

‘Ōhi‘a Lehua: An Amazing Adaptor

Next Generation Science Standards:

- 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment.
- 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survives less well, and some cannot survive at all.

Hawai‘i Content and Performance Standards III:

- SC.3.3.1 Describe how plants depend on animals.
- SC.3.4.1 Compare distinct structures of living things that help them to survive.
- SC.3.5.1 Describe the relationship between structure and functions in organisms.

Description:

The ‘ōhi‘a lehua is a famous pioneer species that reached Hawai‘i and made various unique adaptations to survive in the many different climates. Students will discover legends, uses and other fun facts about the ‘ōhi‘a lehua and answer questions about its adaptations.

Duration: 45 minutes

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

- Describe how plants and animals use adaptations to survive in particular environment.
- Explain how impacts on a habitat can influence the adaptations of a species.

Background:

Many ecosystems exist within Haleakalā National Park. Haleakalā, rises from the sea to a harsh dry 10,023 foot summit. It is exposed to both the windward moist trade winds and leeward drying air. Wind, rain, temperature, and altitude all play a role in shaping each environment. The varied elevation, along with different wind and rainfall, has created a variety of natural ecosystems. Plants such as the ‘ōhi‘a lehua use adaptations to survive in each different environment. The exceptional adaptations of the ‘ōhi‘a lehua help it to survive in almost every environment from the ocean to the summit.

Vocabulary:

Ecosystem: A complex set of relationships among the living resources, habitats, and residents of an area.

Endemic: Native species that have adapted to a specific region over time and are found nowhere else.

Survival: Meets the needs of food, water, shelter and space.

Materials Needed:

‘Ōhi‘a lehua Fact Sheet (2 sided, included)

Procedure:

Step 1: Review different Hawaiian ecosystems

Explore with students the different ecosystems found on Maui. How many of you have ever been to the summit or the highest point of Haleakalā before? If you drive from the beach to the summit, you go through as many different ecosystems as if you were to drive from Mexico to Alaska! Spend some time asking students what they experience in each area.

Step 2: Adaptations

- Review with students how various adaptations are needed for a species to survive within a specific ecosystem.
- Pass out the 2-sided ‘Ōhi‘a lehua Fact Sheet and read together the facts about ‘ōhi‘a lehua.
- The ‘ōhi‘a lehua has the amazing ability to survive in very different environments from deserts to rainforests.
- Ask students to think of other plants or animals that could survive in almost any environment.
- The ‘ōhi‘a lehua is the most common native tree in Hawai‘i and is endemic which means it is a native plant that has adapted to this specific environment over time and is found nowhere else in the world.
- The ‘ōhi‘a lehua is a highly adaptable tree and has many forms. Scientists know of at least 8 different varieties of this tree.

Step 3: Intro to Latin names

Every species (bird, plant etc.) has a Latin name. The Latin name usually gives a big hint to what the species is like. In Hawai‘i, we call it by its Hawaiian name, ‘ōhi‘a lehua. In other parts of the world, people use its Latin name. *Metrosideros polymorpha* “poly” means “many” and “morpha” means “forms”.

Step 4: Journal Activity

- Where could the ‘ōhi‘a lehua survive?
- What adaptations has the ‘ōhi‘a lehua made to survive?
- How do you survive (clothes etc.) when you visit different environments?
- What would happen if the ‘ōhi‘a lehua went extinct?

'Ōhi'a Lehua Fact Sheet

Metrosideros Polymorpha



Hawaiian Traditions

Many native Hawaiian legends refer to the 'ōhi'a lehua tree as sacred to Pele the volcano goddess, and to Laka the goddess of hula. The tree itself is referred to as the 'ōhi'a tree, and the blossoms are called lehua flowers. This comes from the famous Hawaiian legend: 'Ōhi'a was a handsome warrior and Lehua was his beautiful girlfriend. They were transformed into a tree and its flowers so that they could be together forever.

The wood is used for:

- house construction
- poi boards
- weapons
- tool handles
- kapa beaters
- fencing
- firewood
- statues
- outrigger canoe seats
- decking

The flowers and leaf buds (liko) are used for:

- decking
- making lei
- medicinally to treat pain experienced during childbirth.

The nectar from the blossoms are:

- A favorite food of native birds and the birds also help to pollinate the 'ōhi'a lehua.

The 'Ōhi'a Lehua...

- Are usually the very first plants to grow on new lava flows
- Trunk can be straight and smooth or gnarly and twisted
- Is slow growing
- Can grow in every ecosystem from sea level to summit
- Can tolerate a wide range of soil conditions, temperature, and rainfall
- May occur as a tall tree or a small shrub and everything in between
 - Can grow up to 100 feet tall in perfect conditions
 - Grow much smaller in boggy (wet) soil
 - Grow like bushes in areas with poor soil or little rainfall
- Flowers look like a pom-pom, color can be fiery red to yellow
- Can grow on logs or the stems of fallen tree ferns
- Can have roots above ground that gather moisture from the air

