



**Coordinating Group on Alien Pest Species  
(CGAPS)**

# **Annual Report**

**January 1 — December 31, 2022**

**Submitted to:**  
Hau'oli Mau Loa Foundation  
Hawai'i Community Foundation  
Hawai'i Invasive Species Council  
National Park Service-Pacific West Region  
USDA Forest Service  
U.S. Fish and Wildlife Service-Pacific Islands Office  
University of Hawai'i-Pacific Cooperative Studies Unit

## Introduction

### Acronym Index

BIISC: Big Island Invasive Species Committee  
CGAPS: Coordinating Group on Alien Pest Species  
CTAHR: University of Hawai'i-College of Tropical Agriculture and Human Resources  
DAR: DLNR Division of Aquatic Resources  
DLNR: Department of Land and Natural Resources  
DOFAW: DLNR Division of Forestry and Wildlife  
DOD: Department of Defense  
EDRR: Early detection & rapid response  
EPA: Environmental Protection Agency  
HAL: Hawai'i Ant Lab  
HCAF: Hawai'i Conservation Alliance Foundation  
HCF: Hawai'i Community Foundation  
HDOA: Hawai'i Department of Agriculture  
HDOT: Hawai'i Department of Transportation  
HGG: Hawai'i Green Growth  
HIBP: Hawai'i Interagency Biosecurity Plan  
HPWRA: Hawai'i-Pacific Weed Risk Assessment  
KISC: Kaua'i Invasive Species Committee  
LFA: Little Fire Ant  
MISC: Maui Invasive Species Committee  
MoMISC: Moloka'i-Maui Invasive Species Committee  
NPS: National Park Service  
OISC: O'ahu Invasive Species Committee  
PCSU: University of Hawai'i-Pacific Cooperative Studies Unit  
RCUH: Research Corporation of the University of Hawai'i  
ROD: Rapid 'Ōhi'a Death  
SCTLD: Stony Coral Tissue Loss Disease  
TNC: The Nature Conservancy  
UH: University of Hawai'i  
UHF: University of Hawai'i Foundation  
USDA APHIS: U.S. Department of Agriculture-Animal and Plant Health Inspection Service  
USDA FS: U.S. Department of Agriculture-Forest Service  
USFWS: U.S. Fish and Wildlife Service  
VIDA: Vessel Incidental Discharge Act

### Overview of CGAPS

Two significant reports (NRDC TNCH 1992; OTA 1993) found that Hawai'i had the nation's worst invasive species problem due to gaps in prevention, detection, and control programs. These reports concluded that these gaps could be closed through increased communication, cooperation, and public participation. In 1997 the Coordinating Group on Alien Pest Species, "CGAPS", (pronounced "C-GAPS") formed as a partnership of agencies and non-governmental organizations working together to close the gaps in Hawaii's biosecurity programs. In short, **we "see the gaps" and try to fill them.**



Quarterly meetings are held to facilitate information-sharing and networking between all entities that have a stake in biosecurity, while CGAPS Steering Committee meetings focus on strategy and progress toward our vision, that "Hawaii's natural environment, agriculture, economy, and the health, lifestyle, and culture of its people are protected from the impacts of invasive species."

CGAPS has five full-time, grant-funded staff employed through the Research Corporation of the University of Hawai'i (RCUH): Andrew Porter, Aquatic Legal Fellow; Stephanie Easley, Terrestrial Legal Fellow; Ambyr Miyake (formerly Mokiao-Lee), Statewide Rapid 'Ōhi'a Death (ROD) Outreach Coordinator; Kailee Lefebvre, CGAPS Planner; and Christy Martin, Program Manager, and occasional Interns and student Assistants. Visit [www.cgaps.org](http://www.cgaps.org) for staff contacts and more information.

***The CGAPS mission is to coordinate and catalyze action among government and non-government partners to prevent and manage invasive species in Hawai'i, as well as communicate key issues to the public.***



## Acknowledgement of CGAPS Support

Mahalo to the CGAPS Steering Committee for working to advance the [HISC & CGAPS 2025 Joint Strategy](#), and especially to Chair Adam Radford for stepping into the Chair role early with the departure of Benton Pang from his position, and Deputy Chair David Smith for your multi-year commitment to CGAPS. Each year the CGAPS Steering Committee selects a Deputy Chair for the calendar year, who then serves as Chair the following year, and Chair Emeritus to support and provide guidance to the Deputy and Chair in year three. The Deputy position rotates from State to Federal, and then non-governmental organizations (such as academia, Bishop Museum, etc.), so that the Chair structure is always comprised of these three perspectives.

Mahalo also to the staff of the Hawai'i Invasive Species Council (HISC), our partners in implementing the 2025 Strategy. We are thrilled that Chelsea Arnott, former CGAPS Planner, has moved into the HISC Coordinator role in 2022.

CGAPS staff and projects are supported solely via grants. Mahalo to Hau'oli Mau Loa Foundation (herein the Foundation), the Hawai'i Resilience Fund, and the Robert Emens Black Fund at the Hawai'i Community Foundation (HCF), HISC, U.S. Department of Agriculture Forest Service (via Department of Land and Natural Resources-Division of Forestry & Wildlife pass-through), National Park Service (via Hawai'i-Pacific Islands Cooperative Ecosystem Studies Unit agreement #P17AC01216 Mod2), and the U.S. Fish and Wildlife Service.

CGAPS core funds were administered by the University of Hawai'i at Mānoa (UH) Office of Research Services and the University of Hawai'i Foundation (UHF) through the Pacific Cooperative Studies Unit (PCSU), through the College of Tropical Agriculture & Human Resources (CTAHR) for the Statewide ROD Outreach Specialist, and through the William S. Richardson School of Law for the Legal Fellows. The Hawai'i Conservation Alliance Foundation also served as fiscal sponsor for some CGAPS projects, and we are grateful for this help.

Thank you to William S. Richardson School of Law Professor Denise Antolini, Environmental Law Program Co-Directors David Forman, and Richard Wallsgrove, and to Drs. Mike Melzer and J.B. Friday of CTAHR for their leadership. We are also honored to work with Emma Anders and the team at the Hawai'i Conservation Alliance and Foundation, and Celeste Connors and the Hawai'i Green Growth team. We are truly grateful for each of these relationships and humbled by the kuleana of our work together.

Mahalo to UHF, RCUH, Dr. David Duffy, Dr. Shaya Honarvar, and the PCSU staff for the behind-the-scenes support for our work. There is so much to be grateful for, and so many people that play a role in advancing the Strategies. Mahalo nui loa to everyone for this support!

### CGAPS Steering Committee

Hawai'i Department of Agriculture  
Hawai'i Department of Land and Natural Resources (Division of Aquatic Resources and Division of Forestry and Wildlife)  
Hawai'i Conservation Alliance Foundation  
Hawai'i Invasive Species Council  
Invasive Species Committees of Hawai'i  
The Nature Conservancy  
U.S. Department of Agriculture (Animal and Plant Health Inspection Service and USDA Forest Service)  
U.S. Department of Defense-Naval Facilities Engineering Command Pacific  
U.S. Department of Homeland Security-Customs and Border Protection  
U.S. Fish and Wildlife Service  
University of Hawai'i-College of Tropical Agriculture and Human Resources  
Valued emerita members

## HISC & CGAPS 2025 Joint Strategy Progress

The CGAPS Steering Committee is comprised of management-level participants from agencies and NGOs, with decades of experience and a deep understanding of the issues and gaps. In 2002, the legislature established the Hawai'i Invasive Species Council which provided the framework for engaging the appointed executives of the state agencies. In 2019, these two networks joined together to assess the greatest needs from the 2017-2027 Hawai'i Interagency Biosecurity Plan to create the five-year HISC & CGAPS 2025 Joint Strategy. In 2022, the working groups continued to make progress on the Strategies. Most Strategies have a Working Group chaired by a lead agency participant and HISC and CGAPS staff provide planning and meeting coordination support, and at times lead work on some Key Actions.

For each Strategy, the Key Actions are listed in the left column, and progress made in 2022 is listed in the right column with the following terms:

**Achieved / Nearly complete:** key action is complete or nearly complete

**Ongoing:** work that was done to support a key action that is perpetual in nature

**In process:** advances that were made and that are progressing towards completing an Action

**No opportunity for progress:** no significant progress was made in 2022

### Strategy 1: Prevention & early detection/rapid response for new terrestrial invasions

Objective: Keep Hawaii's top invasive species threats from arriving and establishing in the state, by identifying and addressing high-risk pathways and major modes of introduction, and by improving early detection/rapid response.

**Lead/Chair:** HDOA & CTAHR. Support by Stephanie Easley, CGAPS & Leyla Kaufman, HISC.

#### Key Actions:

1. HDOA, HISC, and other partners collaborate on generating a non-regulatory Hawai'i Prevention Priority List to guide prevention and rapid response.
2. Assess capacity to detect, mitigate and/or treat each species on the Hawai'i Prevention Priority List, including procedures, training, and technology.
3. Conduct risk analyses and risk assessments along known and high potential pathways for invasive species introductions.

#### Progress:

**Achieved.** Led by HDOA, a preliminary non-regulatory Hawai'i Prevention Priority List was developed in 2020. In 2021, a Pathways task group reviewed, validated, and updated the list to make it more representative of the highest priority species across all taxa.

#### In process

- Most probable pathways added for Prevention species.
- Dr. Michael Melzer continued working with HDOA and other UH researchers to assess diagnostic capabilities for pathogens and other pests species.
- Testing and training on handheld DNA units complete.

#### Ongoing:

- The Hawai'i-Pacific Weed Risk Assessment (HPWRA) was used to screen plants not known to occur in Hawai'i.
- Working Group Chair continued to work with federal partners to access foreign imports interception data and to access and compile interception data from HDOA.

**Key Action:**

4. Address regulatory gaps for terrestrial invasive species in Hawai'i to address high-risk pathways and other modes of introduction.

**Progress:**

**Achieved:** CGAPS staff supported the addition of language to emergency declaration authorities, which was signed into law as [Act 99](#) and added "protection of the environment of the State" as a valid reason for declaration (it previously only listed public health and property as criteria).

**In process:**

- Progress continued on addressing firewood as a pest vector. HDOA held two scoping meetings on the firewood quarantine rule to be added to Chapter 70, HAR
- Prepared draft language for a subsection to chapter 70, HAR to prevent the introduction of citrus diseases into Hawai'i that mirrors federal quarantine requirements
- Prepared a draft of all of Chapter 70 HAR that attempts to update and revise out of date provisions.
- CGAPS contractor Rachel Neville completed all petitions for federal import restriction on a list of plants that are high-risk of being invasive and are not known to be established in Hawai'i.

**No opportunity for progress:**

- The proposed restricted plant language and list did not get scheduled for the BOA Subcommittee on Plants & Animals in 2021 or 2022.
- No progress in 2022 on draft language provided in 2021 for rule making on the Noxious Weed Seed Administrative Rules and Species List (Chapter 4-67 HAR) and the Noxious Weed Administrative Rules and Species List (Chapter 4-68 HAR).

5. Continue to support adoption and implementation of Myrtaceae import restriction (domestic and foreign) and apply this approach for the protection of additional key native and economically important plant species.

**Nearly complete.** The only remaining open pathway is foreign imports of cut flowers and foliage that contains myrtle family plants. USDAAPHIS needs to add this into their manual on cut flowers and there is no established petition process for this.

6. Fund and fill key positions listed in the HIBP to enforce existing and new Administrative Rules and Hawai'i Revised Statutes. [link to Obj 6]

**Ongoing:**

- General funds restored for the HISC Coordinator position and for the Ballast Water & Hullfouling Coordinator, the first permanent civil service position focused on these pathways.
- HISC continued support of the HPWRA Screener position through non-competitive administrative funds.

## Key Actions:

7. Support HDOT to make the Māmalu Poepoe airports pilot project permanent to enhance monitoring and detection of the Federal Aviation Administration approved list of invasive species (disease spreading mosquitoes, fire ants, coconut rhinoceros beetle, and Africanized bees). [link to Obj 2]
8. Identify and provide Best Management Practices (BMPs) for reducing pest risk at critical control points in systems, such as airports, harbors, and procurement contracts.
9. Strengthen early detection and rapid response (EDRR) capacity on each island for regulatory agencies and partnership projects, including mobilizing species-specific teams for high-risk terrestrial incursions.
10. Support HDOA in implementing transitional inspection facilities and opportunities to inspect other high-risk commodities.
11. Support HDOA to promote and achieve clean nursery operations (e.g., treatment requirements, incentives). [link to Obj 2 & 7]

## Progress:

### Ongoing.

- HISC and CGAPS staff submitted requests for Congressionally Directed Spending to support an expanded pilot program in 2021 and the notification of the \$600K award came in 2022. Funding supports ongoing surveys and monitoring at airports, expands monitoring to harbors, and expand targets to include Japanese beetle.
- Two bills were introduced to provide state funding for the program. SB 3379 was passed and was signed into law as Act 138, on 06/27/2022 and provided \$525K to HDOA.

### Ongoing.

- In 2021, PCSU and CGAPS were awarded \$96,155 from USDA to support the ISCs to conduct outreach to nurseries on pest id and prevention BMPs. Project is extended through May, 2023 and work is ongoing.

### Ongoing.

- HISC and CGAPS networks including DLNR, HDOA, and OISC collaborated on the planning and conducting the aerial treatment of a coqui infestation in forest reserve land in the back of Waimānalo. The Incident Command System was used.
- CGAPS and HISC staff filled coordination roles for interagency EDRR work, including new infestations that require working together as described in the multi-agency [Plant Health Emergency Response Plan](#).

**No opportunities for progress.** Key positions in HDOA, including the Plant Quarantine Branch Manager, remain open despite open recruitment in 2022. This position is key to advancing several prevention priorities.

### In process.

- CGAPS and HISC staff assisted HDOA with a \$850k Congressionally Directed Spending request to start a pilot clean nursery program for those exporting products.
- Updated draft statutory amendments and work will continue on nursery regulation in 2023.

### Key Actions:

12. Maintain and strengthen the Pest Risk Committee and other mechanisms for federal and state agencies to share data, effective practices, lessons learned and informal observations.
13. Track and report annually on status of Hawai'i Priority Prevention List species (e.g. not established, prevented at source; detected & intercepted, established).  
[link to Obj 2]

### Progress:

#### Ongoing.

- The Hawai'i Risk Assessment Committee (HI-RAC) continues to meet and be a valuable way to share sensitive information across jurisdictions.
- The Working Group continued to develop protocols for researchers and HDOA to ensure permitting for movement of samples and pest reporting procedures are clear.

**In process.** In 2021, the Working Group Chair initiated part of this action for Strategies 1 and 2. In 2022, HDOA began looking into retrieving domestic interception data from the old database and the new Kupono database. A request to CBP for access to more detailed interception data for foreign imports is needed.

### Strategy 2: Inter/Intra-island movement of terrestrial invasive species

Objective: Keep Hawaii's top invasive species threats from spreading within Hawai'i (inter- and intra-island), by identifying and addressing high-risk pathways and major modes of introduction and spread, and by improving early detection/rapid response for new populations.

Lead/Chair: HDOA & CTAHR. Support by Stephanie Easley, CGAPS & Leyla Kaufman, HISC. The Working Group for Strategies 1 and 2 are combined to maximize HDOA and other partners' participation and develop projects that address both the prevention and intra-state spread of high-risk invasive species.

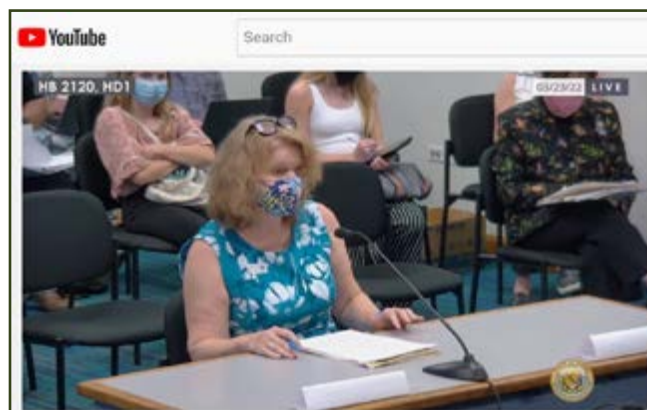
### Key Actions

1. HDOA, HISC and other partners collaborate on generating a Hawai'i Limited Distribution Priority List of high-impact localized invasive species to address inter-island and intra-island movement.

### Progress:

**In process.** In 2020, HDOA prepared a preliminary List, and no progress was made in 2021. In 2022 the Pathways Task Group began to review, validate, and add pathways. HDOA will need to take the lead on assessing internal capacity to prevent, detect, or mitigate inter- and intra-island spread.

*Stephanie Easley testified on bills related to emergency declaration authorities. Act 99 passed, which authorizes emergency declarations to respond to or mitigate imminent threats to "the environment of the State". Prior language narrowly focused on emergency declaration to protect public health, safety, welfare, and property.*





## Key Actions:

2. Include an assessment of the Hawai'i Limited Distribution Priority List to support HDOA in developing and executing a clean nursery program that reduces inter/intra-island movement of invasive species. [link to Obj 1]
3. Conduct risk analyses and assessments to identify and prioritize pest pathways and high-risk gaps for movement of terrestrial invasive species within Hawai'i.
4. Identify and implement cost-effective tools, technologies, and methods that improve management of priority pathways by state agencies and private companies.
5. Clarify HDOA authority and determine capacity needed to assess and inspect high-risk non-agricultural commodities and cargo and develop voluntary initiatives to mitigate risk.
6. Work with ISCs to increase County support for prevention and rapid response of invasive species not known to occur on their island(s). [link to Obj 6]

## Progress:

**In process.** Multiple actions to address nursery-related inter/intra island movement invasive species, including:

- CRB Interim Rule took effect on July 1, 2022.
- CGAPS provided a draft of HISC administrative rules for AG review which provides new mechanisms of control and eradication for all departments of the HISC and the counties of Hawai'i to control and eradicate identified invasive species on public and private land.
- Supported draft revisions of chapter 72 to clarify HDOA's authority to stop movement of any items infested with a pest, not just agricultural commodities.

**Ongoing:** The HPWRA continued to be used to screen plants. To date, 2,281 plants have been screened.

**No opportunity for progress:** No progress was made on a pathway analysis between Australia and Hawai'i due to a lack of time and capacity to secure and supervise the right contractor.

## Ongoing:

- HISC is exploring new detection technology for coqui, mosquitos, and swarm traps.
- The CTAHR Agrosecurity Lab completed testing of hand-held diagnostic tools (see description under Projects).
- HISC and CGAPS continued to support the ISCs and HAL as effective gap-filling capacities for inter- and intra-island response. Funding for HAL at \$500K proposed in SB 2996 was secured through an increase to the HISC budget.

**In process.** See progress note on Key Action 2 regarding work on Chapter 72, HAR.

**Ongoing:** In 2022, CGAPS and HISC staff worked with KISC and OISC on messaging for response work primarily on LFA and coqui. Focused work needs to be done on this Action.



**Key Actions:**

7. Support HDOT implementation and 2022 update of the Statewide Noxious and Invasive Pest Program Strategic Plan in cooperation with public and private stakeholders.
8. Create standardized contract language for BMPs to minimize the spread of invasive species and incorporate into contracts by state agencies and other partners.
9. Promote the use of the State Pest Reporting System. [link to Obj 7]
10. Track and report annually on status of species on the Hawai'i Limited Distribution Priority List (e.g. prevented at source, detected & removed, established, other).

**Progress:**

**No opportunities for progress.** The program is still successfully operating with contractors from SWCA Environmental Consultants. Although HISC and CGAPS tried several times to engage the right DOT personnel and find ways to highlight the success of this program, there appears to be little support or even awareness within the agency.

**No opportunity for progress.** BMPs exist for LFA, coqui, and CRB, and as part of the SNIPP program which DOT Highways contractors are bound by. However, new BMPs for new pests have not yet been developed.

**Ongoing.** Continued use of 643-PEST and 643PEST.org as a call to action for campaigns and pest alerts. In 2022, there were 851 online reports submitted, a substantial increase from 642 reports in 2021 and 551 reports in 2020

**In process.** In 2021, the Working Group Chair initiated part of this action for Strategies 1 and 2. In 2022, HDOA looked into retrieving domestic interception data from new Kupono database and the old database, which had more data but is difficult to access.

**Strategy 3: Aquatic biosecurity**

Objective: Prevent the introduction and spread of aquatic non-native species (ANS) into, between, and around the Hawaiian islands, by reducing species movement through ballast water, biofouling, intentional import and release, and unintentional modes of introduction.

Lead/Chair: DLNR DAR. Support: Andrew Porter, CGAPS, Chelsea Arnott, HISC.

**Key Actions:**

1. Conduct risk assessments to identify and prioritize aquatic pest pathways and risks into and within Hawai'i.

**Progress:**

**Ongoing.** DAR continued aquatic species risk assessments.

**In process.** CGAPS participated in national SCTLTD transmission team meetings to support prevention actions and track progress on research being conducted on vessels as a pathway.

## Key Actions:

2. Develop aquatic rapid response plans to address high-risk vessels.
3. Establish a vessel inspection program in Hawai'i harbors with the maritime industry and government partners, including a framework to co-regulate commercial vessels related to ANS as incidental discharges regulated under VIDA.
4. Develop framework and associated rules to manage ANS risks from non-commercial vessels (those not exempted and not covered under VIDA).
5. Fund and establish an aquatic biosecurity team to perform vessel ballast water and biofouling risk assessments within Hawai'i. [link to Obj 6]
6. Identify and implement tools, technologies, and methods that improve detection and/or management of priority species and pathways. [link to Obj 1 & 2]
7. Increase awareness of key private stakeholders of their role and opportunities to help address aquatic invasive species introduction and spread. [link to Obj 7]

## Progress:

### In progress.

- CGAPS and DAR drafted proposed emergency rules to require additional actions by vessels from SCTLD-affected areas. The draft was reviewed by the AG and is being revised for submittal and board hearing in 2023.
- Initiated coordination of a multi-agency response to new octocoral (possible ID is *Unomia* spp.) reported from Pearl Harbor

**In progress.** CGAPS drafted bill language for 2023 that would give DAR additional authorities to regulate all incidental discharges, a necessary step to allow DAR to regulate or co-regulate when VIDA is enacted. These additional authorities are also necessary for regulating all the vessel-related ways that SCTLD may be transported to Hawai'i.

**In process.** The SCTLD emergency rule would apply to non-commercial vessels and the previously mentioned bill will also add authorities that can be applied to all vessels.

**In process.** This is at the very early stage of development with one civil service position established in 2021, one grant-funded position, and one intern. A team of at least ten will be needed to achieve this Action.

### Ongoing.

- CGAPS, DAR, and UH met with a potential post-doc interested in an E-DNA project on marine invasives
- DAR began work on a Rapid Response decision tree to aid in reporting and rapid response.
- HISC again provided partial support for *Avrainvillea* spp. control projects with UH.

**Ongoing:** CGAPS and DAR held an Alien Aquatic Organism Task Force (AAOTF) meeting to discuss SCTLD and the proposed draft emergency rules to get feedback from participants including vessel operators, U.S. Coast Guard, and others. The meeting was recorded and shared with AAOTF participants that were not present.

**Key Actions:**

8. Research and develop a list of high-risk aquatic animals and prohibit their introduction to Hawai'i.
9. Establish a baseline for aquatic biosecurity and initial measures for tracking effectiveness at preventing introduction and spread of ANS.

**Progress:**

**In process:** A short list was formulated and a graduate student continued conducting risk assessments for each. With the likelihood of a lengthy rule making process, DAR will be seeking the best strategy to efficiently protect Hawai'i from these proven high-risk species.

**Ongoing.** In 2021, the Working Group made good progress on databases to document the variety of marine and estuarine taxa and species present in Hawai'i. Although work continued, most of 2022 was spent discussing SCTLD response capacities.

**Strategy 4: Large-scale control of high-impact invasive species**

Objective: Implement at least one new large-scale control or eradication project for an invasive species population with highly significant ecological, economic, and/or health impacts in Hawai'i, and build momentum for action on other widespread high-impact species (e.g. mosquitoes, rats, marine algae).

Lead/Chair: DLNR. This Strategy does not have a working group. Instead, HISC and CGAPS staff and networks are participating in new (novel) large-scale control projects that meet the intent of this strategy and that have already been prioritized for action by agencies.

**Key Actions:**

1. Identify and prioritize at least five established invasive species (aquatic or terrestrial vertebrates, invertebrates or plants) with populations that have highly significant ecological, economic and/or health impacts and where large-scale projects could be implemented in the next 10 years (e.g. mosquitoes, rodents, marine algae).
2. Research and identify tools, technologies, and methods that are proven effective (or have high potential) for large-scale control or eradication of at least three priority invasive species by 2021.

**Progress:**

**Achieved.** In 2020, HISC and CGAPS staff identified rodents, mosquitoes and the diseases they carry, little fire ants (LFA), and coqui frogs are top invasive pests that have critical momentum and they require novel control technologies. A subset of these could benefit from the help of the HISC & CGAPS networks. While there are other highly significant invasive species, viable options for novel technologies for large-scale control are either not known or are beyond a ten-year horizon.

**Ongoing.**

- CGAPS and HISC staff continued to participate in the Steering Committee and Public Engagement subcommittee for the "Birds, Not Mosquitoes" project.
- CGAPS and HISC re-initiated work on detector dog pilot projects.
- MISC and HAL continued aerial control of LFA in Nāhiku.
- HISC, DLNR, HDOA, OISC, and CGAPS conducted an aerial treatment of coqui infestation in forested area.



### Key Actions:

3. Select first pilot/ demonstration large-scale eradication project and identify political, regulatory, funding, social, cultural, and other barriers/opportunities to implementation with possible ways to reduce barriers and leverage opportunities.
4. Develop and implement a model community engagement plan (BMP) for the first large scale control or eradication project(s) and make it available for future large-scale projects. [link to Obj 7]
5. Work with partners to implement at least one large-scale project and initiate planning for at least one more.
6. Ensure the large-scale impact is sustained, including regular monitoring and follow-up. [link to Obj 6]
7. Assist lead agencies to evaluate the large-scale project(s), including model community engagement, evaluation and follow-through.

### Progress:

#### 3 & 4 In process.

- The Birds, Not Mosquitoes (BNM) Steering Committee, Subcommittees, strategic plan, and monthly meetings, and permitting continues to be on track for BNM.
- Additional participants to the engagement subcommittee include TNC which is helping to relieve some of the growing workload as this project advances.
- Executive briefings apprised agency leaders of progress and needs.
- BNM partners at Haleakala National Park initiated public scoping in December, to close in January, 2023.
- Federal State of the Birds Research received \$3.8 million (\$250,000 increase from 2021). Infrastructure Investment and Jobs Act funds secured over \$14 million for this project: \$6.5 million to implement mosquito control strategies and support captive care capacity for wild birds; \$6 million to support mosquito eradication at Haleakalā National Park; \$1 million to help develop new technology to stop the spread of avian malaria; and \$592,000 for mosquito management practices.

**Ongoing.** BNM and previously mentioned projects are advancing.

**No opportunity for progress.** Monitoring and other work continued in 2022 to maintain a rodent-free Lehua achieved in 2021.

**In process.** Lessons learned from the Lehua rodent eradication are informing current projects, including BNM.

### Strategy 5: Pacific regional biocontrol center

Objective: Increase the capacity and scope of biocontrol work in Hawai'i by creating a Pacific regional biocontrol center with planning for new facilities, base funding, and core staff in place. With existing capacity, release biocontrol agents for at least three top priority established invasive species and annually assess, prioritize, and advance critical biocontrol projects.

Support: Christy Martin for CGAPS, Chelsea Arnott for HISC. Monthly partners teleconference meetings have been held since February 2020.

## Key Actions

1. Build a broad coalition to support the building and long-term maintenance of Pacific regional biocontrol facilities that can test potential classic biocontrol organisms across different taxonomic groups.
2. Develop a feasibility assessment for raising capacity of new Pacific regional biocontrol facilities for Congressional delegates and agency use.
3. Identify and secure lines of potential funding, site(s) and designs for climate-resilient containment facilities, including options for natural hazard mitigation. [link to Obj 6]
4. Maintain and develop new regional and international partnerships to strengthen regional biocontrol capacity and success of exploration missions.
5. Secure funding and increase biocontrol staff for both state and federal biocontrol projects. [link to Obj 6]
6. Test at least eight biocontrol agents, and release five by 2025.
7. Evaluate and harmonize the biocontrol regulatory process for greater efficiency.

## Progress:

### In process.

- A third annual all-partners meeting was held in February via videoconference. Key agencies and partners remain engaged and meet monthly, coordinated by HISC staff.
- Held an Executive Briefing via videoconference to share progress and discuss next steps, opened by Gov. Ige and Chairs Case and Shimabukuro-Geyser.
- Fifteen local and national organizations provided letters of support for appropriations submittals.

**No opportunity for progress.** Appropriations requests included request for funds to complete a feasibility assessment. Also, CGAPS took advantage of the NAISMA conference location and toured the USDA ARS biocontrol facility in Florida to understand facility needs.

### In process.

- Drafted and submitted appropriations requests.
- Worked with UH Vice President for research, CTAHR, DLNR, and HDOA to apply for America the Beautiful Challenge grant, but the proposal was not selected for funding.

### In process.

- Through presentations and participation in the Pacific Ecological Security Conference (PESC), secured regional partners
- Developed new national and international partners through presentations and participation in the Biocontrol sessions at the North American Invasive Species Management Association (NAISMA) annual conference and through HDOA and USDA FS webinars for NAISMA.

**In process.** This challenge was selected as the top issue in need for professional strategic communications assistance. See details in the Foundation projects section.

**In process.** Three agents continued to move through the regulatory process (miconia caterpillar, tibouchina beetle, and *Aprostocetus nitens*, a second biocontrol for the gall wasp) and in 2022 a fourth (an agent for coffee berry borer) completed testing and entered the regulatory process.

**No opportunity for progress.** Work on revising previously mentioned prevention rules have been the priority in 2022.

**Key Action:**

8. Build and maintain public support for 21st century biocontrol practices. [link to Obj 7]
9. Measure effectiveness of released biocontrol agents over time (>5 years) and track the number of biocontrol agents in pipeline and released annually.

**Progress:****Ongoing.**

- CGAPS and DOFAW worked with a contractor to produce a second [biocontrol explainer video](#), posted to the DLNR biocontrol website.
- In 2022, CGAPS engaged a professional communications contractor to implement portions of the Biocontrol Strategic Communications Strategy.

**Ongoing.**

- On track to meet release target.
- The 2022 survey results showed that 3 in 4 residents support the use of biocontrol (74%) and an increase in funding for new facilities and work in Hawai'i (77%).

**Strategy 6: Increased and diversified funding for invasive species priorities**

Objective: Increase & diversify funding for invasive species priorities to secure at least \$100M annually through county, state, federal, regional, and private sources, including \$90M for operational and personnel requirements and \$10M for essential facilities (in support of other Strategies).

This Strategy does not have a Chair or Working Group. HISC and CGAPS staff continued to pursue new funding opportunities, and partners in the Working Groups continued to focus on opportunities that align with each Strategy.

**Key Actions:**

1. Work with a diverse group of advocates to increase State general funds to DLNR, HDOA, UH, HDOH and HDOT for implementing HIBP actions (e.g. staff, electronic databases, adopting new technologies).
2. Secure additional HISC project funding to support specific critical new initiatives in the HIBP and 2025 Strategy, including risk assessments.

**Progress:**

**Ongoing.** CGAPS and HISC participate in Hawai'i Green Growth (HGG) meetings and work with HGG staff on messaging and strategies.

**Ongoing.** HISC received \$5,750,000 in recurring general funds and an additional \$1,500,000 non-recurring funds, \$500K of which was a "plus-up" to the HISC budget for HAL (not a new initiative, but one that had lost a core funding source).



## Key Actions:

3. Secure a funding mechanism (public and/or private) to provide at least \$1 million annually for emergency response to new terrestrial or aquatic incursions.
4. Increase annual support from all four counties to ensure stable and effective Invasive Species Committees (ISCs), ROD response and other priority invasive projects.
5. Double private discretionary funding to support CGAPS' ongoing and new invasive species initiatives (estimated at \$700K per year). [link to Obj 10]
6. Build a relationship with visitor industry decision-makers and develop mutually beneficial projects.
7. Investigate existing and new lines of federal funding for invasive species work.
8. Identify invasive species management as a priority use for DLNR's forest carbon offset program and secure annual commitment in addition to annual appropriations to HISC funds and Watershed Partnership Program Grants.

## Progress:

**Ongoing.** HISC and DLNR staff coordinated a request for several million for agency and partnership work on invasive species from the Department of Defense REPI funds, some of which will be used for emergency response projects.

**Ongoing.** Communications with each county is primarily through the island ISC. In 2023, CGAPS will put more effort into building this relationship on O'ahu for OISC.

### In process.

- In 2021, CGAPS was awarded \$40K from the CHANGE grant of HCF. An additional \$20K was awarded in 2022.
- Although not an increase, CGAPS secured a commitment from Hau'oli Mau Loa Foundation to continue funding projects.

**No opportunity for progress.** Although the new destination management plans for each island lay a stronger foundation for working together, no projects or funding opportunities were identified in 2022.

### Ongoing.

- CGAPS applied for but was not awarded DOD funds to support HAL, with a small amount of funds for MISC.
- In 2021, HISC and CGAPS advocated for \$600K in "Congressionally-Directed Spending" to expand the Māmalu Poepoe Airport monitoring project. In 2022, those funds were awarded to DLNR.

**No opportunity for progress.**

**Key Action:**

9. Secure capital funding for essential facilities. [link to Obj 5]
10. Repeat funding analysis conducted by LRB in 2015 to assess progress.

**Progress:**

**In process.** Annual appropriations requests submitted but yet to receive funds for biocontrol facilities.

**No opportunity for progress.** This analysis should occur once state agency funding normalizes a bit more.

**Strategy 7: Engaged and supportive community**

Objective: Raise or maintain strong awareness and support (70% in polls) for key invasive species issues and expand, diversify, and mobilize a network of allies to achieve 2025 Strategies.

Lead/Chair: CGAPS. Support: Ambyr Miyake, CGAPS, Elizabeth Speith, HISC.

**Key Actions**

1. Provide quality, timely, accessible information to community, decision-makers and allies.
2. Develop resonant/targeted messages (related to the core values of the audiences) and use effective methods/channels.
3. Increase adoption of specific biosecurity behaviors at ports of entry, especially airports. [link to Obj 1 & 2]
4. Identify and engage influencers in different sectors, industries, and groups who can champion invasive species priorities.

**Progress:**

**Ongoing.** HISC, CGAPS, and partners provided current, timely, accurate, and accessible information.

**Ongoing.** CGAPS staff continued to chair the Public Outreach Working Group and the LFA Outreach Working Group, and coordinate the ROD Outreach Working Group, all with outreach specialists from each county. Social marketing concepts and practices are used to plan messages, delivery methods, and in assessments.

**In process.**

- In 2021, completed the airport biosecurity display site selection. In 2022, CGAPS, HISC, DOFAW and partners worked together on content, and Bishop Museum was contracted to coordinate work and design the display. Installation is on track for January, 2023.
- HISC Māmalu Poepoe continued work with port managers on monitoring.
- ROD messaging at the airport continued to focus on reducing spread.

**Ongoing.**

- In 2021, CGAPS' 'ōhi'a advocacy project worked with schools to teach civic engagement, the importance of 'ōhi'a, and threat of ROD. In 2022, students and CGAPS successfully advocated for a law to name 'ōhi'a the State Endemic Tree.
- In 2022, the 'Ōhi'a Love Fest featured popular local retailers and artists, along with cultural influencers.
- CGAPS worked with Mālama Learning Center to produce and air a program on biocontrol featuring a variety of voices.

**Key Action:**

5. Increase CGAPS & partner understanding and use of social science and raise capacity for the effective use of social science concepts and social marketing for invasive species messages.
6. Increase political will to support policy and funding needs.
7. Coordinate statewide or regional strategies and messages across lead agencies and partners; provide communications/coordination support for agencies and partners for key issues.
8. Evaluate effectiveness of communications periodically and use these lessons to improve future initiatives.

**Progress:**

**Ongoing.** Public Outreach Working Group meetings and annual outreach campaigns such as Stop the Ant Month allow the Working Group to assess messages, audience groups, delivery methods, and ways to reduce barriers to desired behavior adoption.

**6 & 7 Ongoing.**

- HISC and CGAPS staff continued to meet with local, regional, and national decision makers and agency leadership related to the 2025 Strategy.
- CGAPS staff continued to provide support to DAR related to policy and capacity needs for VIDA and SCTLD.
- HISC and CGAPS staff continued as part of the core team of the Pacific Regional Invasive Species and Climate Change (Pacific RISCC) management network, and in 2022 hired a coordinator.
- CGAPS co-led the development and drafting of a Biocontrol Strategic Action Plan for the Pacific Islands and worked with local, national, and international partners to vet and adopt the strategy at the PESC.
- CGAPS coordinated a media and presentation training for staff and key partners by professional contractors.

**Achieved.** Planned and conducted a statewide awareness and opinion survey that found that 93% of respondents said that invasive species were a serious problem. More results in the Foundation Projects section.

**Strategy 8: HISC engagement across sectors**

Objective: Improve HISC's engagement and support across key sectors (agriculture, conservation, economy, health, tourism, transportation, and culture/way of life), and systems (terrestrial and aquatic), as measured by engagement in HISC activities and effective use of HISC tools (e.g. funding, policy resolutions, testimony).

Lead: HISC staff, Council members or designees, and working group chairs.

As Strategy 8 is an internal HISC Strategy, progress on key actions are not included in this report.



## Strategy 9: Strong CGAPS network

Objective: Include representatives across the diverse invasive species community of practice in the CGAPS Network and actively engage all partners needed to implement this 2025 Strategy.

Lead: CGAPS staff and Steering Committee members.

### Key Actions:

1. Continue to engage and support CGAPS partners by assessing and improving current network communications, including general meetings, list-serve, website, information sharing and other network activities.
2. Provide and socialize a simple description of what CGAPS does and how it relates to HISC with all CGAPS participants, especially Steering Committee members.
3. Challenge the CGAPS Steering Committee to actively lead, implement and/or support elements of the 2025 Joint Strategies (Objectives and/or Key Actions) most relevant to their positions and agencies.
4. Identify and recruit additional public and private sector partners needed to implement the 2025 Joint Strategies, using various meeting formats, venues and other engagement mechanisms.

### Progress:

#### Ongoing.

- Four quarterly general meetings were held, all via video conference. All were well-attended, averaging fifty participants from across Hawai'i and occasionally Guam and California.
- Meetings were scheduled at the start of the year, a practice that started at the beginning of 2021.
- Listserve participation was steady, as was website usage. Top website pages viewed include "What are invasive species" and "Contact us".

**In process.** The simple "identify and fill the gaps" description works well, but the HISC and CGAPS distinction seems clearer to those that do not participate in the 2025 Strategy Working Groups where HISC and CGAPS work closely together.

**Achieved.** Four Steering Committee members or their Alternates are leading Working Groups for Strategies, while others are leading or supporting Key Actions or elements of the plan.

#### Ongoing.

- Continued to expand CGAPS and HISC networks and increase focus on the HIBP through Hawai'i Green Growth and projects.
- Using a variety of engagement mechanisms and formats remained challenging with Covid. The CGAPS Steering Committee voted to have two hybrid and two videoconference general meetings in 2023.
- After several years, CGAPS and HISC staff began participating and networking at in-person conferences and meetings to expand networks, including the PESCC, NAISMA, U.S. Coral Reef Task Force, and others.

**Key Action:**

5. Track member participation and periodically gather input on their satisfaction with the CGAPS network and opportunities for adaptive management.

**Progress:****Ongoing.**

- There is steady participation by all key partners. A partners survey will be conducted again in 2023.
- A high-level review of CGAPS conveyed satisfaction of the network.

**Strategy 10: Stable CGAPS funding and staffing**

Objective: Secure committed, consistent annual contributions from CGAPS partners to provide core support for two staff and core operations (est. \$250K per year, not including project funds).

Lead: CGAPS staff, Steering Committee members.

**Key Actions**

1. Review CGAPS funding needs with the Steering Committee and request/secure annual contribution commitments from all members.
2. Work with the CGAPS Steering Committee to assess the potential core funding mechanisms, contributors, and amounts to ensure CGAPS financial security and continuity after 2022 (when HMLF 11-year commitment ends).
3. Secure additional annual commitments from active CGAPS partners outside the Steering Committee.
4. Complete the first eleven years of partnership with HMLF and agree on future partnership priorities by 2022.
5. Present CGAPS “value proposition” and funding needs to the Environmental Funders Group (EFG) to seek core funding and/or project support.

**Progress:**

**Achieved.** The annual funding spreadsheet was shared at the second and fourth quarter Steering Committee meetings with the request for support. As noted previously, some agencies are not able to contribute funding for a variety of reasons, making the other Actions an even higher priority.

**Ongoing.** The mechanisms were evaluated and the most feasible course of action is a faculty specialist position funded through UH or other mechanism.

**Ongoing.** HCF extended the 2022 grant to CGAPS and added a new award.

**In progress.** In 2022, the Foundation committed to entering into a new agreement with CGAPS. CGAPS and Foundation staff will meet in 2023 to agree on a time frame, partnership priorities, and other parameters for the new agreement

**Achieved.** This presentation was made in 2021, and no additional opportunities have been available since. Specialized work in this area will prioritized for the new funding agreement with the Foundation.

### Key Actions:

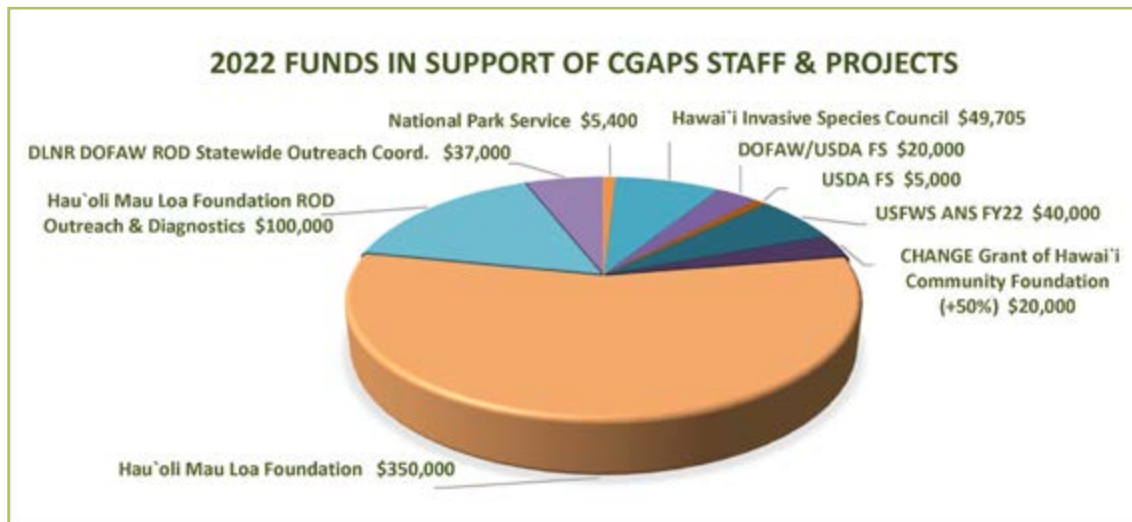
6. Explore feasibility of permanent funding for one CGAPS position in a partner institution's budget (e.g. faculty specialist at UH).
7. Provide annual CGAPS budget and financial report to the Steering Committee, especially tracking core support from partners.

### Progress:

**In process.** PCSU Director is exploring the feasibility of UH-budget funded faculty specialist positions for several key positions in its projects.

**Achieved.** CGAPS support remained steady in 2022 compared to 2021.

*Photo: HISC Coordinator Chelsea Arnott organized a field trip for the HISC and CGAPS staff in December. In addition to a hike, Josh Atwood, DLNR DOFAW's Outreach Coordinator, filmed the group in a holiday 'ōhi'a-free wreath demonstration video. L-R: Elizabeth Speith, Ambyr Miyake, Kailee Lefebvre, Josh Atwood, Christy Martin, Chuck Chimera, and Chelsea Arnott.*



*Fig. 1 Total funding committed for core support in 2022 was \$627,105, a decrease from \$725,605 in 2021 which included a USDA PPA 7721 grant for \$96,155 to support the ISCs to help with a collaborative outreach project. Removing this, CGAPS core support held steady, just \$2K less than in 2021. Note that grants are awarded and become available at different times of the year. Therefore, funds are counted in the calendar year when the majority of funds will be expended.*



## HISC Project: Stop The Ant Month

Funded through a grant from HISC, the annual Stop The Ant Month campaign was held again in October with each of the ISC outreach staff as the lead for communications in each county, and statewide message planning and other logistics facilitated by Christy. As in past years, planning for the campaign began with assessing the previous year's messages. The calls-to-action were to request a free ant collection kit and collect and submit ants for ID to help find LFA or other new and harmful ant species before they become established.

Planning for the campaign was conducted by weekly team meetings that started in September. Preparations included updating information on the Stop The Ant website, ordering supplies for the ant collection kits, designing and contracting print ads for the Honolulu Star Advertiser and radio ads in some counties, designing and scheduling social media posts, and contracting KHON for additional social media posts which included pre-roll ads that ran before on-demand news stories, and an interview with Erin Bishop of OISC and Heather Forrester of HAL. Additional news media stories were solicited, and as with the 2021 campaign, there was a significant uptick in LFA detections in October and the subsequent months.

The estimated reach for all outreach, print, news, and social media was more than 1 million statewide. This does not mean that the campaign "reached" every single adult in the state. Instead, it reflects the estimated total number of people that likely encountered campaign messages because the messages appeared multiple times in places where the particular audience segment receives information. Direct outreach numbers such as number of people that attended a training class, and number of people that are reached with social media ads are also counted. A second caveat is that there is no way to determine if some people are double counted because they saw an ad in the paper, heard it on the radio, and see it in their social media feed. However, a conservative estimate of reach for 1 million people is significant. Other metrics include:

- In October through the end of November, there were 4,471 Stop the Ant website users, a slight increase from 2021 (4,433 users).
- 684 ant collection kits were requested and sent (and hundreds more were made available at garden shops, outreach events, and other locations), a 51% increase over the 333 kits mailed in 2021, and 290 ant samples were submitted in October 2022 alone.
- At least 3 infestations on O'ahu and 1 on Kaua'i during the month of October were the direct results of Stop The Ant Month efforts, and several additional sites that were detected in November and December may also be attributable.
- MISC's analysis of the value of public participation showed that 13 of the 19 known infestations on Maui were public reporting.

County	Year 2021	Year 2022	Kits Requested STA Month 2021	Kits Requested STA Month 2022	% increase in Kit Requests STA Month from 2021	Samples Submitted STA Month 2022*
Hawaii Is	92	185	68	126	46%	64
Maui	45	174	23	135	83%	41
Oahu	270	430	224	340	34%	77
Kauai	25	111	18	98	82%	108
<b>TOTALS</b>	<b>432</b>	<b>900</b>	<b>333</b>	<b>684</b>	<b>51%</b>	<b>290</b>

Table 1. In each county there were significant increases in the number of kits requested and ant samples turned in by residents in 2022 compared to 2021.

## Hau'oli Mau Loa Foundation Projects

In 2011, Hau'oli Mau Loa Foundation selected CGAPS as their partner to help achieve their mission to protect Hawaii's natural environment by preventing the arrival and establishment of new invasive species. Each year, the CGAPS Steering Committee prioritizes and submits a short list of projects for funding consideration, and 2021 was the tenth year of the Foundation's ten-year funding commitment which was graciously extended through 2022 due to the ongoing pandemic. Summaries are provided as progress reports for some multi-year projects, and as final reports for others. In addition, project and salary funds for the CGAPS Program Manager and Statewide ROD Outreach Coordinator are provided by a combination of sources, including the Foundation.

### **Invasive Plant Prevention/NAPPRA (2020-2021, extension to 9/30/22)**

This project (#19-1211-12-337) is complete. In 2020, CGAPS contracted Rachel Neville, the former OISC Program Manager, to research and draft petitions to place 35 plants that are high risk for being invasive if imported into Hawai'i on the USDA "Not Approved Pending Pest Risk Analysis" (NAPPRA) list which would restrict their importation from foreign sources. This same list, developed through an initial Foundation project that contracted Shahin Ansari to establish a process that identified a list of high-risk plants that were likely to arrive in Hawai'i and were not restricted for importation, was also part of a Petition for Restricted Plant Rule and List heard by the Board of Agriculture in February 2019 and approved to be sent to the Subcommittee on Plants and Animals (no movement to date). Rachel submitted most of the petitions, but found that some of plants were in cultivation for forestry in the U.S. Instead of proceeding with those plants, six of the Invasive Species Committees' eradication target weeds were proposed for the NAPPRA list because they are under a control program. In addition, Rachel drafted and submitted petitions for five high-risk species recommended by HISC staff Chuck Chimera (Hawai'i Pacific Weed Risk Assessment Screener) and four species from the Centre for Agriculture and Biosciences International's (CABI) list of medicinal plants in long distance trade. The entire list is awaiting the start of the federal rule making process. This involves the listing of all proposed species in the Federal Register for public comment, prior to the agency's decisions on each species.

### **Support for Hawai'i Green Growth (annual)**

Funding provided by the Foundation through CGAPS (Grant #21-1208-20-380) supports the general operating cost of the Hawai'i Local 2030 Hub, a UN-designated sustainability hub, which includes facilitation of the [Hawai'i Green Growth](#) (HGG) local network and processes. These funds support HGG staff and network projects that drive progress on the [Aloha+ Challenge](#) Goals, which includes progress towards implementing the Hawai'i Interagency Biosecurity Plan (HIBP) as one of the Natural Resource Management goals,

In addition to organizing and hosting HGG Network meetings and working group meetings on policy and other topics, HGG staff focused work on updating the Aloha+ Challenge Natural Resource Management and



*The Hawai'i Green Growth annual meeting provided an opportunity to work in person on shared goals.*

Invasive Species Target Dashboard metrics. Updates included providing more granular detail on the status of each of the HIBP actions through interactive tracking graphs and exploring new methods of communicating Hawaii's efforts on addressing invasive species. As a major election year, HGG also played a vital role in engaging and securing commitments from county and state leaders to ensure that the elements of the Aloha+ Challenge are carried forward as priorities by incoming elected officials. This future-proofing strategy has been a missing element in enacting so many multi-year plans and priorities.

### **Preventing New Invasives (2021, extended through 2022)**

Dr. Melzer and the UH Agrosecurity Lab completed this project (#20-1209-14-354). This project succeeded in purchasing and testing hand-held DNA diagnostic units and worked with inspectors at HDOA Plant Quarantine to assess the unit's utility in quickly identifying plant pathogens at ports of entry. Initially, the project aimed to test the units for monitoring for key plant diseases, but the testing was expanded to include some insects that have egg or larval stages that make them difficult to identify. Ultimately, the units proved to be fairly accurate and useful in identifying the pathogens and insects tested. However, it was determined that it would be best if the units were used by those that have some background in conducting DNA work. Although HDOA hired a pathologist at the end of 2022, discussions are ongoing about how best use this new tool to fill the rapid-diagnostic gap. In the interim, the UH Agrosecurity Lab will continue to work in partnership with HDOA in this role.

### **Strategic Communications (2020, extended through 2022)**

This project (#19-1211-11-336) was completed in 2022. As part of the Strategic Planning process in 2019, two top two issues were identified as fundamentally important to advance, yet they would require additional external strategic communications help. The first issue was to address the pest pathway related to the live plant trade, yet the political timing was not right. The second was to raise capacity to address populations of particularly harmful widespread pests and weeds through the construction and operation of new biological control facilities. This issue was selected for strategic communications because of the dire need for biocontrol to protect the forest's ability to attract, hold, and convey moisture into the soil, to protect the carbon sequestration that slow-growing native trees provide, along with many other services. In California, biological control is also being used as part of their rapid response program as a tool to help prevent the establishment of pests.

In projects completed with prior Foundation and HISC funding, a Biocontrol Strategic Communications Plan to implement Strategy 5 was drafted by Sheila Sarhangi. Funding from this Strategic Communications grant was used to contract Communications Pacific to accomplish portions of that plan, including developing key messages and outreach materials. Because of there are many misconceptions about modern biocontrol practices and multiple outreach staff across the state that can help carry and convey messages, we



*Biological control is the viable only way to reduce the harm caused by some widespread pests and plants, ecological balance and ecosystem functions. However, public knowledge about modern biocontrol techniques is minimal. The Strategic Communications contract with ComPac included workshops to help CGAPS and partners to hone communications skills and messages.*

decided to use a portion of the contract funds to provide media and presentation training on the new key messages for outreach specialists with DLNR and the Invasive Species Committees, the DOFAW Biocontrol Planner Andy Cullison, Christy, and Kailee.

### **Little Fire Ant Detector Dog (2015-2016, extended through June 2021)**

Foundation funding for this pilot project (#14-1210-31-210, returned to the Foundation in 2020, re-awarded with HCAF as administrator in 2020) would secure the services of a Western Australia company that selects, trains, and provides detector dogs for the Australian Government, to select and train a detector dog for Little Fire Ant (LFA) detection, and send one or two handler staff from Hawai'i to Western Australia to train with the dog. The new timeline was derailed due to the closure of Australia's borders due to Covid-19 and the timing of border opening meant that the selected dog had already lost more than two years of its working life and was put to work locally. In 2022, a new dog was trained and is nearly ready for Hawai'i staff to travel to train as handlers with the dogs. The Maui Invasive Species Committee (MISC) is still eager to add this capacity to their program and in 2023, CGAPS will provide the Foundation with a plan and timeline, and we anticipate requesting approval for the use of the funds.

### **Testing In-Water Cleaning Technologies (2018 – 2019, extend through 2023)**

This project (#17-1213-12-294), administered by HCAF, was initially delayed due to the passage of the Vessel Incidental Discharge Act in December, 2018, which made it unclear how in-water cleaning may or may not be regulated, and if so, what sort of data was needed to support the goals of clean hulls and clean water. In October 2020, the EPA proposed their draft discharge standards, which made it clear that VIDA intended to preempt state regulations related to cleaning vessels while in-water, at least for vessels with biofilm (the "slime layer" that allows larger organisms to attach to the hull and niche areas), but they did not include numerical discharge standards for in-water cleaning technologies or water quality. In the summer of 2021, EPA re-engaged states (including Hawai'i) in scoping and additional comments were submitted at the end of January, 2022, after which the EPA was supposed to publish their final rule. In October, 2022, the EPA announced that it would be finalizing their rules likely in November of 2023.

During this year, it has also been shown that ballast water and biofilms are capable of carrying and spreading SCTLD, which is likely one reason why the EPA has delayed rule making. The extension of this grant is appreciated and CGAPS will continue to work with national, regional, and local partners to identify the best use of these funds related to testing in-water cleaning technologies, which may also involve answering questions related to reducing SCTLD risk.



*Participants in the SCTLD Pacific Preparedness workshop at the U.S. Coral Reef Task Force meeting in Kona learned about the risk posed by SCTLD from coral scientists, EPA, and U.S. Coast Guard.*

### **Preventing New Invasives—Pathway Risk Analysis (2022, extended through 2023)**

This project (#20-1209-14-354) would contract a specialist to conduct a pathway risk analysis between Hawai'i and Western Australia due to the unusual number of pests, including the Queensland longhorn beetle, that have arrived and established in Hawai'i in recent years, yet with no clear pathway or connectivity between the two areas. Limited staff availability to



organize, contract, and oversee the project have resulted in the delay in 2022. HDOA will need to provide much of the guidance and oversight due to the regulatory nature of the data.

### **CGAPS Legal Fellows (annual)**

The CGAPS Legal Fellows (#20-1209-12-352 and #21-1208-18-378) is a collaborative project between the UH William S. Richardson School of Law and CGAPS. The work of the Legal Fellows is crucial in helping HISC, CGAPS, and partners with legal research and potential policy changes to support better invasive species prevention and response programs. The Legal Fellows also assist the Environmental Law Program through occasional talks, working with Legal Interns and Externs, and other special projects. Educating this community of next-generation leaders in invasive species issues helps us meet longer-term goals of CGAPS.

**Andrew Porter** kept his focus on ballast water and vessel biofouling issues in 2002 as the CGAPS Aquatic Legal Fellow. Andrew worked closely with the DAR Ballast Water and Biofouling Coordinator, Elizabeth Monaghan, on a slate of issues related to ballast water and biofouling including the EPA's protracted roll out of its regulations under the Vessel Incidental Discharge Act of 2018 (VIDA) and a variety of issues related to continued spread of Stoney Coral Tissue Loss Disease (SCTLD). Andrew also assisted DAR in coordinating the Aquatic Biosecurity (Strategy 3) working group.

Progress on the EPA's roll out of its incidental discharge regulations under VIDA was relatively quiet this year. In September 2022 Andrew attended the US Coral Reef Task Force annual meeting where the EPA expressed its intention to delay finalizing their regulations until November 2023, meaning that all regulations under VIDA will not be finalized, come into force, and preempt state regulations until late 2025 at the earliest. This clarity has given Andrew the opportunity to work with DAR to develop interim and/or emergency rules to respond to the looming threat of SCTLD as discussed further below.

SCTLD prevention and response related to ballast water and vessel hull biofouling was Andrew's main focus in 2022. SCTLD is now considered to be the most severe stoney coral disease outbreak in history. This disease results in rapid large-scale die-offs of entire stoney coral colonies with little hope of regrowth or regeneration. The current SCTLD outbreak is still confined to countries and territories within the Greater Caribbean Basin; however, there is growing concern that ballast water and vessel hull biofouling could be a vector that introduces SCTLD to the Pacific via the Panama Canal. The causative agent of SCTLD is still unknown, but research has been identifying potential vectors and confirming their ability to transmit SCTLD. Through this research, ballast water and vessel hull biofouling have been identified as the most probable and capable transmission vectors.

This past year Andrew participated in a number of working groups on both the state and federal levels to help better understand the transmission of SCTLD and develop a plan to prevent its introduction into Hawai'i state waters. Andrew has been working closely with DAR in a state working group to update Hawaii's Rapid Response Contingency Plan for events of coral



*Andrew briefed HISC Co-Chairs Suzanne Case and Phyllis Shimabukuro-Geyser on potential ways to reduce risk posed by vessels traveling to Hawai'i from SCTLD-affected areas.*

bleaching, disease, or crown-of-thorns starfish outbreaks which was last updated 2008. This update will focus on an early detection and rapid response plan for SCTLD, but will also update the plan for the potential outbreak of other newly emerging coral diseases as well. Andrew is looking at permitting issues related to coral take as well as permits for the use of chemicals and agents to prevent the spread of SCTLD once introduced such as antibiotics and medicated plaster/putties.

On the federal level, Andrew has continued to work closely with the National Oceanic and Atmospheric Administration's (NOAA) SCTLD Implementation Plan Working Group and two subgroups specifically focused on Pacific preparedness and transmission. The Pacific preparedness working group held many online interactive sessions to spread knowledge on how state agencies and groups working with them can identify SCTLD on coral and steps to take to stop or mitigate spread. For the transmission working group, Andrew is the lead in developing a white paper focused on the state, federal, and international legal framework for preventing the transmission of SCTLD through shipborne vectors. This paper mainly focuses on ballast water and biofouling, but also includes other potential vectors such as ballast tank sediment and sediment from anchor chain lockers, niche areas, and vessel raw water piping. Andrew also attended the US Coral Reef Task Force annual meeting in Kona, Hawai'i where an entire day was devoted to the issue of SCTLD and in-depth discussions were held on SCTLD regulatory and prevention issues.

Andrew also worked closely with DAR and legal fellow Stephanie Easley to develop and draft legislation and regulations that will be introduced for passage in 2023. Two pieces of legislation related to aquatic invasive species will be introduced in the 2023 Hawai'i state legislative session. For the first bill, HRS 187A-5 will be revised to include aquatic nuisance species in DAR's adaptive management program. This will give DAR the ability to react quickly to rapidly developing issues related to the introduction of aquatic nuisance species.

The second bill would expand DAR's authority under HRS 187A-32 to include regulation of all vessel incidental discharges related to aquatic nuisance species. Currently, DAR's authority over vessel discharges is limited to ballast water and biofouling; however, when VIDA comes into force, co-enforcement of the VIDA regulations with the USCG will require DAR to have regulatory authority over all of the incidental discharges related to aquatic nuisance species to avoid a disjointed and piecemeal approach to co-enforcement.

Based on the results of new research on the potential long-distance transmission of SCTLD through vessels, Andrew and the DAR team drafted an emergency rule for vessels entering Hawai'i from ports within the SCTLD effected area ("SCTLD Risk Vessels"). The recent discoveries that provided the impetus for this emergency rule were that:

- 1) the SCTLD causative agent can be carried by and remain infectious in ballast tanks;
- 2) UV-based ballast water treatment systems only reduce infections from tainted ballast water by fifty percent (50%);
- 3) vessel biofilm (and likely biofouling) is capable of transmitting SCTLD; and
- 4) sediment is capable of transmitting SCTLD.

The initial draft of the emergency rule would require all SCTLD Risk Vessels to perform a full ballast water exchange and then a full treatment using a USCG approved ballast water treatment system before entering Hawai'i waters. This rule would also prohibit ballast water discharge from SCTLD Risk Vessels and require a Notice of Voyage that includes all of the vessel's recent hull husbandry practices. Andrew assisted DAR in hosting a meeting of the Alien Aquatic Organism Task Force (AAOTF) to introduce the proposed emergency rule to the shipping industry and other stakeholders and to hold an open discussion on the effects it could have on the broader shipping industry in Hawai'i. Andrew is currently in the process of reviewing and revising the emergency rule in dialogue with the Hawai'i Department of the Attorney

General before introducing the rule to the Board of Land and Natural Resources.

In addition to her work with the team on VIDA, **Stephanie Easley** continued in her role as the CGAPS Terrestrial Invasive Species Legal Fellow and focused on building relationships and working with HDOA staff to support and accomplish invasive species prevention and response projects and priorities.

One of Stephanie's primary responsibilities was to participate in and provide support to the Prevention & Early Detection/Rapid Response (EDRR) Working Group. Stephanie also led and participated in a variety of Working Group task groups, most of which utilized Stephanie's research and drafting skills. These responsibilities provided Stephanie the opportunity to assist HDOA, under the leadership of Dr. Helmuth Rogg, in reviewing and revising its out of date administrative rules.

In July, HDOA adopted an interim administrative rule to prevent the spread of coconut rhinoceros beetle from O'ahu to other islands. Stephanie provided review, drafting, and consistency support to HDOA in preparation of the interim rule and to the coconut rhinoceros beetle task group which was formed to support HDOA's efforts. Making the interim rule permanent requires HDOA to compile all of chapter 72, Hawai'i Administrative Rules (HAR), the rules related to the movement of plant pests within the State. Stephanie assisted HDOA in reviewing and revising chapter 4-72, which has not been updated in more than 10 years. By the end of 2022, HDOA had a proposed draft of chapter 4-72 that:

- 1) clarifies that HDOA has the authority to prevent the movement of nursery plants and any other merchandise that is infested with a pest within the State;
- 2) clarifies that HDOA may require treatment of a commercial area where infested plants or merchandise is stored;
- 3) clarifies that a person who transports pests or infested items within the State is subject to penalties; and
- 4) sets out permanent quarantine restrictions for coconut rhinoceros beetle and its host material.

The draft rules will be considered by the Board of Agriculture and subject to public comment and other review early in 2023.

Stephanie continued to assist HDOA with the development of an administrative rule to require firewood imported into the State to be heat treated and labeled to prevent the introduction of invasive species. She supported HDOA in preparation of the draft firewood rule and assisted with two scoping meetings for stakeholders held in May and June 2002. Adopting a firewood rule requires HDOA to compile all of chapter 4-70, HAR, the plant import rules. Stephanie worked with HDOA to revise and update that chapter. She also drafted a new rule to prevent the introduction of citrus pests that are regulated by USDA to protect Hawaii's growing citrus industry. HDOA is reviewing the draft of chapter 4-70, and intends to have them considered by the Board of Agriculture in 2023. In March 2022, Stephanie submitted a memo to HDOA analyzing the HDOA's authority to conduct invasive species inspections of items that enter Hawai'i from another state or travel from one island in Hawai'i to another island. This memo was helpful in the review and updating of chapters 70 and 72 HAR.

In late 2022, HDOA restarted work on



*L-R: Christy, Ambyr, Stephanie, and Kailee attended the signing of the Endemic Tree bill at Washington Place. Stephanie provided drafting support for the bill, and the bill signing was a celebration of teamwork.*

the Noxious Weed Administrative Rules and Species List, chapter 4-68 HAR. HDOA is building on the work done by the noxious weed/noxious weed seed task group which Stephanie led in coordination with Becky Azama of HDOA in 2021. Stephanie is assisting HDOA in updating the proposed revisions of chapter 4-68 HAR made by the task group. HDOA hopes to move the revised noxious weed rules forward in 2023.

Stephanie, working with CGAPS intern Evan Miyaki, prepared a draft of administrative rules to carry out the HISC statutes (chapter 194, Hawai'i Revised Statutes (HRS)). That chapter permits departments of the HISC to control and eradicate invasive species on private and public property. Once the rules are adopted they will provide the authority for the Invasive Species Committees and other HISC entities to control and prevent the establishment of invasive species throughout the State.

Stephanie also utilized her background in legislative drafting to assist in preparing appropriations requests for the Pacific Regional Biocontrol Facilities. Stephanie submitted these appropriations requests on behalf of the HISC and CGAPS networks.

She also monitored and provided written and oral testimony to the Legislature in support of House Bill 2120 during the 2022 Legislative Session. The bill, which was enacted as Act 99, permits the State to use emergency authorities to respond to damage or loss to the environment, separate from and in addition to damage to the population or property.

In support of the William S. Richardson School of Law, Andrew Porter and Stephanie Easley were guest speaker/panel participants in Administrative Law and Legislation classes.

They also worked together to supervise a CGAPS Legal Intern. **Evan Miyaki**, a rising third year law student at UH William S. Richardson School of Law, joined CGAPS as a summer intern. He assisted in the preparation of the draft HISC administrative rules, participated in weekly meetings with HISC and CGAPS staff, prepared multiple legal research memos on legal issues related to the rules, and prepared initial drafts of sections of the rules. His extensive legal research topics included state and federal constitutional issues related to entry onto private property to control or eradicate an invasive species, public nuisance abatement, the State constitutional right to a clean and healthful environment, and the laws of other states related to entry onto private property for invasive species control. Evan also assisted in preparation of a memo to the Attorney General's office and prepared proposed statutory amendments to chapter 194, HRS to address ambiguities and other issues with the HISC statute.



*Legal Intern Evan Miyaki, bottom left, provided research and drafting support for HISC's draft administrative rules.*

### **Capacity Support for CGAPS Program Manager and Planner (annual)**

In past years, the Foundation provided 100% of the funds supporting the CGAPS Planner salary and operating costs. In 2021, a grant from the Hawai'i Community Foundation CHANGE Framework will provide approximately 50% of CGAPS Planner Kailee Lefebvre's salary and fringe for 2022. Hau'oli Mau Loa Foundation funds also supported a portion of the salary and operating costs for the CGAPS Program Manager, with additional 2020 funds received from the U.S. Forest Service through DOFAW, NPS (#P17AC01216 Mod2), USFWS, and HISC.

**Kailee Lefebvre** continued as CGAPS Planner and worked on several projects in 2022,



focused primarily on Strategies 7 (Engaged and Supportive Communities), 9 (Strong CGAPS Network), and 2 (Inter/Intra-Island Movement).

One of Kailee's biggest projects was to work with HISC's Māmalu Poepoe Coordinator Leyla Kaufman and Christy on the interactive biosecurity display to be installed at the Daniel K. Inouye International Airport in January 2023. She worked to coordinate one of the interactive portions of the display with partners from USDA and HDOA by collecting photos and captions for the Be an Ag Inspector game. Kailee also initiated the organizing content for the biosecurity video interviews, and helped write, organize, and edit content for the six panels of the display. She reached out to partners at DOFAW who generously donated a boot brush station to be integrated into the display. She also coordinated a site visit to the USDA's airport inspection station with Bishop Museum Exhibits Manager Brad Evans and HISC Coordinator Chelsea Arnott to better understand the role and scope of ag inspectors in our state.

Kailee completed a multi-year project with Ambyr that engaged students and teachers from across the state in the legislative process and taught students about the importance of protecting 'ōhi'a through a project that enacted a law designating 'ōhi'a as the State Endemic Tree. In January, Kailee continued conducting presentations for classes on State legislature and how to participate. Kailee, the teachers, and students tracked the endemic tree bills that were introduced (SB2059 and companion HB2202), contacted legislators, and submitted over 1,225 pieces of testimony for the bills over 4 hearings. Kailee and Christy prepared and sent press releases which resulted in several articles. With the help of legislators and their staff, Kailee coordinated a tour of the State Capitol for classes from Mānoa and Kāne'ohe Elementary where they had the opportunity to meet and speak to legislators, attend and be recognized in a Senate floor session, and learned more about the Capitol building and the legislature.

On 'Ōhi'a Lehua Day (April 25), Kailee organized 'ōhi'a plantings with classes at Le Jardin Academy and Kalaheo High School. She also organized a contest for the participants to create a logo for the project. A design made by a student from 'Iolani school was made into a sticker and distributed to all the project participants. On May 24, Governor Ige signed SB2059 into law with an effective date of July 1, 2022. Kailee helped to coordinate the participation of 2 classes and CGAPS partners in the bill signing ceremony and an 'ōhi'a planting with Governor Ige at Washington Place. DLNR provided coverage and a press release of the event.

To wrap up the project, Kailee re-visited 8 classes either virtually or in-person to talk to students about the experience, what they learned, and any future plans to engage with the legislature in the future. Overall, the project included all 4 counties, 13 schools, and about 533 students. Upon surveying students and teachers before and after the project, there was a significant increase



*Kailee (bottom right) worked with legislators and their staff to organize and host a visit to the State Capitol for students, including this class and their teachers from Windward O'ahu. J.C. Watson (top right) of the 'Ōhi'a Legacy Initiative were collaborators throughout the project. The class wore the 'ōhi'a t-shirts they designed and printed, and met with Senator Keohokalole (top row, left). Congressman Kahele (top right) joined the group and congratulated the students on their project.*

in knowledge of 'ōhi'a, it's threats, and conservation efforts. They also learned a lot about the legislative process and advocacy, and indicated a high potential for future engagement with the legislature. Teachers found the project valuable, with 100% of them saying they would participate in a similar project in the future.

In response to the success of the 'ōhi'a civics project, Kailee began a new project for the 2023 legislative session to work with students to advocate for a resolution naming a Hawaiian Birds Day on 8/08 aimed at highlighting the importance and dire needs to protect endangered honeycreepers. This project will follow a similar template to the previous year with students going through presentations on the legislature and advocacy, and another on the Hawaiian honeycreepers, their threats, and conservation efforts. Classes will contact legislators, submit testimony, and will have the opportunity to visit the State capitol and the forest to visit the birds they are trying to protect. Kailee worked with outreach coordinators from the Birds, Not Mosquitoes project and presented on the legislature and advocacy to 8 schools/classes in October through November. Presentations will resume in January and classes will start contacting their legislators and tracking the resolution.

This year, Kailee assisted with the USDA PPA Pono Nurseries project by editing and finalizing presentation and print material, and promoted the program at conferences and meetings. She also helped with annual projects led by CGAPS, HISC and partners through planning, logistics, and content creation for the 'Ōhi'a Love Fest, ROD Outreach Workshop, Stop the Ant Month, and Hawai'i Invasive Species Awareness Month (HISAM). She also conducted presentations for the ROD outreach workshop and HISAM. She attended in-person events like the Hawai'i Green Growth Local 2020 Annual Partnership Event, and the Hawai'i Agricultural Conference. She also attended and gave a presentation for the virtual Hawai'i Conservation Conference. She also helped to write and edit questions for the CGAPS Public Awareness Survey that was conducted in December.

Kailee participated in the Presentation and Media Workshop put on by CommPac focused on biocontrol messaging and supported the production of a series of videos on biocontrol in Hawai'i produced by Mālama Learning Center to be aired on a local television show, Outside Hawai'i.

Kailee also continued to provide support for the Coconut Rhinoceros Beetle Response by helping to plan for the implementation of an HDOA Interim Rule to manage the spread of CRB through compliance agreements with producers and transporters of host material including greenwaste, mulch, and palms and supported UH researchers with an experimental aerial treatment of palms by making observations during treatments and collecting dead and dying beetles after the treatment of palms. For the O'ahu LFA Response, Kailee helped Hawai'i Ant Lab staff conduct surveys to delimit new infestations.

In support of the CGAPS partnership and community, Kailee continued to coordinate the logistics for the quarterly CGAPS General and Steering Committee meetings and monthly staff meetings. She also maintained the listserve and continued to work on the CGAPS website.



*Kailee provided logistical support to ensure the smooth running of meetings such as the CGAPS Steering Committee (above), the quarterly general meetings, the O'ahu LFA Response meetings, and others.*

**Christy Martin** continued as the Program Manager for CGAPS, responsible for public and policy maker outreach and media-related duties (50%); staff direction and supervision, partnership coordination, and partner project support services (25%); grants and reports, planning, and project management (20%); and other duties as assigned (5%). In this position, Christy continued to supervise and guide the CGAPS staff, contractors, and projects, work with fiscal staff and administrators on procurement and contracting, and assist the CGAPS Chairs, Steering Committee, and the Working Groups, to advance action on the Strategies.

In January, Christy helped organize and host an executive briefing on need for Pacific Regional Biocontrol facilities, and provided talking points for Gov. Ige who opened the meeting. During the legislative session, Christy monitored and provided testimony on fourteen bills. The highest-priority was for emergency funding for the Hawai'i Ant Lab (HAL), which passed as a non-recurring \$500K increase to the HISC budget and designated for HAL. Meetings with legislators were held during and outside of session on priority issues, and Christy provided the summary statements for the Legislative info-briefing on the HIBP. Meetings with congressional staff were also held, focused on the need for biocontrol facilities and to introduce the HDOA Administrator to staff. CGAPS and HISC staff provided support for HDOA's congressionally directed spending request which was awarded \$850K to reduce pests at export nurseries.



*In January 2022, HISC and CGAPS staff and the Biocontrol Working Group held an Executive Briefing to update supporters on the Pacific Regional Biocontrol Facilities. Governor Ige opened the meeting with the HDOA and DLNR Chairs.*

In support of Strategies 1, 2, and 7, Christy continued to facilitate work on the Pono Nurseries outreach project (a USDA Plant Protection Act grant secured by CGAPS in 2021) which provides funding support for the ISCs outreach specialists to conduct in-person and video trainings on prevention & early detection species to interested nurseries on each island. The grant was extended through May of 2023 and trainings are ongoing through March.

Christy also continued to support partners and advance the Strategies by co-chairing the Public Outreach Working Group (Strategy 7), chairing the Statewide LFA Outreach Working Group (Strategies 2 and 7), organizing and hosting the O'ahu LFA Incident Command System meetings, as part of the strategic planning team and engagement subcommittee for the Birds, Not Mosquitoes landscape-scale mosquito control project (Strategy 4), as the strategic communications lead for the Pacific Regional Biocontrol Facilities (Strategy 5), as a founding member and part of the core team of the Pacific Regional Invasive Species and Climate Change (Pacific RISCC), by participating in the ROD Outreach Working Group, and other projects.

New collaborative work in 2022 included joining the national SCTLD Transmission working group and stepping in as co-chair of the Biocontrol working group for the Pacific Ecological Security Conference (PESC), including writing the draft Pacific Biocontrol Strategic Action Plan, presenting and collecting feedback on the plan at the PESC.

The Pacific RISCC core team continued to focus attention and advance knowledge, understanding, and communication on the synergistic effects of climate change and invasive species, and in 2022 funding secured through the Climate Adaptation Science Centers supported the hiring of Dr. Elliott Parsons as the Pacific RISCC Coordinator. Elliott was able to hit the ground running and has organized and hosted webinars nearly monthly, has reviewed,



summarized and shared to partners recent research relevant to tropical Pacific Island systems. In addition, the core team continues to meet with each of the regional RISCCs as they build up into established networks. Monthly video meetings and even shared interns and now a post-doc are providing the much-needed organizational framework that has resulted in regular participation by the National Invasive Species Council and other federal invasive species agency leads.

With Foundation funding and the guidance of CGAPS Steering Committee member Alan Holt, Christy and Kailee again worked with Pauline Sato, the executive producer of Outside Hawai'i, to plan and produce a story about modern biological control and how it is the only available tool that can support agriculture, conservation, ecosystem function, and enhance resilience. [The program](#) was completed in 2022 but held to run in January 2023 on OC16 and online. With funding from the USFWS, Christy also worked with a contractor to produce a short explainer video about [vessel biofouling](#) which will be added to the CGAPS website in 2023.

As part of the UH PCSU and RCUH community, Christy supported links between the University, the community, and invasive species work through lectures, informal advising, and other communications and collaborative projects with students and faculty. Talks are tailored for each group, although annual presentations are made to Dr. Andy Kaufman's Landscape Architecture class and the Marine Option Program Seminar at UH Mānoa. A full list of the staff's outreach work is listed in the Outreach & Media section of this report.

#### **ROD Emergency Special Funding Projects (2019, 2020, 2021, 2022)**

HMLF has provided special additional support for emergency response work on ROD, which is deeply appreciated. Most ROD funds are administered by the University of Hawai'i Foundation and Office of Research Services because UH plays a key role in the research, response, and extension work on ROD.

Funding provided for 2019 (#18-1212-22-321) has been extended through 2023. A portion of the funds supported Ambyr Miyake (formerly Mokiao-Lee) and her work as the ROD Statewide Outreach Coordinator, and to fill a gap in funding for lab technician Eva Brill, housed at USDAARS, to help process the thousands of samples submitted for ROD pathogen testing. The remaining funds, and the primary reason for the extension, are being used to support the production of more effective boot brush stations and signage, a project that was put on hold during the pandemic because of the cost and difficulty of procuring items for the stations.

Funding support (#19-1211-13-338, #20-1209-15-355, and #21-1208-22-382) again provided partial payroll support for lab tech Eva, and half of the salary and operating costs for Ambyr. All of the first and most of the second grants are expended, and most salary and fringe costs for 2021 (#20-1209-15-355) and 2022 are nearly spent. The delay in spending other parts of these grants partially revolve around our cautious approach to hosting in-person train-the-trainer workshops and outreach events.

**Ambyr Miyake** continued in her sixth year as the Rapid 'Ōhi'a Death Statewide Outreach Coordinator under the supervision of CGAPS, with Drs. Mike Melzer and J.B. Friday as Principal Investigators. Ambyr focuses on engaging partners and potential partners to increase



*Kailee, Ambyr, and Governor Ige at the Endemic Tree bill signing ceremony.*



outreach capacity and reach across the state, and conducts direct outreach to key audiences. Ambyr worked closely with Hoku Pihana, the Hawai'i Island ROD Outreach Specialist, Kim Rogers, the Kaua'i ROD Outreach Specialist, and J.B. Friday to plan and conduct outreach projects.

Outreach to schools has been one of Ambyr's main priorities, and in 2022, Ambyr, Kailee, Christy, and Stephanie successfully completed the civics engagement project to designate 'ōhi'a lehua as Hawaii's State Endemic Tree. A huge congratulations are in order to all the students who participated in passing this bill into law. More information is provided in the CGAPS Planner section.

The ROD Strategic Response public engagement strategy calls for extending our reach by training the trainers, and each year, a workshop is held for individuals that conduct or are likely to conduct outreach about 'ōhi'a. Ambyr helped coordinate the 5th annual ROD outreach workshop which was held virtually due to COVID. The purpose of this workshop was to provide statewide educators with the knowledge and tools to conduct 'ōhi'a and ROD outreach in their networks and to work together to assess and plan ROD outreach messaging. The virtual platform of the workshops allowed us to reach an average of 45-55 participants and the workshops were held over the course of 4 weeks with 8 science and 8 social science presentations. Feedback from the workshops was overwhelmingly positive with participants saying that they thoroughly enjoyed it and learned a lot of new skills that they could use in their work.

Ambyr coordinated and hosted, with the help of the ROD outreach team, the 6th annual 'Ōhi'a Love Fest from November 5th-19th. Coming out of COVID, the team decided to host mini-festivals as in-person events. We partnered with numerous agencies and organizations to host 4 separate festivals on Kaua'i, O'ahu, Maui and Hawai'i Island. The 2022 theme was Mohala, or the unfurling of the 'ōhi'a lehua blossom. This theme and offerings was intended to be a metaphor for coming out of COVID and to provide face-to-face contact with scientists and the conservation community to those of the broader community.. Participants learned from the various organizations all about 'ōhi'a love, invasive species, advocacy, planting workshops, and more, leaving with the tools and resources they need to take action in their communities to perpetuate 'ōhi'a growth and abundance.

In order to generate attention and attendees for the 'Ōhi'a Love Fest, Ambyr and the team worked on a statewide social media campaign on Instagram and Facebook. With limited resources and funds, they were unable to acquire air time for radio or TV advertising. However, with boosted Facebook posts and many views we had over 2500 people attend the 'Ōhi'a Love Fest events across the state.

In addition to advertising via social media platforms, the ROD outreach team also created keiki craft kits that were distributed at the various events. The keiki craft kits contained information



*Ambyr coordinated the ROD Outreach Working Group (top left in the meeting image above), and co-manage the ROD website, [RapidOhiaDeath.org](https://RapidOhiaDeath.org), and social media accounts.*

about ‘ōhi‘a, ROD, and crafts for kids to teach them about the cultural and ecological importance of ‘ōhi‘a. In addition, the team also found funds to acquire bio-sanitation kits that were given out at the events. The bio-sanitation kits contained a handheld boot brush, rubbing alcohol, spray top, ROD information, stickers, and a bag. These kits were valued at \$10 each, so we had a limited supply per island.

Ambyr also worked with the ROD Strategic Response research team and partners to understand and develop messages on the role of feral ungulates, such as wild cattle and pigs, in the wounding of ‘ōhi‘a trees, and why fencing and animal removal is the best landscape-scale protection tool currently available for ‘ōhi‘a forests statewide. Work in 2023 will continue to focus be on engaging partners and potential partners across the state to increase outreach capacity and extend the reach of ROD prevention messages, and on conducting outreach to key audiences.

### **ROD Public Awareness Survey (2020, extended through 2022)**

This project is complete. The ROD public awareness survey (#19-1211-14-339) had an original term date of 12/31/20, an extension to 12/31/21, and a second extension to 12/31/22 because of the pandemic’s influence on public sentiments. In the summer of 2022, participants of the HISC Public Outreach Working Group assisted in identifying questions which CGAPS refined. Due to the amount of funds needed for telephone surveys, CGAPS instead opted for an electronic survey via a “community panel” managed by Ward Research. The questions were administered in early December, and the results and analysis were provided by the end of the year. Some of the questions were repeated from a phone survey in 2017. A total of 500 surveys were completed, resulting in a  $\pm 4.4\%$  error margin at a 95% confidence level, and some of the survey results are summarized below.

	2022	2017
<b>Respondents that have heard of “alien pest species” or “invasive species”:</b>	<b>97%</b>	<b>72%</b>
<b>Respondents that said that invasive species is a “somewhat” or “very” serious problem in Hawai‘i:</b>	<b>93%</b>	<b>87%</b>
<b>Have heard of “‘ōhi‘a” or “‘ōhi‘a lehua”:</b>	<b>89%</b>	<b>68%</b>
<b>Have heard of “Rapid ‘Ōhi‘a Death” or “ROD”:</b>	<b>80%</b>	<b>48%</b>
<b>Support for fencing high-value native forests and removing hooved animals from within fenced areas:</b>	<b>80%</b>	
<b>Support for fencing high-value native forests and removing hooved animals from within fenced areas to protect forests from ROD:</b>	<b>80%</b>	
<b>Respondents that support an increase in funding for new biocontrol facilities and work in Hawai‘i:</b>	<b>77%</b>	

## Hawai'i Community Foundation: CHANGE Framework

CGAPS was awarded a CHANGE Framework Grant (Grant ID: 21HCF-111171, CHANGE Sector 4N3) from the Hawaii Resilience Fund of the Hawai'i Community Foundation (HCF) for the period of August 1, 2021 through July 31, 2022. That grant was extended through January 31, 2023 and an additional award from the Robert Emens Black Fund of HCF. A final report will be submitted in accordance with the agreement. We are grateful for this support.

As detailed earlier in this report, a portion of the funds were used to support the salary and fringe for CGAPS Planner Kailee Lefebvre. Funds were also used to provide basic materials and supplies for CGAPS staff, and for CGAPS priority projects which are described here.

HCF funds were used to contract the local media company Hyperspective, LLC to create a second biocontrol explainer video. With funds from HISC, the first 3-minute animated video was produced for CGAPS by Hyperspective in 2021 and describes how biocontrol work is done by telling the story of testing the safety of the miconia butterfly (the [video](#) has temporarily been "hidden" as it the regulatory permitting process is completed for the miconia butterfly). Through HCF's support, a second short animated video was created to the story of how a biocontrol saved Hawai'i's endemic wiliwili trees from extinction. The story again reinforces how biocontrol selection and testing is done, and that sometimes biocontrol is the only way to restore balance. CGAPS and DLNR DOFAW staff worked together on the script, then worked with the contractor to ensure that the visuals were accurate, the story had an easy-to-follow flow, and that the accompanying music supported the video. The video is housed on the State's biocontrol website, [BiocontrolHawaii.org](https://BiocontrolHawaii.org), which is managed by DLNR DOFAW.

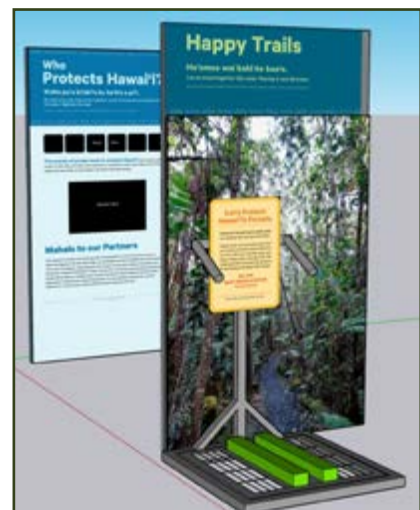


*Funds were used to contract Hyperspective to produce a short explainer video about how a biocontrol saved the wiliwili from extinction.*

In 2021, funds from Hau'oli Mau Loa Foundation were used to contract Bishop Museum to coordinate, design, and install an interactive Biosecurity Display in the new terminal at the Daniel K. Inouye International Airport in January, 2023. One of the interactive screens will feature videos for the "Who protects Hawai'i from invasive species?" panel. HCF funds were used to support contracts with video production companies on Kaua'i, Maui, and Hawai'i Island to plan, schedule, film, and produce short interviews with Hawai'i residents who work or volunteer on invasive species control projects. CGAPS will be working with partners at DLNR on a video news release for February 1, the first day of Hawai'i Invasive Species Awareness Month.



*Renderings of the Airport Biosecurity Display*





## CGAPS Staff Outreach & Media

Staff participated in a number of in-person and videoconference or webinar outreach opportunities in 2022. The following is a list of events where Ambyr Miyake (AM), Stephanie Easley (SE), Andrew Porter (AP), Kailee Lefebvre (KL), and Christy Martin (CM) conducted outreach to the public or stakeholder groups via presentations, workshops, booths at community events, or via radio, print, television, or social media stories.

- 1/5 Presentation (AM): *‘Ōhi‘a Advocacy* for Highlands Intermediate
- 1/6 Presentation (KL): *Hawaii’s legislature and ‘ōhi‘a advocacy* for Highlands Intermediate
- 1/6 Presentation (AM): *‘Ōhi‘a Advocacy* for Highlands Intermediate
- 1/14 Presentation (KL): *Hawaii’s legislature and ‘ōhi‘a advocacy* for Highlands Intermediate
- 1/18 Presentation (CM): *Status of planning and next steps for the Pacific Regional Biocontrol Facilities* for the executive briefing on Biocontrol Facilities
- 1/19 Presentation (KL): *Hawaii’s legislature and ‘ōhi‘a advocacy* for Laupahoehoe Elementary
- 2/3 Presentation (KL): *Three ways to participate in Hawaii’s law-making process* webinar for Hawai‘i Invasive Species Awareness Month
- 2/25 Presentation (CM): *Urgent biosecurity needs* for 2022 Legislative Invasive Species Infobriefing
- 2/25 Presentation (KL): *‘Ōhi‘a Advocacy Project* webinar for Forest Friday: Is ‘Ōhi‘a Worth Saving? How Kaua‘i Is Managing the Spread of Rapid ‘Ōhi‘a Death
- 3/7 Presentation (AP, SE): *Vessel Incidental Discharge Act (VIDA): Administrative Law Case Study* for Richardson School of Law, Administrative Law class
- 3/21 Panel participants (AP, SE) *Hawai‘i Administrative Procedure Act*, Richardson School of Law, Administrative Law class
- 4/1 Event (KL): State Capitol tour with ‘Ōhi‘a Advocacy Project participants from Mānoa and Kāne‘ohe Elementary Schools
- 4/7 Presentation (CM): *Pacific Islands forest resilience opportunities: a natural and cultural history perspective from Hawai‘i* for the Pacific Islands Forest Resilience Roundtable
- 4/11 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Highlands Intermediate
- 4/12 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Kamehameha Schools, Maui
- 4/12 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Hawai‘i Tech Academy, Kaua‘i
- 4/14 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Kāne‘ohe Elementary
- 4/14 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Mānoa Elementary
- 4/18 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Kalaheo High School
- 4/19 Presentation (KL): *‘Ōhi‘a Advocacy Project* debrief for Kalaheo High School
- 4/22 Booth (KL): *‘Ōhi‘a Advocacy Project* Kailua Intermediate Earth Day event
- 4/22 Booth (CM): ROD outreach booth at Merrie Monarch
- 4/24 Press Release (CM, KL): Students celebrate ‘ōhi‘a



(L-R) Hoku Pihana, Kylene Fezaroy, Christy Martin, and Eva Brill at the ROD Outreach booth at the Merrie Monarch Craft Festival.



- 4/25 Event (KL): 'Ōhi'a planting for 'Ōhi'a Lehua Day at Le Jardin Academy
- 4/25 Event (KL): 'Ōhi'a planting for 'Ōhi'a Lehua Day at Kalaheo High School
- 4/29 Presentation (KL): 'Ōhi'a Advocacy Project for Tree Awareness Day at the Capitol
- 5/15 Article (CM, KL, Kim Rogers): *Students lobby for 'ōhi'a lehua*. Press release, provided information. <https://www.thegardenisland.com/2022/05/15/hawaii-news/students-lobby-for-'ōhi'a-lehua/>
- 5/24 Event (KL, CM, AM, SE): 'Ōhi'a endemic tree bill signing ceremony at Washington Place. <https://www.staradvertiser.com/2022/05/24/breaking-news/'ōhi'a-lehua-named-hawaii-state-endemic-tree/>
- 7/10 Presentation (CM): *Little fire ants* for farmers at Kapaka Farm Plots
- 7/13 Workshop (AM): Agriculture Discovery Program Lei Workshop, UH Mānoa
- 7/19 Presentation (KL): *Haumana* for 'Ōhi'a for Hawai'i Conservation Conference
- 8/16 Presentation (CM): *Three priority pests on O'ahu* for East O'ahu Farm Bureau
- 9/8 Presentation (AM): Hawai'i Department of Transportation Bio-Sanitation Training Workshop, Lana'i
- 9/20 Presentation (CM): *Plant pono* for UH Mānoa Landscape Architecture class
- 9/29 Presentation (AM): Hawai'i Department of Transportation Bio-Sanitation Training Workshop, Moloka'i
- 10/4 Presentation (CM): *Intro to the Pacific Biocontrol Strategic Action Plan* at the Pacific Ecological Security Conference
- 10/5 Presentation (CM): *Pacific biocontrol summary of needs* at the Pacific Ecological Security Conference
- 10/13 Presentation (SE): *Federal Legislative Procedure*, Richardson School of Law, Legislation and Statutory Interpretation class
- 10/15 Booth (AM): Kāhuli Festival at Bishop Museum
- 10/19 Presentation (AM): Filming of Mililani High School Agriculture Students for 'Ōhi'a Love Fest video
- 10/20 Presentation (CM): *Nonprofits (and invasive species work)* for UH Mānoa Marine Option Program seminar class
- 10/20 Presentation (KL): *Honeycreeper Advocacy* for Le Jardin Academy
- 10/22 Presentation (KL): *Honeycreeper Advocacy* for Grow With Us Mentoring Program
- 10/24 Presentation (KL): *Honeycreeper Advocacy* for 'Iolani School
- 10/25 Presentation (CM): *Silent invasion* for participants of the Ocean Awareness Training
- 10/26 Presentation (CM): *Plant pono* for UH Mānoa Tropical Plants & Soil Sciences class
- 10/26 Presentation (KL): *Honeycreeper Advocacy* for 'Iolani School
- 10/26 Presentation (KL): *Honeycreeper Advocacy* for Hawai'i Tech Academy, Kaua'i
- 10/31 Presentation (KL): *Honeycreeper Advocacy* for Le Jardin Academy
- 11/5 Booth (AM): Maui Nui Botanical Gardens Arbor Day Expo, Maui
- 11/7 Article (CM): Provided background information and quotes. <https://www.civilbeat.org/2022/11/a-local-nursery-wants-to-make-a-native-tree-hawaiis-choice-for-christmas/>
- 11/9 Presentation (KL): *Honeycreeper Advocacy* for Kalaheo Elementary



*Pacific Ecological Security Conference participants provided feedback on the Biocontrol Strategic Action Plan and the needs of their country or territory for implementing the plan.*

- 11/7 Presentation (CM): *Biological control for Pacific Island resilience* at the North American Invasive Species Management Association annual conference
- 11/9 Presentation (CM): *Pacific Ecological Security Conference summary of outcomes & next steps*, co-presented at the North American Invasive Species Management Association annual conference
- 11/19 Articles (CM): Worked with DLNR on press release on debut of the explainer video, *How a Biocontrol Save the Wiliwili Tree from Extinction*. <https://bigislandnow.com/2022/11/19/how-did-parasitic-wasps-save-native-wiliwili-trees-in-hawaii-from-edge-of-extinction/>
- 11/19 Booth (AM, KL) 6th Annual 'Ōhi'a Love Fest, Leeward Community College, O'ahu
- 11/22 Presentation (KL): Honeycreeper Advocacy for Waipahu High School, O'ahu
- 12/7 Presentation (AM): Forestry, 'Ōhi'a, and ROD Presentation, Le Jardin Academy
- 12/12 Article (CM): Provided background information and quotes. <https://www.civilbeat.org/2022/12/hawaii-plans-to-update-its-noxious-weeds-list-local-environmentalists-arent-waiting/>



*The images on the cover and above are from the Wiliwilinui Ridge Trail in 2022.*

*This report was submitted by January 31, 2023 in compliance with grant agreements. The report was drafted by CGAPS staff with HISC staff providing some information on progress towards the Strategy. Nothing in this document requires any agency to expend funds that have not been appropriated and allocated. For more information about this report, please contact Christy Martin at [christym@rocketmail.com](mailto:christym@rocketmail.com).*