DURATION	Preparation: 30 minutes Activity: 1 activity per day
SETTING	Classroom

OBJECTIVES

Students will be able to:

1. Identify the common characteristics of primates that allow them to survive in their environments.
2. Explore how changes in the environment can affect the survival rate of certain organisms in an ecosystem.
3. Come up with at least one action item to help protect primates in the natural world.

MATERIALS

- butcher paper (one large piece per group)
- pencils (one per student)
- markers (one set per group)
- rulers or meter sticks (one per group)
- tape (one roll)
- scissors (one pair per group)
- magnifying glasses (optional)
- primate cards
- primate and/or rainforest books
- post-palm oil activity handout

SCIENTIFIC TERMS FOR STUDENTS

- **adaptation:** any structure or behavior of an organism that improves its chances for survival
- **deforestation**: the cutting down and removal of all or most of the trees in a forested area.
- **extinct:** species that no longer have any living members
- **endangered:** species that are in danger of going extinct
- **habitats:** the area of environment where an organism or ecological community normally lives or occurs.
- **primate**: any of various mammals of the Order Primates, having a highly developed brain, eyes facing forward, a shortened nose and muzzle, and opposable thumbs. Lemurs, monkeys, apes, and humans are examples of primates.

- **sustainable:** meets the needs of the present without compromising the ability of future generations to meet their own needs.
- **threatened**: species that are likely to become endangered in the future

BACKGROUND FOR EDUCATORS

Monkeys, apes, lemurs, and humans all belong to the Order Primates. Therefore, we have many of the same characteristics as chimps, gorillas, orangutans, howler monkeys, and even lemurs! These characteristics include: having highly developed brains which correlates to their intelligence and social-group structure, a shortened nose and muzzle, opposable thumbs on hands and feet to grasp objects, a solid ball and socket joint in the shoulder and a collarbone that allows hanging and swinging from branches, and eyes centered in the front of the head which makes depth perception possible and indicates that there is more of an emphasis on using sight instead of smell to capture prey or escape predators ("Primate," 2014).

There is great concern for the tropical rainforest primates of the world. Due to human activity, many populations of monkeys, apes, and lemurs are on the brink of extinction. Deforestation, the main threat leading to this extinction, is caused by an increased cutting of forests for commercial use of tropical hardwoods and the development of farmland from rainforests. Orangutans, one of the most endangered apes, are found in Sumatra and Borneo and are facing a very bleak future. It has been estimated that during the past 35 years about 50,000 orangutans have been lost due to their habitat loss. This loss is mainly attributed to the growth of palm oil plantations. Palm oil is the most widely produced vegetable oil worldwide. It has the highest yield of any oil crop and is the cheapest vegetable oil to produce and refine ("Palm Oil, 2014). If the pattern continues, this majestic creature will likely face extinction by 2050 ("Orangutan Plan," 2008). As habitats shrink, the populations of these primates shrink as well. Although primates are very adaptable animals, they have not been able to sustain their numbers when faced with such a dramatic depletion of resources.

Palm oil, which is an ingredient in many prepackaged food items like cookies and crackers, is one of the largest drivers of deforestation in Southeast Asia—essential habitat for critically endangered species, especially Sumatran orangutans. In 2014, Kellogg, the company that produces Girl Scout Cookies, announced that it will now use deforestation-free palm oil, thanks to the demands of two teenage Girl Scouts who challenged the organization's use of unsustainably-sourced palm oil which was used in Girl Scout Cookies. The two girls created a petition to force Kellogg to find more sustainable sources, as well as a letter-writing drive, and contacted Girl Scouts across the nation to speak out ("Girl Scouts," 2014).

TEACHER PREP

1. Print attached primate cards (lemurs from Madagascar, howler monkeys from

Costa Rica, squirrel monkeys from the Amazon, and orangutans from Borneo).
2. Cut out one 5-5 ½ foot long piece of butcher paper per student group.
3. Assign your groups of 4 beforehand.

Primate Comparison

INTRODUCTION

1. Pass out one species of primate cards to each group. Let them know that they are going to explore how they (the students) are similar and different to the primates on the cards.
2. Have students make observations of their primate cards within groups. Have students discuss characteristics they notice and things they wonder about their specific primate.
   (For example: hairy/furry, long arms, big eyes, live in trees)
3. Then ask students to discuss why those characteristics might be important to have.
4. As a group share those characteristics and write them on the board. Discuss possible reasons for these characteristics.
5. Have students think about the following question in groups: "How do primate characteristics relate to or connect to human characteristics?"

   - Teacher Tip: *Reasons for primate characteristic include, but are not limited to: eyes centered in the front of the head creates an overlapping field of vision which gives the brain more information for both close and far away images, opposable thumbs on hands and feet help to grasp objects, solid ball and socket joint in the shoulder and a collarbone that allows hanging and swinging from branches, and shortened nose and muzzle to emphasize using sight instead of smell to capture prey or escape predators.*

ACTIVITY

1. Explain to students that they will be comparing their own characteristics to the primate species on their cards.
2. Ask one student per group to lie down on top of the butcher paper.
3. Remaining group members help trace the student's body on the paper with a pencil.
4. The groups use their primate cards for reference and label similar characteristics they observe between themselves and the primate picture onto their butcher paper.
5. Have students write *I wonder* questions about the primates beneath their drawings.
6. In their groups, have students think about what these animals might need in order to survive (type of habitat, food, etc.).
7. Allow students to then choose one of their questions to research by using informational text.

8. Display drawings throughout the class, discuss similarities and differences and have students share their questions and what they learned.
   (For example, why do some of the monkeys have tails and others don't? How might that characteristic be useful to that animal?)

Palm Oil Activity

TEACHER PREP

1. For this part of the activity, your focus is on the orangutan's habitat and how palm oil is having an effect on its habitat.
2. Print out a couple images of palm oil to share with the class as a whole.
3. If you have bought products with palm oil, think how you're going to divide the class (in groups of 4) to have them investigate the ingredients on the snack items. Otherwise, ask students to keep any snack wrappers from the day of or day before.
4. The list of companies who adhere to (or do not) sustainable palm oil is your own resource to supplement your class discussion. You may print this as well.

INTRODUCTION

1. Have students observe a picture of a healthy rainforest (flickr photo in Reference).
   - Teacher Tip: *Allow students to make observations with I notice and I wonder statements for both pictures.*
2. Transition into showing what an unhealthy rainforest looks like-deforestation (flickr photo in Reference).
   - Teacher Tip: *Allow students to make observations with I notice and I wonder statements for both pictures. Both photos were taken in Malaysia.*
3. Inform students that many primates are endangered or threatened and are losing their habitats for many reasons- one of them being deforestation to make room for palm oil plantations.
   - Teacher Tip: *An example is that of deforestation of a Southeast Asian rainforest for palm oil production and its negative affects to the orangutan. You may show the class the infographic of deforestation and its effects on wildlife.*
4. Give examples of everyday items that contain palm oil with an emphasis on food/snack items (check References).

ACTIVITY

Part 1: Girl Scout Story/Sustainable Palm Oil

1. Share the incredible story of how two girl scouts voiced their concerns about their Girl Scout cookies containing palm oil and in return were able to get sustainable palm oil to replace the non-sustainable palm oil in the Girl Scout cookies. Find the

story in the References section at the end of this lesson.
2. Tell students that they will be carefully looking to see how they also can help out in their homes with their families.

Part 2: Rainforest Action Hero: Check the ingredients

1. Inform students they will be Rainforest Action Heroes (!) by checking the ingredients of products to see which items have palm oil and which don't.
2. If snacks were purchased for this part of the activity split class into groups. On the board, write the other names palm oil goes by. If students have store-bought snacks, direct them to read the ingredients on their snacks as well to search for palm oil.
    - Teacher Tip: *Alternative names for palm oil include: palm oil kernel, palmitate/palmate, elaeis gunieensis, hydrated palm glycerides hexadecanoic, palmitic acid, and any vegetable oils with saturated fats.*
3. Have students use a magnifying glass to find ingredients in products that are not rainforest friendly.
4. Create a chart as a class, of snacks/candy bars to show those items with no palm oil and/or sustainable palm oil vs. non-sustainable palm oil and have students discuss the data.
5. Talk about good alternatives to palm oil and share companies and their products that are adhering to sustainable practices for growing palm oil. Use information from your Palm Oil Scorecard resource found below in References.
    - Teacher Tip: *Palm oil is in many packaged food items, as well as cleaning and cosmetic products. Finding alternatives is difficult, the best solution is to check labels to see if palm oil is present, or look for labeling of sustainability, and eating non-processed foods.*
6. Commitment: Thank students for being Rainforest Action Heroes! Encourage students to continue to take action by asking students if they would be willing to check their labels for palm oil the next time they go to the store. Pass out the palm oil handout to help encourage your Rainforest Action Heroes!

WRAP-UP

Discuss as a class how students can take action to protect primates before talking about the following:

- Only buy sustainably produced rainforest products, or eat local fruits and vegetables
- Write letters to conservation groups and politicians
- If possible, volunteer for conservation organizations and/or donate money
- Help spread the word to friends and family

EXTENSIONS

- Discuss how rainforests are important and why these beautiful creatures help this ecosystem.
- As a way to integrate English Language Arts, have students write letters to conservation groups and/or politicians expressing their concern for the future of tropical rainforest primates.

REFERENCES

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NEXT GENERATION SCIENCE STANDARDS

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
• **Asking Questions and Defining Problems:** Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.	• **LS2.C Ecosystem Dynamics, Functioning, and Resilience:** When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. • **LS4.D Biodiversity and Humans:** Populations live in a variety of habitats, and change in those habitats affects the organisms living there.	• **Cause and Effect (3-5)** Cause and effect relationships are routinely identified, tested, and used to explain change.

CALIFORNIA SCIENCE CONTENT STANDARDS

Grade 3
Life Sciences

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.
d. Students know when the environment changes, some plants and animals survive and reproduce; other die or move to new locations.

Grade 4
Life Sciences

3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:

b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.