

# FINDING THE FOREST



Grade 1

## Lesson at a Glance

Students play a game to discover some unique Hawaiian forest plants and animals and then work together to create a forest mural.

## Key Concept

Many unique plants and animals live in Hawaiian forests.

## Objective

Students will be able to describe some of the plants and animals that make up Hawaiian forests and learn how to *mālama* (care for) them.

**Science/Mālama i ka ‘Āina:** students make decisions needed to sustain life on Earth now and for future generations by considering the limited resources and fragile environmental conditions.

Performance indicator for Conservation of Resources: The student identifies ways things can be conserved.



**Social Studies/Environment and Society:** students demonstrate stewardship of earth’s resources through the understanding of society and the physical environment. Performance indicators—the student:

- Identifies the earth’s resources within land, air and water.
- Describes how and why people use earth’s resources to meet their needs.
- Describes how people change the environment.
- Creates and implements a plan to sustain and preserve a part of the environment.

## Time

two–three class periods



## Subject Areas

science, language arts, art, Hawaiian studies

## Materials

game board and cards (provided)  
tape  
scissors  
large sheet of butcher paper  
construction paper  
(11 x 17 in sheets of green and brown  
8.5 x 11 in sheets of various colors)  
washable ink marker or grease pencil

## Preparation

Color some of the characters and the forest illustration on the game board and laminate them. The forest illustration on page 15 should be glued to the reverse side of the game board on page 14 and laminated that way. Make three copies of the plant cards and two copies of the animal cards and cut them out.

## Teacher Background

There are a number of different kinds of forests in the Hawaiian Islands, including **dryland forests**, **rainforests** and, on slopes above 1,800 m (6,000 ft), **subalpine** forests. These forests are home to a diverse array of unusual plants and animals, many of which occur only in the Islands. Our rainforests are also our watersheds.



Many of these native forests have been altered or are being destroyed by human activities, such as farming or ranching, and the introduction of non-native plants and animals. For example, some areas of formerly native forests have been replanted with trees such as eucalyptus or Cook pine that have been brought in from other parts of the world. As wild pigs and goats forage for food, native habitats are destroyed. As a result of these human activities and introductions, a number of native plants and animals have been lost to extinction and numerous other **species are endangered**. Specific information about a few native and rainforest plants and animals is included on the teacher information sheets provided with this activity.

This lesson is designed to introduce children to some unique Hawaiian forest plants and animals, foster a sense of pride in their natural heritage, and to *mālama* (care for) the native forests.

## Teaching Suggestions

1. Ask children if they have ever been in a forest and discuss their impressions of forest environments. Are these places dark? Beautiful? Scary? Peaceful?
2. List the children's descriptive words and set the list aside to be used later in the activity. Explain that they will be playing a game to find out about special plants and animals in Hawaiian forests.
3. Play the game! Read the game introduction to students and explain how to play. (See the following page.)
4. When the game is completed, distribute construction paper and scissors and ask each child to make a cutout of the plant or animal on his/her card. Give large green and brown paper to children making trees. (Note that there is more than one of each forest "character.")
5. As you help children to create a forest mural (either on a bulletin board or a large sheet of paper) emphasize that each plant and animal in the mural is special or unique to Hawai'i. Have children give the forest a name.

6. Read the list of descriptive words generated earlier and ask children which they would use to describe the forest they have created. Ask them to describe their plants and animals. Use their descriptions to write a caption for the forest mural.
7. Discuss ways people should *mālama* the forests: do not release pets into the environment, report invasive species, do volunteer work with environmental organizations and agencies such as the Department of Land and Natural Resources, help plant native species, keep forest trails clean, clean your hiking boots before entering a forest to prevent the spread of unwanted insects, seeds, and weeds, and tell others to respect the forest. Pass out the student activity sheet on page 13.

### Extended Activities

- Take a class field trip to a forest. See the Field Sites Appendix for locations on your island. If the class can't participate on a field trip, show the class pictures of a native forest. Students can do the field trip as a family activity.
- If children created creatures as part of the "Schoolyard Search" lesson, add animals to the mural that children think could survive in the forest they have created.
- Have children create a class pop-up riddle book using students' descriptions of Hawaiian forest plants and animals. The riddles could be printed on one side of a page and flipped up to reveal plants or animals beneath. Send the book home with each child on a rotational basis to review and share his/her newly acquired knowledge.
- Learn about introductions from the lesson "Introducing," Grade 2, Plants and Animals.



## Introduction

On a Hawaiian island out in the middle of the sea, there is a beautiful forest kingdom. It is ruled by King Koa, tallest of the forest trees, and Queen 'Ōhi'a, known for her beautiful red lehua blossoms. Beneath their branches live Princess Hāpu'u and her *hāpu'u* cousins who love to wave their lacy green fern fronds in the wind, and Prince 'Ōhelo and his cousins who offer delicious red berries to the birds of the land. Their servants, *kāhuli* tree snails, are often seen slowly cleaning their leaves. The kingdom is a special place where you can find plants and animals that live nowhere else in the world!



You are about to take a journey to this forest, but it is not easy to find. You must help each other along the way. On your journey you may meet the Court Magicians, Crunchy and Munchy. One loves to eat flies and the other gets fat on leaves. They can magically change their bodies as they grow older. If you are lucky, Happy-Face the Court Jester may greet you or the Court Minstrels, 'Amakihi and 'I'iwi, may sing to you. Pepeiao the fungus is an interesting one to meet. He eats dead trees! Without Pepeiao, our forest would be filled with dead trees. But don't worry about him. Instead, beware of Pua'a the Hungry Eater. Pua'a is a pig who digs up plants with his long snout and eats them, spreads seeds of non-native plants through his droppings, and destroys the lovely forest kingdom. Pua'a does not belong in a Hawaiian forest. He may frighten you and try to keep you from finding the forest, but don't give up. You will find the way!

## Objective

The objective of the game is to find the forest at the end of the trail and to collect plant and animal cards along the way.

## Cards

There are ten plant and animal cards, each representing a special (unique) Hawaiian forest plant or animal. They are:

Trees:	King Koa, Queen 'Ōhi'a
Plants:	Princess Hāpu'u (tree fern), Prince 'Ōhelo
Birds:	Minstrels 'Amakihi and 'I'iwi
Insects:	Magicians Munchy (Kamehameha butterfly caterpillar) and Crunchy (carnivorous caterpillar)
Snail:	Kāhuli the Servant (tree snail)
Spider:	Happy-Face the Court jester

## To Complete the Game

The game ends when each player has collected a plant or animal card and children reach the forest at the end of the trail on the game board.

## How to Play

- a. This is a group game where everyone tries to find the forest together. Each player has a turn to answer a riddle about a forest plant or animal. The answers are: tree, plant, bird, insect, snail, or spider. (Children are not expected to know the specific names of organisms.)
- b. If a riddle is answered correctly, the player receives that plant or animal card. (As the card is awarded, show it to the class and announce the name of the plant or animal.)
- c. If a player is not able to solve the riddle, everyone should work together to help him/her with the answer so that each player receives a plant or animal card.
- d. To mark progress on the game board, draw a line from the start arrow through one circle or box at a time as each riddle is answered.
- e. When reaching Pua‘a the Hungry Eater’s box, players must move back one space then skip over it on the next turn.
- f. When the class reaches the end of the trail, turn the game board over to reveal the forest.

## Game Riddles (to be read to students)

I match the green leaves that I eat and I am smaller than your hand. One day, just like magic I will grow up to have beautiful red and black wings. Who am I? (insect - Munchy the Magician will become Kamehameha butterfly)

I am the tallest living thing in the forest. Hawaiians used me to make big canoes. Who am I? (tree - King Koa)

I am small, but tough! I eat flies and turn into a moth when I grow up. Who am I? (insect - Crunchy the Magician - carnivorous caterpillar)

I have a hard shell and I am tiny. My body is soft and I’m slimy. I clean the leaves in the forest kingdom. Who am I? (snail - Kāhuli the Servant)

My bright red blossoms are special to the volcano goddess, Pele. I grow much taller than you and I’m stronger too. Who am I? (tree - Queen ‘Ōhi‘a)

I fly to the top of the trees where I sip flower nectar from Queen ‘Ōhi‘a and sing my forest songs. My feathers are golden. Who am I? (bird - Minstrel ‘Amakihi)

My feathers are a beautiful red and my wings are black. You can find me singing high in the trees. Who am I? (bird - Minstrel 'I'iwi)

I grow beneath the trees. You can always find me in the same spot. Birds come for the fruit I offer. Who am I? (plant - Prince 'Ōhelo)

I may be slimy, but I know how to clean. And if anything frightens me, I hide in my shell. Who am I? (snail - Kāhuli the Servant)

A smile that's wide and eight legs have I. Look for me beneath big leaves where I stay dry. Who am I? (spider - Happy-Face the Court jester)

I fly throughout the forest singing my songs for all to hear. You'll know me by my "tseet" call. Who am I? (bird - Minstrel 'Amakihi)

I hide where my tiny body matches leaves and twigs. Watch out! I like to bite, but only if you are a tasty bug! Who am I? (insect - Crunchy the Magician -carnivorous caterpillar)

The birds of the forest fly high to my bright red flowers for a sip of nectar. Who am I? (tree - Queen 'Ōhi'a)

My song sounds like a squeaky swing (e-ee-vee). I fly through the forest singing my songs wherever I go. Who am I? (bird - Minstrel 'I'iwi)

My long, lacy leaves blow in the breeze under the shady forest trees. Who am I? (plant - Princess Hāpu'u tree fern)

When I am young, leaves are my favorite treat. But when I grow up, flower nectar is what I eat. Who am I? (insect - Munchy the Magician - Kamehameha butterfly)

Hawaiians offer my berries to the volcano goddess, Pele. I grow beneath the forest trees. Who am I? (plant - Prince 'Ōhelo)

I catch tiny insects that land on my leaf." I look like I have a happy face. Who am I? (spider - Happy-Face the Court jester)

I am tall and wide and my queen often grows at my side. Who am I? (tree -King Koa)

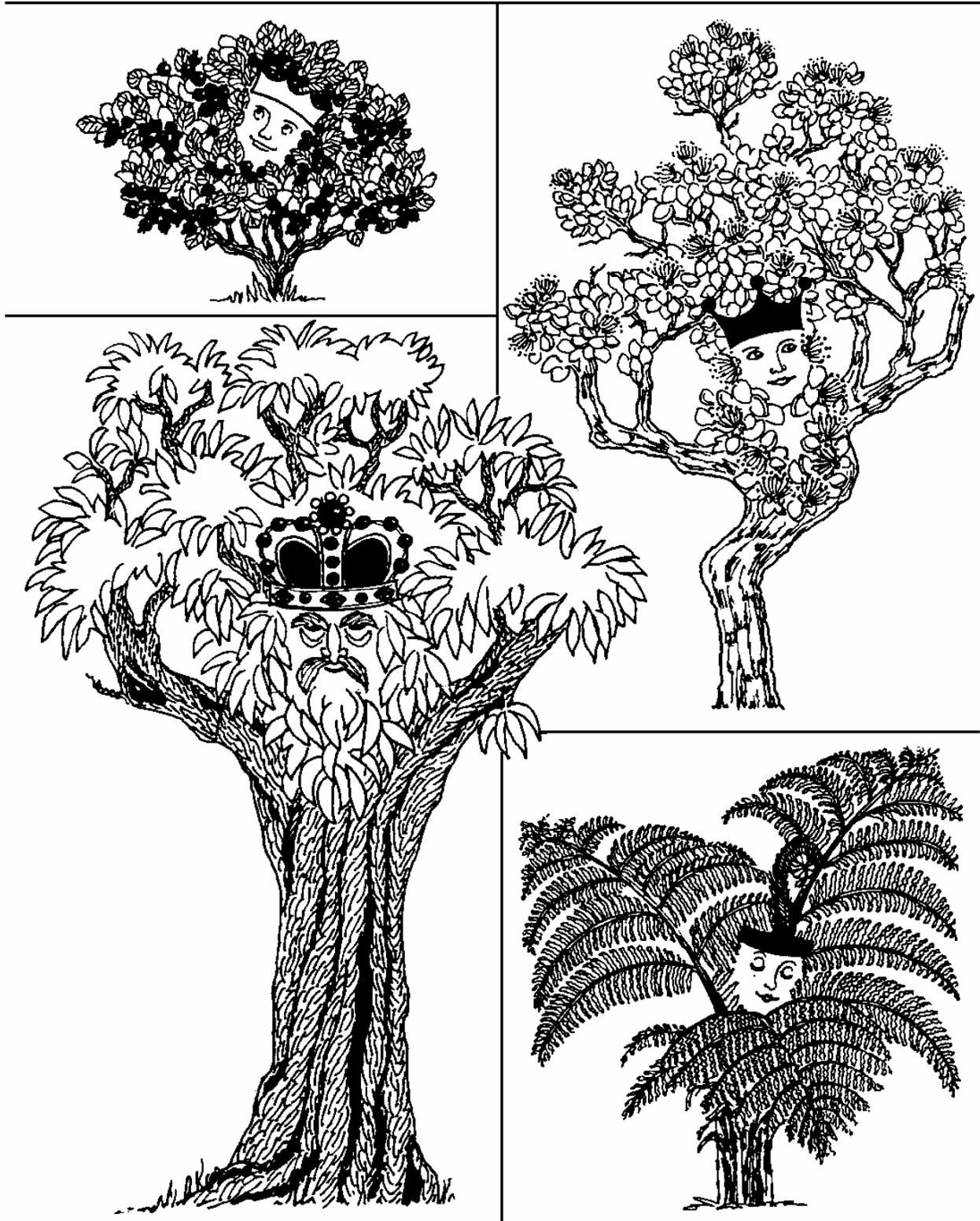
I grow taller than you, but a tree I am not, for fronds are all I've got. Who am I? (plant - Princess Hāpu'u - tree fern)

Part of me is round, red and tasty. Birds of the forest often fly down and eat me. Who am I? (plant - Prince 'Ōhelo)

Strong winds probably blew my seeds to Hawai'i. Now birds build their nests in me. Who am I? (tree - Queen 'Ōhi'a)

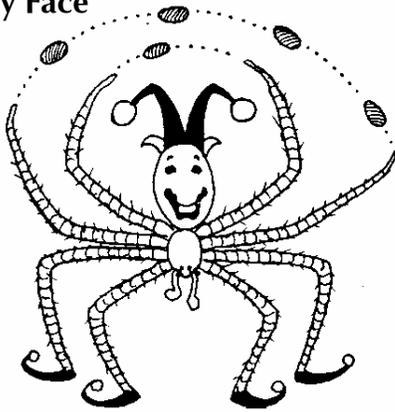
Some insects live under my thick, rough, and tough bark. It's a protected place to grow up in. I stay in one place, but I can reach high to the sky! Who am I? (tree - King Koa)

I live in the shade of forest trees. You can always find me growing taller in the same spot. Who am I? (plant - Princess Hāpu'u)



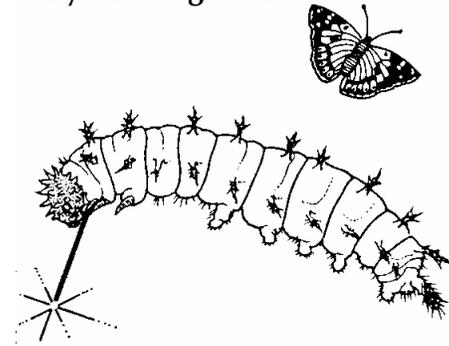
Make 3 copies.

**Happy Face**



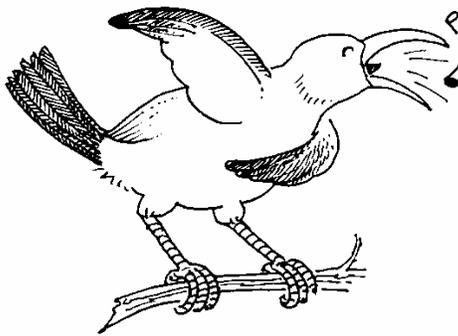
**the Court Jester**

**Munchy the Magician**



**Kamehameha Caterpillar and Butterfly**

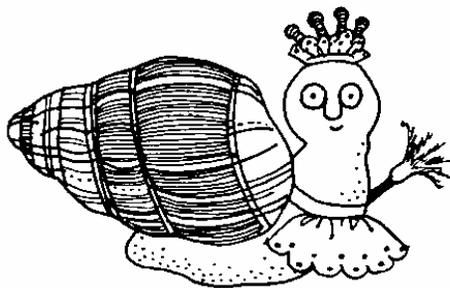
**Minstrel 'I'iwi**



**Minstrel 'Amakihi**



**Kāhuli the Servant**



**Carnivorous Caterpillar and Moth**



**Crunchy the Magician**

Make 2 copies.

**‘Ōhelo** (endemic)

Five of the six ‘*ohelo* species grow as shrubs; one grows as a small tree, reaching a height of 4.6 m (15 ft).

description: Edible red fruits are 0.6–1.3 cm (0.25–0.5 in) in diameter; leaves are small with serrated edges.

habitat: ‘*Ohelo* grow in the understory of native Hawaiian forests.

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**Koa** (endemic)

*Koa* is the Hawaiian word for warrior. Hawaiians carved the straight trunks of this giant tree into sturdy outrigger canoes.

description: 15–40 m (50–140 ft) tall, and up to 4 m (12 ft) in diameter; “leaves” on mature trees are crescent-shaped, flattened leaf stems; true leaves are finely divided.

habitat: dry and medium wet forests from 460–1,800 m (1,500–6,000 ft) elevation. *Koa* are found on all the main Hawaiian Islands.

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**‘Ōhi‘a lehua** (endemic)

The first tree to grow on new lava flows, ‘*ohi‘a lehua* is the most common native tree in the islands. Its blossoms are said to be sacred to the volcano goddess, Pele.

description: dark green leaves vary from round to narrow and smooth to hairy; flowers are pink, yellow, peach and most commonly, red; ranges in size from a small 30-cm (1-ft) shrub to a 30-m (100-ft) tree.

habitat: occurs from sea level to 2,700 m (9,000 ft); the largest trees are in areas of high rainfall.

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**Hāpu‘u, Hawaiian tree fern** (endemic)

The downy covering of the new fronds (*pulu*) was used as a wound dressing and was once collected and exported for pillow stuffing.

description: up to 5 m (16 ft) tall; bright green fronds are 1–3 m (3–9 ft) long; *pulu* is golden.

habitat: understory of rainforests.

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**Happy-face spider** (endemic)

The “happy-face” pattern on this tiny spider is actually camouflage on the back of its abdomen. When sunlight shines through a leaf, the spider’s markings help to hide it from predators, such as birds. Happy-face spiders catch small insects that land on their leaf “roofs.”

description: body and legs are each 13 mm (0.5 in) long; transparent green/yellow with various red and black patterns.

habitat: undersides of large leaves in native rainforests.

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**‘I‘iwi** (endemic)

The brilliant red feathers of the ‘i‘iwi match the red ‘ōhi‘a blossom on which it feeds. In addition to sipping nectar, ‘i‘iwi also hunt for insects. Its Hawaiian name sounds like its loud, squeaky call.

description: 14 cm. (5.5 in); red with black wings; long, curved salmon-colored bill and orange legs.

habitat: lives in rainforests on all main islands, except Lāna‘i; it is listed by the state as endangered on O‘ahu and Moloka‘i.

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**Kāhuli, tree snail** (endemic)

Once referred to as the jewels of the Hawaiian forest, tree snails are now rare. Of the 40 or more species, over half are extinct and the remainders are endangered.

description: 2 cm (0.75 in); variety of shell patterns and colors, including orange, red, yellow, green, brown, black and white.

habitat: native forests; snail may spend its entire life on one tree! Closely related snails live or once lived on all main islands.

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**Pulehua, Kamehameha butterfly** (endemic)

description: butterfly is bright orange-red with black and white markings. The green caterpillar matches the *māmaki* leaves on which it feeds. The caterpillar’s head resembles the small *māmaki* fruit, adding to the larvae’s camouflage.

habitat: Kamehameha caterpillars are found on *māmaki* plants in the understory of Hawaiian forests.

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**'Amakihi** (endemic)

'Amakihi are the most common native forest birds. They feed on nectar, insects and fruits in the forest.

description: 11.5 cm (4.5 in); males have a bright yellow-green breast; juveniles and females are dull yellow-green. Dark bill is down-curved. Voice is a high "tseet" call and a trilling song.

habitat: forests and parks of Hawai'i, O'ahu, Lāna'i, Moloka'i, Maui and Kaua'i.

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**Carnivorous caterpillar** (endemic)

The only caterpillars known to catch active prey are the larvae of geometrid moths. These caterpillars changed their diet from plants to insects here in Hawai'i.

description: 2.5 cm (1 in) long; green or brown color matches area where caterpillar waits for prey. The caterpillar has excellent camouflage and may look like a twig, a clump of moss, a piece of leaf litter, or a leaf edge!

habitat: medium wet forests and shrublands.

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**Pua'a, Feral Pig** (Introduced) **UNWANTED!!**

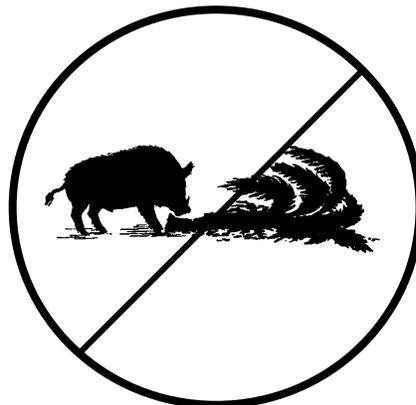
Pua'a destroys native rainforests by eating its way through them. This single impact causes soil erosion, loss of watersheds, an increase of alien vegetation (such as clidemia), and many mosquitoes in muddy ponds. Mosquitoes carry the avian malaria disease, which kills native birds. Control is by hunting and fencing. The Polynesians brought small sized pigs to Hawai'i as a food source. Captain Cook introduced the larger European pig. It was this European introduction that went wild in the forests. Today's pig is a hybrid of the Polynesian and the European pigs and has replaced the Polynesian pig.

description: coarse hair (usually black), thick necks, long snout, straight tail; can weigh up to 70 kg (150 lbs)

habitat: all types of forests

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**UNWANTED!**

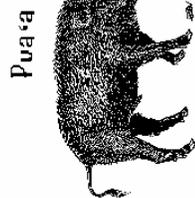




How to *mālama* the forest:

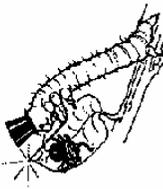
- ✓ Do not release pets into the environment.
- ✓ Report invasive species.
- ✓ Do volunteer work with environmental organizations and agencies.
- ✓ Help plant native species.
- ✓ Keep forest trails clean. Pack your trash out after visiting the trail.
- ✓ Clean your hiking boots before entering a forest to prevent the spread of unwanted insects, seeds, and weeds.
- ✓ Teach others to respect the forest.

Can you think of other ways to *mālama* the forest?



Pua'a

I'm Pua'a and eating makes me glad. Stay out of my way or I'll be mad. Move back 1.

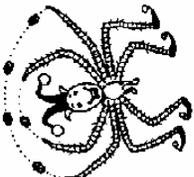


CRUNCHY  
(Carniverous Caterpillar)

Our magic can save the day. You will make it all the way.

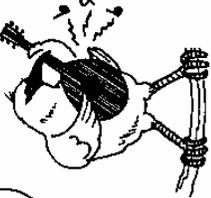


MUNCHY  
(Kamehameha Butterfly larva)



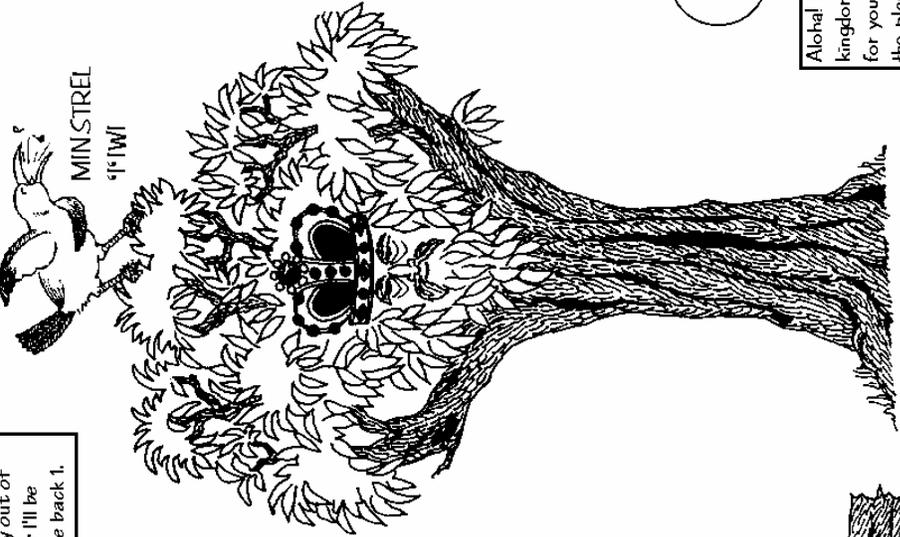
HAPPY FACE  
the Court Jester

Put on a happy face. The forest is a happy place.



MINSTREL  
AMAKIHI

The forest awaits you, so don't delay. We'll sing to help you on your way.



MINSTREL  
'I' IWI

KING KOA



PEPEIAO THE DEAD  
TREE EATER

I'm Pepeiao the fungus you see. Eater of dead trees that's me.

Aloha! My forest kingdom is here for you. Enjoy the plants, birds, and insects too.

