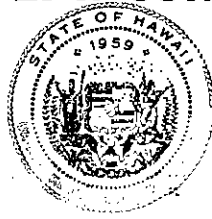
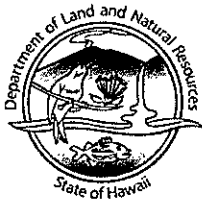


DEPT. COMM. NO. 55

DAVID Y. IGE
GOVERNOR OF
HAWAII



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CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

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FIRST DEPUTY

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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAILOOLAWA ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 1, 2016

The Honorable Ronald D. Kouchi,
President
and Members of the Senate
Twenty-Eighth State Legislature
State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Joseph M. Souki, Speaker
and Members of the House of
Representatives
Twenty-Eighth State Legislature
State Capitol, Room 431
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Souki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the Budgetary and Other Issues Regarding Invasive Species report, as required by Section 194-2, Hawaii Revised Statutes (HRS). In accordance with Section 93-16, HRS, a copy of this report has been transmitted to the Legislative Reference Bureau and the report may be viewed electronically at <http://dlnr.hawaii.gov/reports/>.

Sincerely,

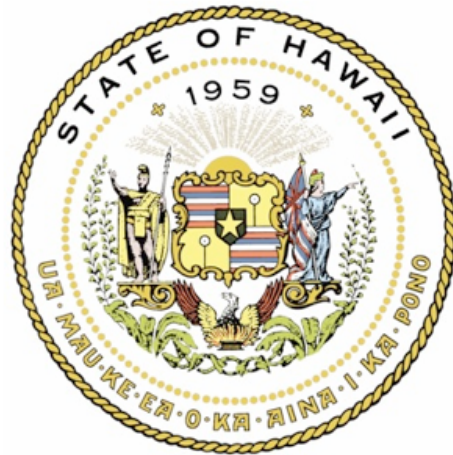
A handwritten signature in black ink, appearing to read "Suzanne Case".

SUZANNE CASE, Chair
Board of Land and Natural Resources

Enclosure

REPORT TO THE TWENTY-NINTH LEGISLATURE
STATE OF HAWAII
2017 REGULAR SESSION

BUDGETARY AND OTHER ISSUES REGARDING INVASIVE SPECIES



Prepared by:
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
STATE OF HAWAII

In response to:
Section 194-2, Hawaii Revised Statutes

November 2016

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2017 Executive Summary

HAWAII INVASIVE SPECIES COUNCIL

PROVIDING STATE POLICY DIRECTION, COORDINATION, AND PLANNING TO PROTECT HAWAII FROM THE IMPACTS OF INVASIVE SPECIES



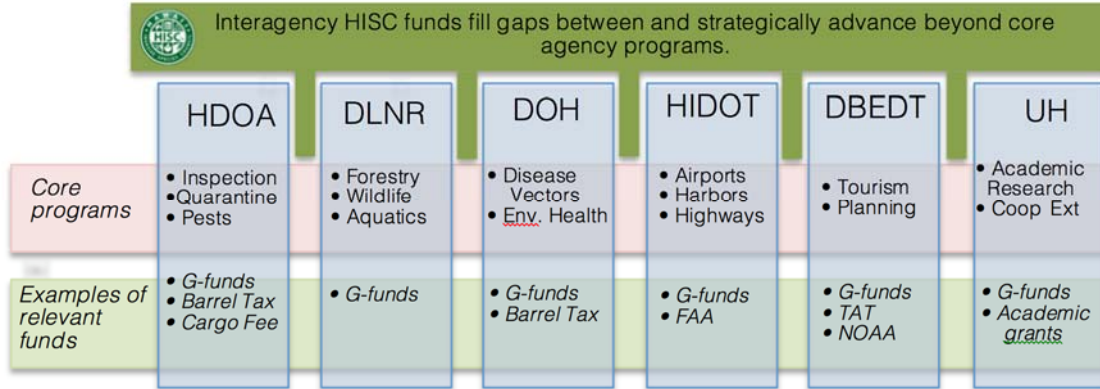
SUZANNE D. CASE DLNR SCOTT ENRIGHT HDOA KEITH KAWAOKA DOH LEO ASUNSCION DBEDT DR. KEN GRACE UH DAVID RODRIGUEZ DOT

The HISC is an interagency board created by Chapter 194, HRS. Appointed HISC legislative participants include:

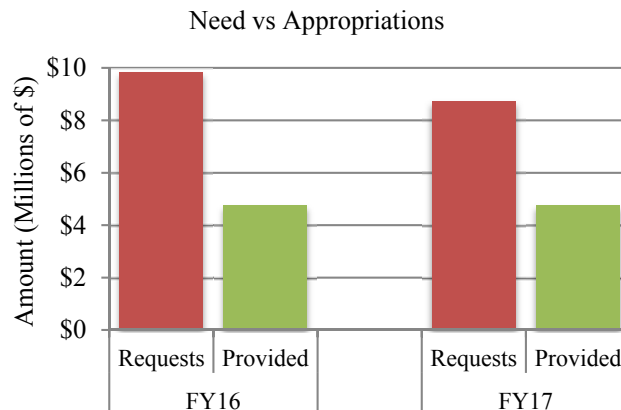
- Senators Ronald Kouchi, Mike Gabbard, J. Kalani English, and Lorraine Inouye
- Representatives Derek Kawakami, Chris Lee, Kaniela Ing, and Richard Onishi

BUDGETARY ISSUES RELATING TO INVASIVE SPECIES

- State agencies largely address invasive species through existing programs funded by departmental budgets. HISC grants support interagency projects and new research that help fill the gaps between agency mandates.
- A 2015 report by the Legislative Reference Bureau found that in FY14, \$19.6M (0.15% of a total \$13B state budget) in state funding was provided for invasive species programs across all state agencies. This includes an appropriation for the interagency HISC budget.

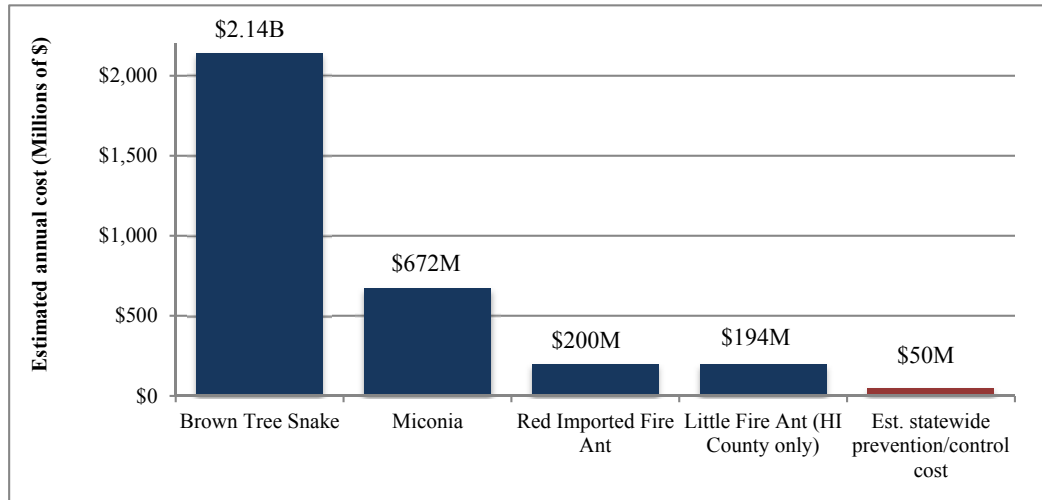


- **The HISC receives roughly \$10M in project requests annually.**
- The legislature appropriated \$4.75M to the HISC in FY16-17, comprised of \$750,000 in the base budget and \$4M provided by SB1299 (2015).
- **In 2017, the HISC budget will drop by 84% (to \$750,000) unless legislative action is taken to increase funding in the base budget for FY18.**



THE COST OF INACTION: ECONOMIC DAMAGES FROM INVASIVE SPECIES

Economic impacts from a sample of invasive species below, including estimated damages from species that are already in Hawaii (miconia and little fire ant) as well as potential damages from species that have so far been kept from establishing (brown tree snake and red imported fire ant).



L to R: potential brown tree snake impact (\$2.14B/yr in infrastructure, health costs, lost tourism), miconia impacts (\$672M/yr in lost water recharge, bird habitat); red imported fire ant cost (\$200M/yr in lost tourism, agriculture); estimated Little Fire Ant cost, HI County only (\$194M/yr in costs to agriculture,

*nurseries, residents, other sectors); estimated **additional** annual need to support invasive species programs (\$50M, LRB, 2002). References available in the full 2017 legislative report available on <http://hisc.hawaii.gov>.*

ADVICE REGARDING INVASIVE SPECIES IN THE 2017 LEGISLATURE

Implement the Hawaii Interagency Biosecurity Plan: The Hawaii Department of Agriculture partnered with a broad range of state, county, and federal agencies as well as industry and NGO stakeholders to produce a comprehensive, coordinated approach to invasive species prevention, detection, and control. The Biosecurity Plan is a 10-year vision and roadmap of how to enhance biosecurity and includes over 100 action items. This plan includes key themes, such as:

- E-manifest technology for import inspection
- Increase DLNR capacity for aquatic and terrestrial invasive species control
- Increased, stable funding for Hawaii Ant Lab and the Invasive Species Committees
- Restructure the HISC as the Hawaii Invasive Species Authority
- Fully restore the Vector Control Branch at Department of Health
- Increase HDOA capacity to allow more interisland and interstate inspections

Utilize the Recommendations of the Legislative Reference Bureau: In 2015 the Legislative Reference Bureau published a thorough report on invasive species management in Hawaii. Key recommendations from the report include:

- Develop & implement a comprehensive biosecurity plan
- Increase invasive species funding both at departments and the interagency HISC
- Restructure the HISC to provide staff and additional coordination resources
- Provide a dedicated, stable funding source for invasives & rapid response

The 2017 legislative report *Budgetary and Other Issues Regarding Invasive Species* includes further details on the Hawaii Interagency Biosecurity Plan, the use of HISC funds in FY16-17, and provides a list of invasive species bills from the 2016 session and their fate.

For more information, visit <http://hisc.hawaii.gov>, or contact the HISC Program Supervisor at Joshua.P.Atwood@hawaii.gov

1. Introduction

1.1 Purpose of this Report

Invasive species are non-native species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health. Invasive species do not fall exclusively under the mandate of any single state agency. Recognizing this, the State Legislature in 2003 authorized the creation of the interagency Hawaii Invasive Species Council (HISC, Act 85, Session Laws of Hawaii 2003), and stated, “the silent invasion of Hawaii by alien invasive species is the single greatest threat to Hawaii’s economy, natural environment, and the health and lifestyle of Hawaii’s people and visitors.”



This document meets the reporting requirements of Section 194-2, HRS, to annually report to the Legislature on budgetary and other issues regarding invasive species. Though the HISC is an interagency board, Chapter 194, HRS, places the HISC within the Department of Land and Natural Resources (DLNR) for administrative purposes.

1.2 Composition of the Hawaii Invasive Species Council

Chapter 194, HRS, requires that the HISC be composed of the chairs, directors, or designees of the organizations listed below. In FY16 the Council was composed of:

- | | |
|--|-----------------------------------|
| • DLNR | Suzanne D. Case |
| • Hawaii Department of Agriculture (HDOA) | Scott Enright |
| • Department of Health (DOH) | Keith Kawaoka |
| • Department of Business, Economic Dvpt. and Tourism (DBEDT) | Leo Asuncion |
| • Department of Transportation (DOT) | David Rodriguez |
| • University of Hawaii (UH) | Maria Gallo & J. Kenneth Grace |

Additionally, legislators and federal agency partners are invited as non-voting participants to provide advice and guidance to the HISC. Current legislative appointees include:

- Senators Ronald Kouchi, Mike Gabbard, J. Kalani English, and Lorraine Inouye
- Representatives Derek Kawakami, Chris Lee, Kaniela Ing, and Richard Onishi.

1.3 Function of the Hawaii Invasive Species Council

The HISC’s function is to coordinate and promote invasive species prevention, control, outreach and research. Chapter 194, Hawaii Revised Statutes (HRS), establishes the interagency HISC, determines its composition and responsibilities (Appendix 2). Several key responsibilities of the HISC include:

- Advise, consult, and coordinate invasive species-related efforts with and between departments
- Identify agency resource shortfalls with respect to invasive species
- Coordinate and promote the State’s position with respect to invasive species
- Advise the governor and legislature on budgetary and other issues regarding invasive species
- Suggest appropriate legislation to improve the State's administration of invasive species programs and policies.

One of the ways in which HISC coordinates efforts with and between departments is through the management of an annual interagency project budget that exists in complement to the recurring base costs of departmental invasive species programs. In each fiscal year, the legislature appropriates funding to the HISC, which in turn solicits proposals from government agencies, including the UH system, to identify and address resource, capacity, and knowledge gaps with regard to invasive species (Fig 1).

This report will detail the HISC’s advice to the Governor and the legislature for 2017, summarize its efforts to coordinate and advise agencies on invasive species efforts, and summarize interagency HISC projects supported by legislative appropriations.

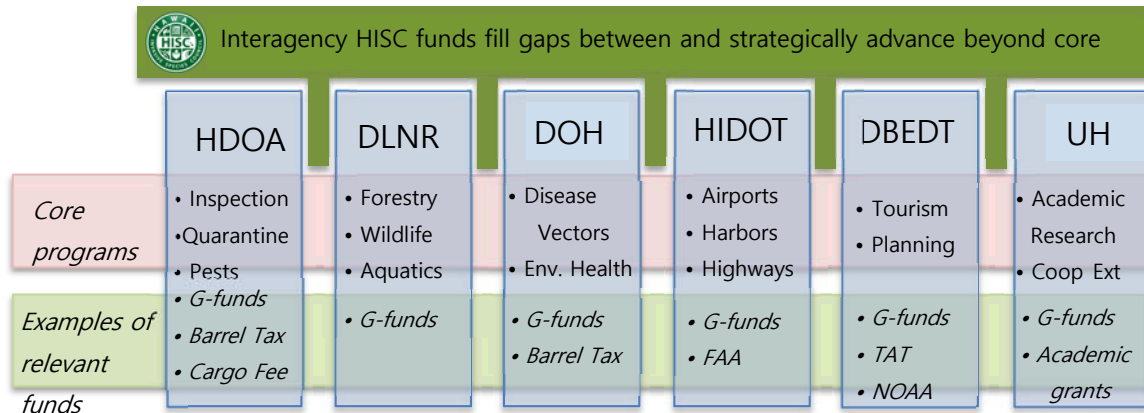


Figure 1: Depicting the relationship between core departmental programs and funds vs. interagency HISC funding

1.4 Hawaii Invasive Species Council Meetings in FY16

All HISC meeting agendas and minutes are available at <http://dlnr.hawaii.gov/hisc/meetings/>.

- July 29, 2015: The HISC met to review and approve the proposed FY16 budget for interagency projects.
- December 4, 2015: The HISC met to discuss legislative priorities for the upcoming session and to review two initiatives:
 - The Hawaii Department of Agriculture’s planning process to produce the Hawaii Interagency Biosecurity Plan in 2016. The HISC adopted a resolution supporting this effort and committing agency involvement. The resolution can be found at <http://hisc.hawaii.gov>.
 - The proposed restructuring of the HISC as the Hawaii Invasive Species Authority, a semi-autonomous agency that would replace the HISC and have its own dedicated staff and additional board seats for representatives from various industry and non-governmental sectors.
- May 31, 2016: The HISC met to review the outcome of the 2016 legislative session with regard to invasive species, and to receive project updates from the HISC Support Program regarding online pest reporting, the Māmalu Poepoe airports monitoring project, and changes to the HISC grant application process.

1.5 Hawaii Invasive Species Awareness Week 2016

The State of Hawaii hosted the 4th annual [Hawaii Invasive Species Awareness Week](#) (HISAW) in February 2016. HISAW is organized in coordination with the U.S. National Invasive Species Awareness Week and regional Pacific Invasive Species Awareness efforts. HISAW seeks to promote information sharing and public engagement.

Partners across the state hosted volunteer and educational opportunities for the public to engage in invasive species control. The HISC, in partnership with members of the legislature, distributed the 2016 “HISC Awards” for people or organizations that have made substantial contributions to addressing the invasive species problem. HISC Award recipients in 2016 included:

- Kay Howe: Community Hero
- Young Brothers, LTD: Business Leader
- Lisa Keith, JB Friday, and Flint Hughes: Greatest Hit of 2015

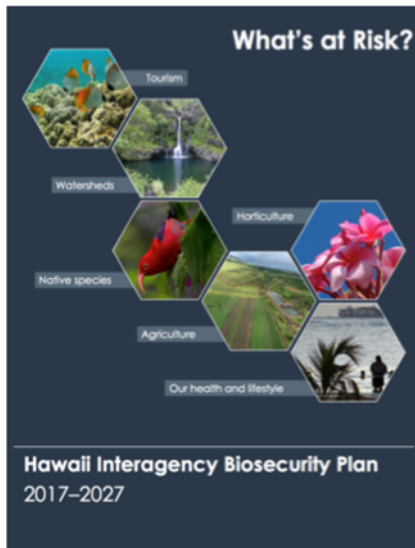
- Laura Hew: Hottest Pest Hotline Report
- Judith Houle: Hawaii Island MVP
- James Leary: Maui Nui MVP
- Paul Zweng: Oahu MVP
- Trae Menard: Kauai MVP

Full details on award recipients can be found on the HISC website's [HISAW 2016 page](#).



HISC co-chairs Suzanne Case and Scott Enright with Governor Ige and recipients of HISC Awards during Hawaii Invasive Species Awareness Week, February 2016.

1.6 HISC Support for the Hawaii Interagency Biosecurity Plan developed by the Hawaii Department of Agriculture



Hawaii is at an invasive species crossroads: our islands host more endangered species than any other state, we import 80-90% of our food, and our residents and visitors are threatened by fire ants and mosquito-borne illnesses. Better biosecurity is Hawaii's path forward. "Biosecurity" encompasses the set of pre-border, border, and post-border actions and policies used to minimize the impacts of invasive species on our natural resources, agriculture, health, and way of life. This work does not fall under the mandate of any one agency, and requires coordinated, strategic partnerships across agencies, private sector industries, and the public.

In 2015, the Hawaii Department of Agriculture announced their intention to create an interagency biosecurity plan. It is important to note that while biosecurity *programs* already exist (such as the HDOA Plant Quarantine Biosecurity Program described by HRS 150A), this biosecurity *plan* is a new concept that identifies long-term programmatic goals and improvements across multiple agencies. The resulting Hawaii Interagency Biosecurity Plan (HIBP) is a 10-year vision for over 100 coordinated actions that would substantially enhance our biosecurity system.

The complete set of recommendations to be pursued over the next decade can be found within the plan and its accompanying matrix of action items, which describe specific policy, process, and infrastructure needs, assign lead and partner agencies for each task, and estimate a per-year cost of implementation for each task. These action items are organized around 10 key themes, highlighted below and in the Executive Summary for the HIBP, located at <http://hdoa.hawaii.gov>.

- **Offshore compliance:** Agreements with other jurisdictions to adopt preshipping inspection and control policies
- **E-manifest and intelligence gathering:** New technology to track what is coming in, what is high risk, and what is low-risk (for faster release)
- **Inspection facilities:** Well-lit, secure areas for efficient inspections, refrigerated areas for produce
- **Inspection of nonagricultural items:** Provide HDOA the authority and staff to inspect high-risk nonagricultural items
- **Emergency response capacity:** Interagency plans, protocols, and funding in place for timely and effective response to new pest incursions
- **Better coordination and participation by industries:** Expansion of the Hawaii Invasive Species Council into the Invasive Species Authority to provide industry a seat at the table and better interagency coordination to monitor, detect, and control invasive species
- **Renewed focus on human health:** A fully restored DOH Vector Control Branch to detect vectors of dengue, Zika, and more
- **Enhanced control of established pests:** Adequate field staff at HDOA, DLNR, DOH, and UH to control established invasive species, improved laboratories to support effective biocontrol
- **Minimized interisland spread:** Increased staff and inspections for interisland goods, support to local farms and nurseries through certification programs and import substitution programs
- **Engaged and supportive community:** Targeted outreach to different stakeholder groups to increase awareness of and engagement in biosecurity programs

Implementation of the HIBP will happen in multiple ways. For process suggestions that provide solutions to work smarter with existing resources, agencies and partners can start now to restructure the way they work to provide more efficient results. For action items that require policy changes or capacity increases, the administration will need to work with the legislature in each biennium to propose specific legislation to achieve these goals. The HIBP is designed to be adaptable, and specific legislative proposals in future biennia will reflect changing logistical and economic realities as the state progresses toward the 10-year vision.

2. Budgetary Issues Relating to Invasive Species

2.1 HISC Funding History

In addition to providing interagency coordination and policy statements, the HISC administers an interagency budget that supplements existing departmental budgets by strategically filling gaps between mandates or expanding beyond existing mandates to address new threats. State agencies, including the UH system, apply for HISC funds on a competitive basis annually. Counties and local offices of federal agencies that have standing agreements with the State are also eligible.

The HISC began disbursing funds to interagency projects in FY05. The legislature has appropriated general funds to the HISC in most fiscal years, with the exception of FY07 (when funds were instead directed to Hawaii County to deal with coqui frogs) and during the economic downturn from FY10-13. In years where insufficient general funds were available, DLNR, as the administrative host of the HISC, utilized the special fund spending authority for Natural Area Reserve (NAR) fund and the Legacy Land Conservation (LLC) fund. The NAR fund derived revenue from the conveyance tax on property sales. No special funds were provided in FY15, and in 2016 the legislature repealed the NAR fund.

The HISC does not have a dedicated source of funds from tax revenues and currently relies solely on legislative appropriations of general funds. In FY16, \$750,000 was provided as part of the regular biennium budget. An additional \$4,000,000 was provided by Senate Bill 1299, resulting in a total budget of \$4.75M.

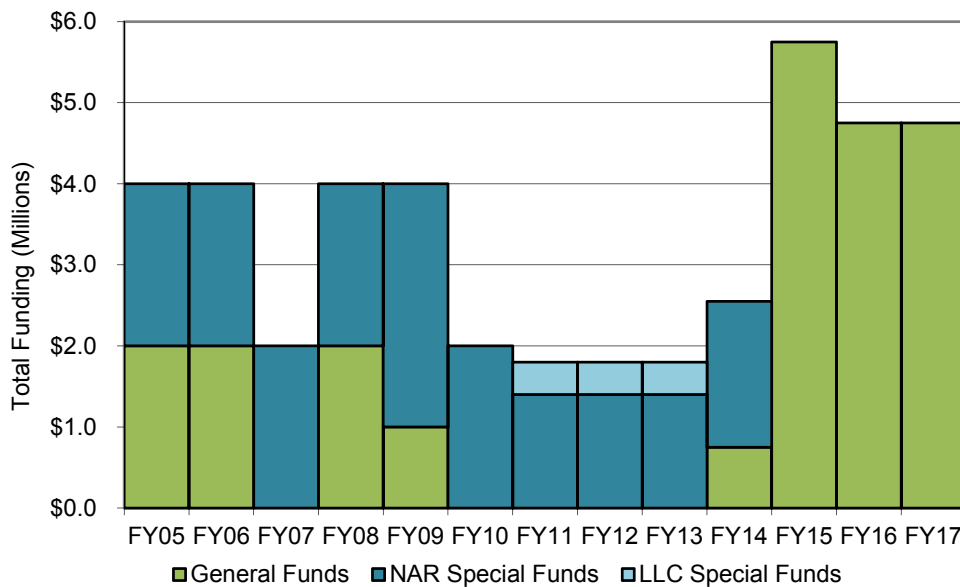


Figure 2: Total amount of funding (in millions of dollars) made available to the HISC through special and general funds, by fiscal year. Special funds refer to the Natural Area Reserve (NAR) fund and the Legacy Land Conservation (LLC) fund.

2.2 HISC FY17-18 Funding

The HISC currently receives a recurring \$750,000 appropriation of general funds in the biennium budget under LNR 402 (the Native Resources and Fire Protection Program), which is located within the Division of Forestry and Wildlife at DLNR. A 2016 request to move the \$4,000,000 provided by SB1299 to the base budget was denied. Without specific legislative action in 2017, the HISC budget for FY18 will decrease to \$750,000.

While the amount of funding appropriated to HISC decreased from \$5,750,000 in FY15 to \$4,750,000 in FY16 and FY17, the amount of requests for project funding remained at roughly \$9-10,000,000 each year. About half of all applicants received project funding, though the amount provided for each project was typically 50-70% of the stated need. A list of projects receiving funding in FY17, as well as projects that applied for funding but did not receive funding due to budget shortfalls, is provided in Section IV of this report. Based on the amount of applications received in FY16 and FY17, an estimated \$10,000,000 is needed to support interagency projects that address gaps between agency mandates or research needs in FY18.

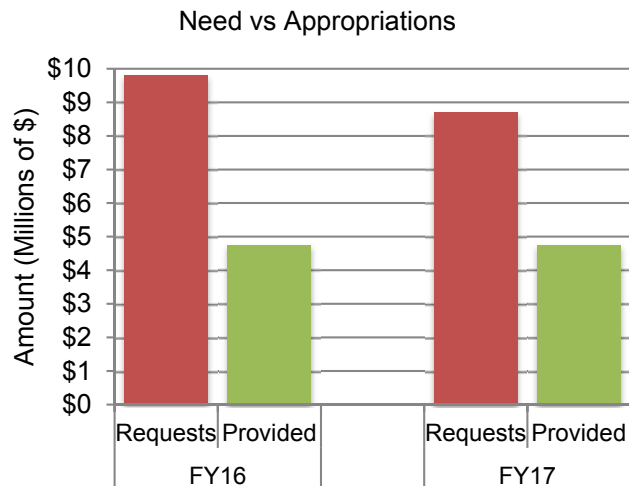


Fig 3: Amount of project requests received by HISC in FY16-17 vs the amount of available funding

2.3 Agency Resources & Shortfalls Relating to Invasive Species

In 2015, the Legislative Reference Bureau released a report, titled [Can't see the Forest for the \(Albizia\) Trees: An Invasive Species Update](#) that was commissioned as an update to the 2002 report [Filling the Gaps in the Fight Against Invasive Species](#). The report details the roles, resources, and shortfalls of government agencies in great detail. The report demonstrates the following expenditures across state, county, federal, and other funding sources in Fiscal Year 2014:

Table 1: FY14 expenditures on invasive species programs, per the Legislative Reference Bureau (2015)

| Expenditure Level | State Funds | County Funds | Federal Funds | Other Funds | Total |
|-------------------|--------------|--------------|---------------|--------------|--------------|
| State | \$19,574,521 | X | \$12,436,258 | \$10,059,994 | \$42,070,773 |
| Counties | X | \$70,147 | X | \$0 | \$70,147 |
| Federal | X | X | \$15,276,419 | \$71,571 | \$15,347,990 |
| Total | \$19,574,521 | \$70,147 | \$27,712,677 | \$10,131,565 | \$57,488,910 |

As demonstrated in the table above, most invasive species programs are part of their regular departmental programs, rather than reliant on the interagency “gap filling” project grants provided by HISC. Continued support for departmental programs is critical to making sure that basic infrastructure exists for invasive species prevention and control in Hawaii. Because the invasive species problem is complex and programs to deal with various portions of the invasive species problem are spread across agencies, this report provides a brief summary of biosecurity or invasive species programs at individual departments.

2.3.1 Department of Land and Natural Resources

- Division of Forestry and Wildlife: DLNR DOFAW has a broad mandate to protect Hawaii’s natural resources and addresses invasive species through multiple programs, including:
 - Forestry Program (LNR 172): manages and develops forest resources statewide. Employs Forestry Technicians positions to remove invasive plant species on state lands.
 - Wildlife Program (LNR 402, also known as the Native Resources and Fire Protection Program): manages wildlife resources and game opportunities statewide. Employs 1 Invasive Species Coordinator, who manages the interagency HISC program and assists with departmental invasive species project planning and policy. Wildlife Biologists at the District Offices directly manage native and nonnative wildlife in each county.

- Native Ecosystems Protection & Management (LNR 407): manages Natural Area Reserves, watershed protection programs, and other statewide efforts. Staff at District Offices control invasive plants and animals in protected natural areas. Following the repeal of the Natural Area Reserve Fund (HRS 195-9) in 2015, these programs are funded by general funds.
- Division of Aquatic Resources: Employs 1 Aquatic Invasive Species (AIS) Coordinator and 4 field team members. The AIS team plans and implements projects including the removal of invasive algae from Kaneohe Bay, response to Japan Tsunami Marine Debris for detection of aquatic invasive species, and the development of policies relating to ballast water and hull fouling.

2.3.2 Hawaii Department of Agriculture (Plant Industry Division)

- Plant Quarantine Branch: Prevents the introduction and spread of harmful pests and diseases into the state, as well as certifying plants for export out of the state. Plant Quarantine Branch employs Inspectors with enforcement authority for violations of importation and possession of regulated species. State funds for staff and operations of this branch come partially from the general fund, partially from the Pest Inspection, Quarantine, and Eradication Fund (HRS 150A-4.5, which receives revenue from the Inspection, Quarantine, and Eradication Service Fee, HRS 150A-5.3) and from the Agricultural Development and Food Security Special Fund (HRS 141-10, which receives revenue from the Environmental Response, Energy, and Food Security tax, HRS 243-3.5). The Department also actively seeks and receives federal funding for these programs.
- Plant Pest Control Branch: Eradicates, contains, or controls pests of plants which could cause significant economic damage to agriculture, our environment, and quality of life. Includes the Biological Control (or Biocontrol) Section, which provides research and regulation of biocontrol agents in the State. The Plant Pest Control Branch also includes the Apiary Program. State funding for Plant Pest Control Branch staff and operations comes from the general fund, the Agricultural Development and Food Security Special Fund (HRS 141-10, which receives revenue from the Environmental Response, Energy, and Food Security tax, HRS 243-3.5), the Pest Inspection, Quarantine, and Eradication Fund and with additional operating funds provided by federal grants from the U.S. Department of Agriculture. The Department also actively seeks and receives federal funding for these programs.
- Pesticides Branch: Regulates the manufacture, sale, and use of pesticides in the State of Hawaii. This is a critical function for implementing pest control projects that utilize approved pesticides, and for research on new pest control methodologies and tools. State funding for staff and operations comes from the general fund and the Pesticides Use Revolving Fund (HRS 149A-13.5). The Department also actively seeks and receives federal funding for these programs.

2.3.3 Department of Health

- Vector Control (HTH 610-VC): The Department of Health's primary resource relating to invasive species is the remainder of its Vector Control Branch, which manages vectors of human diseases, including invasive species such as mosquitoes and rodents. The Vector Control Branch employed 56 positions until the Reduction-of-Force in 2009, when 39 positions were discontinued. The remaining positions continue to monitor for mosquito populations, but do not have the capacity for frequent surveillance or response. From 2013-15, the Department requested the restoration of eight Vector Control Worker positions. Four were approved in 2013 and the remaining four in 2015. Following an outbreak of dengue fever in 2015 and new threats from Zika virus, the legislature approved 20 positions to be restored to Vector Control Branch in 2016. This restoration will still leave DOH with fewer Vector Control positions than it had before the 2009 Reduction-in-Force.
- Clean Water Branch: Reviews permits relating to the use of pesticides near water, a necessary component of many invasive species control projects.

2.3.4 Department of Business, Economic Development, and Tourism

- Office of Planning, Coastal Zone Management Program (CZM), Ocean Resources Management Plan (ORMP): CZM is tasked with coordination of the ORMP - an interagency effort to effectively manage and protect marine resources. CZM hosts eight Planners who assist with planning and implementation of marine projects, including aquatic invasive species prevention and control.
- Hawaii Tourism Authority (HTA): DBEDT is the administrative host of the HTA. A report to the HTA from the University of Hawaii Center for Sustainable Coastal Tourism estimates that the 2010 market valuation for Hawaii's natural resources, tourism infrastructure and facilities, and tourism-related businesses was approximately \$8.24B. The report identifies invasive species as a primary threat to natural resources that support Hawaii's tourism industry (Cristini et al., 2012).

2.3.5 Hawaii Department of Transportation

- Highways Division: The Department of Transportation (HIDOT)'s primary program for addressing invasive species is the Highway Division's Statewide Noxious Invasive Pest Program (SNIPP). The SNIPP is currently managed under a 10 year strategic plan covering 2012-2022: http://hidot.hawaii.gov/highways/files/2013/02/Landscape-SNIPP_Strategic_Plan.pdf. The HIDOT has procured a consultant under a multi-year contract to provide services for the implementation of the goals and objectives that are outlined in the 10-year strategic plan.
- Airports Division: In addition to working with Hawaii Department of Agriculture on hosting facilities for agricultural pest inspection, the Airports Division is pursuing an interagency project under the HISC to enhance pest monitoring at airport facilities. The project, known as *Māmalu Poepoe*, will coordinate efforts of UH researchers, Department of Health Vector Control workers and entomologists, Department of Agriculture entomologists, and Department of Land and Natural Resources biologists to develop a pilot program that examines pest presence and creates a model for enhanced pest surveillance.

2.3.6 University of Hawaii

- College of Tropical Agriculture and Human Resources (CTAHR): CTAHR employs a number of faculty and specialists dealing with invasive species, and currently serves as the designated representative for the University on the HIS. Relevant CTAHR departments include:
 - The Plant and Environmental Protection Sciences department, which employs researchers in invasive insect biology, biological control, and plant pathogens.
 - Natural Resources and Environmental Management, which employs researchers in wildlife management and invasive weed management.
 - The Cooperative Extension Service, including researchers specializing in pests, diseases, and weeds.
- College of Natural Sciences:
 - The Department of Botany: In addition to hosting researchers in invasion biology and species conservation, the Department of Botany hosts the Pacific Cooperative Studies Unit (PCSU). PCSU employs approximately 300 positions working on conservation research, including the Invasive Species Committees (ISCs), the Watershed Partnerships, and the Hawaii Ant Lab. These positions are not part of the University's budget request to the legislature and rely on grants for support.

2.4 The Cost of Inaction: Examples of Invasive Species Costs in Hawaii

Due to a lack of consistent funding for invasive species programs, many invasive species problems in Hawaii have become worse over the past decade. Coqui frogs have spread across Hawaii Island, exist in a handful of populations on Maui, and are intercepted regularly on Oahu in small numbers. In December 2013, Little Fire Ants, which had been found throughout the greater Hilo area and on Kauai for 10 years, were detected on Maui and Oahu. A new pest, Coconut Rhinoceros Beetle, was detected on Oahu in December 2013 and threatens to decimate Hawaii's coconut palms. The invasive plant miconia is beyond

control on Hawaii Island and is at a critical point-of-no-return on Maui and Oahu. *Aedes aegypti*, a species of mosquito, has been detected at an increased frequency at Honolulu International Airport, and is a potential carrier of Zika, yellow fever, dengue fever, and chikungunya disease.

The relatively minimal cost of supporting invasive species prevention and control should be weighed against the potentially devastating economic impact that widespread invasive species can have in Hawaii. Notable examples include:

1. **Potential economic damages of Brown Tree Snake in Hawaii: estimated at \$2,140,000,000 annually.** A 2010 study by Schwiff et al. estimated that brown tree snake (*Boiga irregularis*, not yet found in Hawaii) impacts could cost \$2.14 billion annually in infrastructure and health costs as well as decreased tourism. This figure does not include the cost of conservation programs to mitigate the loss of native bird species.
2. **Economic damages of Miconia in Hawaii: estimated at \$672,000,000 annually.** The invasive plant miconia (*Miconia calvescens*) was introduced by a private resident on Hawaii Island in the late 1950s and has since spread to all counties in the state. This fast growing plant forms monocultures (a forest stand consisting of only one species) by invading forests and shading out competitors. Miconia is a prolific producer of seeds, which are dispersed by birds and may lay dormant in soil for 15 years or more (studies are still ongoing) before germinating. A 2007 study by Burnett et al. estimated annual damages in lost groundwater recharge and valuation of endangered bird species with habitat threatened by miconia at \$672,000,000.
3. **Economic impact of Little Fire Ant on Hawaii Island: estimated at \$194,000,000 annually.** A 2013 study by Motoki et al. on the economics of Little Fire Ants (*Wasmannia auropunctata*) at estimates that without management, the damages on Hawaii Island alone in costs to nurseries, agriculture, residents, lodging, parks, schools, and other sectors could reach \$6.8B over the next 35 years, or \$194,000,000 annually. Total eradication of ants from Hawaii Island is not possible. A study published by Lee et al. in 2015 found that an immediate investment of \$8M over the next 2-3 years would avoid costs over the next 10 years totaling \$1.2B in control and \$129M in economic damages. The Hawaii Ant Lab, partially funded by the HISC, is currently the primary resource for research and response to Little Fire Ant incursions, with an annual budget between \$200-250,000. This species has been on Hawaii Island since 1999 and has since spread to Kauai (1999), Maui (multiple occurrences, most recently in 2013), and Oahu (2013), likely through interisland shipment of commodities.
4. **Potential economic impact of Red Imported Fire Ant: estimated at \$200,000,000 annually.** A 2007 study partially funded by the HISC estimated that the potential impact of red imported fire ant (*Solenopsis invicta*, not yet found in Hawaii) at roughly \$200 million annually within 10 years of introduction because of its impact on tourism, infrastructure and quality of life. (Gutrich et al., 2007).
5. **Economic loss in property value in Hawaii County due to coqui frogs: estimated at \$7,600,000 annually.** A 2006 study of the economic impacts of *Eleutherodactylus coqui* in Hawaii by Dr. Brooks Kaiser (Gettysburg College) and Dr. Kimberly Burnett (University of Hawaii) highlights that, while coqui frogs present an ecological impact through the predation on native invertebrate communities, the primary economic impact is on property value. The frogs, which can reach densities of 55,000/acre, produce a call between 80-90 A-weighted decibels (dBA, a modified calculation of decibels based on the response of the human ear). For comparison, the Hawaii Department of Health sets the threshold for minimizing impacts to human health and welfare at 70 dBA (HRS 324F-1). The estimated damages to property values in Hawaii County as of 2006 was \$7,600,000 annually. This figure has likely increased as coqui frogs have continued to expand their distribution on Hawaii island since 2006. Should coqui frogs establish on Maui and Oahu, the annual

loss in property value would drastically increase.

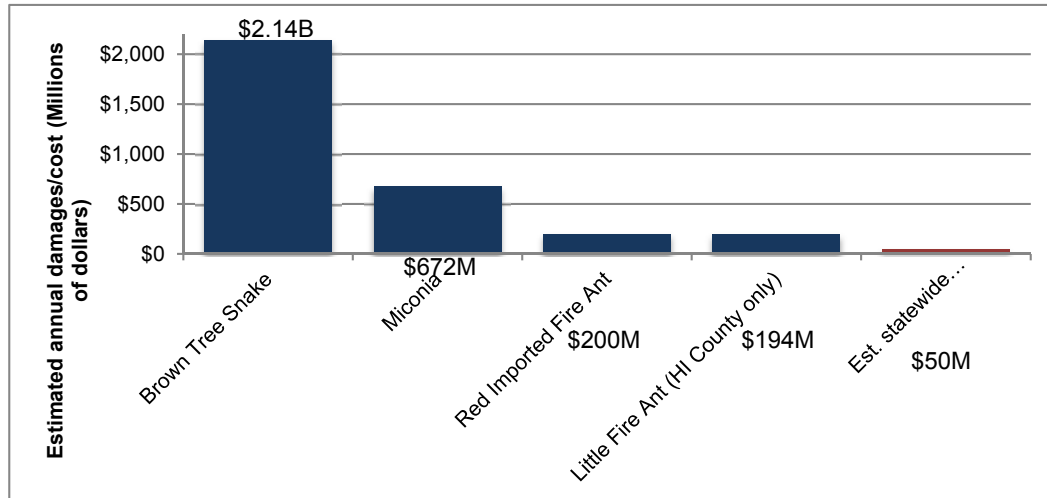


Fig 4: Examples of estimated damages from invasive species in Hawaii.

The Legislative Reference Bureau estimated in 2002 that the additional funding needed to adequately support prevention/control programs in Hawaii was an additional \$50M annually beyond what was being spent already (Ikuma et al., 2002). The costs associated with invasive species far exceed the estimated cost for prevention and control programs. Investing in departmental programs (such as agricultural inspections and watershed management) and interagency projects under the HISC are an extremely cost effective strategy for Hawaii.

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3. Advice to the Governor and Legislature Regarding Invasive Species



Governor Ige joined by a giant Little Fire Ant at the closing ceremony for Hawaii Invasive Species Awareness Week 2015 at the State Capitol.

Chapter 194, HRS, requires the HISC to advise the Governor and the legislature on issues regarding invasive species. The HISC fulfills this mandate by adopting resolutions, drafting legislation, submitting testimony during the legislative session, and by providing other relevant advice in this annual report.

3.1 Advice Regarding Invasive Species in the 2017 Legislative Session

3.1.1 Implement the Hawaii Interagency Biosecurity Plan

While the administration package for the 2017 legislative session was still in development at the time of publication for this report, the 2017 session will be the first covered under the new Hawaii Interagency Biosecurity Plan, a 10-year vision (2017-2027) for strategically enhancing biosecurity measures across various agencies. The plan will describe over 100 coordinated action items for agencies and partners to enhance invasive species prevention, detection, and control. These action items are organized around 10 key themes, highlighted below and in the Executive Summary for the HIBP, located at <http://hdoa.hawaii.gov>.

- **Offshore compliance:** Agreements with other jurisdictions to adopt preshipping inspection and control policies
- **E-manifest and intelligence gathering:** New technology to track what is coming in, what is high risk, and what is low-risk (for faster release)
- **Inspection facilities:** Well-lit, secure areas for efficient inspections, refrigerated areas for produce
- **Inspection of nonagricultural items:** Provide HDOA the authority and staff to inspect high-risk nonagricultural items
- **Emergency response capacity:** Interagency plans, protocols, and funding in place for timely and effective response to new pest incursions
- **Better coordination and participation by industries:** Expansion of the Hawaii Invasive Species Council into the Invasive Species Authority to provide industry a seat at the table and better interagency coordination to monitor, detect, and control invasive species
- **Renewed focus on human health:** A fully restored DOH Vector Control Branch to detect vectors of dengue, Zika, and more
- **Enhanced control of established pests:** Adequate field staff at HDOA, DLNR, DOH, and UH to control established invasive species, improved laboratories to support effective biocontrol
- **Minimized interisland spread:** Increased staff and inspections for interisland goods, support to local farms and nurseries through certification programs and import substitution programs
- **Engaged and supportive community:** Targeted outreach to different stakeholder groups to increase awareness of and engagement in biosecurity programs

3.1.2 Utilize the recommendations of the 2015 Legislative Reference Bureau study on invasive species

The 2015 report, titled *Can't see the Forest for the (Albizia) Trees: An Invasive Species Update* was commissioned as an update to the 2002 report *Filling the Gaps in the Fight Against Invasive Species*. The 2015 report documents the current state of invasive species management in Hawaii, and details the reasons why, 13 years after the original report, substantial gaps in Hawaii's invasive species programs still exist. These include:

1. The absence of a comprehensive biosecurity plan or a coordinated multiagency plan or strategy to clearly address agencies' authority and responsibility;
2. Inadequate funding and staffing to fully address invasive species efforts;
3. Insufficient inspection efforts to fully prevent invasive species from entering, moving within, and becoming established in Hawaii;
4. A lack of effective public education and outreach;
5. Inconsistent, incomplete, and overlapping laws, rules, and agency mandates; and
6. An often ineffective invasive species entity, HISC, the potential of which remains unrealized. □

The Legislative Reference Bureau's recommendations for addressing these gaps include:

1. **Hawaii should develop a comprehensive, statewide biosecurity plan** to effectively prevent the introduction and control the spread of invasive species. (*Note: the comprehensive Hawaii Interagency Biosecurity Plan was developed in 2016.*)
2. The Legislature should take the action necessary to effect the statutory and regulatory changes proposed in a comprehensive, statewide biosecurity plan, and to provide sufficient funding and support for its development and full implementation, **ensuring that moneys thereafter are allocated and expended according to the biosecurity plan**. (*Note: specific legislative requests associated with the Hawaii Interagency Biosecurity Plan will be submitted for the 2017 legislative session.*)
3. The Legislature should give consideration to **amending the organizational structure of HISC** to provide clearer authority to direct interagency coordination and provide resources and support for priority actions necessary in the fight against invasive species. (*Note: A proposal to restructure HISC as an attached agency called the Hawaii Invasive Species Authority was introduced in 2016 but failed to pass. This proposal would build on the HISC model by adding dedicated staff and board seats for industry, NGO, and cultural representatives.*)
4. The Legislature should **provide sufficient funding and resources** needed to increase capacity of agencies to engage in preventive actions throughout the State.
5. With respect to funding for inspection and other efforts necessary to prevent or control invasive species in the State, the Legislature may wish to revisit a Bureau 2002 recommendation to **provide a stable, dedicated means of funding for invasive species operations, including rapid response actions**. (*Note: a proposal for an invasive species emergency response fund was introduced by Representative Nicole Lowen in 2016. The measure was deferred by the House Committee on Agriculture.*)
6. In consultation with the Governor concerning state priorities and needs, the State's congressional delegation should **prioritize action on issues that lay exclusively within federal jurisdiction** regarding the protection of Hawaii from invasive species that may arrive either from the United States mainland or from foreign nations.
7. The Legislature may wish to consider pursuing the University of Hawaii Economic Research Organization's suggestion to use an existing case study of the economic impact of a particular invasive species to **determine the necessary steps and data requirement for assessing the impact of future invasive species**.

3.2 Invasive Species in the 2016 Legislative Session

The 2016 legislative session began with 37 bills relating to invasive species. Most of these bills provided appropriations for existing management programs or policy changes intended to improve the efficiency of

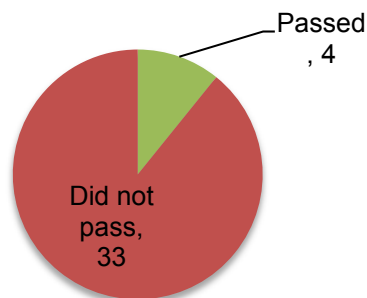
invasive species management. Of these 37 bills, only four passed (an additional initiative, the restoration of positions at the DOH Vector Control Branch, was deferred in bill form but was added to the supplemental budget). Of the 33 bills that failed to pass the 2016 session, 27 bills failed due to lack of being scheduled for a hearing, compared to six bills that were heard and deferred.

Of the four measures that passed, two were appropriation bills. One provided funding for rapid ohia death research (HB2675) and the other provided infrastructure support relating to interisland movement of commodities through Hilo (HB1050). Another increased the penalty for animal abandonment in order to deter the placement of unwanted pets, particularly cats, into colonies of feral animals. The fourth measure recommended an audit of the HDOA Plant Quarantine Branch.

The 33 measures that did not pass encompassed a wide variety of efforts relating to invasive species. Nearly all of these measures were supported by either the HISC or the Department of Land and Natural Resources (the administrative host of the HISC):

- Restructuring the HISC as the Hawaii Invasive Species Authority, an attached agency with dedicated staff and additional board seats to engage industry and other nongovernmental experts
- Authorizing the HISC to create and update by board action an official list of designated invasive species
- Research on invasive rose-ringed parakeets, a growing agricultural threat on Kauai
- Expanding the HDOA Biosecurity Program to become a function of the entire department, rather than the Plant Quarantine Branch
- Funding for research and outreach relating to rat lungworm disease, a growing human health threat carried by snails and semi-slugs, which can cause nervous system damage
- A prohibition on the feeding of predators, including feral cats, on state lands
- Creation of an invasive species emergency response fund

Number of IS bills passed



Reason for bill failure

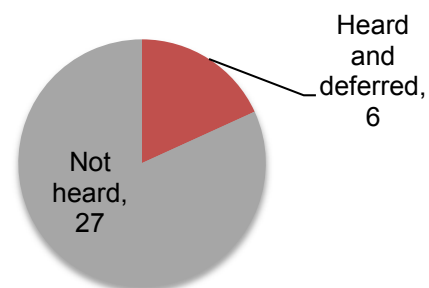


Figure 5: a) Number of invasive species bills passed in 2016, and b) reason for failure of bills in 2016.

A full list of invasive species bills proposed in the 2016 legislative session, along with testimony positions by HISC or DLNR and the ultimate fate of those bills, is presented in Appendix 1.

3.3 FY16 Resolutions of the Hawaii Invasive Species Council

The HISC adopted one resolution in FY16:

- Resolution 15-1: Supporting the Hawaii Department of Agriculture’s 2016 Interagency Biosecurity Planning Initiative and Committing Agency Engagement, adopted December 4, 2015

All HISC resolutions are available at <http://dlnr.hawaii.gov/hisc/reports/resolutions/>.

3.4 Review of Relevant Administrative Rules

No existing administrative rule chapters pertaining to invasive species were reviewed or updated during the reporting period.

At the June 10, 2015 meeting of the HISC, the Council directed staff to develop proposed legislation for the 2016 legislative session that would provide the HISC with the ability to develop, pursuant to HRS 91, a process for developing and maintaining a list of designated invasive species. This action would have allowed the HISC to meet its mandate to identify and record invasive species in the state, per HRS 194-2(a)(6). Legislation to provide this authority was not passed, and the HISC is in the process of identifying alternative strategies for development of administrative rules that designate invasive species for control or eradication.

4. HISC-Funded Projects, FY16-17

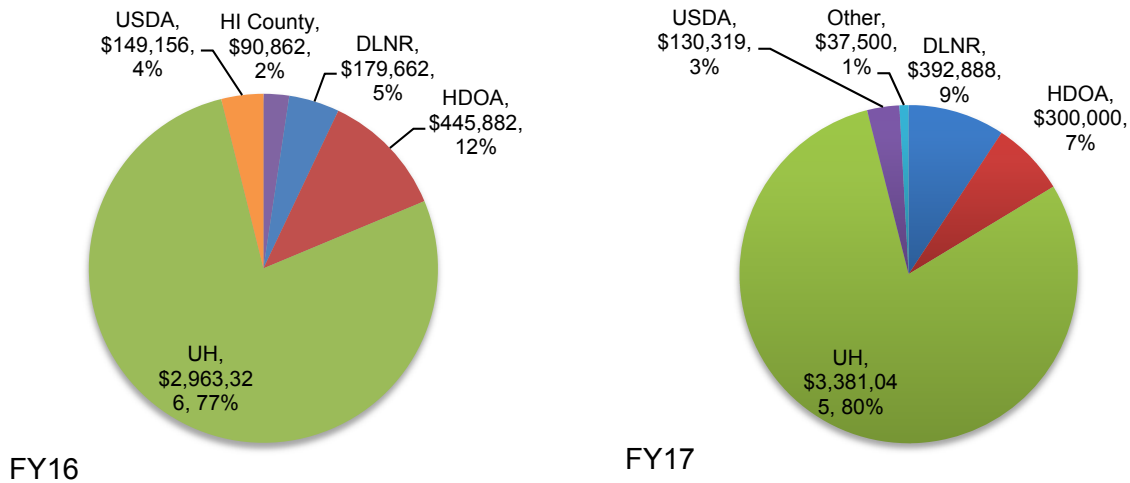
This report provides details about projects funded by the HISC in FY16 and FY17. Because the release of funding and subsequent encumbering of project funds can take up to six months, projects durations are typically based on the calendar year following the year in which funds are awarded. This report therefore includes:

- A list of projects funded by the HISC in FY16 (typically implemented for the duration of calendar year 2016)
- A list of projects funded by the HISC for FY17 (typically implemented for the duration of calendar year 2017).

4.1 Summary of FY16-17 Grants

The HISC was appropriated \$4.75M in each year of the FY16-17 biennium. Each year, the HISC solicits proposals for projects from government agencies, including the UH system and county and federal partners, for strategic projects in invasive species prevention, control, research, and outreach.

Fig. 6: a) HISC FY16 budget separated by agency, b) HISC FY17 budget separated by agency



No funding requests for interagency projects beyond existing departmental efforts were received from DOT, DOH, or DBEDT in FY16-17.

4.2 Projects Funded by the HISC in FY16

The HISC received roughly \$10M in requests in FY16 and had \$4.75M to disburse. Full project abstracts can be found at <http://dlnr.hawaii.gov/hisc/projects/fy16/>, as will final reports once projects are complete.

Table 2: Projects funded by the HISC in FY16

| Dept | Entity | Abbreviated Project Title | Award |
|------------------|---------|--|-----------|
| B&F | | 10% Restriction | \$475,000 |
| DLNR | DOFAW | 5% Overhead | \$213,750 |
| HISC | Support | Support program | \$183,294 |
| Control Projects | | | |
| DLNR | DAR | Aquatics Program Expansion to Neighbor Islands | \$8,586 |
| DLNR | DOFAW | Molokai Himalayan Ginger Eradication | \$31,802 |
| DLNR | DOFAW | Oahu Strawberry Guava Biocontrol | \$46,989 |

| | | | |
|---------------------|-----------|---|-------------|
| DLNR | DOFAW | Oahu NARS Weed Control | \$15,015 |
| HDOA | PPC | Coconut Rhino Beetle Response | \$445,882 |
| HI County | DRD | HI County LFA Coupons around Parks | \$90,862 |
| UH | HAL | Ant Lab Core Support | \$177,181 |
| UH | HBIN | Online Info Services Core Support | \$50,045 |
| UH | ISC-BIISC | Albizia Control Teams | \$142,653 |
| UH | ISC-BIISC | Big Island Axis Deer Detection | \$86,041 |
| UH | ISC-BIISC | BIISC Control Program | \$361,602 |
| UH | ISC-BIISC | BIISC Early Detection | \$103,082 |
| UH | ISC-KISC | KISC Detection & Control | \$282,808 |
| UH | ISC-KISC | KISC Mongoose | \$24,987 |
| UH | ISC-KISC | Kokee Weed Control | \$21,649 |
| UH | ISC-MISC | MISC Detection & Control | \$504,339 |
| UH | ISC-OISC | Oahu <i>Tibouchina</i> Control near Poamoho | \$28,431 |
| UH | ISC-OISC | OISC Detection & Control | \$528,506 |
| UH | WP-KMWP | Koolau Goat Eradication | \$34,414 |
| UH | WP-WMWP | West Maui Fern Control | \$29,931 |
| Outreach Projects | | | |
| DLNR | DAR | Aquatic Invasive Species Outreach | \$3,625 |
| UH | CGAPS | CGAPS Core Outreach Support | \$47,000 |
| UH | ISC-BIISC | BI Outreach | \$61,646 |
| UH | ISC-KISC | Kauai Outreach | \$58,152 |
| UH | ISC-MISC | Maui Nui Outreach | \$73,598 |
| UH | ISC-OISC | Oahu Outreach | \$86,050 |
| UH | WP-WMWP | Waianae Outreach | \$4,543 |
| Prevention Projects | | | |
| DLNR | DAR | Ballast Water & Hull Fouling | \$73,645 |
| DLNR | KIRC | Kahoolawe Biosecurity | \$49,066 |
| UH | HPWRA | Weed Risk Assessment | \$78,688 |
| Research Projects | | | |
| UH | CTAHR | Miconia Ballistic Control | \$117,212 |
| UH | CTAHR | Naio Thrips Research | \$8,920 |
| UH | HAL | LFA Research | \$51,848 |
| USDA | USFS | Ohia Death Research | \$99,000 |
| USDA | USFS | Melastome Biocontrol | \$50,156 |
| | | TOTAL | \$4,750,000 |

4.3 Projects Funded by the HISC in FY17

The State Legislature provided \$4,750,000 in FY17 for the HISC to support projects. The HISC approved a spending plan for FY17 on August 17, 2016. Encumbrance for these projects is underway, with anticipated start dates of Q2 or Q3 FY16. Full project abstracts are available at

<http://dlnr.hawaii.gov/hisc/projects/fy17/>. The HISC received \$9M in requests for FY17 and had \$4.75M to disburse. The Department of Budget and Finance imposed a 5% restriction on expenditures in FY17, and the DLNR Division of Forestry and Wildlife increased their overhead cost for hosting the interagency HISC from 3.5% in FY15 to 6% in FY17. HISC Support program costs totaled \$257,186, which provides two temporary support staff and part-time technician and web programmer costs associated with the development of HISC's online pest reporting system. The amount remaining for competitive project funding was \$3,984,564. Due to broad need across many different projects and species, most applicants received a partial award based on their evaluation score, the scalability of their project, and their ability to seek additional funds.

Table 3: Proposals received and grants provided by the HISC in FY17.

| Dept | Div | Abbreviated Project Title | Final award |
|----------|------------|---|-------------|
| Dept B&F | | 5% Restriction | \$237,500 |
| DLNR | DOFAW | 6% DOFAW Overhead | \$270,750 |
| HISC | Support | HISC Support | \$257,186 |
| DLNR | DAR | Ballast Water and Hull Fouling Program | \$91,000 |
| DLNR | DOFAW | Kohala Rapid Ohia Death Surveys | \$44,701 |
| HDOA | PI | Coconut Rhinoceros Beetle Response | \$300,000 |
| Iowa | Plant Path | Rapid Ohia Death Genetics | \$37,500.00 |
| UH | COP | Rat Lungworm Outreach | \$65,635 |
| UH | CTAHR | Development of Herbicide Ballistic Technology Platform for Unmanned Aerial Vehicles | \$71,843 |
| UH | CTAHR | Kauai Surveys for Toxoplasmosis, Salmonella, and Rat Lungworm Disease | \$23,615 |
| UH | CTAHR | Maui County Mosquito Surveys | \$40,908 |
| UH | WO | Albizia Statewide Planning | \$50,000 |
| UH | BIISC | Big Island Rapid Response | \$270,000 |
| UH | BIISC | Big Island Early Detection | \$198,122 |
| UH | BIISC | Big Island Outreach | \$151,271 |
| UH | BIISC | Big Island Albizia Control | \$100,000 |
| UH | CGAPS | CGAPS Core Program Support | \$57,000 |
| UH | HAL | Hawaii Ant Lab | \$250,000 |
| UH | KISC | Kauai Detection & Control | \$499,223 |
| UH | KISC | Kauai Outreach | \$76,504 |
| UH | LHWRP | Haleakala Bocconia HBT Research | \$20,214 |
| UH | MISC | Maui Detection & Control | \$500,860 |
| UH | MISC | Increased Control of Coqui in Maliko Gulch | \$178,635 |
| UH | MISC | Maui Outreach | \$57,277 |
| UH | MISC | Maui Control of Miconia Core | \$20,931 |
| UH | OISC | Oahu Detection & Control | \$562,000 |
| UH | OISC | Oahu Outreach | \$80,000 |
| UH | OISC | Oahu Cane Ti Control | \$15,000 |
| UH | WRA | Weed Risk Assessment Program | \$92,000 |
| USDA | USFS | Albizia Biocontrol Research | \$80,000 |

| | | | |
|------|------|-------------------------------|-------------|
| USDA | USFS | Melastome Biocontrol Research | \$30,318 |
| USDA | USFS | Ginger Biocontrol Research | \$20,000 |
| | | TOTAL | \$4,750,000 |

Abbreviations

Departments: BISH= Bishop Museum; UH= University of Hawaii; USDA= US Dept of Agriculture; HDOA= Hawaii Dept of Agriculture

Entities: MISC= Maui Invasive Species Committee; BIISC= Big Island Invasive Species Committee; OISC= Oahu Invasive Species Committee; PPC= Plant Pest Control Branch; KIRC= Kahoolawe Island Reserve Commission; HPWRA= Hawaii-Pacific Weed Risk Assessment; WMMWP= West Maui Mountains Watershed Partnership; HAL= Hawaii Ant Lab; DOFAW= Division of Forestry and Wildlife; HBIN= Hawaii Biodiversity Information Network; CGAPS= Coordinating Group on Alien Pest Species; KISC= Kauai Invasive Species Committee; CTAHR= College of Tropical Agriculture and Human Resources; KMWP= Koolau Mountains Watershed Partnership; USFS= US Forest Service; DAR= Division of Aquatic Resources; DRD= Dept of Research & Development; PBARC= Pacific Basin Agriculture Research Center; COP= College of Pharmacy; SDAV= Spatial Data Analysis & Visualization Lab; MDWG= Maui Deer Working Group; HIMB= Hawaii Institute for Marine Biology

Appendix 1: Invasive Species Bills in the 2016 Legislative Session, with Positions of HISC and/or DLNR

The 2016 legislative session had a large number of bills relating to invasive species, though most did not pass. Testimony on invasive species bills was provided by HISC as well as DLNR (the administrative host of the HISC). The “Position” in the table below generally denotes the position of DLNR, which was able to draft testimony for a larger number of bills than was the support staff for HISC. When HISC was able to provide separate testimony from DLNR, the positions of the two agencies were the same.

Table 4: Invasive species bills that passed in the 2016 session, and the position of HISC and/or DLNR.

| Bill# | Title | Description | Introducers | Position |
|--------|---|---|---|---|
| SB2512 | RELATING TO ANIMALS. | Increases penalties for animal desertion. | RIVIERE, SHIMABUKURO, Keith-Agaran, Kim, L. Thielen | Support |
| HB1050 | RELATING TO INTERISLAND MOVEMENT OF INVASIVE SPECIES. | Mandates the Department of Agriculture to perform specified tasks to address the interisland spread of invasive species. Requires annual report. Makes appropriations | TSUJI, BROWER, CHOY, et al | Comments, based on additional mandates without additional resources |
| HR144 | REQUESTING THE AUDITOR TO CONDUCT A FINANCIAL AND MANAGEMENT AUDIT OF THE PLANT QUARANTINE BRANCH OF THE DEPARTMENT OF AGRICULTURE. | Requires an audit of HDOA Plant Quarantine Branch | YAMASHITA, CHOY, DECOITE, ITO, KONG, ONISHI, TSUJI | No position |
| HB2675 | RELATING TO RAPID OHIA DEATH. | Appropriates funds for research to combat rapid ohia death. | ONISHI, AQUINO, et al | Support |

Table 5: Invasive species bills that did not pass in the 2016 session, and the position of HISC and/or DLNR

| Bill# | Title | Description | Introducers | Position | Death |
|--------|---------------------------------------|---|-----------------------------------|--------------------|------------------|
| HB1596 | RELATING TO INVASIVE SPECIES | Establishes the invasive species rapid response special fund within DLNR. Establishes procedures for emergency declarations and expenditures. Appropriates moneys. | LOWEN, ING, JOHANSON, et al | Support | Deferred by AGR |
| HB1597 | RELATING TO ENVIRONMENTAL PROTECTION. | Appropriates funds to the Department of Agriculture for research and mitigation efforts relating to the rapid ohia death disease in the State. Requires the Department to submit a report to the Legislature. Makes appropriation. | LOWEN, CREAGAN, et al | Not drafted | Not heard by WLA |
| HB1607 | RELATING TO INVASIVE SPECIES. | Mandates the Department of Agriculture to establish a Little Fire Ant Pesticide Treatment Coupon Pilot Project and site map. Requires the Department of Agriculture to report to the Legislature on project implementation. Appropriates funds. | ONISHI, BROWER, CHOY, et al | Support | Not heard by WAM |
| HB1869 | RELATING TO THE ROSE-RINGED PARAKEET. | Appropriates funds to the Department of Agriculture to assist and fund the National Wildlife Research Center to research the negative impacts of the rose-ringed parakeet on Kauai and develop and implement a control plan to reduce the negative impacts. | KAWAKAMI, MORIKAWA, TOKIOKA | Support | Not heard by WAM |
| HB1888 | RELATING TO ENVIRONMENTAL FUNDING. | Repeals Act 84, SLH 2015, which established maximum dollar amounts to be distributed among certain non-general funds from the conveyance tax and amended the list of non-general funds that receive distributions from the conveyance tax. | OSHIRO, AQUINO, ITO, SAY, TOKIOKA | Not drafted | Not heard by FIN |
| HB1998 | RELATING TO BIOSECURITY. | Requires the Department of Agriculture to establish or participate in public-private partnerships to enhance the biosecurity program and quarantine inspection process. Appropriates funds for specified projects. | TSUJI | Drafted in support | Not heard by AGR |
| HB2038 | RELATING TO THE ALOHA+ CHALLENGE. | Appropriates funds for the natural resource, clean energy, and green workforce goals of the Aloha+ Challenge. | YAMANE, C. LEE, TSUJI | Support | Not heard by FIN |

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| HB2118 | RELATING TO PREDATORS. | Prohibits individuals from releasing, feeding, watering, or otherwise caring for unrestrained predators on state lands. Establishes administrative fines for individuals that violate this prohibition. Exempts hunters that deploy, feed, or water unrestrained dogs in the course of hunting. | SOUKI (Introduced by request of another party) | Drafted in support | Not heard by WAL |
| HB2143 | RELATING TO INVASIVE SPECIES. | Authorizes HISC to adopt rules to change its invasive species list. Authorizes an agent of HISC to enter private property, under specific conditions, to control or eradicate invasive species. | SOUKI | Support | Not heard by FIN |
| HB2223 | RELATING TO RAT LUNGWORM DISEASE. | Appropriates funds to the University of Hawaii at Hilo, the department of health, and the department of land and natural resources for programs, studies, and activities related to rat lungworm disease. | CREAGAN, EVANS, LOWEN, et al | Drafted in support | Not heard by HLT |
| HB2245 | RELATING TO ANIMALS. | Increases penalties for animal desertion. | HASHEM, ICHIJAMA, KEOHOKALO LE, et al | Support | Not heard by WAM |
| HB2270 | RELATING TO INVASIVE SPECIES PROGRAM ADMINISTRATION | Restructures the Hawaii Invasive Species Council as the Hawaii Invasive Species Authority, attached administratively to the Department of Agriculture, for the enhancement of the State's invasive species prevention, early detection, rapid response, control, enforcement, and outreach programs. Establishes the Hawaii Invasive Species Authority Special Fund and appropriates moneys to that fund to implement the Authority and relevant invasive species projects. | Gov, SOUKI (Introduced by request of another party) | Support | Deferred by AGR |

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| HB2272 | RELATING TO THE BIOSECURITY PROGRAM. | Improves the effectiveness of Hawaii biosecurity program by establishing the program as a function of the whole department of agriculture. The improvement of Hawaii biosecurity goes beyond the confines of the plant quarantine branch and often also includes other groups both inside and outside of state government. | Gov, SOUKI (Introduced by request of another party) | Drafted in support | Not heard by AGR |
| HB2376 | RELATING TO PREDATORS. | Increases protection to human health and wildlife by prohibiting individuals from releasing, feeding, watering, or otherwise caring for unrestrained predators on state lands and provides a fine for individuals that violate this prohibition and an exemption for hunters who deploy, feed, or water unrestrained dogs in the course of hunting. | Gov, SOUKI (Introduced by request of another party) | Drafted in support | Not heard by EEP/WALL |
| HB2424 | RELATING TO BIOSECURITY. | Requires DOA to establish or participate in private-public partnerships to enhance the biosecurity program and quarantine inspection process. Appropriates funds. | TSUJI, CACHOLA, DECOITE, et al | Support | Died in conference |
| HB2516 | MAKING AN APPROPRIATION TO MANAGE ALBIZIA TREES ON THE ISLAND OF HAWAII. | Makes an appropriation to the department of land and natural resources division of forestry and wildlife for the Big Island Invasive Species Committee for the immediate coordinated management of albizia trees on the island of Hawaii. | LOWEN, CREAGAN, EVANS, et al | Drafted in support | Not heard by WAL |
| HB2542 | RELATING TO THE AUDITOR. | Directs the auditor to audit the plant quarantine branch of DOA to facilitate its transfer to DOT. | YAMASHITA, BROWER, CHOY, et al | Comments | Not adopted by WLA |
| HR143/HR197 | REQUESTING THE LRB TO EVALUATE MOVING THE PLANT QUARANTINE BRANCH TO THE DEPARTMENT OF TRANSPORTATION. | Requests the Legislative Reference Bureau to evaluate the movement of the HDOA Plant Quarantine Branch to the Department of Transportation | YAMASHITA, CHOY, DECOITE, ITO, KONG, ONISHI, TSUJI | Not drafted | Deferred by AGR |

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| SB2129 | RELATING TO THE ROSE-RINGED PARAKEET. | Appropriates funds to the Department of Agriculture to assist and fund the National Wildlife Research Center to research the negative impacts of the rose-ringed parakeet on Kauai and develop and implement a control plan to reduce the negative impacts. | KOUCHI (Introduced by request of another party) | Support | Not heard by WAM |
| SB2271 | RELATING TO ENVIRONMENTAL PROTECTION. | Appropriates funds to the Department of Agriculture for research and mitigation efforts relating to the rapid ohia death disease in the State. Requires the Department to submit a report to the Legislature. Makes appropriation. | RUDERMAN, CHUN OAKLAND, GABBARD, et al | Not drafted | Not heard by WAL |
| SB2278 | RELATING TO TAXATION. | Provides an income tax credit for a portion of the cost of removing invasive species trees from private property and replacing invasive species trees with non-invasive species trees. | CHUN OAKLAND, GABBARD, et al | Drafted in support | Not heard by EET |
| SB2379 | RELATING TO INVASIVE SPECIES. | Mandates the Department of Agriculture to establish a Little Fire Ant Pesticide Treatment Coupon Pilot Project and site map. Requires the Department of Agriculture to report to the Legislature on project implementation. Appropriates funds. | KOUCHI (Introduced by request of another party) | Support | Not heard by WAM |
| SB2448 | RELATING TO INVASIVE SPECIES. | Authorizes HISC to adopt rules to change its invasive species list. Authorizes an agent of HISC to enter private property, under specific conditions, to control or eradicate invasive species. | KEITH-AGARAN, ENGLISH, GABBARD, et al | Support | Not heard by WAL |
| SB2450 | RELATING TO PREDATORS. | Prohibits individuals from releasing, feeding, watering, or otherwise caring for unrestrained predators on state lands. Establishes administrative fines for individuals that violate this prohibition. Exempts hunters that deploy, feed, or water unrestrained dogs in the course of hunting. | KEITH-AGARAN, KIDANI, SHIMABUKURO, Dela Cruz, Galuteria, Wakai | Drafted in support | Deferred by WLA/EET |
| SB2516 | RELATING TO RAT LUNGWORM DISEASE. | Appropriates funds to the University of Hawaii at Hilo, the department of health, and the department of land and natural resources for programs, studies, and activities related to rat lungworm disease. | RUDERMAN, Baker, Chun Oakland, Espero, Gabbard, Shimabukuro, L. Thielen | Support | Not heard by WAM |

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| SB2518 | RELATING TO INVASIVE SPECIES. | Appropriates funds to the Hawaii ant lab for personnel and equipment to support mitigation of the little fire ant. | RUDERMAN, CHUN OAKLAND, GABBARD, SHIMABUKU RO, Espero, L. Thielen | Drafted in support | Not heard by EET/HEA |
| SB2750 | MAKING AN APPROPRIATION TO MANAGE ALBIZIA TREES ON THE ISLAND OF HAWAII. | Makes an appropriation to the department of land and natural resources division of forestry and wildlife for the Big Island Invasive Species Committee for the immediate coordinated management of albizia trees on the island of Hawaii. | RUDERMAN, CHUN OAKLAND, GABBARD, Espero, Ihara, Shimabukuro | Drafted in support | Not heard by EET/WL A |
| SB2771 | RELATING TO BIOSECURITY. | Requires the Department of Agriculture to establish or participate in public-private partnerships to enhance the biosecurity program and quarantine inspection process. Appropriates funds for specified projects. | GABBARD, SHIMABUKU RO, Kidani, Kim, Nishihara, Riviere, Slom | Support | Not heard by WAM |
| SB2773 | RELATING TO THE ALOHA+ CHALLENGE | Appropriates funds for the natural resource, clean energy, and green workforce goals of the Aloha+ Challenge. | GABBARD, CHUN OAKLAND, IHARA, KEITH-AGARAN, RUDERMAN, Kim, Nishihara | Support | Not heard by AGR/WA L |
| SB2799 | RELATING TO INVASIVE SPECIES PROGRAM ADMINISTRATION | Restructures the Hawaii Invasive Species Council as the Hawaii Invasive Species Authority, attached administratively to the Department of Agriculture, for the enhancement of the State's invasive species prevention, early detection, rapid response, control, enforcement, and outreach programs. Establishes the Hawaii Invasive Species Authority Special Fund and appropriates moneys to that fund to implement the Authority and relevant invasive species projects. | Gov, KOUCHI (Introduced by request of another party) | Support | Not heard by AGR |
| SB2801 | RELATING TO THE BIOSECURITY PROGRAM. | Improves the effectiveness of Hawaii biosecurity program by establishing the program as a function of the whole department of agriculture. The improvement of Hawaii biosecurity goes beyond the confines of the plant quarantine branch and often also includes other groups both inside and outside of state government. | Gov, KOUCHI (Introduced by request of another party) | Support | Not heard by WAM |
| SB2905 | RELATING TO PREDATORS. | Increases protection to human health and wildlife by prohibiting individuals from releasing, feeding, watering, or otherwise caring for unrestrained predators on state lands and provides a fine for individuals that violate this | Gov, KOUCHI (Introduced by request of another party) | Drafted in support | Not heard by WLA/JDL |

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| | | prohibition and an exemption for hunters who deploy, feed, or water unrestrained dogs in the course of hunting. | | | |
| SB3047 | RELATING TO RAPID OHIA DEATH. | Appropriates funds for research to combat rapid ohia death. | INOUYE, GABBARD, NISHIHARA, RUDERMAN, Slom | Not drafted | Not heard by WLA |

Appendix 2: Chapter 194, Hawaii Revised Statutes: INVASIVE SPECIES COUNCIL

Section

- 194-1 Definitions
- 194-2 Establishment of council; duties
- 194-3 Lead agencies; accountability
- 194-4 Relation of chapter to other laws
- 194-5 Entry; private property
- 194-6 Entry; public property
- 194-7 Rules

Cross References

- Coqui frog; designation as pest, see §141-3.
- Landowners liability for access to control invasive species, see chapter 520A.
- Noxious weed control, see chapter 152.
- Plant, animal and microorganism, etc., imports (see chapter 150A).

[§194-1 Definitions.] As used in this [chapter], unless the context requires otherwise:

“Council” means the [invasive species council].

“Department” means any entity that is a member of the [invasive species council] established under section [194-2(a)]. [L 2003, c 85, §2; am L 2004, c 10, §16; am L 2006, c 109, §2].

[§194-2 Establishment of council; duties.] (a) There is established the invasive species council for the special purpose of providing policy level direction, coordination, and planning among state departments, federal agencies, and international and local initiatives for the control and eradication of harmful invasive species infestations throughout the State and for preventing the introduction of other invasive species that may be potentially harmful. The council shall:

- (1) Maintain a broad overview of the invasive species problem in the State;
- (2) Advise, consult, and coordinate invasive species-related efforts with and between the departments of agriculture, land and natural resources, health, and transportation, as well as state, federal, international, and privately organized programs and policies;
- (3) Identify and prioritize each lead agency's organizational and resource shortfalls with respect to invasive species;
- (4) After consulting with appropriate state agencies, create and implement a plan that includes the prevention, early detection, rapid response, control, enforcement, and education of the public with respect to invasive species, as well as fashion a mission statement articulating the State's position against invasive species; provided that the appropriate state agencies shall collaborate with the counties and communities to develop and implement a systematic approach to reduce and control coqui frog infestations on public lands that are near or adjacent to communities, and shall provide annual reports on the progress made in achieving this objective;
- (5) Coordinate and promote the State's position with respect to federal issues, including:
 - (A) Quarantine preemption;
 - (B) International trade agreements that ignore the problem of invasive species in Hawaii;
 - (C) First class mail inspection prohibition;
 - (D) Whether quarantine of domestic pests arriving from the mainland should be provided by the federal government;
 - (E) Coordinating efforts with federal agencies to maximize resources and reduce or eliminate system gaps and leaks, including deputizing the United States Department of Agriculture's plant protection and quarantine inspectors to enforce Hawaii's laws;

(F) Promoting the amendment of federal laws as necessary, including the Lacey Act Amendments of 1981, Title 16 United States Code sections 3371-3378; Public Law 97-79, and laws related to inspection of domestic airline passengers, baggage, and cargo; and

(G) Coordinating efforts and issues with the federal Invasive Species Council and its National Invasive Species Management Plan;

(6) Identify and record all invasive species present in the State;

(7) Designate the department of agriculture, health, or land and natural resources as the lead agency for each function of invasive species control, including prevention, rapid response, eradication, enforcement, and education;

(8) Identify all state, federal, and other moneys expended for the purposes of the invasive species problem in the State;

(9) Identify all federal and private funds available to the State to fight invasive species and advise and assist state departments to acquire these funds;

(10) Advise the governor and legislature on budgetary and other issues regarding invasive species;

(11) Provide annual reports on budgetary and other related issues to the legislature twenty days prior to each regular session;

(12) Include and coordinate with the counties in the fight against invasive species to increase resources and funding and to address county-sponsored activities that involve invasive species;

(13) Review state agency mandates and commercial interests that sometimes call for the maintenance of potentially destructive alien species as resources for sport hunting, aesthetic resources, or other values;

(14) Review the structure of fines and penalties to ensure maximum deterrence for invasive species-related crimes;

(15) Suggest appropriate legislation to improve the State's administration of invasive species programs and policies;

(16) Incorporate and expand upon the department of agriculture's weed risk assessment protocol to the extent appropriate for the council's invasive species control and eradication efforts; and

(17) Perform any other function necessary to effectuate the purposes of this chapter.

(b) The council shall be placed within the department of land and natural resources for administrative purposes only and shall be composed of:

(1) The president of the University of Hawaii, or the president's designated representative;

(2) The director, or the director's designated representative, of each of the following departments:

(A) Business, economic development, and tourism;

(B) Health; and

(C) Transportation; and

(3) The chairperson, or the chairperson's designated representative, of each of the following departments:

(A) Agriculture; and

(B) Land and natural resources.

(c) Representatives of federal agencies, the legislature, and members of the private sector shall be asked to participate or consulted for advice and assistance. Representatives of the legislature shall consist of eight members, as follows:

(1) Four senators, one from each county, to be selected by the senate president; and

(2) Four representatives, one from each county, to be selected by the speaker of the house of representatives.

(d) The council shall meet no less than twice annually to discuss and assess progress and recommend changes to the invasive species programs based on results of current risk assessments, performance standards, and other relevant data. Notwithstanding any law to the contrary:

(1) A simple majority of voting members of the council shall constitute a quorum to do business; and

(2) Any action taken by the council shall be by a simple majority of the voting members.

(e) The council shall submit a report of its activities to the governor and legislature annually. [L 2003, c 85, §3; am L 2004, c 10, §16; am L 2006, c 109, §§1, 2; am L 2008, c 160, §1]

[§194-3 Lead agencies; accountability.] A state department that is designated as a lead agency under section [194-2(a) (7)], with respect to a particular function of invasive species control, shall have sole administrative responsibility and accountability for that designated function of invasive species control. The lead agency shall:

(1) Coordinate all efforts between other departments and federal and private agencies to control or eradicate the designated invasive species;

(2) Prepare a biennial multi-departmental budget proposal for the legislature forty days before the convening of the regular session of the legislature in each odd-numbered year, showing the budget requirements of each of the lead agency's assigned invasive species function that includes the budget requirements of all departments that it leads for that species, as well as other federal and private funding for that invasive species;

(3) Prepare and distribute an annual progress report forty days prior to the convening of each regular session of the legislature to the governor and the legislature that includes the status of each assigned function; and

(4) Any other function of a lead agency necessary to effectuate the purposes of this [chapter]. [L 2003, c 85, §4; am L 2004, c 10, §16; am L 2006, c 109, §2]

(C) Transportation; and

(3) The chairperson, or the chairperson's designated representative, of each of the following departments:

(A) Agriculture; and

(B) Land and Natural Resources.

(c) Representatives of federal agencies, the legislature, and members of the private sector shall be asked to participate or consulted for advice and assistance. Representatives of the legislature shall consist of eight members, as follows:

(1) Four senators, one from each county, to be selected by the Senate president; and

(2) Four representatives, one from each county, to be selected by the speaker of the House of Representatives.

(d) The Council shall meet no less than twice annually to discuss and assess progress and recommend changes to the invasive species programs based on results of current risk assessments, performance standards, and other relevant data. Notwithstanding any law to the contrary:

(1) A simple majority of voting members of the council shall constitute a quorum to do business; and

(2) Any action taken by the council shall be by a simple majority of the voting members.

(e) The Council shall submit a report of its activities to the governor and legislature annually. [L 2003, c 85, §3; am L 2004, c 10, §16; am L 2006, c 109, §§1, 2]

[§194-4 Relation of chapter to other laws.] Notwithstanding any other law to the contrary, and in addition to any other authority provided by law that is not inconsistent with the purposes of this [chapter], a department is authorized to examine, control, and eradicate all instances of invasive species identified by the Council for control or eradication and found on any public or private premises or in any aircraft or vessel landed or docked in waters of the State. [L 2003, c 85, §5; am L 2004, c 10, §16; am L 2006, c 109, §2]

[§194-5 Entry; private property.] (a) Whenever any invasive species identified by the Council for control or eradication is found on private property, a department may enter such premises to control or eradicate the invasive species after reasonable notice is given to the owner of the property and, if entry is refused, pursuant to the court order in subsection (d).

(b) If applicable, a duplicate of the notice so given shall be left with one or more of the tenants or occupants of the premises. If the premises are unoccupied, notice shall be mailed to the last known place

of residence of the owner, if residing in the state. If the owner resides out of the state or cannot be expeditiously provided with notice, notice left at the house or posted on the premises shall be sufficient.

(c) The department may instead cause notice to be given, and order the owner to control or eradicate the invasive species, if such species was intentionally and knowingly established by the owner on the owner's property and not naturally dispersed from neighboring properties, at the owner's expense within such reasonable time as the department may deem proper, pursuant to the notice requirements of this section.

(d) If the owner thus notified fails to comply with the order of the department, or its agent, within the time specified by the department, or if entry is refused after notice is given pursuant to subsection (a) and, if applicable subsection (b), the department or its agent may apply to the district court of the circuit in which the property is situated for a warrant, directed to any police officer of the circuit, commanding the police officer to take sufficient aid and to assist the department member or its agent in gaining entry onto the premises, and executing measures to control or eradicate the invasive species.

(e) The department may recover by appropriate proceedings the expenses incurred by its order from any owner who, after proper notice, has failed to comply with the department's order.

(f) In no case shall the department or any officer or agent thereof be liable for costs in any action or proceeding that may be commenced pursuant to this [chapter]. [L 2003, c 85, §6; am L 2004, c 10, §16; am L 2006, c 109, §2].

[§194-6 Entry; public property.] (a) Whenever any invasive species is found on state or county property or on a public highway, street, lane, alley, or other public place controlled by the state or county, notice shall be given by the department or its agent, as the case may be, to the person officially in charge thereof, and the person shall be reasonably notified and ordered by the department to control or eradicate the invasive species.

(b) In case of a failure to comply with the order, the mode of procedure shall be the same as provided in case of private persons in section [194-5]. [L 2003, c 85, §7; am L 2004, c 10, §16; am L 2006, c 109, §2]

[§194-7 Rules.] The invasive species council may adopt rules pursuant to chapter 91, to effectuate this [chapter]. [L 2003, c 85, §8; am L 2004, c 10, §16; am L 2006, c 109, §2].