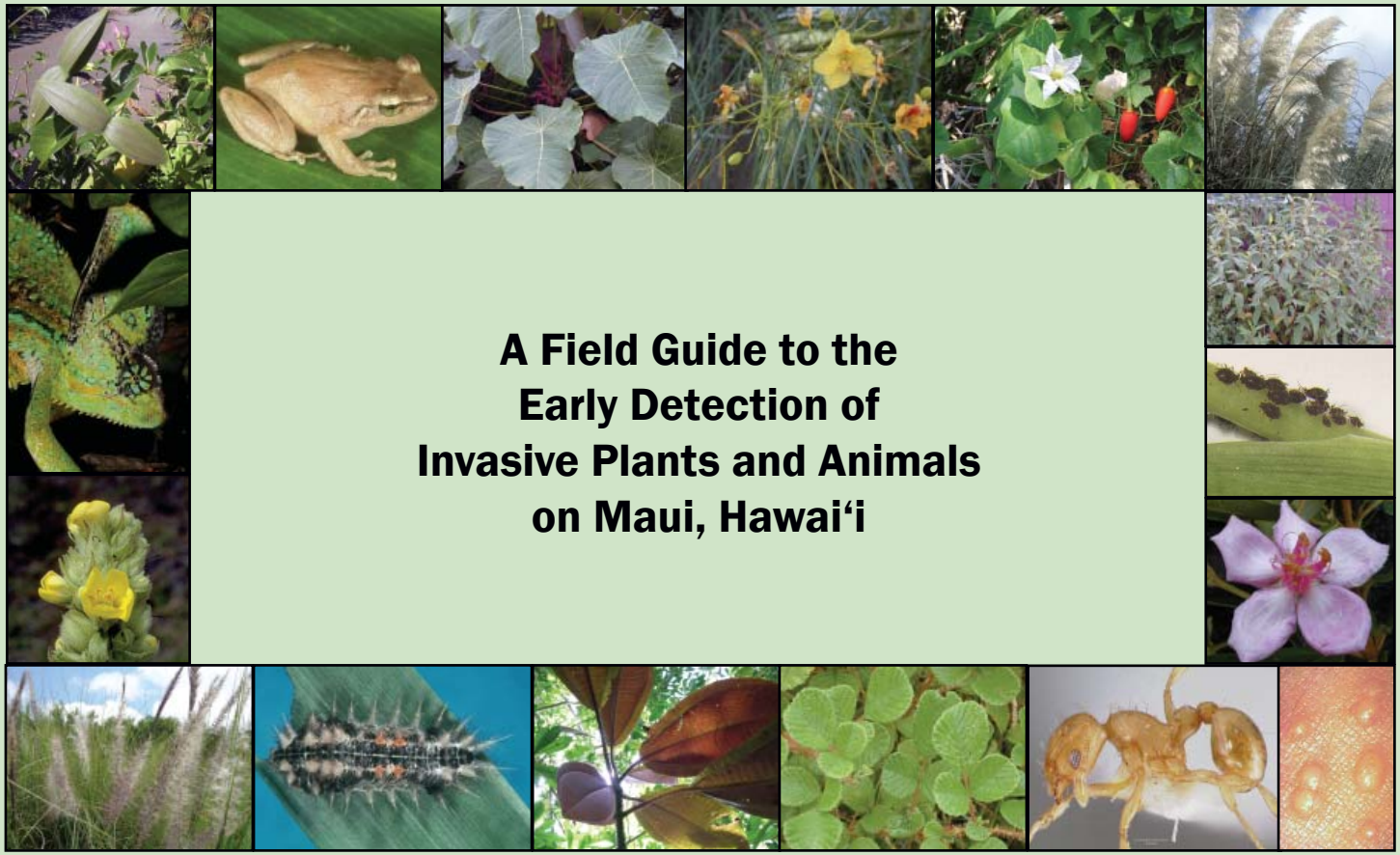

A Field Guide to the Early Detection of Invasive Plants and Animals on Maui, Hawai‘i

Acknowledgements

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MISC
MAUI INVASIVE SPECIES COMMITTEE

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nbii Pacific Basin Information Node
http://pbin.nbii.gov

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The Need for Your Eyes & Ears

Maui County is in the midst of a silent invasion that threatens the islands' environment, economy, and quality of life.

Non-native plants, such as miconia, grow out of control, produce millions of seeds per tree every year, and threaten to take over unique natural areas and watersheds. Non-native animals, like the coqui frog, jeopardize peaceful nights, tourist revenue and residents' property values. Containing and removing these unwanted visitors costs Maui County, the State of Hawai‘i and the federal government millions of dollars each year.

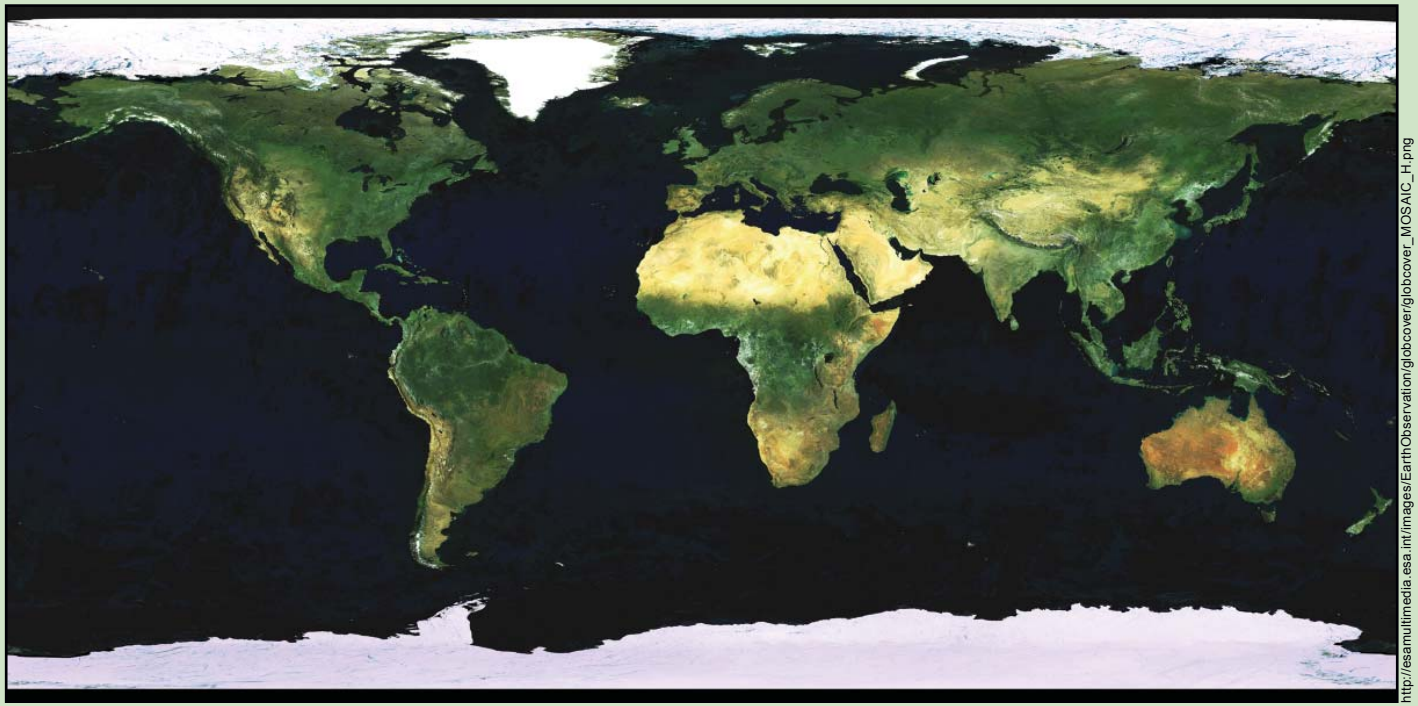
With the increase of traffic to and from the islands, the influx of invasive species is not likely to stop. Therefore, it is important for new species to be detected early and to have a program for rapid response. This is why the early detection reporting system was created. It helps reduce the overall impact of invasive species. The system is designed to connect people who find early detection species with agencies that are tasked with removing these invasive pests.

Here's where you come in. By participating in an early detection reporting system, you will help increase the number of eyes and ears searching for invasive species. Whether you're driving to work, enjoying the beach, hiking, hunting, or just going *holoholo* (cruising or fishing), you can help keep an eye out for unusual plants and animals that don't belong here on Maui.

Take some time to learn about plants and animals that are here on Maui so if you come across something unusual and/or new, you'll know what to do. Report-a-pest immediately to 643-PEST or www.reportapest.org.

Stopping the Introduction of Invasive Plants and Animals

The role of humans is much larger than that of natural pathways in the spread of plants. Today 20 to 50 new non-native species arrive in Hawai‘i every single year, transported both purposefully and accidentally through trade and travel.



http://esamultimedia.esa.int/images/EarthObservation/globcover/globcover_MOSAIC_H.png

What Are We Protecting?

The Hawaiian archipelago's biological wonders are 70 million years in the making. Before the arrival of humans, a single bird, plant, or insect established itself in these islands only once every 35,000 years. As these pioneer species adapted to Hawai'i's lava fields, alpine deserts, and rainforests, they evolved into distinct Hawaiian organisms. Hawaiian honeycreepers and silverswords are spectacular examples of such survival and adaptation and unknown species continue to be discovered. Hawai'i is one of the world's greatest natural biological laboratories.

Devastatingly, our home is also known as the nation's "extinction capital." We have lost more species to extinction than any other state. With the advent of air travel and globalization, alien species now establish themselves on the islands at an accelerated rate. Unlike their predecessors, they do not adapt to their new environment; they replace it.

Because Hawai'i has such a fragile environment and many of the lands within Maui County are used for agriculture, it's imperative to protect these areas from invasive species.

Unless major prevention and response actions are taken immediately – actions that will require solid public support – biological invasions will continue to erode the integrity of our island ecosystems, eventually reaching the last strongholds.

Stop! It's Against the Law

It is unlawful to transport designated noxious weeds into the state or into areas within the State that are free or relatively free of that noxious weed (Chapter 152, HRS). There are also limitations on the types of animals that can be imported into the state. The state's Injurious Species list makes it illegal to release or transport listed species to other parts of the state or to export them without a permit. For more information, visit the Hawai'i Dept. of Agriculture's website at www.hawaii.gov/hdoa.

Emergency Situations: Act Now!

Certain animals such as snakes, iguanas, giant lizards, or stinging ants require immediate emergency response. If you come across these or other unusual animals, act immediately. **Call 643-PEST (7378). For snake sightings, call 911!**

What You Can Do to Protect Maui

Don’t plant a pest.

- Avoid planting any plant that may potentially become invasive.
- Carefully inspect plants before purchasing to ensure they are free from unwanted pests.
- Remove invasive plants and animals on your property.

Don’t buy a pest.

- Do not import, plant, sell, or move invasive plants and animals in, around, or off island.
- Report locations where invasive species are growing or for sale.
- Use non-invasive and native plants in your landscape.

Protect Hawai‘i.

- Clean your hiking boots, equipment and vehicles before you go into a native area and after hikes in infested areas.

Keep pets contained.

- Do not release pets into the wild - keep parrots and rabbits caged.
- Don’t dump aquarium pets or plants.
- Turn in unwanted aquarium pets or plants to a pet store.

Spread the word.

- Share what you learn with your friends and neighbors.

Support MISC activities.

- Allow the Maui Invasive Species Committee access to your property to control an invasive species.
- Tell your county and state legislators to support funding proposals and bills related to the prevention and control of invasive species in Hawai‘i.

How to Use this Field Guide

After you've reviewed the early detection species, here's what to do next:

Investigate It! Take a walk around your neighborhood, drive to a park or just visit a new place. Early detection begins with looking around for species listed within this field guide. In addition, it is also a good practice to keep an eye out for any new species that you recognize as a recent new arrival. It could be the next invader!

Inspect It! Once you've found a plant or animal that looks like an early detection species, compare it to the description and photos within this guide. Does it have a similar size, color, or shape? Don't forget to compare it to the "Look Alike" section. Sometimes the species can fool you.

Collect It! If you're unsure about what you've found, it's time to collect it. Refer to the "Collect It!" section for ways to collect a specimen without causing harm to yourself or the environment.

Report It! Now you're ready to tell someone about your findings. Use the reporting methods listed in the "Report It!" section to let authorities know about your discovery.

Inspect it!

Take a look at the species that you've found. Compare it to the pictures and description within this guide.

If you find a snake or large reptile, this is an emergency situation and requires immediate action. Use the "Report-a-Pest Form for Snakes and Reptiles" at the back of this field guide to record important information. **Call 911 immediately if you have a snake sighting.**

If you think it's an early detection species, then record the following information on the Report-a-Pest Form found at the back of this book:

- Date of Pest Sighting
- Name of Pest
- Description of Pest
  - For plants, note the following information: size, flower color, scent, orientation, foliage color, fruit color, description of its habitat.
  - For animals, note the following information: size, color, plant or host that the animal was found on or nearby, description of its habitat.
- Location: include information such as the street address, cross streets, mile markers, place name, any easily identifiable structure that will help others find the species.

Collect it!

If you can't determine if you've found an early detection species, you may want to bring a sample to one of the walk-in pest reporting locations to help identify the pest. Here's how to collect a plant, insect, animal, or pathogen sample.

Plant Collection - Using Photography

- Submit an image for identification to reportapest-maui@hawaii.edu or via the online report form at www.reportapest.org.
- Whenever possible, include a ruler, penny, pencil, etc. for size reference.
- Include the growing tip end of the stem with seeds, leaves, and flowers in your image.
- Images of flowers should face the center of the flower.

Plant Collection – Submitting a Sample

- Submit a physical sample to a walk-in location.
- Whenever possible, provide a 6" to 10" sample of the growing tip end of the stem with seeds, leaves, and flowers if available.
- Place the sample flat between a few layers of dry newspaper or paper towels. Avoid excessive folding of the leaves and place flowers so that you are looking into the center of the flower. Do this while the sample is fresh!
- Pack the wrapped bundle in plastic, preferably with a cardboard to keep the sample flat.
- Or, place fresh terrestrial plant samples directly into a plastic bag and refrigerate until they are taken to a reporting facility.
- Aquatic weed samples can be placed in a plastic bag without newspaper.
- Wrap whole fruit specimens in paper and store in a crush-proof container.
- Ensure that the package is well sealed. Don't spread the weed!

Insect Collection – Using Photography

- Submit an image for identification to reportapest-maui@hawaii.edu or via the online report form at www.reportapest.org.
- Whenever possible, include a ruler, penny, pencil, etc. for size reference.

Insect Collection – Submitting a Sample

- Include damaged plant material if associated with insects.
- Place insects in a non-crushable container such as a small medicine bottle or film canister.
- Tiny and/or soft-bodied specimens should be preserved in a small leak-proof bottle or vial of rubbing alcohol or frozen in a Ziploc bag. Do not submit insects in water or formaldehyde.
- Hard-bodied specimens can be submitted dry in a crush-proof container. Do not tape insects to paper or place them loose in envelopes.

Animal Collection – Submitting a Sample

- Contain the animal in a sturdy container/box.
- Submit your sample to the Hawai‘i Dept. of Agriculture or the Maui Invasive Species Committee.

Animal Collection – Using Photography

- Submit an image for identification to reportapest-maui@hawaii.edu or via the online report form.
- Whenever possible, include a ruler, penny, pencil, etc. for size reference.
- Freeze the specimen in a Ziploc bag to preserve it.

Pathogen/Plant Disease Collection

Banana Bunchy Top Virus Collection Method

- Refer to the “Plant Collection - Using Photography” and “Plant Collection - Submitting a Sample” sections above for proper specimen collection techniques.
- Take your specimen to the UH-CTAHR extension office on Maui.

Submit an Image for Identification

- Submit an image for identification to the Bishop Museum’s “Ask a Scientist” website at http://hbs.bishopmuseum.org/askascientist/ or via the online form at www.reportapest.org.

Report it!

Now that you've found a possible pest, it's time to report it.

First, record the location. Clearly mark the area with flagging tape, etc. This will assist researchers in finding the site in the future. Then, use one of the following methods to notify authorities:

- **Report-a-Pest online**: Visit www.reportapest.org. Here, you will find an online form that you can fill out. Your submitted information will be forwarded to the correct agency.
- **Report-a-Pest by phone**: Call in your report to one of the following locations:
  - Maui Invasive Species Committee (MISC): (808) 573-MISC (6472)
  - Hawai'i Department of Agriculture Pest Hotline: 643-PEST (7378)
  - **If you see a snake, call 911 immediately!**
- **Walk-in locations***:* Below are locations where you can report a pest in person. Prior to bringing in a sample, see the previous "Collect It!" section on how to collect a specimen.
  - Maui Invasive Species Committee (MISC)
    820 Pi'iholo Road, Makawao
    Hours: 7:30 a.m. to 4 p.m., 573-MISC(6472)
  - College of Tropical Agriculture and Human Resources (CTAHR) - Maui Extension
    310 W. Ka'ahumanu Ave. Bldg. # 214, Kahului
    Hours: 9 a.m. to 5 p.m., 244-3242
  - Hawai'i Department of Agriculture - Maui
    635 Mua St., Kahului
    Hours: 7:45 a.m. to 4:30 p.m., 873-3555

What Happens Next?

The help that you provide increases the eyes and ears of Maui County and allows agencies to increase the area being searched. Now that you've reported a possible pest, authorities will collaborate on the next best step. This may include monitoring, controlling or investigating new populations. Thank you for your participation!

Contact Information

- Emergency Situations/Snake Reports: 911
- Report-a-Pest website: www.reportapest.org
- Pest Hotline: 643-PEST (7378)
- Maui Invasive Species Committee
  820 Pi‘iholo Road, Makawao, HI 96768
  573-MISC (6472)
- Hawai‘i Department of Agriculture
  635 Mua St., Kahului, HI 96732
  873-3555
- College of Tropical Agriculture and Human Resources (CTAHR) - Maui
  310 W. Ka‘ahumanu Ave. Bldg. 214
  Kahului, HI 96732
  244-3242
- Dept. of Land & Natural Resources
  - Division of Forestry & Wildlife
    54 South High Street, Room 101
    Wailuku, HI 96793
    873-3502
  - Division of Aquatic Resources
    130 Mahalani St., Wailuku, HI 96793
    243-5294

Additional Resources

Coordinating Group on Alien Pest Species
www.hear.org/cgaps/index.html

Global Compendium of Weeds
www.hear.org/gcw/

Hawai‘i Department of Agriculture
www.hawaii.gov/hdoa

Hawai‘i Ecosystems at Risk
www.hear.org

Hawai‘i Invasive Species Council
www.state.hi.us/dlnr/dofaw/HISC/

Hawai‘i’s Most Invasive Horticultural Plants
www.state.hi.us/dlnr/dofaw/hortweeds/

Maui Invasive Species Committee
www.mauiisc.org

Pacific Island Ecosystems at Risk
www.hear.org/pier/

Where am I on Maui?

Describe your location with lots of details (street address, cross streets, mile marker, place name, features) so that others can find it. Remember to use non-objective descriptors, such as compass directions (N,S,E,W) and distances (feet and miles) from features. GPS coordinates are the best way to convey a location. If you don't have your own GPS, you can use online maps to find the coordinates of your spot.

To electronically find an exact latitude and longitude use:

- **Google Maps (https://maps.google.com)**
  - Find your location on Google Maps and double click to make your location the center of the map.
  - Click on "link to this page".
  - You will find the latitide and longitude in the URL. (i.e. the latitide and longitude in the following URL, http://maps.google.com/?ie=UTF8&ll=20.775877,-156.356199 &spn=0.005146, 0.008669& t=h&z=17, is 20.775877 latitude and –156.356799 longitude.)
- **Microsoft livemaps (http://maps.live.com)**
  - Find your location on Live Search Maps and double click on your location to center the map.
  - "Share" your map by email.
  - You will find the latitide and longitude in the URL. (i.e. the latitide and longitude in the following URL, http://maps.live.com/default.aspx?v=2&cp=20.706525~-156.184022 &style=a&lvl=17&tilt=-90&dir=0&alt=-1000&encType=1, is 20.706525 latitude and -156.184022 longitude.)
- **itouchmap (www.itouchmap.com/latlong.html)**

What Makes a Species Invasive in Hawai‘i?

Characteristic	Advantage
Quick growth	Rapidly maturing invasive species monopolize available resources and out-compete native species.
Profuse reproduction	Many invasive species multiply rapidly, several times a year, producing high numbers of offspring, seeds or vegetative structures, overwhelming native species that reproduce at a slower rate.
Dormant or delayed offspring	The eggs or seeds of invasive species can persist in the soil or parent's body until conditions are ideal for growth. Some species can remain fertile for years while others reproduce asexually.
Easily spread by wind, water, and/ or animals	These species are often referred to as "hitchhikers." The ability to establish new populations in distant areas give invasive species an edge over native species without those dispersal mechanisms.
Production of "biological toxins"	Some invasive species produce toxic substances, such as phytochemicals or venom, that suppress native species and can harm humans.
Spines, thorns, or aggressive behavior	Aggressive defense mechanisms are important protection against predators such as goats, pigs, and cattle. Alien species often possess them. Native species evolved in Hawai‘i without predators, so they lack those protective mechanisms.
Large food reserves	The ability to fast or store food through roots or rhizomes may enable invasive species to survive adverse environmental conditions.
Adapted to diverse habitats	Invasive species thrive in a wide range of habitats. Native species can be highly specialized and adapted to a more limited range of environments.
Large leaves/high photosynthetic rates	Invasive plants can grow into dense thickets, shading out native plants that need sunlight to survive and thrive.
Eats a lot	Invasive species consume massive quantities of available food. Native species are harmed through direct predation, competition, or harboring or transmitting diseases.

Asian and Red Melastome

Melastoma spp.

General Description: Asian Melastome (*Melastoma septemnervium*) is an erect shrub that grows between 5' to 15' tall. Its leaves are elliptic in shape ranging 1.5" to 4" long and 0.5" to 1.5" wide. The leaves have five to seven distinct arching veins. The inflorescences have two to seven pink flowers. Each flower usually contains five to six petals, averaging 1" long. The small berries are about 0.75" long and split open to reveal five or six cells full of seeds.

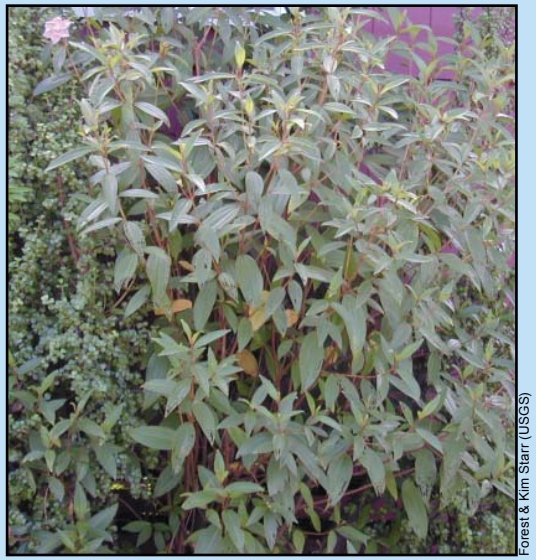
Red Melastome (*Melastoma sanguineum*) is similar to Asian Melastome. It is an erect deciduous shrub that grows 6' to 12' tall. Its leaves are slightly pointier, measuring 4" to 8" long and 1" to 2" wide with five to seven veins. The inflorescences have two to seven purplish pink flowers. Each flower has six petals that are 1" to 2" long. Red Melastome berries have six cells.

Impacts: Both species form dense monotypic thickets and can crowd out native vegetation.

Forest & Kim Starr (USGS)

R. L. Stemmermann

Asian Melastome flowers are pink or purple and its leaves may have five to seven distinct arching veins.



Forest & Kim Starr (USGS)

Red Melastome grows 6' to 12' tall.

Asian and Red Melastome

Dispersal Mechanism: *Melastoma* spp. are spread long distances by humans in the horticulture trade. From gardens, plants readily escape and are further spread by fruit eating birds and other mammals. Melastomataceae have also been observed moving inter-island on *hāpu'u* fern (*Cibotium* spp.) through the horticultural trade.

Origin, Distribution, and Habitat: Asian and Red Melastomes, native to Southeast Asia, are cultivated in tropical areas as ornamental shrubs. In Hawai'i, they have escaped from cultivation and are now locally abundant and invasive in mesic to wet areas, windward areas, and bog margins on Kaua'i, O'ahu, and Hawai'i from sea level to 3,000'.

Cultivation: In Hawai'i, these species are grown as ornamentals for their showy flowers, shrubby habit, and attractive foliage. Asian Melastome was first introduced as an ornamental from Florida to the island of Kaua'i in 1916. Red Melastome was first collected from the Island of Hawai'i in 1957.

☑ **Hawai'i State Noxious Weed**

Asian & Red Melastome Look-Alike Species

Koster's curse
Clidemia hirta

Koster's curse is a widespread pest in Maui County and a State noxious weed. It is also a Melastome species and tends to be shorter than Asian and Red Melastome. Its leaves are covered in stiff coarse hairs.


Forest & Kim Starr (USGS)

Koster's curse leaves have stiff coarse hairs.

Tibouchina
Tibouchina urvilleana
Tibouchina herbacea

Tibouchina is widespread in Maui County and is another Melastome species. Its large 5" flowers are deep purple with noticeable long yellow or purple anthers. The fleshy fruits are smaller than Asian and Red Melastomes and do not split open at maturity.


Forest & Kim Starr (USGS)

T. urvilleana *T. herbacea*
Tibouchina spp. *anthers are yellow or purple.*

Bingabing

Macaranga mappa

General Description: Bingabing is a large-leaved plant that grows 15' to 30' tall. Its round leaves can be as large as an umbrella up to 2' to 3' long. The stem attaches to the middle of the leaf. Bingabing flowers do not have petals. Instead, there are noticeable red bracts along the main stem.

Impacts: On the island of Hawai'i, bingabing was seeded from airplanes along with many other weedy forestry species near Hilo after a fire. Today, it lines roadsides, gulches, and disturbed forests in the vicinity. Its large leaf structure creates a dense growth that can crowd and shade out other vegetation.

Dispersal Mechanism: Long distance dispersal of bingabing is achieved primarily through humans who use the plant in ornamental landscaping or reforestation.

Origin, Distribution, and Habitat: Bingabing is native to the Philippines and is cultivated in tropical regions throughout the world. In Hawai'i, it is known to be naturalized on the islands of O'ahu and Hawai'i in low elevation mesic to wet areas and disturbed mesic valleys (sea level to 721'). It was once planted on Kaua'i in 1927 but there are no reports that the pest has become naturalized there. Several bingabing trees have been found in Upcountry Maui.

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Bingabing has large leaves as big as an umbrella.

Cultivation: Bingabing was cultivated in Hawai'i and other tropical regions of the world for ornament and in reforestation projects.

Bingabing

Forest & Kim Starr (USGS)

Top: The stem attaches to the middle of the leaf.

Right: Red bracts are located along the main stem of bingabing.

Forest & Kim Starr (USGS)

Bingabing Look-Alike Species

Parasol Leaf Tree
Macaranga tanarius

This relative of bingabing has already escaped into the wild on West Maui. However, in East Maui and within nurseries, parasol leaf tree remains a target species. It can be distinguished from bingabing by its smaller leaves (less than 1' long) and pale green to yellowish green calyx. If you find parasol leaf tree growing in East Maui or in nurseries, please report it.

Parasol leaf tree is already widespread in West Maui.

Forest & Kim Starr (USGS)

Common Mullein

Verbascum thapsus

General Description: Common mullein is an herbaceous plant that can grow up to 10' tall by its second year. The leaves are covered with a dense layer of yellowish or whitish woolly hairs and range from 3" to 20" long and 1" to 5.5" wide. The leaves grow in a rosette pattern getting progressively smaller toward the top. It has small yellow flower clusters (8 to 15 mm long) that grow in a random fashion along the center stalk. This stalk may project up to 3' beyond the leaves.

Common mullein grows in a rosette and projects a spike of yellow flowers.

Impacts: Common mullein can become invasive by quickly colonizing disturbed areas. It produces numerous seeds that may remain dormant in the soil for over 100 years. On the Island of Hawai'i, it has formed a monotypic cover that out-competes native vegetation and it is feared that it could do the same in similar native alpine ecosystems such as those found on Haleakalā.

Dispersal Mechanism: Common mullein plants are dispersed over long distances in the horticulture trade and by birds. Seeds fall nearby with a secondary spread that is usually not very far from the parent plant. In Hawai'i, it has been speculated that seeds are dispersed in mud along roads by cars and along trails by hikers.

Origin, Distribution, and Habitat: Common mullein is native to Europe and is cultivated and naturalized in temperate areas of the world, including North America, Hawai'i, La Reunion, Australia, and New Zealand. Locally, it is established on the island of Hawai'i and has been sparingly found and controlled on Maui. On the island of Hawai'i, this pest has infested roadsides at elevations from 5,000' to 10,000' and is particularly dense around 6,562'.

Cultivation: Common mullein has been cultivated for medicinal purposes, dyes, fish poison, and as an ornamental plant.

☑ **Hawai'i State Noxious Weed**

Common Mullein Look-Alike Species

Telegraph weed
Heterotheca grandiflora

Telegraph weed is another invasive plant growing in the sunny high altitudes of Maui. It can be distinguished from mullein by its dandelion-like flower. Leaves are smaller with pointed tips and have a strong sage smell when crushed.

Forest & Kim Starr (USGS)

Telegraph weed has a dandelion-like flower.

Forest & Kim Starr (USGS)

Primrose
Oenothera sp.

Primrose also grows in sunny high altitude areas of Maui. Its leaves are lance-like with pointed tips. Flowers are large and showy, up to 2".

Forest & Kim Starr (USGS)

Primrose has yellow showy large flowers.

Forest & Kim Starr (USGS)

Downy Rose Myrtle

Rhodomyrtus tomentosa

General Description: Downy rose myrtle is an attractive multi-stemmed ornamental plant that has an average height of 6' but may grow much taller. Its 3" leaves are oval and grow opposite each other. They are glossy green above with a dense mat of hairs below. There are three prominent leaf veins, similar to *Melastoma* spp. leaves, that have a leaf-within-a-leaf vein pattern. The flowers are small (1" wide) with rose-pink petals and pompom anthers. The round berries are bluish-purple, similar to blueberries.

Impacts: Downy rose myrtle is popular in landscaping and has quickly spread from gardens. In Florida, it forms dense thickets that out-competes native vegetation and converts the understory to a monotypic thicket. The plant has aggressive growth rates and can spread from seeds by birds and mammals that eat the fruit. Plants are able to tolerate a wide range of elevation and environmental conditions, including slight freezes and salt spray. Other invasive characteristics include prolific seed production and a high percentage of seed germination. In addition, downy rose myrtle is fire-adapted and can resprout after fires.

Franz Xaver, Wikipedia

Downy Rose Myrtle averages about 6' tall.

Forest & Kim Starr (USGS)

Forest & Kim Starr (USGS)

Flowers have pom-pom anthers (left) and leaves have a dense mat of hairs on the underside (right) with a leaf-within-a-leaf vein pattern.

Downy Rose Myrtle

Dispersal Mechanism: Downy rose myrtle is spread by humans who use the plant in landscaping. It readily escapes the garden and is further spread by fruit-eating birds and mammals.

Origin, Distribution, and Habitat: This pest's native habitat ranges from India to southeastern Asia and the Philippines. In Hawai'i, downy rose myrtle is cultivated and naturalized in disturbed mesic forests to wet forests on Kaua'i, O'ahu, and Hawai'i where it covers large acreage and often dominates areas it invades. On Maui, three locations have recently been controlled. No other known naturalized plants have been documented on Maui.

Cultivation: Downy rose myrtle is cultivated for its ornamental and edible attributes. This small evergreen shrub has attractive furry leaves, showy rose-colored flowers, and purple berries that can be eaten raw or made into a jam. In Hawai'i, flowers are used to make *lei* (garland).

☑ **Hawai'i State Noxious Weed**

Downy Rose Myrtle Look-Alike Species

Pineapple guava
Acca sellowiana

Pineapple guava is grown ornamentally in Hawai'i. It is missing the three prominent veins found on downy rose myrtle leaves and has showier pompom anthers.

Pineapple guava does not have three prominent leaf veins like Downy Rose Myrtle.

Fountain Grass

Pennisetum setaceum

General Description: Fountain grass is a perennial clumping grass that grows erect up to 3' high. The leaves grow are greenish-grey and have a slender, cylindrical, rolled shape. It has small flowers that are grouped together in upright long purple to rose-colored inflorescences that turn white. Each inflorescence averages 6" to 15" long.

Impacts: Originally introduced as an ornamental plant, fountain grass has become an aggressive, habitat-altering invader. It is not a good pasture grass and it degrades the quality of pasture lands, particularly in drier areas. Fountain grass is also fire-adapted and can sustain fires that spread quickly into adjacent areas. Its dried leaves increase the intensity of wildfires. After a fire, it resprouts faster than native plants.

Dispersal Mechanism: Fountain grass is dispersed through the horticultural trade as an ornamental grass. Its seeds are also transported via the wind, water, vehicles, livestock and humans.

Maui Invasive Species Committee

Fountain grass is a large clumping grass.

Maui Invasive Species Committee

Long purple inflorescences have hundreds of seeds.

Fountain Grass

Origin, Distribution, and Habitat: Fountain grass is native to Africa. In Hawai‘i, it invades many types of natural areas including bare lava flows, grasslands, and rangelands. The worst infestation occurs on the Island of Hawai‘i, where fountain grass covers at least 200,000 acres. Fewer than 200 acres of fountain grass occurs on O‘ahu. Known fountain grass populations on Maui are limited to areas in Wai‘ehu, Kahului and South Maui.

Cultivation: Fountain grass is cultivated for its ornamental attributes.

☑ **Hawai‘i State Noxious Weed**

The dry leaves of fountain grass create a fire hazard in open fields.

Maui Invasive Species Committee

Fountain Grass Look-Alike Species

Red Fountain Grass
Pennisetum macrostachym var. purpureum

Red fountain grass can be differentiated by red or purple tinted foliage and seed heads. It also grows much taller (6’ to 8’).

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Red fountain grass has a deeper red or purple tint to its leaves.

Feathertop
Pennisetum villosum

Feathertop is another perennial, clumping grass with a similar growth structure and leaves as fountain grass. Feathertop produces distinctive feathery seed heads that can grow up to 3’ in length.

http://www.criaderosantarosa.cl/Pennisetum%20villosum.JPG

Feathertop has distinct feathery seed heads.

Ivy Gourd

Coccinia grandis

General Description: Ivy gourd is an aggressive vine. Its leaves are 2” to 3” long and heart-shaped. Ivy gourd flowers are white, up to 2” across and have five petals. The cucumber-shaped fruits are green with whitish stripes and turn crimson red when ripe. Ivy gourd is a State noxious weed.

Impacts: Ivy gourd grows aggressively and can climb over trees and shrubs as well as on fences and power lines. It can also cover archaeological sites such as *heiau* (Hawaiian temple). If left unchecked, ivy gourd can form a dense canopy that quickly smothers out its hosts under a solid blanket of vines.

Dispersal Mechanism: Ivy gourd is dispersed long distances by humans who grow the plant for food. This pest can also be dispersed unintentionally by the transport of plant material by humans. Ivy gourd seeds are spread by birds and rodents.

Ivy gourd has white flowers with red fruit.

Lobed leaves may vary in shape.

Ivy Gourd

Origin, Distribution, and Habitat: Ivy gourd is native to Africa, India, Asia, and Australia. It has been found on all Hawaiian Islands with the exception of Moloka'i. On Maui, ivy gourd was first observed in 1992 in Kahului and Kīhei. Today, this pest can be found in Kīhei, Kahului, Ha'ikū, Makawao, Lahaina, Kā'anapali, and Kapalua. Ivy gourd is found in dry to moist areas up to 1,500' elevation.

Cultivation: Ivy gourd is cultivated for its edible leaves and fruits.

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Ivy gourd smothers anything in its path, including coconut trees and abandoned vehicles!

Ivy Gourd Look-Alike Species

Bitter melon
Momordica charantia

Bitter melon is a fast growing vine also in the cucumber family. It has thin stems and deeply lobed, alternate growing leaves that are often covered in hairs. It produces yellow flowers and has oblong, prickly fruits that turn from green to yellow or orange at maturity.

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Bitter melon's bright yellow fruit and flowers differentiate it from ivy gourd.

Jerusalem Thorn

Parkinsonia aculeata

General Description: Jerusalem thorn is a shrubby, thorny tree that grows 9' to 30' tall. It has a smooth green bark and spines along its branches. Feathery leaves are formed by long flat spine-like stems and it has 22 – 30 pairs of small leaflets measuring 10" to 16" in length. Jerusalem thorn has small 1" yellow flowers with orange spots. The flowers hang in groups. This plant has green pods with brown or purple spots that range from 2" to 8" long.

Impacts: This pest has spread throughout the world as an ornamental tree and has since escaped from cultivation. Jerusalem thorn is fast growing, drought tolerant, and able to grow in different soil types. In Australia, Jerusalem thorn can form dense thorny impenetrable thickets along water courses and drainages.

Dispersal Mechanism: Jerusalem thorn seeds disperse via water courses and flood conditions. It is also dispersed by animals and humans who spread the plant long distances in landscaping.

Jerusalem thorn grows into a large tree ranging from 9' to 30' tall.

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Small yellow flowers hang in groups.

Forest & Kim Starr (USGS)

Jerusalem Thorn

Origin, Distribution, and Habitat: The full extent of Jerusalem thorn's native range is uncertain. However, it is widely cultivated and is known to spread from initial plantings in California, Arizona, Florida, and Hawai'i, the West Indies, Australia, and Micronesia. On Maui, this plant was once located at three sites which have since been controlled. The potential range on Maui is suspected to be extensive, possibly wherever *kiawe* exists.

Cultivation: Jerusalem thorn is a hardy species and is valued as an ornamental or shade tree. Its uniquely shaped leaves, yellow flowers, shrubby weeping-like habit, drought tolerance, and ability to grow in a wide range of soils makes it an appealing ornamental. Jerusalem thorn has also been used in Africa and Pakistan to revegetate desert regions.

Jerusalem Thorn Look-Alike Species

Kiawe
Prosopis pallida

Kiawe is the common thorny mesquite found in dry and coastal areas of Maui County. It grows up to 40' tall and has 1" thorns and yellow seed pods. Jerusalem thorn can be differentiated by its long yellow flowers.


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Kiawe has white flowers (top) and can grow taller than Jerusalem thorn (right).


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Miconia

Miconia calvescens

General Description: Miconia is grows up to 50' tall when mature. It has extremely large oval leaves (averaging 3' long and 1' wide) that are a dark green on top and purple on the underside. Each leaf has three prominent leaf veins. Its tiny white to pink flower clusters are very short lived, lasting one day. The berries are dark purple measuring 7 mm in diameter and contain hundreds of seeds.

Impacts: Miconia trees grow quickly and close together, shading out nearly all other forest plants with the large oval leaves. It also has a shallow root system and can cause increased erosion and landslides.

Miconia quickly matures, producing fruit after three to four years and flowers and fruits several times a year. Plants produce ten to twenty million seeds a year, which can remain viable for twelve years and possibly longer.

Dispersal Mechanism: Humans and animals are key dispersal mechanisms for miconia. Miconia has been used as an ornamental plant

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Miconia leaves can be 3' long by 1' wide with a green top and purple underside.

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Miconia

in landscape projects. Seeds, about the size of a sand grain, are unintentionally spread by humans and hitchhike on clothes, boots, gear and animals. Fruit-eating birds feed on miconia dispersing seeds into pristine native habitat. Contaminated vehicles can also be another vector for the seeds. Hitchhiking seeds have been moved inter-island on *hāpu'u* fern (*Cibotium* spp.) stumps.

Origin, Distribution, and Habitat: Miconia, a native to Central and South America, was introduced to Tahiti in 1937 and has since overwhelmed two-thirds of Tahiti's native forests. It is responsible for threatening 25% of Tahiit's native forest species with extinction. Miconia was introduced into Hawai'i in the 1960s. On Maui, miconia can be found on the windward sides of the island and is established in East Maui.

Cultivation: Miconia is primarily grown as an ornamental plant for nurseries.

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Miconia Look-Alike Species

Koster's Curse
Clidemia hirta

Koster's curse is a widespread pest in Maui County and a State noxious weed. Leaves are small (2" to 6" long and 1" to 3" wide) and covered in stiff hairs. This shrub is shorter than miconia at 5' to 10' tall.


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Koster's curse is much smaller than miconia when mature.

Rubber Tree
Ficus elastica

Rubber tree is widespread in Maui County. Its leaves are shiny, leathery, and purple on both sides, without three prominent veins. This plant contains copious white latex.


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Rubber tree leaves are purple on both sides.

Pampas Grass — *Cortaderia* spp.

General Description: Pampas grass is a giant bunchgrass with long, slender, bright green, saw-toothed leaves. At the plant's base are dried corkscrew-shaped leaves. Pampas has large showy flower plumes (2' to 3' long) that extend beyond the foliage.

Two species of pampas grass are found on Maui. *C. selloana* grows up to 10' tall and has narrow, blue-green leaves with white fluffy seed heads. It reproduces sexually and flowers August through November. *C. jubata* grows up to 9' tall and has loosely clumped white-purplish seed heads. It can reproduce asexually and flowers July through October.

Impacts: Pampas grass grows rapidly, produces thousands of seeds per flower plume and can accumulate large clumps of biomass. Seeds can remain viable for at least six years. The plants crowd out native species, impede access, damage grazing lands, and create fire hazards.

The invasive nature of *C. selloana* was historically not recognized in Hawai'i because only female plants were cultivated and sold. This species generally requires cross-pollination between

Pampas grass flower

Dried corkscrew-shaped leaves

Pampas grass flower plumes hold thousands of seeds that may blow up to twenty miles away.

Pampas Grass

male and female plants to produce viable seeds. The introduction and spread of male plants has caused an explosion of this species in California and New Zealand, and Maui is set up for a similar situation.

Dispersal Mechanism: Pampas seeds are spread by wind traveling up to twenty miles away from the parent plant. Humans also disperse seeds with contaminated gear. Flower plumes are sold for dried flower arrangements.

Origin, Distribution, and Habitat: South American pampas grass was introduced to Hawai‘i as an ornamental plant. On Maui, it invades native mesic and wet forests to dry alpine shrubland, including pristine areas within and around Haleakalā Crater. It is found in Upcountry pastures, roadcuts, gulches, yards and in remote West Maui locations.

Cultivation: Pampas grass is used as an ornamental plant for landscapes and its flower plumes are used for decorations.

☑ **Hawai‘i State Noxious Weed** (*C. jubata* only)

Pampas Grass Look-Alike Species

Native Hawaiian sedges
Family Cyperaceae

Some of the native Hawaiian sedges can be confused with young pampas grass. Native Hawaiian sedges do not produce corkscrew leaves, saw-like sharp leaf edges, tall flowering stalks, or large showy seed plumes like pampas grass.

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Native Hawaiian sedges may be confused with young pampas grass plants.

Rubber Vine

Cryptostegia spp.

General Description: Rubber vine has dark glossy green leaves that grow in an opposite leaf arrangement averaging 3” to 4” long and 1” to 2” wide. The showy flowers are purple, funnel-shaped and have five petals. The large distinctive seed pods (about 3” long and 1” wide) are triangular, rigid, and grow in an opposite arrangement along the plant’s stem. The seed pods can contain up to 450 brown seeds that have white silky hairs.

Impacts: Rubber vine is a notorious invader in Australia. First introduced for ornamental use around 1860, it was later planted for rubber production. The seeds spread rapidly by wind, floodwaters, and mud, sticking to machinery and in the hooves of animals.

In Australia, it forms dense impenetrable thickets by climbing up trees and covering them. It has the ability to choke out native vegetation. In addition, rubber vine is an expensive problem for ranchers in Australia who must control the toxic plant from cattle and horses.

This woody, self-supporting vine of the Milkweed family, has toxic properties that are harmful to

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Rubber vine is poisonous to humans and livestock.

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Flowers are funnel-shaped with five petals.

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Seed pods appear wing-like.

Rubber Vine

humans and animals. The milky sap can cause burning rashes and blisters. When dry, a powdery dust emerges and may cause coughing, nose swelling and eyelid blisters.

Dispersal Mechanism: Plants are often dispersed long distances by humans. In Australia, plants initially spread along water courses then spread to pasture land in both open and forested areas. Numerous seeds with tufts of silky hairs help disperse the seeds in the wind.

Origin, Distribution, and Habitat: Rubber vine is native to Madagascar and is found along the western coastal plains, below 1,640'. On Maui, the distribution of rubber vine is still small.

Cultivation: Rubber vine has been cultivated in warmer regions of the world as an ornamental and for the production of rubber. It is an attractive vine with shiny evergreen leaves and attractive pink-purple blooms. In Hawai'i, it is grown as an ornamental and is occasionally observed on Maui in yards along driveways or fronting properties.

Rubber Vine Look-Alike Species

Purple allamanda
Allamanda violacea

This showy vine also produces a milky sap. Purple allamanda can be distinguished from rubber vine by its whorled three to four leaf growth pattern (arranged like spokes on a wheel). It doesn't have large seed pods.

Purple allamanda flowers grow in a whorl-like pattern.

Brazilian jasmine
Mandevilla sanderi

This sap producing vine is considered a safe alternative to rubber vine in landscaping. It can be differentiated by its dark pink to red trumpet-shaped flowers.

M. amabilis, similar to M. sanderi

Australian Cheesewood — *Pittosporum undulatum*

General Description: Australian cheesewood, also known as Victorian box and Sweet Pittosporum, is a fast growing tree that is often grown in gardens for its aromatic white flowers. It can grow from 15' to 45' and has shiny green leaves that are 2'' to 6'' long with distinctly undulating edges. Leaves have an alternate arrangement. Five-petal white flowers (3/4'' – 1'' long) are found clustered at the end of young branches and smell strongly of citrus. Orange fruit capsules are formed in the fall (approximately 1/2'' long) and bear shiny black seeds.

Impacts: Australian cheesewood is a popular landscaping tree that has escaped the garden in Hawai'i, Jamaica, South Africa, New Zealand, and other Pacific and Atlantic Islands. This tree is considered the most threatening invasive plant in the Blue & John Crow Mountains of Jamaica, where it out-competes native plants in the tropical montane forest. This tree has aggressive growth rates, with up to 5,000 seedlings per square meter in infested areas. The seeds are distributed far distances by birds.


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Australian cheesewood


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Australian cheesewood orange fruit cappsules


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Alternate leaf arrangement


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White flowers with five petals

Australian cheesewood

Dispersal Mechanism: Australian cheesewood is spread by humans who use the plant in landscaping. It readily escapes the garden and is further spread by fruit-eating birds.

Origin, Distribution, and Habitat: This tree is native to Australia but is widely cultivated throughout the world as an ornamental. In Hawai‘i, Australian cheesewood has naturalized in disturbed mesic forests on Lāna‘i and Hawai‘i where it covers large acreage and often dominates areas it invades. On Maui, it is only known to be at a few sites upcountry.

Cultivation: Australian cheesewood is cultivated for its ornamental and for aromatic flowers. In Jamaica, the first introduction was at a Zoological Garden.

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Australian cheesewood Look-Alike

Ho‘awa
Pittosporum glabrum


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Ho‘awa leaves and fruit

There are ten endemic pittosporum species in Hawai‘i, found in a variety of habitats, usually in predominantly native forests. Australian cheesewood can be differentiated by its undulating edged leaves.

Cape pittosporum
Pittosporum viridiflorum


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Lacks undulating leaf margins

This tree is native to South Africa and is cultivated in Hawai‘i for garden plantings. It has fragrant, orange scented flowers and orange seedpods, but does not have the undulating leaf margins. This tree may also be a target pest as it readily naturalizes.

Yellow Himalayan Raspberry

Rubus ellipticus

General Description: Yellow Himalayan raspberry is a rambling shrub that grows up to 7' tall and is covered with prickles. It is the only raspberry that has light green oval leaves growing in a three-leaflet pattern along the stem. The leaves average 2" to 3" long and have saw-like edges with rounded tips. The white flowers are small (3 to 10 mm long) and are covered with prickles. Yellow Himalayan raspberry is also the only raspberry with yellow fruit (1" long).

Impacts: Yellow Himalayan raspberry spreads by vigorous vegetative growth as well as by birds and other mammals that eat the fruit. It is hard to kill once established.

Dispersal Mechanism: In Hawai'i, Yellow Himalayan raspberry is spreading from the island of Hawai'i to Maui as contaminants in *hāpu'u* fern trunks and parts, such as mulch. Humans transport the plant long distances for use as an ornamental or as an edible crop. It can also be spread by birds and mammals that eat the fruit.

Yellow Himalayan raspberry has hundreds of prickles along its stem.

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Flowers also have prickles.

Forest & Kim Starr (USGS)

The leaves have a saw-like edge and rounded tip.

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Yellow Himalayan Raspberry

Origin, Distribution, and Habitat: Yellow Himalayan raspberry is native to tropical and subtropical India. On Hawai‘i Island, this pest is now naturalized in moist to wet disturbed forests from 2,270’ to 5,580’ elevation. It is well adapted to open sunny areas and wet shady rainforests. On Maui, it is not yet established in the wild, but with the constant importation of *hāpu’u* from Hawai‘i Island, it is likely that Yellow Himalayan raspberry will eventually make its way to Maui.

Cultivation: This pest is widely cultivated as an ornamental in warm regions.

☑ **Hawai‘i State Noxious Weed**

Yellow Himalayan Raspberry Look-Alike Species

Blackberry
Rubus argutus

This invasive berry is widespread in Maui County. It can be distinguished from Yellow Himalayan raspberry by its white flowers and pointed leaves.

Black-berry is common on Maui.

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‘Ākala
Rubus hawaiiensis

The native Hawaiian raspberry can be distinguished by its pale tan stalk, large pink flower and red berry. ‘Ākala is the only berry that loses its leaves in the winter.

‘Ākala has a large pink flower and red berries.

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Banana Bunchy Top Virus

BBTV

General Description: Banana Bunchy Top Virus is a devastating pathogen that affects banana plants. There is no cure for this virus.

Symptoms that can help identify the disease are:

1) shrunken malformed leaves “bunching” at the top,
2) “Morse code” dark green streaking on the leaf stem,
3) mottled and streaked flowers,
4) dark green streaks with “J” shape on midrib
5) signs of the banana aphid (*Pentalonia nigronervosa*)

Impacts: BBTV stunts the growth of banana plants and fruit. Eventually, banana plants may die and/or stop producing fruit.

Dispersal Mechanism: BBTV is spread by banana aphids which feed on infected plants later transporting the virus to healthy banana plants. It is also spread by the movement of infected plants.

Scott Nelson (UH CTAHR)

Banana leaves may have J-hooks toward the mid-rib.

Scott Nelson (UH CTAHR)

Plants infected with banana bunchy top virus (left) have leaves which appear “bunched”.

Banana Bunchy Top Virus

Origin and Distribution: Banana bunchy top virus was first introduced to Hawai'i in 1989. It was first seen on O'ahu, then the disease made its way to the Big Island followed by Kaua'i. In 2002, BBTV was first detected on Maui in Pukalani. Since then, it has been found in Pukalani, Makawao, Kula, Kahului, Lahaina and Kīhei.

Banana Bunchy Top Virus Look-Alike Species

Cucumber Mosaic Virus *(CMV)*

CMV is also spread by the banana aphid, but does not cause significant damage to banana fruit. Symptoms are mottling and streaking flowers. CMV does not cause the "Morse code" leaf streaking pattern of BBTV infected plants.

Nutrient Deficiencies

Severe deficiencies of nutrients like calcium and boron can cause yellowing and deformed growth of banana leaves.

Plants infected with the cucumber mosaic virus, have mottled and streaked flowers.

Coqui Frog

Eleutherodactylus coqui

General Description: Adult coqui frogs average 1" long, similar in size to a quarter. Their color ranges from light brown, dark brown and red and may have a line running down the back. They have a broad, rounded snout and obvious toe pads.

Impacts: These small tree frogs are known for the male's loud "ko-kee" mating call which can reach up to 90 decibels, interrupting the evening peace for residents and visitors. Coqui have no natural predators in Hawai'i and can reach population densities of up to 10,000 frogs per acre. They have a voracious appetite and feed on a large amount of insects, including native insects, possibly affecting food supplies for native insect-eating birds. Coqui have caused economic harm to real estate sales on Hawai'i Island where home sellers must disclose that coqui are in the area.

Dispersal Mechanism: Coqui frogs do not travel very far on their own, but when given the chance to hop on a nursery plant, flowers, or vehicle, they can quickly spread. Most coqui arrive on

Arnold Hara (UH CTAHR)

Coqui frogs are about the size of a quarter.

Arnold Hara (UH CTAHR)

Coqui are larger than greenhouse frogs.

Coqui Frog

Maui through infested nursery plants and flowers. Coqui travel intra-island by the movement of plants and frogs may hitch a ride on vehicles.

Origin, Distribution, and Habitat: Coqui frogs are originally from Puerto Rico and made their way to the islands via plant shipments. They were first introduced to Maui in 1988 and were detected on Hawai‘i Island in 1997. Today, Hawai‘i Island has the largest population statewide with over 200 populations centers while Maui is second in line with fourteen. Moloka‘i and Lāna‘i are coqui-free.

Coqui are primarily nocturnal, seeking shelter during the day in moist leaf matter and emerge at dusk where they can be found anywhere from high in the trees to the brush on the ground, wedged between leaves, and in PVC pipes. They prefer environments that are similar to their Puerto Rico home which is hot, humid and moist.

Coqui Frog Look-Alike Species

Greenhouse frog
Eleutherodactylus planirostris

The invasive greenhouse frog is widespread in Maui County. Adult greenhouse frogs are about the size of a dime whereas coqui frogs are larger, about the size of a quarter. They also have a different vocalization which sounds similar to a cricket. Greenhouse frogs have a narrower snout and less distinct toe pads. Greenhouse frogs are only found on the ground.

Arnold Hara (UH CTAHR)

Greenhouse frogs (left) have more claw-like toes compared to coqui frogs (right).

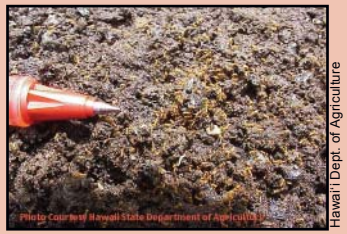
Little Fire Ant — *Wasmannia auropunctata*

General Description: The little fire ant (LFA) is a very slow moving ant, averaging 2 mm in size. It gets its name from its powerful sting that can feel fire-like to the person or animal on the receiving end. Many people will develop large red welts that last hours, even days, followed by an intense itching sensation. An individual ant can deliver multiple stings, and often several ants attack at once. Little fire ants do not have big heads.

Impacts: The speck-sized ant invades agricultural areas and nurseries putting coffee growers and flower pickers at risk of being stung. Some farm owners have had difficulties retaining workers who fear the fire ant bite. Besides being a serious nuisance to humans, this ant has been known to attack the eyes of domestic animals and blind them.

Dispersal Mechanism: LFA will find their way into the nooks and crannies of potted plants, flowers, clumps of grass, and leaf litter. To the dismay of Big Islands residents, little fire ants have been known to enter Big Island homes getting into clothes, beds, furniture and food.


April Noble


Hawai'i Dept. of Agriculture

Little fire ants average 2 mm in size.

Origin, Distribution, and Habitat: Originally from Central and South America, little fire ants have been found on Kaua'i and on the Island of Hawai'i. They are not known to be on Maui.

Little Fire Ant Look-Alike Species

Tropical Fire Ant
Solenopsis geminata

Tropical fire ant is common throughout Hawai'i. It can be distinguished from LFA by its much larger size (3 to 6 mm) and the presence of "big headed" workers. This ant is restricted to dry coastal areas, nests in the soil, and does not construct mounds.


Ant Image Database

Tropical Fire Ant

Red Imported Fire Ant — *Solenopsis invicta*

General Description: Red imported fire ants (RIFA) are aggressive biting ants not known to occur anywhere in Hawai‘i. They average 3 to 6 mm in length and have an opaque, shiny black abdomen. RIFA do not have “big-headed” workers. RIFA build dome-shaped mounds of soil.

Impacts: RIFA pose a serious threat to human health. Large numbers of ants will rapidly swarm on and relentlessly sting anything unfortunate enough to disturb them. In the U.S., hundreds of people are stung each year. RIFA stings cause blisters filled with white pus which lasts for several days. In infested areas, they may cause injury or death to livestock, pets, and wildlife; damage crops, ornamental plants, electrical equipment, and irrigation systems; and cause serious declines in biodiversity.


Bart Drees

Skin reaction

Dispersal Mechanism: RIFA are primarily dispersed via human activities such as cargo and nursery plant shipments.

Origin, Distribution, and Habitat: Native to Brazil, RIFA were introduced to the United States in the 1930s. They have invaded over 300 million acres across the southern U.S. Though this ant has not yet established itself in Hawai‘i, it established a foothold in California in 1998. With the enormous quantity of cargo and people arriving in Hawai‘i from California, the risk of this ant becoming the next major severe pest invasion in Hawai‘i is high.

Red Imported Fire Ant Look-Alike Species

Other Ants

There are over 40 types of ants in Hawai‘i. Most of these ants are black to pale brown and slightly transparent. Most other ants build mounds that will have a visible opening or be surrounded by an area that is stripped of vegetation. No other ant in Hawai‘i will aggressively swarm like the red imported fire ant.

Stinging Nettle Caterpillar — *Darna pallivitta*

General Description: The stinging nettle caterpillar is the 1” larval form of an Asian moth. It is covered with rows of poisonous spines. The coloration is variable, ranging from white to light grey, with a dark stripe running down the length of the back.

Impacts: This caterpillar produces a painful sting filled with a burning, itching sensation and may cause an allergic reaction. The skin will swell and create a welt that may last for days followed by a persistent rash that may last for weeks. In the nursery industry, stinging nettle caterpillars feed upon and damage crops.

Stinging nettle caterpillars have a spiny body.

Dispersal Mechanism: Stinging nettle caterpillars are often distributed through cargo and nursery shipments.

Origin, Distribution, and Habitat: Originally from Southeast Asia, stinging nettle caterpillars were first found on the Big Island in 2001. They continue to have a large presence on the Big Island and are now known from several locations on Maui. The nettle caterpillar can be found on over 30 plant species including palms, pasture and ornamental grasses, weeds and foliage plants.

Male (left) and female (right) nettle moths.

Stinging Nettle Caterpillar

Hawai'i Dept. of Agriculture

Stinging nettle caterpillars damage nursery crops.

Stinging Nettle Caterpillar Look-Alike Species

Nymphalid butterflies
Family: Nymphalidae

Some of the caterpillars from the Nymphalidae family also are covered in spines but do not sting. Butterflies in this family include the Kamehameha butterfly (*Vanessa tameiameiae*), painted lady (*Vanessa cardui*), red admiral (*Vanessa atlanta*), American lady (*Vanessa virginiensis*), and California tortoiseshell (*Nymphalis californica*).

Maui Invasive Species Committee

Vanessa species are members of the Nymphalid family of caterpillars and have bodies covered in dark spines. They are often found on passion vine plants and do not sting.

Veiled Chameleon

Chamaeleo calyptratus

General Description: Veiled chameleons have a casque or shark fin-like shield ranging from 3” to 4” long on their heads. A fleshy fringe runs from under the chin of each animal down the middle line of the body towards the base of the tail. The legs and tail are long and thin. They are usually light green with vertical bands of contrasting colors. Veiled chameleons can grow up to 2’ in length. Juveniles are usually light green with a small but visible casque on their head, but can also be light brown.

Impacts: Veiled chameleons are able to live in a wide range of habitats which poses a threat to Maui’s native birds, insects and vegetation. Fully-grown veiled chameleons may be capable of eating small birds, such as the native ‘apapane.

Dispersal Mechanism: Veiled chameleons may enter the state through the illegal pet trade. They are invasive and illegal in Hawai‘i. It is against the law to import, breed, keep as pets, sell, release, or export veiled chameleons. Penalties can include a fine of up to $200,000 and a possible prison sentence. The Hawai‘i Department of

Maui Invasive Species Committee

Veiled chameleons have a large sharkfin-like shield on its head.

Veiled Chameleon

Agriculture has an amnesty program allowing a person to turn in an illegal animal without prosecution.

Origin, Distribution, and Habitat: Veiled chameleons are originally from Yemen and Saudi Arabia. They were first found on Maui in March 2002. Since then, over 200 veiled chameleons have been captured on Maui with a majority from Makawao. Chameleons are not native to Hawai‘i and do not belong here. The discovery of pregnant females, mature males, and juveniles indicates that veiled chameleons have established a breeding population on Maui. They tolerate tropical and sub-tropical climates, and occupy mountainous regions, plateaus and valleys. They are found at altitudes ranging from 1,700 to 9,500 feet in their native habitat.

Veiled Chameleon Look-Alike Species

Jackson’s chameleon
Chamaeleo jacksonii

Jackson’s chameleons grow up to 10” in length. Adult males have three horns on the top of their heads. Juveniles and females often have a blotchy color. This look-alike is considered invasive in Maui County.

Female Jackson’s chameleons do not have a sharkfin-like shield on their head.

Male Jackson’s have three horns on their head.

Additional Alerts

Snakes: Call 911!

Snakes are not native to Hawai‘i and are illegal. Should a brown treesnake or other snake enter Hawai‘i and establish a breeding population, our island’s economy, ecology, and way of life will be irretrievably altered. Illegal pets can be turned in, no questions asked, by calling the Pest Hotline at 643-PEST. If you EVER see a snake, call 911 immediately.

L. Oberhofer, USDA APHIS)

Brown tree snake

Any Unusual Animal

Mystery animals, such as **big cats, iguanas, and monitor lizards** are occasionally reported on Maui. These exotic alien species do not belong on Maui and are an immediate threat. If you EVER see an unusual animal, call 643-PEST immediately.

Unknown

Paw prints

Aquatic Invaders

Aquatic invasive seaweeds, corals, invertebrates, and fish are affecting Maui’s freshwater and marine environments. They reproduce quickly and out-compete native species for space and food. Aquatic species are spread by the dumping of unwanted aquarium pets into streams, the careless spread of seaweeds attached to diving gear, and by ballast water of ships. On Maui, keep an eye out for Gorilla ogo, a seaweed that has been found on other islands, but not in large quantities on Maui. Report aquatic invasive species to the Division of Aquatic Resources at 243-5294.

CGAPS

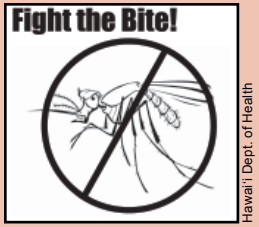
Gorilla ogo

Additional Alerts

Insects

Alien insect pests can hide in fruit, vegetables, flowers and soil, costing everyone money in diseased crops and higher prices and sometimes posing human health risks. If you find unusual insects, report them to the Hawai‘i Dept. of Agriculture at 873-3555.

Diseases



Hawai'i Dept. of Health

West Nile virus, malaria, and dengue fever are diseases spread by the bite of infected mosquitoes. They may be transmitted to humans, horses, birds and other animals. Those who are infected may have either no symptoms or mild symptoms. On rare occasions, humans may experience severe and fatal illnesses. These diseases are not currently found in Hawai‘i. One of the first indicators are dead birds that have died from an infected mosquito’s bite. If you find a dead bird, report it by calling 2-1-1.

Birds


Unknown

Mitred conures

Mitred conures and other parrots invade seabirds’ nests, damage agricultural crops, and can potentially spread invasive plant seeds such as miconia.

Bulbuls are not known to occur on Maui and are a serious agricultural pest. They feed on bananas, papayas, flower nectar, insects, and have been known to eat orchid buds. Bulbuls are on the State Injurious Species list, which makes it illegal to release or transport them to other parts of the state or to export them without a permit.

Report mitred conures, parrots, and bulbuls to the Maui Invasive Species Committee at 573-MISC (6472).


Kim Bridges

Red-vented Bulbul

Report-a-Pest Form

Name: _____ Date of pest sighting: _____

E-mail: _____ Phone: _____
(Including your e-mail will allow us to let you know what happened with your report.)

Name of pest that you are reporting: _____

Description: _____

_____

_____

_____

_____
(Plant: size, flower color, scent, orientation, foliage color, orientation, fruit color, habitat found in, etc.)
(Insect/animal: size, color, plant/host found on or nearby, habitat)

Location:

_____

_____
(Street address, cross streets, mile marker, place name)

(continued)

Report-a-Pest Form (continued)

Additional Comments:

Drawing of specimen:

Send completed form to the Maui Invasive Species Committee: P.O. Box 983, Makawao, HI 96768, Fax: (808) 573-6475, Phone: (808) 573-MISC(6472), or submit online at www.reportapest.org.

Report-a-Pest Form

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(continued)

Report-a-Pest Form (continued)

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(Plant: size, flower color, scent, orientation, foliage color, orientation, fruit color, habitat found in, etc.)
(Insect/animal: size, color, plant/host found on or nearby, habitat)

Location:

_____

_____
(Street address, cross streets, mile marker, place name)

(continued)

Report-a-Pest Form (continued)

Additional Comments:

Drawing of specimen:

Send completed form to the Maui Invasive Species Committee: P.O. Box 983, Makawao, HI 96768, Fax: (808) 573-6475, Phone: (808) 573-MISC(6472), or submit online at www.reportapest.org.

Report-a-Pest Form for Snakes and Reptiles

Name: _____ Date of pest sighting: _____

E-mail: _____ Phone: _____
(Including your e-mail will allow us to let you know what happened with your report.)

Address: _____ City, State, Zip: _____

Location: _____

_____
(Street address, cross streets, mile marker, place name)

Last seen where and when: _____

Habitat: _____

_____

Description of behavior/actions: _____

_____

_____

(continued)

Report-a-Pest Form for Snakes and Reptiles (continued)

Number of animals observed: _____

Length: _____ Diameter: _____

Size of eyes: _____

Color and pattern(s): _____

_____

Shape of head: _____

Tail Description: _____

Did you collect it? Yes ___ No ___
If yes, where is the animal located now?: _____

_____

Disposition of animal: Alive ___ Dead ___

Additional Comments:

Drawing of specimen:

Send completed form to the Maui Invasive Species Committee: P.O. Box 983, Makawao, HI 96768, Fax: (808) 573-6475, Phone: (808) 573-MISC(6472), or submit online at www.reportapest.org.

Early Detection List

MISC MAUI INVASIVE SPECIES COMMITTEE

nbii Pacific Basin Information Node http://pbin.nbii.gov

	Scientific Name	Common Name	Page
Plants	*Coccinia grandis*	Ivy Gourd	23
	Cortaderia spp.	Pampas Grass	29
	Cryptostegia spp.	Rubber Vine	31
	Macaranga mappa	Bingabing	15
	Melastoma sanguineum	Red Melastome	13
	Melastoma septemnervium	Asian Melastome	13
	Miconia calvescens	Miconia	27
	Parkinsonia aculeata	Jerusalem Thorn	25
	Pennisetum setaceum	Fountain Grass	21
	Pittosporum undulatum	Australian cheesewood	33
	Rhodomyrtus tomentosa	Downy Rose Myrtle	19
	Rubus ellipticus	Yellow Himalayan Raspberry	35
Animals	*BBTV*	Banana Bunchy Top Virus	37
	Chamaeleo calyptratus	Veiled Chameleon	45
	Darna pallivitta	Stinging Nettle Caterpillar	43
	Eleutherodactylus coqui	Coqui Frog	39
	Solenopsis invicta	Red Imported Fire Ant	42
	Wasmannia auropunctata	Little Fire Ant	41