



# Kaho'olawe Island Reserve BIOSECURITY



**Kaho'olawe Island Reserve Commission  
Hawai'i Invasive Species Council**



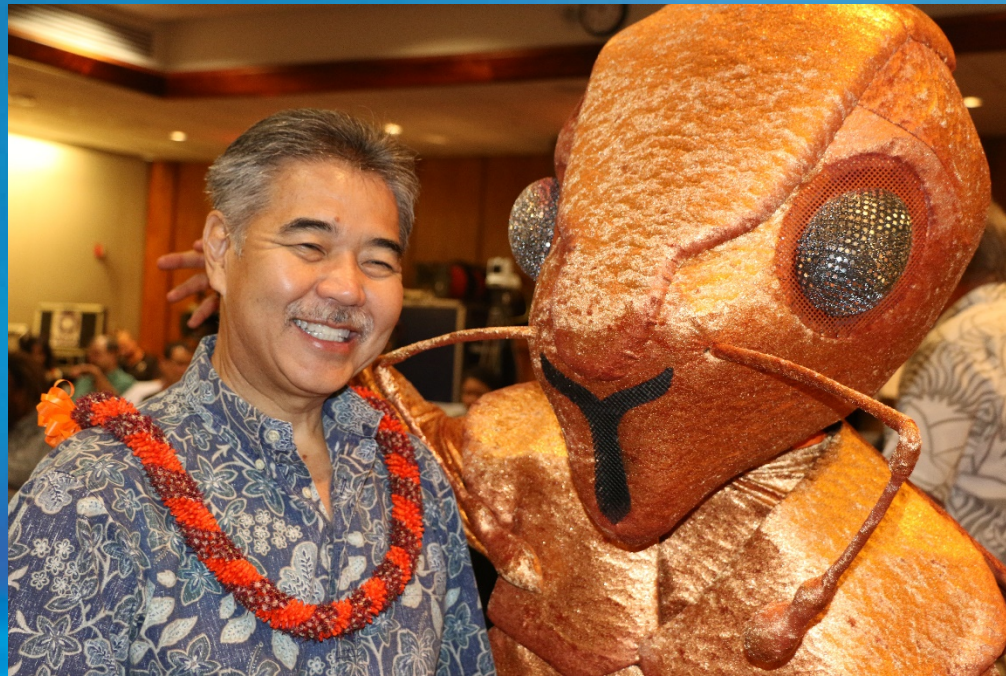
**E Maka'ala Kākou!**



Problem;

Annually, Hawai'i receives an average of 15 new introductions of non-native (alien) species.

Harmful to environment, economy and/or human health. HISC budget ~ 5million dollars annually.



Governor Ige with a Little Fire Ant



# Biosecurity

## Definition;

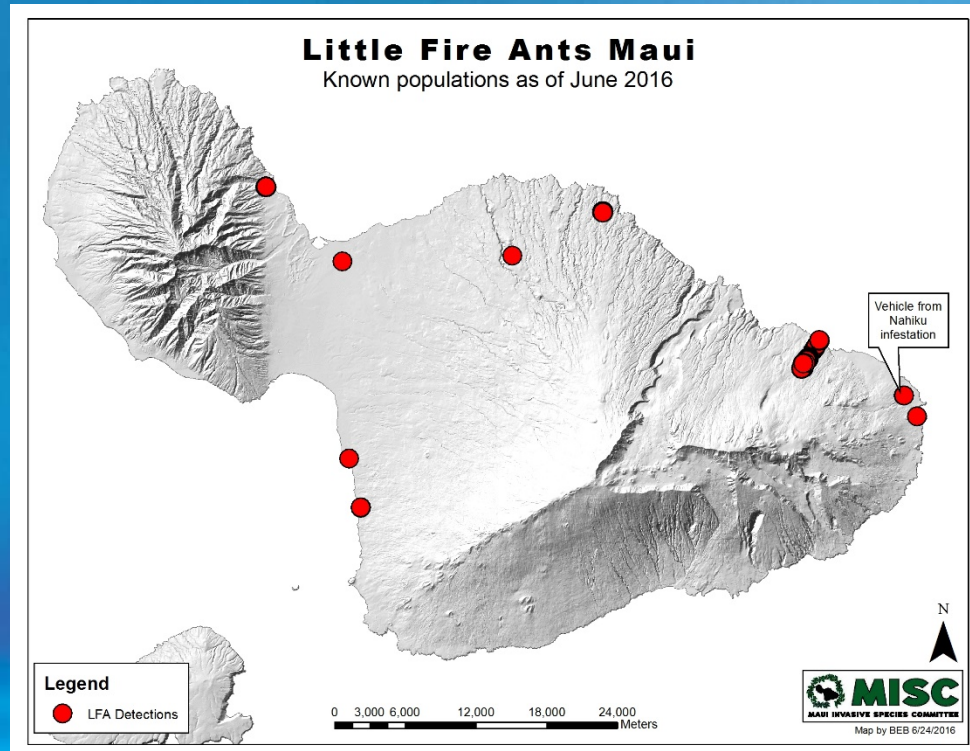
Measures that are taken to stop the spread or introduction of Invasive Alien Species (IAS) to animal or plant life.



1883 - Mongoose (*Herpestes auropunctatus*)

# Invasive Alien Species (IAS)

- Certain species are considered “Invasive” because they invade and establish populations in new areas.



Little Fire Ant (*Wasmannia auropunctata*) on Maui

# Hawai'i Invasive Species Council

- Established in 2003 by Hawai'i State legislature (HRS-194).
- Provide policy level direction, coordination, and planning among state departments, federal agencies, for the control and eradication of harmful invasive species
- 2016 HISC Grant – “Biosecurity Implementation Plan for the Island of Kaho`olawe”.



# Biosecurity Implementation Plan

- **Be on alert of what we are bringing to Kaho‘olawe.**
- Biosecurity is everyones’ responsibility. Help us keep Kaho‘olawe Island Reserve (KIR) free of new harmful introductions and Invasive Alien Species (IAS).
- Please carefully inspect all materials transported to the island for “IAS.”



# IAS on `Ōhūa

1. December, 2009 – Norway Rat (*Rattus norvegicus*) Exterminated on Board at the Boathouse.
2. March, 2015 – Carpenter Ants (*Camponotus variegatus*) in a large cardboard box delivered to KIR.
3. February 2016 – Gold Dust Day Gecko (*Phelsuma sp.*) on `Ōhūa in transit to Kaho`olawe (PKO). Taken back to Kihei Boat house.

# KIR Biosecurity Plan

- Deliverable for the HISC Grant
- 1 Goal, 5 Objectives
- Biosecurity Advisory Committee
- KIRC/PKO Representatives
- Kihei Nursery Management Plan/Emergency Response Plan





# Biosecurity Goal (1)

1. Prevent IAS from entering the KIR.



Madagascar Day Gecko (*Phelsuma madagascariensis*)

# Biosecurity Objectives (5)

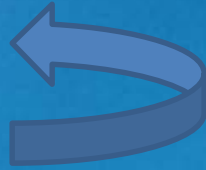
- 5 Objectives to achieve the one Goal.



Coqui Frog (*Eleutherodactylus coqui*)

# 5 Biosecurity Objectives

1. Prevention
2. Education
3. Early Detection



## Rapid Response

4. Quarantine
5. Eradicate






Norway Rat (*Rattus norvegicus*)



# 1. Prevention

- **Prevention is Key.** Keep IAS from getting into KIR by vessel or air.
- Use Biosecurity Inspection Form.
- Pre-launch and Post-launch.
- Inspector Initials and Signature.



---

IAS Biosecurity Inspection Form - E Maka'ala Kākou!

Date \_\_\_\_\_ Destination \_\_\_\_\_ # of PAX \_\_\_\_\_

**Pre Launch** - Please circle all appropriate.

- Have PAX been briefed on Biosecurity Protocols (check gear) Y/N?
- Are you transporting vegetation (plants, produce) Y/N?
- If Yes, was it inspected Y/N? Inspector Initials \_\_\_\_\_
- Were any organisms (ants, lizards, insects) found Y/N?
- If Yes, was it collected per protocols (Rapid Response Kit, Picture, IAS Quarantine Form) Y/N?

**Post Launch**

- Is all 'ōpala secured into a metal trash bin Y/N?
- Are any lines, ropes, nets, ladder hanging off of 'Ohua Y/N?
- Is the Front Ramp up Y/N?
- Comments: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

- Hawaii Invasive Species Committee -  
Kaho'olawe Island Reserve Commission

Mahalo for Keeping Kaho'olawe IAS free - E Maka'ala Kākou!

---

KIR Biosecurity Plan

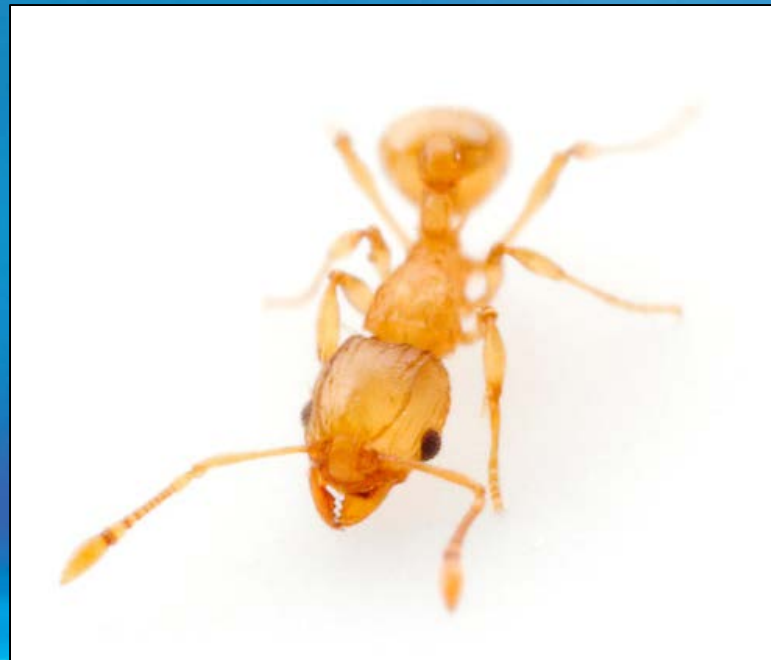
## 2. Educate

- **Educate** the public, as a key component to a successful Biosecurity Plan.
- Linked directly with **Prevention**.
- The main message is that IAS are detrimental to native ecosystems, and **Prevention** is the most cost effective and efficient approach to control them.



# 3. Early Detection

- Perform “real time” monitoring as a crucial method for **Early Detection** of an IAS in transit or at a vector location.



Little Fire Ant (*Wasmannia auropunctata*)



# 4. Quarantine

- **Quarantine** the IAS according to specific protocols in the most efficient and expedient manner to mitigate the potential introduction.
- Use IAS Rapid Response Kit – Jars/Vials
- Take Pictures of IAS



Glass jar and vials in IAS Rapid Response Kit

# 5. Eradicate

- **Eradicate** the IAS immediately on site.
- Use insecticides in IAS Rapid Response Kit.

**Summary - These 5 objectives will be used to achieve the Biosecurity Goal;**

**1. Prevention**

**2. Early Detection**

**3. Quarantine**

**4. Eradication**

**5. Education**



# Biosecurity Information Page

## KIR BIOSECURITY – E MAKA`ALA KĀKOU

### Before Going to Kaho`olawe:

- Have you inspected your shoes and clothes for seeds and soil?
- Report any Invasive Alien Species (IAS) you find to KIRC Staff for Quarantine - Animals, Insects, Weeds.
- All dive gear must be clean of algae and dipped in 10% Bleach solution.



Animals  
(rodents, lizards) (esp. ants)



Insects



Weeds, Seeds  
and Soil

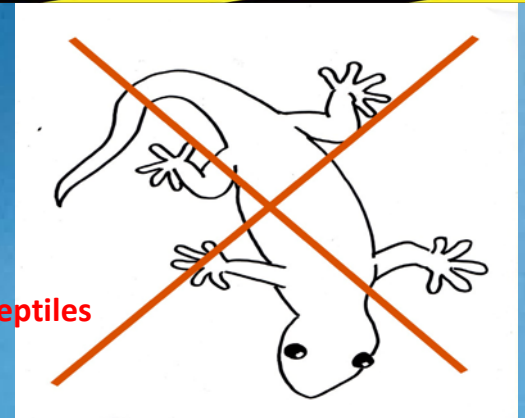
**GOAL** - To Prevent Invasive Alien Species (IAS)  
from Entering the Kaho`olawe Island Reserve (KIR).

- PREVENTION
- EARLY DETECTION
- QUARANTINE
- ERADICATION
- EDUCATION



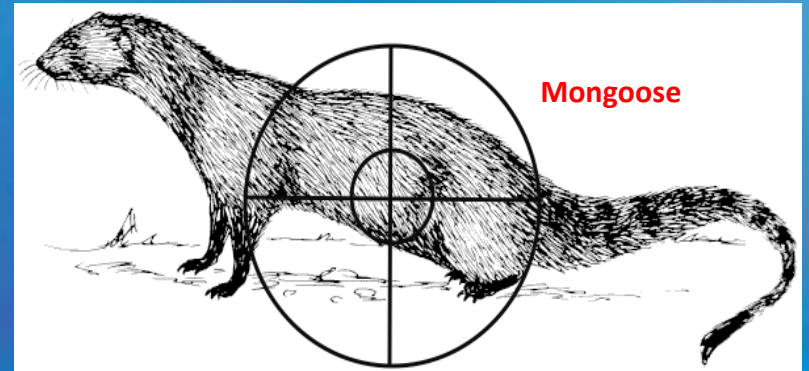
- Hawaii Invasive Species Council -  
Kaho`olawe Island Reserve Commission





# Bio Security Area

Keep this area clear of all invasive species, inspect your gear



Caution: all seeds & all plant materials

# Kihei Nursery

## Kihei Nursery Protocols:




1. No **SOIL!!!**/Please Do Not take Quarantined plants into Nursery area.
2. Rodent/Pest Control
3. Ant Bait Stations
4. Pesticide Restricted Entry Interval (REI) 12/24/48 hours

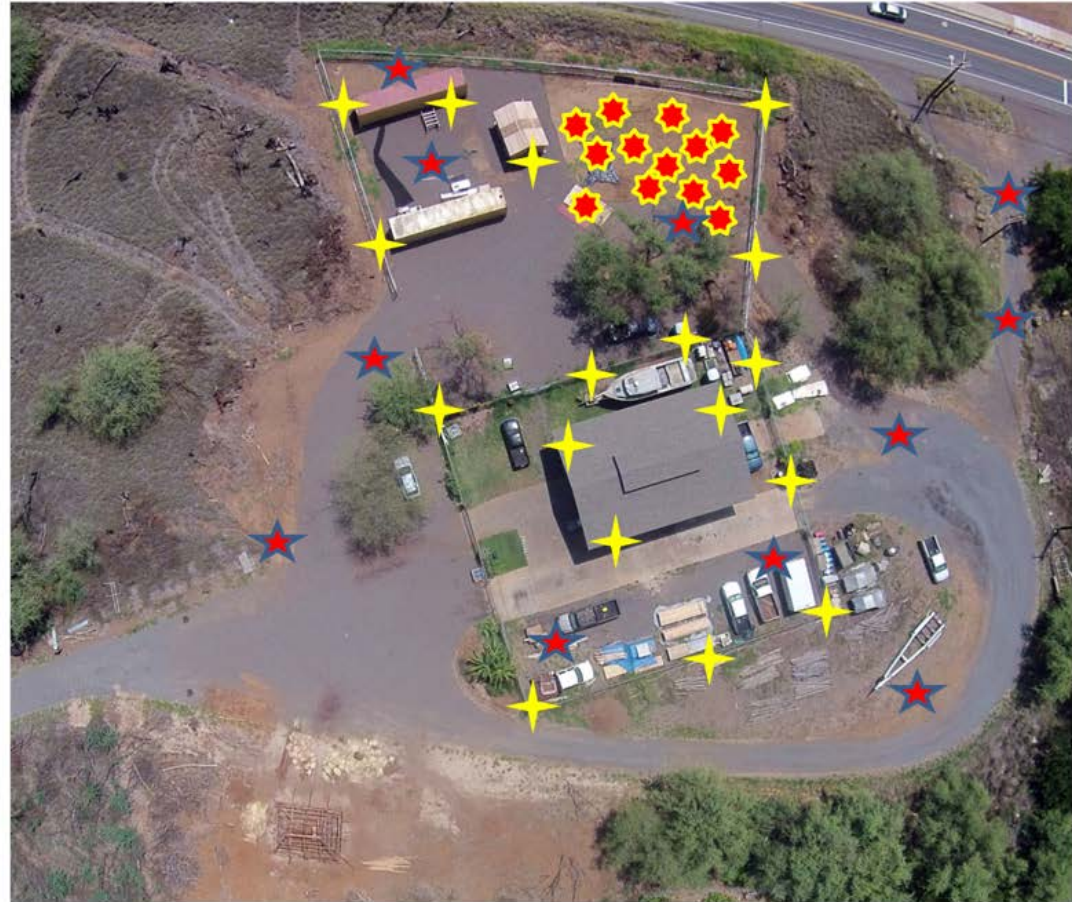




# Boathouse Rodent/Pest Control

Invasive Alien Species (IAS) Control at Kihei Boat House, October 2015 - June 2016

-  Rodent Bait Station
-  Puncture Vine  
(*Tribulus terrestris*)
-  Khaki Weed  
(*Alternanthera pungens*)





# Help Keep Kaho'olawe Khaki Free



Painful burs form mats



Check tires and footwear



Bag up the whole plant



Dig out the whole root

## Did You Know:

- Kaho'olawe and Ni'ihau are the only Main Hawaiian islands without an established population of Khaki Weed (*Alternanthera pungens*)?

- Also known as “**pokey weed**”, most people notice this invasive species when stepping on the sharp-toothed burs barefoot. Seeds are dispersed by footwear, clothing, vehicle tires, and animals.

- **Control can be achieved by digging up whole plant the with pick or shovel. Make sure the whole taproot is dug out with seeds bagged up for disposal. Clean seeds from gloves and tools into trash bags.**

- **Check and Clean** footwear, field gear and automobile tires before coming to the Kihei boathouse or Kaho'olawe. Help keep Kaho'olawe a khaki free island.

**Mahalo for your Kōkua!**

# Boathouse Ant Bait Stations



Surveys January, June, September 2016





## Ant surveys on Molokini

57 ant species in Hawai'i

Zero native ant species





**Big Headed Ants on Petrel chick**





Fire Ant Stings

# Boathouse/ Kaho`olawe Ant List

	Kihei Boat House - June 15, 2016	Present on Kaho`olawe		
	Taxa	Yes	No	RISK (PIA)
1	<i>Anoplolepis gracilipes</i>	X		Medium
2	<i>Brachymyrmex obscurior</i>		X	NA
3	<i>Cardiocondyla obscurior</i>		X	Low
4	<i>Camponotus variegatus</i> <sup>1</sup>	X		TBD
5	<i>Monomorium bicolor (destructor)</i>	X		Medium
6	<i>Ochetellus glaber</i>	X		Low
7	<i>Paratrechina longicornis</i>	X		High
8	<i>Tetramorium simillimum</i>	X		Medium

Source: Starr Environmental January, 2016/ KIRC June, 2016

<sup>1</sup>*Camponotus variegatus* observed at Boathouse April, 2016.

# Quarantined Plants

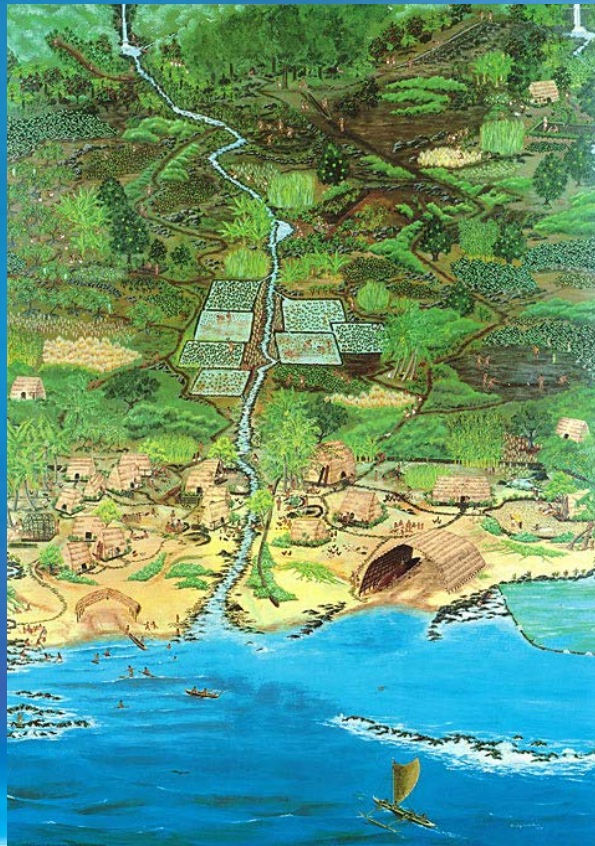


Banana Stump - No Soil!!!



# Biosecurity

- Land Based – Plants and invertebrates
- Ocean Based – Invasive Limu



Mauka to makai Ahupua`a poster



# Ocean Based Biosecurity

- Clean masks, snorkels, fins, tabi's (10%Clorox Bleach)



# Ocean Based Biosecurity

Permitted Trolling Form (Item #7).

## 7. Prevention of Invasive Alien Species (IAS).

The permittee will be held accountable to prevent any invasive alien species, plant or animal (i.e. Invasive algae, barnacles, etc.), into the Reserve in regard to the marine environment. Vessel hulls will be free of any IAS.

7. Prevention of Invasive Alien Species (IAS). The permittee will be held accountable to prevent any invasive alien species, plant or animal (ie. invasive algae, barnacles, etc.), into the Reserve in regard to the marine environment. Vessel hulls will be free of any IAS.

# Pressure Washing Hull/DAR Sign



## Please Kokua



### STOP AQUATIC HITCHHIKERS!™

Prevent the transport of nuisance species.  
Clean all recreational equipment.

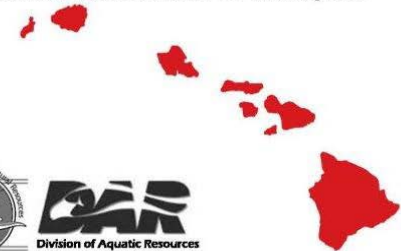
[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

### Help Protect Hawaiian Waters From Invasive Alien Species:

Clean your boat and equipment before you leave  
this harbor

Never release plants or animals from an aquarium  
or from another location

Native Limu MoBettah! Don't culture or transport  
alien algae



**DOBOR**  
Division of Boating and Ocean Recreation



**DAR**  
Division of Aquatic Resources

NOAA Vessel Koholā





# Mahalo! E Maka'ala Kākou!



Kaho'olawe Island Reserve Commission  
Hawai'i Invasive Species Council

