Detection & Control of Invasive Species on the Island of Hawai'i: Early Detection/Rapid Response Invasive Species Control Program

HISC Grant FY2024 (April 2024-Mar 2025) Final Report

Submitted by BIISC Manager Franny Brewer June 2025

Project Goal: To reduce the future impacts of invasive plants on our forests and farms by implementing strong early detection, rapid response, and containment strategies.

Summary of Activities:

Hawaii Island is 4,000 square miles of rural communities, small agricultural operations, expansive ranches, high-end resorts, and lush forests woven across a landscape of active volcanoes. Each day, humans bring onto these landscapes imported materials, potentially infested with a new beetle, a pathogen, or a plant that threatens our island. The ISCs historically were formed out of the old miconia task forces and our core work remains deeply grounded in finding and eradicating new high threat plant species - the "miconias of tomorrow."

As the horticultural industry is well known as the primary source of new invasive plants, our early detection team, Invasive Plant Prevention, is a hybrid team straddling between Plant Control team and Outreach team. On the outreach side, the team manages the Plant Pono program, an education and incentive program for nurseries and the public that seeks to discourage the planting of invasives and import of live plants (a known pathway for pests and disease). However the IPP team also actively searches the landscape for newly naturalizing plants across the island, assessing them for their potential to cause harm and their candidacy as a containment or eradication target. The Plant Control Team handles the "rapid response" to those target plant invasions, with direct, boots-on-the-ground control of invasive plants, utilizing a variety of mechanical and chemical methods all highly targeted for each species to achieve highest efficacy and least environmental harm, and collecting granular data in real time - extensive maps that provide individual points for each plant controlled that includes location, method of control, and even age of the plant (tracking mature vs. juvenile individuals gives us a chance to assess the effectiveness of our intervention timings).

After a rebuilding year for this program in 2023, in 2024 we were able to fully enjoy the benefits of added capacity - a fully trained IPP technician, doubling our capacity on that team - and a fully staffed Plant Control (rapid response) team, which had been whittled down to just one field position during Covid. Because live plants and planting material are also a well-known pathway for introduction of pests, our Invasive Arthropod Education Technician also joined this team at the end of the reporting period, allowing for additional capacity in early detection and response to invertebrates such as Queensland Longhorn Beetle and Coconut Rhinoceros Beetle, and support for our

BIISC staff work together to prepare plant specimens for voucher submission.

Plant Pono nurseries with control of pests like little fire ants. The increase in our productivity with the added capacity was noticeable, and underscores how significant each individual position is at an ISC. HISC funds allow us to build a highly trained and experienced field crew that can then also work with land managers such as the Natural Area Reserve program and Hakalau Wildlife Refuge to expand their capacity to control invasive species on state and federal lands.

In 2024, we also saw the full implementation of new systems that had been in development over the previous two years. A new approach to plant detections utilizing iNaturalist data significantly improved our efficiency at locating newly naturalizing plants, and led to even more vouchers being submitted to Bishop Museum for naturalization records. Our new BIISC plant evaluation system, laboriously revised with input from Steering Committee members, the HISC HPWRA specialist, and staff from every team, was fully launched, providing a streamlined but thorough process that allowed all staff to be clear on steps, roles, and decision making. Our GIS specialist utilized newer ESRI tools to create new workflows that allowed some processes to be done directly via phone app, allowing for real-time data uploads of work occurring in the field without a need for handheld GPS (although remote forest work continues to depend on those workhorses!)

The Plant Crew continued eradication work on eight species that are currently targeted for island eradication: devil weed (*Chromolaena odorata*), *Cotoneaster pannosus*, giant Burmese honeysuckle (*Lonicera hildebrandiana*), rubbervine (*Cryptostegia madagascariensis*), *Photinia davidiana*, Dahoon holly *(Ilex cassine*), Barbados gooseberry (*Pereskia aculeata*), and smokebush (*Buddleja madagascariensis*). Control of outliers continued on containment targets (those assessed as not possible to control with current methods/resources, but which we are preventing from expanding their range): Molluca raspberry (*Rubus sieboldii*) and *Phenax hirtus*; and border treatments continued for exclusion targets (widespread species for which we are trying to prevent entry into uninfested areas): European holly *(Ilex aquifolium*) and *Miconia calvescens*.

In 2024, the Plant Crew also worked directly on a project in response to a community request. Because of the nature of our island, where residential subdivisions cut directly through forest, community members on just a couple of acres are plagued by invasive weeds as much as any large land managers. One of our upper Puna communities reached out pleading for assistance with Himalayan raspberry (*Rubus ellipticus*), an viciously thorny weed that forms impassable thickets more than 15 feet tall. All published materials related to control of raspberry were more than two decades old, and the information was directed only at ranches and field crews - not useful for homeowners who are more limited in the products they can legally use on their properties. The BIISC Plant Crew and Operations Planner worked with the community to test and compare the efficacy of multiple easy-to-buy products, including vinegar (at the request of community members). Using a small grant from a local County Councilmember, we purchased the rugged PPE and tools necessary to battle this nasty plant, and once the project was finished donated them back to the community to build a lending library of tools that residents can use to battle Rubus. The one-year study was launched in April of

Field crew leader Kai'a Andaya uses a pole saw to remove Himalayan raspberry brambles in to apply treatment during herbicide trials as part of a community support project

2024, and wrapped up at the end of the reporting year. Public outreach and materials about the results are in development currently for release later in 2025.

Project goals for 2024 specifically addressed priorities in the Hawaii Interagency Biosecurity Plan, developed and approved by twelve county, state, and federal agencies and community partners. Below is a summary of the progress on the Outputs & Outcomes listed in the grant Agreement.

ED/RR Outputs & Outcomes

Green: fully completed/exceeded
Yellow: partially/mostly completed
Red: not completed or very little completed

Expected Outcome	Actual Outcome
BIISC will obtain and maintain proper permissio to enter airport and ship port areas to implemer the POEM Biosecurity program. Pest traps will b installed at Hilo and Kona airports and Hilo and Kawaihae ship ports and monitored biweekly, monthly, or seasonally as specified by HISC staff for each pest, and results provided immediately to the HISC staff overseeing the program. Staff will participate in all trainings related to POEM work.	BIISC staff were able to update all vehicle and personal licenses as required, and were able to properly install and maintain CRB and Japanese Beetle traps at all locations listed. The staff made timely inspections of a traps, which led to the first detection of a CRB in the Kona area, previously unknown population. All POEM data is recorded in NRDS on a timely basis (within 24 hours of the trap checks). Multiple members of the staf traveled to Oahu for a two day training hosted by the U -CRB Response Team to develop their skills around CRB detection.
BIISC will deploy and monitor CRB traps in and around high risk areas across the island. BIISC w respond to any reports of CRB w/i 48 hours in coordination with partners on Hawai'i Island. BIISC will use a contractor to search for CRB in suspect materials, such as mulch piles. BIISC wil input the site location and trap reports to the statewide ArcGIS online database to make data accessible to all partners.	In addition to the large number of traps issued through the community host program, BIISC also installed sever dozen traps in the Kona detection zone that are monitored directly by staff on a weekly (or more) basis, leading to the detection of several adult beetles and expanding the buffer zone for CRB response. Upon confirmation of ID the coordinates are added to the shared AGOL map on a real-time basis. During this year BIISC responded to more than 55 reports of palm damage or suspect larvae from the public, and responded w/i 48 hours (sometimes immediately even on weekends) and coordinated w/ partners such as HDOA to ensure that any follow up needed was performed.
BIISC will submit at least 6 plant samples to the Bishop Museum for naturalization records, and will complete at least 3 new or revised plant evaluation reports for naturalized species.	We were able to far exceed our predicted output. Twenty plant vouchers were prepared and sent to Bishop Museum for new naturalization records. A total of 16 Plant Assessment Reports were created, 4 of which were extended PARs that were fully investigated

	for eradication potential.
BIISC will perform at least 10 thorough scans of iNaturalist for potential sightings of high-priority pest plants (target eradication species, containment species outside containment areas or high-profile known plant invaders).	More than ten scans of iNaturalist were done of the course of the reporting year.
BIISC will control upwards of 15,000 individual eradication target plants across 2,500 acres.	BIISC far exceeded the predicted number of plants controlled with 25,196 individuals of our target species across 2,332 acres. The acreage was slightly lower than predicted because of the significant time investment into our highest priority plant target, the Noxious Weed *Chromolaena odorat*a (devil weed). With 10 sites under management by BIISC across Hilo and Puna, Chrodo is found mostly on residential/small ag lots of less than 5 acres, but necessitates multiple visits per year to interrupt the life cycle and catch juvenile plants before they mature.
(from CE outputs) BIISC will complete Rubus trial in coordination with a local community, and provide online and print materials with easily understandable and updated information on the best method for controlling Rubus.	BIISC successfully conducted its Rubus treatment trials in 2024 and presented the results in May 2025 to 35 community members in Fern Forest during an in-person outreach session. This event also launched a new tool lending library, giving residents access to equipment for Rubus control and encouraging hands-on implementation of the recommended strategies. Because the study did not conclude until April 2025 the materials could not be created until after the close of the reporting period. The materials will be created and distributed in FY 2025.

HISC Funding Priorities

The *HISC & CGAPS 2025 Joint Strategy: In Support of the Hawai'i Interagency Biosecurity Plan* provides a guideline for how to plan and prioritize efforts in invasive species work across the state. While our Community Engagement team handles a very broad range of invasive species work, the ED/RR Invasive Species Control work is more narrowly focused. The Invasive Plant Prevention team is the lead on Hawai'i Island for early detection of new plants, and also supplies staff for the Ports of Entry-Exit Pest Monitoring Program (with other staff from the CE team). These efforts address Strategy #1, Prevention & Early Detection/Rapid Response for New Invasions and #2,Management of the Inter/Intra-Island Movement of Invasive Species.

The BIISCuits 2024