Coqui Frogs

Concepts
Invasive species are organisms can impact native ecosystems by being better competitors, eating native species, or by changing the environment.

HCPS III Benchmarks
SC 4.5.2
SC 4.5.3

Duration
1 hour

Source Material
PRISM

Vocabulary
Invasive Species
Native Species
Susceptible
Adaptations
Endangered
Extinct
Ecosystems
Reproduce
Resources
Amphibians

Introduction to Invasive Species

Summary

Students will do background reading on how invasive species can affect Hawaii's native ecosystems. They will begin to understand what an invasive species is, the difference between native and non-native species, and how each might come to inhabit Hawaii island.

Objectives

- Students will be able to define an invasive species.
- Student will be able to describe ways that invasive species affects native ecosystems.

Materials

Background article: Invasive Species

Making Connections

Many students may already be aware of invasive species such as the coqui frog, nettle caterpillar, strawberry guava, miconia or the little fire ant. They may recall personal experiences where they have seen an invasive species and observed the impacts they have on the native environment.

Teacher Prep for Activity

Photocopy the background article and KWL chart. Review the vocabulary words. Read the article on invasive species.

Background

Invasive species is a growing concern to many biologists because they can destroy ecosystems or disrupt agriculture. Hawaii is especially affected by invasive species because we have many endangered and threatened species that could be affected by invasive introductions.

Procedure

1. Begin by asking the students to tell you what they already know about invasive species including specific examples. See examples listed above in the making connections section.
2. After a brief group discussion about what they know, ask the students to fill out the "K" portion of the KWL chart indicating what they know.
3. Next, ask the students to also complete the "W" portion of the KWL chart indicating what they want to know about invasive species.
4. When the students have finished the "K" & "W" portions,

pass out the background article on invasive species. Explain that they will now take turns volunteering to read the article out loud as a class. (This could also be done individually if if silent reading is the normal classroom protocol.

5. At the end of the article, try to engage the entire class in a discussion by asking them again if they know of any invasive species and ask them to share stories that they may have from their own personal experiences.
6. Additionally, ask the students during open discussion to share new vocabulary words they may have encountered while reading. Make a running vocabulary list or write it the board. Use the vocabulary words listed on page 1 as a guideline. Work together with the help of the article to define each of the new vocabulary words. (HINT: it may be helpful to have the students turn their KWL chart over and use the blank back of the paper to record the vocabulary for themselves.
7. When the discussion ends, ask the students to finish their KWL charts by asking them to fill out the "L" portion indicating what they have learned about invasive species.

Assessments

Completion of KWL chart and vocabulary words

Resources

www.hear.org

Elton, Charles. 1958. "The ecology of invasions by animals and plants". University of Chicago Press, Chicago.

Art Connection

Have your students imagine a native forest with tall trees, ferns and birds then have your students draw what they imagine. After they are finished with their native forest, ask them to imagine and draw what would happen if goats were to be introduced into their forest. How would goats affect the trees (goats eat vegetation) and how will that affect the birds? Ask for student volunteers to share and explain the differences between their two drawings and how they feel about those differences. (HCPS III Benchmark FA.4.1.4)

Name: _____

Date: _____

Invasive Species KWL Chart

What I know about invasive Species	What I want to know about invasive species	What I learned about invasive species

Background Article: Invasive Species

Invasive species are plants and animals that damage native ecosystems or agricultural businesses. Hawaii has the most invasive species than any other State in the US; in fact, Hawaii has just as many non-native species as native species. A **native species** can be defined as a species that has made it to Hawaii on its own, either by flying to Hawaii like the i'o (Hawaiian hawk), hitched a ride on birds like the ma'o (Hawaiian cotton), or floated here on the ocean like the hala (Hawaiian screw-pine).

Invasive species can affect native species by being better at gathering the same resources, eating native species, or by disrupting an ecosystem to make it more suitable for the invasive species. It is believed that Hawaii is more **susceptible** to the effects of invasive species because many of our native species have lost their defensive **adaptations-** for example, the akala (native raspberry) lost its thorns so now it is easier for animals to eat the plant. Hawaiian species lost these adaptations because they evolved without animals that can eat them. When grazing animals were introduced to Hawaii, many plants were eaten and now there are many native species that are **endangered** (only a few are left) or even **extinct** (no longer existing).

Ecosystems are made up of the unique interactions between species within an area. When an invasive species is introduced to an ecosystem, the interactions between species changes and the ecosystem is disrupted. For example, the native ohi'a tree is a dominant tree in many forests but is not a very aggressive competitor, so it grows and **reproduces** slowly. The strawberry guava is very good at gathering resources, so it is able to grow and reproduce much faster than the ohi'a. The strawberry guava is so good at gathering resources that it quickly grows larger than many of the native trees, including the ohi'a, and takes away **resources**, like nutrients, from the natives so they become the new dominant species. Because the native species are not as competitive as the strawberry guava, they do not get enough soil nutrients or enough sunlight, so they die, changing the entire ecosystem.

Coqui frogs are also considered invasive species. Coquies are native to Puerto Rico and was introduced to Hawaii in the late 1980's and have quickly spread across the island. The male's mating call can be heard on warm and wet nights. Hawaii evolved without any **amphibians** so the coqui represents a new type of animal. The coqui frog is really good at catching food (mostly insect-type of animals) and can reach populations more than double the size of those found in Puerto Rico. Why do you think the coqui frog is considered an invasive species?