

A WILD WETLAND JOURNEY



Grade 3

Lesson at a Glance

Guided imagery immerses students in the wet and wild life of a Hawaiian marsh. A game then tests their stalking skills as students become mongooses trying to steal a Hawaiian coot's eggs.

Key Concepts

Wetlands provide habitat for both native and introduced plants and animals. Introduced animals can threaten the survival of native species.

Objectives

Students will be able to:

1. Distinguish between native and introduced species in a Hawaiian wetland.
2. Describe one way introduced animals can affect native water birds.

Time

two class periods

Subject Areas

science, language arts, physical education, Hawaiian studies

Materials

'Ōhi'a Project streams and wetlands poster (provided)
student activity sheet (provided)
small rock or plastic egg
a blindfold
a small jingle bell to attach to each students' ankle (optional)



Teacher Background

Five endangered native Hawaiian water birds depend on wetland habitat found in marshes or cultivated taro fields. Like many native Hawaiian plants and animals, they naturally occur nowhere else in the world.

The Hawaiian coot (*'alae ke'oke'o*), featured in this activity, is descended from the North American coot. It is found on all of the major inhabited Hawaiian Islands except Lāna'i. An excellent diver, the coot feeds on submerged aquatic plants, such as widgeongrass and *limu alolo*. It also feeds on small fish and insects, particularly during breeding season when additional protein is needed.

Mongoose were **introduced** to the Islands in 1883 and 1885. Originally from India, mongooses were imported to Jamaica and from there to the island of Hawai‘i to control rats in sugarcane fields. They are now established on Maui, Moloka‘i and O‘ahu as well. Rats are nocturnal and mongooses are active during the day, but mongooses do manage to prey on rats. Unfortunately, like rats, they also prey on the young chicks and eggs of ground-nesting birds, such as the coot and stilt.

Stray dogs and cats also prey on water birds. Some birds, like the Hawaiian stilt (*ae‘o*) and duck (*koloa*), may lead these predators away from their nests by pretending to have a broken wing. The predator approaches what appears to be a vulnerable, injured bird and is distracted and led away from eggs or chicks. Stilts may also intimidate a predator by swooping around it in mobs while sounding their alarm calls.

In wetland areas set aside as wildlife preserves, mongooses are sometimes trapped and removed, and the public is alerted to keep pets on leashes. Some wetlands, such as the James Campbell National Wildlife Refuge, have been created by people as habitat for water birds. Following is a list of some of the protected wetlands found on the main islands:

Kaua‘i	Hanalei National Wildlife Refuge Hulē‘ia National Wildlife Refuge
O‘ahu	James Campbell National Wildlife Refuge Pearl Harbor National Wildlife Refuge
Moloka‘i	Kakahai‘a National Wildlife Refuge
Maui	Kanahā Pond State Wildlife Sanctuary, Keālia Pond
Hawai‘i	Kapo‘ikai Pond, Makalawena; ‘Aimakapā Pond, Honokōhau (Both of these ponds are slated for protection.)

Teaching Suggestions

1. Distribute the student activity sheet and ask students to find the hidden animal (mongoose). Identify the long-legged stilt and the coot on the nest. Define “native” and “introduced” and write the words on the board. Ask students to decide which of the three animals are native and which are introduced, and explain their reasoning.
2. Display the poster of the marsh and point out some of the plants and animals. Describe where marshes are located on your island and ask if any students have visited a marsh. (Maps with marsh locations are included in the third grade geography lesson, “Sprouting Marsh Models.”)
3. Have everyone remove his/her shoes and sit comfortably as you read the guided imagery on the following page.

4. Discuss students' reactions to the story. How did they feel when the mongoose raided the nest or when the stray dog threatened the stilt? Explain why mongooses were introduced to the Islands and discuss what can be done to prevent mongooses and stray pets from harming wildlife. Introduce the idea that these native Hawaiian water birds exist nowhere else in the world.
5. Define the terms "predator" and "prey," using the mongoose and coot as examples. In a cleared area of the classroom or in a grassy field, play a mongoose and coot game.*
 - a. Show students how to stalk or walk without making a sound, the way some predators do. Let them practice this technique. (If desired, attach small jingle bells to ankles of stalkers.)
 - b. Appoint one student to be the coot on the nest. Blindfold the coot and place a small rock (egg) between his/her feet.
 - c. Have the remaining students form a "horseshoe" of mongooses around the coot, about 6 m (20 ft) away.
 - d. When you give the signal, mongooses are to begin stalking on their own. No running is allowed. The coot listens carefully and points to any mongooses s/he hears. These mongooses are out. (This does not mean that the mongooses have been killed, but that their stalking was not successful. In nature, the coot would flee if it heard the mongoose.)
 - e. The first mongoose to successfully reach the coot and steal the egg becomes the next coot.
6. Ask students to complete the student activity sheet by writing sentences from the point of view of a stilt or coot when a mongoose comes into the marsh.
7. Ask students to share some of their sentences and discuss ways that introduced animals can affect native birds.

Extended Activities

- Make story boards to illustrate the guided imagery, or make stick puppets and perform a puppet play. See "Spotlight on the Marsh," Humans and the Environment, Grade 3.
- Visit a wetland with your class. See the Field Sites Appendix for suggested sites on your island.

* Game adopted from Joseph B. Cornell. 1979. Sharing Nature with Children. Anando Publications, Nevada City.

Close your eyes and relax as I take you on an imaginary journey. We leave the classroom and make our way to a sunny place where tall grasses are waving in the wind. There is a faint smell of the sea and the wind feels soft on your cheeks. You take off your slippers and feel the wet, cool mud of the marsh squishing beneath your toes.

Watching your toes sink into the mud, you notice your legs becoming thin and hard. Four of your toes grow longer and the other disappears! The skin between your toes becomes strong with tiny flaps that will work like fins. Now you can really swim! Your body is covered with black feathers. You dip a feather in the water and watch as the water rolls right off. It's like wearing a diving suit! You push off into the cool, clear water, diving down, down past the roots of the grasses and down to the dark, cool bottom. Your arms have become wings that you keep folded to your sides as you swim. You open your mouth and find that it is a hard white beak. With it you can scoop up some insects and tasty grass from the water.



You need a breath of air and you push hard with your strong feet, swimming up toward the light. It feels good when you burst through the water out into the air. You see a flash of blue as *pinao*, the dragonfly, darts quickly past. Its wings look like golden lace in the sun as it chases the buzzing flies.

You paddle your feet and move quickly across the water to the shore. There, hidden among the tall grasses, is your mate, a Hawaiian coot. She is sitting on a nest, keeping six light tan, speckled eggs warm. She is hungry, and you bring her some of the plants you scooped up. Water rolls off your sturdy black feathers as you move among the tall grasses. The wind helps to keep you cool.

You watch an *'o'opu*, the goby fish, swim by. Insects dancing in the sun make tiny ripples on the water. You are still hungry and you shove off into the water to chase them. Scooping some insects up in your beak, you head back to the nest to share them with your mate. When you return, there's a big surprise. Your mate is gone! Then you hear her calls for help. A big brown mongoose is in your nest! He takes an egg and runs off as you sound your alarm call. Nearby, birds are hissing and squawking. The mongoose keeps running.

You hear the sound of a barking dog and your mate hurriedly settles back onto the nest to protect the other eggs. On the soft, muddy banks across the marsh, you watch a barking dog rush at a big black bird. It's a beautiful Hawaiian stilt with long pink legs. It looks like her wing is broken! But, as the dog gets close, the stilt flies off into the air, squawking loudly at the jumping dog beneath her feet, "kip, kip, kip." She was only pretending to have a broken wing so the dog would go after her and not see her young chicks! Then her stilt neighbors begin swooping around the dog. Their big flapping black wings and their harsh calls finally chase the dog away!

The marsh settles down and becomes peaceful again. The water softly laps at your feet. The clouds drift slowly by overhead. And all over the marsh, birds are sitting on their nests or feeding their chicks. Suddenly you hear a tiny sound. You and your mate see one of the eggs begin to crack. It splits open and out comes a tiny, helpless black chick. It's wet and weak and unable to lift its head. Soon the other four eggs crack open. Now you and your mate have five hungry mouths to feed! The chicks call, "peep, peep, peep, peep."

You feed them plants, tiny fish and insects. They grow quickly and soon the chicks will learn to feed themselves. The wind tickles their soft, downy feathers as they play at the water's edge. When you push off into the water, your chicks follow closely behind, taking their very first swim. You lead them out into the open water and search for food. Overhead the *'iwa* bird glides in the wind. Beneath you, *'o'opu* gracefully wave their fins and prawns hide among the rocks. Birds call softly and sunlight dances with the insects in the wet, wild and wonderful marsh that is your home.

Find the hidden animal in this marsh!

Fill in the box with sentences coots or stilts might say if they could talk!

Color the picture.

