Snapshot Ruaha: Citizen Science Activity
Virtual Classroom Extension

Objectives

These activities are designed to start your at-home students in recognizing themselves as scientists and in thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. Feel free to adapt the lessons provided to better suit your students' abilities. Take these ideas, make them your own, and your students will have a greater chance of success.

Materials

Smartphone, tablet, or computer with an internet connection.

Background Information

Lions are the majestic symbol of wild Africa, but their populations have decreased by more than 40% in the last 20 years and they have disappeared from more than 80% of their range due to loss of habitat and prey, and conflict with humans. Unless a major conservation effort is mounted to save them, their population numbers are likely to halve again in the next two decades. Central to protecting lions is supporting the human communities that share their home in places like Tanzania's Ruaha landscape, a globally important region for carnivore conservation. In partnership with the Ruaha Carnivore Project (RCP), Cleveland Metroparks Zoo is working to mitigate human-carnivore conflicts.

RCP studies and monitors large carnivores in and around Ruaha National Park in Tanzania. Lions and other large carnivores share this land with people. Because lions are predators, they often prey upon the livestock (like cattle and goats) the people in the area are raising. Prior to RCP, lions were killed often so that the people could protect their livestock. This is one of the reasons lion populations were decreasing. Now that RCP is in the area and working with local communities, they are able to help them coexist with lions. One of their goals is to provide important conservation-related benefits to these local communities. Livestock guarding dogs, community Lion Guardians, and livestock corrals called bomas help local villages protect their livelihoods, and as a result, attacks on livestock have decreased by 95% and the retaliation killing of lions in the area has decreased by more than 80%. Making education, health care, and other important community benefits available helps decrease the cost of living alongside carnivores. More than half of local people now say they see benefits from carnivores, up from only 2% prior to RCP programs in the region. And finally, satellite collaring and camera trapping efforts engage local communities in carnivore monitoring.

It is sometimes difficult to think of ways we can help animals that live so far away from us, but practicing citizen science is one of them. Citizen science is the practice of data collection and analysis by the general public, typically in collaboration with a scientific study or project run by professional scientists. Volunteering your time is a great way to contribute to conservation efforts and RCP has just the way to contribute to lion and cheetah conservation.

You can help the Zoo and RCP mitigate human-wildlife conflict by classifying camera trap images taken in Ruaha National Park which are used to assess communities' contributions to conservation efforts. Visit the link below to begin. If you are having trouble accessing the link, step-by-step instructions are provided below.

- Direct link to begin identifying images – https://www.zooniverse.org/projects/meredithspalmer/snapshot-ruaha/classify
  Go to Zooniverse.org → click on Projects in the upper left corner of the home page → scroll down and find the search bar → search "Snapshot Ruaha" → scroll down and click on "Get started: Snapshot Ruaha" →
- To learn more about the Snapshot Ruaha project – https://www.zooniverse.org/projects/meredithspalmer/snapshot-ruaha
- To learn more about Ruaha Carnivore Project – https://www.ruahacarnivoreproject.com/
- To learn more about lions – https://resourcelibrary.clemetzoo.com/Animal/70
- To learn more about what the Zoo is doing to secure a future for wildlife – futureforwildlife.org/conservation

Procedure

1. Begin this activity by discussing the difference between a predator and prey. Is a lion a predator or prey? What type of animals do lions prey upon in the wild? Refer to the Zoo's lion fact sheet provide in one of the links above.

2. Discuss the dangers of living around wild lions. Humans and lions share the same habitat in the Ruaha landscape of Tanzania. Do you think lions who are sharing habitat with humans know the difference between wild prey (like antelope or warthogs) and livestock (like goats and cattle)? Lions have to spend a lot of energy finding food so preying upon something that is easy to catch, like livestock, helps them conserve energy. This is not good for the livestock farmers who use their livestock to survive.

3. Discuss what Cleveland Metroparks Zoo (CMZ) and Ruaha Carnivore Project (RCP) are doing to help, not only the lions, but the people that share habitat space with them. By helping people and wildlife coexist, we work to help everyone and everything living and sharing that same habitat which makes for a safer and healthier ecosystem.

4. One of the ways CMZ and RCP are helping, is by capturing camera trap images to identify the type and number of species and individual animals living in and around the Ruaha National Park. Discuss citizen science and why it's important for the public to volunteer their time to help.

5. Open up Snapshot Ruaha, review the instructions, and begin identifying images. Depending on your child's abilities and interest, you can take this activity in a few different directions.

   - *SIMPLE IDENTIFICATION*: You can simply identify images together and finish by, once again, discussing the importance of citizen science and volunteering your time.

   - *PREDATOR/PREY CLASSIFICATION*: As you identify images, you can classify them as predators or prey. When you finish, discuss how many predators you classified and counted and then do the same for prey species. Where there more predators or prey? Why do you think that is the case? What would happen if there were more predators than prey? What if there weren't enough predators to eat the prey species? Discuss the food chain and what makes it healthy and successful.

- *SCIENTIFIC INQUIRY (a worksheet has been provided at the end of this lesson plan for this extension)*: After you have identified a few images, discuss what you observed. Look through 5-10 more images and record your observations. Based on what you observe in those, formulate a comparative question. A good comparative question compares two things and cannot be answered by simply doing one thing (e.g. "are there more images that have animals in them or more images that don't?" is better than "how many impala will show up in 50 images?"). Once you have your question, explore some predictions. What do you think the answer to your question will be and why? Next, make a plan for how you will collect your data and then implement it. Once you have collected your data, think hard about what you found. Consider creating a chart, graph, table, or diagram to analyze your findings. The last step of scientific inquiry is to share your findings. Who would be interested in seeing what you found? How can you prepare your findings to share with others?

Ohio's Learning Standards

Science Content Standards
Grade K Life Science Topic: Physical and Behavioral Traits of Living Things **K.LS.1:** Living things have specific characteristics and traits.
Grade 1 Life Science Topic: Basic Needs of Living Things **1.LS.2:** Living things survive only in environments that meet their needs.
Grade 3 Life Science Topic: Behavior, Growth and Changes **3.LS.2:** Individuals of the same kind of organism differ in their inherited traits. These differences give some individuals an advantage in surviving and/or reproducing.
Grade 5 Life Science Topic: Interconnections within ecosystems **5.LS.1:** Organisms perform a variety of roles in an ecosystem.

Sample images from Snapshot Ruaha

Some animals will be difficult to spot…

And some will be easy…

And many will not have animals…

Sifting through these images and identifying that there are no animals present, though, is extremely helpful to the scientists that eventually review them. If enough citizen scientists identify that no animals are present, they know they won't have to spend a lot of time reviewing them.

Scientific Inquiry Worksheet:

1. **In the space below, write down any observations you make regarding the first set of images you view:**

2. **Write your comparative question:**

3. **Write your predictions:**

4. **Use the back of this sheet to collect and analyze your data.**

5. **Does the data support your prediction? Why or why not?**

6. **Who do you want to share your findings with?**