

Increasing the Impact of an Early Detection and Rapid Response Program

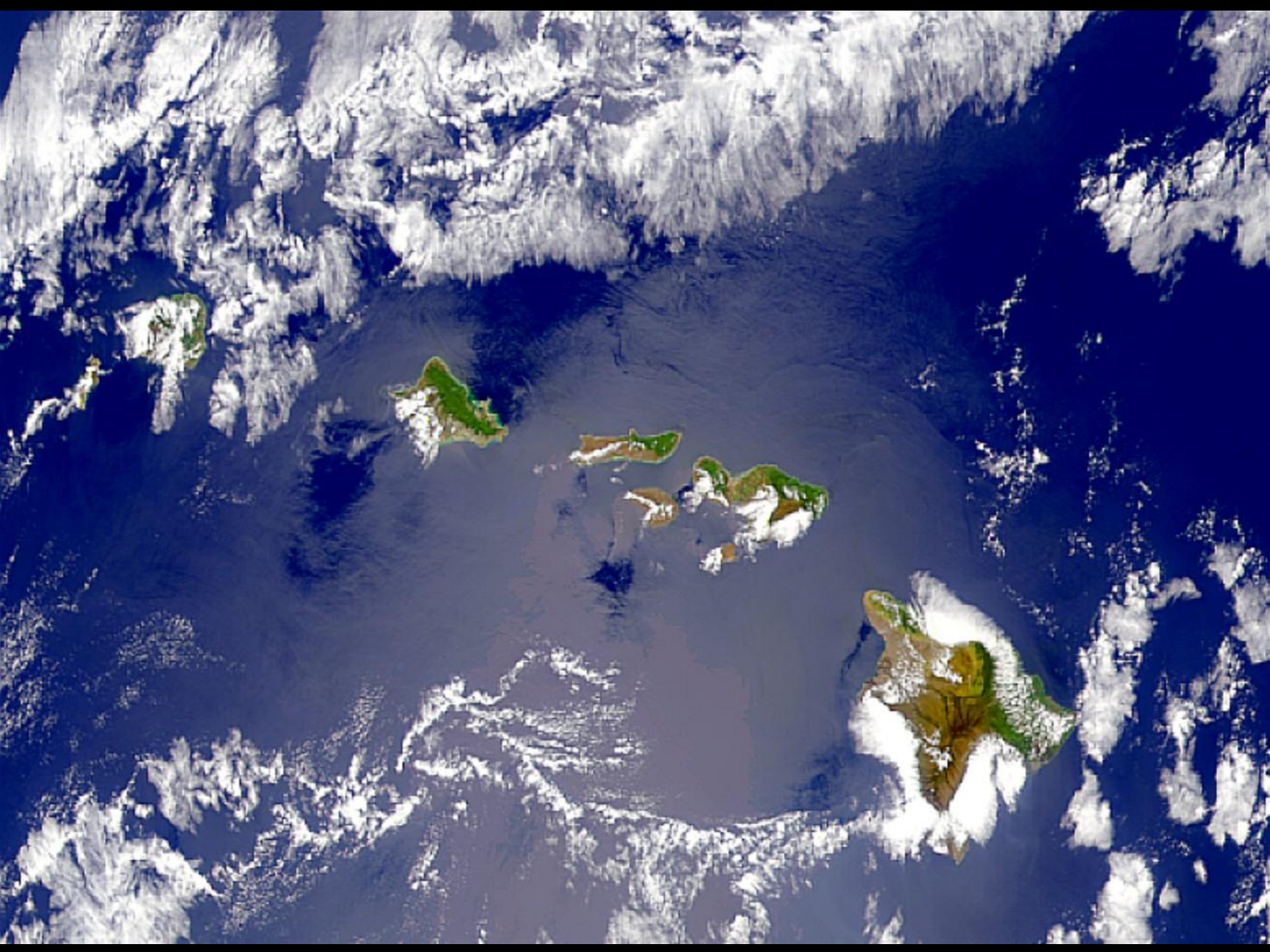
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Wisconsin Department of Natural Resources



Early Detection





Hawaii's First Arrivals



Some seeds, spores and insects arrived on the **wind**.

Wings, a few birds flew or were blown off course. In them or stuck to their feathers were more seeds.

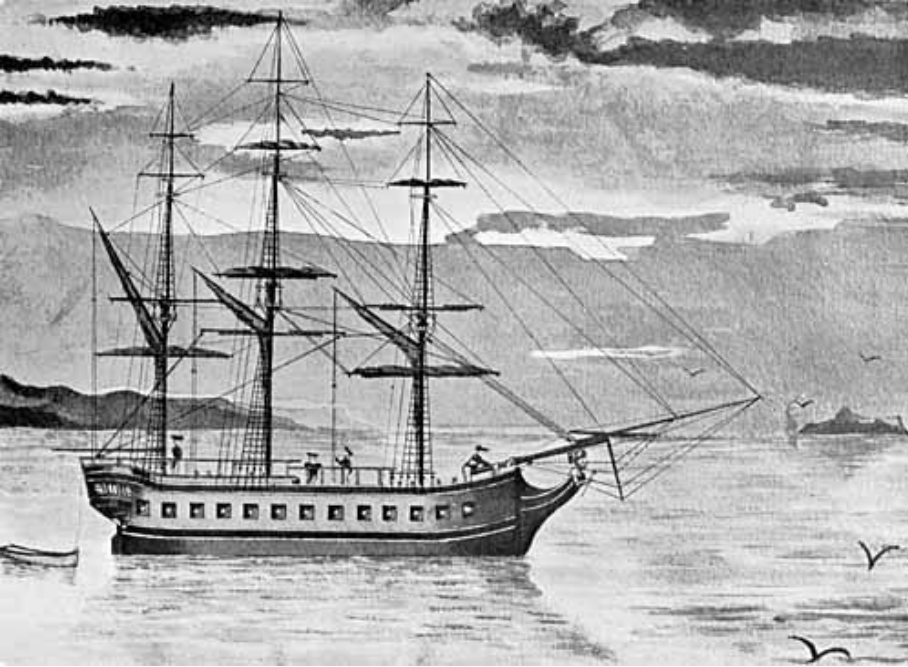
Some seeds managed to float here on ocean currents or **waves**. Ocean currents also carried larval forms of fish, invertebrates, algae, and even freshwater stream species.

Nonindigenous (Alien)
species = 34



↑ 1500 Years Ago

Nonindigenous (Alien)
species = 500?



231 Years Ago



Nonindigenous (Alien) species = 5311

- 343 new marine/brackish water species
- Hawaii went from 0 to 24 land reptiles
- 0 to 6 amphibians (including coqui)
- More than 20 insects become established each year.

Now



Estimate:
10,000 plants introduced;
200 causing ecosystem damage;
others may become invasive.



Now

What is being done?

Invasive Species
Committees

Weed Risk Assessment

Early Detection



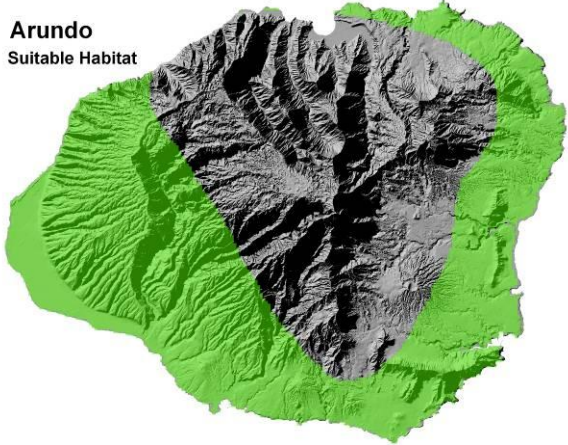
Hawaii's Invasive Species Committees \$3.5m



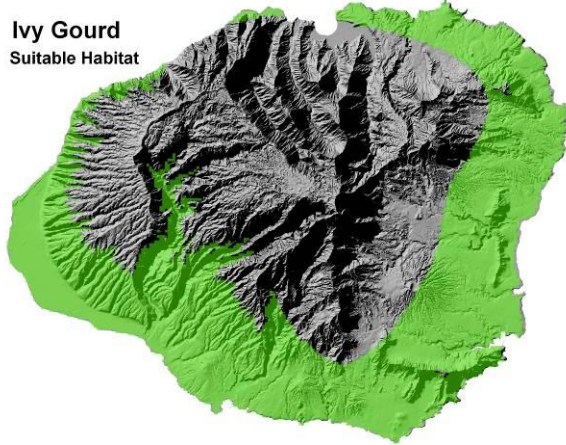


High Resolution Data & Modeling Capacity

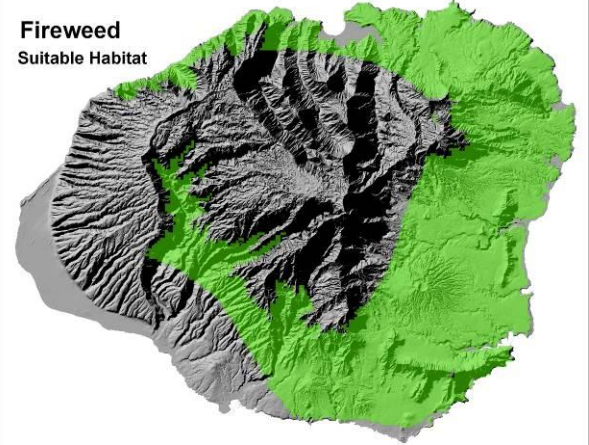
Arundo
Suitable Habitat



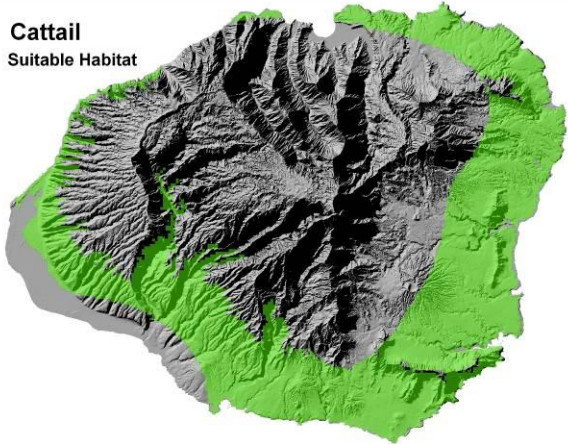
Ivy Gourd
Suitable Habitat



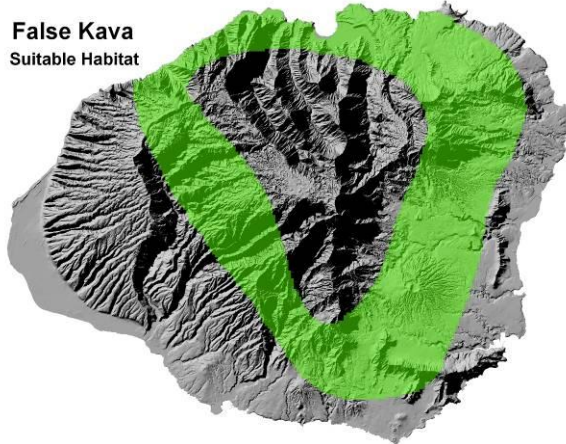
Fireweed
Suitable Habitat



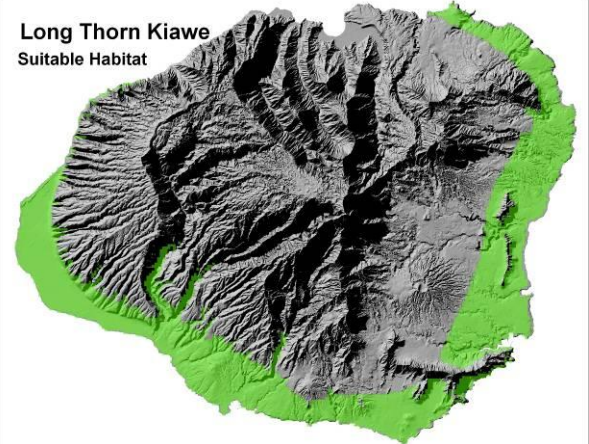
Cattail
Suitable Habitat



False Kava
Suitable Habitat

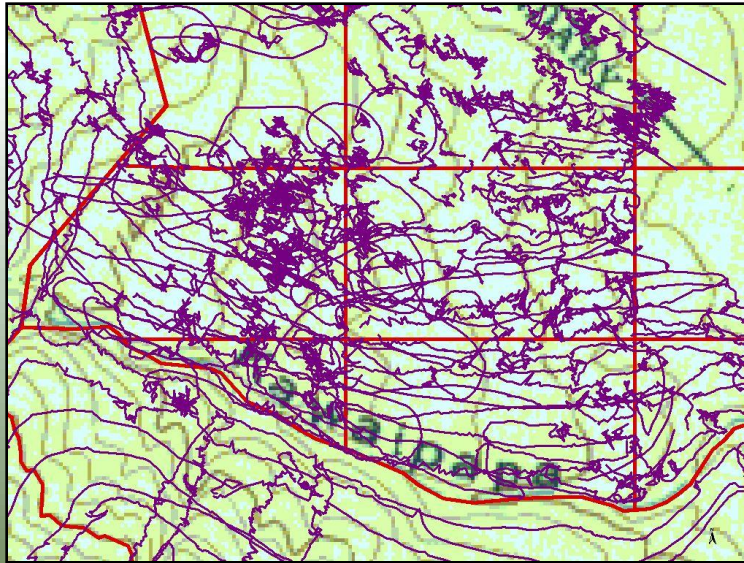


Long Thorn Kiawe
Suitable Habitat

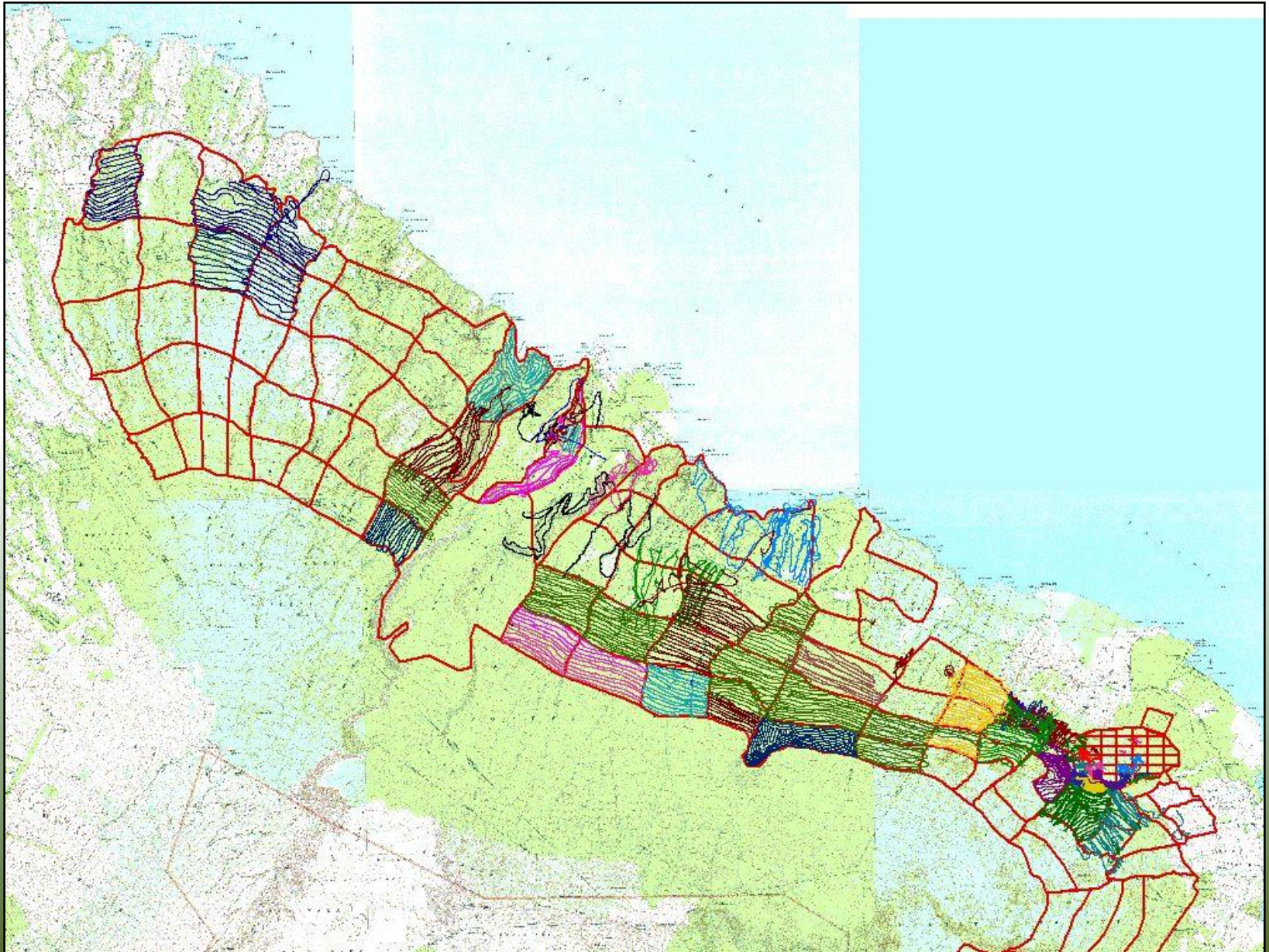


High Resolution Data & Modeling Capacity

- Sprayer attached to aircraft
- One spotter on-board with pilot to collect data and watch hazards
- Pilot and spotter each have GPS/PDA's to guide progress
- Attempt to color within the lines and saturate unit
- Repeated entries into management unit necessary



Aerial Coverage 2006 : 29 Helicopter Days, 60% of available air operation for this year



The Conant Principal:

“When a new target species is suggested at a committee meeting it’s too late to control it.”



Eradication

“The complete removal of all individuals and propagules from an biologically defined area where there is the expectation that re-introduction is the only dispersal mechanism.”

Weed Risk Assessment

Is a global effort to create a system that is:

Objective

Transparent

Science-based

Repeatable

Accurate



Weed Risk Assessment

The Hawaii-Pacific WRA asks 49 questions about:

Climate/distribution

Domestication

Weed elsewhere

Undesirable traits

Reproduction

Dispersal

Persistence

and more...



Weed Risk Assessment



WRA Webpage:

<http://www.botany.hawaii.edu/faculty/daehler/wra/>

[Google: Hawaii Weed Risk Assessment]

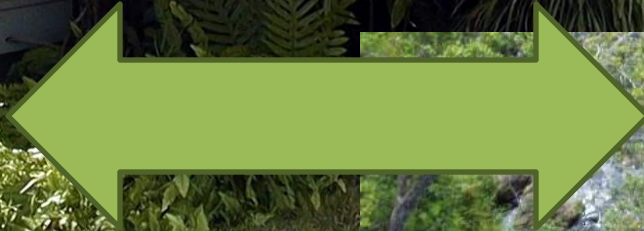


the official [State of Hawaii List of Plant Species Designated as Noxious Weeds](#).

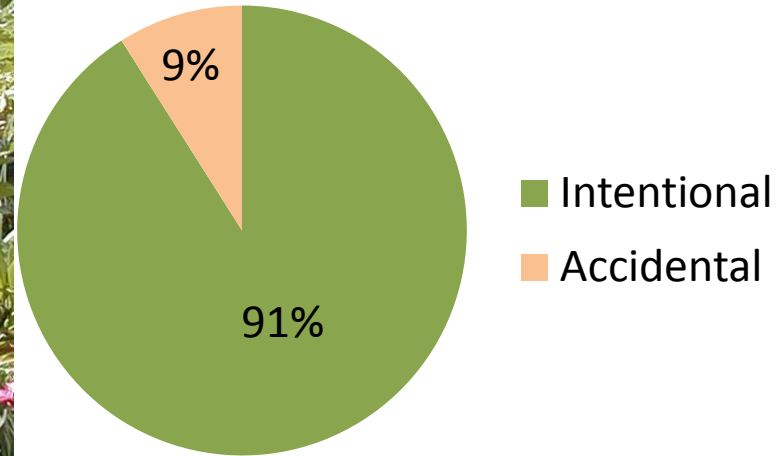
WRA designation	Meaning
L	Not currently recognized as invasive in Hawaii, and not likely to be
L(Hawai'i)	Not currently recognized as invasive in Hawaii based on a track
H(HPWRA)	Likely to be invasive in Hawaii and on other Pacific Islands as de behavior in Hawaii and/or other parts of the world.
H(Hawai'i)	Documented to cause significant ecological or economic harm in
EVALUATE	The species has been assessed using the HP-WRA system; ho assessment or 2)the species possesses a combination of traits

To download the **full assessment** for any species, click on the species name.

Completed assessments sorted by Genus

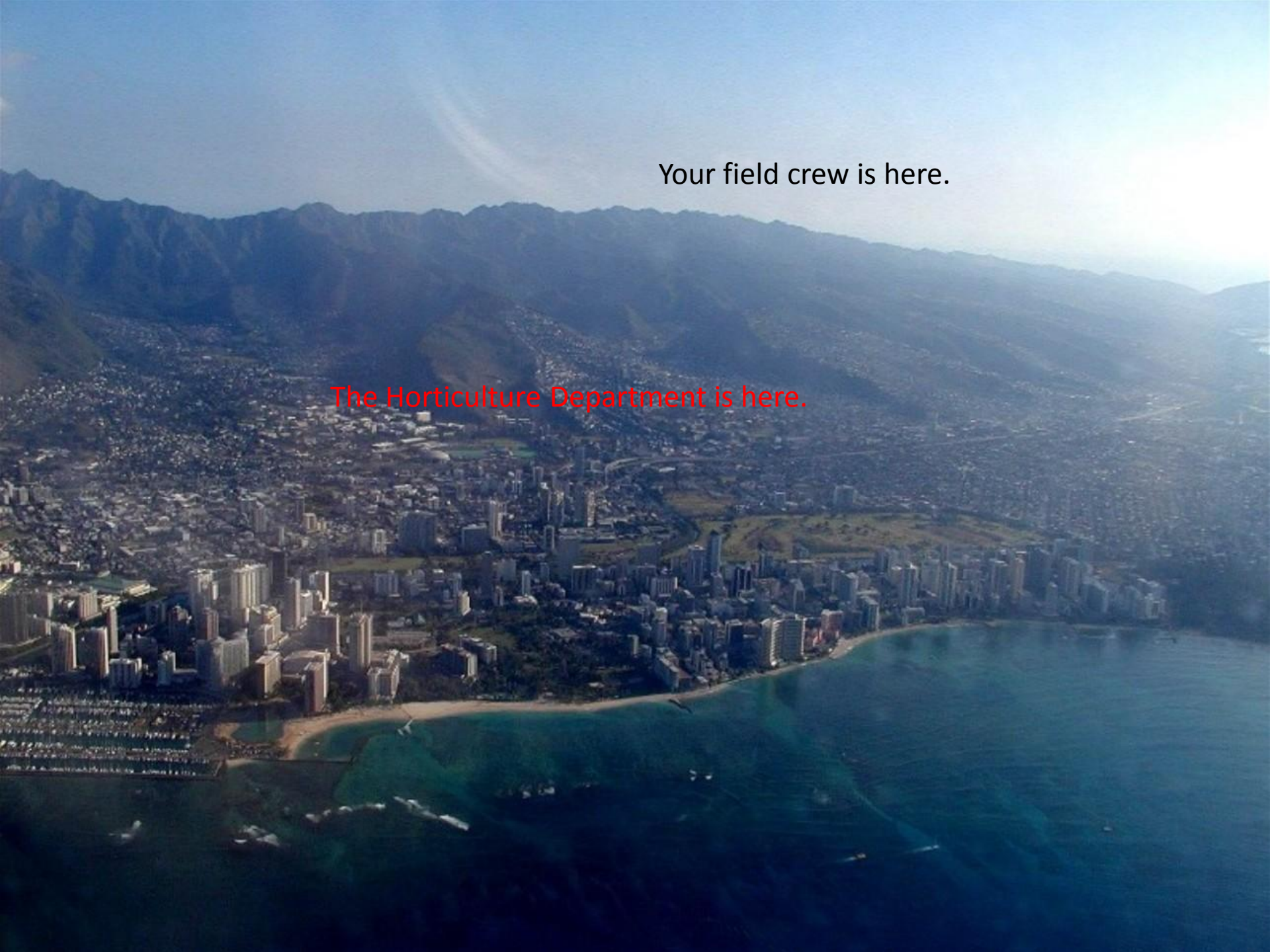


Forest weeds



From the tree's point of view there is no boundary between the urban forest and the "natural" forest.



An aerial photograph of a coastal city, likely Santiago, Chile, showing a dense urban area with numerous high-rise buildings and a large mountain range in the background. The city is situated along a coastline with a sandy beach and turquoise water. The sky is clear and blue.

Your field crew is here.

The Horticulture Department is here.

Eradications and People: Lessons from the Plant Eradication Program in Galapagos

Mark R. Gardener, Rachel Atkinson, Jorge Luis Rentería

first published online: 25 NOV 2009

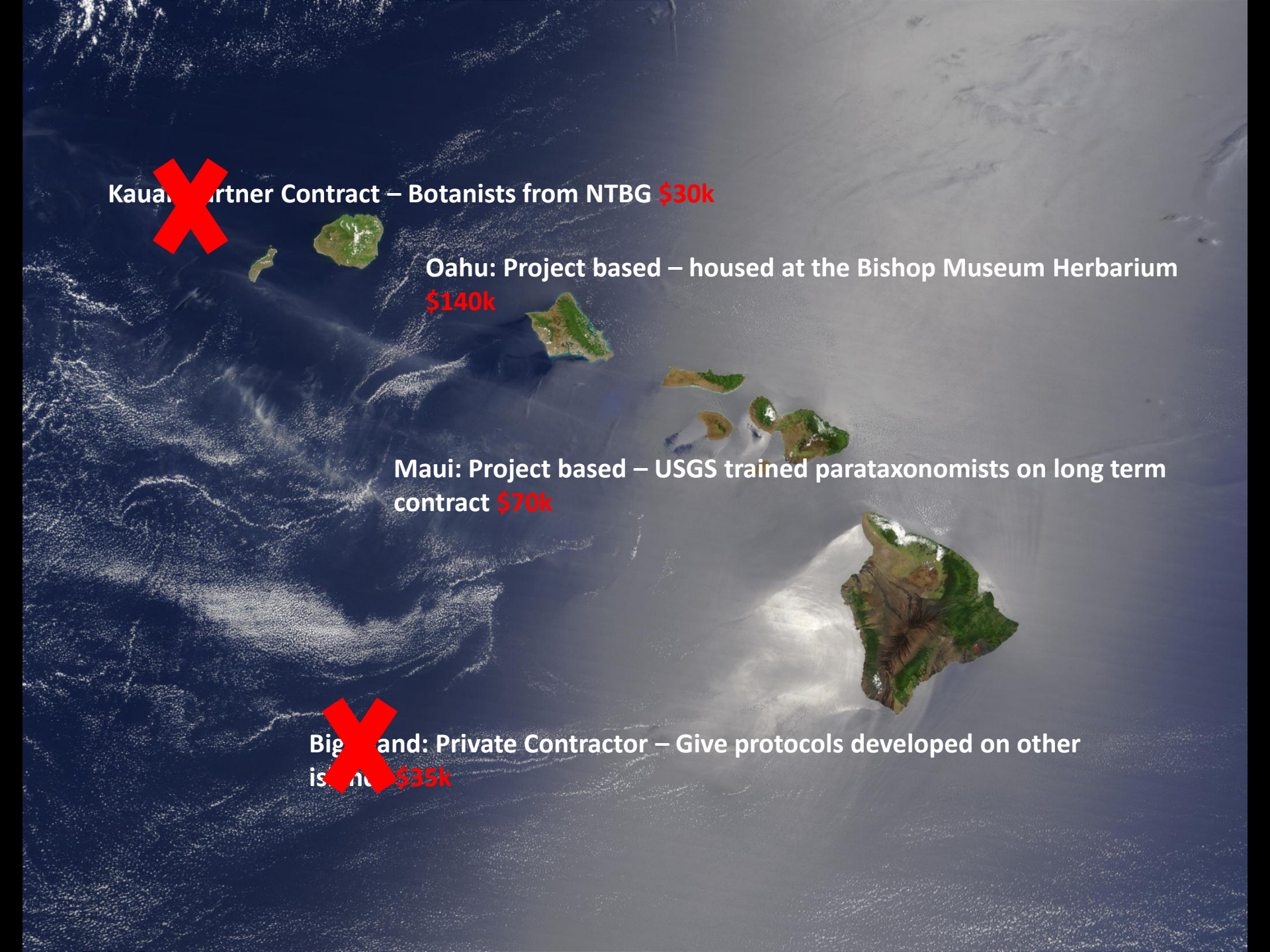
It is often argued that the benefit of eradication of an invasive species—a one-off injection of funds and the problem is solved—far outweighs the cost of a perennial control program. Furthermore, these are very attractive projects for funding agencies as outcomes are clear and easy to assess. Galapagos is in the early stage of the invasion process, with most alien species not yet naturalized and still restricted to gardens and farms. These species should be easy targets for early and cost-effective eradication projects, which would prevent many future problems. **We review 30 plant eradication projects covering 23 potentially invasive species with limited distributions on four of the Galapagos Islands. Of the 30 projects, only four were successful: these were all less than 1 ha in net area, on land with a single owner and did not have persistent seed banks. Of the other 26 projects, most failed due to a lack of support from institutions that did not offer continuity of resources, from land owners who denied permission to carry out the work or from being too ambitious. As a result of these problems, 64.3% of the funding secured for the program was spent on discontinued projects. We highlight lessons learned to inform plant eradication programs in the future.**

Eradication is hard.

“The effort required to detect targets is inversely proportional to their abundance. If you don’t have the capacity, tools and political will to establish an eradication campaign, you don’t need to do early detection.”

Early Detection



A satellite image of the Hawaiian Islands, showing the progression from smaller islands in the northwest to the larger island of Hawaii in the southeast. Overlaid on the image are text labels for different islands, some with red 'X' marks.

~~Kauai~~ Partner Contract – Botanists from NTBG **\$30k**

Oahu: Project based – housed at the Bishop Museum Herbarium
\$140k

Maui: Project based – USGS trained parataxonomists on long term
contract **\$70k**

~~Big Island~~: Private Contractor – Give protocols developed on other
islands **\$35k**

Early Detection



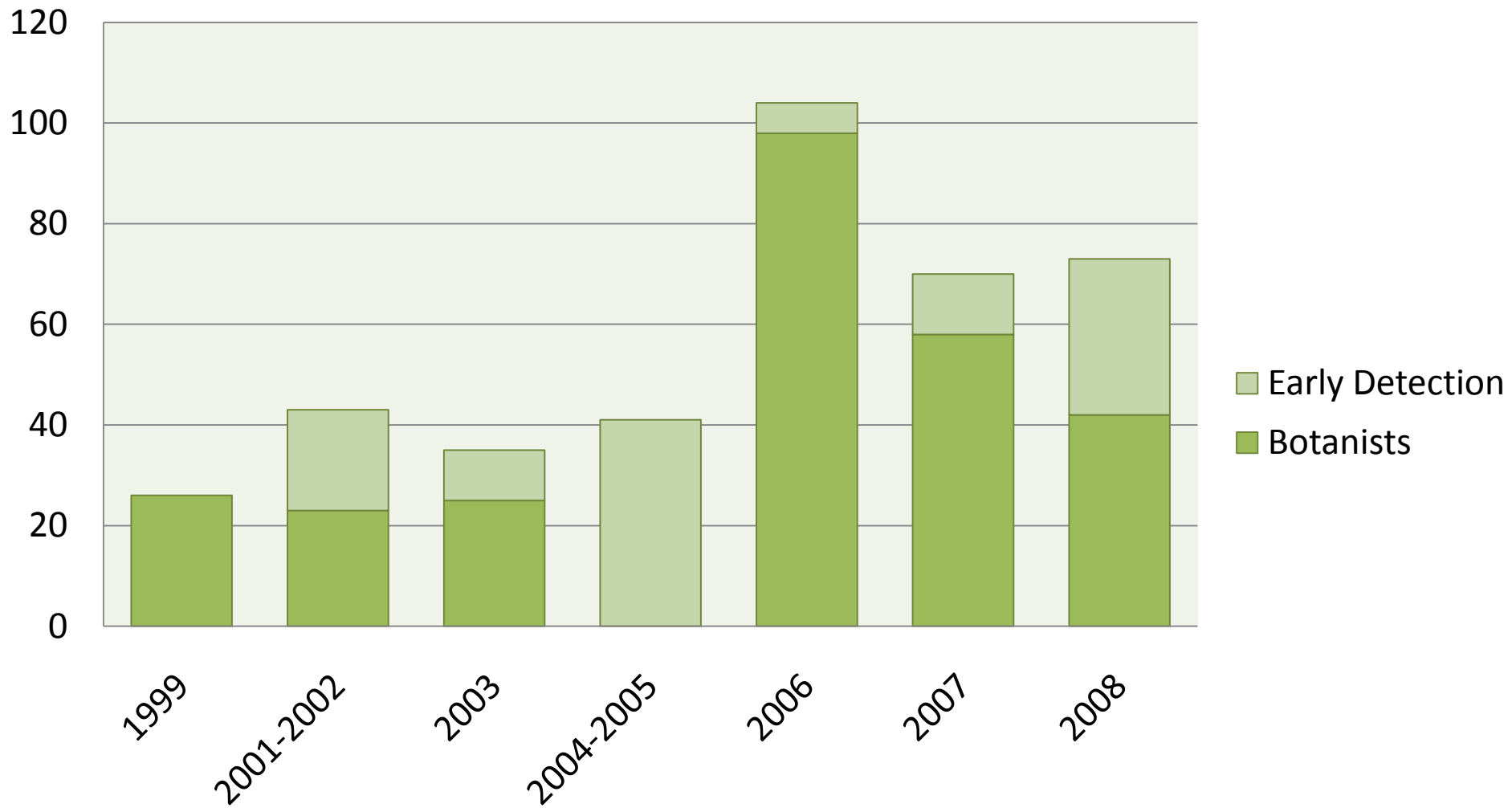
Early Detection



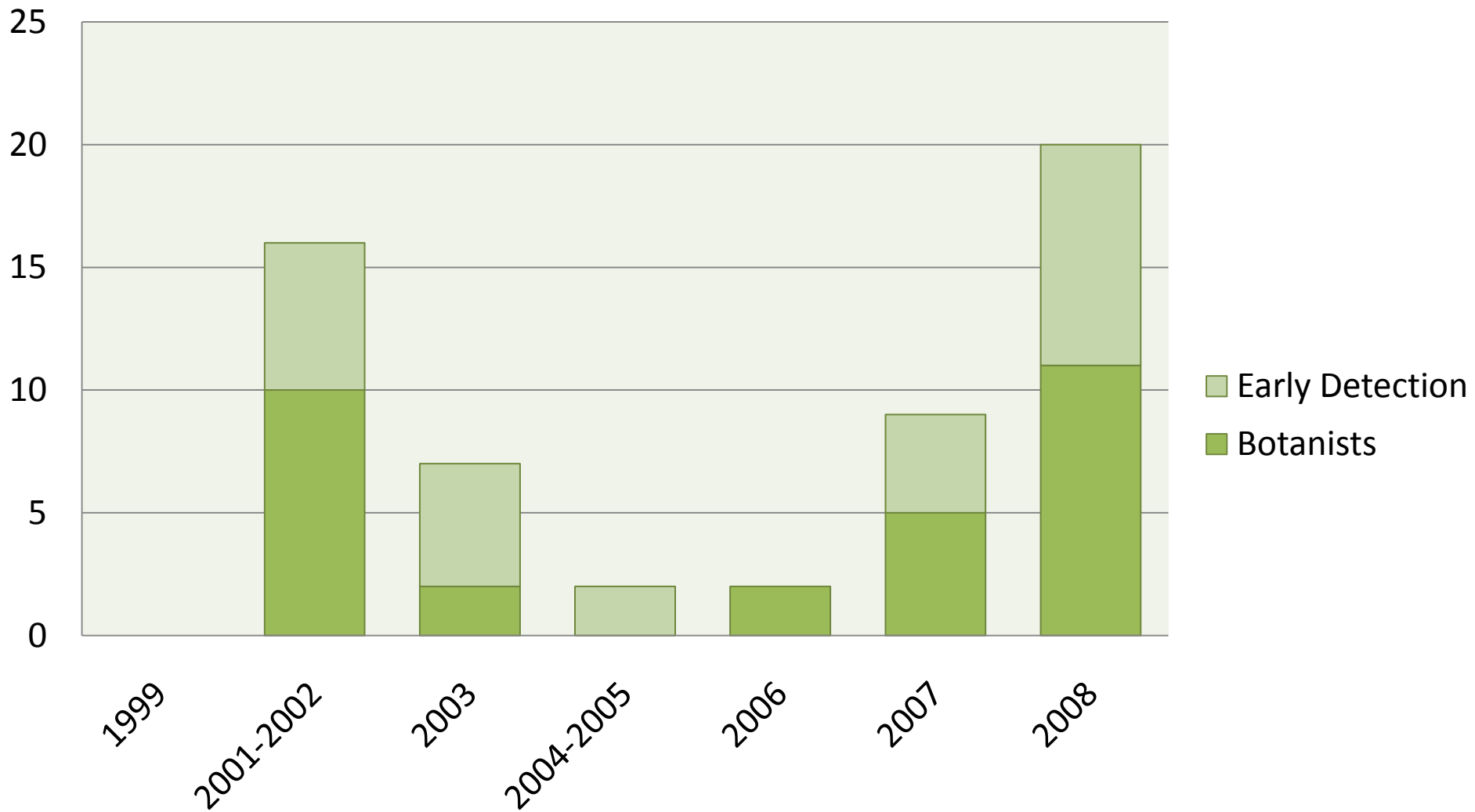
Early Detection



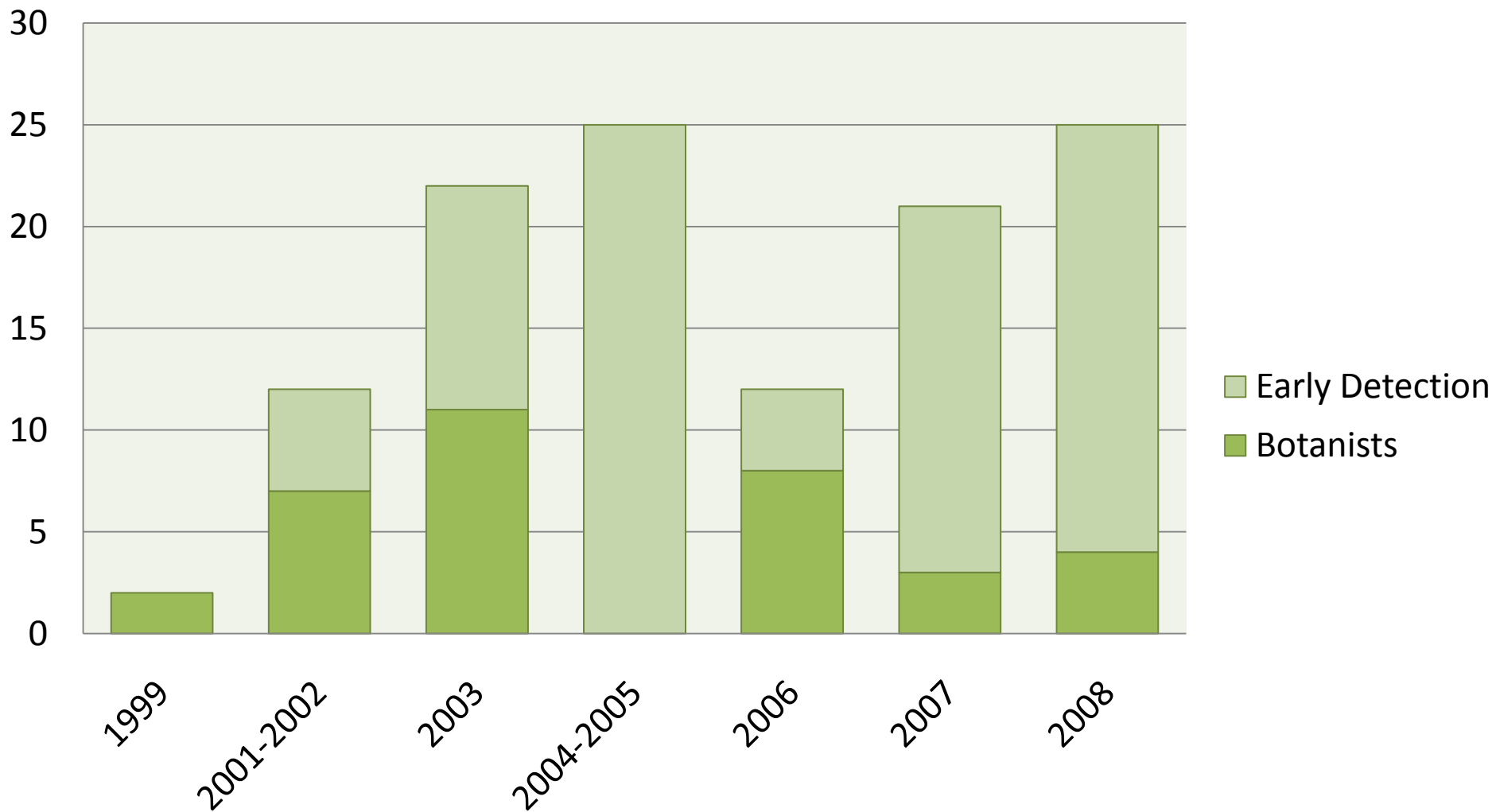
New Island Detections



New Statewide Records



New Naturalizations



Increased Impact 1:

“Eradicate this weed or not?”

Probabilistic decision making.

- Based heavily upon the NZ Department of Conservation’s protocol
 - Six steps:
 - Conservation threat of species
 - Feasibility of control of population



The Decision- Making Process

- The Six Steps:
 - Step 1: Initial Assessment
 - Step 2: Perform Weed Risk Assessment (WRA)
 - Step 3: “Effect on System” Score
 - Step 4: Calculate the species ‘Weediness Score’ and ‘Weediness Group’
 - Step 5: Assess the ‘Practicality of Control’
 - Step 6: Derive a ‘Priority Ranking’



Increased Impact 2:

Presence and engagement builds trust.

- Surveying nurseries benefits the nursery owner.
- Participating in industry meetings links risk assessment with businesses.



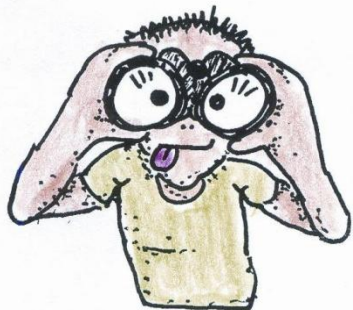


Statewide adoption – Voluntary compliance

Codes of Conduct: Hawaii Goals

1. Have new plant introductions screened for their potential to be invasive (the Weed Risk Assessment system).
2. Work with natural resource/conservation groups to identify some incipient (not widespread) invasive plants and agree to discontinue use/sale.
3. Identify non-invasive alternatives and help promote the use of non-invasives.





Increased Impact 3: Eyes and Ears.

- Using taxonomists to help with reports of citizen scientists and partner agency staff.
- Building passive detection networks is a form of outreach.

[Kauai early detection field guide](#)

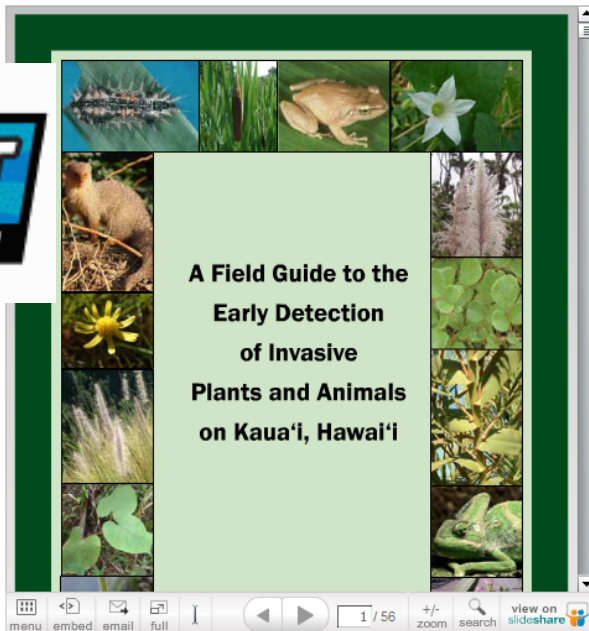
Get involved by following these simple steps for detecting invasive species.

Investigate it: Take a walk around your neighborhood, drive to a park, visit a friend, or just visit a new place. Early detection begins with looking around for the species on the [Hawaii Early Detection Network pest list](#) or download your own copy of the [Maui "Eyes and Ears" manual](#) (2 MB PDF) or [Kauai "Eyes and Ears" manual](#) (1.2 MB PDF).

Inspect it: Once you've found a plant or animal that looks like a target species, compare it to the description and photos on the [Hawaii Early Detection Network priority pest pages](#) or your field "eyes and ears" manual. Don't forget to compare it to the "look alikes" section. Sometimes the species can fool you.

Collect it: If you are unsure about what you've found, it's time to collect it. Learn how to [collect pest specimens](#) without causing harm to yourself or the environment.

Report it: Now you are ready to tell someone about your findings. Report your pest [online](#), by [phone](#), or at a [walk in location](#).



View more [documents](#) from [PBIN NBII](#).



Increased Impact 4: Repeat.

- Roadside surveys and nursery inventories are on track to be repeated about every 7 years.
- The impact of regulation and voluntary compliance should show up or at least we learn that we have more work to do.



South Africa

Brazil

Australia

New Caledonia

Sri Lanka

