Biological Diversity Field Study

Next Generation Science Standards:

- MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Hawai'i Content and Performance Standards III:

- SC.7.3.2 Explain the interaction and dependence of organisms on one another.
- SC8.5.1 Describe how changes in the physical environment affect the survival of organisms.

Description:

The purpose of this lesson is for students to gain an understanding of biological diversity. Where is it found and what does it look like? Students will search for biodiversity in their schoolyard. They will be asked to speculate on how the biodiversity of their schoolyard compares to that of Haleakalā National Park.

Duration: 60 minutes

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

- Understand that biodiversity of an ecosystem depends on many interconnected factors and that an effect on one factor can influence all the others.
- Name three reasons why people should care about the loss of endemic species.

Background:

The biodiversity of an ecosystem is often used as a measure of the health of an ecosystem. The more diverse, the better chance the ecosystem has of adapting to the inevitable changes that impact that ecosystem. Every plant and animal has a job or niche for which it is best suited. The interconnectedness of species plays a role in the health and survival of each individual species.

Vocabulary:

Ecosystem: A group of organisms occupying a particular area, interacting with each other and their environment.
Habitat: The natural home or environment of an animal, plant, or other organism.
Niche: The job, place, position, or activity for which an organism is best suited.

Materials Needed:

Biological Diversity Field Study Worksheet (2 sided, included)

Procedure:

Step 1: Review and Introduce Vocabulary

Define niche: the job, place, position or activity for which an organism is best suited. Then, discuss the interdependent relationship of organisms.

Step 2: Instructions to Field Study

Give each student a copy of the Biological Diversity Field Study Worksheet. Look over the worksheets to familiarize students with the types of things they will be searching for on their field study. Have students take their worksheet, a book or folder for something hard to write on, and a pencil out with them for the field study.

Step 3: Discussion

Have students break into small groups and compare the results of their worksheet with each other. Ask each question, allowing time for the group to discuss and share their answers and ideas with each other.

- Is our schoolyard a biologically diverse place? Explain your answer.
- Predict whether our schoolyard is more diverse or less diverse than the ecosystems we will see on our field trip to Haleakalā National Park. Why do you think so?
- You may have heard the saying, "Variety is the spice of life." How could this also apply to the biodiversity of plants and wildlife? What does it mean?
- How do the benefits of biodiversity in an ecosystem compare with the benefits of diversity in our school and community?
- Is diversity a good or bad thing? What is good or bad about it? Explain.

Step 4: Reflection & Conclusion

Discuss the following questions with the students and check for understanding.

- Name some examples of how species interact and depend on each other?
- Name three benefits of biological diversity.
- How might biodiversity enable an organism to better survive?
- What if all of Maui looked like the schoolyard and there was no place for the rare species to live?
- How do changes in the environment affect a species ability to survive?
- Why it is so important to have places that have a lot of biological diversity like Haleakalā National Park?

Name: _____ Date: _____ Period: _____

Biological Diversity Field Study

From where you are standing, how many different plants can you see?	I am in a biologically diverse place. (Yes or No)	I found an endemic plant! (Yes or No)
I found a plant that is flowering. (Yes or No)	I found a rock with living things on it or under it. (Yes or No)	Find an animal with 6 legs. What is it? (Yes or No)
I found an insect living in the soil. (Yes or No)	I found an animal with no legs. (Yes or No)	I found a seed that travels by sticking to things. (Yes or No)
Stand quietly for at least 2 minutes. Record the # of birds that you see or hear.	Name the different kinds of sounds that you hear?	Find insects living in leaf litter. Name them.
How many different types of plants are in a 5 foot square?	Name a change made by humans that decreased biodiversity.	Name a change made by humans that increased biodiversity.
I found a plant whose leaves grow right next to the ground. (Yes or No)	I found a plant predator. (Yes or No) Name it.	I found an animal predator. (Yes or No) Name it.

Name: _____ Date: _____ Period: _____

Biological Diversity Field Study

I found a leaf that feels hairy! (Yes or No)	I found an animal living in a shelter. (Yes or No)	I found a puddle of water. (Yes or No)
I found a common plant. (Yes or No) Name it.	I found a rare plant! (Yes or No)	Watch a flowering plant for at least 2 minutes. Record the # of insects that visit it.
Find as many different leaves as you can. How many did you find?	I found a plant with protective parts (sting or thorns). (Yes or No)	Find the three most common plants in the area. Name them.
Find an animal with more than six legs. (Yes or No)	Find a leaf whose edge is -wavy. -saw tooth. -lobed. (Circle the ones you found)	Find an organism that aids in pollination of flowers. Name it.
Look under a tree, did the tree drop anything that could be used for another species food? (Yes or No) What is it?	I found rubbish. (Yes or No) How many pieces did you find?	I found a spider web. (Yes or No) What is in it?