



Coordinating Group on Alien Pest Species (CGAPS)

Annual Report

January 1 — December 31, 2016

Submitted to:
Department of Land and Natural Resources-Division of Forestry and Wildlife
Hau'oli Mau Loa Foundation
Hawai'i Department of Agriculture
Hawai'i Invasive Species Council
National Park Service-Pacific West Region
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

DLNR DAR: Department of Land and Natural Resources-Division of Aquatic Resources

DLNR DOFAW: Department of Land and Natural Resources-Division of Forestry and Wildlife

DLNR: Department of Land and Natural Resources

HCAF: Hawai'i Conservation Alliance Foundation

RCUH: Research Corporation of the University of Hawai'i

HDOA: Hawai'i Department of Agriculture

HMLF: Hau'oli Mau Loa Foundation

KISC: Kaua'i Invasive Species Committee

KMWP: Ko'olau Mountains Watershed Partnership

LFA: Little Fire Ant

MISC: Maui Invasive Species Committee

MoMISC: Maui-Moloka'i Invasive Species Committee

NPS: National Park Service

OISC: O'ahu Invasive Species Committee

PIO: Public Information Officer

ROD: Rapid 'Ōhi'a Death

TNCH: The Nature Conservancy of Hawai'i

UH CTAHR: University of Hawai'i-College of Tropical Agriculture and Human Resources

UH PCSU: University of Hawai'i-Pacific Cooperative Studies Unit

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

The Coordinating Group on Alien Pest Species (CGAPS) is a partnership of agencies and non-governmental organizations working together to close the gaps in Hawaii's invasive species programs in the areas of prevention, early detection/rapid response, and long-term control of terrestrial and aquatic invasive species.

CGAPS hosts quarterly public meetings which are a venue for participants to network and communicate issues, challenges, and progress. CGAPS also has a Steering Committee that is responsible for strategizing actions and for shepherding their agencies or NGOs' progress toward our shared vision, "To achieve effective protection of Hawai'i's unique natural environment, economy, agriculture, and the health and lifestyle of its people."

Currently, CGAPS has three staff positions to facilitate the partnership, implement projects prioritized by the Steering Committee, and to make progress on the 2015-2019 CGAPS Strategic Plan. The CGAPS staff consists of Andrew Porter, CGAPS Legal Fellow working on ballast water and biofouling issues in partnership with DAR; newly hired CGAPS Legal Fellow Timothy Sutton, who will be working on biosecurity and prevention issues with HDOA Plant Quarantine; and Christy Martin, Statewide Invasive Species Public/Community Outreach Coordinator (shortened to PIO for Public Information Officer) who also serves as the CGAPS program manager.

For more information on CGAPS, its projects, or to see the 2015-2019 CGAPS Strategic Plan, visit www.cgaps.org.



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.

CGAPS Support

Each year, many people work together to support the CGAPS partnership, its goals, projects, and staff. Mahalo to the 2016 CGAPS Chair Domingo Cravalho, 2017 Chair Michael Melzer, and Chair Emeritus Rob Hauff for overall coordination of the partnership and supervision of the PIO. Thanks also to incoming Deputy Chair Joshua Atwood who will rotate into the chair position in July 2017 for fiscal year 2018. Mahalo also to the CGAPS Steering Committee for providing a framework and direction for our projects. Participation in CGAPS is voluntary, and the commitment of time and energy from individuals and agencies is our greatest asset.

The CGAPS staff and projects are supported by grants. Mahalo to the Department of Land and Natural Resources-Division of Forestry and Wildlife, Hau'oli Mau Loa Foundation, Hawaii Invasive Species Council, U.S. Fish and Wildlife Service, the National Park Service, U.S. Forest Service (DOFAW pass through), for financial support of CGAPS and its projects. Most funds were administered by the University of Hawai'i at Mānoa or the University of Hawai'i Foundation (for private foundation grants) through the Pacific Cooperative Studies Unit. Funding for the Legal Fellows program is administered by the University of Hawai'i Foundation through the William S. Richardson School of Law. The Hawai'i Conservation Alliance Foundation also serves as a fiscal sponsor for some of the CGAPS projects. Mahalo to all our funders and fiscal sponsors, and to the Research Corporation of the University of Hawai'i

The UH William S. Richardson School of Law continues to be a strong partner in helping CGAPS manage the CGAPS Legal Fellowship Program, and work with Hawai'i Green Growth on shared commitments is also extremely important.

In-kind support is also appreciated and integral to our work. Mahalo to HDOA, DLNR, and TNCH for providing meeting spaces. DLNR and HDOA also provided office space for the legal fellows, PCSU provided office space for the PIO, and KISC provided office space for the Plant Pono/HPWRA Liaison. Kaua'i Nursery and Landscaping and the Kaua'i Landscape Industry Council provided partial travel and conference attendance support for the Liaison.

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 Invasive Species
Council

The Invasive Species
Committees of Hawai'i

The Nature Conservancy of
Hawai'i

U.S. Department of
Agriculture (Animal and Plant
Health Inspection Service and
U.S. Forest Service)

U.S. Department of Homeland
Security/Customs and Border
Protection

U.S. Fish and Wildlife Service
University of Hawai'i

Mahalo nui loa for supporting the CGAPS partnership and projects!

About This Report

This report was compiled and submitted to funding agencies to provide a summary of the major initiatives and activities during the 2016 calendar year. Questions and comments are welcome. Contact Christy Martin at christym@rocketmail.com; (808) 722-0995; P.O. Box 61441 Honolulu, HI 96839.

CGAPS Strategic Plan Progress

CGAPS staff work plans, projects, and partnership meetings are aligned to advance our collective progress towards the five goals in the 2015-2019 CGAPS Strategic Plan. Specific actions are listed for each goal, and details are provided for the action items where significant progress has been made in 2016.

Goal 1: Minimize the inter- and intra-state movement of pests

Action 1: Support development of effective quarantine and inspection

CGAPS and its partners have made tremendous progress on this Action. See the Hawai'i Interagency Biosecurity Plan box. The challenge for the next few years will be to support and facilitate the implementation of the plan. If progress is not made and publicized, the value of the plan and planning process is greatly reduced.

Action 2: Find solutions to federal pre-emption

As part of the IUCN WCC Legacy initiative and the Interagency Biosecurity Plan process, CGAPS held multiple meetings to better understand the federal-state inspection authorities, policies, and gaps, and to explore mechanisms to address these gaps. Although the gap analysis did not succeed in producing a list of policy gaps for different types of foreign commodity imports, the discussions were very important in informing new agency staff about the policy and inspection differences for foreign and domestic imports.

HDOA and CGAPS staff worked together to produce a document of proposed requests, although the initiative did not have enough support to continue.

Action 3. Support reinstatement of HDOA Detector Dog program

Through the efforts of DOI Deputy Esther Kia'aina and HDOA, the Detector Dog program has been reinstated with the hiring of two dog handlers, who will be matched with dogs and the teams will be trained by USDAAPHIS at the National Detector Dog Training Center. The teams will begin working at Honolulu points of entry in 2017. Service hiring is a long process. CGAPS and Maui Invasive Species Committee (MISC) have not yet contracted the little fire ant (LFA) detector dog and trainer, although a year remains on the HMLF grant supporting this. Support for this pilot project remains high with the Oahu LFA Response Team.

Action 4: Support the development of an effective hull-fouling and ballast water management program

The DAR Ballast and Hull-fouling Coordinator position was vacant for most of 2015, thus CGAPS staff stepped up work on this Action to cover existing projects, candidate interviews, and training of Jules Kuo, the new Coordinator who started in January 2016. CGAPS Legal Fellow Kevin Richardson led CGAPS support for this Ac-

Governor David Ige's announcement at the opening of the 2016 IUCN WCC: "Invasive species have devastated many of Hawaii's natural areas and pose a threat to our tourism economy and industries. That's why I'm pleased to announce the first-ever Hawai'i Interagency Biosecurity Plan which provides a vision and a path forward, through partnerships, to prevent, detect, and control invasive species."

Hawaii Interagency Biosecurity Plan

In 2015 in preparation for the International Union for the Conservation of Nature-World Conservation Conference (IUCN WCC) which was held in Honolulu in September 2016, the CGAPS PIO and HISC Coordinator crafted a Biosecurity Journey as one of the major organizing themes for the conference. In May of 2015, fellow IUCN planning committee leader Christopher Dunn reached out to CGAPS to ask for help drafting a biosecurity resolution for an international conference that was held in Honolulu in July, the Association for Tropical Biology and Conservation (ATBC).

Through these projects, it became clear that our messaging needed help—it needed focus, a clear voice, and a voice stronger than what CGAPS or HISC had. What was needed was a strategic planning exercise that could achieve internal and interagency communications, a policy and resource assessment, public engagement in the process, an agreement on needs, and buy-in to propel the implementation of the plan.

Therefore, starting with the ATBC resolution, CGAPS began calling for the crafting and implementation of a 10-year biosecurity plan that would lay out the major needs for prevention, early detection/rapid response, and control of terrestrial and aquatic invasive species. The PIO met with HDOA Chair Enright to talk about the idea in September 2015, and Chair agreed on the need and committed full HDOA support and leadership for the process. As a “Legacy Commitment” of the IUCN WCC, the idea for the Interagency Biosecurity Plan was applauded by the conservation community, adding momentum.

In 2016 HISC Coordinator Josh Atwood took the lead by working with a core team at HDOA and the contractors to plan and hold stakeholder and public meetings, with the PIO assisting the project team with strategy and internal communications. CGAPS staff participated in the stakeholder meetings, reviewed and commended on two rounds of drafts, and assisted with coordinating other stakeholder comments.

HGG staff and the Chairs of HDOA and DLNR worked with Gov. Ige and his office to ensure the inclusion and announcement of the Interagency Biosecurity Plan in Gov. Ige’s welcome address at the opening of the WCC. The press conference announcing the plan was coordinated by DLNR, and further conveyed the importance of the issue and the opportunity for the public to review and provide input on the draft plan. At this writing, the final plan is awaiting the Governor’s approval for release.



tion and also coordinated the HMLF project which contracted Smithsonian Institute Environmental Research Center to assess in-water cleaning practices and available technologies until the end of March when he joined the Attorney General's office. In April, Andrew Porter, CGAPS Legal Fellow with HDOA, transferred to DAR to assist on ballast and biofouling issues. More progress on this Action is in the Legal Fellows section.

Action 5: Support voluntary and regulatory mechanisms that prevent inter-and intra-state movement of pests

CGAPS staff each supported different aspects of this Action, from promoting the use of the HPWRA and best management practices for pest detection and mitigation, to policy assistance provided by the Legal Fellows.

Action 6: Address lists regulating plants

Through HMLF support, CGAPS contracted botanist and former HPWRA Screener Shahin Ansari to develop a procedure to select high-risk invasive plants not yet present in Hawai'i that could be proposed for restriction by HDOA and USDA APHIS. That project has been extended several times and was being finalized in December 2016. In preparation for the need to take the products of this risk assessment process back to plant industry groups before entering the rulemaking process, CGAPS staff worked with Dr. James Leary of CTAHR and former OISC and KMWP staff Chelsea Arnott on a Graduate Assistantship to do this work in 2017-2018.

Goal 2: Expand Hawai'i's Biocontrol Program

Action 1: Assist in developing messaging regarding the importance of biocontrol; Action 2: Support the development of expanded capacity for biocontrol in Hawai'i

The biosecurity planning process conducted in 2016 helped clarify the need

for increasing the State's ability to do bio-control work and that there is a need for professional communications help on this and other topics.

Goal 3: Educate the public and decision-makers on importance of prevention*

Action 1: CGAPS will work with a professional contractor to develop a coordinated strategy

Agency buy-in of the need for a professional communications contractor, with assistance of CGAPS staff and others, was the first step. The release of the final Inter-agency Biosecurity Plan in January 2017 will hopefully reflect a timeline and funding mechanism to do this work.

Action 2: CGAPS will provide information support to decision-makers regarding prevention-based* policies and programs

CGAPS continued to provide information to decision-makers on various issues, including the undesirable impacts of proposed federal legislation that would preempt state authority to manage ballast water and biofouling, the research and response updates on ROD, and other topics described in this report. On project, the motion on International Biofouling marks the first attempt by CGAPS staff to engage decision-makers regarding international policy (see CGAPS Motion on International Biofouling on p. 5)

**Although preventing a species is less costly than controlling its impacts once it is here, prioritizing the MESSAGE of prevention over control is not helpful because many invasive species are already here and causing impacts that must be addressed. Messaging is balanced between prevention-based policies (the absolute importance of keeping new species out) AND the need to manage or reduce the impacts of high-priority invasive species already present in Hawai'i.*

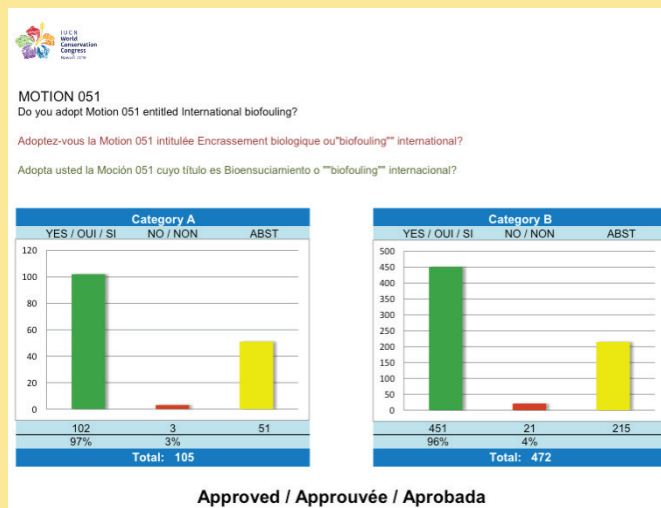
CGAPS Motion on International Biofouling

In December 2015 Denise Antolini of the University of Hawaii William S. Richardson School of Law announced that she would have a class that could help draft and submit Motions to the IUCN in 2016, prompting the CGAPS PIO and Legal Fellow Kevin Richardson to explore the idea of proposing a motion on biofouling. Together with the help University of Hawaii William S. Richardson School of Law student Stephanie Batzer, a draft motion was produced urging the International Maritime Organization (IMO) to begin work on transitioning voluntary best practices for biofouling management to a binding international convention, similar to the IMO Ballast Water Management Convention. The draft was sent to national and international biofouling colleagues for input and feedback, and sponsorship was requested and secured from IUCN member organizations including the Conservation Council for Hawai'i, Hawai'i Conservation Alliance, Lyon Arboretum, the Association for Tropical Biology and Conservation, the Sierra Club, and Island Conservation.

In February, the motion on International Biofouling was the first of seven motions submitted by Hawai'i, and it was one of 95 motions accepted for international debate in the months leading up to the WCC. During the summer, UH William S. Richardson student Claire Colgrove took over for Stephanie Batzer, who graduated in June, and CGAPS Legal Fellow Andrew Porter took over for Kevin Richardson, and both monitored the progress of the motion online. The motion went through two rounds of online comments, during which time there were no opposing comments or significant edits proposed, unlike many of other motions. In August, the International Biofouling motion was one of the motions with strong consensus approved for "en bloc voting" at the Members' Assembly portion of the WCC. The motion was formally voted on and adopted on the first day of the Members' Assembly. The text is available at https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_048_EN.pdf.

During 2015 and 2016, CGAPS was also actively engaged in opposing proposed federal legislation weakening ballast rules and preempting any regulation of biofouling, thus it seemed all the more important to try to promote international action in this area, and it was extremely gratifying to see the motion pass.

Although it is still too early to predict the potential impact of this motion, advice from Denise Antolini on motions is that, "The success of motions may lead to changes in policy or action in two ways: (a) as a "Resolution" that is internally directed to the IUCN and its members (including the IUCN Programme and mandates), or (b) as a "Recommendation" that encourages third parties to take action related to any matter of importance to the objectives of the IUCN. IUCN Resolutions and Recommendations are one of the strongest types of "soft law" that grow support for adoption of international environmental law agreements such as treaties and conventions."



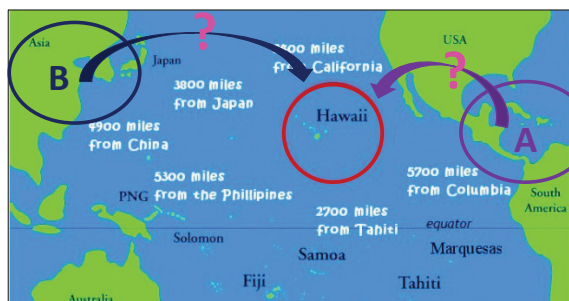
Goal 4: Identify key invasive species threats and coordinate response plans

Action 1: Coordinate and develop strategies to detect, respond to, and control new invasive species

A lot of the priorities that arose from the biosecurity planning process highlighted the need to institute risk assessments on commodities and at ports, the need to greatly improve our ability to detect pests such as plant diseases, and the increasing challenge of controlling invasive species due to public opinion of control measures. Beyond the biosecurity plan that articulates some of these strategies, CGAPS called for and helped to guide the development of the ROD Strategic Response Plan.

Action 2: Facilitate research on key threats and pathways using risk-based assessments

Several HMLF projects are progressing on this Action, including the work with the Smithsonian Environmental Research Center on biofouling and in-water cleaning, and with CTAHR on the risk of federal deregulation of a long list of invertebrates. Through securing of private foundation grants, CGAPS is also supporting molecular biology work on the ROD pathogens, their origins, and host pathways through which additional strains may enter Hawai'i.



Expanded sampling of dead ohia trees and DNA work on the pathogen revealed two pathogens responsible for ROD, and two source regions. Host pathway work is underway (from L. Keith slide, modified from <http://www2.padi.com/blog/2011/05/02/teach-your-child-to-protect-our-oceans/hawaii-map/>).

Action 3: CGAPS will evaluate the effectiveness of control responses

CGAPS did not have the human resource capacity to conduct or contract any evaluations of the effectiveness of invasive species control responses in 2016.

Action 4: Support the redevelopment of capacity for mosquito vector monitoring and response

The focus on mosquitos has greatly increased over the past two years due to the dengue fever outbreak on Hawai'i Island, and the threat posed by Zika, which is supporting calls for increased capacity at ports. In addition, in response to the recent projection of the loss of native forest bird habitat due to increase in mosquito and vectored diseases due to climate change, federal and state agencies are moving forward with looking at tools to reduce mosquito impacts to native species. These synergies have prompted greater participation by CGAPS staff in mosquito working groups, and has prompted a plan for investigating public opinion survey work on mosquito control techniques and other topics in 2017.

Action 5: Continue to help with effective pest reporting mechanisms

In 2015-2016, the PIO met with HDOA staff to relay the history of the 643-PEST hotline and how it was set up. Through these conversations, HDOA staff worked with the provider to better address the high number of calls received on Coconut Rhinoceros Beetles, Little Fire Ants, and coqui frogs, among other pest calls through a phone tree system. HDOA also took over the responsibility for tracking Pest Hotline calls, thus CGAPS will no longer report on this. CGAPS will continue to promote the State Pest Hotline, and will continue to assess public awareness and likelihood of reporting pests through surveys.

Goal 5: Identify, synthesize, and share information about prevention and control measures

Action: Work with HISC and other partners to identify available data, develop indicators, and share to gain support for current and future work

With the leadership of Hawai'i Green Growth (HGG), CGAPS and HISC staff participated in developing invasive species indicators for the Aloha + Challenge Dashboard (see <https://dashboard.hawaii.gov/aloha-challenge>). The majority of indicators are based on progress towards implementing the Interagency Biosecurity Plan.

CGAPS Operational Goals

The Strategic Plan also identified two Operational Goals: to explore potential changes to the organizational structure as part of, or a first step to, securing stable funding for at least one CGAPS staff position; and to grant-fund CGAPS priority projects through additional staff capacity, including a project manager.

Continuing from work in 2015 to shore-up PCSU as the administrative foundation for CGAPS and many critical projects, the PIO continued to assist in exploring a transition for Dr. Duffy, the Principal Investigator (PI). One of the possible avenues for targeting and hiring a non-traditional PI (that is, someone without a PhD and strong research and publication record in the biological sciences) for PCSU is to create a Faculty Specialist position. Interestingly, the draft Interagency Biosecurity Plan proposed "institutionalizing" within UH a handful of key positions such as the manager of the ISCs, HAL, and CGAPS, and it appears that the most appropriate way to do this is to make these positions Faculty Specialists. The agreement between each of these managers is that the idea is appealing in some ways, but there are known drawbacks uncertain impacts, and it would be inappropriate to list these transitions as action items in the biosecurity plan at this time.

The Steering Committee and PIO also assessed the existing staff structure, projects, and needs of the CGAPS, resulting in a change in the staffing structure. While the need to continue to address the import, sale and use of invasive plants continues to be a very high priority, the 2016 launch of KISC's Plant Pono Endorsed Nursery program, the successful second year of the Big Island's endorsement program, and the inclusion of a travel budget for the HISC-funded HPWRA screener Chuck Chimera are expected to continue and expand the awareness and use of the HPWRA. Therefore, CGAPS closed the HPWRA/Plant Pono Liaison position held by Amanda Skelton in November, and will create a project specialist position based on Oahu in 2017 that will focus on a variety of issues.

CGAPS PIO

The PIO position description lists public and policymaker outreach and media-related duties at 50%; staff direction and supervision, partnership coordination, and partner project support services at 25%; grants, planning, and project management at 20%; with 5% other duties as assigned.

The following is a snapshot of outreach projects and assistance provided in 2016.

- Assisted PCSU in working with a contractor on a transition plan, and coordinated a day-long meeting with PCSU project managers and leadership from UH, RCUH, federal and state agencies
- Assisted DOFAW and USFWS in preparing outreach materials on the draft PEIS for Rodent and Mongoose Control, and participating in public scoping sessions on each island
- Continued to serve as interim chair for the HISC Public Outreach Working Group and worked with HISC Support Staff Randy Bartlett and John-Carl Watson to coordinate meetings for outreach staff statewide to share and collaborate on messages and projects. Also

served as one of the reviewers for HISC project proposals

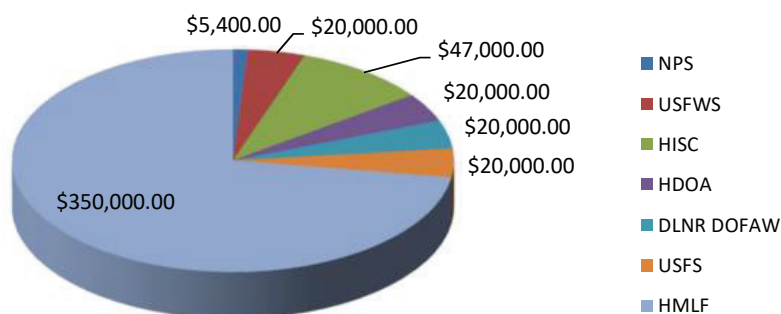
- Also continued to lead the Little Fire Ant Response Outreach Working Group (see Spot the Ant, Stop the Ant Campaign Update)
- Participated in the outreach working group and strategy working group on Rapid 'Ōhi'a Death by assisting in identifying and communicating messages with target audiences and funders (all photos at right). Drafted two briefing papers for meetings between the ROD researchers and Gov. Ige, and drafting a Call to Action for participants of a meeting called by Sen. Schatz. Worked with Dr. Gordon Bennett of CTAHR to coordinate and host a ROD Research Symposium at C-MORE Hale at UH Mānoa in March, which was also available for remote participation. Called for, and assisted in coordinating and drafting a ROD Strategic Response Plan. Coordinated the layout and printing of the Plan and the logistics for a ROD Summit at the Hawai'i State Capitol on November 30, which was attended by more than 200 people and available for remote participation. The morning session of the Summit is available for viewing on the Olelo Community Media website at http://olelo.granicus.com/MediaPlayer.php?view_id=20&clip_id=58224



Grantwriting

This year, the PIO shifted grant writing efforts from support of CGAPS to support for Rapid 'Ōhi'a Death. With assistance from CGAPS progenitor Alan Holt, the multi-agency ROD team, UHF, UH, HMLF, and partners in the non-profit

2016 Funds in Support of CGAPS Staff & Projects



community, the CGAPS PIO helped to coordinate the requests for ROD strategic research and response priorities, receiving \$273,500 in 2016. Fundraising for CGAPS staff and projects remained stable (chart at left).

Spot the Ant, Stop the Ant Campaign Update

The December 2013 discovery of LFA in hapu`u logs being sold at nurseries and garden shops on Oahu, Maui, and in a landscape on Lāna`i prompted the formation of an interagency LFA Response in the spring of 2014. Since that time, the CGAPS PIO has assisted HDOA by leading the outreach efforts through the LFA Response Outreach Working Group with the goal of increasing the chances of finding new infestations before they become too large to be eradicated. Since summer of 2014, the group has focused on raising awareness and public participation through surveying and submittal of ant samples.

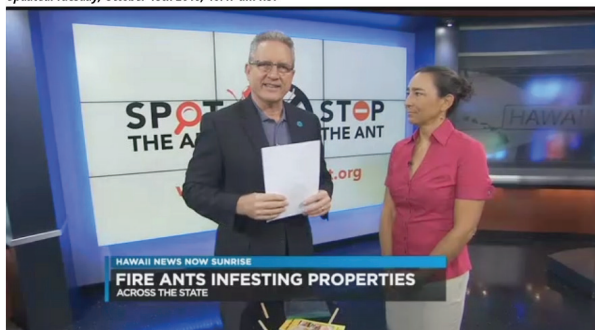
Work conducted in 2014 consisted of creating and printing a new brochure, redesigning and launching the Stop the Ant website, and creating a short video to show the public how to survey for ants, and transitioning a module on invasive ants from the Ho`ike o Haleakala environmental curriculum into a stand-alone 1-2 day project for schools.

In 2015, funding was received to conduct a radio campaign, and Spot the Ant, Stop the Ant Month was devised as a way to focus effort and attention on conveying the importance of surveying for ants and turning them in to HDOA for identification. The logo and branding were part of this work, and OISC led the effort to engage public libraries on Oahu to provide locations across the island for free test kit pick-up and drop-off (direct drop off of samples to HDOA offices during business hours and mailing of samples are both believed to be barriers). There was a modest rise in the number of sample submitted by the public during Stop the Ant Month, including 11 samples submitted through Oahu public libraries.

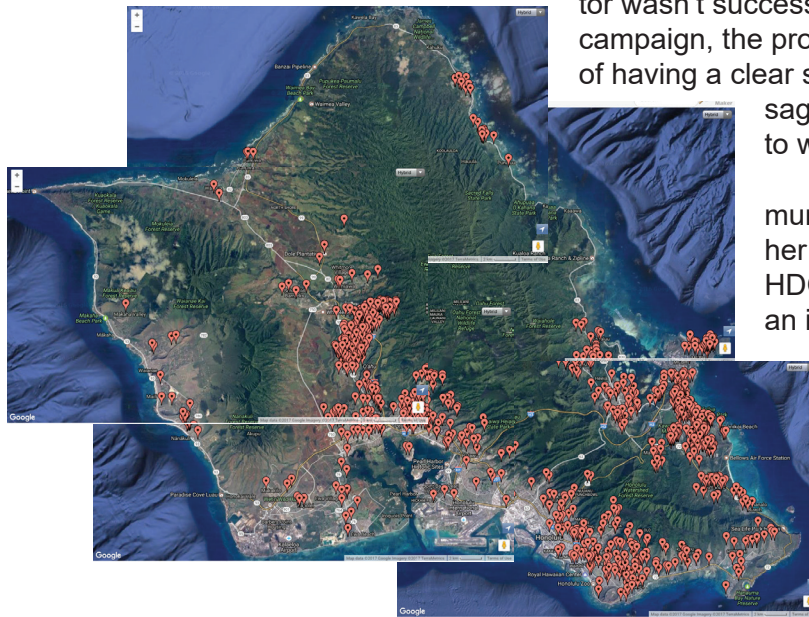
In 2016, HISC radio campaign funding was distributed to ISC outreach staff on each island to run radio ads during Stop the Ant Month, which was moved from September to October due to the WCC. Planning for the campaign started with examining the existing materials and messages, and ensuring that each island had the consistent message that ALL ant samples should be submitted for identification, and that HDOA supported the message and potential influx of ant samples. The second task was a review and update of the website and brochure, and the 2015 PSAs, which were good, but perhaps not as urgent as they needed to be. The LFA Outreach Working Group meeting was the perfect setting to discuss messages, and BIISC outreach specialist Franny Kinslow offered to transcribe some testimonials from Big Island residents talking about the impact of the ants on their lives. These messages were then crafted into 30-second scripts and distributed for use. In total, 786 30-second ads ran on multiple stations on Oahu, Kaua`i, and Maui in October, and stations provided additional interview slots as well (Big Island will also be using some radio funds, although their radio ads will air once the Hawai`i County pesticide coupon program is in place, as their ads are aimed at helping people detect and control LFA, which are fairly widespread in many areas of the Big Island). OISC again engaged 9 public libraries on Oahu to help (see <http://www.library-shawaii.org/event/spot-the-ant-stop-the-ant-a-community-campaign/2016-10-13/>), and Kaua`i and Maui also adopted the idea and were successful at engaging their help in being test kit distribution and collection centers.

During this time, assistance was also provided to MISC in contracting broadcast time for the second LFA documentary, and to OISC by helping Erin Bishop work with a private contractor to assist with the Stop the Ant campaign on Oahu. Although most of the work with the contrac-

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With the help of Hawaii News Now's Dan Cooke, viewers received a quick visual explanation of how to survey for LFA and how to turn in ant samples.



tor wasn't successfully implemented in time for the campaign, the project underscored the importance of having a clear scope of work, deliverables, messages, timeline, and dedicated staff to work closely with the contractor.

At the end of October, a community member in Kapalua surveyed her property for LFA and mailed it to HDOA, which was confirmed to be an infestation spanning 12 acres. It is

not yet known how the resident learned of LFA, how to survey, or where to send the ants, but clearly the collective outreach efforts are making a difference.

Data collection and other metrics for this project on Oahu have been better

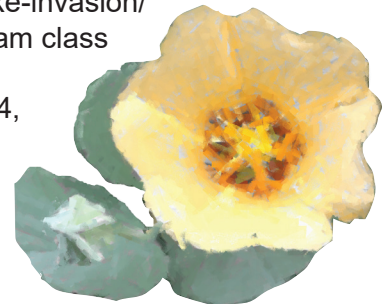
than for most invasive species outreach projects, due to the use of Podio, an online project and data management program where all public calls, surveys, and samples on Oahu are logged by HDOA, OISC and CGAPS. Since the start of the LFA response, there have been a total of 499 ant samples submitted by the public to HDOA on Oahu, most from surveys conducted on Oahu. In addition, the work with Oahu schools has garnered 1,202 samples collected by Oahu students surveying their yards and bringing the samples to school to conduct a staff-led identification lab (see schools data map above). To date, none of the samples submitted by students have been LFA, although several of the recent detections and reports of LFA have been through public samples and reports.

The majority of school samples collected in 2016 were thanks to the work of Chris Frohlich of OISC, with CGAPS garnering 40 data points from work with schools. All radio ads also included the Spot the Ant, Stop the Ant web address, and while Google Analytics was not set up on the site until October 16, 2015, we can compare the 217 visits to the website last year between October 16-30 (a non-campaign period) and 417 visits this year October 16-30 during Spot the Ant, Stop the Ant Month. Average time spent on the site and number of pages viewed were also higher during this time period in 2016, compared to 2015.

PIO Media, Outreach Presentations, Workshops & Events

- 1/13 Event: Organized day-long meeting: Taking stock of PCSU and charting future directions
- 2/2 Presentation: Invasive species update for Kunia Orchid Society
- 2/22 Presentation: The 5 worst invasive species for NREM seminar class
- 3/1 Outreach booth: Moloka'i public meeting on the draft PEIS for rodent and mongoose control in conservation areas
- 3/3 Outreach booth: Lāna'i public meeting on the draft PEIS
- 3/7 Outreach booth: Waimea, Kaua'i public meeting on the draft PEIS. Garden Island News article: Seeking input on rodent management. http://thegardenisland.com/news/local/seeking-input-on-rodent-management/article_640aee3-bc6c-5eca-b5be-ad815377748b.html
- 3/8 Outreach booth: Lihue, Kaua'i public meeting on the draft PEIS
- 3/9 Film: Panel discussion on Rapid 'Ōhi'a Death for LCC/public access television

- 3/9 Newspaper editorial: <http://www.staradvertiser.com/2016/03/09/editorial/island-voices/non-native-pests-expand-the-fight-against-invasive-species/>
- 3/10 Outreach booth: Maui public meeting on the draft PEIS
- 3/14 Outreach booth: Hilo public meeting on rodent and mongoose control for draft PEIS
- 3/15 Outreach booth: Kona public meeting on rodent and mongoose control for draft PEIS
- 3/17 Film: Panel discussion on LFA for LCC/public access television
- 3/24 Film: Panel discussion on biofouling for LCC/public access television
- 3/31 Presentation: Spot the Ant, Stop the Ant for Iolani School 3rd grade; ID lab on 4/8
- 5/3 Event: Assisted in coordinating the Rapid 'Ōhi'a Death Research Symposium
- 5/17 Film: Panel discussion on Coconut Rhinoceros Beetle for LCC/public access television
- 5/20 Panel presentation: Invasive species for HCA
- 6/22 Presentation: Raising capacity in Hawai'i to address invasive species for DOI Islands and Territories workshop
- 8/29 Event: Invited participant in Senator Schatz's meeting on ROD
- 9/2 Presentation: Raising capacity of islands to address invasive species for IUCN WCC Islands at risk session
- 9/3 Panel presentation: Milestones in addressing invasive species in Hawai'i for IUCN WCC Conservation Case" How to effectively institutionalize invasive alien species programs
- 9/8 Field day: Led a biosecurity field trip for IUCN staff and Invasive Species Specialist Group leaders
- 9/21 Presentation/Training: Stop the Ant lesson and activity for Kupu RISE trianees
- 10/1-10/31 Radio ads: Spot the Ant, Stop the Ant month radio ads on Oahu, Maui, Kaua'i
- 10/2 Television interview: Biosecurity plan formed to protect the islands from invasive species. <http://khon2.com/2016/10/02/biosecurity-plan-formed-to-protect-hawaii-from-invasive-species/>
- 10/4 Radio interview: Public hearings set being conducted for draft interagency biosecurity plan. Hawai'i Public Radio. <http://hawaiipublicradio.org/post/public-hearings-being-conducted-draft-interagency-biosecurity-plan>
- 10/6 Event: Planned and moderated a track at the Landscape Industry of Hawai'i annual conference featuring ROD and a native plants panel to move implementation of the Native Plants law (2015 Act 233) forward
- 10/17 Newspaper interview: Brown tree snake remains significant, costly risk. Hawai'i Tribune Herald <http://hawaiitribune-herald.com/news/local-news/brown-tree-snake-remains-significant-costly-threat>; West Hawai'i Today <http://westhawaii.com/news/local-news/real-concern-over-reptile-risk>; and Washington Times <http://www.washingtontimes.com/news/2016/oct/18/brown-tree-snake-poses-costly-threat-to-hawaii/>
- 10/18 Television interview: Spot the Ant, Stop the Ant on Hawai'i News Now. <http://www.hawaiiinewsnow.com/story/33420208/group-aims-to-fight-off-little-fire-ant-infestation>
- 10/19 Newspaper interview: Biosecurity plan. <http://www.staradvertiser.com/2016/10/19/hawaii-news/biosecurity-plan-cites-costly-effects-of-tree-snake-invasion/>
- 10/26 Presentation: NGO opportunities for Marine Option Program class
- 11/30 Event: Assisted in coordinating ROD Summit, http://olelo.granicus.com/MediaPlayer.php?view_id=20&clip_id=58224, and afternoon breakout sessions. <http://www.bigislandvideonews.com/2016/12/01/video-rapid-ohia-death-summit-convened/>
- 12/9 Radio interview: invasive species for Hawai'i Matters
- 12/11 Talk story: ROD for Merrie Monarch kumu hula meeting



2016 Hau'oli Mau Loa Foundation Prevention Projects

In 2011 Hau'oli Mau Loa Foundation selected CGAPS as their partner to help achieve some of their environmental protection priorities. Each year, the CGAPS Steering Committee prioritizes a short list of projects for funding consideration, and 2016 was the fifth year of collaborative projects. Some projects are multi-year, others have a 1-year term. Summaries are provided as updates on progress, summarized from progress reports submitted by contractors and project personnel.

CGAPS Legal Fellows

The CGAPS Aquatic Legal Fellow position transitioned from Kevin Richardson to Andrew Porter (the former terrestrial legal fellow) in May of 2016. As a former captain, maritime attorney, and recipient of the Graduate Ocean Policy Certificate at the University of Hawaii, Andrew's experience and knowledge of marine policy has made him uniquely suited to the aquatic legal fellow position.

The main focus of the aquatic legal fellow has continued to be the regulation of ballast water and biofouling. Both Kevin and Andrew worked closely with the new DAR Ballast Water and Biofouling Coordinator, Julie (Jules) Kuo, who has a scientific background and extensive experience in ballast water treatment systems.

The introduction of an update to the Hawaii ballast water regulations continued to be on hold much of the year as Congress reintroduced the Vessel Incidental Discharge Act (VIDA) as part of the National Defense Authorization Act (NDAA). This was a revised version of the preemptive federal legislation introduced in past years; however, with widespread support and as a minor section in an imperative national defense act, VIDA enjoyed a high probability of passing into law this year. Much of Andrew's time was spent briefing state legislators, department heads, the attorney general's office, and our congressional delegation on the intricacies, implications, and impacts that VIDA would have on Hawaii's harbors and nearshore waters. Additionally, Andrew and Jules worked in collaboration with ballast water and biofouling managers representing the Pacific Coast states in developing several

letters to be jointly signed by groups such as the Western Governors Association and the National Association of Attorney Generals. After months of campaigning against it, VIDA was dropped from the NDAA just before it was passed into law in November.

Andrew has completed final revisions to the proposed amendments to the ballast water regulations and the rulemaking process is slated to begin in early February of 2017. The rulemaking process will include a meeting of the Alien Aquatic Organism Task Force (AAOTF) in March that will offer an overview of the proposed amendments and provide a forum for stakeholder input. Information garnered from the AAOTF meeting will be incorporated into the proposed rule prior to beginning the process of presentation to the



The success of the CGAPS Legal Fellows program was shared with participants of a territories capacity-building workshop with National Invasive Species Council Exec. Director Jamie Reaser (presenting), and organized by DOI Deputy Esther Kia'aina. Participants from Guam have since initiated planning for Legal Fellows for their new Biosecurity Program.

Board and publication for public comment.

Andrew and Jules have also been in consultation with the United States Coast Guard (USCG) in developing a program for state inspectors to test ballast water compliance levels during USCG vessel inspections. Andrew has developed a Memorandum of Understanding between the State and the USCG to allow for continued collaboration during vessel inspections. Andrew and Julie are currently developing Standard Operating Procedures for Division of Aquatic Resources inspectors to test ballast water for compliance on a regular basis.

Andrew and Jules have also been in consultation with the Department of Transportation, Harbors Division (DOT) in setting the groundwork to develop regulations and policies for biofouling and in-water cleaning in Hawaii harbors. A major hurdle in developing in-water cleaning regulations is ensuring that technology that prevents the introduction of aquatic invasive species and chemical elements to Hawaii waters during the in-water cleaning process is commercially available and economically viable. To this end, a meeting was set up in which Franmarine, a leading in-water vessel cleaning company, presented a detailed account of new developments in in-water cleaning technology to representatives from DAR, DOT, and the Department of Health (DOH). A second meeting of the AAOTF is tentatively planned for the Summer of 2017 to gain input from stakeholders on this issue. Andrew has developed a pending Memorandum of Agreement

between DAR and DOT and will continue to work with both DOT and DOH in developing in-water cleaning and biofouling regulations.

Andrew also participated in the development of the aquatic invasive species portion of the Hawaii Interagency Biosecurity Plan and worked closely with students from the William S. Richardson School of Law in finalizing and presenting a motion calling on IUCN member nations to develop an international framework to prevent the introduction of AIS through biofouling. As part of the William S. Richardson School of Law, Andrew also assisted Associate Dean Denise Antolini in welcoming environmental judges from across the globe to the WCC Judges in Nature program, and attended many of the legal sessions and the Motions process of the conference.

In December, CGAPS hired a new terrestrial legal fellow, Timothy Sutton, who will begin in January 2017 with HDOA Plant Quarantine under the direct supervision of acting Plant Quarantine Branch manager Jonathan Ho, in partnership with CGAPS and the William S. Richardson School of Law. Some of Timothy's projects will be to follow up on Andrew's progress in transferring certain violations of HDOA's regulations to the jurisdiction of the Environmental Court System and the development of a civil resources violations system for HDOA invasive species prevention-related regulations. Other projects will include drafting of rules and formation of an invasive plant restriction list, and continuing to work on strengthening import and inter-island quarantine rules.

Capacity Support for CGAPS (annual)

Besides partial support for the PIO, HMLF funds supported Amanda Skelton, the Plant Pono/HPWRA Liaison. Amanda continued to work with the Plant Pono website and database contractor to complete changes and updates to the functionality of the site. Overall website use has increased in 2016, with 9,269 users compared to 8,413 users in 2015, and 6,950 in 2014. Session duration, page views, and pages per session also increased, and the bounce rate is lower than previous years.

Outreach also continued with the Hawai'i Tropical Fruit Growers, landscape and nursery industry associations and businesses, and special training sessions were conducted with the Kaua'i Master Gardeners. The Plant Pono brochure was updated and reprinted, and several presentations were made to school groups.

Although very important, the decision to restructure CGAPS staffing saw the closure of this position in October 2016, and a new project specialist position is planned for 2017.

Guidance Document for Rapid 'Ōhi'a Death

HMLF 2016 funds supported a contract for Dr. Lloyd Loope to draft a guidance document that would help inform the response to ROD. Over the course of the year, Dr. Loope conducted literature reviews, participated in research and response meetings, and produced several drafts of the Guidance Document with input and reviews by key people. The document is a wealth of information about 'ōhi'a and its importance, the Ceratocystis disease group, and the impact of the two new Ceratocystis spp. on 'ōhi'a in Hawai'i. As such, it is an excellent resource that gives an orientation to those new to the response. In the summer of 2016, information from the document was used as the basis for a Strategic Response Plan, which is a short document drafted by teams of participants in the ROD response and the main ROD researchers. The final Guidance Document for ROD is being formatted and will be available shortly.

Compiling a Proposed List of Offshore & Incipient Invasive Plants for Restriction (2014, extended to December 2016)

Contractor Shahin Ansari continued this project that gathered the invasive plant lists from all states and several countries, identified which ones were not present in Hawai'i or the continental U.S., and that were not currently restricted from entry, and finally using the HPWRA to assess the invasive risk potential of that list. The final report and list was delayed because Shahin also works for the contractor drafting the Interagency Biosecurity Plan.

Biofouling & In-Water Clean Technical Report (2015, extended to December 2016)

This project contracted Smithsonian Environmental Research Center (SERC) to assess the risk posed by ship biofouling and in-water cleaning, and propose options for reducing or managing the risk. The majority of scope of work was conducted in 2015, although the interviews of hull cleaning companies were delayed until Jules Kuo could get acclimated and conduct that work. The final report is being formatted and will be released shortly.

Little Fire Ant Detector Dog (2015-2016, extended to December 2017)

HMLF funding for this pilot project has been extended, as the dog selection and successful training by the contractor is still underway. In 2016, project lead Teya Penniman transitioned from MISC Program Manager to special projects, and the LFA Detector Dog project will continue to be one of her main projects.

Reducing Interisland Pest Movement at the Source (2014-2016, extended to June 2017)

This project provided three years of support to Dr. Arnold Hara of the UH College of Tropical Agriculture and Human Resources, to test quarantine treatments to prevent the spread of pests, and to develop and promote the use of best management practices to survey for and control coqui frogs, LFA, and other interisland quarantine pests at approximately 10-12 plant nurseries that ship interisland. Additional grants from other agencies to Dr. Hara for testing quarantine treatment for cut flower and produce export, and other commodity treatment work greatly enhanced the benefits of this project. Dr. Hara regularly produced technical reports that are shared with CGAPS partners including the ISCs and Hawai'i Ant Lab. Besides their ongoing work with more than a dozen nurseries, Dr. Hara has started working on an additional tool for large nurseries to address LFA using unmanned aerial vehicles (UAVs). Completing the regulatory process for testing the application of ant baits by UAV took a lot of time, thus this project has been extended through June of 2017.

Actionable List of Insects and Plant Pathogens (2016 extended to June 2017)

This project is being conducted by Drs. Michael Melzer and Helen Spafford of CTAHR and student assistants to review the insect and plant disease species listed on the Federal non-reportable pest list; review and produce a list of emerging insect pests and plant diseases not currently listed for key HI crops; and to review other Pest Risk Assessments such as the recently completed Forest Health Pest Risk Assessment to identify additional insect pests and plant pathogens that are currently not actionable by Federal inspection agencies. The final product will be a report with one or more lists of species that will be used by HDOA and CGAPS to request federal protection for Hawai'i from those pests that are high risk. The project is nearly complete, although timing of semesters for student assistants has required a short extension.

Support for Hawai'i Green Growth (annual)

HGG continued to be successful in convening a wider group of partners to support common goals. The groundwork that HGG puts into identifying and selecting by consensus the slate of legislative bills that HGG supports was helpful for CGAPS and partners for ongoing priorities, and also extended the reach of CGAPS priorities such as the Interagency Biosecurity Plan. HGG Executive Director Celeste Connors, assisted by HGG staff and fellows, provided strategic direction, coordination, and communications for the Legacy projects of WCC. Events and press releases on HGG initiatives such as Gov. Ige's Sustainable Hawai'i Initiative announced at the opening of the WCC and the Aloha+ Challenge event which saw the Governor, County Mayors, Office of Hawaiian Affairs, and University of Hawai'i highlight action and progress towards the 2030 sustainability goals. One of the biggest challenges that HGG continues to meet head-on is the integration of different groups and priorities (e.g. renewable energy, climate change, food security, water security, invasive species, etc.) under one umbrella of sustainability.



ROD Emergency Special Funding Projects (2016, extended to December 2017)

The unprecedented emergency of ROD prompted HMLF to provide urgently needed support for the response. Four projects were proposed totaling \$225,000, the two highest need projects have been completed, and the other two are underway.

Support was provided to CTAHR through Dr. J.B. Friday to continue to support for six months Dr. Wade Heller, the microbiology post-doc assisting pathologist Dr. Lisa Keith of USDA Agricultural Research Service. Dr. Heller's work on the ROD pathogens resulted in the development of a rapid DNA diagnostic test, shortening the time it took to verify the presence of the pathogen in a sample from two weeks to two hours. Further work is making and testing a rapid field test kit that is about the size of a briefcase for on-site testing by rapid responders. As part of this work, Dr. Heller also conducted DNA and other identification work that showed that we were dealing with two pathogens instead of one. This position has continued to be supported through a variety of grants, and is one of the highest funding priorities for the Strategic Response.

Support was also provided to CTAHR through Dr. Melzer and Dr. Gordon Bennett to support six months of salary for Dr. Bennett's entomology post-doc, Dr. Curtis Ewing. Dr. Ewing has been central in collecting and cataloging the wide variety of insects that could play a role

in the transmission of ROD, either directly or indirectly. Dr. Ewing was able to prove that ambrosia beetles attracted to dying and dead 'ōhi'a are burrowing through the wood and that the resulting sawdust carries the pathogens. Further, the beetles themselves also carry the pathogen, although it still isn't clear if the beetles can and do transmit the disease. This position has also continued to be supported through different grants, and is among the highest of priorities. HMLF funding for both Dr. Heller and Dr. Ewing were critical in filling temporal gaps, and without it, these positions would likely have faced layoffs.

HMLF funding was also awarded for Dr. Friday to support a pathology technician to assist Dr. Keith. As this was to be a new position, there was a lot more preparation and background work that needed to occur, and the team did not have the time and resources to do this until late 2016. The position description was crafted and approved by RCUH, and it has been posted for recruitment.

The final project that received support was provided to Dr. Melzer to create and hire a statewide ROD outreach coordinator. The position description was created in March and posted for recruitment, although the hiring committee decided to close recruitment and re-advertise when it was discovered that only the minimum salary (not the salary range) was included. The position was reposted, interviews were conducted in December 2016, and we are expecting to announce the selectee shortly. The new coordinator will initially be placed at PCSU near the PIO for training and collaboration.

2017 HMLF Projects

Item	2017 Projects	Term	Subtotal	Admin	Overhead	Total
1	Law Fellowship funding for partial year two legal fellows + up to 2 interns, materials & supplies, operating costs	1/30/2018	\$ 104,500	UHF	\$ 5,500	\$ 110,000
2	CGAPS Core Support: partial year for PIO and projects specialist; materials, supplies, operating costs; PCSU direct	1/30/2018	\$ 114,000	UHF	\$ 6,000	\$ 120,000
3	Two years support for a GA at UH Mānoa to work on consensus-building for restricted plant list	12/31/2018	\$ 57,000	UHF	\$ 3,000	\$ 60,000
4	Contracts for qualitative research/professional surveys	12/31/2017	\$ 31,818	HCAF	\$ 3,182	\$ 35,000
5	Support for Hawai'i Green Growth	12/31/2017	\$ 23,364	OEDB	\$ 1,636	\$ 25,000
Total						\$ 350,000

	2017 ROD Supplemental Project	Term	Subtotal	Admin	Overhead	Total
1	ROD Rapid Response Emergency Fund	12/31/2018	\$ 166,350	UHF	\$ 8,650	\$ 175,000