



RAINFOREST
TRUST®

Orangutans & the Oil Palm Crisis

Levels: Ages 15 – 18



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Standards

- Common Core Standards for English Language Arts/Literacy and Mathematics
- Next Generation Science Standards for HS Interdependent Relationships in Ecosystems

Concepts

- This lesson focuses on the Great Apes and one of our closest relatives in the animal kingdom, the orangutan. Students will learn about orangutan natural history and the threats they face in their rainforest habitat in Borneo.
- How are humans similar to orangutans, and how do humans impact orangutan habitat and their chances of survival through choices we make at home?

Part I: Making Connections

Idea – Students will learn about the taxonomic order *Primates* in the animal kingdom that includes monkeys, prosimians, great apes, and us. The four species of Great Apes: chimpanzees, gorillas, orangutans and humans form the taxonomic family known as *Hominidae*. Similar features and social organization, large brains capable of complex thought, and opposable thumbs are some of the seemingly small but hugely significant traits that define and make all primates unique.

Students will learn about primates by developing a taxonomic model to represent relationships in the primate classification system.

Materials –

- Index cards (one per student) with the common name of a unique primate, including prosimians, monkeys and apes.
- Pens, colored markers.
- One roll of masking tape.
- Several yards of string or ribbon.
- Access to the internet for research, other research materials on taxonomic classification.

Procedure –

1. Before class, do some basic research on different primate species. Prepare one index card per student with the name of a primate species on one side of the card. Include prosimians, monkeys and apes. One card, one primate per student.
2. To begin the lesson, discuss the concept of grouping and classification in labeling scientifically. Ask students to think of some examples of grouping using items or people around the classroom like shoes, backpacks or hair color. Why might grouping and classification be important to scientists?
3. Each student will be given an index card with a primate and research it's taxonomic classification. On the blank side of the card, students should fill out the following about their primate: **Kingdom, Phylum, Class, Order, Family, Genus, Species**
4. Next, have students use colored markers to label their cards on the common name side for where their primate lives. Choose different colors to represent South America, Asia and Africa.
5. Have students work together to create a taxonomic tree for their primates. Begin by marking the front of the room with the highest level of classification in the hierarchy that they can identify. Mark this level with masking tape and the name of the taxonomic level written on it.
6. Next, students use string to connect the preceding level of classification for their primate and mark it with masking tape in turn. In this way, the taxonomic tree will grow.
7. As students continue to work on their index cards they will come across levels of classification for which there is more than one branch. Students should work together to figure out the appropriate number of branches per level and continue to connect levels to the hierarchy.
8. In the end each student will work themselves down to the species level and insert their primate.

9. When the whole class is finished, talk about what you learned. Ask students to think about how scientists work to classify species and how they must often revise their work as new information comes along.

Part II: Reading and Discussion

Idea - Orangutans share approximately 97% of the same DNA as us and are the only great apes native to Asia. The Bornean Orangutan is the third largest primate after the two species of gorilla and is the largest arboreal tree dwelling animal alive today. They have arms that can reach almost five feet in length, a shaggy reddish coat and prehensile hands and feet. Highly intelligent and with human-like features, it is no wonder that the Malay name for these charismatic primates, Orang – utan, literally means “person of the forest”.

The Borneo Orangutan is found only on the island of Borneo in Southeast Asia. Borneo is the third largest island in the world and the largest island of Asia. It is divided between the countries of Brunei, Malaysia and Indonesia, with around 73% in Indonesian territory. Situated directly on the equator, Borneo has some of the lushest and most ancient rainforest in the world. These forests are home to countless species of plants, animals and insects, including the orangutan.

Despite the richness of Borneo’s biodiversity, the island’s rainforest are severely threatened by deforestation, illegal logging, and the spread of oil palm plantations. Oil palm is one of the most versatile tropical vegetable oils in the world and used in many products. The huge demand for it drives deforestation in Borneo and the destruction of the orangutan’s habitat. Today the Bornean Orangutan is classified as endangered by the IUCN. Their populations are estimated at around 54,500 individuals in the wild and declining.

In this exercise students will learn about the Borneo Orangutan and how oil palm drives deforestation of orangutan habitat directly and indirectly. We will read literature provided by the Union of Concerned Scientists to learn more.

Materials –

- Palm Oil and Orangutans Infographic: Palm Oil and Tropical Deforestation. http://www.ucsusa.org/global_warming/solutions/stop-deforestation/palm-oil-infographic.html#.VG-pNcnaVIO
- Palm Oil Scorecard: Ranking America’s Biggest Brands on Their Commitment to Deforestation-Free Palm Oil. http://www.ucsusa.org/global_warming/solutions/stop-deforestation/palm-oil-scorecard.html#.VG-pwcnaVIO

Procedure –

1. Access the internet, or print and pass out handouts of *Palm Oil and Tropical Deforestation Article* and *Palm Oil Scorecard* from the Union of Concerned Scientists.
2. Have students read the article about oil palm and tropical deforestation in Borneo with the accompanying infographic. Ask if any of them were aware of this issue. According to the article,

what are two major negative consequences of clearing rainforests for oil palm? Had anyone heard anything about oil palm before reading this article? What are some products oil palm is used in?

3. Have students access the Palm Oil Scorecard provided and discuss some of the products and companies scored on it. Look over the scorecard together and discuss all of the companies that use palm oil in their products. Do students and their families buy any of these products? Which come from companies that are making a commitment to deforestation-free palm oil? Which don't?
4. Have students complete a survey and questionnaire to explore the issue of oil palm awareness.
5. For the first part have students do a survey of their own home. How many of these items did students and/or their families have at their house? According to the UCS scorecard how many came from companies that are deforestation-free?
6. For the second part have students develop a questionnaire to survey teachers, staff and parents on their awareness of oil palm and its relationship to tropical deforestation. Have students develop a list of survey questions about oil palm, tropical deforestation and orangutans.
7. Assist students in designing their survey. Some possible questions might include.
 - a. Have you ever heard of oil palm?
 - b. What kind of products is oil palm found in? List some products from the list.
 - c. Do you purchase products from these companies? List some companies that use oil palm in their products.
 - d. Were you aware that development for oil palm plantations for these products is destroying tropical forests in Borneo and driving orangutans towards extinction?
 - e. Would you support companies that committed to deforestation-free oil palm commitments helping to save orangutans?
 - f. Would you pay more for products knowing they are deforestation-free?
 - g. Do you think it's important that we are aware of where our products come from and how they are made?
8. Engage students in a follow-up discussion about their survey. Ask questions:
 - a. How knowledgeable were respondents about oil palm and how it is produced?
 - b. How might informing people about the origins of oil palm and its effects on tropical forests change things?
 - c. Do you think it's important that people know what companies they buy from are doing or not doing for the environment?
 - d. Why or why not?

Part II: Math and Geography

Idea –Students will continue to learn about orangutans and the oil palm crisis through analysis of maps and various calculations of deforestation and palm oil production rates across orangutan habitats.

Materials –

- Map of the world for reference.
- Map 1: Orangutan species distributions.
http://www.mappalette.com/orangutans_files/image002.jpg
- Map 2: Oil palm producing and consuming countries.
http://na.unep.net/geas/newsletter/images/Dec_11/figure-2.png
- Figure 1: “Oil palm plantings and forest loss in Indonesia and Malaysia, 1990 – 2008”, Taken from the Mongabay.com article, “First large-scale map of oil palm plantations reveals big environmental toll.” <http://photos.mongabay.com/11/0103op.jpg>
- Calculators and other materials for making calculations.

Procedure –

1. Have students look at Maps 1 and 2 to compare and overlap the places where orangutans live and oil palm is produced.
2. Ask students to look at Map 2. What countries produce (supply) the most palm oil? Which countries consume (demand) the most palm oil?
3. Next, have students look at Figure 1. Ask students to better analyze this figure and solve the following:
 - a. Calculate the total forest loss for Indonesia and Malaysia together between 1990 -2008. What is the average forest loss per year across that time?
 - b. Next, have students calculate the area (in hectares) that would be roughly equivalent in their own country, the United States.
 - c. Have students describe in their own words the correlation they see. Why is it that forest loss in Indonesia is so much greater than that in Malaysia even though the oil palm planting rate of increase stays relatively the same? Encourage students to think of other factors that may be contributing to forest loss in Indonesia that are not accounted for by this figure. For example, logging for timber, other agriculture and development.
 - d. Lastly using Figure 1, have students calculate the average forest loss for the period of 1990 - 2009. At the current rate of forest loss, how long do you think it would be before all the forests are gone? How long before the orangutans are gone?

Part IV: Create

Idea – Students will imagine they are an orangutan or other creature (elephant, pygmy rhino, proboscis monkey, hornbill, tapir, frog, snake etc.) from the Borneo rainforest. They will do a creative writing monologue about a day in their life. Students will learn about personification in writing and attribute to their creature human characteristics, such as feelings and the powers of thought and speech. They will personify their animal and describe the world through its eyes, including its anxiety at the threat of losing its rainforest home.

Materials –

- Pens/pencils
- Paper
- Background material on animals found in Borneo, or access to the internet or library for research

Procedure –

1. After an overview of the assignment have students pick an animal from the Borneo rainforest to personify. Discuss with students what personification means in writing – to give non-human things human characteristics.
2. They will write a short narrative from the perspective of their animal.
3. As a pre-writing activity have students outline their narrative by answering some of the following questions for their animal:
 - a. What does your animal look like?
 - b. How does it move around?
 - c. What does it eat?
 - d. How does it find its food?
 - e. How does it communicate/interact with others of its kind?
 - f. What is a typical day like for your animal?
 - g. What kind of habitat does it live in?
 - h. What threatens your animal’s survival?
 - i. What other parts of the rainforest ecosystem does your animal interact with and depend upon for survival?
4. Brainstorming and drawing on their response to the questions, students will write a narrative monologue from the perspective of their animal: “A Day in the Life of” In their monologue, students will be encouraged to include as much description as possible to capture the essence of their animal. Encourage students to get into the role and be imaginative.
5. After students have drafted and polished their monologues, they can share them with the class through dramatic readings, performances or guessing games for which person is what animal.
6. Following the class readings, discuss personification and ask how writing from the perspective of a non-human living thing can help humans better identify with our nature.

Part V: Service Learning

Protect tropical habitat for orangutans and other rainforest animals in Borneo. Put your lessons into action by organizing awareness and fundraising campaigns to protect the tropical rainforest of Borneo. Use the proceeds of donations and funds raised to help Rainforest Trust directly purchase and protect critical rainforest for orangutans in Borneo

Three fun orangutan fundraising ideas:

Go Orange for Orangutans

Idea – Draw attention to your favorite orange cousins by going orange for orangutans. Pick a day to Go Orange and donate to save orangutans. Get your class, family, community and everyone you know to chip in to save orangutans.

Materials –

- Orange clothes. Whatever you have or want to wear as long as it's orange!

Procedure –

1. Have students get their classmates, families and communities to pledge to Go Orange for Orangutans to help save their vanishing rainforest homes.
2. Spread the word about your event.
3. Have participants pledge a flat rate or donate as much as they can to help save Orangutans. 100% of the donation will go directly to purchase and protect rainforest habitat for Orangutans in Borneo.

Orangutan Bake Sale

Idea – Everyone loves fresh baked goodies. Host a bake sale to help save orangutans. No orange required but pumpkin pies, carrot cakes, orange cupcakes and fun faces are a few yummy ideas.

Materials –

- Homemade baked goodies (be sure they are palm oil free)
- A table or stand at a central location.
- A money change box, free coffee or other accessories.
- Poster or literature to advertise your event to save orangutans.
- A team of dedicated volunteers to work at the table and have fun with passerby.

Procedure –

1. Encourage as many people as you can to join in your bake sale to help with baking sweets.
2. Set up your bake sale and advertise it as widely as possible to teachers, parents and community.
3. Find a good time and location for setting up your bake sale stand and get the approval and help of students, family and teachers.
4. Decorate your stand and draw attention to your fundraiser to protect the tropical habitats of orangutans with Rainforest Trust.
5. Sell your baked goodies for a flat rate or auction them off to the highest donations to help save Orangutans. Rainforest Trust will use 100% of the donation to directly purchase and protect rainforest habitat for orangutans in Borneo.

Save the Orangutans Fun Run/Walk

Idea – Save the Orangutans by organizing a fun run or walk. Being able to get outside and get fit while supporting a great cause is a win-win. Encourage your community to rally together to make a difference. All proceeds will go directly towards protecting critical rainforest habitat for orangutans in Borneo by Rainforest Trust.

Materials – Grab some friends and your running shoes and get started!

Procedure –

1. Some of the most successful fundraiser campaigns involve getting people together and getting active. A little competition can be fun, too.
2. Organize a Save the Orangutans Run/Walk.
3. Discuss the details of when and where to host your Fun Run with students, teachers, parents and the community. Think about a good venue to hold your event. How many miles to make your route. What day to have it. How to advertise and other planning details.
4. Get the permission and support of teachers, parents, friends and community members to make it happen and get them to be a part of your fun run, spreading the word to others.
5. Prizes – even small ones – can be a good incentive for some people to compete. Consider whether you will have prizes for your fun run and what they will be.
6. Ask participants to pledge as generously as they can to help save orangutans from extinction.
7. Take photos and videos of your fun run and send them to Rainforest Trust along with your donation.
8. Rainforest Trust will use 100% of your fun run's donation to directly purchase and protect rainforest habitat for orangutans in Borneo.