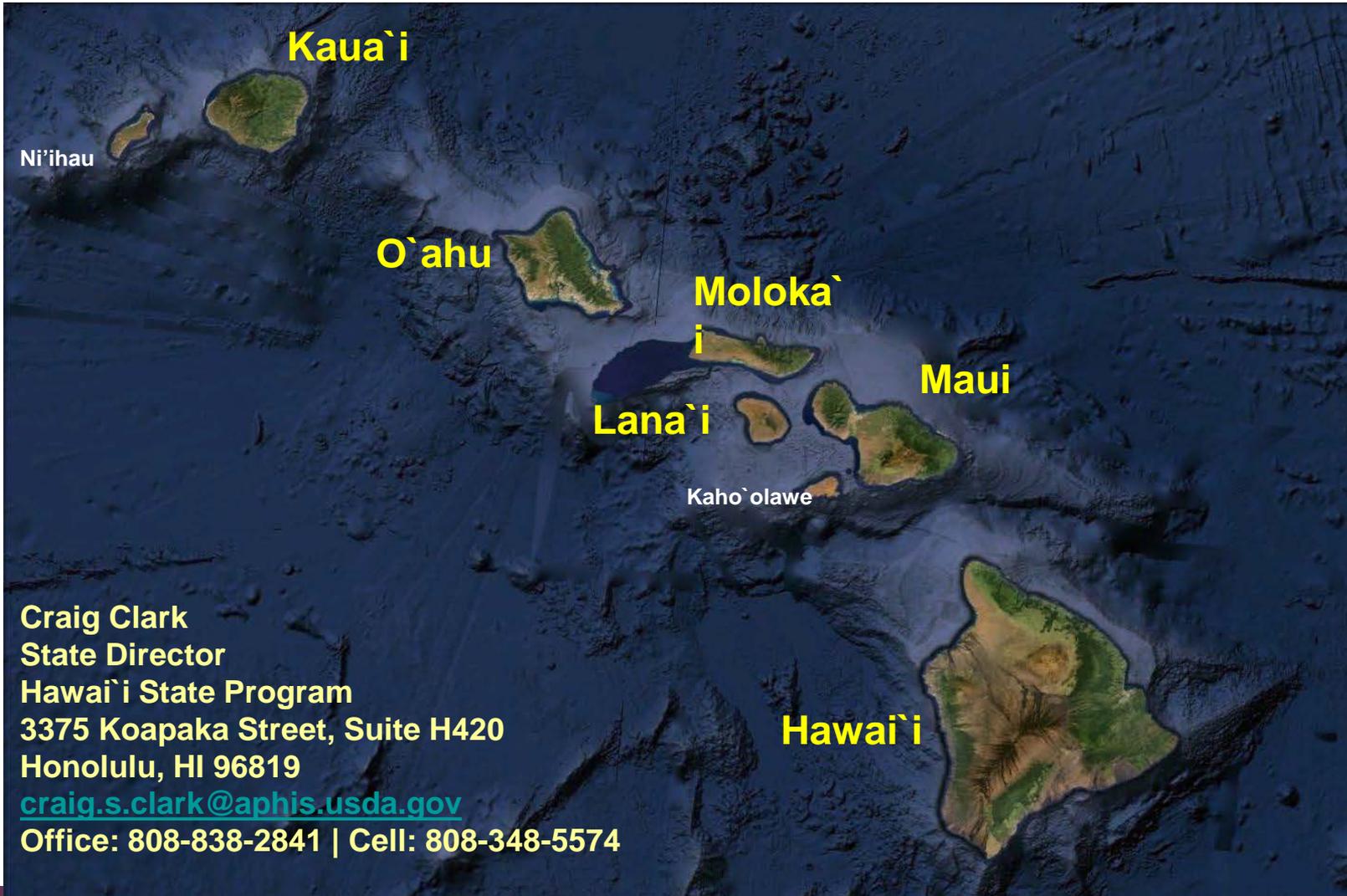


Bird Strike Conference 22-24 August 2017

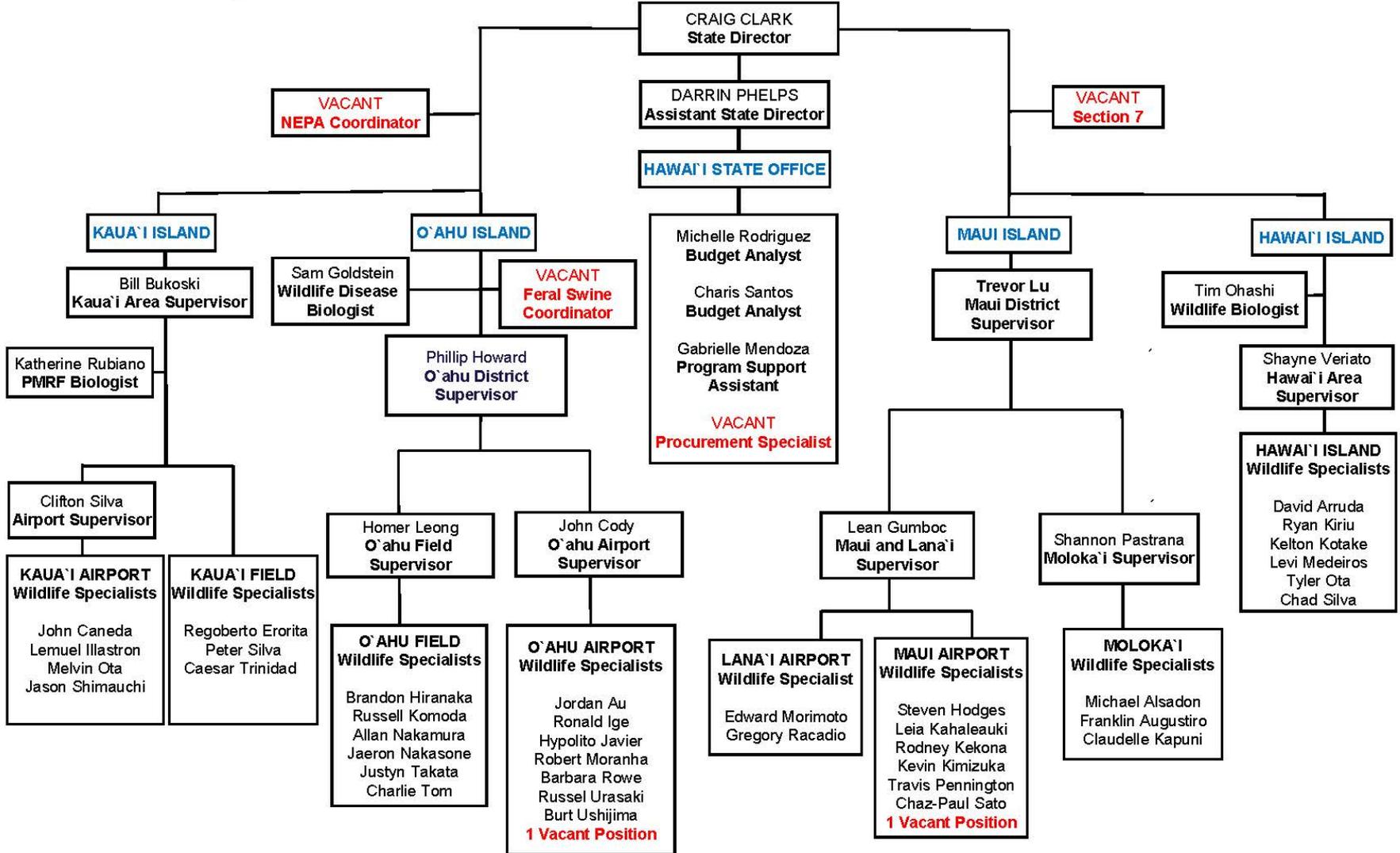


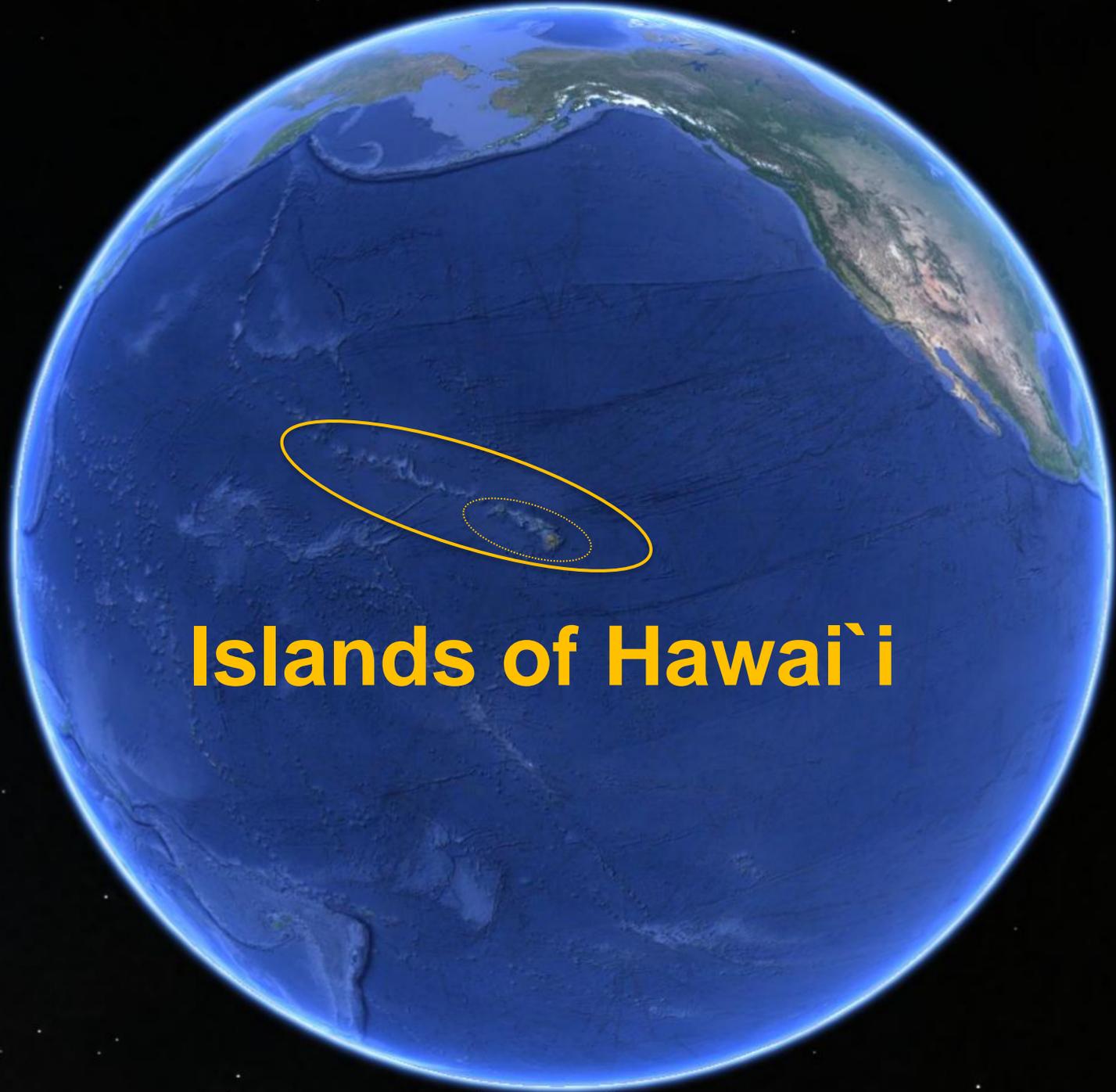
Outline

- ❖ **Wildlife Services at Hawai`i Airports**
- ❖ **Wildlife Strikes, Database, and Reporting**
- ❖ **Wildlife Hazardous Species**
- ❖ **Wildlife Hazard Management: Applications, and
Techniques**
- ❖ **Specific Airport Examples**



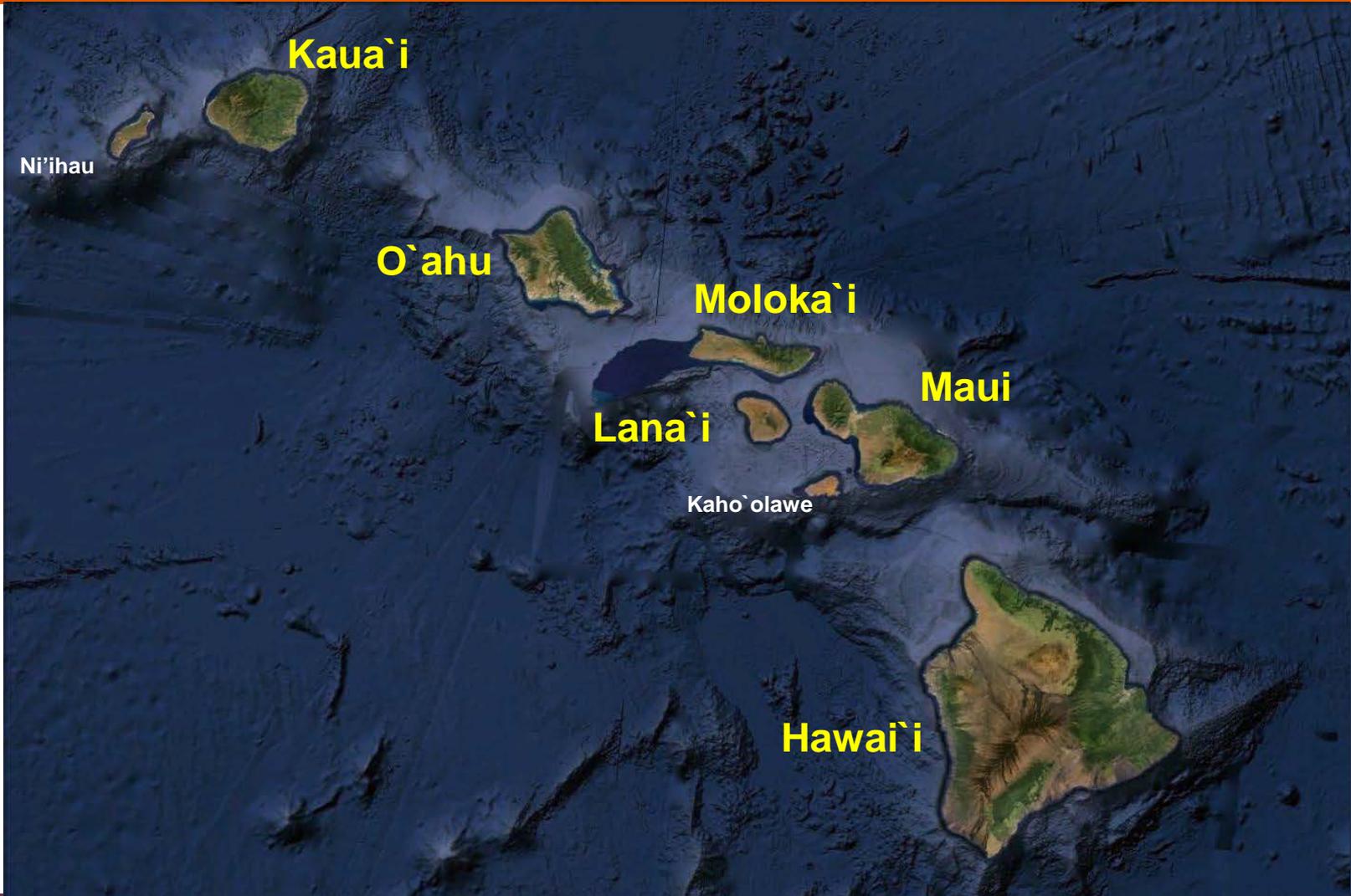
WILDLIFE SERVICES HAWAII STATE ORGANIZATIONAL STRUCTURE





Islands of Hawai`i

Hawai`i Islands



Hawai`i Military Airfields (N=4)

Pacific Missile Range Facility
(PMRF)

KAUA`I

O`AHU

Kaneohe Marine Corps Base

Wheeler Army Airfield

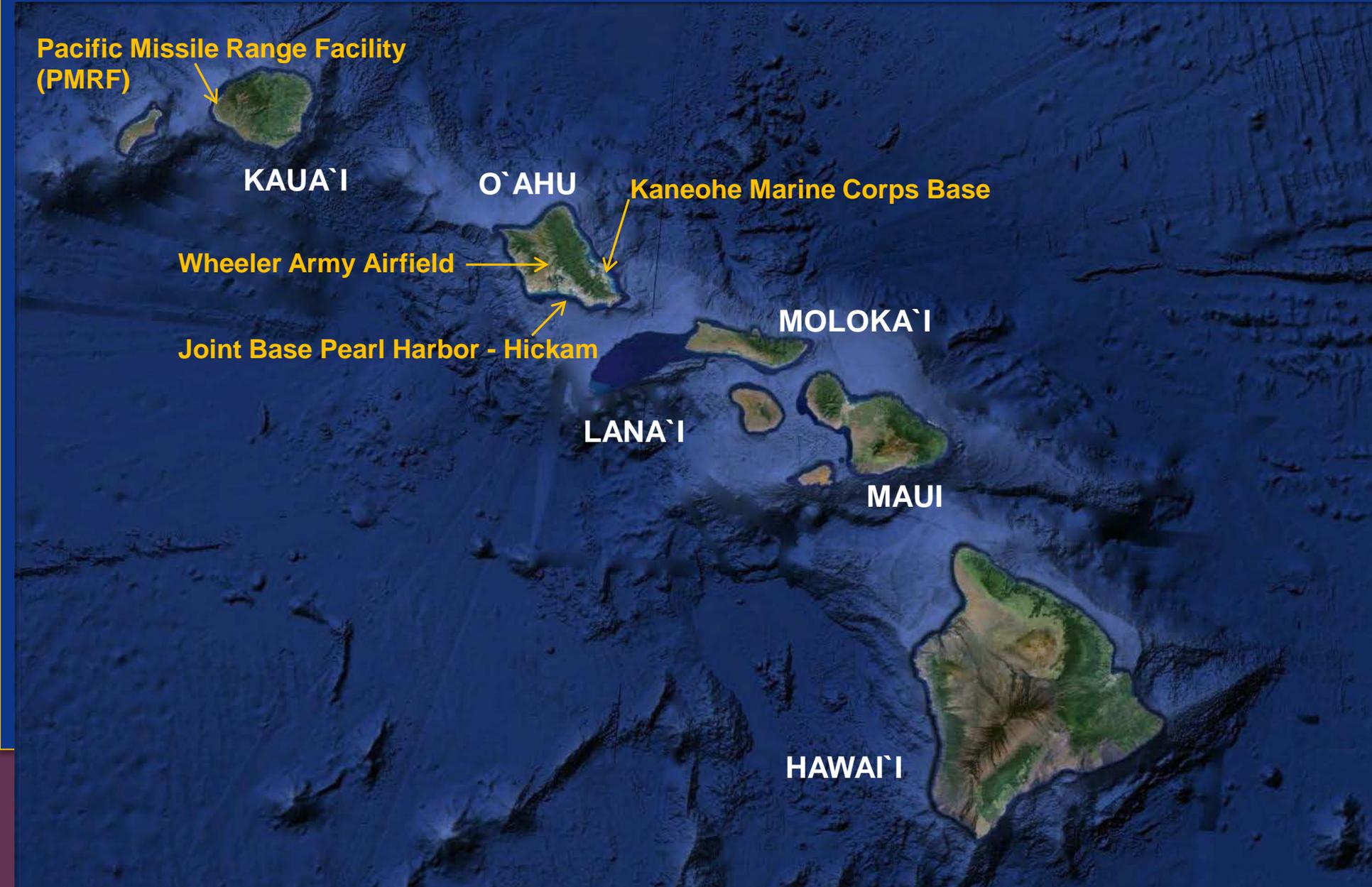
Joint Base Pearl Harbor - Hickam

MOLOKA`I

LANA`I

MAUI

HAWAI`I



Hawai`i Military Airfields (N=4)

Kaua`i



Wheeler Army Air Field

Kaneohe Marine Corps Base



O`ahu



Joint Base Pearl Harbor-Hickam

Pacific Missile Range Facility - PMRF

WS Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

Hawai`i General Aviation Airports (N=7)

Port Allen

KAUA`I

O`AHU

Dillingham

Kalaeloa

Kalaupapa

MOLOKA`I

LANA`I

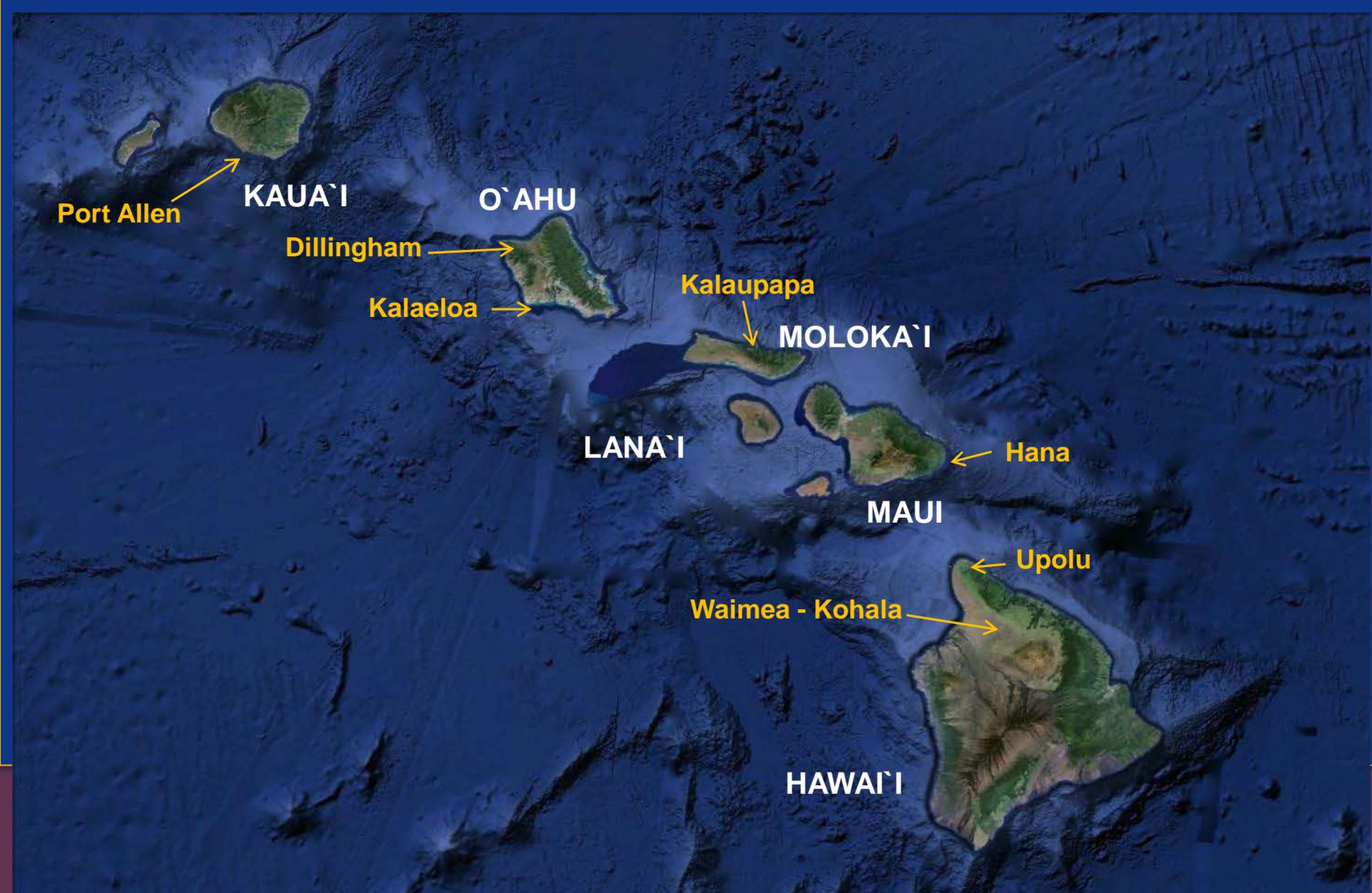
Hana

MAUI

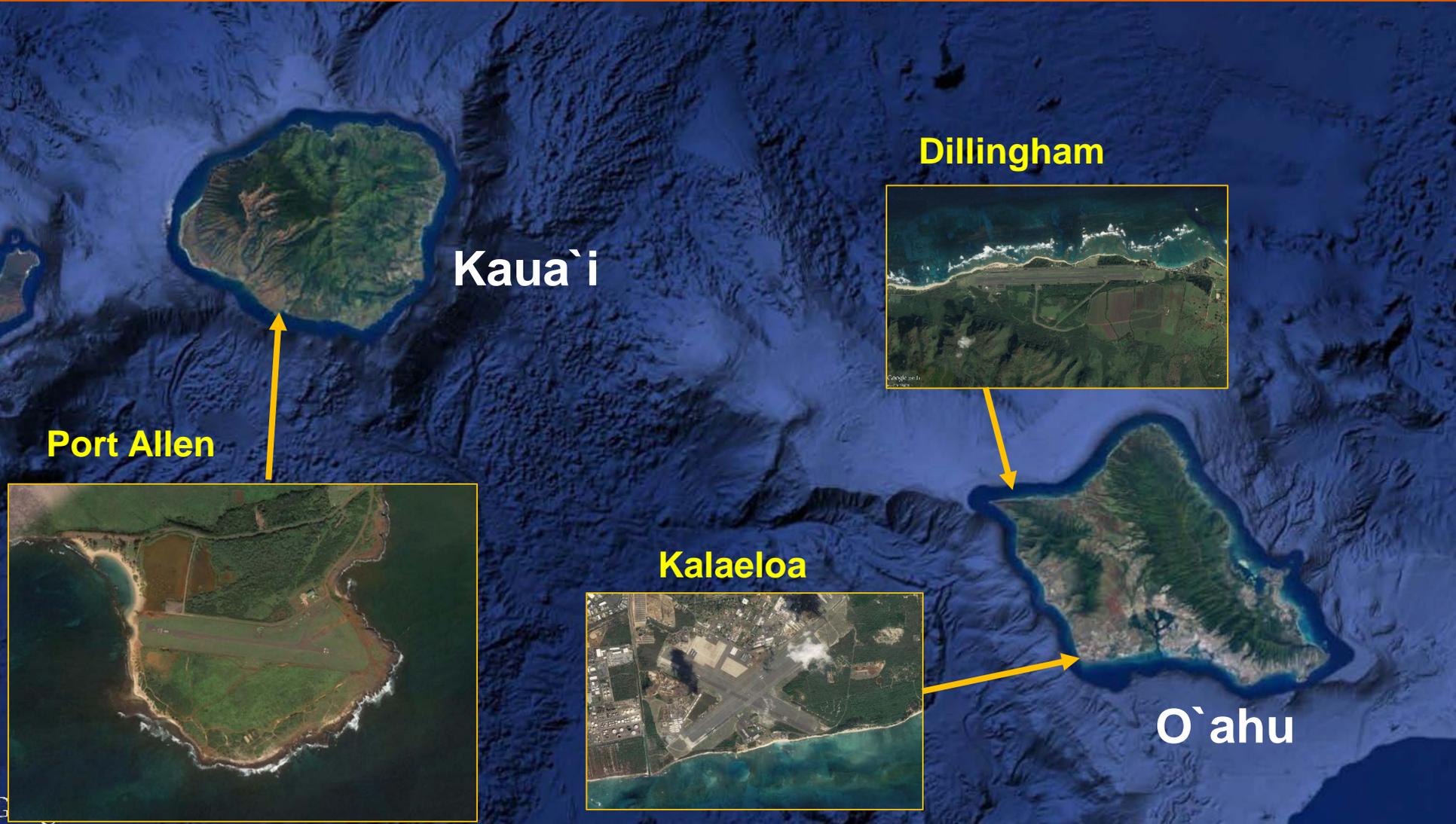
Upolu

Waimea - Kohala

HAWAII`I



Hawai`i General Aviation Airports (N=3)



Hawai`i General Aviation Airports (N=4)

Moloka`i

Kalaupapa

Maui

Hawai`i

Hana

Upolu

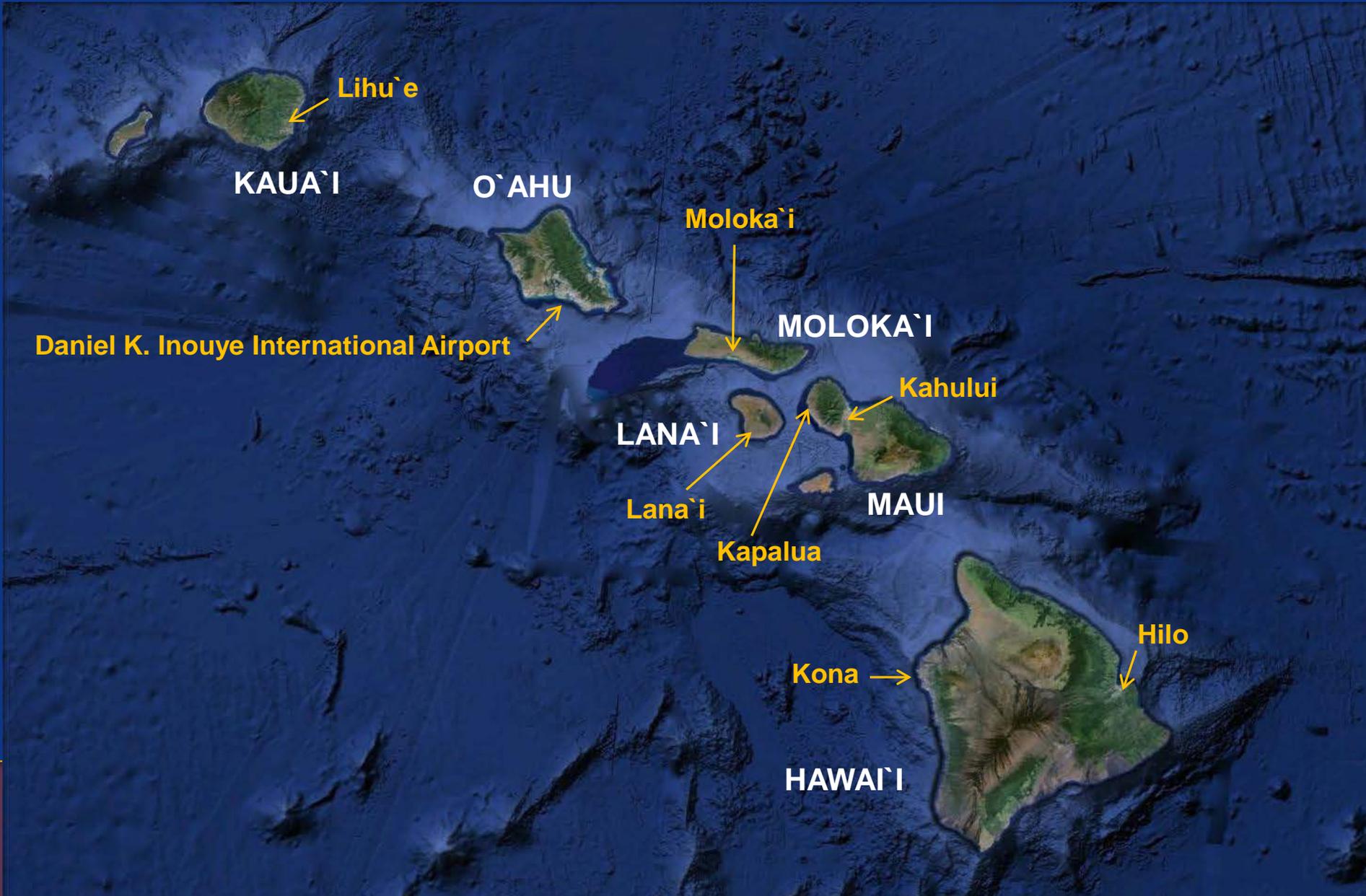
Waimea - Kohala



Kalaupapa Airport



Hawai`i FAA Part 139 Airports (N=8)



Lihu'e

KAUA'I

O'AHU

Moloka'i

MOLOKA'I

Daniel K. Inouye International Airport

Kahului

LANA'I

MAUI

Lana'i

Kapalua

Hilo

Kona

HAWAII

Hawai`i FAA Part 139 Airports (N=2)



Kaua`i



Lihue



O`ahu



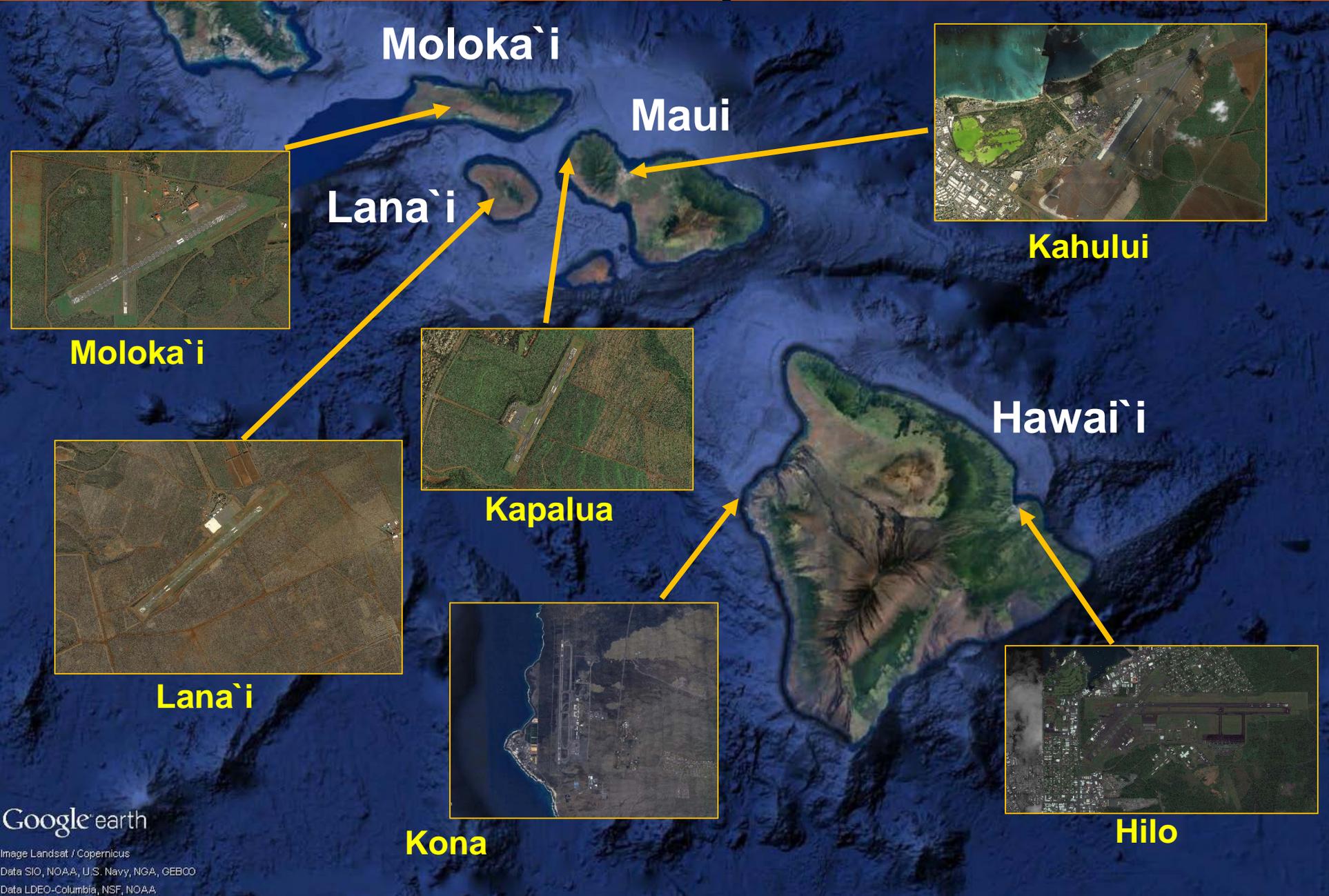
Daniel K. Inouye International

Google earth

WS Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

Hawai`i FAA Part 139 Airports (N=6)



Hawai`i Airports (N=19) (Mil=4, GA=7, 139=8)

Pacific Missile Range Facility

Lihu`e

KAUA`I (3)

Port Allen

O`AHU (6)

Kaneohe Marine Corps Base

Dillingham

Wheeler Army Airfield

Kalaeloa

Kalaupapa

MOLOKA`I (2)

Daniel K. Inouye International Airport/Hickam

Moloka`i

Kahului

LANA`I (1)

Lana`i

Kapalua

MAUI (3)

Hana

Lana`i

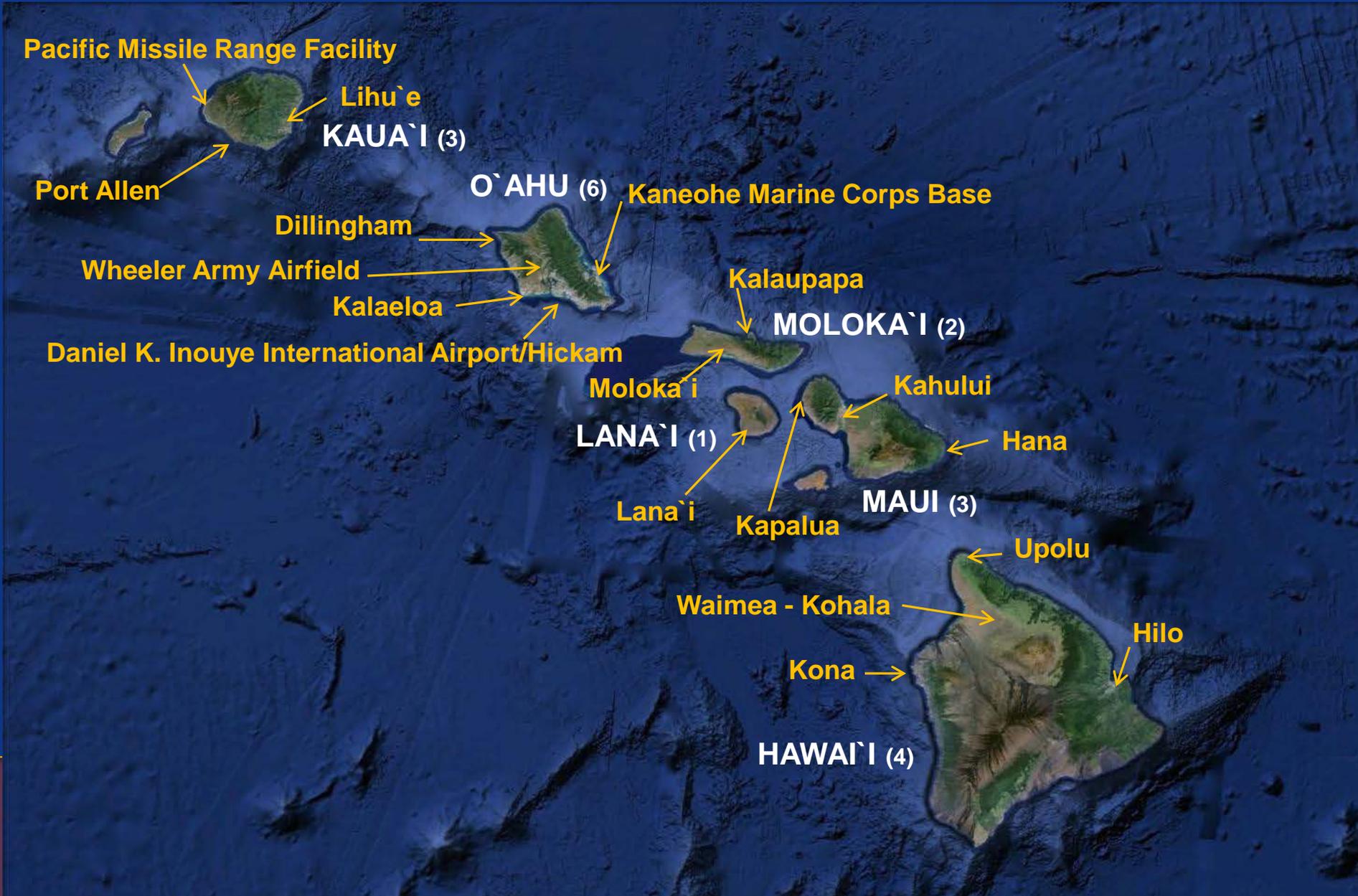
Upolu

Waimea - Kohala

Kona

Hilo

HAWAI`I (4)



Species of Concern

❖ Migratory

- ❖ Pacific Golden Plovers
- ❖ Ruddy Turnstones
- ❖ Cattle Egrets
- ❖ Shore Birds
- ❖ Laysan Albatross



Species of Concern



❖ Passerines

❖ Non-native

- ❖ Zebra Doves
- ❖ Spotted Doves
- ❖ Common Mynas
- ❖ Red-crested Cardinals
- ❖ Mannikins
- ❖ Java Sparrows

Species of Concern

❖ Raptors

❖ Short-eared Owl (Pueo)



❖ Barn Owl (Non-native)

- ❖ Body mass
- ❖ Wildlife Strikes



Applications and Techniques

- ❖ Habitat Management
- ❖ Harassment (Hazing)
- ❖ Trapping
- ❖ Pyrotechnics
- ❖ Working Canines
- ❖ Wildlife Research (NWRC)
- ❖ Working with other agencies
- ❖ Lethal Control

Protected Species Are More Challenging...



Hawaiian Stilt



Hawaiian Duck



Hawaiian Gallinule



Hawaiian Coot



Laysan Albatross



Hawaiian Goose

Species of Concern

❖ Threatened and Endangered

❖ Hawaiian Goose (Nēnē)

❖ Hawaiian Duck (Koloa)

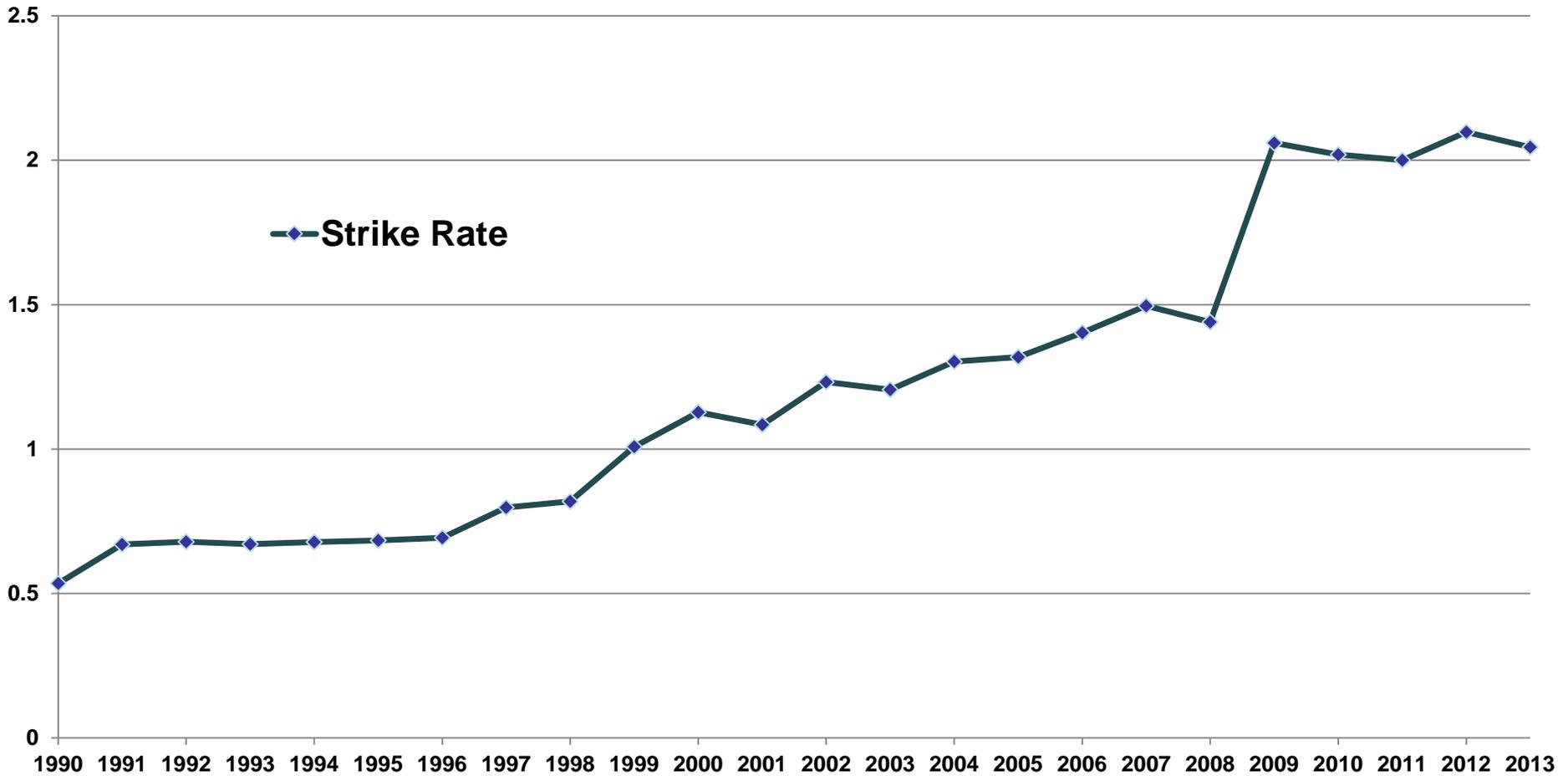
❖ Body mass

❖ Flocking behavior

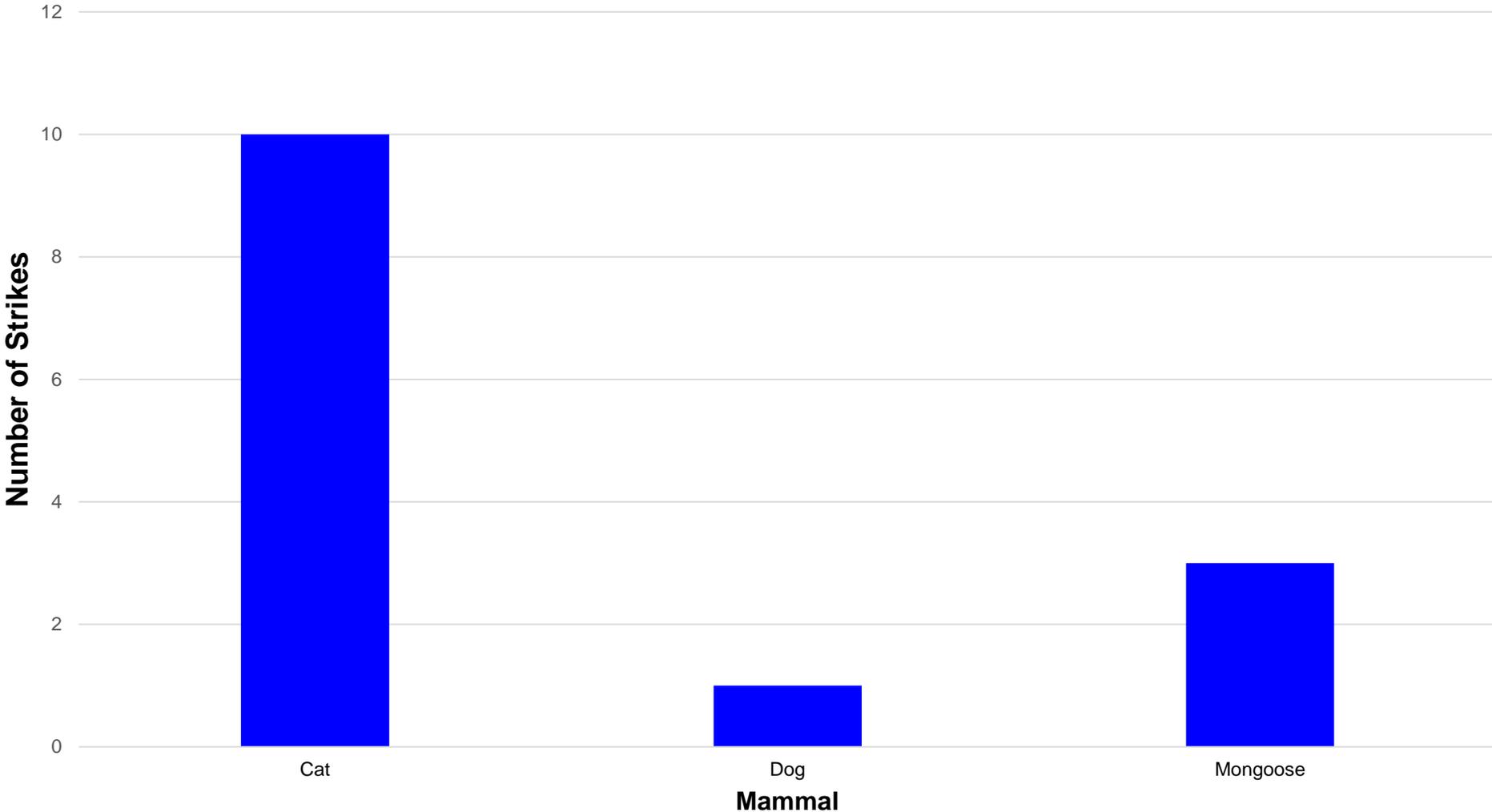
❖ Site fidelity



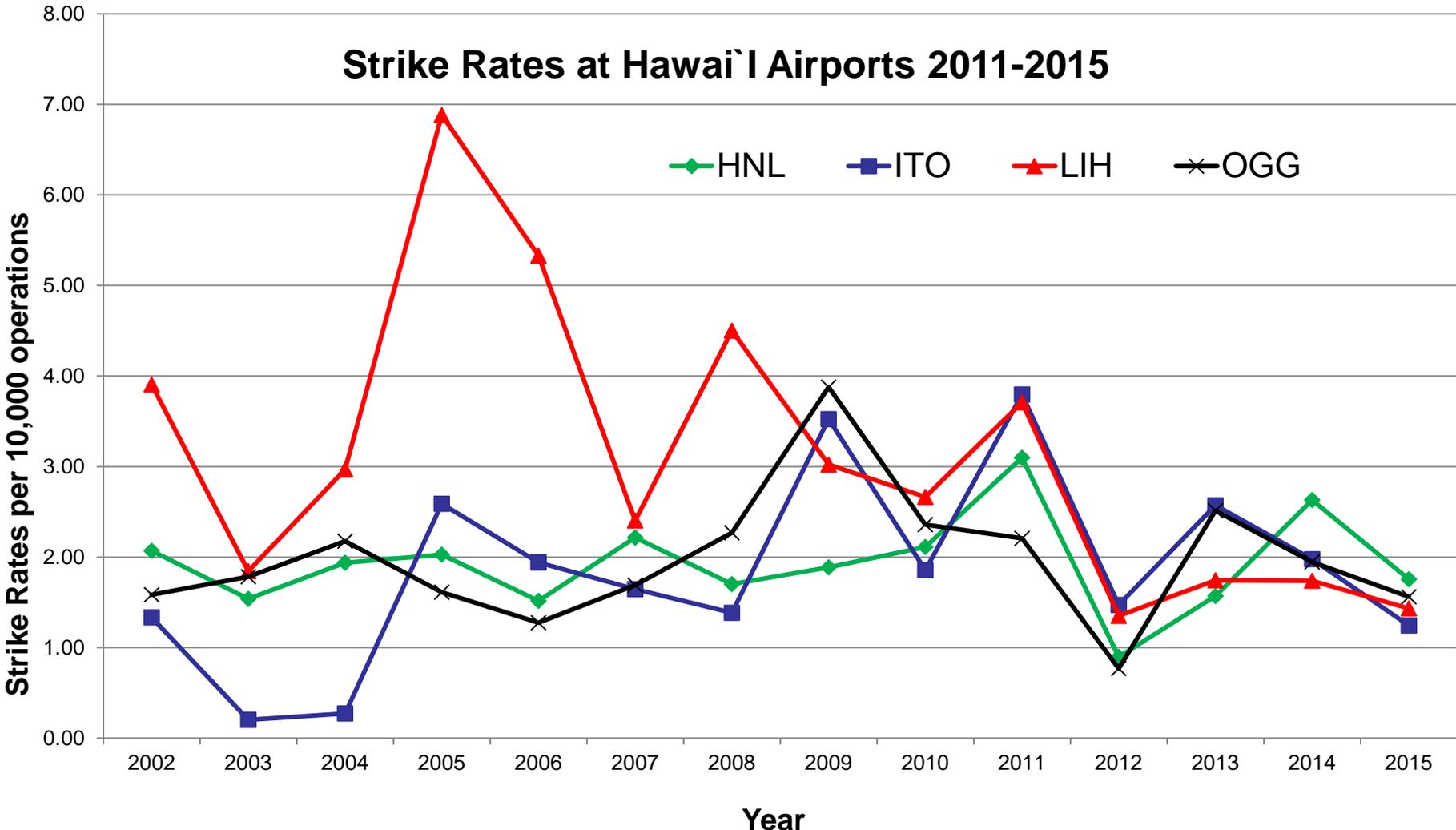
National Strike Rate (per 10,000 movements)



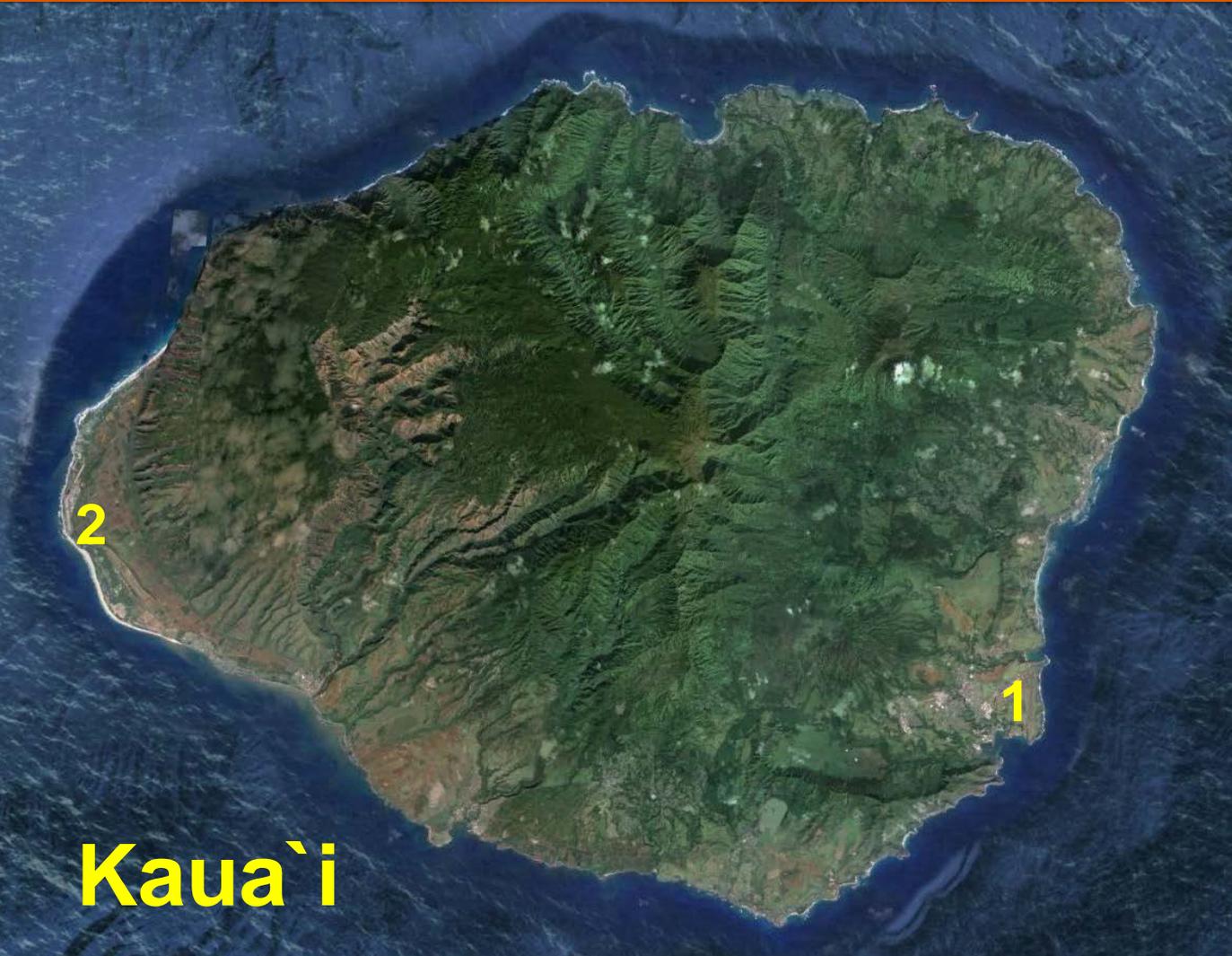
Number of Mammal Strikes in Hawai`i 1990-2016



Strike Rates at Hawai`i Airports (per 10,000 aircraft ops)



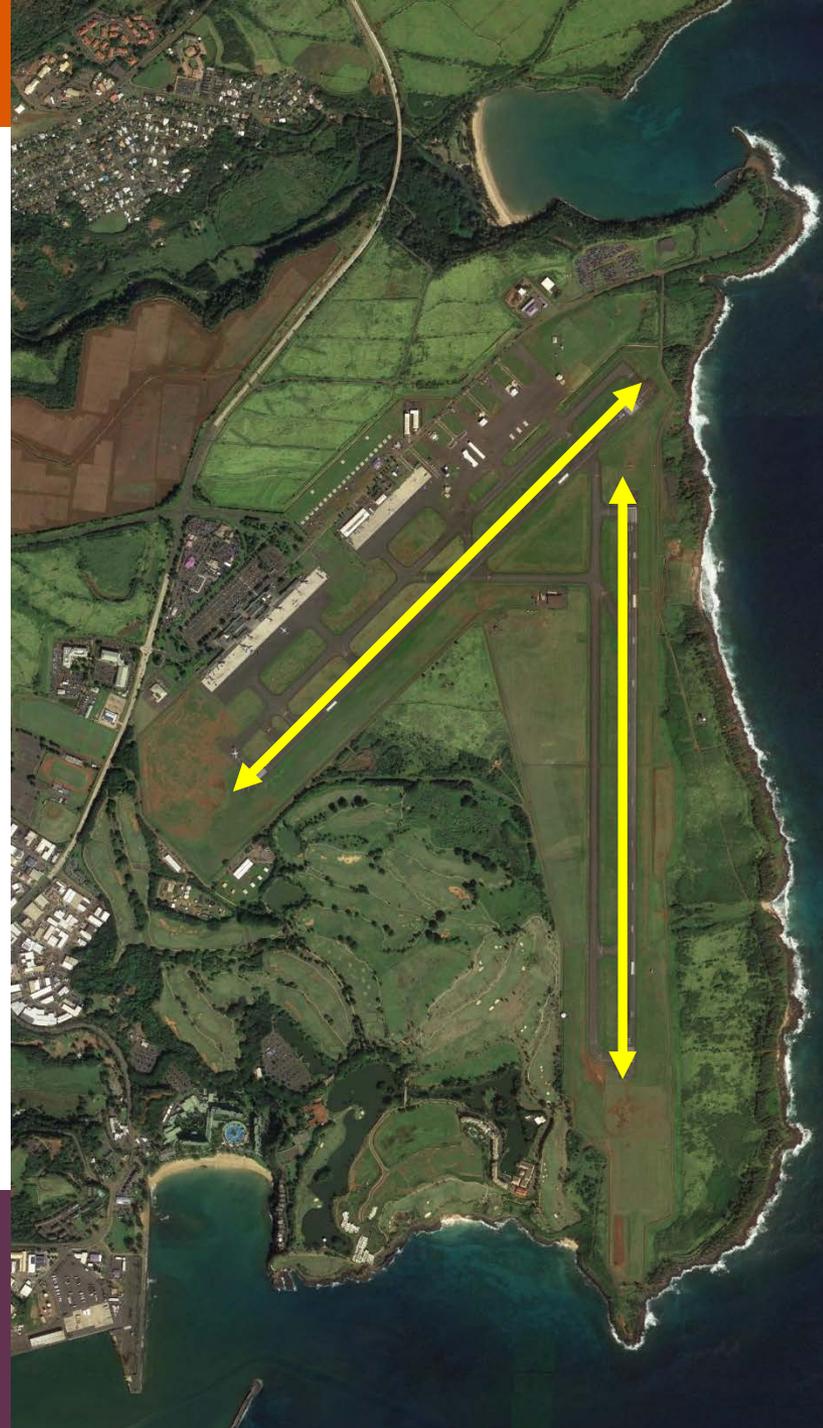
Kaua`i District



- 1) Lihu`e Airport (LIH)
- 2) Pacific Missile Range Facility (Barking Sands, PMRF)

Lihu'e Airport, Kaua'i

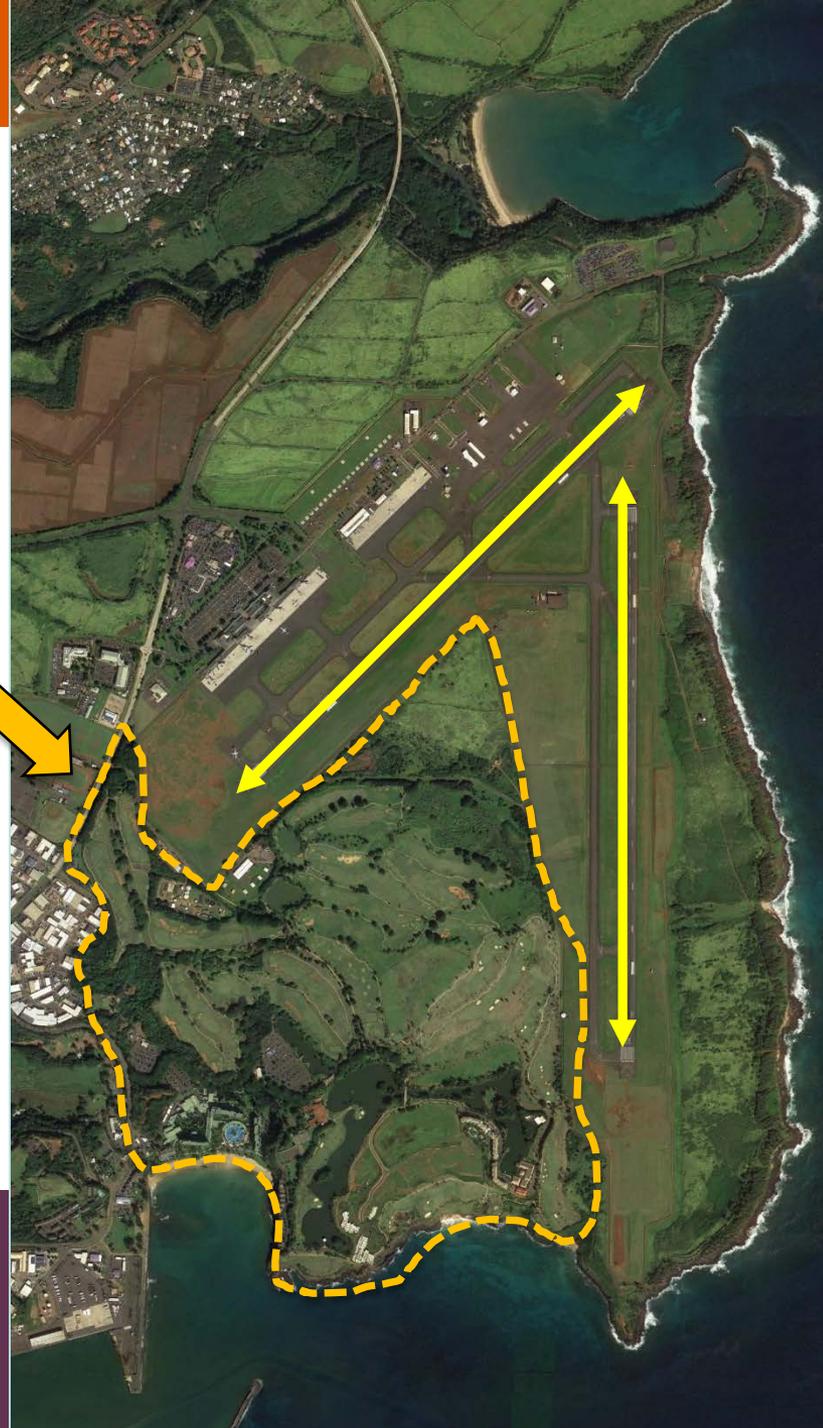
- ❖ 879 Acres
- ❖ 4 active runways and 12 taxiways
- ❖ 05:00 to 23:20 7 days a week
- ❖ 5 full time employees
 - ❖ 4 Wildlife Specialists
 - ❖ 1 Wildlife Airport Supervisor



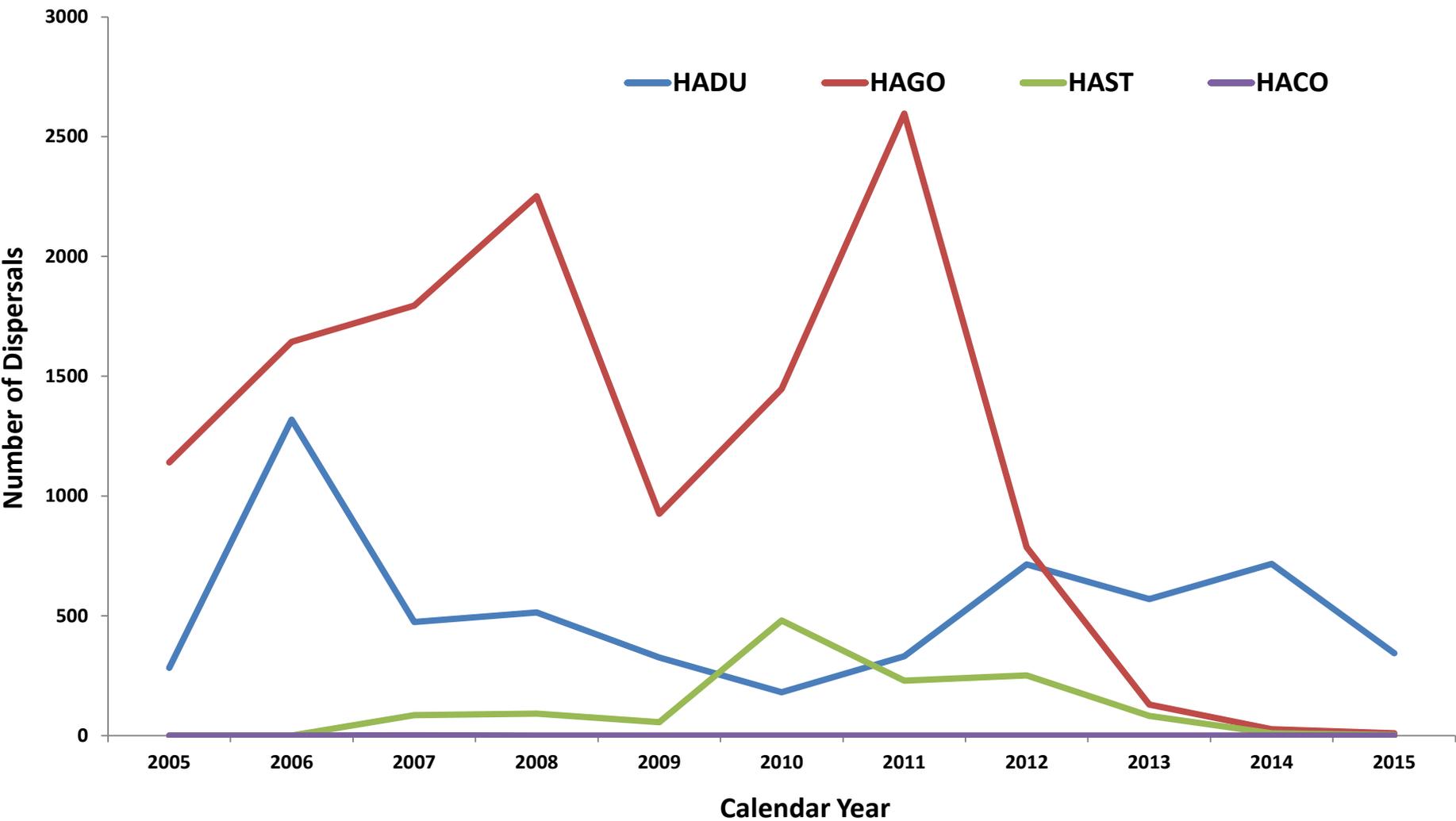
Lihu'e Airport, Kaua'i

Hōkūala Resort (Formerly Kaua'i Lagoons)

- ❖ 600 acres
- ❖ 18 Hole Golf Course
- ❖ Numerous residential units
- ❖ Hotel
- ❖ Restaurant
- ❖ Man-made navigable lagoons
- ❖ Plans for additional development



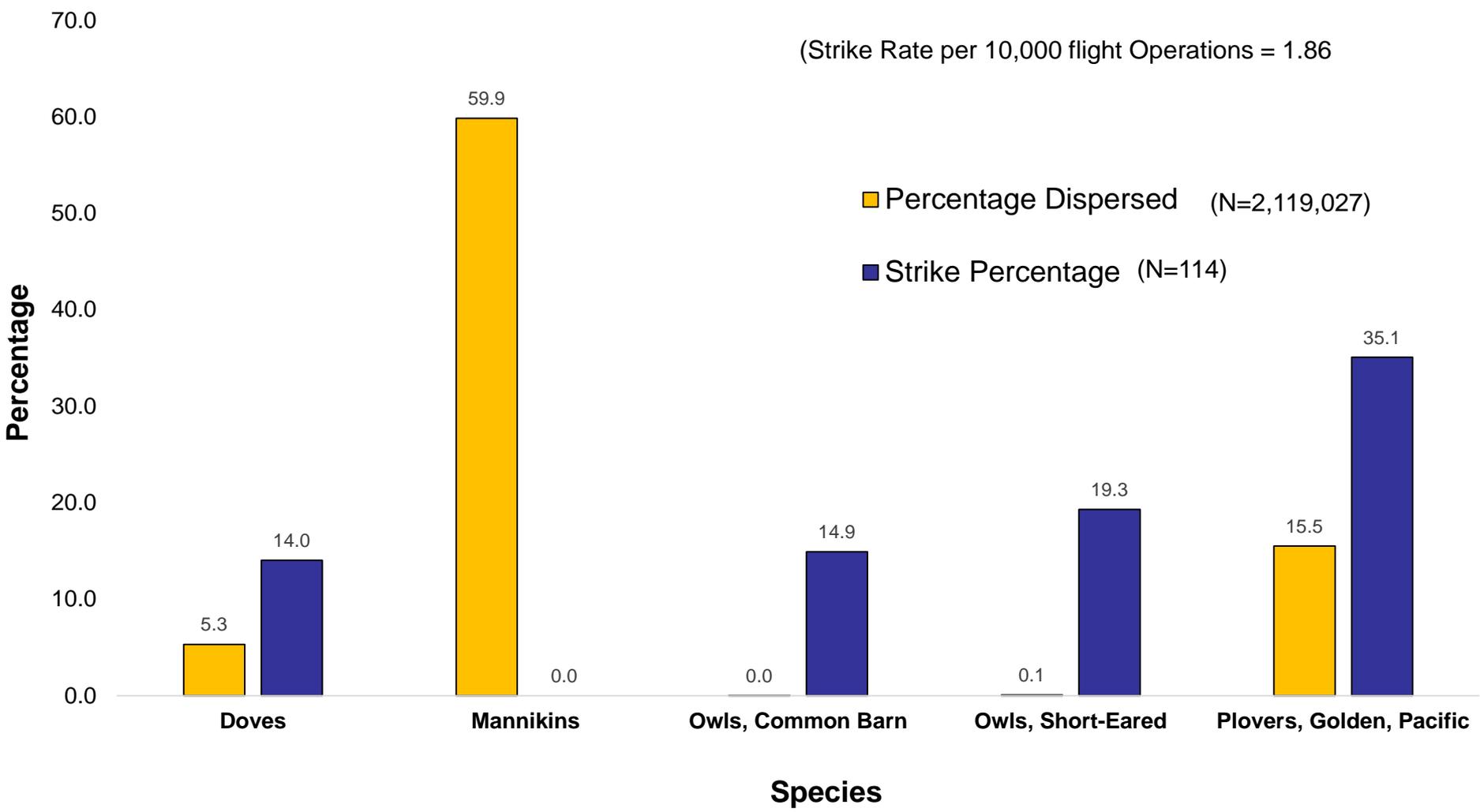
Bird Dispersal Events at Lihu'e (LIH)



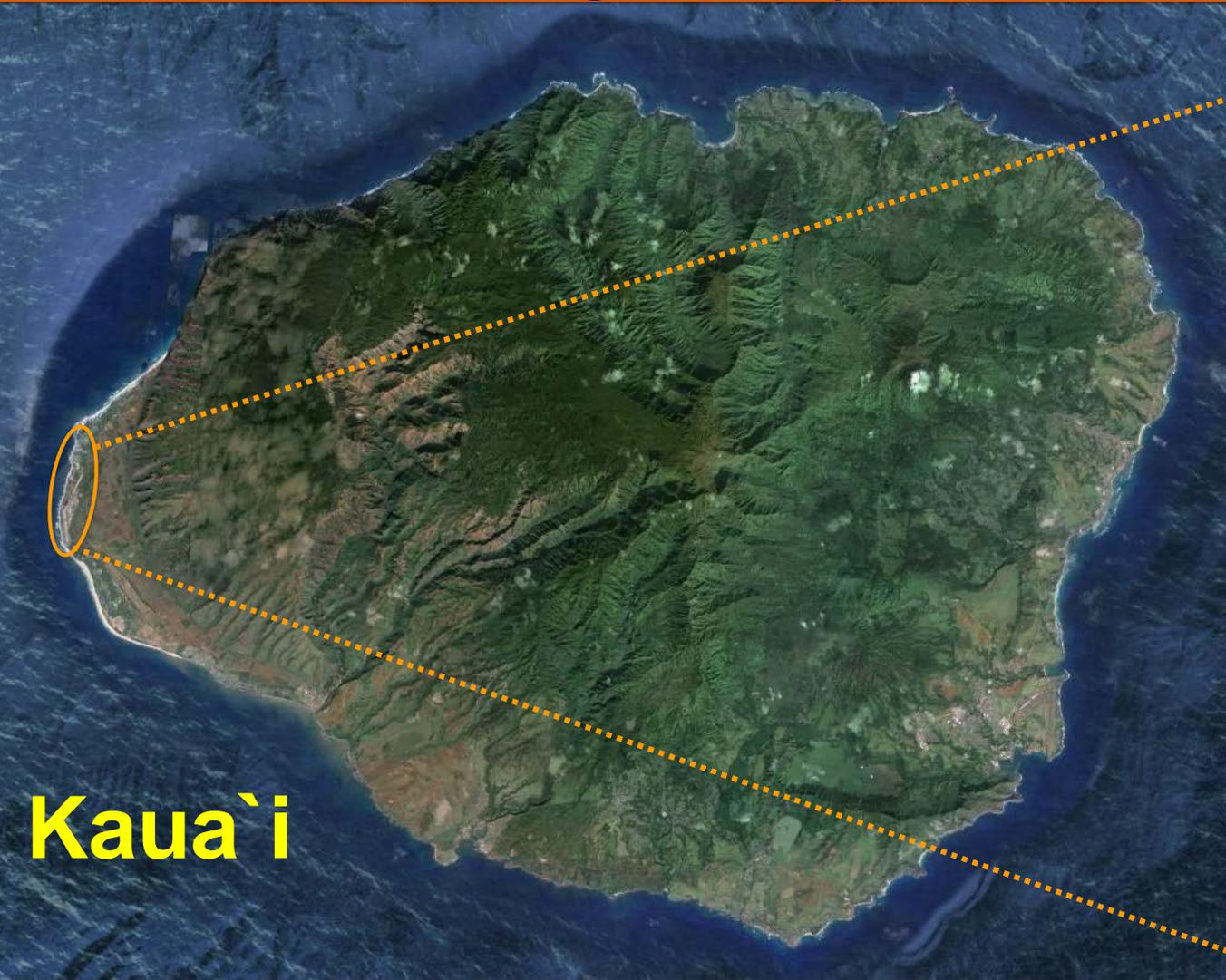
Protecting People
Protecting Agriculture
Protecting Wildlife

HADU = Hawaiian Duck
HAGO = Hawaiian Goose or Nēnē
HAST = Hawaiian Stilt
HACO = Hawaiian Coot

Percentage Dispersed and Strikes at Lihū`e (2011-2016)



Pacific Missile Range Facility – PMRF



Kaua`i



WS Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

Pacific Missile Range Facility

- ❖ 3,000 Acres
- ❖ 2 active runways and 3 taxiways
- ❖ 1 full time Wildlife Specialist
- ❖ 1 full time Wildlife Biologist
- ❖ 5 Days per week
- ❖ 0600 to 1800 hours



Concerns at PMRF

- ❖ Laysan Albatross
- ❖ Hawaiian Goose
- ❖ Game Birds
 - ❖ Ring-necked Pheasant
 - ❖ Black Francolin
 - ❖ Erckel's Francolin
- ❖ Passerines
 - ❖ Spotted Dove
 - ❖ Zebra Dove
- ❖ Ungulates
 - ❖ Feral swine
 - ❖ Black-tailed deer



O`ahu District



- 1) Daniel K. Inouye International Airport
- 2) Joint Base Pearl Harbor-Hickam
- 3) Kalaeloa Airfield
- 4) Dillingham Airfield
- 5) Wheeler Army Airfield
- 6) Marine Corps Air Station Kaneohe Bay

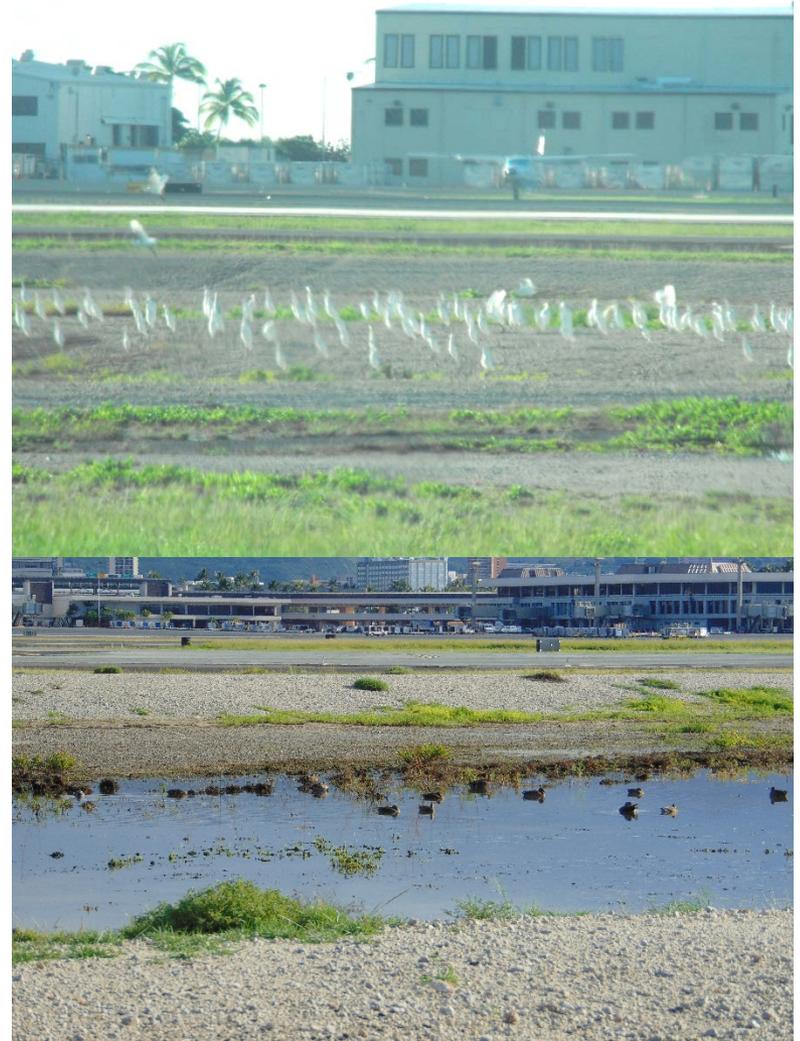


Daniel K. Inouye International Airport - HNL



Protecting People
Protecting Agriculture
Protecting Wildlife

Daniel K. Inouye International Airport - HNL



WS Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

21,000,000+ passengers per year (1/3 of DFW)

Daniel K. Inouye International Airport - HNL

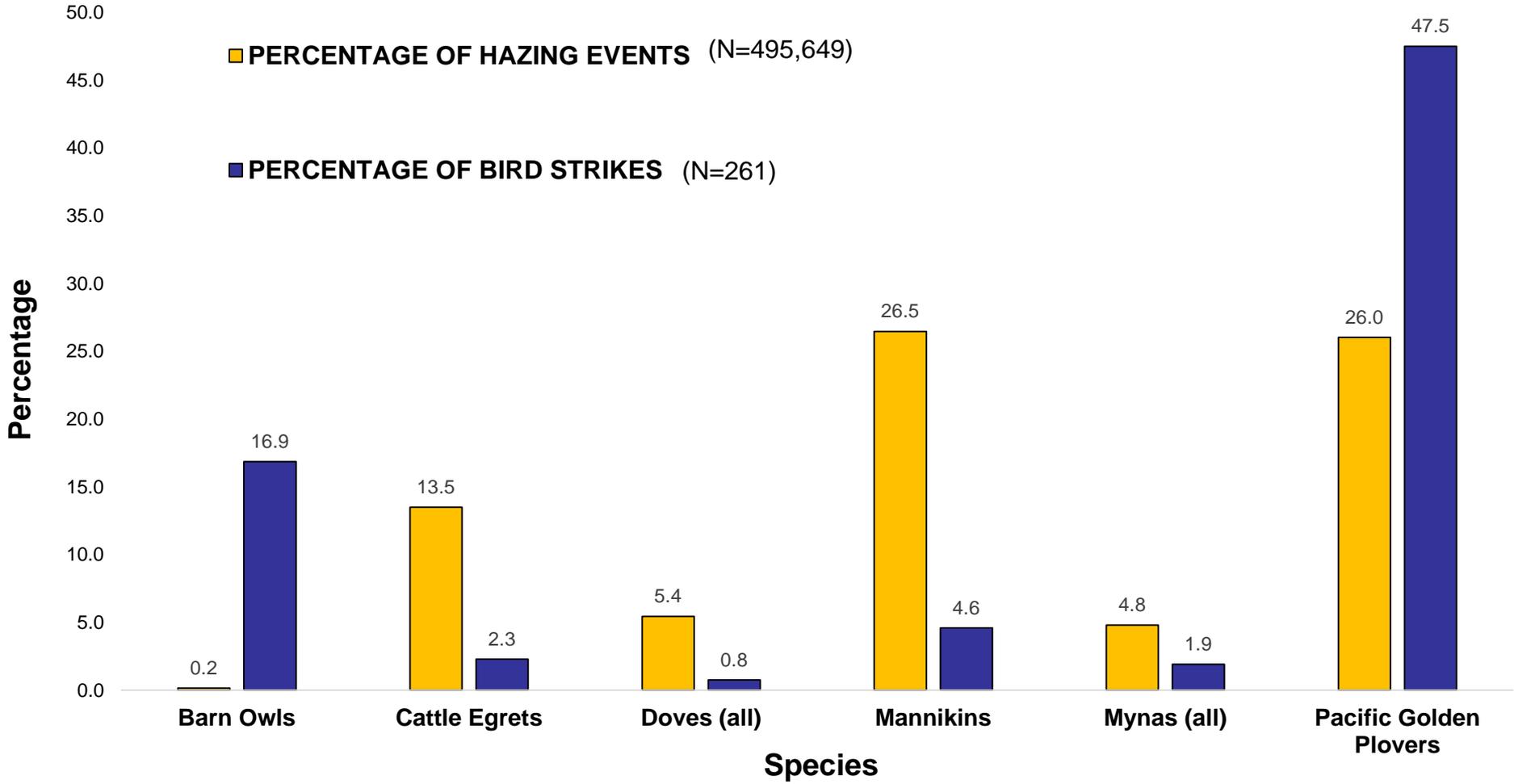


Ke`ehi Lagoon

- ❖ Cattle egrets N=650
- ❖ Homeless camp(s)

Percentage Dispersal and Strike Events at Daniel K Inouye International - HNL

(Strike Rate per 10,000 flight Operations = 1.75)



USFWS Control Order

DEPARTMENT OF THE INTERIOR Fish and Wildlife Service 50
CFR Part 21 [Docket No. FWS–HQ–MB–2013–0070;
FF09M21200–134–FXMB1231099BPP0] RIN 1018–AZ69

Migratory Bird Permits;

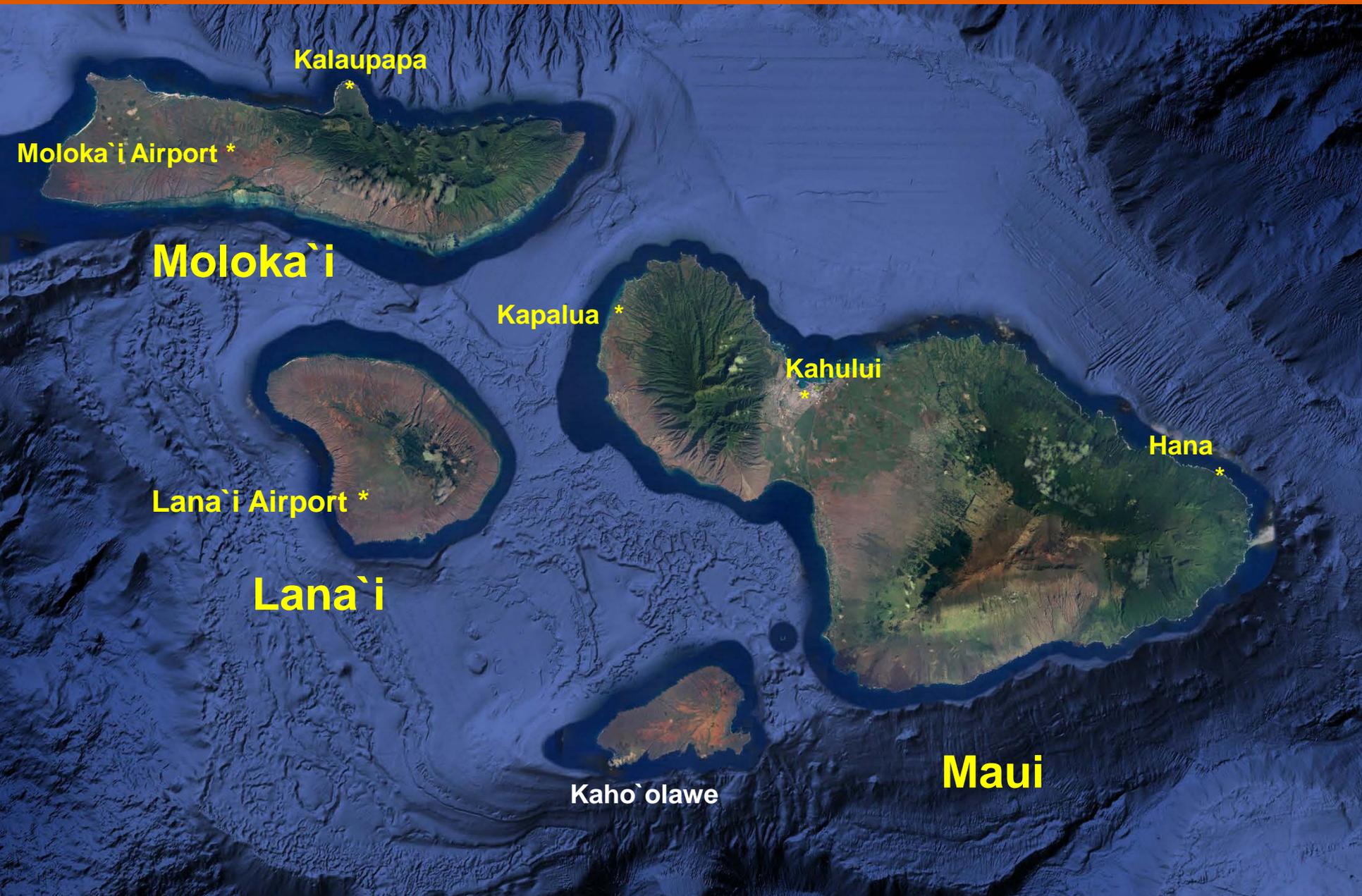
Control Order for Introduced Migratory Bird Species in Hawaii

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

- ❖ **Barn Owl**
- ❖ **Cattle Egret**
- ❖ **Effective 24 August 2017**

Maui District



Kalaupapa *

Moloka'i Airport *

Moloka'i

Kapalua *

Kahului

Hana *

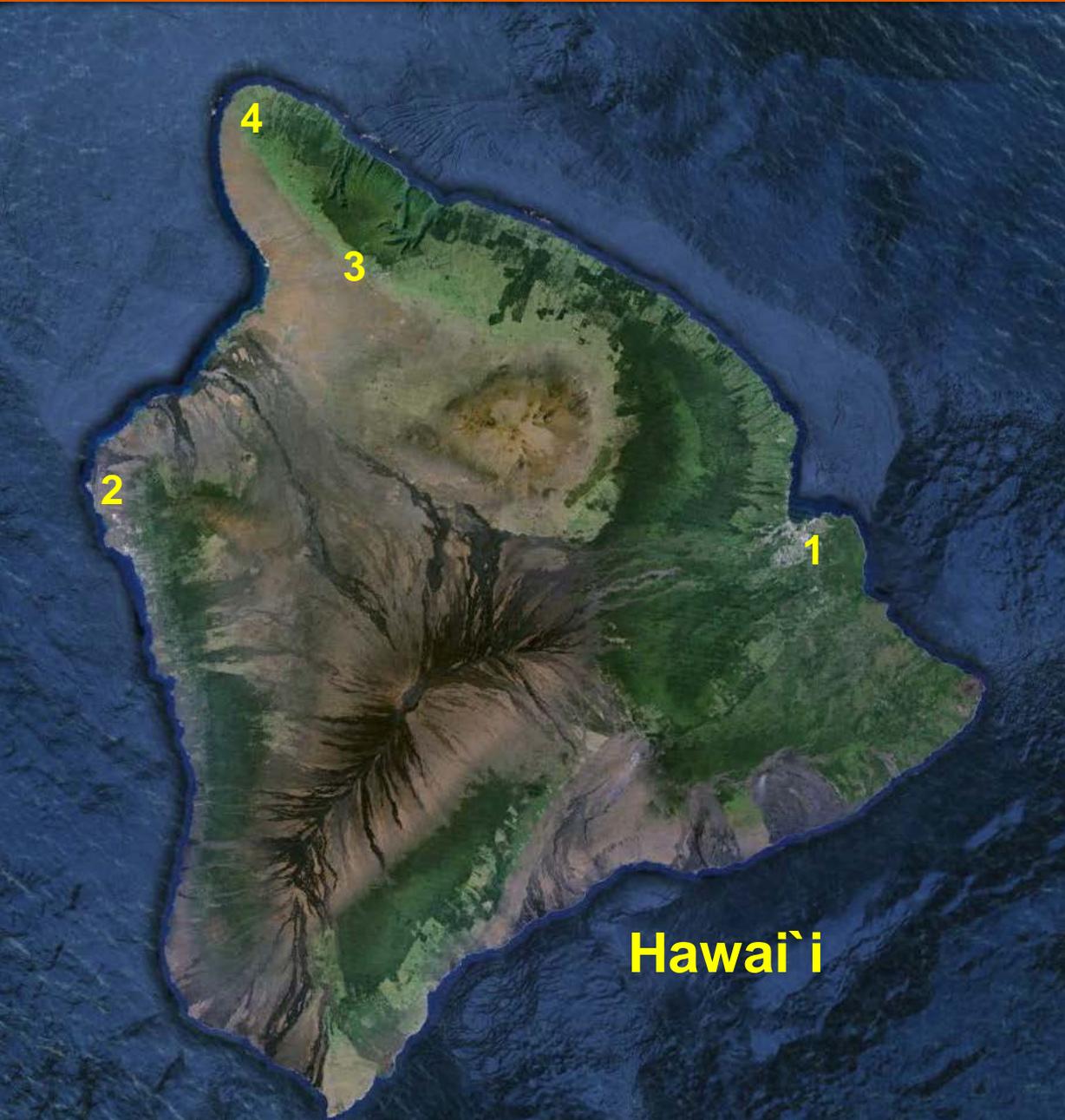
Lana'i Airport *

Lana'i

Kaho'olawe

Maui

The Island of Hawai`i



- 1) Hilo Airport - ITO
- 2) Kona Airport - KOA
- 3) Waimea – Kohala
Airport - MUE
- 4) Upolu airport - UPP

Hilo International Airport - ITO



Cattle Egret Roost *

Kona International Airport (KOA)



Kona International Airport – Feral Goats



- ❖ Source of water source on 'dry side'
- ❖ Landscaping attractants
- ❖ Water-stressed at times
- ❖ WS removed N=75 goats

Utilizing Canines

Hilo International Airport Dog Harassment Project



- ❖ **NWRC - Pacific Golden Plovers**
- ❖ **2 year comparison study (2009-2010)**

Wake Island



Canine WHM Program

Summary

- ❖ **Wildlife Services at Hawai`i Airports**
- ❖ **Threatened and Endangered Species**
- ❖ **Wildlife Hazardous Species**
- ❖ **Wildlife Hazard Management: Applications, and
Techniques**
- ❖ **Specific Airport Examples**

Wildlife Services at Hawai`i Airports

QUESTIONS?



Protecting People
Protecting Agriculture
Protecting Wildlife