cgaps
STOP THE SILENT INVASION
COORDINATING GROUP ON ALIEN PEST SPECIES

Overview of Invasive Species Issues

Senate Committee on Energy and Environment
Friday, January 11, 2013

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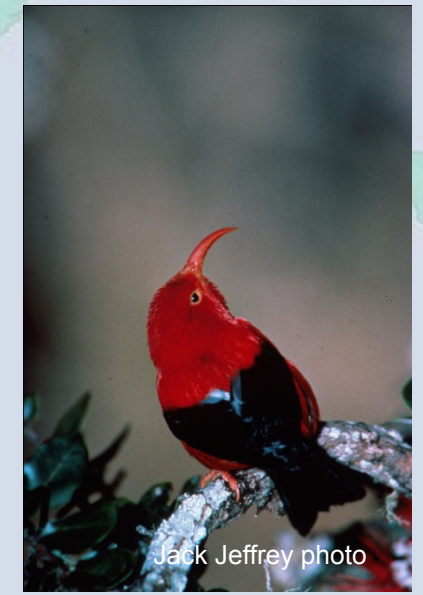
70 million or more years ago…

Plants and animals arrive & thrive



isolation
wide variety of habitats
millions of years
changes over time

\+

20,000 native Hawaiian species

70 million years ago

1500 years ago

First non-native species arrive = 34

...a few, like rats,
proved to be invasive

Non-native = plants and animals that arrived at a location carried by people or our conveyances

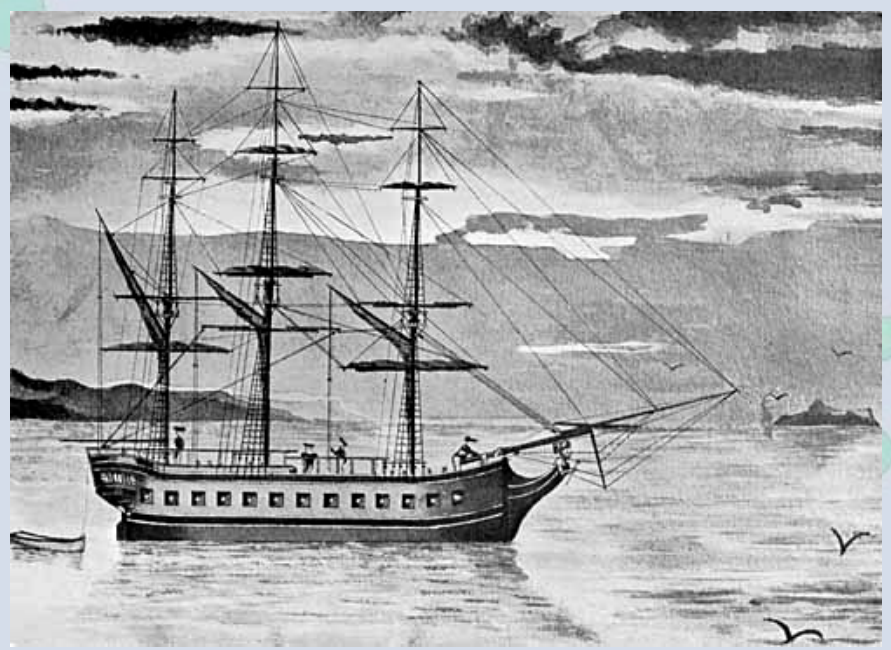
Invasive = Non-native species that cause economic or environmental harm, or harm to human health (E.O. 13112)

70 million years ago

1500 years ago

235 years ago

More non-native species = 500?



...a few of these proved to be invasive, including goats and mosquitoes

70 million years ago…

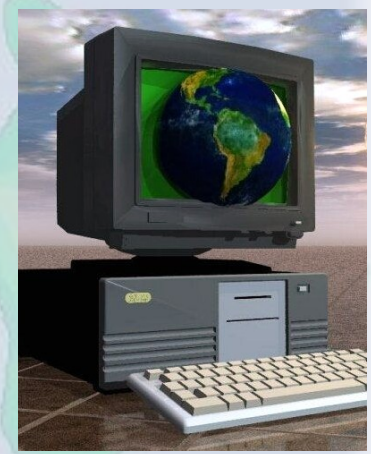
1500 years ago

235 years ago

10 y/a

Today: More non-native species arrive faster (and in better condition)

- 343 new marine/brackish water species
- Hawaii went from 0 to 40 land reptiles
- 0 to 6 amphibians (including coqui)
- 20+ insects/year
- 8,000+ plant species introduced; 1,200 spread to natural areas; 200+ damaging ecosystems & natural resources



Protecting Hawai‘i

Pre-entry
(laws & agreements)

Port-of-entry
(inspection)

Rapid-response
(response crews/regional containment)

World’s Biota

Arrivals

Escapes

Widespread

Options:
-Do nothing

-Eradication

-Regional containment

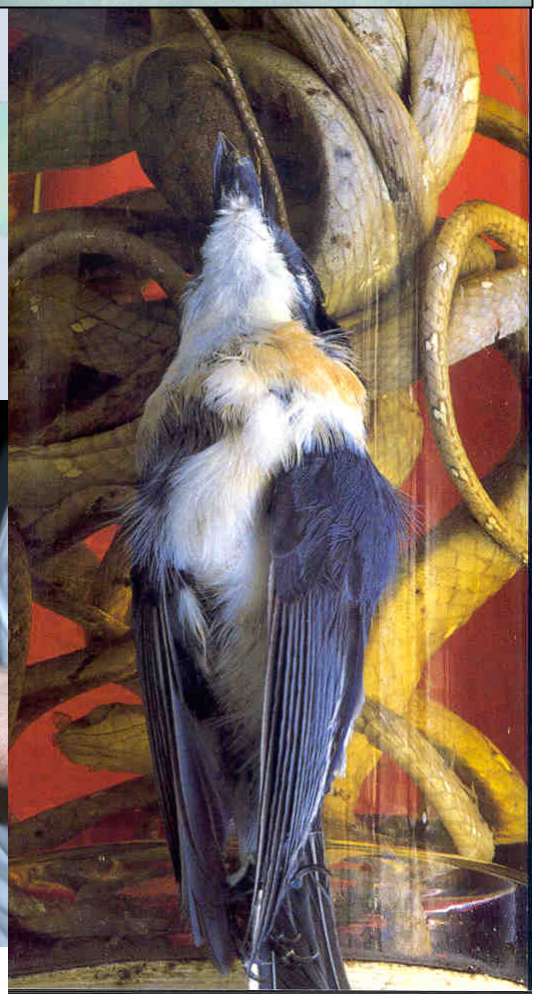
Options:
-Do nothing

-Protect high value areas

-Biocontrol

Brown Tree Snake (BTS)

- Brown treesnakes arrived on Guam in the 1950s hidden in ship cargo
- In less than 20 years they decimated bird, bat and lizard populations
- Bite people and pets, cause power outages
- 8 BTS intercepted in HI since 1981
- Annual economic impacts to Hawai‘i if brown tree snakes become established: between $593 million and $2.14 billion (Shwiff, et al. 2010).



Little Fire Ant (LFA)

- Small stinging ants native to Central and South America, accidentally introduced as hitchhikers on nursery plants.
- Infest yards and move into houses when infestations are high
- Infest agricultural fields and nurseries, where they damage crops and sting people
- Also known to sting eyes of pets and other animals, leading to blindness
- Infestations known on the windward side of the Big Island, some in Kona. One small infestation on Kaua‘i

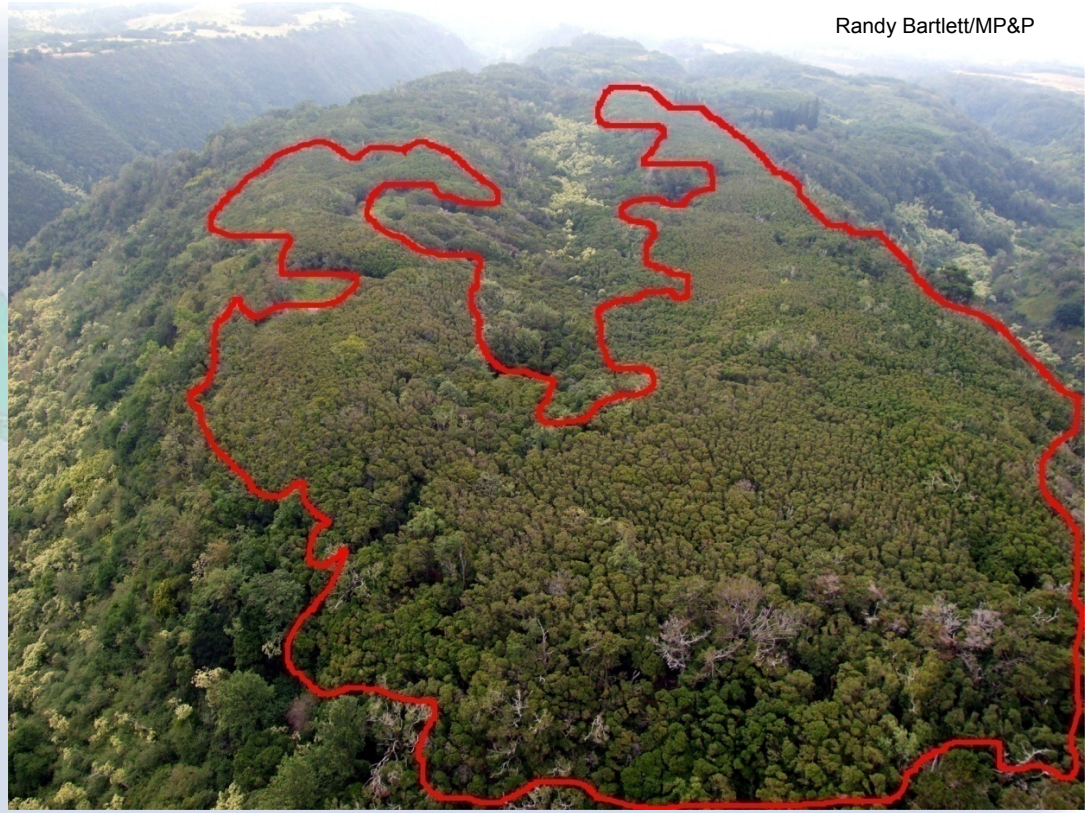
Mosquitoes

- Vectors of human diseases like malaria, yellow fever, dengue fever, etc.
- Vectors of wildlife diseases like West Nile Virus (also affects people), avian malaria, etc.
- The arrival and establishment of malaria-carrying mosquitoes could result in the loss of billions of visitor dollars annually, not to mention the impact on public health
- On two separate occasions in 2012, *Aedes aegypti (*the mosquito that most effectively transmits dengue) were detected in the four traps that remain at Honolulu International Airport. Prior to 2008, HDOH monitored hundreds of traps

Miconia

- 30-50 ft. tall tree native to Central Am.
- Each tree produces millions of seeds per year, forms dense stands, outcompetes other plants & promotes runoff
- Introduced to Tahiti Nui in 1937, now nearly 70% of native forests overwhelmed, endangering 40+ species with extinction
- Miconia is present on all but Lānaʻi, Molokaʻi, and Kahoʻolawe

Strawberry guava



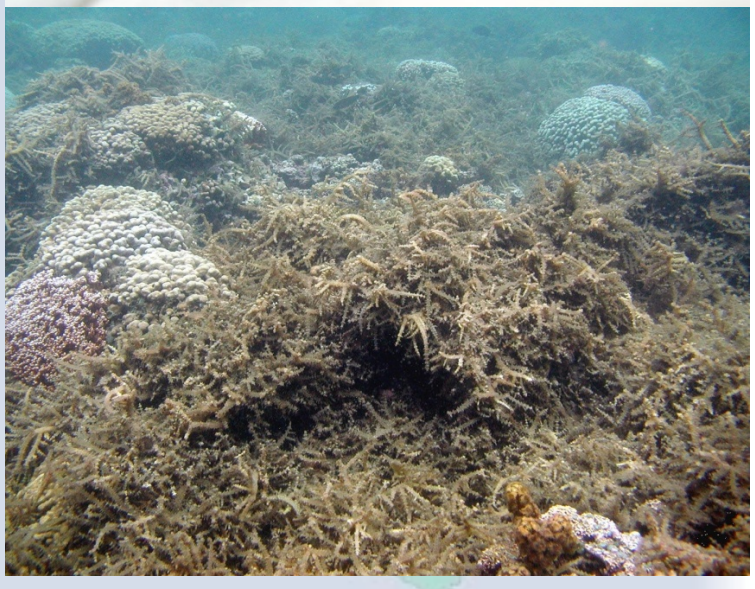
- Forms dense stands, outcompetes and replaces native plants
- Invading moist and wet forests on all islands, from sea level to 4000 ft. elevation
- Compared with native ‘ōhi‘a forests, strawberry guava-infested forests lose 27% more water, with the difference rising to 53% during dry periods.

Feral Pigs, Goats, Deer, Sheep & Cattle

- Eat, trample, and kill native plants, leaving the ground open to erosion or invasion; harm threatened & endangered species
- Spread invasive plant seeds
- Pig wallows, dead tree ferns are breeding grounds for mosquitoes which spread diseases
- Public hunting alone does not stop damage; ungulates reproducing faster than can be controlled by hunting

Why care about invasive species?

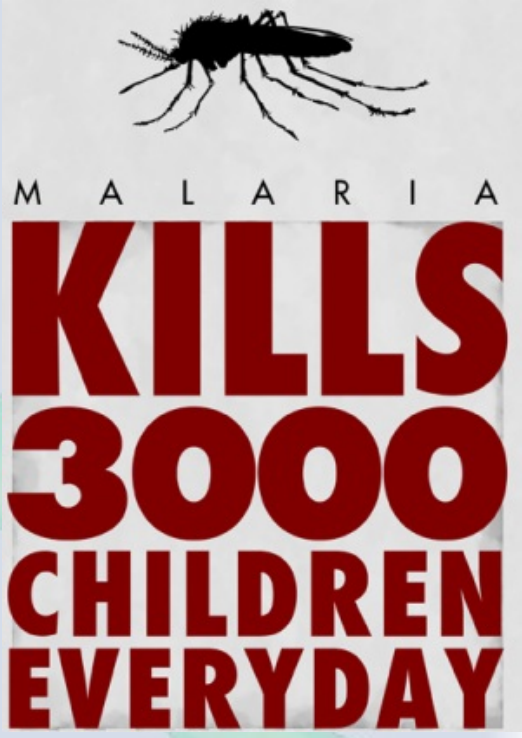
- In the US, $138 billion is spent/per year on a sample of alien plants and animals[1]
- If introduced to HI, Red Imported Red Imported Fire Ants = $211 million/year for HI [2]
- If introduced to HI, brown treesnakes = $593 million-$2 billion/ year [3]
- Invasive seaweed overgrows and kills nearshore reefs which generate $800 million anually[4] & protect our shores from storms and the impacts of climate change

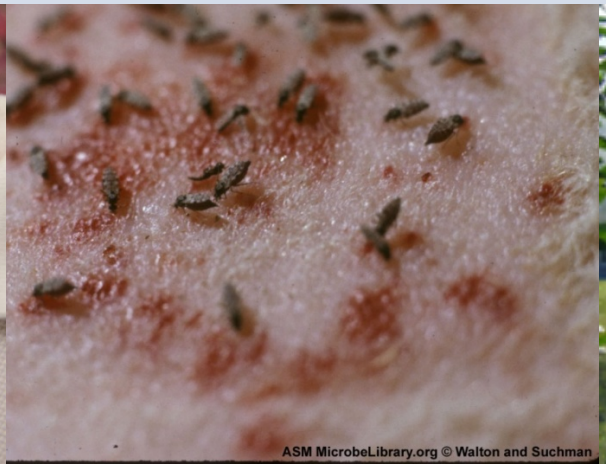


[1]Pimentel et al. 2000
[2] Gutrich et al. 2007
[3] Shwiff et al. 2010
[4] Cesar et al. 2002

Why care about invasive species?

- The arrival of a single mosquito carrying malaria or West Nile Virus would be devastating
- Biting sand flies on other tropical islands can inflict 10,000 bites per person
- Little fire ants are invading Hilo yards and homes, stinging people and pets





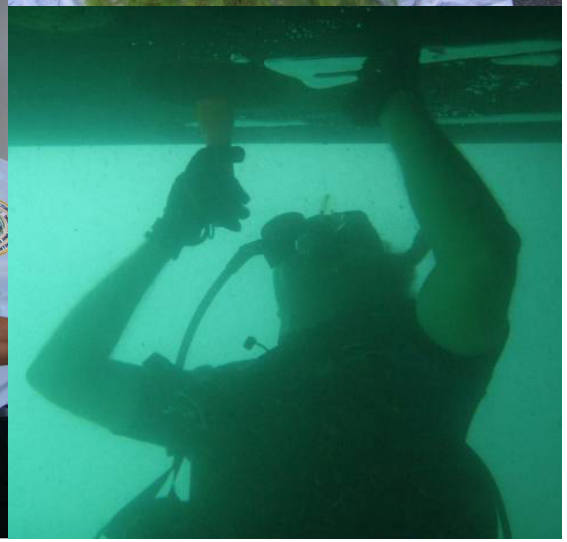
Why care about invasive species?

- Over 80% of endangered plants in Hawaii are threatened by invasive species[1]
- Loss of culture & unique “sense of place”
- Invasive strawberry guava = less water (30-50% less!)[2]
- Reduced volume and reliability of freshwater flow associated with invasive trees[3]; potential for increased erosion and runoff
- Less pollinators = less food

[1]Wilcove et al. 1998
[2]Giambelluca et al. in press
[3]vanWilgen et al. 1996

Prevention:

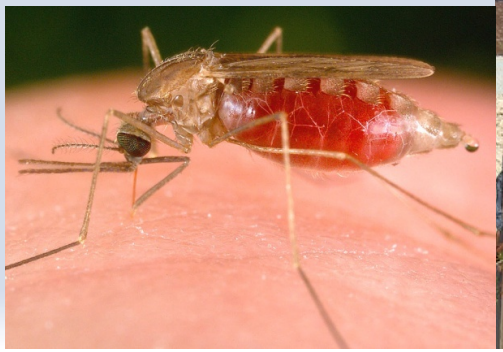
- More pre-entry laws, agreements
- HDOA Biosecurity Plan: progress on joint federal-state inspection facilities at each port; electronic manifests
- Have ballast rules; need hull fouling procedures and rules
- HDOA re-starting Detector Dog program; Fed/State efforts on BTS



Surveillance, Early Detection, and Rapid Response

Things will always get through.

- Some monitoring around ports/high risk areas; need more
- Most early detection and rapid response teams on soft money & without legal teeth
- Need periodic cross-agency/NGO rapid response training and practice
- Rebuild HDOH Vector Control



Conservation Work

- Have great people & projects that work, but we need funding and support
- Protect entire habitats and ecosystems (fencing, outplanting, etc.) for the benefit of all
- Need support to do some unpopular things (killing feral cats, using pesticides, biocontrol, fencing, etc.)

HDOA Plant Pest Control

(Statewide chemical, mechanical & biological control of pests)

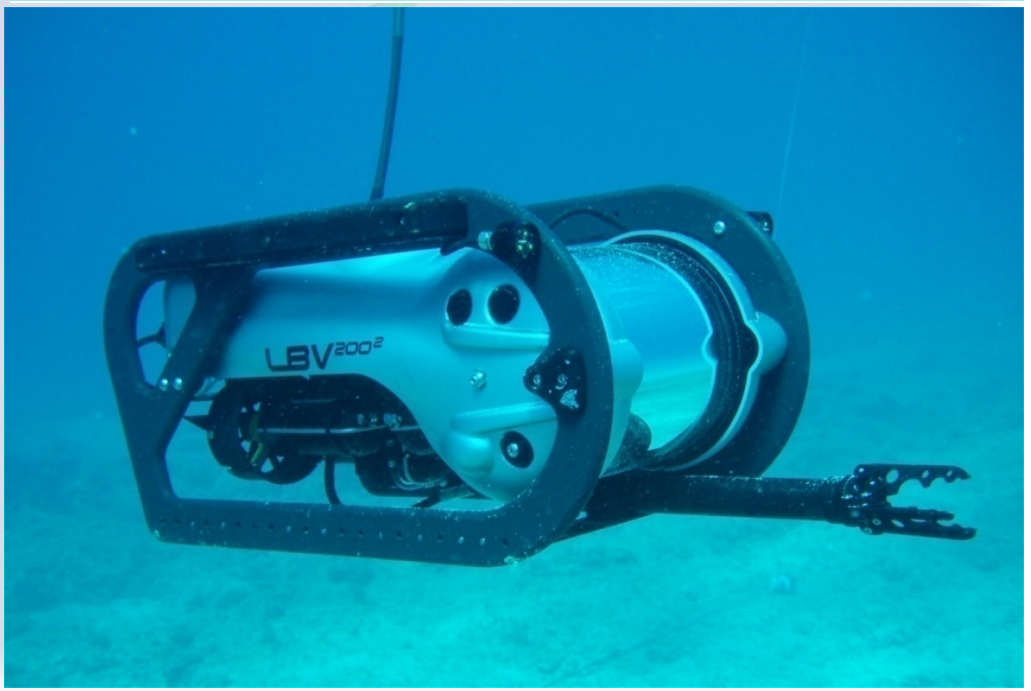
Some biocontrol Successes

- Spiraling whitefly (1980)
- Wooly whitefly (1981)
- Vegetable leafminer (1975-1982)
- Diamondback moth (1983, 1985)
- Lesser cornstalk borer (1986)
- Blue coconut leaf beetle (1986)
- Miconia (1997)
- Ivy gourd (1996,1998)
- Silverleaf whitefly (1998)
- Citrus blackfly (1999)
- Erytrhina gall wasp (2008)
- Nettle caterpillar (2010)

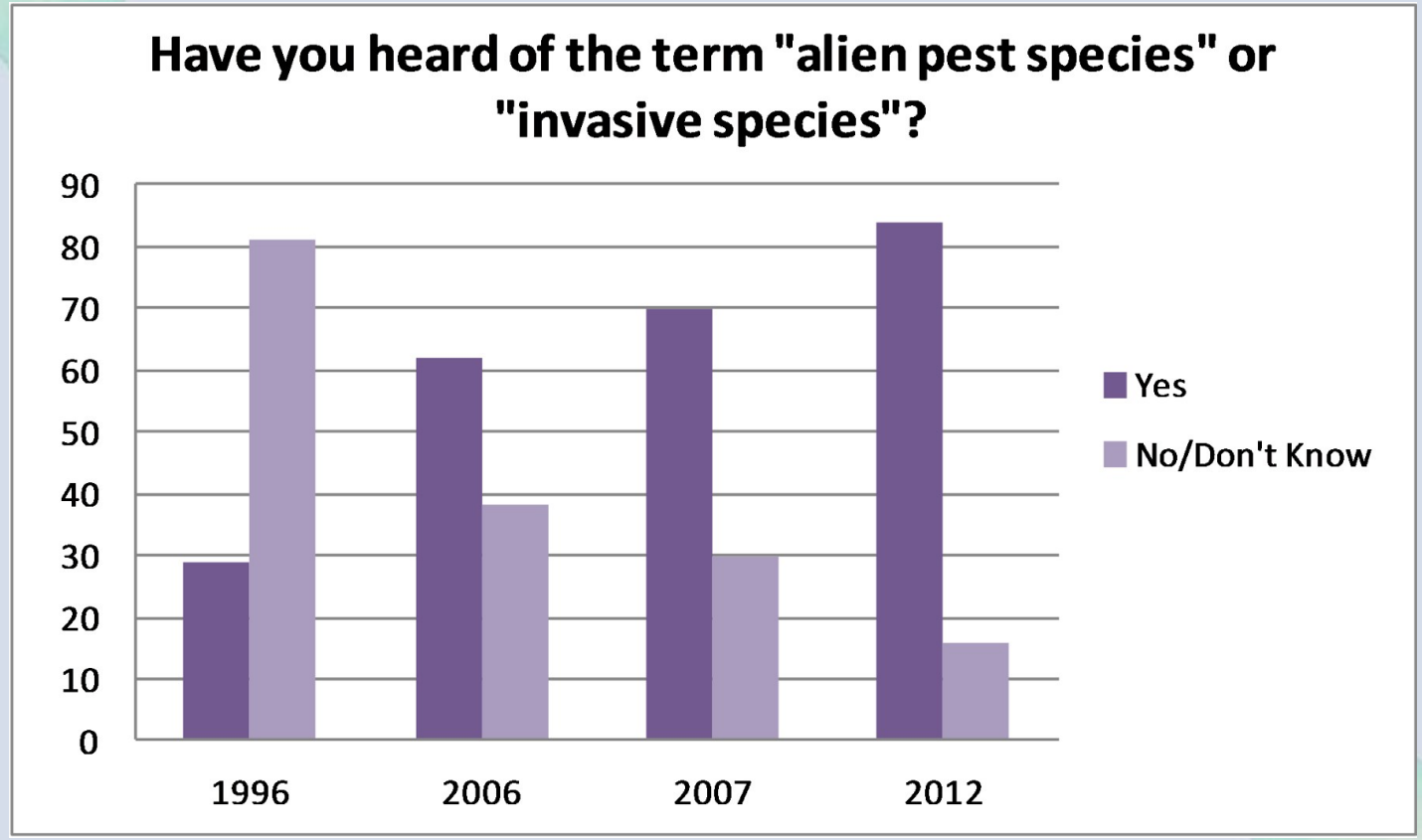
Biocontrol: The meticulous (and mostly thankless) science of reuniting invasive pests with their natural enemies.

DLNR/DAR Aquatic Invasive Species Team

(Statewide prevention, response & control of aquatic invasives)



2012 CGAPS Public Awareness Survey

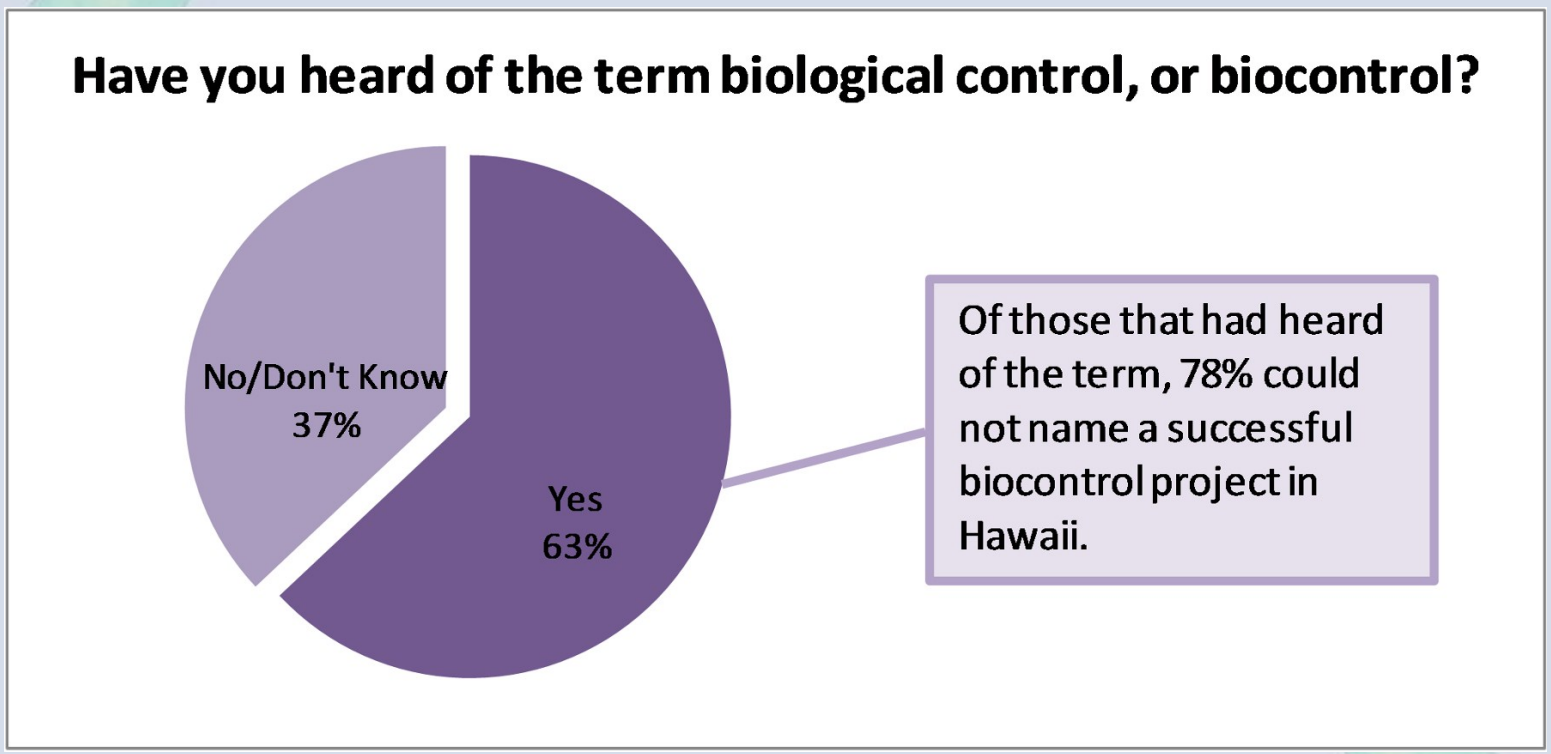


Awareness of the term has risen steadily. More importantly, the percentage of respondents that said invasive species were a “somewhat serious” or “very serious” problem rose steadily from 71% in 2004 to 89% in 2012.

August 2012, Qmark Research

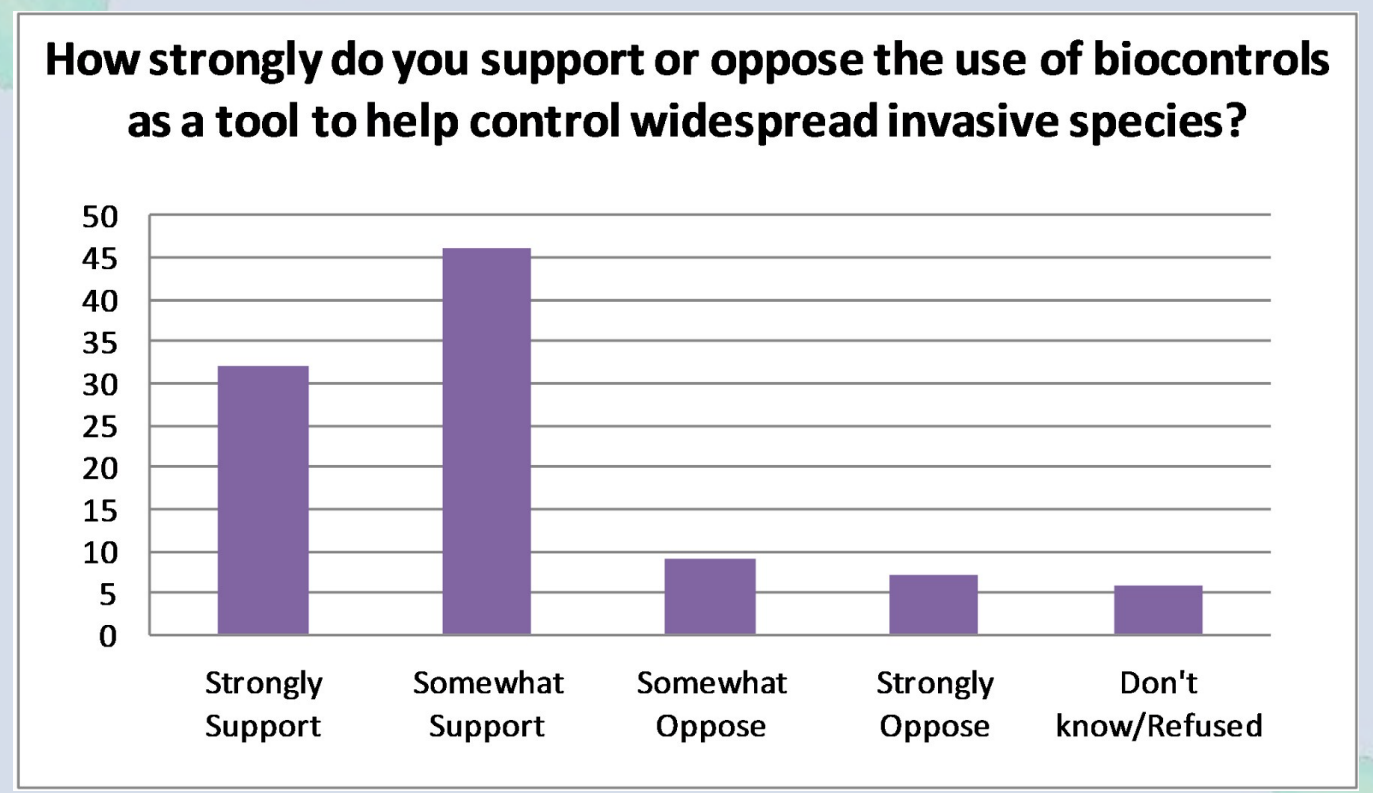
Margin of error +/- 4.38 percentage points with a 95% confidence level.

2012 CGAPS Public Awareness Survey



More than half of respondents (63%) had heard of the term “biological control” or “biocontrol”, although 78% could not name a successful Hawai‘i project. Nine percent of those having heard of the term named mongooses as a successful project. Seventy one percent were familiar with the concept of using “natural enemies” to control invasive species.

2012 CGAPS Public Awareness Survey



There is support for the use of biocontrol and for increased funding (35% strongly support; 41% somewhat support). We should focus on shifting marginal supporters to strong supporters, perhaps through raising awareness of past successes, and incorporate the concept of natural enemies.

For more survey results, visit www.hawaiiinvasivespecies.org/cgaps/pdfs/cgaps2012omnibusreport.pdf.

The good news is that people care and are working to Protect Hawai‘i. Your help and support is important!

Moving forward

Mahalo for understanding the importance of the issue and the need to keep these programs running. Our top priority is to continue to raise the bar until the resources and legal tools are adequate for the job of protecting Hawai‘i. We need:

•Dedicated and sustainable funding for each of these agency branches & NGOs

•Ongoing help in making HDOA PQ’s Biosecurity Program the best in the nation

•Support for designing and building a new state biocontrol facility

•Because the majority of new pests arrive in produce, cut flowers, and plants, your support of local agriculture is supremely important

Mahalo for your help and guidance!