2018 Progress Report

Hawaii Interagency Biosecurity Plan 2017-2027

Prepared by the
Hawaii Invasive Species Council
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Hawaii Interagency Biosecurity Plan 2017-2027

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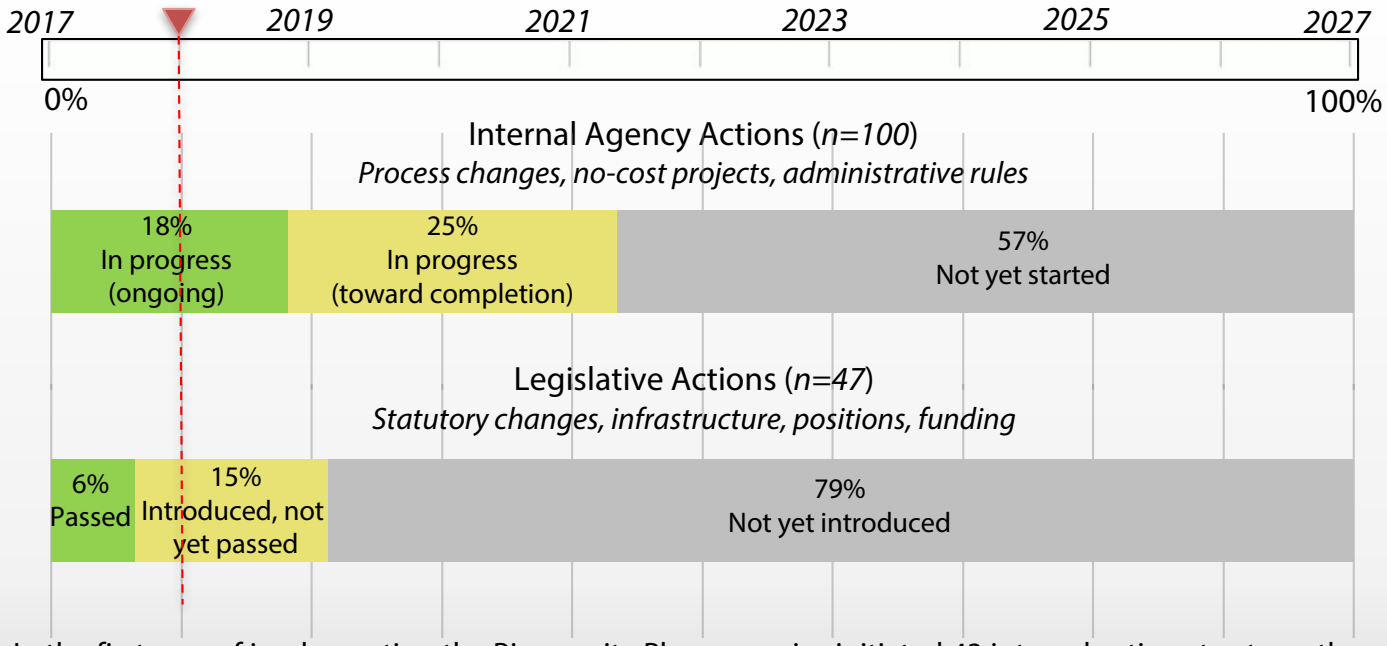
Hawaii Interagency Biosecurity Plan

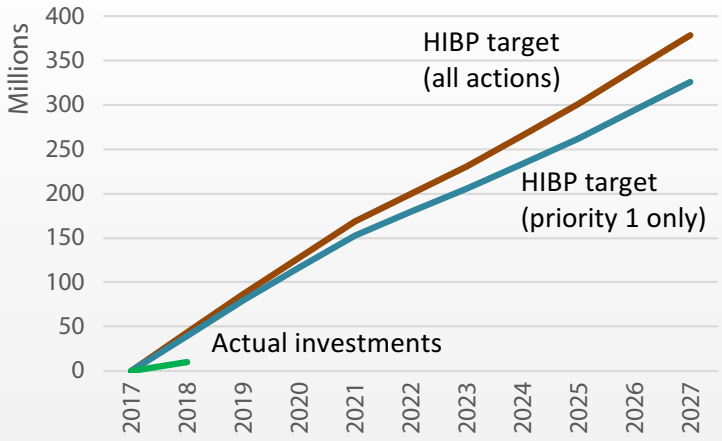
2018 Snapshot

The Hawaii Interagency Biosecurity Plan was released in January 2017 and describes 147 actions designed to meet a 2027 vision of a sustainable, biosecure Hawaii. As the plan turns one year old, we've progressed through 10% of the implementation period. Hawaii's state agencies and legislature are more than keeping pace, and have initiated work on a large number of the recommended actions.

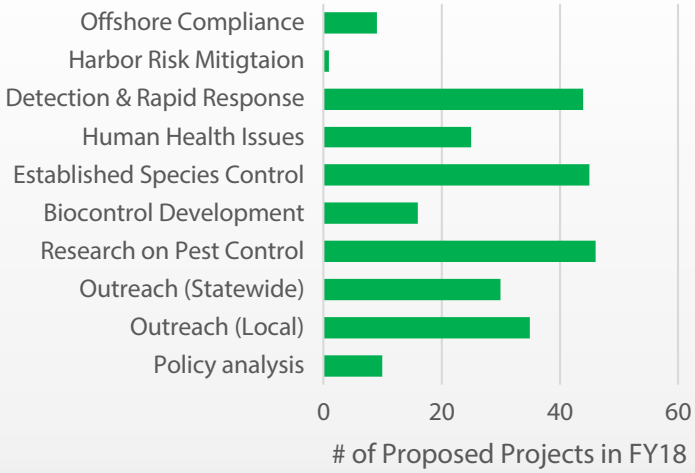


In the first year of implementing the Biosecurity Plan, agencies initiated 43 internal actions to strengthen Hawaii's preborder, border, and postborder biosecurity. Of 47 legislative actions, 10 were introduced in the 2017 session with three passing into law.

Cumulative New Investments in Biosecurity



Utilizing HISC Funds to Address HIBP Actions



New investments in 2017 included appropriations for agricultural loans, rapid ohia death, rat lungworm disease, and conversion of HISC funds to the base budget. HISC revamped its funding process to specifically address HIBP actions and received $12M in requests from applicants. HISC awarded $4M in available funds.

Hawaii Interagency Biosecurity Plan

Implementation Strategy

What is biosecurity?

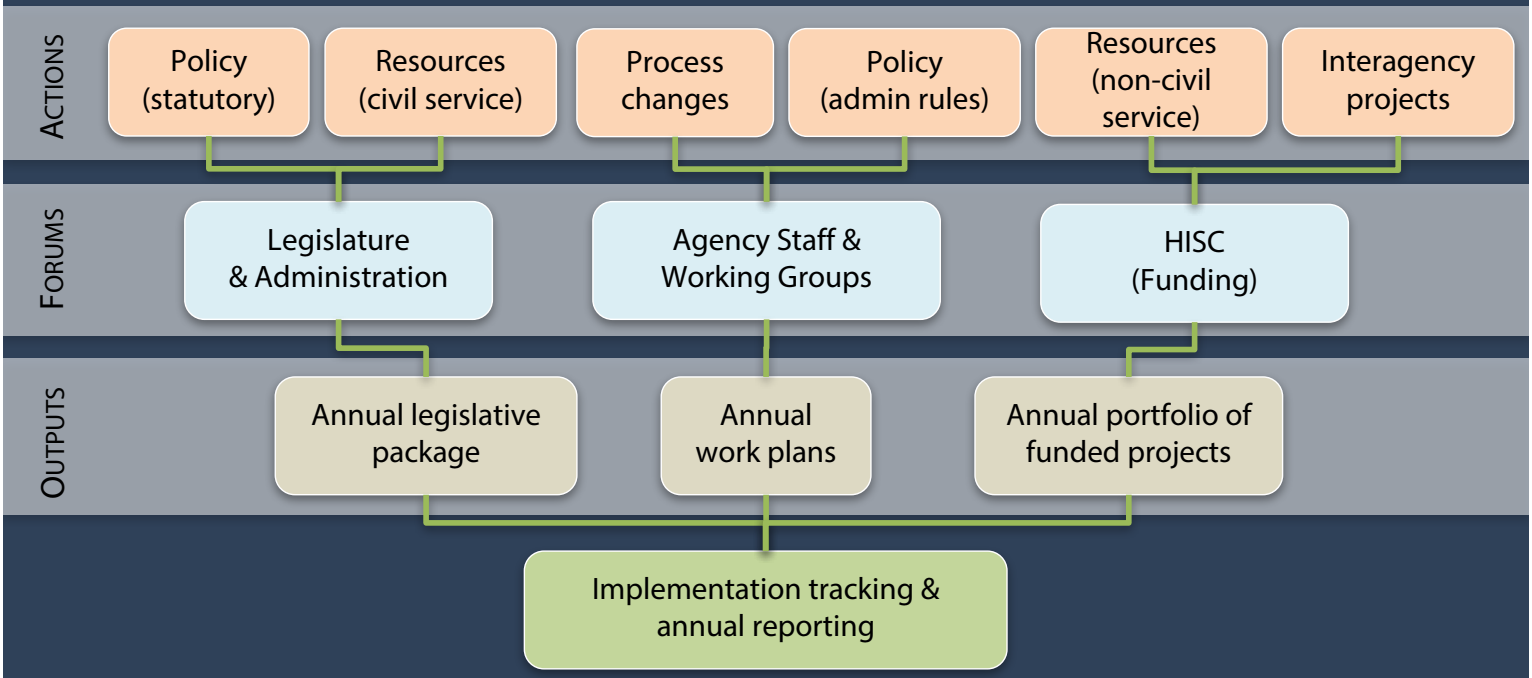
Biosecurity is the complete set of measures taken to manage the risk from invasive species to the economy, environment, and health and lifestyle of the people. The HIBP takes a comprehensive approach that includes preborder, border, and postborder biosecurity. This includes all efforts to prevent, detect, and control invasive species in Hawaii.

Different paths for different actions

HIBP recommendations span a variety of focal areas including preborder, border, and postborder biosecurity concerns, as well as public awareness. Within each area, the Plan recommends different types of actions, including:

- **Policy actions**, including both legislative needs and administrative rule changes
- **Process actions**, which change the way existing resources work together to increase effectiveness
- **Resource actions**, including developments in technology, infrastructure, funding, and staffing.

Because implementation of the Plan will require the assistance of different types of collaborators, the implementation strategy for the HIBP reorganizes the 147 action items according to the forums needed for success:



While the HISC tracks progress toward implementation, actual progress is made by collaborators within and between agencies, and by the Hawaii State Legislature. Points of contact within individual agencies provide status updates to the HISC Support Program on a semi-annual basis. Agency points of contact are listed inside the cover of this report. The following pages present a summary of progress made within the areas of preborder, border, and postboder biosecurity, as well as public awareness.

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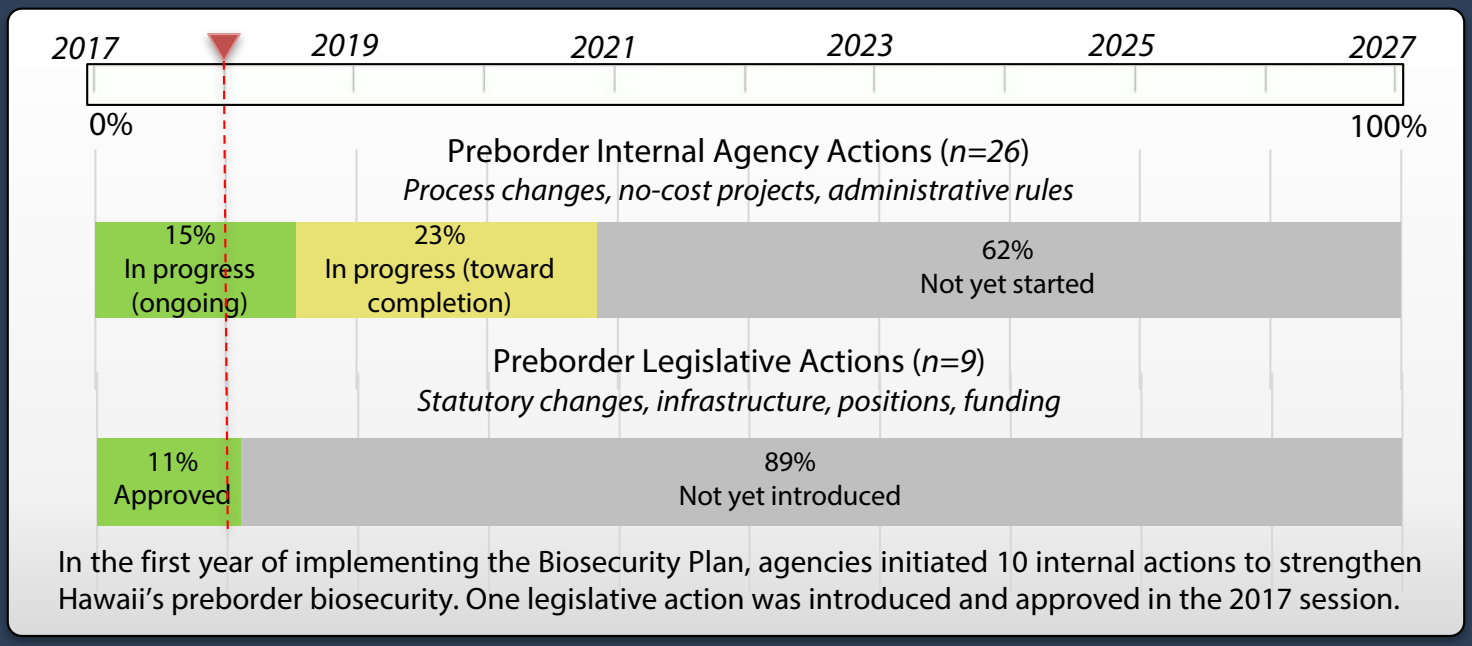
Preborder Biosecurity

Preborder biosecurity encompasses all the policies, processes, and protocols put in place to prevent entry of invasive species into Hawaii.

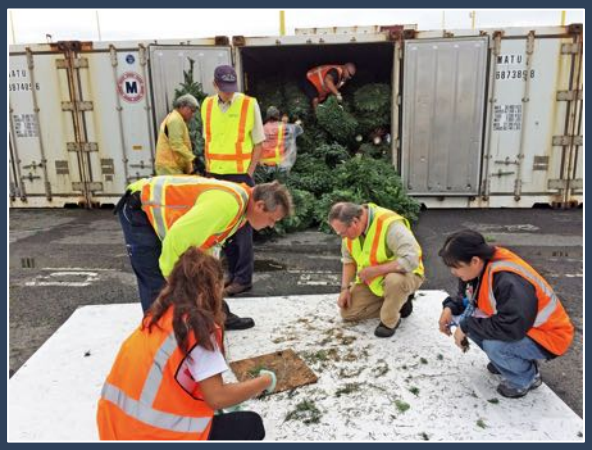


In the first year of implementing the Biosecurity Plan, agencies initiated 10 internal actions to strengthen Hawaii's preborder biosecurity. One legislative action was introduced and approved in the 2017 session.

Bright Spots

- In addition to existing agreements with Oregon, HDOA Plant Quarantine Branch entered into a new agreement with Washington State for pre-shipment treatment of Christmas trees (PrePol2.1)

- HDOA Plant Quarantine Branch entered into a new MOU with DOD to perform brown tree snake inspections (PrePro3.2)



Christmas tree inspection. Credit: Oregon Dept of Ag

- HDOA Plant Quarantine Branch continued its work to develop its electronic manifesting system, which will allow for more efficient, risk-based inspections in the future. (PrePro1.1, 1.4)

Remaining Needs

Over the next 9 years, key HIBP recommendations regarding preborder biosecurity include:

- Amending admin rules to require phytosanitary certificates for high-risk plant imports (PrePol2.2)
- At HDOA Plant Quarantine, hiring three entomologists, two plant pathologists, and two botanists to conduct ongoing pathway risk assessments (PreTifs2.2)
- At DLNR Division of Aquatic Resources, hiring two biologists to conduct ballast & biofouling risk assessments (PreTifs2.5)

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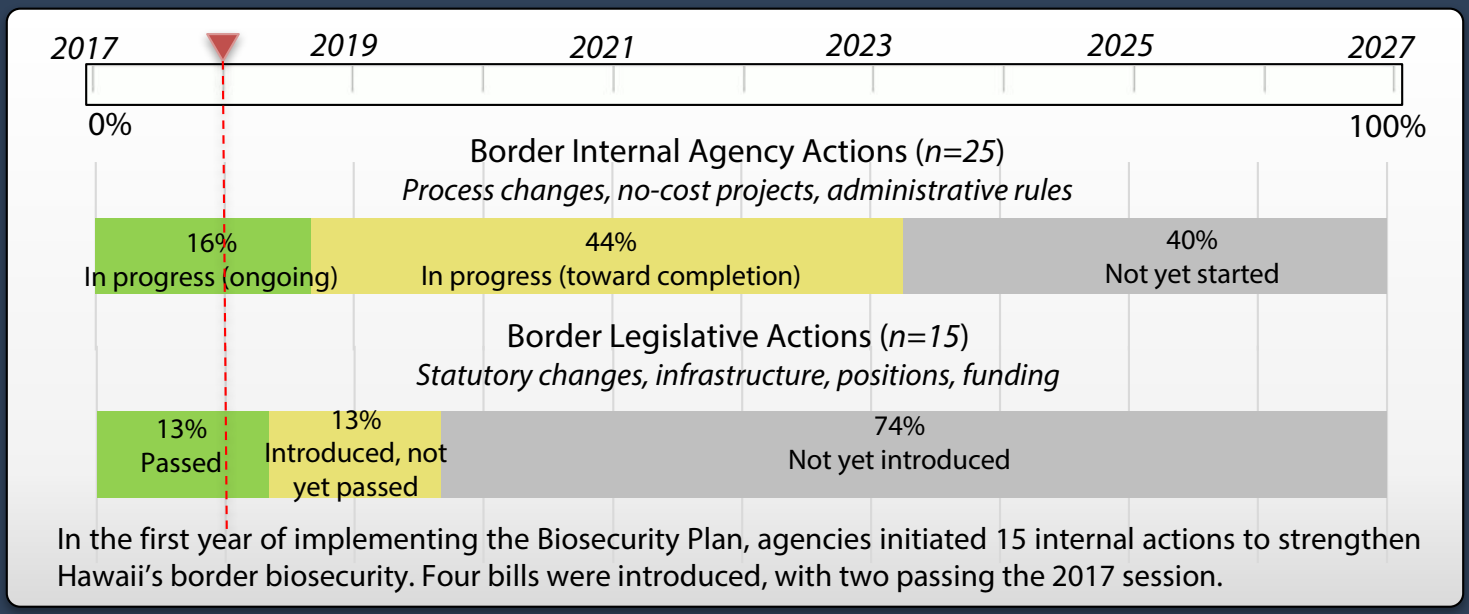
Border Biosecurity

Border biosecurity encompasses all the policies, protocols, and processes put in place to detect and respond to the arrival of an invasive species at ports of entry into the state.



In the first year of implementing the Biosecurity Plan, agencies initiated 15 internal actions to strengthen Hawaii's border biosecurity. Four bills were introduced, with two passing the 2017 session.

Bright Spots

- The Clift Tsuji Act of 2017 provided the authority for HDOA to enter into public-private partnerships to utilize 3rd party inspection facilities. HDOA is developing standards for 3rd party facilities through a pilot program. (BorPol1.1, BorPro1.2,1.3)

- DLNR Division of Aquatic Resources initiated development of a database to house data collected from ballast water reports and, eventually, biofouling inspections (BorPro2.3)

The Clift Tsuji Act provided key biosecurity legislation in 2017

- DOH Vector Control Branch has been fully restored to its capacity prior to the 2009 Reduction in Force. The new Vector Control Branch is actively building programs for mosquito surveillance and response, and is engaging in research relating to rat lungworm disease. (BorTifs1.5)
- HDOA Plant Quarantine Branch has reinstated their detector dog program, with four canine handler teams for inspections. (BorPro1.1)

Remaining Needs

Over the next 9 years, key HIBP recommendations regarding border biosecurity include:

- Establish a biosecurity emergency response fund (BorPol1.3)
- Double the staff at HDOA Plant Quarantine Branch to meet current inspection volume, roughly 90 new positions (BorTifs1.1)
- Hire five aquatic biologists to inspect and regulate ballast water and biofouling statewide (BorTifs3.1)

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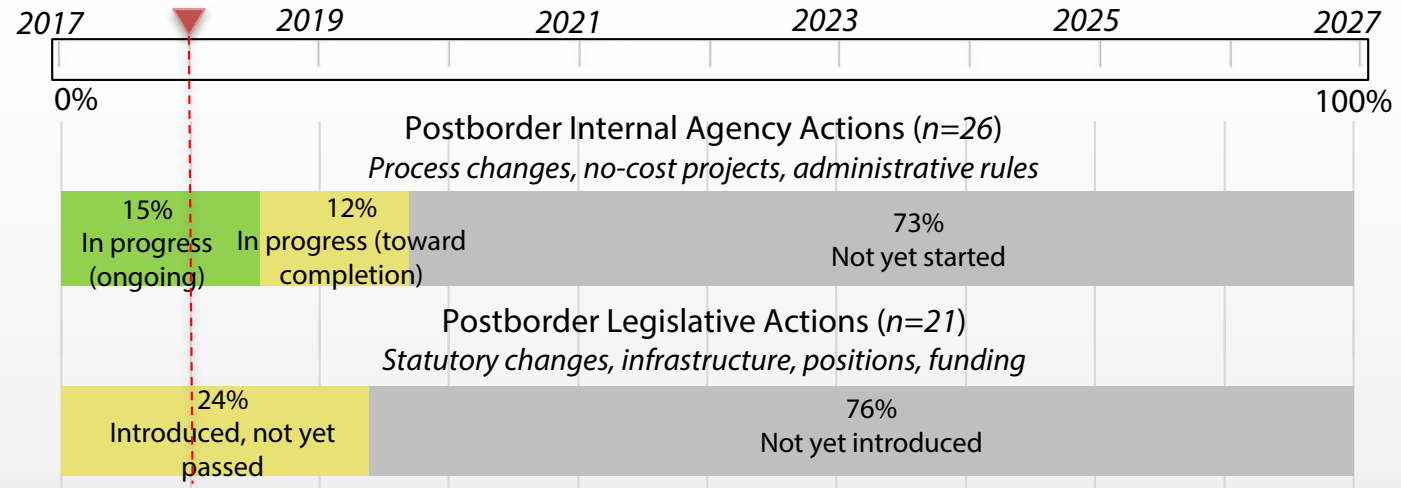
Postborder Biosecurity

Postborder biosecurity encompasses all the policies, protocols, and processes put in place to eradicate or control invasive species beyond the ports of entry and inspection process. Interisland biosecurity and intraisland transport are covered in this section.



In the first year of implementing the Biosecurity Plan, agencies initiated seven internal actions to strengthen Hawaii's postborder biosecurity. Five bills were introduced but have not yet passed.

Bright Spots

- DLNR Division of Aquatic Resources reviewed biofouling cleaning and capture technologies used in New Zealand and Australia, and was invited to join an evaluation process that could lead to similar tools being implemented in Hawaii and elsewhere in the US. (PosPro4.5)

- The UH Invasive Species Committees and Hawaii Ant Lab continued their important gap-filling work to conduct early detection and rapid response statewide. Initial discussions are underway to increase programmatic stability at UH for these projects' administrative home, the Pacific Cooperative Studies Unit. (PosPro1.5)

- The Hawaii Department of Agriculture made permanent a rule to prohibit the movement of soil and ohia products from Hawaii Island, to minimize risk of spreading the *Ceratocystis* pathogen that causes rapid ohia death (PosPol1.3)

Remaining Needs

Over the next 9 years, key HIBP recommendations regarding postborder biosecurity include:

- Restructure the HISC as the Hawaii Invasive Species Authority, attached to HDOA (PosPol2.1)
- Increase funding for Watershed Partnerships and Invasive Species Committees (PosPro3.3)
- Construct new biocontrol research facilities at the HDOA Plant Pest Control Branch (PosTifs2.1)
- At UH CTAHR, hire four agricultural diagnosticians for insect & disease response (PosTifs1.14)
- At HDOA Plant Pest Control Branch, hire 20 positions to meet current control needs (PosTifs1.2)
- At DLNR DOFAW, hire 45 invasive species techs statewide to protect natural areas (PosTifs1.10)

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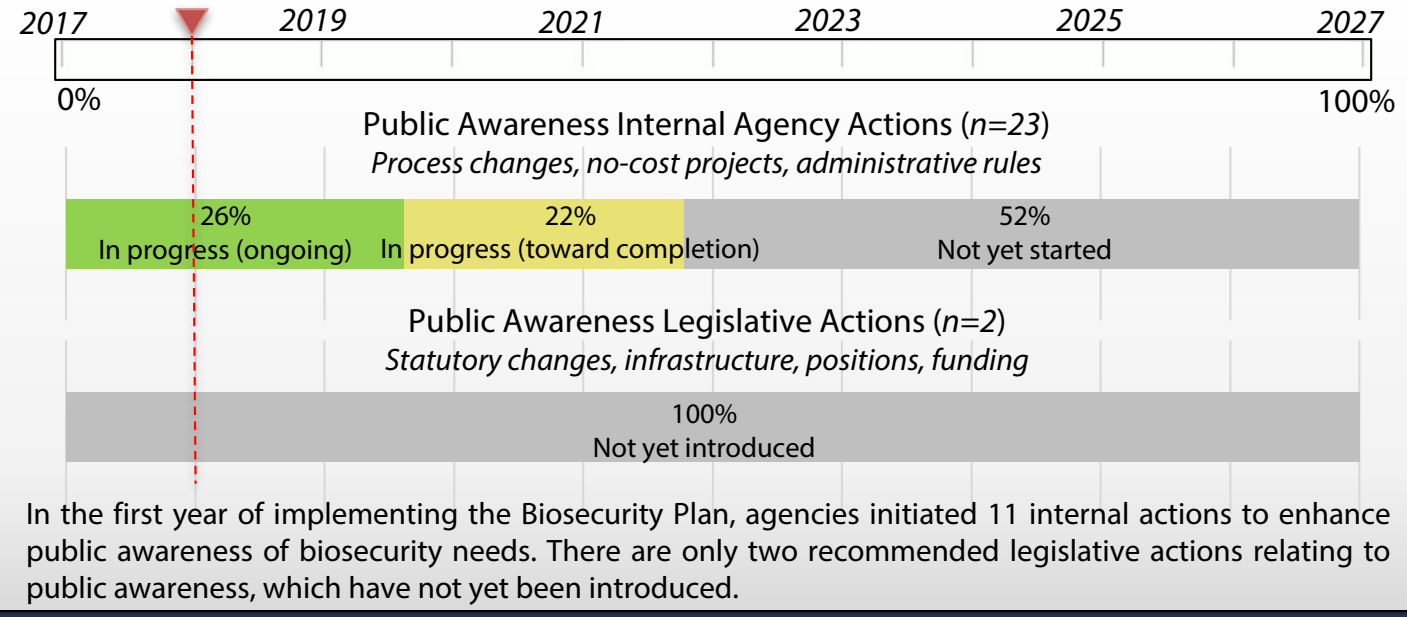
Public Awareness

An engaged, supportive community is critical to Hawaii's biosecurity efforts. From incoming visitors passing the airport amnesty bin, to residents who report invasive species sightings, the most important biosecurity collaborator is you.



In the first year of implementing the Biosecurity Plan, agencies initiated 11 internal actions to enhance public awareness of biosecurity needs. There are only two recommended legislative actions relating to public awareness, which have not yet been introduced.

Bright Spots

- HDOA Plant Industry Division has begun discussions with Honolulu Airport to place new signs relating to biosecurity, focusing on proper use of amnesty bins on entry to Hawaii (PwsTifs1.4)

REPORT INVASIVE SPECIES
643-PEST
643pest.org
CALL OR CLICK TO PROTECT HAWAII

Available on the App Store
GET IT ON Google Play

Download the app using our QR code

643-Pest

- HISC and HDOA launched a new pest reporting tool for public use in 2017. Joining the existing 643-PEST telephone hotline are the new 643pest.org website and 643-PEST mobile app, available on iOS and Android. Now users can alert the state of invasive species sightings from anywhere, and can upload photos and map points to aid response. (PwsPro3.5)
- A 2017 public awareness survey by the Coordinating Group on Alien Pest Species found that over 80% of Hawaii residents consider invasive species a serious problem, and 75% support doubling the portion of the state budget that goes toward biosecurity agencies. (PwsPro3.3)

Remaining Needs

Over the next 9 years, key HIBP recommendations regarding public awareness include:

- Promote a certified nurseries program to help consumers find certified growers (PwsPro1.5)
- Expand the "Buy Local" campaign at HDOA to include messaging about biosecurity and the reduced invasive species risk associated with supporting local agriculture.

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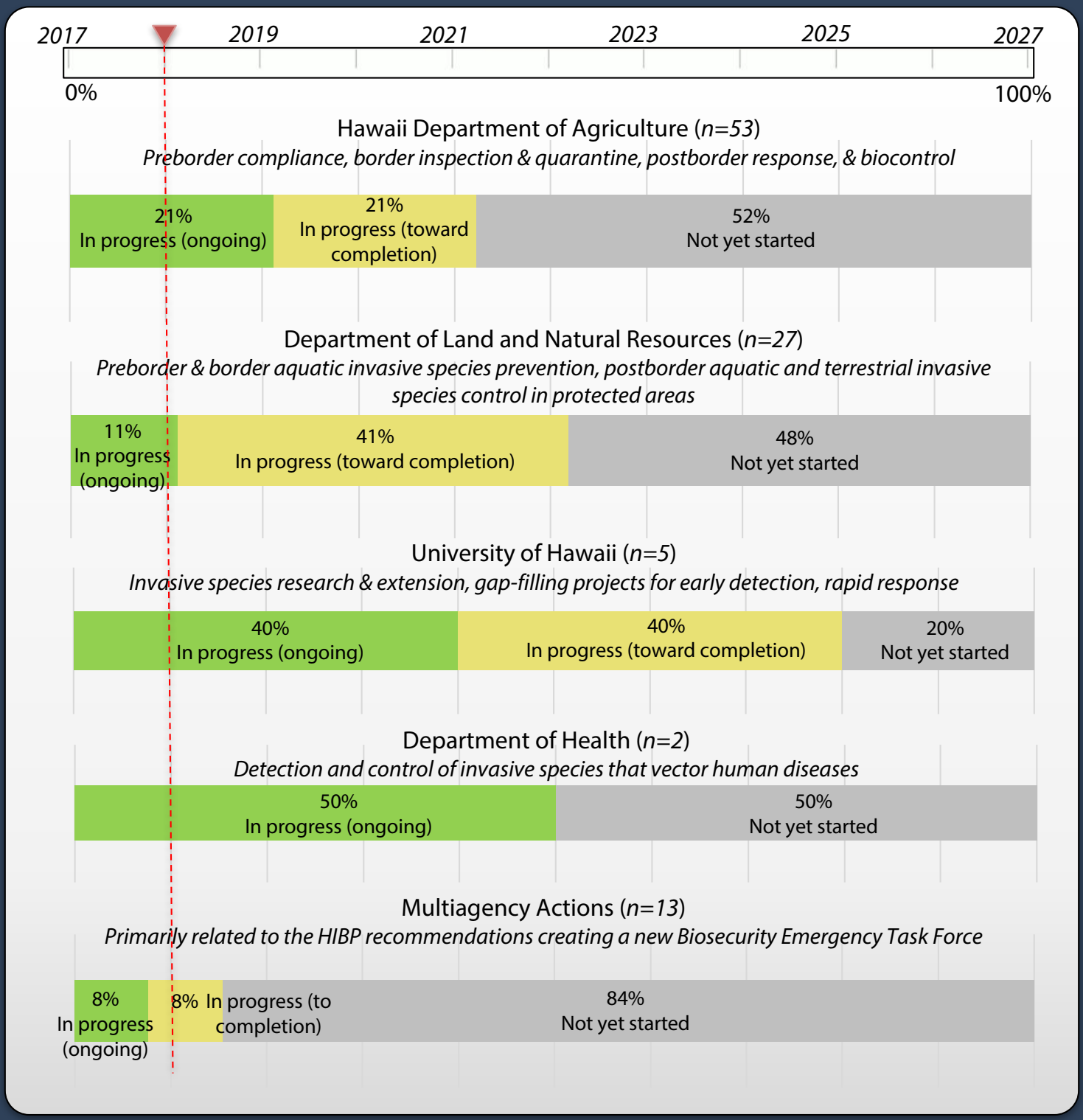
Progress by Agency

Action items recommended by the HIBP are assigned to lead agencies to oversee their implementation. At the one year mark, agencies have made substantial progress in initiating internal actions that will increase Hawaii's biosecurity. Because legislative actions are measured using different metrics, the figures below describe internal agency actions only (e.g., process changes, no-cost projects, administrative rules).



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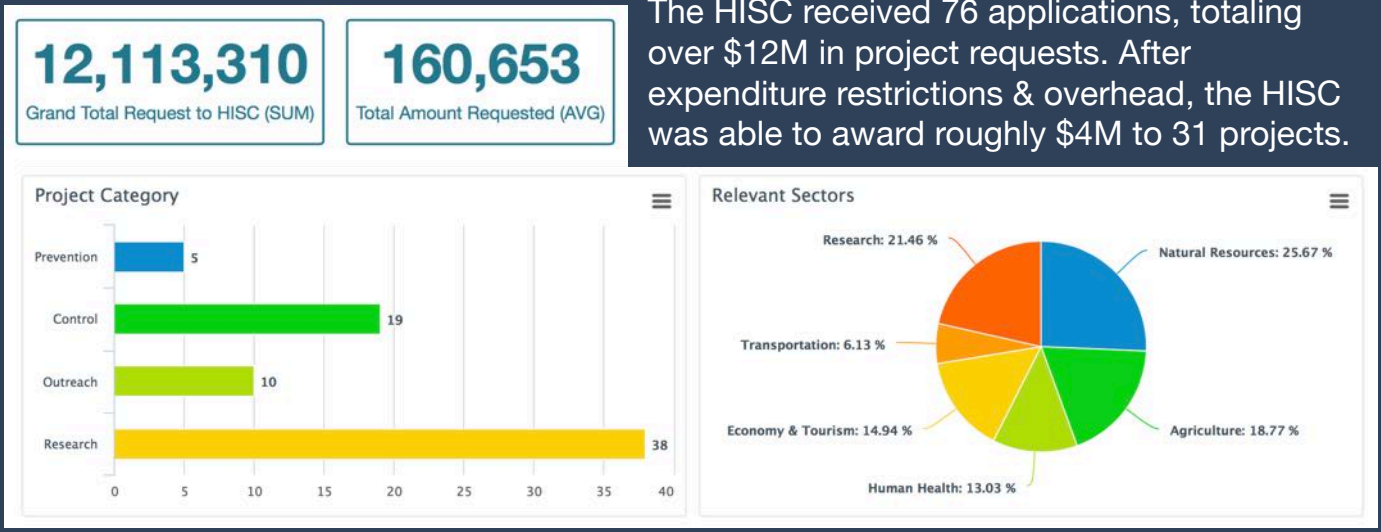
HISC Funded Projects, FY18

The Hawaii Invasive Species Council receives funding from the legislature to operate a program that coordinates invasive species issues across agencies and, through a competitive awards process, support interagency projects that:

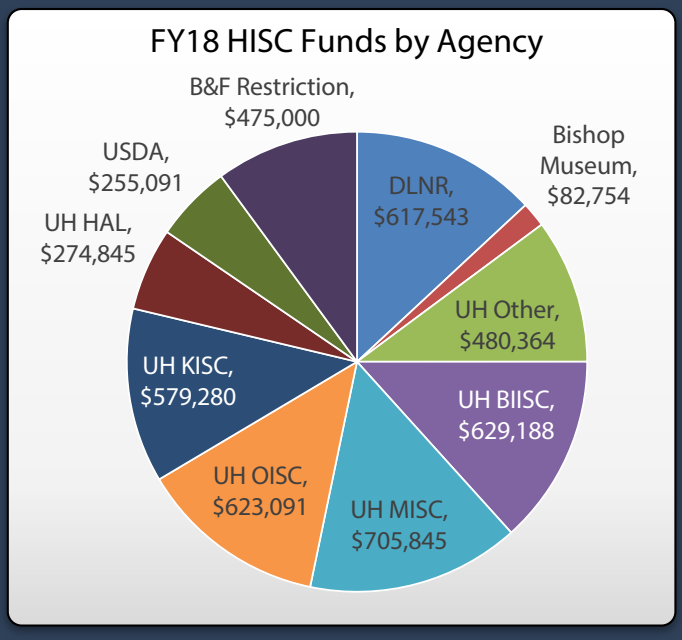
- fill gaps between agency mandates or existing agency programs, and/or
- advance our collective knowledge through research and development of new tools.

In FY18, the HISC revamped its funding process to focus on implementation of the HIBP. The Call for Proposals identified 10 key areas of the HIBP (e.g., harbor security, biocontrol research) and provided examples of priority action items within those areas. Applicants for HISC funds were required to select which HIBP priorities were addressed by their proposal, with an interagency evaluation team scoring proposals on how critical proposed projects were to achieving goals of the HIBP.



The HISC received 76 applications, totaling over $12M in project requests. After expenditure restrictions & overhead, the HISC was able to award roughly $4M to 31 projects.

Summary statistics for FY18 applications to the HISC



The majority of funds were awarded to the UH Invasive Species Committees and Hawaii Ant Lab, as these gap-filling projects do not have permanent funding. Increasing stability of these projects is a HIBP goal (PosPro1.5) Other HISC funds were used for invasive species research, including:

- Surveys for nonnative snails & rat lungworm disease (PosTifs1.5)
- Development of new tools including Herbicide Ballistic Technology, survey drones, ant baits, mongoose toxicants, and biocontrol agents (PostTifs2.3, 2.4)
- Ballast water & biofouling capacity (BorTifs3.1)

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Appendix: Action Item Matrix

The following tables describe all 147 action items recommended by the HIBP, with current status as of December 2017. Action items are coded with two components, the first three letters signifying a focal area and the remaining letters signifying the type of action:

- Focal areas: Pre=preborder, Bor=border, Pos=postborder, Pws=public awareness
- Action types: Pol=policy, Pro=process, Tifs=technology, infrastructure, funding, & staffing

HIBP Task #	HIBP Implementation Task	Status (Dec 17)
PrePol1.1	Propose for enactment the necessary legislative amendments to HRS §150A-5 (and other related sections) to enable HDOA to screen and inspect nonagricultural commodities and amend or promulgate corresponding administrative rules, as needed.	Legislative items: not yet introduced
PrePol1.2	Propose for enactment the necessary legislative amendments (e.g., an amendment to the list of commodities regulated by statute, as proposed in Prepol2.1), and promulgate administrative rules in accordance with HRS §§ 150A-9 and -53 to implement a comprehensive emanifest system. Examples include redefine "inspect" to include electronic release, authorize HDOA to prescreen and release commodities electronically, and require manifests to indicate whether the goods are of foreign or domestic origin and the port of origin.	Legislative items: not yet introduced
PrePol1.3	Amend HAR Chapter 4-70 to enable HDOA to require importers to treat/fumigate commodities identified by HDOA as a high biosecurity risk. Use fumigation of coffee imports as a successful model system.	Not yet started
PrePol1.4	Require declaration of high-risk packaging materials in shipments to Hawaii regardless of commodity.	Not yet started
PrePol1.5	Amend HAR Chapter 4-70 to update quarantine requirements for tissue-cultured plants. Certified tissue-cultured plants indexed for targeted pests and pathogens by a qualified lab independent of the exporter and imported in sealed vials and in sterile media should not be quarantined as long as these plants are of species, subspecies, variety, or type that can otherwise be permitted for importation.	Not yet started
PrePol1.6	Amend HAR Chapter 13-76 to make it consistent with USCG ballast water regulations. For example, develop and implement minimum ballast water discharge standards for organisms and certain indicator microorganisms.	In progress: toward completion
PrePol1.7	Obtain an MOA between the Office of the Governor of Hawaii, DOD, and other federal quarantine and regulatory agencies to require that military vessels (including those participating in Rim of the Pacific Exercise) entering Hawaii meet state standards regarding ballast water treatment and hull cleaning.	Not yet started
PrePol1.8	Submit petitions to HDOA to either add unlisted high-risk AIS organisms to the list of prohibited species or change list placement (e.g., from conditionally approved to restricted or prohibited list to allow for more stringent regulation.	Not yet started
PrePol2.1	Enter into cooperative agreements with other state departments of agriculture or with private industries to establish offshore screening programs (similar to HDOA's current Christmas tree screening program in Oregon) for high-risk commodities being shipped to Hawaii.	In progress: ongoing
PrePol2.2	Amend HRS Chapter 4-70 to require phytosanitary certificates for high-risk plant materials imported from domestic sources, and identify needed federal actions or enter into cooperative agreements to obtain phytosanitary certificates for imports of high-risk plant materials from foreign sources (also see PrePol1.1).	Not yet started

Appendix: Action Matrix

PrePol3.1	Complete an analysis of international and federal laws and regulations that currently preclude the state from taking effective action to prevent the introduction of invasive species to Hawaii, and list amendments and recommendations to better protect Hawaii (also see PreTifs2.1). Key Issues include working with APHIS on solutions to state quarantine needs relative to the Plant Protection Act, determining whether insular areas can get special recognition in the United States from a biosecurity perspective, and strengthening federal quarantine laws dealing with nonagricultural products.	Not yet started
PrePol3.2	Consult with the California and Florida Departments of Agriculture regarding what state and federal laws, regulations, and policies have been enacted to give them special protection at the state level, and produce recommendations to enact comparable protection for Hawaii.	Not yet started
PrePol3.3	Align the notifiable disease list with internationally and nationally recognized lists of existing threats to domestic livestock (terrestrial and aquatic).	In progress: toward completion
PrePro1.1	Implement a comprehensive emanifest system that is effective no later than January 1, 2020. The system must be able to collect relevant nonproprietary information, authorize HDOA to prescreen and release commodities electronically, require manifests to indicate whether the goods are of foreign or domestic origin, identify port of origin, and be implementable on a trial basis between 2017 and 2019 to identify the need for any improvements. (Also see PrePol1.2)	In progress: toward completion
PrePro1.2	Conduct risk analyses of terrestrial plants, pests, diseases, commodities, and pathways to prioritize screening and inspections. When warranted by science and risk assessments, take the next policy, process, and staffing steps in collaboration with federal partners to approve and implement more restrictive state policies and rules—and seek complementary federal policies and rules—to protect Hawaii from the introduction of new pest threats.	In progress: ongoing
PrePro1.3	Based on the results of the risk analyses, annually write/update import requirements for high-risk commodities imported to Hawaii.	In progress: toward completion
PrePro1.4	Implement a state-of-the-art biosecurity database system within HDOA to meet important functions, such as emanifest, efficient input from risk assessments, capability to house survey and taxonomic data, ability to communicate among different databases, and ability to produce query-specific reports.	In progress: toward completion
PrePro1.5	Obtain MOUs for sharing data between state and federal agencies and the industry that facilitate sharing relevant biosecurity information and also ensure proper handling of proprietary or confidential information.	In progress: toward completion
PrePro1.6	Conduct an annual policy review of animal disease import regulations to identify new threats and ensure that adequate biosecurity measures are taken.	Not yet started
PrePro1.7	Conduct risk assessments for hull fouling, ballast water, aquaculture, and aquarium issues to better inform regulation of AIS organisms being introduced via these pathways and affecting native habitats.	In progress: ongoing
PrePro2.1	Create working groups with representatives of the food, forestry, livestock, biofuel, and landscape industries to work with HDOA's import substitution program (also see PreTifs2.4), DLNR, and UH staff to substitute importation of plants (already in Hawaii) that pose a high-risk pathway for the introduction of pests and pathogens with plants that can be grown locally. Reduce importation with local production by 2027.	Not yet started
PrePro2.2	Create working groups with representatives and end users of the aquaculture, wetland agriculture, and aquarium industries to work directly with agency staff to identify high-risk pathways and standards for facilities and institute self-policing practices to minimize AIS threats.	Not yet started

Appendix: Action Matrix

PrePro3.1	Enter cooperative agreements with ecommerce industries (e.g., online plant nurseries, pet stores) to include language on their websites about what is not allowed to be imported or shipped to Hawaii, and compel them to follow existing import regulations.	Not yet started
PrePro3.2	Enter MOAs with DOD to allow for the inspection and clearance by HDOA of any military vessel and related cargo and equipment entering Hawaii and to identify and close gaps in policy, process, and procedures to prevent inadvertent introduction of invasive species via household goods, equipment and other materials transported by DOD's units and contractors.	In progress: ongoing
PrePro3.3	In collaboration with other state and federal regulatory agencies, establish an intelligence unit with the purpose of identifying and preventing illegal introductions (including ecommerce) to Hawaii.	Not yet started
PrePro4.1	Write Hawaii-specific standards and protocols for use in compliance agreements for offshore prescreening of agricultural and nonagricultural commodities en route to Hawaii.	Not yet started
PrePro4.2	Enter into cooperative agreements or contracts with private industry to conduct inspections at transitional facilities at offshore sites for high-risk import commodities.	Not yet started
PreTifs1.1	Fund equipment and licensing to support the emanifest system.	Legislative items: not yet introduced
PreTifs1.2	Fund equipment and licensing to support HDOA's biosecurity database system.	Legislative items: Introduced at legislature, approved
PreTifs1.3	Fund equipment, licensing, and employee training on data systems that will record the movement of livestock animals and hold prearrival testing results. The data are aligned with existing federal databases to track movement and animal identification for disease trace-back.	Legislative items: not yet introduced
PreTifs2.1	Hire two policy analysts to conduct international, federal, and state policy analysis and write necessary rules and regulations listed in this plan.	Not yet started
PreTifs2.2	Hire three entomologists, two plant pathologists, and two botanists at HDOA to conduct risk analysis on pathways and on organisms and commodities entering Hawaii.	Legislative items: not yet introduced
PreTifs2.3	Hire four data management specialists to support HDOA's new biosecurity database system.	Legislative items: not yet introduced
PreTifs2.4	Fund an annual import substitution program to encourage Hawaii growers to identify and grow food and nonfood alternative products to phase out imports of high-risk pathway food/commodities by 2027.	Legislative items: not yet introduced
PreTifs2.5	Contract or hire two biologists at DLNR to conduct risk analysis on vessels, pathways and organisms entering Hawaii via ballast water, biofouling, and aquaculture and pet industry pathways.	Legislative items: not yet introduced
BorPol1.1	Propose for enactment appropriate legislation (through HRS Chapter 150A) to enable HDOA oversight and establishment of transitional facilities in Hawaii for freight inspection and quarantine.	Legislative items: Introduced at legislature, approved
BorPol1.2	Propose for enactment appropriate legislation (through HRS Chapter 150A) to enable HDOA to require the importer to transport shipped commodities that HDOA determines to be of high risk to state-designated inspection facilities.	Legislative items: not yet introduced

Appendix: Action Matrix

BorPol1.3	Propose for enactment necessary legislation (through HRS Chapter 141 or 150A) to create a biosecurity emergency response fund to support multiagency terrestrial and aquatic emergency responses at or beyond (postborder) ports by emergency task forces (see also BorPro3.1).	Legislative items: Introduced at legislature, denied
BorPol1.4	Propose for enactment legislation to move enforcement of HDOA's importation statutes and regulations under the Hawaii Environmental Court by amending HRS § 604A-2 to include civil fines for violations of HRS Chapter 150A within the Environmental Court's jurisdiction.	Legislative items: not yet introduced
BorPol1.5	Amend the current penalty section in HRS §142-12, relating to violations of AI Division Quarantine Rules, to authorize issuance of administrative citations for minor violations such as failure to file written or verbal reports in prescribed time, or failure to provide nonconsequential information on shipping and import forms.	Legislative items: not yet introduced
BorPol1.6	Propose for enactment the necessary legislation to authorize DLNR to inspect vessels and regulate hull-fouling threats, with penalty provisions for noncompliance.	Legislative items: not yet introduced
BorPol1.7	Collaborate with CBP, APHIS, CDC, and HDOA to review agency authorities, policies, and procedures and write a plan to take preventive action when disease-carrying vectors not on the APHIS actionable list (e.g., mosquitoes) are found in foreign cargo or conveyances (unintentional import).	Not yet started
BorPol2.1	Amend HRS 141-3 to provide HDOA the flexibility to not have to cover the costs associated with the control of noxious weeds and update the state's noxious weed list and noxious weed seed list as outlined and/or required in HAR Chapter 4-68 and HAR Chapter 4-67, respectively, to include invasive plant species harmful to Hawaii's agriculture and natural systems.	Legislative items: not yet introduced
BorPol2.2	Promulgate administrative rules, as required under HRS § 150A-6.1, to add species to the restricted plant list, and regulate or prohibit the introduction, sale, distribution, and propagation of specific plants put on the restricted plant list.	Not yet started
BorPol2.3	Update HAR Chapter 13-124 to add aquatic species to the state's injurious wildlife list.	Not yet started
BorPro1.1	Implement inspections by state detector dogs to intercept high-risk species difficult to detect by other methods of inspection or at ports of entry difficult to inspect with other methods (see also BorTifs1.3).	In progress: ongoing
BorPro1.2	Write a set of minimum standards, specifications, and operational protocols that would constitute HDOA's certification program for operating transitional facilities in Hawaii. For example, secure facilities with appropriate mechanisms, such as fences, double doors, and negative pressure, to contain any pests encountered; appropriate processes executed when pests are found; and appropriate equipment based on the type of goods being inspected, such as air conditioning and refrigerators for perishable goods. Work with industry on specifications and operational protocols.	In progress: toward completion
BorPro1.3	Enter into public-private partnership (e.g., contracts, cooperative agreements) to operate transitional facilities for freight and commodity inspections in Hawaii under HDOA's transitional facility certification program (see also BorPro1.2).	In progress: toward completion
BorPro1.4	Hold quarterly coordinating meetings/ workshops with APHIS, CBP, DHS, USFWS, and DOH to facilitate communication relative to border processes, such as inspection and detection. In collaboration with federal partners, take the next policy, process, and staffing steps to implement more protective state policies and rules and seek complementary federal policies and rules to protect Hawaii from the introduction of new pest threats.	In progress: ongoing
BorPro1.5	Provide annual training for state and federal inspectors on identification of emerging pests and diseases, as well as on new detection and screening methods for pests and disease.	In progress: toward completion

Appendix: Action Matrix

BorPro1.6	Based on the results of pathway and species risk assessments, run monitoring programs at major ports, harbors (ports and harbors that receive both domestic and foreign cargo), and post offices for high-risk pests not known to occur in Hawaii (e.g., brown tree snake) (see also BorTifs2.8).	In progress: ongoing
BorPro1.7	Administer the livestock disease detection monitoring program focused on contagious animal diseases of high consequence and exotic parasites (and increase staffing and operations to include new port locations; see BorTifs1.3).	In progress: toward completion
BorPro2.1	Create standard operating procedures and protocols and ballast water reporting forms to regulate ballast water management and treatment specific for Hawaii. Develop compliance assessments and protocols to quarantine noncompliant vessels.	In progress: toward completion
BorPro2.2	Create standard operating procedures for vessel biofouling inspections and a form to report hull inspection applicable to Hawaii. Develop compliance assessments and protocols to quarantine noncompliant vessels (see also BorPol1.4).	In progress: toward completion
BorPro2.3	Create a database to house data collected for ballast water reporting and management and hull inspections and hull biofouling treatment. The database should also be able to generate reports that can be used to conduct risk analysis regarding ballast water and hull biofouling (see also PrePro1.3).	In progress: toward completion
BorPro2.4	Test and apply new methods and technologies for ballast water and hull biofouling monitoring, treatment, and compliance monitoring and assessment, including in-water cleaning and treatment methods relative to their application in Hawaii.	In progress: toward completion
BorPro2.5	Write best ballast water and hull husbandry practices and proactive ballast water and hull cleaning standards for all nonmilitary vessels to minimize movement of AIS into Hawaii's ports, harbors, and marinas. Include incentives to encourage vessel ballast water discharge and biofouling compliance.	In progress: toward completion
BorPro2.6	Before regulations for ballast and hull biofouling inspection and treatment are enacted, enter into MOUs or cooperative agreements with partner agencies and port authorities to implement effective AIS prevention, inspection, and response best management practices.	In progress: toward completion
BorPro3.1	Create a multiagency Biosecurity Emergency Response Task Force to coordinate and respond to new aquatic and terrestrial pests or disease incursions both at and beyond (postborder) ports of entry. This task force should comprise representatives from relevant government agencies and consult with private industries working at the borders (e.g., airlines, shippers, freight forwarders).	Not yet started
BorPro3.2	Hold postincident meetings/workshops hosted by HDOA of the Biosecurity Emergency Response Task Force to coordinate/review/debrief rapid response actions, and set up an incident command system.	Not yet started
BorPro3.3	Write species-specific response plans for high-risk/priority pests that detail the roles of relevant agencies and stakeholders. Review plans annually to ensure alignment with existing policies and USDA response plans.	Not yet started
BorPro3.4	Write general and taxa-specific (e.g., insects, plants, fish), rapid-response strategies that can be implemented immediately in response to an emergency involving multiple agencies and private industries.	Not yet started
BorPro3.5	Write plans to respond to livestock diseases or exotic parasites. Review plans annually to ensure alignment with existing policies and USDA response plans.	Dept needs to re-evaluate and amend this action item
BorPro3.6	Write contingency plans for treating and disposing of dirty ballast water and for cleaning biofouling vessels. Also include plan to dispose of harmful paint removed during the treatment.	Not yet started

Appendix: Action Matrix

BorTifs1.1	Double HDOA's current PQ staff from 91 to 182 over the 10-year period of the plan to meet current and future needs for inspection services at all ports of entry. Adjust pay scales commensurate with positions, increasing responsibilities, and duties.	Legislative items: not yet introduced
BorTIfs1.2	Increase AI staff and resources by adding 15 new positions and operating funds to implement an expanded livestock disease detection monitoring program focused on contagious animal diseases of high consequence and exotic parasites at five ports.	Legislative items: not yet introduced
BorTifs1.3	Add four new state detector dog units (handler + dog) to intercept high-risk species difficult to detect by other methods of inspection or at ports of entry difficult to inspect with other methods.	Legislative items: not yet introduced
BorTifs1.4	Allocate money on a yearly basis to the biosecurity emergency response fund (see also BorPol1.4 and BorPro3.1).	Legislative items: Introduced at legislature, denied
BorTIfs1.5	Increase staffing and operating funds for the DOH Vector Control Branch by adding 13 new staff members (total 33: current 20 in FY2017 plus 13 new positions) to be able to detect and respond to threats from disease vectors such as mosquitoes and diseases such as dengue, Zika, and rat lungworm.	Legislative items: Introduced at legislature, approved
BorTifs2.1	Use state-of-the-art diagnostics technology to test for disease in imported plants.	Not yet started
BorTifs2.2	Install effective containment features (e.g., fences), attractants, and traps in the vicinity of ports of entry to help monitor for pests (see also BorPro1.6).	In progress: ongoing
BorTifs3.1	Contract or hire five full-time positions at DLNR's DAR to manage ballast water and biofouling threats and inspections: two biologists stationed on Oahu, two biologists stationed on the Big Island, and one technician position to collect water quality samples and assess releases of harmful antifouling paints.	Legislative items: not yet introduced
BorTifs3.2	Fund equipment and licensing to support DLNR's ballast water and hull fouling reporting, tracking, and compliance monitoring data management system, and aquatic invasive organism reporting, tracking and compliance database system.	Legislative items: not yet introduced
BorTifs3.3	Contract or hire one data management specialist to support DLNR's new ballast water, biofouling, and aquatic invasive species database systems.	Legislative items: not yet introduced
BorTifs3.4	Contract a public institution or private company to use molecular techniques to identify organisms recruited onto the settlement plates, and build an eDNA database of nonindigenous and invasive species established in Hawaii.	In progress: toward completion
PosPol1.1	Propose for enactment necessary legislative amendments to HRS § 150A-5 (and other related sections) to authorize HDOA to screen, inspect, and regulate nonagricultural commodities in interisland transport and amend corresponding administrative rules (HAR Chapter 4-72).	Legislative items: not yet introduced
PosPol1.2	Propose for enactment the necessary legislation (see also PrePol2.1 and PrePol2.2) and regulations (HAR Chapter 4-72) to authorize HDOA to require the use of the emanifest reporting and data management system for interisland shipments.	Legislative items: not yet introduced
PosPol1.3	Develop a comprehensive approach to minimize the interisland movement of plant pathogen and pests via the interisland transport of agricultural products. This could include one or more mechanisms, such as amend and update HAR Chapter 4-72 for stricter regulation of interisland movement of pests and pathogens, enter into compliance agreements, or develop an interisland nursery certification program (see also PosPro2.2).	In progress: toward completion
PosPol1.4	Revise HDOA or DLNR rules, HAR Chapter 4-71 and HAR Chapter 13-124, and corresponding lists pertaining to nondomestic animals and injurious wildlife, to regulate movement of injurious wildlife and set up a permit process to allow legal interisland transport of pets classified as injurious (e.g., parrots).	Not yet started

Appendix: Action Matrix

PosPol1.5	Update HAR Chapter 4-72 to further prevent the interisland movement of pathogens and pests via soil.	Not yet started
PosPol1.6	Propose for enactment the necessary legislation and regulations (HAR Chapter 13-76) to require vessels and waterborne equipment >5 feet long to conduct and document proper hull husbandry management before being moved or shipped between islands (see also BorPol1.3).	Legislative items: not yet introduced
PosPol2.1	Propose for enactment the necessary legislation and regulation to restructure the HISC as the Hawaii Invasive Species Authority, an autonomous interagency body to manage and administer biosecurity programs.	Legislative items: Introduced at legislature, denied
PosPol2.2	Enter into MOUs with waste management facilities to accommodate disposal of carcasses associated with disease outbreaks.	Not yet started
PosPol2.3	Propose for enactment the necessary legislative amendments (e.g., through HRS Chapters 150A, 183, 126, 195, and 183C), and promulgate new administrative rules to prevent the introduction of invasive species to natural areas, sensitive ecosystems, and protected areas and the spread of these species in these areas via commercial activities such as ecotourism, agrotourism, and construction activities.	Legislative items: not yet introduced
PosPol2.4	Submit petitions to HDOA to place additional high-risk AIS on the lists of prohibited and restricted animals to regulate their sale, distribution, culture, husbandry, and spread in the state. Key issues to address: prevent release of pet aquarium species into natural areas, and include adequate administrative and criminal penalties that provide effective deterrence and require restoration and mitigation of harm caused related to the intentional introduction or release of AIS.	Not yet started
PosPro1.1	Surveillance and monitoring coordinator (see also PosTifs1.6) to collaborate with state, federal, county, and private entities to design, build, and coordinate islandwide comprehensive and uniform surveillance/ monitoring programs for high-risk taxa (e.g., mosquitoes, plant pathogens, ants, plants, rat lungworm disease and vectors). Surveillance and monitoring to be conducted by other staff from HDOA and partnering organizations such as ISCs and DOH. Role of these positions would be to facilitate uniform data gathering methods and data entry into HDOA's biosecurity database.	In progress: ongoing
PosPro1.2	Contract an independent analysis of effectiveness of current enforcement and prosecution of biosecurity laws, and prepare a report of recommendations on what administrative and criminal penalties should be revised to be more effective deterrents.	Not yet started
PosPro1.3	In coordination with the overarching Biosecurity Emergency Response Task Force, write species-specific and generic postborder aquatic and terrestrial emergency response plans (see also BorPro3.1). Encourage federal, state, and county agencies to develop their own emergency response plans. Key Issues to address: clarification of what constitutes a postborder biosecurity emergency, determination of roles and responsibilities of participating organizations, decision-making processes, commitment of resources for emergency response, a realistic assessment of feasibility of eradication, and determination of when different cease-action triggers are pulled. These triggers relate to when to stop a rapid response, when to engage in long-term control, and when to engage in biocontrol.	Not yet started
PosPro1.4	Integrate invasive species control and mitigation actions into project requirements during environmental review and approval processes (e.g., HEPA/NEPA and ESA consultation) to protect native resources.	Not yet started
PosPro1.5	Institutionalize the funding in the UH system, and create the organizational structure in the Research Corporation of the University of Hawaii (RCUH)/PCSU to fund and implement the critical services provided by ISCs and HAL for invasive species control.	In progress: toward completion

Appendix: Action Matrix

PosPro1.6	Write and adopt best management practices to control invasive species that state government agencies, counties, industry, and private individuals can follow or require for actions on their lands.	Not yet started
PosPro2.1	Implement an emanifest data management system (see also PosPol1.2 and PrePro1.1) for interisland transport of commodities to improve record keeping and inform interisland risk assessments. Design the interisland system to focus on preventing the known risks and be user friendly to the public and industry.	Not yet started
PosPro2.2	Improve data utilization from livestock movement documents by collecting and entering data into the HDOA biosecurity database to support animal disease traceability. The existing movement documents that provide the data are the DC-44 (Certificate of Livestock Movement/ Ownership) and DC-8 (Permit to Ship).	In progress: ongoing
PosPro3.1	Create standardized language for best management practices to incorporate into state contracts to minimize the spread of invasive species in the islands.	Not yet started
PosPro3.2	Create working group to develop effective solutions that address carcass disposal, including carcasses of marine animals.	Not yet started
PosPro3.3	Effectively control and eradicate established harmful pests on private and public lands by increasing base funding of competitive grants for Watershed Partnerships from the current $2 million per year to $6 million per year. The competitive grant program supports Watershed Partnerships and agency projects and is implemented by agency, Watershed Partnerships, and ISC staff to specifically engage in weed control, ungulate control, and public outreach for watershed protection. This measure is needed for the control of detrimental established invasive species in Watershed Partnerships lands.	Legislative items: Introduced at legislature, denied
PosPro4.1	Write protocols and standard operating procedures for statewide field response to inspect, isolate, and appropriately dispose of unexpected arrivals of high-risk AIS of distant origin, such as materials transported by a tsunami or floating debris from other sea structures or vessels, and implement those procedures by January 2019.	Not yet started
PosPro4.2	Increase efforts statewide to control established AIS, including development of new control techniques, such as the use of Rotenone to control introduced invasive fish. Contribute data gathered to HDOA's biosecurity database.	Not yet started
PosPro4.3	Implement comprehensive approaches to remove and control the spread of algal AIS using mechanical removal, native grazers (e.g., urchins), and other technologies in at-risk high-value native habitats identified based on survey and monitoring data.	In progress: ongoing
PosPro4.4	Collaborate with DLNR, NOAA, USFWS, UH, research entities, and others and write uniform survey and monitoring methods for early detection and rapid response efforts, and clarify the roles and responsibilities of collaborating organizations.	Not yet started
PosPro4.5	Consult with New Zealand, Australia, and the states of Alaska, Washington, Oregon, California, and Florida on how AIS vectors are managed elsewhere; conduct in-state studies to document recreational and commercial fleet AIS issues; and based on the results of research and studies, implement appropriate actions to reduce AIS impacts.	In progress: toward completion
PosPro4.6	Submit petitions to HDOA to raise minimum standards for aquaculture and other point-of-sale facilities (e.g., pet stores and live seafood sellers) to minimize the chance that high-risk species are intentionally or inadvertently released into the wild.	Not yet started
PosPro4.7	Provide training and logistical support (e.g., boats, personal protective equipment) to local community organizations to effectively control and eradicate established aquatic pests.	Not yet started
PosTifs1.1	Fund the Hawaii Invasive Species Authority to coordinate and implement interagency invasive species efforts, including an annual grant program for interagency projects for control, prevention, outreach, research, and administrative costs.	Legislative items: Introduced at legislature, denied

Appendix: Action Matrix

PosTifs1.2	Triple HDOA's current PPC staff from 10 to 30 positions over the 10-year term of the plan, to increase effective plant and pest control using chemical and mechanical methods. Triple the current operating budget to support staff fieldwork.	Legislative items: not yet introduced
PosTifs1.3	Double HDOA's Biocontrol Section's staff from 24 to 48 positions over the 10-year term of the plan to conduct statewide surveys; provide diagnostic and scientific support to PQ and PPC; and research, screen, and test new biocontrol agents for biocontrol of widespread established pests. Double the current operating budget to support staff fieldwork.	Legislative items: not yet introduced
PosTifs1.4	Increase operating funds for HDOA's biocontrol program by $100,000 per year to support exploration of foreign natural enemies of established invasive species.	Legislative items: not yet introduced
PosTifs1.5	Hire two surveillance and monitoring coordinators—one an entomologist and one a botanist—to coordinate statewide comprehensive and uniform surveillance/ monitoring programs for high-risk taxa (e.g., mosquitoes, ants, plants, rat lungworm disease vectors) (see also PosPro1.1).	Legislative items: not yet introduced
PosTifs1.6	Hire a biological control program coordinator plus operational support to help increase public support for biocontrol, assist with the regulatory process for biocontrol agents, and coordinate international activities that may be of benefit and impact Hawaii.	Legislative items: not yet introduced
PosTifs1.7	Increase DLNR's AIS program funding by $400,000 per year to address threats from established AIS (see also PosPro4.2).	Legislative items: not yet introduced
PosTifs1.8	Hire four forest health specialists and one forestry pathologist to conduct monitoring, detection, and control for high-risk pests and pathogens in forest habitats (e.g., Rapid Ohia Death, ohia rust, myoporum (naio) thrips [Klambothrips myopori], lobate lac scale [Paratachardina pseudolobata], hala scale (Thysanococcuspandani).	Legislative items: not yet introduced
PosTifs1.9	Develop grant programs to assist private landowners with invasive species removal and control. Hire one grant program technical staff member to oversee the program and annual grant funding.	Not yet started
PosTifs1.10	Hire 45 invasive species technicians plus operational support and purchase vehicles to be used to detect, monitor, remove, and control invasive species in DOFAW's protected areas.	Legislative items: Introduced at legislature, denied
PosTifs1.11	Allocate funds in the UH budget to provide stable funding of core positions for the ISCs and HAL in RCUH/PCSU in order to carry out invasive species control operations statewide.	Legislative items: not yet introduced
PosTifs1.12	Hire four agricultural extension agents, and provide operating funds to facilitate areawide control (and prevent the reintroduction) of pests on farms, nurseries, and ranches. Support collaborative efforts to control those targeted pests on farms and in the surrounding areas.	Legislative items: not yet introduced
PosTifs1.13	Hire two aquaculture extension agents, one extension specialist, and one researcher to conduct research, develop screening and quarantine protocols, develop pest management strategies, and conduct outreach specific to Hawaii.	Legislative items: not yet introduced
PosTifs1.14	Hire four agricultural diagnosticians to provide for rapid screening, diagnostic testing, and identification of insects and diseases to support extension agents, farmers and ranchers, the general public, and other government agencies in monitoring, detection, and pest management efforts.	Legislative items: not yet introduced
PosTifs1.15	Enter into cooperative agreements between county governments and UH to support county farmers and ranchers with invasive species early detection, control, and research needs provided by UH extension agents, researchers, or specialists.	In progress: ongoing

Appendix: Action Matrix

PosTifs2.1	Build new office complex to house the PPC Branch, which will include new biocontrol program facilities and chemical/mechanical pest control facilities. The new campus will include containment facilities sufficient to run 10 parallel biocontrol projects at one time, diagnostic laboratories, molecular diagnostic laboratories, insectaries, pathogen-rearing facilities, greenhouses, office space, chemical and pesticide storage, meeting spaces, and reference collections (insect, disease, plant and literature).	Legislative items: Introduced at legislature, denied
PosTifs2.2	Upgrade and update Animal Industry Division office and laboratory facilities for the investigation of animal diseases that affect food security and human health. Facilities will house a laboratory, training center, and administration and operation services and will be located at the Animals Industry office complex in Halawa Valley, Oahu.	Legislative items: not yet introduced
PosTifs2.3	Annually fund the development of techniques to control established invasive species, including chemical and mechanical means and new technologies, such as gene drive and other biotechnology, and support for maintaining or replacing the staff necessary to conduct research.	Not yet started
PosTifs2.4	Annually fund research and development of detection techniques (e.g., use of drones, remote sensing, environmental DNA) for new and established invasive species.	Not yet started
PwsPol1.1	Propose for enactment the necessary legislative amendment or clarification (e.g., clarification of existing authority under HRS §150A-53), and obtain the approval of the Board of Education for policy to require biosecurity and invasive species issues to be included in the environmental science K–12 curriculum in Hawaii. Build on existing efforts of integrating invasive species into curriculum, such as the Hoike o Haleakala curriculum.	Legislative items: not yet introduced
PwsPro1.1	Collect pertinent examples and publish stories highlighting biosecurity successes (e.g., notable pest interceptions, capture of illegal animals, biocontrol releases, animal disease control programs, weed control programs) to distribute through social media and outreach products (e.g., shareable videos, fliers, newsletter, posters).	Not yet started
PwsPro1.2	Contract a professional public relations firm to produce outreach materials to encourage residents to buy local products, and foster a sense of pride and self-responsibility in protecting Hawaii's agriculture, environment, and lifestyle. Have HDOA inspectors and agricultural producers share firsthand experience on protecting Hawaii from pests.	Not yet started
PwsPro1.3	Coordinate with partners in the industry, nonprofits, and community groups to use their existing media avenues, such as internal newsletters, cooperative association meetings, social media, websites, and newspapers, to share biosecurity information, send pest and disease notifications, and muster support.	Not yet started
PwsPro1.4	Recruit a network of citizen scientists and other important and competent contributors, and provide logistics and administrative support to develop a citizen science–based comprehensive surveillance system for pests and pathogens.	Not yet started
PwsPro1.5	Publicize and promote the certified nurseries program by posting information on HDOA's website on what nurseries, farms, and shippers are certified and information if participants lose certification.	Not yet started
PwsPro1.6	Engage the veterinary medical community to enhance its role in detection of diseases and parasites of high concern, including ectoparasites, which can transmit wildlife and human diseases.	In progress: ongoing
PwsPro1.7	Engage the education, medical, and public health community to increase education and public awareness about the dangers from human health diseases, such as dengue, Zika, and rat lungworm disease, and increase outreach efforts regarding control of vectors, including mosquitoes, rats, slugs, and snails, and, in the case of rat lungworm disease, mitigation in gardens and safe food preparation.	In progress: ongoing

Appendix: Action Matrix

PwsPro2.1	Solicit support from the native Hawaiian community, including the Office of Hawaiian Affairs and the Aha Moku Council, and from cultural practitioners to advocate for culturally based biosecurity programs to ensure that natural and cultural resources are sustained for traditional and cultural practices. Encourage native Hawaiian communities to organize and advocate with their legislators for stronger and more effective biosecurity programs.	Not yet started
PwsPro2.2	Highlight program successes in briefings to lawmakers, county officials, and members of boards and commissions. Key successes to include: implementation of departmental programs and projects, pest interceptions, capture of illegal animals, biocontrol releases, and weed eradication.	In progress: ongoing
PwsPro3.1	Biosecurity communications specialist at HDOA to develop outreach materials to launch a visitor awareness campaign. Key campaign issues: importance of biosecurity to Hawaii via outreach materials to visitors before their arrival, during flights, and during their stay in Hawaii.	Not yet started
PwsPro3.2	Create and disseminate through various media outlets (e.g., little fire ant video produced by the Maui Invasive Species Committee) accurate and current information to help the public understand the circumstances under which species in the state are regulated and why.	In progress: ongoing
PwsPro3.3	Biosecurity communications specialist to develop tools to measure success of public awareness campaigns (that can be used to leverage future funding for biosecurity needs).	Not yet started
PwsPro3.4	Biosecurity communications specialist to develop and maintain an interagency biosecurity website and portal. Key information to include: Hawaii's unique position relative to biosecurity; interagency biosecurity plan; clear guidance on regulated species at interisland, interstate, and international levels; pest reporting; and import/export restrictions.	Not yet started
PwsPro3.5	Help implement HISC's state-of-the-art pest notification and reporting system, and integrate it with the biosecurity online portal.	In progress: toward completion
PwsPro3.6	Agency staff to provide technical assistance to community volunteer groups working to control invasive species in terrestrial and aquatic systems.	In progress: ongoing
PwsPro3.7	Aquatic education specialist (existing position) to conduct a comprehensive campaign to prevent the introduction and spread of AIS. Key campaign issues: preventing the discard of live AIS into the environment, development of outreach materials for harbor workers and transportation industry.	In progress: toward completion
PwsPro3.8	Expand University level teaching, both classroom and research, on biosecurity problems and solutions to provide an educated and trained workforce for biosecurity programs in the future.	In progress: ongoing
PwsTifs1.1	Hire a full-time biosecurity communications specialist at HDOA to develop and coordinate public awareness programs for HDOA's biosecurity programs.	Legislative items: not yet introduced
PwsTifs1.2	Hire a full-time natural resource economist to analyze the costs of inaction on high-profile biosecurity threats and to publicize the true effects of inaction when requesting funds for biosecurity projects.	Not yet started
PwsTifs1.3	Collaborate with HTA to obtain funds from the visitor industry to pay for biosecurity media campaigns.	Not yet started
PwsTifs1.4	Collaborate with HTA to contract a professional public relations firm to create visually appealing signs and displays regarding biosecurity at airports.	In progress: toward completion

Appendix: Action Matrix

PwsTifs1.5	Contract the creation and maintenance of a user-friendly risk assessment tool for vessel operators as it relates to ballast water and vessel biofouling regulation and management. The risk assessment tool should be available to the public and similar to https://vesselcheck.fish.wa.gov.au/.	In progress: toward completion
PwsTifs1.6	Hire a communications specialist, videographer, and web developer from CTAHR Office of Communications Services to write, develop and disseminate new statewide comprehensive education and outreach materials targeted at specific audiences, such as the native Hawaiian community, tourists, boaters, nursery growers, livestock producers, and farmers, with specific invasive species messages. The CTAHR communications team would work in close coordination with the HDOA biosecurity communications specialist.	In progress: toward completion
PwsTifs1.7	Hire two university instructors/researchers to teach and conduct research on biosecurity program and university field of study.	Not yet started