Rapid ‘Ōhi‘a Death is a fungal disease that is taking Hawai‘i by storm. It attacks the ‘Ōhi‘a tree—an important species in Hawaiian forests and culture.
Host Plants

Host plants are plants that the fungus affects.

ʻōhiʻa lehua or Metrosideros polymorpha is a dominant forest tree and shrub found on all the main forested islands of Hawai‘i. It can grow in many soil types – in rich forests, rocky scrub, and new lava flows.

ʻōhiʻa leaves grow up to 3 inches in length, in opposite pairs, but are very variable. They are often shiny and oval shaped, with an obvious central vein, and slightly arched smaller veins.

The genus name polymorpha means “many forms”. This refers to the various different shapes, sizes, and flower colors of the ʻōhiʻa tree. It grows in many different habitats on the Hawaiian islands—from the coast all the way up to the mountains.

The flowers are typically red, but can be pink, yellow, orange, and anywhere in between.

Because ʻōhiʻa grows in so many different locations, it can be very small, or very large. Smaller ʻōhiʻa shrubs sometimes grow less than 2 feet, while forest trees can grow to 80 or 90 feet!

PHOTO CREDITS

a,c,e: Forest and Kim Starr, Starr Environmental, Bugwood.org; b: T. Beth Kinsey, wildlifeofhawaii.com d: Joy Viola, Northeastern University, Bugwood.org
‘Ohi’a is one of the most common plants of the Hawaiian Islands. Some forests are 80% ‘Ohi’a! Losing such a common species would have a wide range of impacts. One of the biggest problems would be that wherever ‘Ohi’a used to be, invasive weeds would have more room to move in.

Because ‘Ohi’a is so common in Hawaiian forests, it is considered a very important species in riparian zones—around rivers and streams. Having healthy forests in these areas is crucial for filtering water and preventing erosion. Without ‘Ohi’a, some of Hawai‘i’s streams and rivers could be at risk.

‘Ohi’a is a food source for lots of Hawaiian wildlife. Several species of birds feed on the nectar of the ‘Ohi’a tree, including an endangered species—the Hawai‘i Akepa.
‘Ohi’a is used medicinally by native Hawaiians. The bark and flowers can be mixed together and given to women during childbirth. The leaves are also used to stimulate appetite and to treat sore throats.

A traditional Hawaiian building or house is called a ‘hale.’ ‘Ohi’a was sometimes used for the beams and poles that support the hale—if they were straight enough!

‘Ohi’a wood was used in boat building. Traditional canoes might have ‘Ohi’a seats and gunwhales—the rails that run up the sides of the canoe.

Until very recently, ‘Ohi’a lehua flowers were used in lei and as part of traditional hula ceremonies. The Hawaiian people have stopped using them in some events because of the risk of spreading Rapid ‘Ohi’a Death.

‘Ohi’a lehua is an important plant in the traditional culture of Hawai‘i. There is a Hawaiian legend all about the tree:

Pele, the goddess of fire and creator of the Hawaiian Islands, once fell in love with a warrior named ‘Ohi’a, but he had already pledged his love to a woman named Lehua. Pele became so angry that she turned ‘Ohi’a into a crooked and stunted tree. The other Gods felt sorry for Lehua, so they turned her into a beautiful red flower. They placed the Lehua flower on the ‘Ohi’a tree, so the two would be together forever.

The legend says that when a flower is picked from the ‘Ohi’a tree, it will rain—the tears of ‘Ohi’a and Lehua separated again.
Once Rapid 'ōhi'a Death has infected a tree, it will quickly begin to show signs of the disease. This fast moving fungus causes leaves and whole branches to die. If you see an 'ōhi'a tree with lots of dead brown or yellow leaves, it may be infected.

Symptoms are visible clues that a tree may be suffering from a pest or disease issue. Signs are the presence of the pest or disease itself.

To test for Rapid 'ōhi'a Death, researchers will take samples of diseased portions of a tree to a lab and culture them. Culturing is when fungus or bacteria are grown on purpose, like in the petri dish pictured here.

After culturing, the petri dish can be placed under a microscope. Getting up close and personal like this is the most accurate way to identify a fungus.
Some forests have lost 90% of their 'Ohi'a trees in only 2-3 years.

Rapid 'Ohi'a Death kills quickly! Once a tree is infected, it can be killed in only a matter of weeks. This short disease cycle makes it very difficult to control—once a tree has Rapid 'Ohi'a Death it will certainly die.

To date, Rapid 'Ohi'a Death has been detected on Hawai'i Island, Kaua'i, Maui, and Oa'hu. There are at least 135,000 acres of forest on Hawai'i Island alone that are showing symptoms of the disease.

How big is 50,000 acres?
Honolulu: 65,397 acres
Washington, D.C.: 43,700
Manhattan: 14,720

Since 2014, researchers at the University of Hawai'i and the U.S. Forest Service have been tracking where Rapid 'Ohi'a Death has been found. They expect all forests on the big island now contain the disease.
Moving plants around is a big problem! The Animal and Plant Health Inspection Service (part of the US Department of Agriculture) is on the look out for invasive plants and pests like Rapid 'Ohi'a Death.

Slowing or stopping the spread of Rapid 'Ohi'a Death is the main control strategy now. The USDA has quarantined all of Hawai'i Island—nobody may take any of the following off the island:

- 'Ohi'a plants
- 'Ohi'a plant parts including flowers, leaves, stems, twigs, cuttings, untreated wood, logs, mulch, green waste, or any insect frass
- Soil

'Ohi'a firewood should not be moved around Hawai'i Island, or between islands. This is good practice to keep in general. Many invasive insects and diseases have been spread long distances by people moving firewood.

Any tools used to cut or prune 'Ohi'a should also be cleaned. This can be done with 70% rubbing alcohol.

The University of Hawai'i and the U.S. Forest Service have set up these boot brush stations. Rapid 'Ohi'a Death can move around in the soil stuck on the bottom of your shoes! Anyone who has been in an area with Rapid 'Ohi'a Death should make sure to remove as much mud and soil as possible. This includes cleaning soil from car and bicycle tires.
Why Do Plants Need Heroes?
Every year, plant pests and diseases damage and kill millions of trees, both in our neighborhoods and in natural areas. This damage has a negative impact on vital ecosystem services like air and water purification and costs billions of dollars in cleanup and lost revenue.

Who are the Plant Heroes?
The Plant Heroes are four young adults who share a love of nature and interest in science. A non-governmental organization (NGO) has heard about their passion and invited them to join together as a "super team" to detect and combat bugs and diseases that harm plants and ecosystem health. The Plant Heroes scout for these threats and report suspicious sightings to their county extension or local forester, who contacts officials and provides mission details and scientific supplies in order to stop the spread of these bugs and diseases.

How can you be a Plant Hero?
Help neutralize the threat of plant pests and diseases by becoming a part of the Plant Hero team. Take the Plant Hero Pledge and explore the website to learn more about what to look for and how to report suspicious plant pests and diseases. The more you know, the more you can protect the plants in your own yard, neighborhood and community!

Plant Heroes is brought to you by the American Public Gardens Association

Founded in 1940 as the American Association of Botanical Gardens and Arboreta, the American Public Gardens Association adopted its new name in 2006. Over the last eight decades, the Association has emerged as the premiere association for public gardens in North America.

Today, the Association’s 500 member institutions are located throughout the United States, the District of Columbia, Canada, and seven other countries. Our vision is “A World Where Public Gardens are Indispensable” as they provide botanic, conservation, community, education, and economic resources to their community.

The Association is committed to increasing the knowledge of public garden professionals throughout North America through information sharing, professional development, networking, public awareness, and research, so that they have the tools to effectively serve visitors and members.

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