Invasive Plant Field Guide

Pu'uhonua o Hōnaunau National Historical Park
Kaloko-Honokōhau National Historical Park
Pu'ukoholā Heiau National Historic Site

Preventing invasive plants from invading native habitats is vitally important for all Pacific Island national parks. This field guide highlights 15 invasive plants that Pu'uhonua o Hōnaunau National Historical Park (PUHO), Kaloko-Honokōhau National Historical Park (KAHO) and Pu'ukoholā Heiau National Historic Site (PUHE) and partners target for early detection and response.

Species cards have been divided into four categories (Grass / Herb, Shrub, Tree, Vine) that are color-coded for easy navigation. The front of each card has color photos and measurements to help with species identification. Also included are photos of possible "look-alike" species to keep in mind. A more complete description is on the back of each card.

National Park Service
U.S. Department of Interior

PUHO KAHO PUHE

BIISC

REPORT YOUR PEST!

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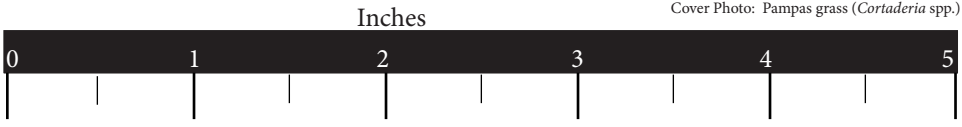
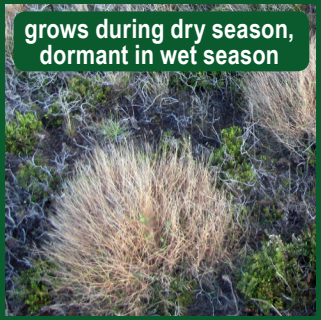
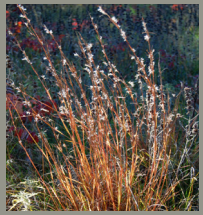
Cover Photo: Pampas grass (*Cortaderia* spp.)



! Hawaii State Noxious Weed

BROOMSEDGE
Andropogon virginicus





Don't confuse with tufted beardgrass (left) or little bluestem (right), which do not have stalks shaped like a fan. Tufted beardgrass also has a distinct tab-like ligule (left inset).

GRASS/ HERB

BROOMSEDGE
Andropogon virginicus

FAMILY: Poaceae

Hawaii State Noxious Weed

General Description: Broomsedge is an erect perennial bunch grass that grows in dense tufts up to 40" tall. The upper third of the stalk is freely branching, giving a broom-like appearance. New growth is green, turning purplish to straw-colored when mature. The plant is dormant and brown during the wet season and grows during the dry season. Leaf-sheaths are flattened with silky hairs along the margins.

Impacts: Broomsedge can persist in a wide variety of habitats, from wet boggy areas to dry areas. Infestations in pasture lands reduce the quality of forage. Allelopathic chemical properties found in this grass can inhibit other plant growth leading to monotypic stands. Dry grass materials are a major fire hazard.

Dispersal Mechanism: Seeds of broomsedge are wind dispersed and are adapted to catch on clothing and animal coats. Seeds are moved in contaminated soil and in mud on vehicles.

Origin, Distribution, and Habitat: Native to the eastern United States, broomsedge can now be found in California, Australia, French Polynesia, Midway, and on all major islands in Hawaii, where it readily becomes naturalized. Infestations are especially problematic on the islands of Oah'u, Moloka'i, Maui, and the Big Island. It is widespread on the Big Island and common in Hawai'i Volcanoes National Park.

Cultivation: Broomsedge was first collected on the Big Island in 1924. It was most likely an unintentional introduction. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Tufted beardgrass (*Schizachyrium condensatum*) and little bluestem (*S. scoparium*) are bunch grasses that have tufted seed heads shaped like a small broom. These grasses do not have the fan-shaped stalk base that characterizes broomsedge. Tufted beardgrass also has a distinct tab-like ligule at the junction of the leaf and leaf stalk. THESE PLANTS ARE ALSO INVASIVE.

CROWN FLOWER, SMALL CROWN FLOWER
Calotropis gigantea, Calotropis procera

Don't confuse with sea grape, which has similar leaves but grape-like fruit.

SHRUB

CROWN FLOWER, SMALL CROWN FLOWER
Calotropis gigantea, Calotropis procera

FAMILY: Asclepiadaceae

General Description: These two plants are difficult to tell apart. They both are small shrubs or trees that grow to 6-12'. All parts of the plants produce a milky-white, latex sap when broken. Leaves are thick and waxy, grey-green, fuzzy beneath, rounded with a pointed tip, and have a slightly heart-shaped base (3-10" long by 2-5.5" wide). Leaves are arranged oppositely along the stem and both have white and purple crown-shaped flowers that are 1-2" in diameter (*C. gigantea*) or .8-1.2" in diameter (*C. procera*). Fruits are kidney-shaped (3-5" long) and green when young and brown when mature. Seeds are brown and flattened with tufts of silky hair attached to one end.

Impacts: These plants have a milky sap that contains poisonous "cardiac glycosides." The sap can irritate skin and ingestion leads to heart irregularities. They can grow in dense, single-plant stands that crowd out other plants. Crown flower is one of the top 10 plants reported on the Hawaii poison hotline.

Dispersal Mechanism: Plants can reproduce by suckering and seeds, which are dispersed by wind, water, and animals. They can easily spread from intentional plantings.

Origin, Distribution, and Habitat: These plants are native to West Africa and tropical Asia, but have been introduced throughout the tropics. In Hawaii, these plants are sparingly naturalized from Kawaihae to Kailua-Kona on the Big Island. Crown flower thrives in disturbed areas like overgrazed pasture, roadsides, and abandoned lots and can grow in a variety of soil types, including beach front dunes and waterways.

Cultivation: Crown flower is intentionally cultivated for its crown-shaped flowers, which are popular for lei-making, and as a butterfly attractant. Small crown flower is promoted as a biofuel in some parts of the world. Both species have been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Sea grape (*Coccoloba uvifera*) is a nonnative plant with similarly shaped leaves. Its leaves have a distinct red vein and it does not produce a milky sap. Flowers grow on a spike that matures into a long string of grape-like fruits.

! Hawaii State Noxious Weed

FOUNTAIN GRASS
Cenchrus setaceus

Don't confuse with cane grass (left), which is taller (7-15'+) or feathertop (right), which has short fluffy seed heads (2").

GRASS/ HERB

FOUNTAIN GRASS
Cenchrus setaceus

FAMILY: Poaceae

Hawaii State Noxious Weed

General Description: Fountain grass is an erect perennial bunch grass that grows up to 3' high. The leaves are greenish-grey and have a slender, cylindrical, rolled shape. The small flowers are grouped together in an upright purple to rose-colored inflorescence that turns white as it seeds. Each inflorescence is 6-15" long.

Impacts: Originally introduced as an ornamental, fountain grass has become an aggressive, habitat-altering weed. It can degrade the quality of pasture lands, particularly in drier areas. Fountain grass is fire adapted and its dry leaves can increase the risk, intensity and longevity of fires. After a fire, it may resprout faster than native plants.

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

Origin, Distribution, and Habitat: Native to Africa, fountain grass has invaded many types of natural areas in Hawaii, including bare lava flows, grasslands, and range lands. On the Big Island, fountain grass covers at least 200,000 acres.

Cultivation: Fountain grass is cultivated for its ornamental attributes. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

Don't confuse with:

Cane grass (*Cenchrus purpureus*) is common throughout Hawaii. It can be differentiated by its taller height (6-8'). It is NOT fountain-shaped and does not grow in defined clumps. Cane grass flower heads are cream-colored. THIS PLANT IS ALSO INVASIVE.

Feathertop (*Cenchrus villosum*) is another perennial bunch grass with a growth structure and leaves similar to fountain grass. Feathertop produces distinctive feathery seed heads that can grow up to 2" in length. Feathertop is also considered a weed in Hawaii and should not be planted. THIS PLANT IS ALSO INVASIVE.

! Hawaii State Noxious Weed

IVY GOURD
Coccinia grandis

Don't confuse with nonnative bitter melon vine. It has leaves that are more lobed, yellow flowers (left), and orange fruit (right).

VINE

IVY GOURD
Coccinia grandis

FAMILY: Cucurbitaceae

Hawaii State Noxious Weed

General Description: Ivy gourd is an aggressive vine. Its leaves are 2-3" long and variably shaped (sometimes deeply lobed). Flowers are white and star-shaped, up to 2" across, and have five petals. The fruits are smooth and green (1-3" long) with whitish stripes turning to a uniform crimson red when ripe.

Impacts: Ivy gourd grows aggressively and can climb over trees and shrubs, and 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 its host plant or structure under a solid blanket of vines.

Dispersal Mechanism: Ivy gourd is dispersed long distances by humans who cultivate the plant for food. This pest can also be dispersed unintentionally via the transport of plant material by humans. Very small pieces of stem or root can resprout. Ivy gourd seeds are spread by birds and rodents.

Origin, Distribution, and Habit: Ivy gourd is native to Africa, India, Asia, and Australia. It has been found on all Hawaiian Islands except Moloka'i. Ivy gourd is widespread on the Big Island in the Kailua-Kona area.

Cultivation: Ivy gourd is cultivated for its edible shoots, leaves, and fruits. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. The Hawaii Department of Land and Natural Resources considers ivy gourd one of Hawaii's most invasive horticultural plants. The Hawaii Chapter of the American Society of Landscape Architects categorizes ivy gourd as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

Don't confuse with:

Bitter melon (*Momordica charantia*) is a fast-growing nonnative vine also in the cucumber family. It has thin stems and deeply lobed alternate growing leaves that are often covered in hairs. Plants produce yellow flowers and oblong prickly fruit that turn from green to yellow or orange at maturity. THIS PLANT IS ALSO INVASIVE.

! Hawaii State Noxious Weed

PAMPAS GRASS
Cortaderia spp.

Don't confuse with sugarcane (left) or native Hawaiian sedges (right). Both lack curled leaves at the base and the sugarcane plume is less dense.

leaves curled

GRASS/ HERB

PAMPAS GRASS
Cortaderia spp.

FAMILY: Poaceae

Hawaii State Noxious Weed

General Description: Pampas grass is an erect giant bunch grass with long, slender, bright green, saw-toothed leaves. At its base are dried, corkscrew-shaped leaves. It has large showy flower plumes that extend 2-3' beyond the foliage. Two species of pampas grass are found in Hawaii, *Cortaderia selloana* and *C. jubata*. Both reach heights of 9-10' and have loosely clumped pinkish-white seed heads. They flower from July through November. Spent flower stalks are sometimes persistent for several years.

Impacts: Pampas grass grows rapidly, produces thousands of seeds per flower plume, and can accumulate large amounts of fire prone biomass. Seeds are viable for 4-6 months, but field evidence from Hawaii suggests viability could be greater. It can crowd out native species, impede access, degrade grazing lands, and create fire hazards.

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

Origin, Distribution, and Habitat: Native to South America, pampas grass was introduced to Hawaii as an ornamental. On Maui, this plant has escaped cultivation and spread into pristine, upland native forests. It is found in pastures, gulches, yards, along road cuts. On the Big Island this plant has been removed from the Waimea Country Club and private homes in Volcano, Waimea, and Kona.

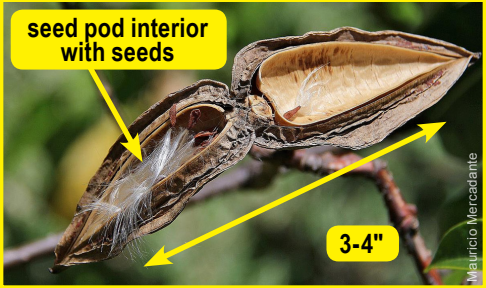
Cultivation: Pampas grass is used as an ornamental plant for landscapes and its flower plumes are used for decorations. Pampas is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

Don't confuse with:

Sugarcane (*Saccharum officinarum*) is a Polynesian introduced plant that has a similar seed plume as pampas but the plume is not as dense and sugarcane does not have corkscrew leaves.

Native Hawaiian sedges (Cyperaceae) can be confused with young pampas grass. They do not produce corkscrew leaves, tall flowering stalks, or large showy seed plumes. Most Hawaiian sedge leaves are not as sharp.

RUBBER VINE
Cryptostegia spp.



Don't confuse with Brazilian jasmine (left) or purple allamanda (right).

VINE

RUBBER VINE
Cryptostegia spp.

FAMILY: Asclepiadaceae

General Description: Rubber vine is a woody self-supporting vine that can also be trained as a shrub. Stems, leaves, and seed pods produce a milky-white sap when broken. Glossy leaves (2.3-4" long by 1-2" wide) are arranged oppositely. The funnel-shaped 5-petaled flowers are white to light purple. Paired seed pods are rigid and appear at the end of the stalk. When dry, the pods brown and open up, releasing hundreds of plumed seeds.

Impacts: Rubber vine is a notorious invader and Weed of National Significance in Australia due to its ability to climb and cover trees, form dense thickets, and generally outcompete native vegetation. It is poisonous to cattle and horses, making it problematic for ranchers. The milky sap can cause burning rashes and blisters. When the plant and sap are dry, a powdery dust emerges that may cause coughing, nose swelling, and eyelid blisters.

Dispersal Mechanism: Rubber vine is distributed widely for use in landscaping. Seed pods contain hundreds of white seeds with hair-like propellers, which easily disperse in the wind. The seeds are also spread by movements of floodwater and mud, and by sticking to machinery and animals.

Origin, Distribution, and Habitat: Rubber vine is native to Madagascar. In Hawaii, it is cultivated sparingly on the Big Island in Kailua-Kona and Kawaihae, and has been found growing at an elevation of 2100'. It can invade many habitats, including wetlands, streams, agricultural lands, savannah/badlands, disturbed areas, and intact forests.

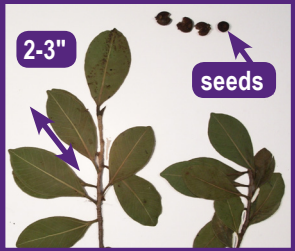
Cultivation: Rubber vine is cultivated in warmer regions of the world as an ornamental and for rubber production. The Hawaii Department of Land and Natural Resources considers rubber vine one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Purple allamanda (*Allamanda violacea*) is a nonnative vine that also produces a milky sap. It can be differentiated by its whorled, three-to-four-leaf growth pattern (arranged like spokes on a wheel) and smaller seed pods.

Brazilian jasmine (*Mandevilla sanderi*) is a nonnative sap-producing vine that is considered a safe alternative to rubber vine in landscaping. It can be differentiated by its dark pink to red, trumpet-shaped flowers.

CHINESE BANYAN
Ficus microcarpa



Don't confuse with the hundreds of ficus that have been introduced to Hawaii, many of which are invasive. Rubber tree (left) and edible fig (above).

All images Forest & Kim Starr (UH)

TREE

CHINESE BANYAN
Ficus microcarpa

FAMILY: Moraceae

General Description: Chinese banyan is a spreading climbing evergreen tree with numerous aerial roots that can form pillar-like structures. It grows to 65' tall and can be epiphytic, growing on top of trees and structures. The leaves are dark green and variable in shape (usually 2-3" long by 1-2" wide), often have mite damage, and grow in an alternate arrangement along the branch. Its bark is smooth and grey. Plants produce small fig-like fruits (.3" diameter) and no visible flowers.

Impacts: Chinese banyan is a notorious invader in Florida, Bermuda, and Central and South America. It can grow in other trees, eventually strangling them. This tree can cause substantial damage to structures, establishing with very little substrate and posing a major threat to Hawaiian cultural and archaeological sites, including heiau (Hawaiian temple) and fish ponds.

Dispersal Mechanism: Chinese banyan requires a specific wasp for pollination. This wasp has been introduced to Hawaii. Fruits are popular with birds and animals that distribute the small seeds long distances.

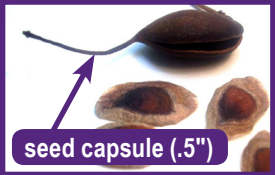
Origin, Distribution, and Habitat: Native to eastern Asia and the Pacific Rim, Chinese banyan has naturalized on all of the main Hawaiian Islands. It can grow in dry to moist open areas up to 3,000'.

Cultivation: Chinese banyan is a popular ornamental in tropical regions of the world. It can be grown as a bonsai. The Hawaii Department of Land and Natural Resources considers Chinese banyan one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Other ficus trees. Hundreds of species of ficus, many of which are invasive, have been introduced to Hawaii as landscape plantings. Related fig trees usually have aerial roots, which create a wide and tangled base to the tree, fig-like fruits, and a characteristic wide mushroom-shaped canopy. THESE PLANTS ARE ALSO INVASIVE.

SILK OAK
Grevillea robusta



Don't confuse with nonnative kāhili flower, which has short circular red flowers.

TREE

SILK OAK
Grevillea robusta

FAMILY: Proteaceae

General Description: Silk oak (silver oak) is a fast-growing tall tree (up to 70') with 5-12" long fern-like grey-green leaves. It has orange-yellow protea flowers (3-6") that have an upright horizontal shape and grow in clusters. Leathery seed pod capsules (.5") with a hair-like appendage on one end contain 1 or 2 winged seeds. Its leaves fall year-round and create a dense layer of litter underneath.

Impacts: Silk oak can form single species stands that crowd out other vegetation. Chemicals released from the leaves and roots can inhibit the growth of surrounding plants. The sap and other parts of the tree can cause allergic contact dermatitis, much like poison ivy or oak.

Dispersal Mechanism: Silk oak produces prolific amounts of winged seeds, which are carried by the wind far beyond the parent plant.

Origin, Distribution, and Habitat: Silk oak is native to eastern Australia. In Hawaii, over 2 million silk oak trees have been planted. It is now established on all islands in dry to semi-wet areas from sea level to 8,000'.

Cultivation: Silk oak is grown as an ornamental and reforestation tree. It has been used since the 1800s as a shade tree for coffee and tea. It is used for woodworking, though the sawdust is allergenic. The Hawaii Department of Land and Natural Resources considers silk oak one of Hawaii's most invasive horticultural plants. The Hawaii Chapter of the American Society of Landscape Architects categorizes silk oak as a "do not plant" species.

Don't confuse with:

Kāhili flower (*Grevillea banksii*) is a related nonnative tree with wispy leaves and red or yellow flowers. Kāhili flower is shorter (20') and its flowers grow in a circular shape around the stem. THIS PLANT IS ALSO INVASIVE.

Protea (Proteaceae). Many varieties of protea are grown in Hawaii. Silk oaks tall stature and upright, horizontal flower shape is distinctive.

PHYSIC NUT
Jatropha curcas

Don't confuse with the Polynesian introduced kukui nut tree, which is in the same family.

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SHRUB

PHYSIC NUT
Jatropha curcas

FAMILY: Euphorbiaceae

General Description: Physic nut is a large shrub that can grow to 9' tall with dull green heart-shaped leaves (4-7.5") with wavy indented margins. Small yellow-green flowers are produced on the ends of branches, mostly hidden by foliage. It has thin green bark that produces large amounts of clear latex when broken or cut. Its dry round fruit (1-1.5") is green when young and brown when mature. Fruits split open to reveal 2-3 black seeds.

Impacts: Physic nut can escape cultivation and become a pest of pasture lands, disturbed areas, and natural forests. Plants contains allelopathic chemicals that can inhibit the growth of neighboring plants, and poisonous, strong purgatives that are a common cause of poisoning among people who ingest the fruits and seeds.

Dispersal Mechanism: Physic nut can reproduce from seed and tuberous root suckering.

Origin, Distribution, and Habitat: Native to the Caribbean region, physic nut has been introduced throughout the tropics. In Hawaii, it has been planted as a crop throughout the Big Island, including in Kea'au, Hawi, Hāmākua, and Hilo. It has become naturalized near Kailua-Kona.

Cultivation: Physic nut is grown in many parts of the world as a biofuel and as hedges for fencing and foraging animals. Several parts of the plant are used in folk medicine in Africa. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Kukui nut tree (*Aleurites moluccana*), the state tree of Hawaii, is in the same family (Euphorbiaceae) as physic nut and has similarly shaped leaves and fruits/nuts. Kukui nut trees are often taller (49-82') with a spreading crown. Young leaves are whitish with a silvery gloss and give the tree an overall grey-green appearance. This Polynesian introduction is often found in gulches throughout Hawaii (and the tropics).

LANTANA
Lantana camara

Don't confuse with invasive trailing lantana, which has solid-colored flowers.

SHRUB

LANTANA
Lantana camara

FAMILY: Verbenaceae

General Description: Lantana is a branching thorny shrub that grows up to 10' with a woody 4-angled (square-shaped) stem. It has multi-colored florets of yellow, orange, pink, and violet and small blue-black spherical fruits. Its tear-shaped leaves grow in an opposite arrangement along the stem and have a spicy smell when rubbed.

Impacts: Lantana is considered a significant weed in 60 countries. It can form dense thickets that crowd out all other plants. Its shoots and roots contain allelopathic chemicals that can inhibit the growth of surrounding plants, potentially reducing the overall biodiversity and productivity in orchards and pasture land. Lantana has a thorny, impenetrable growth habit that can prevent access for people and animals.

Dispersal Mechanism: Lantana fruit, produced almost year-round, attract animals and birds that disperse seeds long distances. Mature plants can produce 12,000 seeds every year. Lantana can also spread vegetatively when stems come into contact with the soil.

Origin, Distribution, and Habitat: Native to southern Mexico, Central America, northern South America, and the Caribbean, lantana has been spread throughout the tropics. It is found on all of the main Hawaiian Islands. Lantana can grow in a variety of habitats and on all types of well drained soil in areas that receive approximately 10-115" of rainfall.

Cultivation: A cultivated form of lantana with no thorns, a compact habit, and fewer seeds is a popular ornamental plant in Hawaii. Due to the unpredictable nature of cross-breeding with weedy forms, planting this cultivated form is highly discouraged. The Hawaii Department of Land and Natural Resources considers lantana one of Hawaii's most invasive horticultural plants. The Hawaii Chapter of the American Society of Landscape Architects categorizes lantana as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Trailing lantana (*Lantana montevidensis*) is a popular garden plant in Hawaii. It has solid-colored purple or yellow flowers and lacks prickles. THIS PLANT IS ALSO INVASIVE.

PARASOL TREE
Macaranga tanarius

Don't confuse with bingabing tree, which is widespread. Bingabing has red flower/fruits and larger leaves (2-3.5').

TREE

PARASOL TREE
Macaranga tanarius

FAMILY: Euphorbiaceae

General Description: Parasol tree is a medium-sized tree (15-30' tall). Leaves (3-12") are heart-shaped and the stem attaches to the middle of the leaf. The leaves feature a distinctive venation pattern with 9 main veins radiating from the center. Clustered flowers are pale green to yellowish-green calyx (tough outer petals that protect the bud before it opens) that grow up to .3". Small yellow fruits (.4-.5" long) are waxy and prickly.

Impacts: Parasol tree has a large leaf structure that creates dense growth that can crowd and shade out other vegetation. It is naturalizing in mesic valleys across Hawaii and can grow from sea level to 4,400' elevation.

Dispersal Mechanism: Parasol tree can flower and fruit several times a year and is spread by fruit-eating birds.

Origin, Distribution, and Habitat: Native to Southeast Asia, parasol tree is found on all main Hawaiian Islands. It has become naturalized and invasive in valleys on Kaua'i, O'ahu, and Maui. 237 trees were planted in Hilo in 1926. They have spread from this initial planting to surrounding areas.

Cultivation: Parasol tree was introduced to Hawaii as an ornamental and for reforestation projects. The Big Island Association of Nurserymen has voluntarily agreed to not order or sell this tree to prevent further spread. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

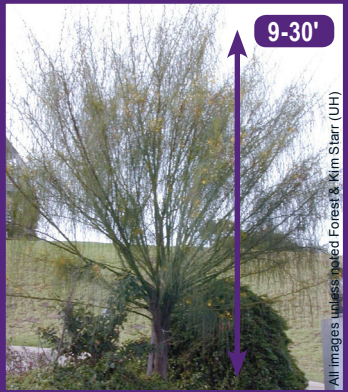
Bingabing (*Macaranga mappa*) is a closely related nonnative tree that was widely planted across the Big Island. Bingabing has larger leaves (2-3.5' long) and pink, petal-less flowers that form in clusters near the base of the leaf stalk. Its leaf vein pattern lacks the 9 arching veins so prominent on parasol tree leaves. THIS PLANT IS ALSO INVASIVE.

JERUSALEM THORN
Parkinsonia aculeata

Philip Thomas, HEAR

Philip Thomas, HEAR

Don't confuse with kiawe tree, which has pipe-cleaner-like flower spikes and 1" long thorns.



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TREE

JERUSALEM THORN
Parkinsonia aculeata

FAMILY: Fabaceae

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

Impacts: Jerusalem thorn has been planted throughout the world as an ornamental and has since escaped from cultivation. Its distinctly shaped leaves, yellow flowers, weeping-like habit, drought tolerance, and ability to grow in a variety of soils makes it an appealing ornamental. In Australia, Jerusalem thorn can form dense, thorny, impenetrable thickets along water courses and drainages.

Dispersal Mechanism: Jerusalem thorn seeds are dispersed via waterways and during flood conditions. It is also dispersed by animals that eat its seeds and humans who spread the plant long distances in landscaping.

Origin, Distribution, and Habitat: The full extent of Jerusalem thorn's native range is uncertain. However, it is widely cultivated around the world and is known to have spread from initial plantings in California, Arizona, Florida, the main Hawaiian Islands, the West Indies, Australia, and Micronesia. On the Big Island, this plant has been found cultivated on one private property in Kealakekua Bay, where it was removed in 2009.

Cultivation: Jerusalem thorn is a hardy species that is valued as an ornamental or shade tree. It has been used in Africa and Pakistan to revegetate desert regions. The Hawaii Chapter of the American Society of Landscape Architects categorizes Jerusalem thorn as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Kiawe (*Prosopis pallida*) is the common thorny mesquite found in dry and coastal areas of the Big Island. It grows up to 40' tall, has 1" thorns, and yellow seed pods. Jerusalem thorn can be differentiated by its long flat ribbon-like stems and yellow flowers. THIS PLANT IS ALSO INVASIVE.

BARBADOS GOOSEBERRY
Pereskia aculeata

Don't confuse with invasive rose cactus, which also has spines. Look for orange flowers and cone-shaped fruits.

SHRUB

BARBADOS GOOSEBERRY
Pereskia aculeata

FAMILY: Cactaceae

General Description: Barbados gooseberry looks like a woody shrub when young and then matures into a spiny vine with branches up to 33' long. Unlike other cacti, it is not a succulent and has large leaves. Young plants have hooked thorns, while older plants grow clusters of large woody spines. It produces loose clusters of white to cream-colored fragrant flowers up to 2" in diameter that turn into round berries that are white, pink, yellow, orange or red.

Impacts: Barbados gooseberry can form dense, thorny, impenetrable thickets. It can overgrow and smother other plants and its spiny stems and dead plant litter can make areas inaccessible to hikers. This plant is a declared pest in South Africa and on the National Environmental Alert List for Australia.

Dispersal Mechanism: Birds and animals are attracted to Barbados gooseberry fruits and can spread the seeds long distances. Small pieces of the plant can regenerate, creating new infestations and making eradication difficult.

Origin, Distribution, and Habitat: Barbados gooseberry is native to the Caribbean and northern coast of South America. It was originally spread via the horticulture industry and has found its way to O'ahu, the Big Island, and Moloka'i, where it is problematic for people and other plants in the Hālawa Valley. This plant was removed from one site in Hawi on the Big Island in 2011 and has not been detected on the island since that time.

Cultivation: In the past, Barbados gooseberry had been planted in private gardens across Hawaii. It was also planted as temporary cattle fences in South Africa until its declaration as a significant weed. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

Don't confuse with:

Rose cactus (*Pereskia bleo* or *P. grandifolia*), common in botanical gardens, has young growth that resembles Barbados gooseberry. Rose cactus can grow to tree size but is not vine-like. It has red flowers and yellow cone-shaped fruits. THIS PLANT IS ALSO INVASIVE.

RED MANGROVE
Rhizophora mangle

Don't confuse with native coastal trees, milo (left) and hau (above). Look for hibiscus-like flowers.

TREE

RED MANGROVE
Rhizophora mangle

FAMILY: Rhizophoraceae

General Description: Red mangrove is a salt-tolerant aquatic tree that can grow 15-60' tall. It has thick leathery leaves that grow in an opposite arrangement. Leaves are dark green above, yellow-green below, and covered with black dots. Small flowers (~.4" long petals) grow in clusters of 2-3. Plants have arching prop roots (6-15' tall) and long pencil-shaped fruit propagules.

Impacts: Mangrove infestations can form single species stands that have been found to reduce habitat quality for endangered Hawaiian waterbirds, reduce drainage in waterways, and obstruct shoreline access. It can also overgrow and destroy anchialine pools and Hawaiian archaeological sites, such as fishponds. Mangroves are a refuge for upside-down jellyfish (*Cassiopea andromeda*), which can be a nuisance to swimmers.

Dispersal Mechanism: Mangroves were originally introduced to Hawaii by sugar companies to reduce erosion. Mangroves form propagules, which are fully developed young plants, on adult trees. Propagules can float over 50 miles and up to 1 year before taking root.

Origin, Distribution, and Habitat: Red mangrove is native to the Atlantic coast from Florida to southern Brazil, western Africa from Senegal to Angola, and the western Pacific from New Caledonia to American Samoa. Introduced to Moloka'i in 1902, it now grows along approximately 25% of the islands southern shoreline. It is widespread on Moloka'i and O'ahu and found in limited areas on Kaua'i, Lāna'i, Maui and the Big Island. Existing mangrove populations are being actively eradicated on the Big Island. Mangroves grow along shorelines, in estuaries and wetlands, and in brackish water at the mouth of streams or rivers.

Cultivation: Red mangrove was introduced to Hawaii to prevent erosional run-off from agricultural fields. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

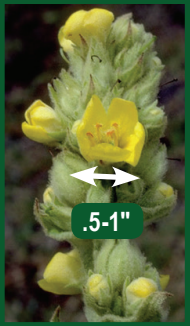
Don't confuse with:

Milo (*Thespesia populnea*) is a native Hawaiian shrub/tree that grows along the shoreline but lacks stilt roots. It has heart-shaped leaves and showy yellow flowers.

Hau (*Hibiscus tiliaceus*) is a native Hawaiian shrub/tree that can grow down to rivers and along the shoreline in a tangle of stems and roots. It can be differentiated by its heart-shaped leaves and multi-colored hibiscus flowers.

COMMON MULLEIN
Verbascum thapsus

! Hawaii State Noxious Weed



All images Forest & Kim Starr (UH)

Don't confuse with telegraph weed, which has dandelion-like flowers, smaller, thinner leaves with pointed tips, and smells strongly of sage.

GRASS/ HERB

COMMON MULLEIN
Verbascum thapsus

FAMILY: Scrophulariaceae

Hawaii State Noxious Weed

General Description: Common mullein is a herbaceous biennial that reaches up to 10' tall by its second year. Leaves range from 3-20" long by 1-5.5" wide and are covered with a dense layer of yellowish or whitish woolly hairs. Initially, the leaves grow in a rosette pattern. After it has bolted the leaves get progressively smaller toward the top. Small yellow flower clusters (.3-.6" long) grow in a random fashion along the center stalk.

Impacts: Common mullein can quickly colonize disturbed areas. Plants produce numerous seeds that may remain dormant for over 100 years. On the Big Island, it currently infests high elevation disturbed areas, such as roadsides and new lava flows, with dense stands that can outcompete native vegetation.

Dispersal Mechanism: Common mullein plants are spread in the horticulture trade and by birds. In Hawaii, there is speculation that seeds are dispersed along roadways by cars and along trails by hikers. Common mullein has been accidentally transported from the Big Island to Maui on infested equipment.

Origin, Distribution, and Habitat: Native to Europe, common mullein is cultivated and naturalized in temperate areas of the world, including North America, Hawaii, La Reunion, Australia, and New Zealand. In Hawaii, it can be found on the Big Island along Mauna Kea Summit Access Road from sea level up to 12,460'. It is particularly dense on Saddle Road and near Pu'u Wa'awa'a.

Cultivation: Common mullein has been cultivated for medicinal purposes, dyes, fish poison, and as an ornamental. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. The Hawaii Department of Land and Natural Resources considers common mullein one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

Don't confuse with:

Telegraph weed (*Heterotheca grandiflora*) is another invasive plant growing in high altitudes. 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. THIS PLANT IS ALSO INVASIVE.