

# Avian Influenza – Surveillance of Wild Birds in Hawai'i and the Pacific

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# Avian Influenza: Background

- Waterbirds are the natural reservoir of all Influenza “A” viruses. Wild birds and these diseases have evolved together naturally over time
- Many subtypes of AI already exist in wild bird populations in North America – but currently not HPAI H5N1



# Avian Influenza: Background

- **Pathogenicity** refers to the ability of the virus to produce disease and is based on the impacts to **domestic poultry**
- High Pathogenic AI = kills >75% of chickens
- AI viruses can become very pathogenic when they enter a new host (domestic poultry, humans, some carnivores). This is the suspected origin of HPAI strains.

# Avian Influenza: Background

## Exposure and Persistence

- Avian influenza is mostly spread between birds through fecal material; HPAI H5N1 may additionally spread via nasal secretions
- Infected material can contaminate wetlands and roost sites used by large numbers of birds during migration and wintering
- Recent studies in Africa show that AI viruses circulate in tropical wintering sites as well as high latitudes

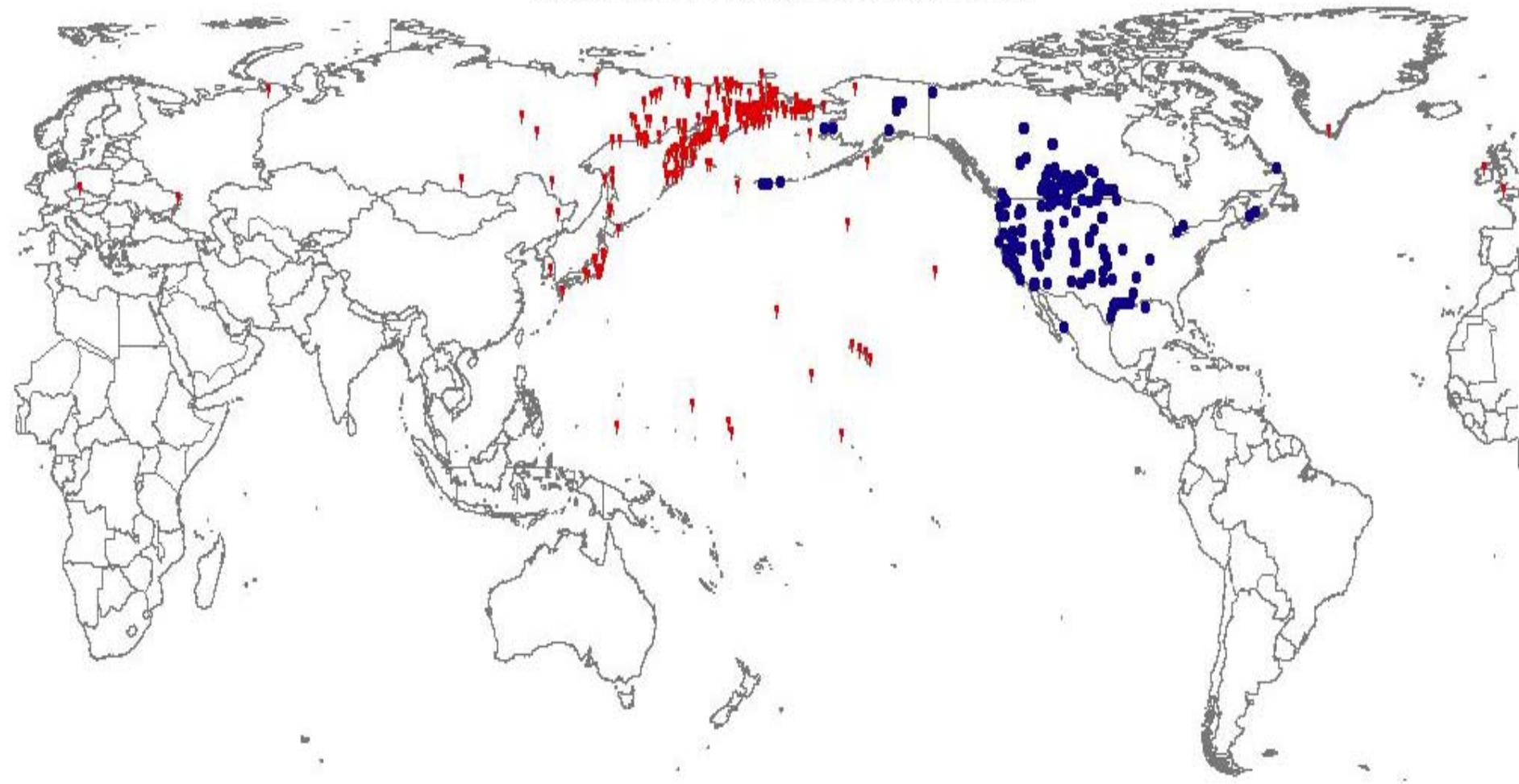
# Role of Migratory Birds vs. Trade

- Tests show that some waterfowl species can survive HPAI H5N1 infection with low or no morbidity. How far they go, how important this is globally is uncertain.
- This uncertainty is large compared to the known role of trade in poultry, eggs, and parts in spreading HPAI H5N1
- Shorebirds (most Hawai'i migrants) are known LPAI carriers, but so far there are no studies on their potential as vectors of HPAI H5N1

# Migratory Birds have Potential

## Northern Pintail Recoveries

Banded North America, recovered elsewhere



# Avian Influenza: Current Public Health Threat?

## HPAI H5N1 Human cases Dec. 2003 to Feb. 2007

<u>Country</u>	<u>Cases</u>	<u>Deaths</u>	<u>Population</u>
Indonesia	76	57	207 million
Thailand	25	17	65 million
Vietnam	<u>93</u>	<u>42</u>	<u>84 million</u>
	194	116	356 million

Average = 1 case per 1.8 million people

Average = 1 death per 3.1 million people

With the exception of one event in Azerbaijan, no HPAI H5N1 human infections have been caused by contact with wild birds

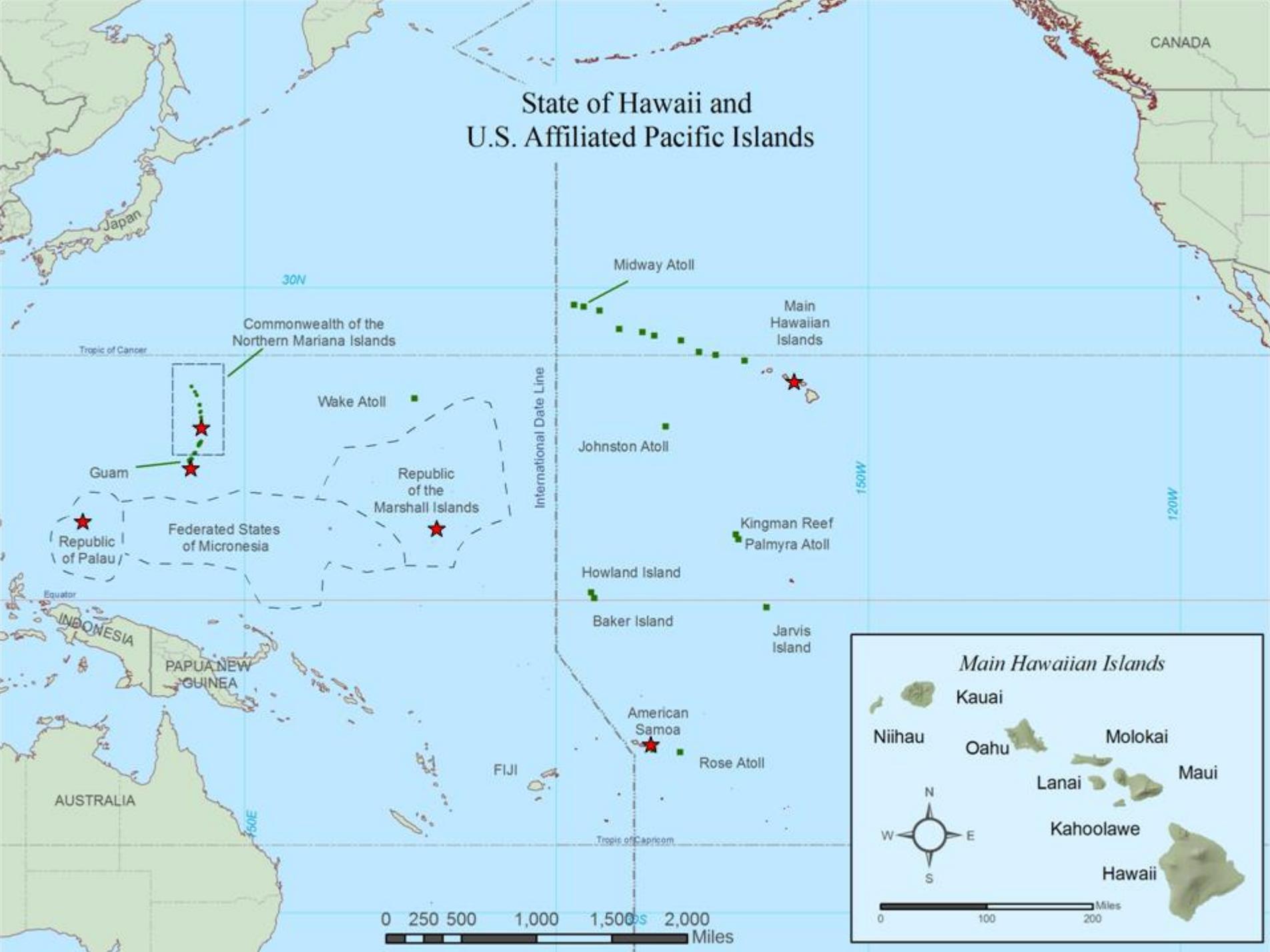
# Why Sample the Pacific Islands?

- Flyways include known HPAI areas in China, East Asia
- Species (esp. shorebirds) not well sampled in North America.
- Covers an area larger than North America, and reaches within 700 miles of Indonesia. Significant “unregulated imports”
- Poultry exposure, veterinary support, other factors in many Pacific Islands are more similar to SE Asia than U.S. mainland

# Surveillance Program Underway



# State of Hawaii and U.S. Affiliated Pacific Islands



*Main Hawaiian Islands*

- Kauai
- Niihau
- Oahu
- Molokai
- Lanai
- Maui
- Kahoolawe
- Hawaii

0 100 200 Miles

# Results So Far

- **Migratory birds arrive August-December**
- **Sampling continues until April because AI viruses circulate in populations, could be detected at any time.**

Hawai'i	Marianas	Marshalls	Palau & Samoa
713	724	189	195

# 2007 Program

- **Lessons learned:**
  - **Focus on mortalities, outreach to public in multiple Pacific Island communities**
  - **Include feral chickens in mortality surveillance**
  - **Sample all species in key habitats, not just migratory species**
  - **Increase sample sizes**
- **Be ready to respond to a detection in both wild and domestic birds**