One Health Puzzle

Teacher Guide

<u>For each team of 5 students</u>

- One large piece of chart paper
- Markers
- Scissors
- Tape

Suggested Class Procedure:

<u>General</u>

Distribute 1 copy of One Health Puzzle to each student.

<u>Part 1: The trip of a lifetime!</u>   (10 minutes)

1. Read Part 1 together as a class.
2. Provide students time to complete part 1 questions.
3. Teacher may consider locating Indonesia on a map.
4. Teacher may show Borneo tourism video at https://www.youtube.com/watch?v=YUNW1XnSW6g

wishes to share with the class. Students should write the consensus solutions on NEW white index cards. Only one solution should be written per index card.

Part 3: Solving problems – How do the puzzle pieces connect? (30 minutes)

1. After groups have had time to come to consensus, the teacher should place the students into new teams consisting of one person from all five "radical listening" perspectives.

2. The teacher should instruct teams to share their identified problem and solution following the directions on the student instructions. The teacher may want to remind students that the information being shared by the team is new. Each person in the team completed a different perspective and it is important to listen to what each team member has to offer.

3.

Suggested

Scan the QR code with your smartphone or tablet camera app to link to a file with all the websites.

Bornean Orangutans Fact Sheet, prepared by Dr. Gibson
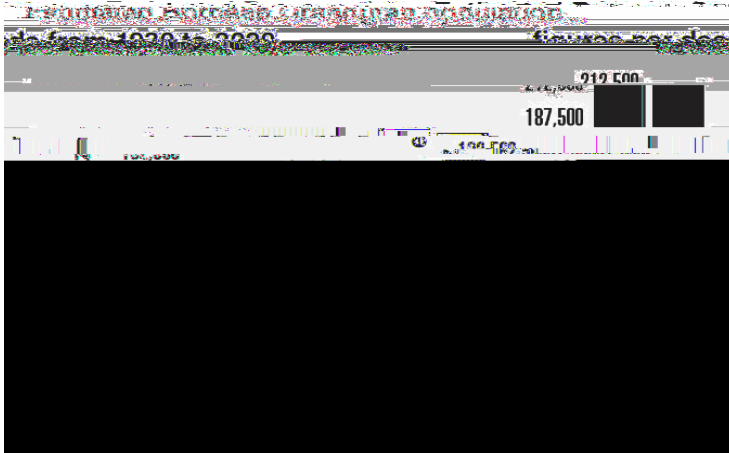
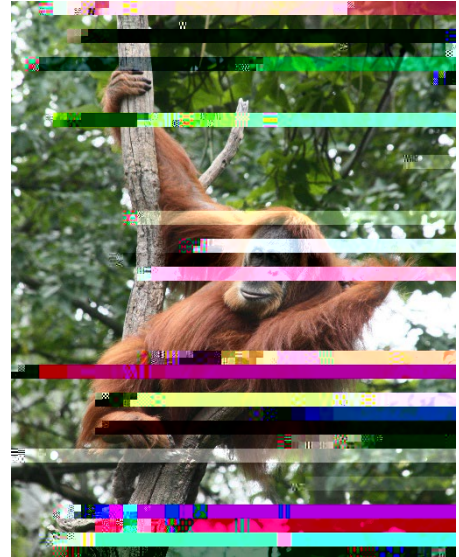Modified from https://www.projectarkfoundation.com/animal/bornean_orangutan

Did you know?

- Orangutans are the world's largest tree-dwelling frugivores (fruit eaters).

- It takes 24 to 72 hours for food to move through an orangutan's digestive system.

- Male orangutans can travel 1000 m per day! This means that orangutans are important forest builders because they transport seeds long distances from the original source tree.

- 70% of orangutan fecal (poop) samples have at least 1 intact seed. Most samples contain 1 to 142 seeds.

- One sample of orangutan poop had over 828 seeds!

- Some seeds show greater germination success and/or quicker germination after they have passed through an orangutan's digestive system. Orangutans are an important part of the forest building process.
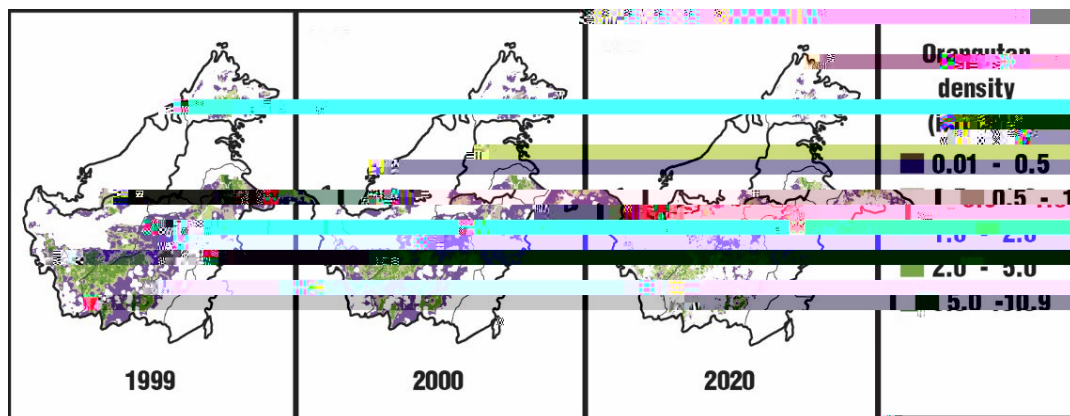
These maps show both orangutan density and geographic range since 1999.

Interview with a logger, Yusuf

Interviewer: Thank you Yusuf for agreeing to tell your story! Can you tell us a little bit about the job in general?

Yusuf: It's probably very different than you think. When I get an assignment, me and the crew go into the forest and we know we will spend about a y

Bornean Rainforest Facts, prepared by Datuk Yen

The main island of Borneo is divided into four areas and is controlled by three governments: Indonesia, Malaysia and Brunei. Until 50 years ago the rainforests of Borneo were considered some of the wildest and most pristine on the planet, home to nomadic tribes and substantial populations of orangutans, pygmy elephants, and rhinos. Today those tribes' traditions are all but gone, rhinos are on the brink of extinction, and orangutans and elephants are endangered. Meanwhile Borneo's forests have transitioned from being a net carbon sink, an area that absorbs greenhouse gases from the atmosphere, to a source of carbon, with deforestation and fires contributing to climate change.

Did you know?

- More than 30% of Borneo's rainforests have been destroyed in the last 40 years.

- Intact lowland forests house the highest levels of biodiversity and store the largest amounts of carbon.

- 34% of forests were selectively logged, while 39% were cleared completely.

- Forest degradation starts with logging roads, which grant access to remote areas for timber extraction.

- Once valuable wood has been harvested, forests may be bulldozed for industrial plantations.

- Industrial plantations supply the world with palm oil, paper, and timber.

- One study found that even inaccessible mountain forests are now being logged and converted for plantations.

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NGSS Correlation:

One Health Puzzle

Answer Key

Part 1: The trip of a lifetime!

In 1993, Kinari Webb was a college student who was provid the opportunity to travel to Borneo, Indonesia to study orangutans. Borneo is the third largest island in the world and is home to one of the oldest rainforests in the world. This would be the trip of a lifetime for Kinari! The Borneo rainforest is one of the few remaining natural habitats for the endangered Bornean Orangutan. Kinari was excited to be able to study the magnificent orangutan in its natural habitat.

Kinari's trip was not without heartache. As soon as she settled in at the research camp, Kinari could hear the hum of chainsaws in the forest. She knew that the orangutans were endangered because the rainforest in Borneo was disappearing at an alarming rate due to logging.

The people at the research camp were concerned for the orangutans. One of the researchers said that the orangutans used to be able to travel from one side of the island to the other without ever touching the ground. Orangutans spend most of their lives in trees, swinging in treetops, finding food and building nests for sleep. As more trees are removed from the forest, greater stress is put on the orangutan, decreasing their chance for survival.

1. What is the main reason the rainforest is declining in Borneo?

    The rainforests are declining because (11) 52 hng (3) 2w (l) 4e) 3y) move (g) 26 in) Juesm fm e rainfoorestt iut Wog in

Part 2: Radical Listening – What is the problem?

During her time in Borneo, Kinari realized that the fate of the orangutans was closely tied to the fate of the rainforest. She also realized that saving the rainforest was a complex issue. After graduating from medical school, Dr. Kinari Webb returned to Borneo in 2005 to build a medical clinic in one of the local Bornean villages.

Kinari quickly understood that she was NOT an expert on the complex factors driving the changes in the rainforest. In order to gather as much information as possible, Kinari and her team engaged the local people, whose livelihood and survival depends on the rainforest, in a radical listening exercise. Kinari defines radical listening as asking all members of the local community what they need to protect their environment and then working to make their solutions a reality. She thinks this is radical because many times conservation groups come into a community and just make changes without listening to local people about what they actually need. Once Kinari is able to understand the complexity of the issue from a local viewpoint, she and her team could begin to make positive changes.

You will participate in a simulated "radical listening" session to collect information to help Kinari. As part of the radical listening team, each of you will be in charge of collecting a part of the story.

Your teacher will assign you one of the t23 >>BDC -0.001 Tc 0.003 Tnccmattuf y13.ng" per -6.6 (fp)2.3 (e)7.9 (

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5. Label a white index card, "SOLUTIONS".

6. Identify 3-4 solutions described in your "radical listening" perspective. Write a list of the solutions you identify on the white index card

7. Be prepared to share your solutions with your classmates.

Share what you learned with others.

8. Your teacher will place you in an expert group with students who reviewed information from the <u>same</u> "radical listening" perspective as you.

9. First, each student should sha<u>re only</u> their **Problem** index card with the group.

10. The group should then come to a consensus (agreement) about the main problem identified by their "radical listening" perspective source.

11. Each student in the group should write the main problem agreed upon by the team on the colored **Problem** card. Raise your hand if you need a new, clean **Problem** card. Each student will need a completed **Problem** card for the next activity.

12. After every student has shared their "problems", take turns sharing your "solutions" with the group. As students share, place a star next to "solutions" shared by more than one person in your group

13. The group should then come to a consensus (agreement) about the possible solutions they want to share with the class. The group may share multiple solutions. Have one person write one solution on each white **Solution** card. For example, if you have 3 solutions, there should be three separate cards. Ask your teacher for more **Solution** cards, if needed.

Part 3: Radical Listening – How do the puzzle pieces connect?

Kinari thought the problem was simply a decrease in the orangutan population. However, after radical listening, she realized that many problems contributed to the decrease in orangutans. The goal of radical listening is to use the information provided by local people to enact real solutions to the problems they identified. Up to this point, you have only heard about this problem from the perspective (point of view) of one person. You will now work with a team of students that represent five different perspectives.

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7. Look at the lines connecting your problem and solution stacks. Which one of the solutions do you feel would have the greatest impact on solving the problems in Borneo? Support your choice.

Student answers will vary.

8. Explain how the solution you selected might affect the health of the forest.

Student answers will vary.

9. Explain how the solution you selected might lead to an increase in the orangutan population.

Student answers will vary.

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Student answers williott

Part 4: One Health

A One Health approach embraces the idea that the health of animals, people and the environment are closely linked. Complex One Health problems must be solved through improved communication, cooperation, and collaboration by experts in human health, animal

3. The Borneo example illustrates how local decisions may have global impacts. Explain how the local decision to build a medical clinic can have an impact on the global environment.

Health in Harmony created a medical clinic to provide people access to free/low cost health