

Autobiographies of Extinct and Endangered Species

Next Generation Science Standards:

- MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

Hawai'i Content and Performance Standards III:

- SC.8.2.1 Describe significant relationships among society, science and technology and how one impacts the other.
- SC8.5.1 Describe how changes in the physical environment affect the survival of organisms.

Description:

This lesson is about why species become endangered or extinct. Students will do a case study of one extinct and one endangered species. The two biggest threats to a species survival are invasive species and habitat loss. Students will learn what an invasive species is and see visuals of habitat loss on Maui. Without intervention and management, these endangered species could disappear within the students' lifetime.

Duration: 80 minutes

Objectives: At the end of this lesson, the students will be able to:

- Describe the impacts of invasive species on the biodiversity of plants and animals in Maui.
- Name three reasons why people should care about the loss of endemic species.
- Understand that biodiversity of an ecosystem depends on many interconnected factors and that an effect on one factor can influence all the others.
- Identify endemic and endangered species in Maui and explain why native habitats are critical to the survival of these species.

Background:

The loss of plant and animal species in the Hawaiian Islands has been staggering. What remains occupies only a small fraction of what their former distribution was just two hundred years ago. Many people are unaware that our native plants are under attack.

There is hope however; the battle against invasive species is being fought on many different fronts and by many different organizations. Inspectors at the airports, Maui Invasive Species Committee, and Haleakalā National Park are just a few of the organizations involved on a daily basis in the war against invasive species on Maui. We all can help in this war by learning how to identify invasive species and raise awareness of this pressing issue. We can also be diligent in

our own efforts to stop the invasion by being careful we don't spread invasive species ourselves when we travel from one habitat to another. We can also help by not planting any invasive plants in our own yards and instead planting native species.

Vocabulary:

Endemic: Native species that have adapted to a specific region over time and are found nowhere else.

Invasive species: Non-native species that compete with native species for valuable space and food in their habitat.

Non-native: A species that is not indigenous or native to a particular place.

Materials Needed:

Map of Maui Ecosystems Pre-Contact (teacher prop) (included)

Map of Maui Ecosystems Post-Contact 2005 (teacher prop) (included)

Autobiography of an Extinct Species (included)

Autobiography of an Endangered Species (included)

Procedure:

Step 1: Show Habitat Maps

- Show the map of Ecosystem types prior to human contact. Explain that this map shows the many different types of ecosystems that were present in Maui before the arrival of people.
 - Point out the 12 different ecosystems.
 - Notice where the alpine desert (light pink) is.
 - Notice where the rainforest (green) is.
- Show the map of Ecosystem types post contact (2005). Explain that this map shows the ecosystems in Maui in the year 2005.
 - Notice where the alpine desert (light pink) is.
 - Notice where the rainforest (green) is again.
 - These are some of the only in-tact native ecosystems left on Maui.
 - Look at all the non-native species (dark pink) that have spread across Maui!
- Show both maps together, and ask:
 - What do you notice about the distribution of ecosystems?
 - What could have happened to cause this?
 - How would the loss of native ecosystems effect biodiversity?
 - If the biodiversity is reduced, how does that affect a species chance of survival?

Step 2: Introduce Invasive Species

On the board, write the term "invasive species". Then explain that invasive species are non-native species that compete with native species for valuable homes and food. Discuss with the class the possible effects of invasive species on

endemic species. Invasive species negatively affect every aspect of life in the Hawaiian Islands. For example:

- Invasive plants can take over an area and crowd or choke out native plants (from their only home!) = Pine trees were introduced 200 years ago and are rapidly spreading throughout Maui.
- Invasive mammals can prey on endemic birds and their young. = Hawaii has lost 70% of its forest bird species from disease and habitat degradation.

Step 3: Research & Complete “Autobiography of an Extinct Species worksheet”

Hand out the “Autobiography of an Extinct Species” worksheet. Ask students to choose an extinct plant or animal from Maui. Have students use the internet or library to do research on the Hawaiian plant or animal they have chosen.

Step 4: Research & Complete “Autobiography of an Endangered Species worksheet”

Hand out the “Autobiography of an Endangered Species” worksheet. Ask students to choose an endangered plant or animal from Maui. Have students use the internet or library to do research on the Hawaiian plant or animal they have chosen.

Step 5: Discussion and journal entry

Discuss:

- What are some factors that could cause an animal to go extinct?
- What are some of the impacts that invasive species have on biodiversity?
- What are some examples of things that we can do to help endemic species from becoming endangered and help endangered species from becoming extinct on Maui? What we can do:
 - Report invasive species wherever you find them to MISC.
 - Do not introduce non-native or invasive species into native ecosystems.
 - Remove all non-native and invasive species and then plant native species in their place.
 - Volunteer for conservation organizations.
 - Awareness/Education: Share your knowledge of this issue with others.

Journal:

- What do invasive species have to do with habitat loss?
- Why is it important to prevent the extinction of endemic species?
- Why are native habitats important to preserve?

Name: _____ Date: _____ Period: _____

Autobiography of an Extinct Species

1. Extinct Species Name _____

2. The places (range) on earth I was found were: _____

3. Scientists know these things about me: _____

4. My jobs in the community/ ecosystem were: _____

5. How did my parts work together to make me successful in my environment: _____

6. A description of me would have included: _____

7. People believe I became extinct because: _____

8. Was my extinction natural (not caused by humans) or unnatural (caused by humans)? What evidence is there? _____

9. Some examples of things that may have helped to prevent my extinction are: _____

Name: _____ Date: _____ Period: _____

Autobiography of an Endangered Species

1. Endangered Species Name: _____

2. Draw a map or write the places (range) on earth where I am found: _____

3. Scientists know these things about me: _____

4. My jobs in the community/ ecosystem where I live is: _____

5. How do my parts work together to make me successful in my environment: _____

6. A description of me is: _____

7. I am endangered because: _____

8. Organizations involved in making sure I don't go extinct are: _____

9. Things people can do to help me are: _____

10. The chances of my survival are: _____



