

**Title:** Invasive Species Detection, Control, and Outreach on Kauai

**Organization:** Kaua'i Invasive Species Committee, Pacific Cooperative Studies Unit, UH

**Award:** \$617,082



**Introduction:** The Kauai Invasive Species Committee (KISC), a project of the Pacific Cooperative Studies Unit (PCSU) with the University of Hawaii, functions as an island-wide rapid response and control team intended to supplement existing agency efforts while serving a gap filling role on Kauai and assisting in the coordination of partnership efforts on a variety of science-driven invasive species management strategies. Priority is focused on species that are recognized as having the greatest potential to harm human welfare, agriculture, and native biodiversity, and where the use of limited resources is most likely to be successful. Hawaii Invasive Species Council funding provided support for KISC's island-wide early detection and rapid response projects on high priority pest species, species assessments and prioritizations on high risk incipient plant species, long-term control programs for target invasive species, and island-wide outreach and community awareness campaigns.

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**Objective: Early Detection of high-risk invasive species**

**2021 Expected Outcomes and Accomplishments:**

*1-3 early detection plant taxa delimited*

- 35.7 acres of additional delimiting surveys were completed following the 2020 delimiting early detection surveys and simultaneous control on 5 species (*Buddleja paniculata*, *Crassula multicaeva*, *Juncus effuses*, *Jasminum polyanthum*, *Vicia sativa*) in or near high value habitat areas in Kokee, Kauai.
- The 2020-2021 distribution and control data will be evaluated for feasibility of eradication and prioritization of control to add the appropriate targets to KISC's priority list for continued management.
- As part of the KISC Plant Early Detection Program, 196.7 acres were surveyed. 145.3 acres were ground surveys including trails and species site surveys. 51.4 acres were roadside surveys.



*Jasminum polyanthum* in Kokee, Kauai

*8 swarm traps and 6 CRB traps at Lihue airport will be maintained.*

- A total of 8 swarm traps and 6 coconut rhinoceros beetle traps were monitored monthly in partnership with Mamalu Poepoe, with no species of interest detected.

*29 naio (Myoporum sandwicense) plant locations surveyed for potential Myoporum thrips (Klambothrips myopori)*

- 53 cultivated naio (*Myoporum sandwicense*) plant locations for 9 population areas were surveyed for potential *Myoporum* thrips (*Klambothrips myopori*) with no thrips detected.

*4-10 high-risk sites (e.g. green waste stations, nurseries, ports) surveyed for little fire ants (Wasmannia auropunctata).*

- 7 high-risk sites were surveyed for little fire ants (*Wasmannia auropunctata*) with no LFA detected. Sites included green waste stations, ports-of-entry, and agricultural stands.

**Objective: Rapid Response to high-risk invasive pest species**

**2021 Expected Outcomes and Accomplishments:**

*Mongoose reports and response*

- According to the 2016 Kauai Mongoose Response SOP, a comprehensive rapid response trapping grid is triggered by the threshold of 3 reported mongoose sightings within a 500m radius within 2 weeks of each other. KISC received two mongoose sighting reports near Nawiliwili Harbor within 5 days of each other. With the response threshold unmet, a full response trapping grid was not triggered. Since the sightings were at a high-risk port of entry, an initial intermediate trapping response with live traps deployed was initiated around the port, no mongooses were detected.

*Coqui frog reports and response*

- In partnership with HDOA, KISC controlled 9 coqui frogs at 4 locations.

*Little Fire Ant (LFA, *Wasmannia auropunctata*) reports and response*

- In July 2021, a new LFA (*W. auropunctata*) detection was confirmed in an agricultural area in Moloaa, Kauai. KISC assisted HDOA in delimiting surveys and began initial treatment on the 13 acres site. Treatment will continue at the third little fire ant infestation site every 6 weeks until the population is brought down to undetectable levels.

*New pest species reports and response (in coordination with CTAHR and HDOA)*

- *Coffee Berry Borer (CBB) and Coffee Leaf Rust (CLR)*: KISC assisted HDOA and UH-CTAHR in early detection surveys and response following the 2020 detection of CBB, *Hypothenemus hampei*, and the 2021 detection of CLR, *Hemileia vastatrix*, on Kauai. A total of 25.1 acres were surveyed and 280 coffee plants were treated in 2021.

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**Objective: Survey and control of high-risk target invasive species**

**2021 Expected Outcomes and Accomplishments:**

*Surveys and control for LFA (*Wasmannia auropunctata*) at known Kalihiwai site*

- KISC assisted HDOA and the Hawaii Ant Lab with the continued monitoring of LFA (*W. auropunctata*) at the known Kalihiwai site. 30.6 acres were surveyed. The previous multi-phase eradication efforts proved promising with the last detected LFA in 2019, no LFA were detected in 2021 at the Kalihiwai site.

*Survey and control for LFA (*Wasmannia auropunctata*) at the new Kilauea LFA*

- KISC assisted HDOA with continued survey and treatment of LFA at the Kilauea site. 15.8 acres were surveyed with 7.4 acres of treatment. LFA were last detected at the site in 2020, no LFA were detected in 2021 surveys.

*Estimated 200 acres of ground survey and control for *Miconia calvenscens**

- Survey and control of *M. calvenscens* is focused in the Wailua Watershed. 1,675 acres of aerial survey were completed leading to the detection of 3 mature plants. KISC crews controlled a total of 3 mature and 880 immature plants during 344 acres of ground survey.



*Miconia calvenscens* in Wailua, Kauai

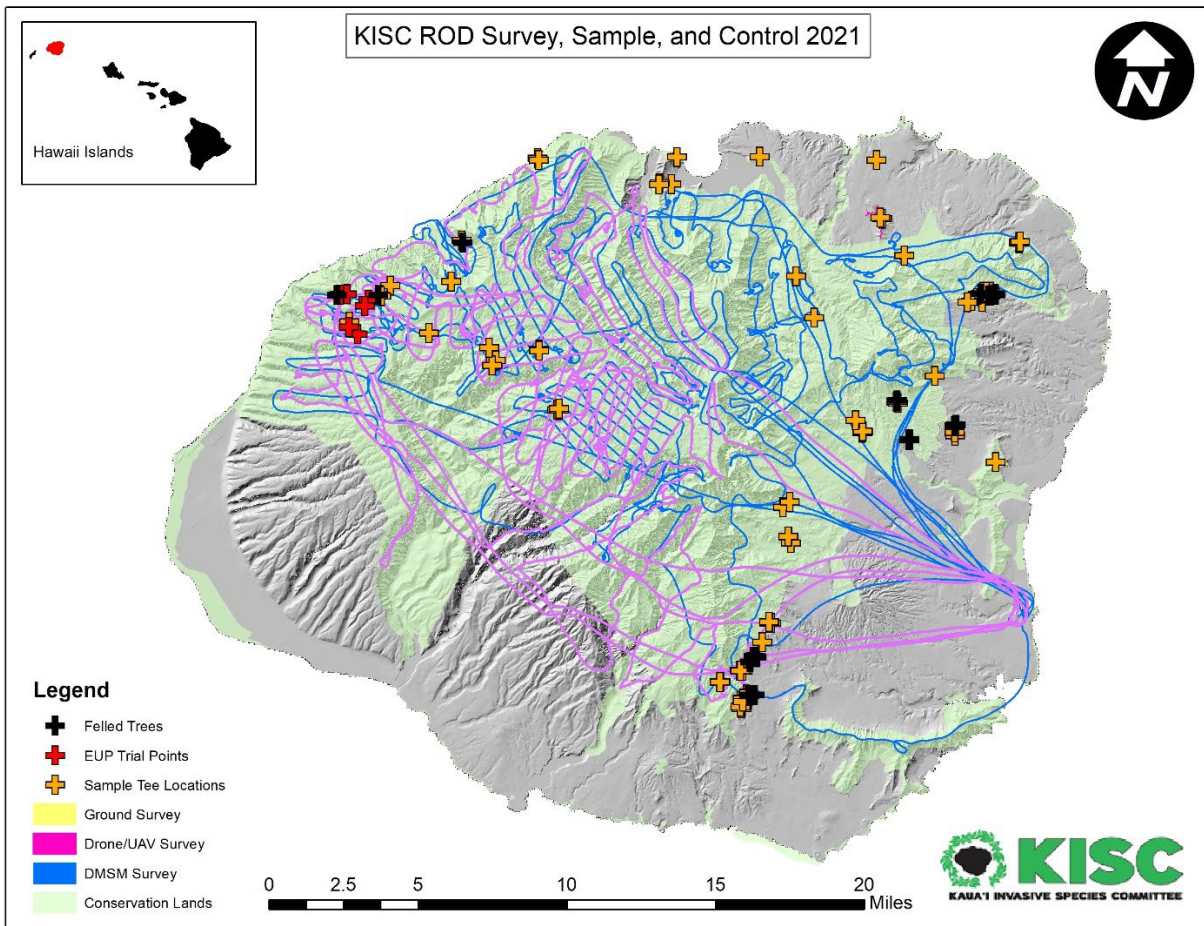
**Population control and seedling suppression of 7 priority plant targets**

- Population and seedling suppression continued for 8 priority plant species (*Arundo donax*, *Clerodendrum macrostegium*, *Coccinia grandis*, *Pereskia aculeata*, *Piper auritum*, *Prosopis juliflora*, *Pueraria montana var. lobata*, and *Solanum torvum*) with 554.8 acres ground surveyed and 1,888 individual plants controlled.

**Objective: Detection and rapid response to Rapid Ohia Death (ROD)**

KISC continued ROD detection and rapid response management in collaboration with DLNR-DOFAW. As of December 2021, *Ceratocystis lukuohia* was detected in a total of 175 trees and *C. huliohia* was detected in 114 trees with both species detected in 3 trees on Kauai. Unfortunately, in late 2020, *C. lukuohia* was detected in the Kokee area. Management efforts are ongoing with prioritized efforts in Kauai's high-value ohia habitat areas. In partnership with USDA-FS and DLNR-DOFAW, ambrosia beetle treatment trials began in July 2021. In 2021, KISC aerial surveyed 45,280 acres, ground surveyed 440 acres, sampled 132 trees, and felled 26 positive ROD trees. Early detection and ohia forest health monitoring efforts included select UAV plots, surveying 2,486 acres. KISC continues to develop and update site-specific management plans for private landowners on Kauai with positive ROD detection.

**2021 Expected Outcomes and Accomplishments: Updated Maps**



Map 1: KISC 2021 ROD field activities including aerial and ground surveys, sample tree locations, felled tree locations, and EUP trial locations.

**Objective: Education through public outreach**

Invasive species outreach and education is an integral component of on-the-ground detection and control efforts by KISC. Community collaboration is essential in the discovery, prevention, and control of target and early detection invasive species. Due to Covid-19 safety restrictions a hybrid outreach strategy was developed using a combination of virtual and limited in-person outreach and education methods. KISC's outreach programs pivoted to foster a spirit of remote community building while continuing to raise awareness about invasive species issues, using an increased focus on electronic delivery and social media platforms.

**2021 Expected Outcomes and Accomplishments:**

**Virtual Communications:**

*8 electronic newsletters & 6 blogs, bulletins, or updates*

- KISC's produced quarterly newsletter, blogs, and web articles focused on partnership projects, common invasive species identification, rapid ohia death response efforts, rapid response to coqui and little fire ants, and planting pono. *3 KISC E-Newsletters, 3 Pono Endorsement highlights, 4 Pest Alerts, 2 event/ campaign announcements (461 people reached). 8 ROD/ Ohia Lehua E-Newsletters (4,960 people reached).*

*208 social media posts*

- Social media platforms continue to be critical outreach tools by delivering educational content and engaging with a wider audience. KISC maintains an active social media presence on Facebook [/kauaiisc](https://www.facebook.com/kauaiisc) and Instagram [@kauaiisc](https://www.instagram.com/kauaiisc).
  - *473 social media posts total.*
  - *Facebook 2021: 1,799 followers (460 increase from 2020); 267 posts; post engagement for year: 10,986; Total reach for the year: 88,003.*
  - *Instagram 2021: 1,601 followers (853 increase from 2020); 206 posts; post engagement for year: 28,154; Total reach for the year: 118,099.*
- In 2021, KISC continued to increase our social media presence with 26 educational videos now available on the newly created KISC YouTube Chanel. *579 total views*. Content includes our Hawaii Invasive Species Awareness Month virtual huakai series highlighting invasive species through the watershed and our Faces of the Forest series highlighting the people working in Kauai's forests and the native species we are trying to save by keeping out invasive species.



*Faces of the Forest video featuring Kauai forest birds.*

*KISC website available online*

- KISC maintains and updates the KISC website to provide digital resources to the community. *Total views all time (12/31/21): 21,447. Avg Page Views per day: 59*

**Educational Displays:**

*Educational displays at 6 venues (in-person or virtual);*

- In-person, interactive displays at events were limited in 2021 due to Covid-19 safety concerns. KISC participated in *2 events* including Kilauea National Wildlife Refuge, Grove Farm Farmers Market. *(371 People reached).*

- 4 passive displays without staff member present: 3 displays at Ohana Days, 1 KISC Traveling Mongoose display stationed at Kīlauea Wildlife Refuge (397 People reached)
- Bootbrush & Educational Signage: Proper biosanitation is how each individual, organization, or agency can help protect Kauai's ohia and prevent ROD from spreading. Boot brush stations with educational signage are located at 36 public and private trailheads island-wide, in partnership with DLNR-DOFAW, USFWS, and KISC.
- Signage: KISC provided educational signage and literature holders to 5 tour companies to display at their site.
- KISC continues to maintain the educational port signage displays focusing on general environmental education, inter-island species movement, early detection and reporting (3 signs at Nawiliwili Harbor, 1 (5) panel display at Nawiliwili Harbor, 3 (5) panel displays at Lihue Airport).  
– reach not reported



Trailhead boot brush and signage installed in partnership with KISC and USFWS..

### **Educational workshops and presentations:**

20 educational workshops, presentations, webinars (in-person or virtual)

- 36 virtual and/or in-person educational workshops, presentations, and webinars were given. (1,310 people reached).
- 8 Forest Friday Talk Story events were produced virtually with the goal of bringing the forest to the people for a conversation about the role forests play in our daily lives—and those of our native flora and fauna. 321 people attended real-time. Recorded events were also posted Facebook and/or YouTube. Each talk story event featured a panel of KISC's conservation partners, including Kauai DOFAW, NTB, Kauai Endangered Seabird Recovery Project, Kauai Forest Bird Recovery Project, National Tropical Botanical Garden, USFWS, as well as, numerous community groups around Kauai also working on behalf of the forest.

6 school presentation/activities (in-person or virtual)

- 15 school educational presentations and/or activities were given in-person and/or virtual for students (262 students reached)
- 400 ohia lehua keiki activity kits were distributed via libraries around Kauai to students as part of the spring campaign (Ohia Lehua Day) and fall campaign (Ohia Love Fest).

### **In the Media:**

2-4 press releases or stories

- 5 press releases
- 19 print media articles featuring KISC and/or KISC messaging (*The Garden Island Newspaper, Civil Beat, AP News, Maui News*)

2-4 radio interviews

- 8 radio interviews (*KKCR, KONG*)

### **Statewide Outreach Campaigns – Kauai Component:**

Statewide Stop the Ant Month - LFA Awareness campaign, Kauai component

- 430 household kits distributed during Stop the Ant Month. Household kits were available at all public libraries and select farmer's markets.
- KISC partnered with Hawaii Department of Agriculture, Kauai County Farm Bureau, Malama Kauai, and the County of Kauai to raise awareness to the Kauai agricultural community and

distribute large LFA survey kits to Kauai farmers and consumers. *180 farmer/agricultural kits distributed during Stop the Ant Month.*

*Statewide Hawaii Invasive Species Awareness Month campaign, Kauai component*

- KISC developed a virtual huakai series for Hawaii Invasive Species Awareness Month featuring invasive species through the watershed. This series was in partnership with fellow organizations such as Malama Huleia and the Division of Aquatic Resources.

*Statewide Ohia Love campaign, Kauai component*

- KISC Outreach served on planning committee for statewide event of Ohia Love Fest and Ohia Lehua Day.
- Pre-produced video content for three workshops: tour of Kauai forests, ohia identification, and how to plant/grow ohia.
- Distributed 400 keiki kits via public libraries (200 for Ohia Love Fest and 200 for Ohia Lehua Day).
- Designed and produced radio campaigns and social media graphics.
- Co-hosted 3 Statewide lei making and 1 wreath making workshops (*98 people reached*)

**Interviews, meetings, and conferences:** KISC maintains a well-established outreach program involving the continued partnerships and relationships with the local community, various private businesses, and government agency partners. Highlights: Kauai Rose-Ringed Parakeet Working Group, Kauai Rapid Ohia Death Advisory Committee, member of the Kauai County Farm Bureau, and member of the Kauai Landscape Industry Council.

**Partner collaboration:** KISC is a project of the Pacific Cooperative Studies Unit (PCSU) with the University of Hawaii. KISC continued to work closely during 2021 with the Hawaii Army National Guard, UH-CTAHR, DLNR-DOFAW, The Nature Conservancy, Hawaii Department of Agriculture, US Department of Agriculture, the County of Kauai, Kokee Conservation Resource Conservation Program, Kauai Forest Bird Recovery Project, National Tropical Botanical Garden, Kauai County Farm Bureau, and US Fish and Wildlife Service.

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**Contact Information**

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