



**A Proposal to the
Hau'oli Mau Loa Foundation
for
2018 CGAPS Invasive Species Prevention Projects**

Introduction

Many projects in our 2018 proposal reference the results of projects previously funded by Hau'oli Mau Loa Foundation. It is gratifying to look back and see how the previous six years of work form the building blocks for where we are today, and this would not have been possible without the help of the Foundation.

The Legal Fellowships continue to be successful, and in 2018 we expect to formally enter rulemaking to update State ballast water rules, and take the next step in addressing barriers to formulating draft rules for regulating biofouling. We also expect to be able to draft suggested language for regulating the importation and sale of certain invasive plants.

CGAPS has also succeeded in selecting Chelsea Arnott as CGAPS Planner, and 2018 will see the allocation of some projects and duties to Chelsea, who will also continue in her current NREM Master's program and year two of her HMLF-funded Graduate Assistance project for CGAPS.

CGAPS continues to participate in and support the goals of Hawai'i Green Growth, not just for invasive species work, but also for their work with people. HGG continues to make great strides in engaging partners and in incorporating next-generation leaders into their structure.

Two proposed 2018 projects are completely new to CGAPS, and we are requesting that both be administered by Hawai'i Conservation Alliance Foundation (HCAF) primarily due to contracting--one project would support work by an international not-for-profit, and the other may involve a foreign contractor. These projects have been discussed with Emily Gardner of HCAF, and we will be using new language in the Scopes of Work to ensure better billing, payment, and tracking of projects.

The final project is a supplementary request for ROD. Last year, HMLF provided funds for Emergency Rapid Response travel and supplies for islands other than Hawai'i Island where ROD is not yet present. We anticipated that groups would quickly organize on each of the islands without ROD, and that the plans would clearly indicate lead agencies and organizations, and following that we were anticipating submitting a letter requesting the use of some of these funds to pre-purchase some response equipment for kits. However, each of the islands is at different stages in planning. Therefore, after consulting with partners on each island, we are requesting funds to hire a limited-time staff to help each island in the planning process.

As in past years, there are several existing projects for which we will need to request grant extensions, and this will be submitted in a separate letter. Mahalo for your flexibility in these grants! As always, please feel free to contact us with any questions or concerns about these or the projects proposed for 2018. We are truly grateful for your help and support. Mahalo nui loa.

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Project 1: CGAPS Invasive Species Law Fellowship Program (Goal 1, Actions 1-6)

Executive Summary

This project will provide continued salary and operational support for two full-time William S. Richardson School of Law Legal Fellows, and up to two interns or externs to work in collaboration with CGAPS in reviewing invasive species prevention related statutes and rules, providing internal analyses, and drafting improved statutes and rules for consideration.

Background

The CGAPS Law Fellowships continue to be one of the most successful projects of our partnership with HMLF. Andrew Porter continues to assist the Department of Land and Natural Resources-Division of Aquatic Resources (DLNR DAR) on ballast water and biofouling issues, and is helping the Department prepare for the formal rulemaking process to update the state ballast water regulations. The multi-year nature of rulemaking includes engaging stakeholders for constructive dialog well before entering formal rulemaking, and the project greatly benefits when legal fellows remain for more than a year. Timothy Sutton, the second Legal Fellow was with us at the Hawai'i Department of Agriculture Plant Quarantine (HDOA PQ) for just under six months, from January through early June, 2017, when he resigned to pursue his dream job. Recruitment for this position was delayed during the summer and fall due to travel schedules, but is nearly complete. This fellow will work directly with Acting Plant Quarantine manager Jonathan Ho, in collaboration with CGAPS, and will focus on proposed changes for streamlining and clarifying plant and animal importation and restriction rules, including rules to enable the formation of an invasive plant list for domestic import restriction, the Myrtaceae restriction rule, and other priority projects.

Existing funds are projected to last until July 2018, assuming the PQ fellow is hired and starts Feb. 1, 2018. This request is for \$120,000, which would support two FTE from July 2018 - January 2019 with salary and fringe, travel, materials and supplies, plus up to University of Hawai'i William S. Richardson School of Law interns or externs.

The legal fellows will be responsible for continuing work on the following issues, in order of priority:

- Support DLNR DAR on rule-making to update state ballast water rules
- Support DLNR DAR in planning AIS mitigation protocols and compliance prior to planning rulemaking to address biofouling
- Support HDOA Plant Quarantine in proposed rulemaking to restrict domestic importation of certain invasive plants, and subsequent request to USDA for



University of Hawai'i William S. Richardson School of Law Associate Dean Denise Antolini holds a monthly networking gathering of current and past Legal Fellows and friends.

- federal rulemaking for foreign importation
- Support HDOA in rulemaking restricting domestic importation of Myrtle family plants, and parallel request to USDA for federal rulemaking for foreign importation
- Gaps in quarantine action authority for federal agencies when human health vectors are found in international cargo or conveyances
- Address DAR policy gaps regarding aquaculture, including permitting for culture, facilities inspection (for biosecurity purposes), and compliance
- Support HDOA in exploring moving some of their invasive species violations to the Environmental Court
- Support CGAPS in implementing its Strategic Plan and the Interagency Biosecurity Plan

Deliverables

The deliverables will consist of regular reports and a year-end final report on progress towards these and other priority issues. Due to previous grant expenditure timelines, we are requesting a two-year grant term for this project.

Budget: \$120,000 (\$6,000 UHF overhead)

Project 2: Capacity Support for CGAPS PIO and Planner

(Multiple Goals and Action items; Goal 1, Action 5 & 6; Operational Goal 2)

Executive Summary

Funds are requested for up to eight months of salary, plus operating support for the CGAPS Statewide Invasive Species Public/Community Relations Coordinator (shortened to PIO), and six months of salary plus operating costs for the new CGAPS Planner. The goals of this position are to facilitate engagement and inter- and intra-agency communication; to coordinate and catalyze collaborative projects towards the goals outlined in the CGAPS Strategic Plan; to promote key outreach messages; to educate decision makers, special interest groups, and the public about invasive species in order to effect a change in perception, actions, rules, or funding for invasive species issues. As a project of the University of Hawaii's Pacific Cooperative Studies Unit, CGAPS staff also conducts and coordinates research, and functions as a connector between the University's knowledge base, resource management agencies, and the community.

Background

The University of Hawai'i is a key resource in the effort to protect Hawaii's natural resources, economy, and residents from the threats posed by invasive species. Under the direction of Dr. David Duffy and in partnership with the CGAPS Chairs, this project will benefit the University of Hawai'i by integrating faculty, researchers, and students in Hawaii's biosecurity programs. Close collaboration between biosecurity agencies and the University also provide research and outreach capacity where there are currently gaps, and in turn, greater integration between the University and in Hawaii's biosecurity programs will enable faculty to identify job training and research pathways.

One example of this integration can be seen in the hiring of the new CGAPS Planner. The hiring committee, composed of CGAPS Steering Committee members and PIO, selected current UH CTAHR Natural Resources and Environmental Management Master's student

Chelsea Arnott, who is currently funded by HMLF as a part time Graduate Assistant under the direction of Dr. James Leary, CTAHR Assistant Specialist on Invasive Plant Species Management and the CGAPS PIO. Chelsea will continue her work on the 2-year GA project working with nurseries and landscape industry to gain support for rules to restrict the importation of certain invasive plants, and will take on new projects for CGAPS. The additional projects and time commitment by Chelsea will increase over the next two semesters, thus the additional request of 5 months of salary, fringe and operating costs to support the commensurate pay increase.



One of the core functions of CGAPS is to facilitate inter-and intra-agency and NGO communication. Facilitating quarterly meetings are one of the ways that this objective is met.

Funding for the CGAPS PIO will cover up to 8 months of salary and operating costs to continue work on CGAPS goals, manage HMLF prevention projects, contractors, and staff. Contributions from the Hawai'i Invasive Species Council, Hawai'i Department of Agriculture, National Park Service, U.S. Forest Service, and U.S. Fish and Wildlife Service also support the salary, fringe, and operating costs of position.

Deliverables

Progress reports are provided to the CGAPS Steering Committee and funders at quarterly meetings and upon request, and a final report will be produced and shared within thirty days following the end of the calendar year. Measures of effectiveness are included for projects where appropriate. Like the Legal Fellows project, we are requesting a two year grant period for this project.

Budget: \$137,000 (\$6,850 UHF overhead)

Project 3: Support for the Hawai'i Green Growth (Goals 3 & 5)

Executive Summary

Funds are again requested to provide support for Hawai'i Green Growth (HGG) leadership and work on 2018 partnership goals, including the implementation of dashboards for invasive species and natural resource protection, and collaborative advocacy around shared priorities including the implementation of the Statewide Interagency Biosecurity Plan.

Background

Funds are requested to help support HGG, a public-private partnership that catalyzes action across government, private sector, and civil society to promote a culture of sustainability through the *Aloha+ Challenge* 2030 sustainability goals, the IUCN Congress Legacy outcomes, increased sustainability coordination capacity within the state and counties, and the establishment of the Hawai'i Sustainability Business Forum. At the November HGG Retreat, partners identified 2018-2020 strategic priorities for action, including identifying policy and finance priori-

ties to implement the Aloha+ Challenge 2030 goals; engaging communities through data and the Dashboard; supporting next generation local global servant leaders; and building climate resilience through the Ala Wai Watershed model. HGG also focuses on engaging high-level leadership, integrating sustainability priorities into long-term policy, and uplifting partner priorities through the statewide framework. Through participation in HGG, CGAPS taps into a broader network for shared messaging and support.

Financial support for HGG is shared among multiple agencies and entities. Funding is requested to provide partial support to HGG for core operations and projects, which will focus on these priority areas in 2018-2020:

- Advance public-private policy priorities that create shared value and catalyze at least two major cross-sector initiatives that help achieve Hawaii's 2030 goals
- Engage communities and students on the Aloha+ Challenge through the online open-data Dashboard to empower and accelerate statewide action
- Build pathways to cultivate next generation local and global leadership on sustainability solutions grounded in systems-thinking and traditional knowledge
- Increase Hawaii's resilience to climate change and natural disasters to meet the Paris Agreement, and develop an innovative and holistic resiliency model in the Ala Wai Watershed



HGG messaging and communications at the Mālama Honua Fair.

Deliverables

With continued support, HGG will continue to make progress on all bullet points listed above, and progress reports will be provided.

Budget: \$25,000 (\$1636 O'ahu Economic Development Board overhead)

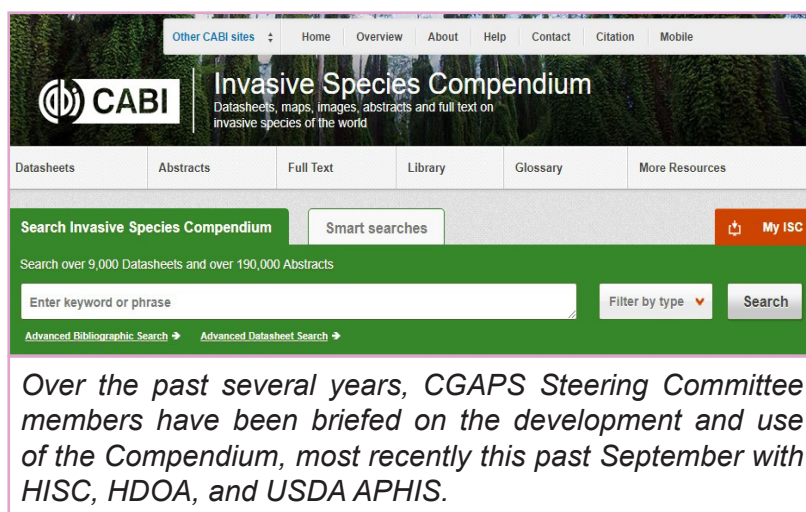
Project 4: CABI Invasive Species Compendium (Multiple Goals and Action items: Goal 1, Action 5, 6, Goal 4, Action 2)

Executive Summary

Funding for this project would support a contract with CABI, the Centre for Agriculture and Biosciences International, to research, produce, and post on the CABI Invasive Species Compendium website (www.cabi.org/isc) full datasheets on six of CGAPS's priority species for prevention as a pilot project to assess whether or not it is beneficial in supporting risk assessments and prevention policies.

Background

The Invasive Species Compendium is a product of CABI, an international not-for-profit organization that aims to improve people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment, and one focus is the problem of invasive species. CABI's approach involves putting information, skills and tools into people's hands, and the Invasive Species Compendium is a good example



of their work. The Compendium is composed of a custom -built database that holds detailed datasheets on all types of invasive species (except human pathogens) that have been written by experts, edited by an independent scientific organization, peer reviewed and enhanced with data from specialist organizations, images, maps, and a bibliographic database of abstracts and full text articles on those species. The Compendium also features a web-crawler that searches for newly published information on those species and adds them to the database.

The construction of the database, website, and web-crawler has been funded by international contributions totaling \$4.75 million (USD) to date, and CABI has committed to maintaining the resource, the scientific and technical expertise, and adding datasheets. However, a contract with CABI would prioritize species of particular concern to Hawai'i, species that might otherwise not be researched and posted for years.

There are currently more than 9,000 datasheets in the database, with full datasheets averaging 40-100 pages and partial datasheets with fewer pages. Hawai'i currently has approximately 1,050 full datasheets on species that are already present such as miconia and coffee berry borer. New datasheets and data sets continue to be added, datasheets are reviewed and updated, and new scientific literature is included on a weekly basis. The information is freely available and is used for a variety of purposes, but CGAPS is particularly interested in its utility as a resource that is used in risk assessment processes for a variety of agencies, and for its potential to assist in supporting invasive species prevention policies.

This pilot project would start with the selection and submittal by CGAPS of 7 invasive species that are not currently regulated (for example, a species that poses a high risk to Hawai'i but is not restricted for importation, and other scenarios), followed by production and posting of datasheets by CABI, although a full assessment of the use of the datasheets for policy would occur in future years.

Deliverables

The deliverables would be the research, development, and posting on www.cabi.org/isc of 6 full datasheets and one partial datasheet on the species provided by CGAPS. A report on the process and analysis of utility of will be included in 2018 and future annual reports.

Budget: 10,000 (\$1,000 HCAF overhead)

Project 5: Testing In-Water Cleaning Technologies (Multiple Goals and Action items: Goal 1, Action 4; Goal 4, Action 1)

Executive Summary

Funding would support one or more contracts for this two-phase project to plan, then test and assess the efficacy of one or more full-capture in-water cleaning technologies for mitigating biofouling while protecting water quality and sediment standards. The project will be conducted in close collaboration with relevant county, state and federal agencies, and stakeholders. Pending cost estimates, testing of samples may be conducted as part of a separate grant request and contract.

Background

Vessel biofouling, the growth of marine species on the hulls and in the niche areas of vessels, is a significant risk for the introduction and spread of invasive aquatic species into and around Hawai'i, and it is unregulated by federal agencies and the State of Hawai'i. HMLF support continues to provide the building blocks for addressing this risk. The 2014 report by the Smithsonian Environmental Research Center (SERC) found that up to 78% of the non-native marine species in Hawai'i waters arrived through this vector and that the use of anti-fouling coatings and dry-docking of vessels were supplemented by more frequent in-water cleanings. The 2016 in-water cleaning technologies and risk report by SERC found that in-water cleaning was occurring in Hawai'i harbors, and that the current practices may pose biosecurity and water quality risks. The report also described some full-capture in-water cleaning technologies that could be used to mitigate risks.

In-water cleaning technologies are not well-known in Hawai'i, and the new "full-capture" technology has tremendous potential to meet the needs of resource protection and regulatory agencies and the shipping industry. Several countries have tested these systems and are moving ahead with implementing biofoul management regulations. For Hawai'i, planning and conducting a pilot test of full-capture in-water cleaning technologies is the next logical step.

This project would be conducted by contract in two phases. The first would be the planning phase, which has informally started to identify and engage agency participants to assist in the selection of a contractor and participate in planning the design of the pilot project. Existing protocols from partners in California, New Zealand, and Western Australia will be used and modified if needed. The second phase would be to conduct the testing of one or more of the technologies in Hawai'i. Pre-and post-sampling of water and sediments will be conducted, although the analysis of the samples will likely require additional funds, and we anticipate that



Full-capture in-water cleaning systems capture the water and materials removed from hulls during cleaning. One example is the Envirocart system which has a separate unit (pictured above) that filters and UV treats the water and materials shaved and suctioned off hulls by an attached in-water unit. Source: http://www.fish.wa.gov.au/Documents/occasional_publications/fop114.pdf

this will be one of our 2019 proposed projects. There may also be an opportunity to collaborate with California officials on their upcoming in-water cleaning pilot test, if expansion to include testing in Hawaii can be added, and if there are clear benefits for doing so.

Deliverables

The deliverables would be the initial plan and timeline for conducting testing, with the deliverable for the second phase being a report on efficacy and utility of the technology for Hawai'i that also highlights any additional questions, research, regulatory issues, and recommended next steps. Due to the likely need for additional funds for analyzing samples and inclusion of results in the final report, we are requesting a two-year grant period for this project.

Budget: 58,000 (\$5,800 HCAF overhead)

Supplemental Request: ROD Rapid Response Planning and Coordination (CGAPS Goal 4, Action 1)

Executive Summary

This additional funding request would support a limited term employee or contract to help coordinate rapid response plans and protocols on Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, with operating costs including travel for this staff, and up to three ROD experts to travel to attend the multi-agency planning meetings on each island.

Background

The University of Hawai'i has played, and continues to play, a major role in the research, response, community outreach, and strategic planning related to Rapid 'Ōhi'a Death (ROD). The discovery last year of several 'ōhi'a killed by the ROD pathogen in Kohala on Hawai'i Island was heart-breaking, but somewhat expected. The isolated nature of this particular infestation and the information learned about the pathogen and how it is spread has allowed the ROD response an opportunity to focus on this area as a rapid response, containment, or even local "eradication" attempt. Concurrent to this work, aerial surveys are ongoing on each island as part of the surveillance and early detection protocol.

Last year, HMLF provided emergency response funds in the event of the discovery of ROD on neighbor islands, and groups on most islands have formed to organize their own response plans. However, these groups have expressed an interest in having help with planning and coordination of island-specific multi-agency response plans, and they are also asking for



Work on ROD continues, and the team recently hosted House Finance Committee and legislators from Hawai'i Island for a briefing in Hilo.

participation from those directly involved in the response on Hawai'i Island.

The research and response efforts on Hawai'i island this past year will result in a more science-based set of response protocols. Only when the rapid response plans are complete for each island will we be requesting that some of the existing funds for ROD Emergency Response (Grant #16-1214-29-278) be used to pre-purchase some equipment and supplies.

Deliverables

As with the Tabletop exercise to test the Plant Health Emergency Response Plan (supported by HMLF in 2013), an evaluation of a rapid response would be conducted to better inform future emergency response work. This evaluation and reports would be submitted to the Foundation and shared with partner agencies.

Budget: \$75,000 (\$3,750 UHF overhead)

2018 Budget

Item	2018 Projects	Term	Subtotal	Admin	Overhead	Total
1	Legal Fellowship Support. Partial salary & operating support for two legal fellows + 2 intern/externs	12/31/2019	\$ 114,000	UHF	\$ 6,000	\$ 120,000
2	CGAPS Core Support. Partial salary & operating support for PIO and Graduate Assist. Planner, PCSU project support	12/31/2019	\$ 130,150	UHF	\$ 6,850	\$ 137,000
3	Support for Hawai'i Green Growth. Annual support for multi-sector approach to sustainability, incl. invasive species priorities	12/31/2018	\$ 23,364	OEDB	\$ 1,636	\$ 25,000
4	Pilot Project Testing the CABI Invasive Species Compendium. Support to CABI to produce and post full datasheets for 6 invasive species	12/31/2018	\$ 9,000	HCAF	\$ 1,000	\$ 10,000
5	Pilot Project Testing In-Water Cleaning Technologies. Support to plan and conduct an in-water cleaning technology efficacy assessment	12/31/2019	\$ 52,200	HCAF	\$ 5,800	\$ 58,000
Total						\$ 350,000

Item	2018 ROD Supplemental Project	Term	Subtotal	Admin	Overhead	Total
1	ROD Rapid Response planning and coordination for non-ROD islands. Limited-term hire, travel, general supplies, refreshments for workshops	12/31/2019	\$ 71,250	UHF	\$ 3,750	\$ 75,000