

Collective Action for Control of Invasive Species on Windward O’ahu



Introduced species are considered invasive to an area when they become established and widespread, causing harm to the economy, environment or humans. Because of their invasive qualities, they can disperse across human-ownership boundaries, causing control efforts to be very difficult and time consuming (Yung, et al 2015). In such cases, a collective or area-wide approach, with multi-agency support and community involvement, is needed to successfully protect the community’s crops, livestock, and property.

Effective control of targeted invasive species by various [Invasive Species Committees of Hawai’i](http://www.hear.org/alliscs) (www.hear.org/alliscs) has involved early detection surveys, rapid response, and sharing information with community members.

This flyer lists invasive species reported by a community member as negatively impacting homeowners and businesses in the Kahalu’u neighborhood of Windward O’ahu. The chart and risk factors below can be used to prioritize and target species.

It is strongly recommended that community members meet to prioritize species to target and develop a coordinated action plan for their management. Descriptive information about each pest and their management can be researched by selecting the website links or QR codes. The agencies listed at the end of the flyer are available to support community members to identify pest species and recommend effective control methods.

Table 1. Pest species and their potential threats to the Kahalu’u neighborhood, Windward O’ahu.

Pest	Property	Horticultural	Livestock	Human Health	Ecosystem	Fire Hazard
Albizia	X	X			X	
Avocado Lace Bug		X				
Banana Bunchy Top		X				
Bingabing		X			X	
Canegrass			X		X	X
Cape Ivy		X		X	X	
Coconut Rhinoceros Beetle		X				
Creeping Indigo			X			
Devil Weed		X	X		X	X
Ginger Virus		X				
Gunpowder Tree	X			X		
Maile Pilau	X	X			X	X

Albizia (*Albizia moluccana*)

Risk Factor: High

- Sudden tree limb collapses can block roads and waterways, and cause damage to powerlines and property.
- Large populations can alter ecosystems by increasing soil nitrogen and phosphorus levels.
- Albizia outcompetes native species for natural resources.

Description: HISC Invasive Species Profiles for albizia (<https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/albizia/>)

Impacts & Management: The Invasive Alien Tree *Falcataria moluccana*: Its Impacts and Management (<https://www.biisc.org/wp-content/uploads/Hughes-et-al-2013-albizia-facets-2-compressed.pdf>) or Albizia Assassins Program (<https://www.biisc.org/albizia/>)



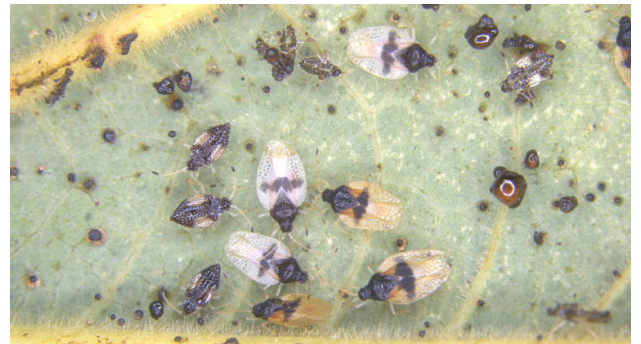
Albizia grows into a large tree, up to 150 ft. tall, with a canopy spread extending over an acre. Image credit: Hawai'i Invasive Species Council.

Avocado Lace Bug (*Pseudacysta perseae*)

Risk Factor: Medium

- Feeding by nymphs and adults causes chlorotic yellowing leaves, and potential leaf die-back occurs with high infestations.
- In a severe infestation, trees may lose leaves. The bugs' effect on yield is unknown.

Description & Management: Avocado Lace Bug in Hawai'i publication (<https://www.ctahr.hawaii.edu/oc/freepubs/pdf/IP-50.pdf>)



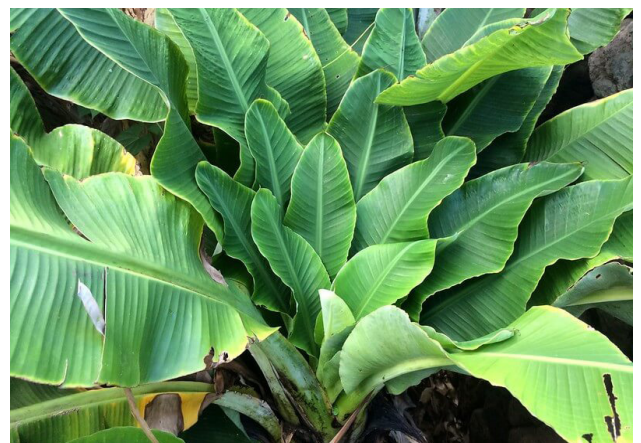
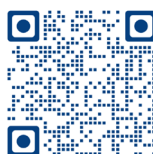
The adult lace bug is black with sculptured wings, approximately 2 mm. in length, and found on the underside of leaves. Image credit: Hawai'i Department of Agriculture.

Banana Bunchy Top Virus (BBTV)

Risk Factor: Low

- BBTV is caused by the feeding of viruliferous banana aphids (*Pentalonia nigronervosa*).
- Once BBTV is confirmed, killing of infested plants is the only way to control the local spread of the virus.
- Spread of BBTV to new locations is mainly by people moving and planting infected young plants.

Description & Management: Banana Bunch Top Virus publication PD-12 (<https://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-12.pdf>).



BBTV causes mature plants to have “bunched” leaves that are narrow and wavy with yellow leaf margins. Image credit: Scot Nelson via Big Island Invasive Species Committee.

Bingabing (*Macaranga mappa*)

Risk Factor: Medium

- Large umbrella-like leaves create a dense growth that can shade out other species in disturbed areas.
- The plant may possibly contain toxic chemicals, but further evidence is needed.

Description: Hawai'i Invasive Species Profiles for bingabing (<https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/bingabing/>).

Management: *Macaranga mappa* publication (http://www.starrenvironmental.com/publications/species_reports/pdf/macaranga_mappa.pdf)



Bingabing is a small tree, 15-30 ft. tall, with columnar stems and rounded leaves with a petiole attached to the middle of the leaf. Image credit: Hawai'i Invasive Species Council.

Canegrass (*Cenchrus purpureus*)

Risk Factor: Medium High

- Canegrass is a major fire hazard, and spreads by seed and stem pieces.
- Infestations in pasture lands reduce the quality of forage as the older plants are not palatable to grazing animals.

Description: Tropical Forages description of *Cenchrus purpureus* and hybrids (https://www.tropicalforages.info/pdf/cenchrus_purpureus__hybrids.pdf) or Useful Tropical Plants description (<https://tropical.theferns.info/viewtropical.php?id=Cenchrus+purpureus>)



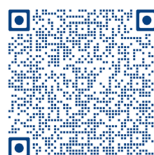
Canegrass is a tall drought-tolerant perennial grass forming a 2-4 m. tall, bamboo-like clump. Leaf blades are green, sometimes purple. Image credit: JS Peterson via USDA-NRCS Plants Database.

Cape Ivy (*Delairea odorata*)

Risk Factor: High

- Cape ivy is known as one of Hawai'i's most invasive horticultural plants.
- It climbs and smothers tall trees and forms impenetrable mats.
- The plant is potentially toxic to aquatic organisms and humans (pyrrolizidine alkaloids).

Description & Management: OISC target species (<https://www.oahuisc.org/cape-ivy/>) or CTAHR publication, Weeds of Hawai'i's pastures and natural areas; an identification and management guide (https://www.ctahr.hawaii.edu/invweed/WeedsHI/W_De-lairea_odorata.pdf).



Cape ivy is a fleshy vine with a woody stem base that can grow up to 20 ft. long. Leaves are 4 in. long by 2.5 in. wide and deeply indented at the base, with 3-10 shallow lobes. Image credit: Joseph DiTomaso via Calif. Invasive Plant Council.

Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)

Risk Factor: High

- Adults of CRB bore into the crown of palms and feed on the sap of the young tissues that can kill the palms.
- A characteristic "V" shaped cut to the palm fronds and bored holes on the petiole adversely affect the aesthetic value of palms.

Description: Hawai'i Invasive Species Profiles for coconut rhinoceros beetle (<https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/>)

Management: Coconut Rhinoceros Beetle Response – Hawai'i (<https://www.crbhawaii.org>)



(Top) The CRB adult is brownish black and 1.2 - 2.4 in. long with a horn that projects from the head. Image credit: Hawai'i Department of Land and Natural Resources, Invasive Species Council.

(Bottom) The CRB grub is milky white in color with a red head, three pairs of segmented legs, "C" shaped, and 2.4 - 4 in. long. Image credit: Aubrey Moore, University of Guam.



Creeping Indigo (*Indigofera spicata*)

Risk Factor: Medium

- Creeping indigo has been connected with equine and livestock deaths.

Description: Creeping Indigo Toxicity in Florida (<https://large-animal.vethospitals.ufl.edu/hospital-services/internal-medicine/creeping-indigo-toxicity/>)

Prevention & Control: Invasive Species Compendium data-sheet for creeping indigo (<https://www.cabi.org/isc/data-sheet/79262>).



Creeping indigo is a prostrate to sub-erect herb with clover-like leaflets, brick red to pink flowers, and straight seed pods in downward-pointing clusters. Image credit: Forest and Kim Starr.

Devil Weed (*Chromolaena odorata*)

Risk Factor: High

- Devil weed is fast growing and forms dense thickets and canopy.
- The plant takes over pasture and aggressively competes with other plants, is toxic to animals, and increases wild fire in dry conditions.

Description, Prevention and Control: Invasive Species Compendium datasheet for devil weed (<https://www.cabi.org/isc/datasheet/23248#toPictures>) and BioNET EAFRINET keys and fact sheet ([https://keys.lucidcentral.org/keys/v3/eafriNET/weeds/key/weeds/Media/Html/Chromolaena_odorata_\(Chromolaena\).htm](https://keys.lucidcentral.org/keys/v3/eafriNET/weeds/key/weeds/Media/Html/Chromolaena_odorata_(Chromolaena).htm)) or OISC devil weed crew volunteer presentation (<https://www.youtube.com/watch?v=r7ufxBsF8w8>)



Devil weed is an herb or shrub with multi-branched stems that are woody at the base. The triangular leaves have three thick veins shaped like a pitchfork. Pale purple to off-white flowers form in small clusters. Image credit: Hawai'i Department of Land and Natural Resources, Invasive Species Council.

Ginger viruses: Banana bract mosaic virus (*Potyvirus* sp.), Canna yellow mottle virus & Banana streak virus (*Badnavirus* sp.)

Risk Factor: High

- Ornamental gingers are the host to this multiple virus complex that can have synergistic effects.
- Vectors (aphids and mealybugs) of these viruses are still under research.
- Virus diseases are difficult to manage and complete removal of an infected ginger crop is often recommended to reduce the spread of these diseases.

Description & Management: Viruses in Flowering Ginger publication PD-116 (<https://gms.ctahr.hawaii.edu/gshandler/getmedia.ashx?moid=65943&dt=3&g=12#:~:text=Recently%2C%20flowering%20ginger%20in%20Hawai>)



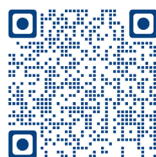
Banana bract mosaic virus in ginger causes mosaic, streaking, severe cupping of leaves, browning of flowers, and reduced bract size. Image credit: UH CTAHR PD-116.

Gunpowder Tree (*Trema orientalis*)

Risk Factor: High

- Gunpowder tree is fast-growing with a root system that can grow into septic pipes causing structural damage.
- The tree may cause eczema in humans.

Description & Management: BIISC backyard pest (<https://www.biisc.org/plant/gunpowder-tree/>)



The gunpowder tree grows up to 100 ft. tall. The leaves are ovate, hairy, and arranged alternately along stem. Small flowers are clustered at leaf nodes in dense bunches. Image credit: Forest & Kim Starr.

Maile Pilau, Skunkvine (*Paederia foetida*)

Risk Factor: High

- Maile pilau outcompetes native species, is potential fire hazard.
- The plant can produce an interwoven curtain of vines that can cover trees and utilities.

Description, Prevention and Control: Invasive Species Compendium datasheet for skunkvine (<https://www.cabi.org/isc/datasheet/38458#toimpactSummary>).



Skunkvine leaves are narrow (5 in. long by less than 2 in. wide) and grow in opposite pairs. The white funnel-shaped flowers have 4 to 5 lobes with a red interior. Image credit: ©Forest & Kim Starr-2000 - CC BY 3.0.

References

HDOA, DLNR, H.T. Harvey & Associates, Kuiwalu LLC, Richard Hill & Associates. 2016. Hawai'i Interagency Biosecurity Plan 2017-2027. <https://dlnr.hawaii.gov/hisc/files/2017/02/Hawaii-Interagency-Biosecurity-Plan.pdf>.

Yung, L., J. Chandler, and M. Haverhals. Effective Weed Management, Collective Action, and Landownership Change in Western Montana. *Invasive Plant Science and Management* 8(2), 193-202, (1 January 2015). <https://doi.org/10.1614/IPSM-D-14-00059.1>

Agency Resources

- Coordinating Group on Alien Pest Species (CGAPS)
- East O'ahu County Farm Bureau
- Department of Land and Natural Resources (DLNR)
- Hawai'i Department of Agriculture (HDOA)
- Hawai'i Invasive Species Council (HISC)
- O'ahu Invasive Species Committee (OISC)
- University of Hawai'i Cooperative Extension

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