



## Coqui Frogs

### Concepts

Coqui frogs have been spreading throughout Hawaii at alarming rate. However, their success in areas is dependent on the type of environment they are introduced in.

### HCPS III Benchmarks

SC 4.3.2

SC 4.5.3

SS 4.7.2

### Duration

1 hour

### Source Material

PRISM

### Vocabulary

Population

Amphibians

## Coqui Frog Populations

### Summary

Students will map out the populations of coqui frogs on the Big Island. They will also learn how to read and use a map for scientific purposes such as research and habitat mapping.

### Objectives

- Students will be able to distinguish what types of environments promote coqui survival.
- Students will understand why frogs need certain environmental conditions to create large populations.

### Materials

Worksheets: “Coqui Map” and “Coqui Map Data Sheet”.

Overhead projector

### Making Connections

This is the second part of the invasive coqui lessons. Students will be asked to and should be able to relate to a personal experience during which they either heard or saw a coqui frog on this island, maybe even at home.

### Teacher Prep for Activity

Photocopy the “Coqui Map” and the “Coqui Map Data Sheet” for each student. Also, make transparencies of both worksheets to use as an example in front of class.

### Background

Coqui frogs were first discovered on the Big Island in the late 1980’s at a nursery in Mountain View. At first, many residents and scientists did not think they would become problematic because they are small amphibians. **Amphibians** rarely ever become invasive because they have very specific needs- most amphibians need a water source for their tadpole stage, warm weather because they are cold blooded, and high humidity because their skin needs to stay moist (their skin is also used to breathe). The coqui frog, however, lacks a tadpole stage and hatch from eggs as tiny coqui frogs.

Hawaii, especially the east-side, has a very warm and humid climate year round, and therefore, most populations are found in this area. A few **populations** of frogs are found in dry areas (such as Kailua) or cold areas (such as Volcanoes), but they do not make as dense populations as those found on the East-side because coquies cannot call if it’s too dry (they risk dehydrating) or too cold (because they get their body heat from the environment around them).



If frogs cannot call, they cannot mate. The coquies found in such extreme areas are believed to have come from a few frogs that have hitchhiked on cars or potted plants that either had coqui eggs or frogs in them.

Many people are concerned about the coqui frogs because of the loud male mating calls heard at night. The high population densities are also a concern because of the possible impact on the native ecosystems but no conclusive impacts have yet been found.

## Procedure

1. Begin with a brief discussion about the coqui frog by asking the students if they have ever seen or heard a coqui frog.
2. Follow with questions about:
  - Where: in the forest, plant nursery, garden, on the East or West side of the island?
  - When have they heard them: in the cold? While it is raining?These questions should lead into a discussion on the importance of rain and warmth for the coqui frog's ability to reproduce (see background for more).
3. At the end of the discussion, hand out the map of the island. Review the map with the students being sure to point out the 2 different types of forests on the map. Use the transparency of the map to select a site to be used as an example.
4. Show your students how to find the sites listed on the Coqui Map Datasheet using the coordinates on the map (A,1; B,4; etc.) and how to distinguish which type of forest the site is found in using the map legend (wet, dry, alpine). Write the site number (1,2,etc.) in the blank square.
5. Repeat step #4 until all the sites have been correctly labeled on the map and the forest habitat is filled in on the datasheet.
6. To end, ask the students to fill in the two "Thought Questions" at the bottom of their data sheet.

NOTE: The map and the datasheet will both be used in the next lesson so be sure you collect the papers or have them put them in a safe place. It is also important to make sure that all the students have correctly completed both sheets.

## Assessments

Complete worksheets: "Coqui Map" and "Coqui Map Data Sheet"

## Resources

Big Island Invasive Species Committee (<http://www.hawaiiinvasivespecies.org/iscs/biisc/>)

CTAHR (<http://www.ctahr.hawaii.edu/coqui/background.asp>)

Juvik, S.P. and J.O. Juvik, editors. 1998. Atlas of Hawaii. 3<sup>rd</sup> ed. Honolulu: University of Hawaii Press. 333.

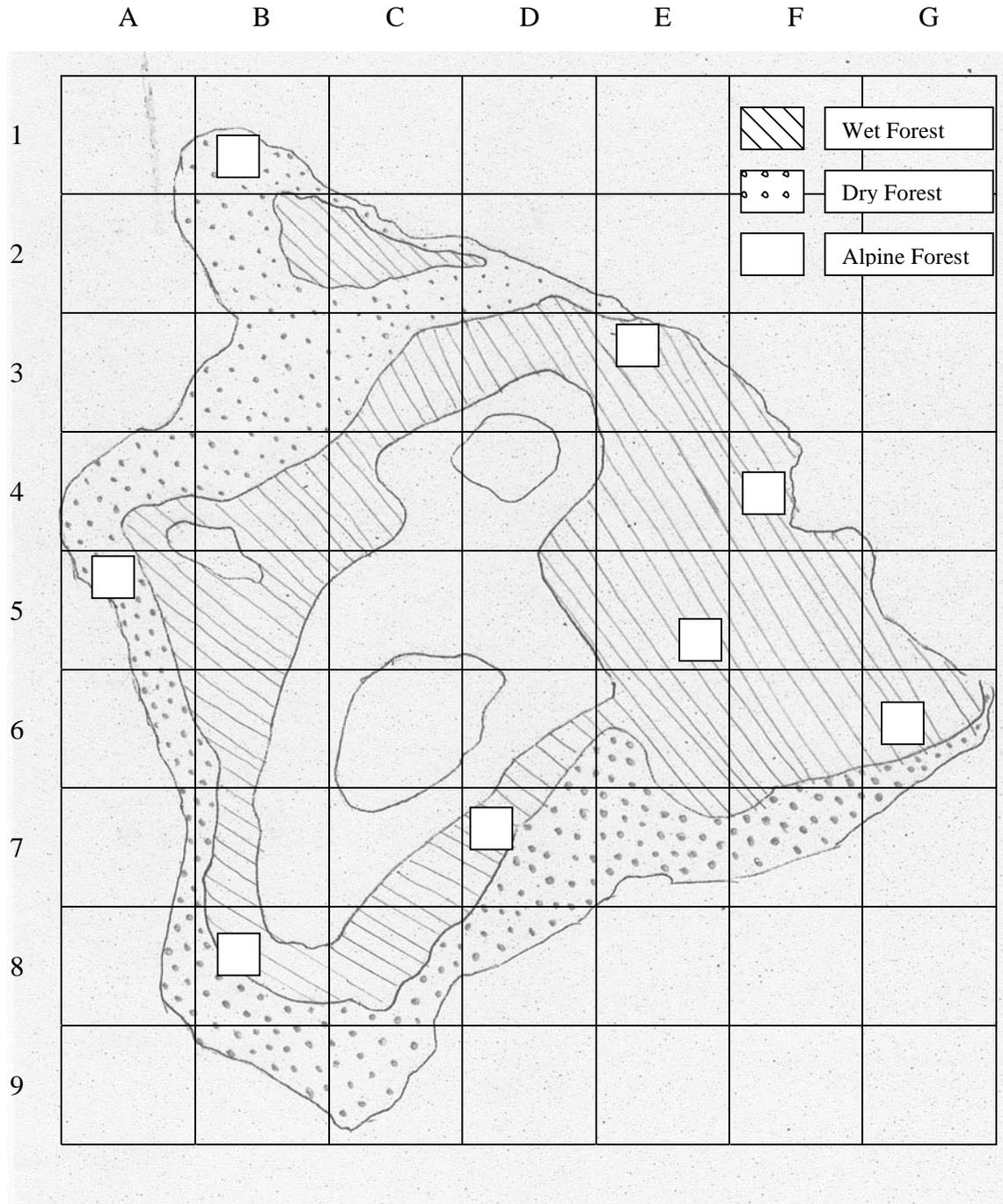


Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Coqui Map

Instructions: Label each blank with the correct "Site Number".





Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Coqui Map Data Sheet

Instructions: Use the “Coordinates” to find the site on the map. Label each site on the map with the “Site Number”. Then, record the type of forest that is found at each site. Finally record the population size you get as a class for each site.

| Site Number | Site Name     | Coordinates | Forest Type | Population Size |
|-------------|---------------|-------------|-------------|-----------------|
| 1           | Pahoa         | G,6         |             |                 |
| 2           | Kailua        | A,5         |             |                 |
| 3           | Kapa’au       | B,1         |             |                 |
| 4           | Pahala        | D,7         |             |                 |
| 5           | Mountain View | E,5         |             |                 |
| 6           | Hilo          | F,4         |             |                 |
| 7           | Honoka’ a     | E,3         |             |                 |
| 8           | Manuka        | B.8         |             |                 |

### Thought Questions:

1. Which type of forest do you find coquies in? Why?
2. Why do you think there is no population in alpine forests?