



PERSPECTIVES AND CHALLENGES: VECTOR CONTROL IN HAWAI'I

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VECTOR CONTROL BRANCH



VECTOR CONTROL BRANCH

**DEPARTMENT OF HEALTH
(DIRECTOR OF HEALTH)**



ENVIRONMENTAL HEALTH ADMINISTRATION



**ENVIRONMENTAL HEALTH SERVICES
DIVISION**



VECTOR CONTROL BRANCH

VECTOR CONTROL BRANCH

- **ADMINISTRATIVE/SUPPORT SERVICES**
 - Oversees all Islands for Vector Control
 - Arbovirus Information Manager
- **TRAINING AND RESEARCH OFFICE**
 - Entomology (Oahu, Hawaii, Kauai)
 - Microbiology
- **FIELD SERVICES**
 - East and West Oahu Sections
 - Inspectors and Vector Control Workers

VECTOR CONTROL BRANCH

- ❖ STATEWIDE REGULATORY PROGRAMS**
- ❖ MANDATED BY LAW**
- ❖ SAFEGUARDS PUBLIC HEALTH AGAINST HUMAN AND ZOOONOTIC DISEASE VECTORED BY INSECTS, OTHER ARTHROPODS, BIRDS OR MAMMALS**

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HISTORICAL BACKGROUND:

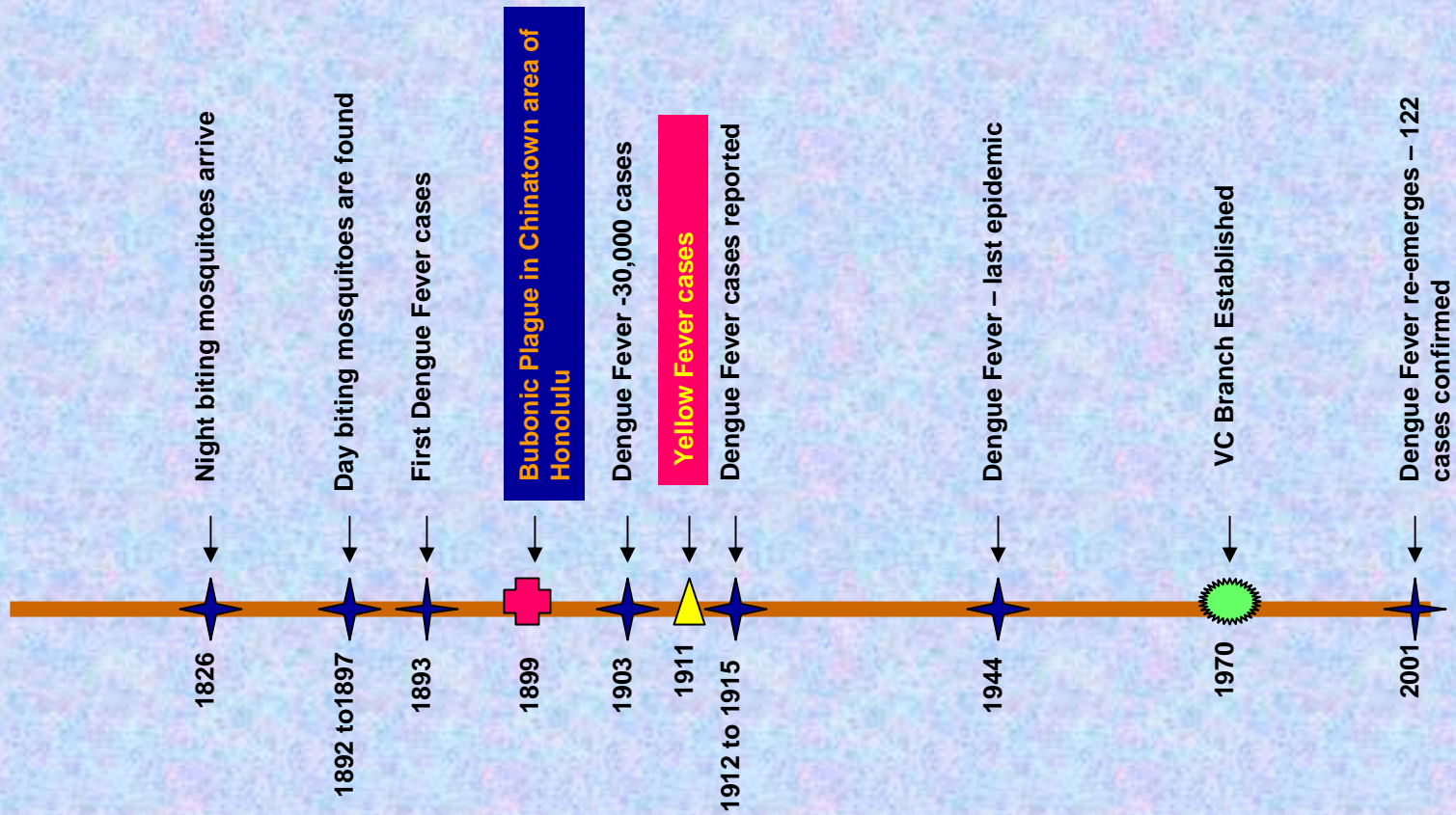
- Before 1826 Hawaii was mosquito free and mosquito-borne illness was not an issue.
- Various rodents introduced and established, most likely from the first sailing ships visiting the Islands, thus creating a threat of plague, murine typhus and leptospirosis.

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HISTORICAL BACKGROUND:

- **Early control efforts were privately financed and local Chambers of Commerce attempted to control “pests”. In the early 1900s, 2 separate Bureaus were formed, Rodent Control and Mosquito Control. In 1970, they merged into the Statewide Vector Control Branch.**

IMPORTANT DATES IN VECTOR CONTROL HISTORY IN HAWAII



DENGUE FEVER IN SEPTEMBER 2001

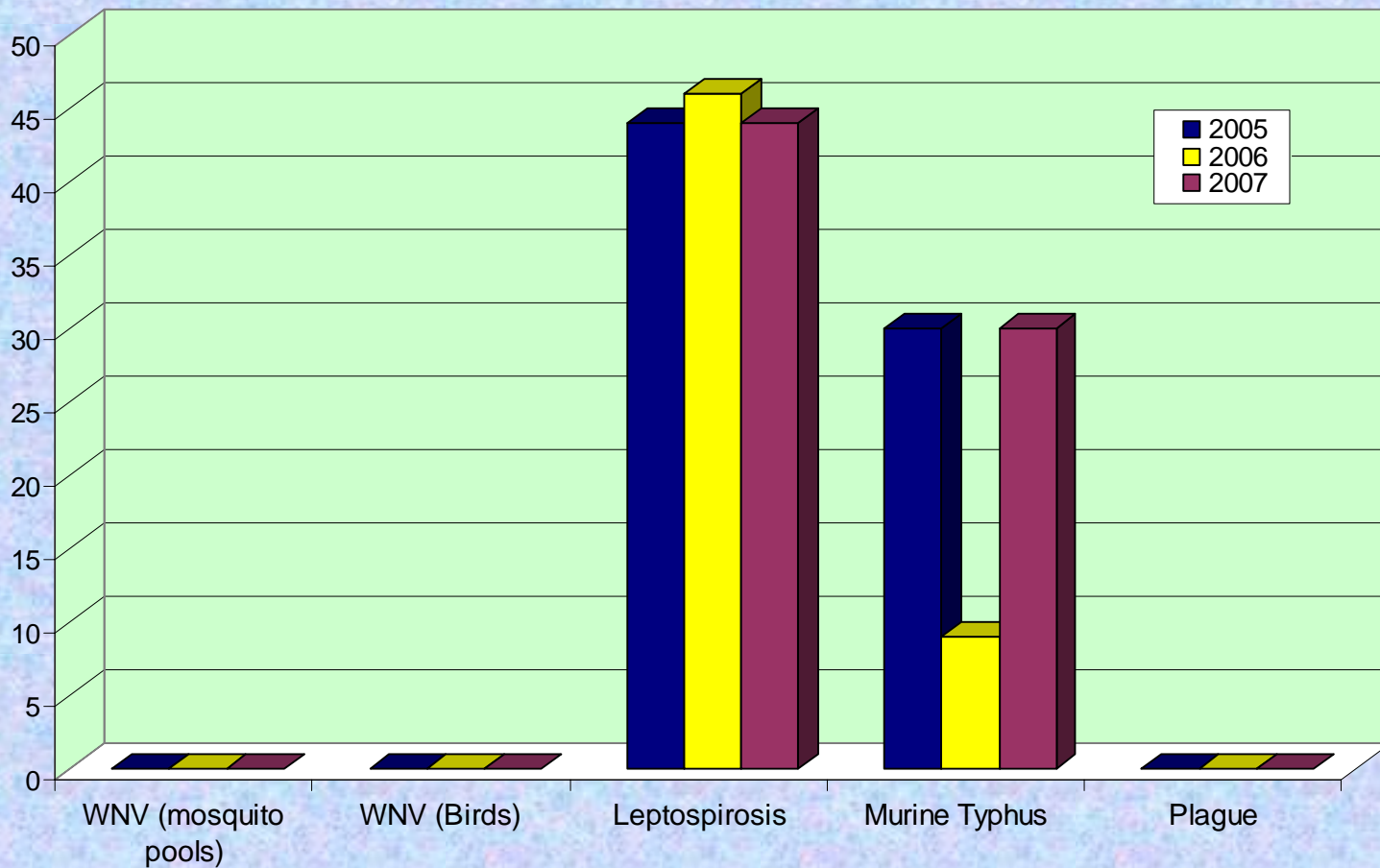
- Re-introduced to the Hawaiian Islands with travelers coming from French Polynesia.
- Transmission took place in the Islands with *Aedes albopictus* as the vector mosquito. First cases reported from Maui.
- 1644 symptomatic “cases” of which 122 confirmed for DF (92-Maui, 26-Oahu, 4-Kauai).



OTHER DISEASES OF CONCERN FOR VECTOR CONTROL IN HAWAII

- ❖ **Leptospirosis**: From 1907 until 2007 at least 32 deaths have occurred due to leptospirosis acquired in the Hawaiian Islands. There have been thousands of reported cases.
- ❖ **Murine Typhus**: 5-6 cases annually occur, but in 2002 (47 cases), 2003 (38 cases) and in 2004 (>15 cases) occurred. Some associated with co-infection of Leptospirosis.

Number of Positive Findings of Zoonotic Diseases 2005-2007

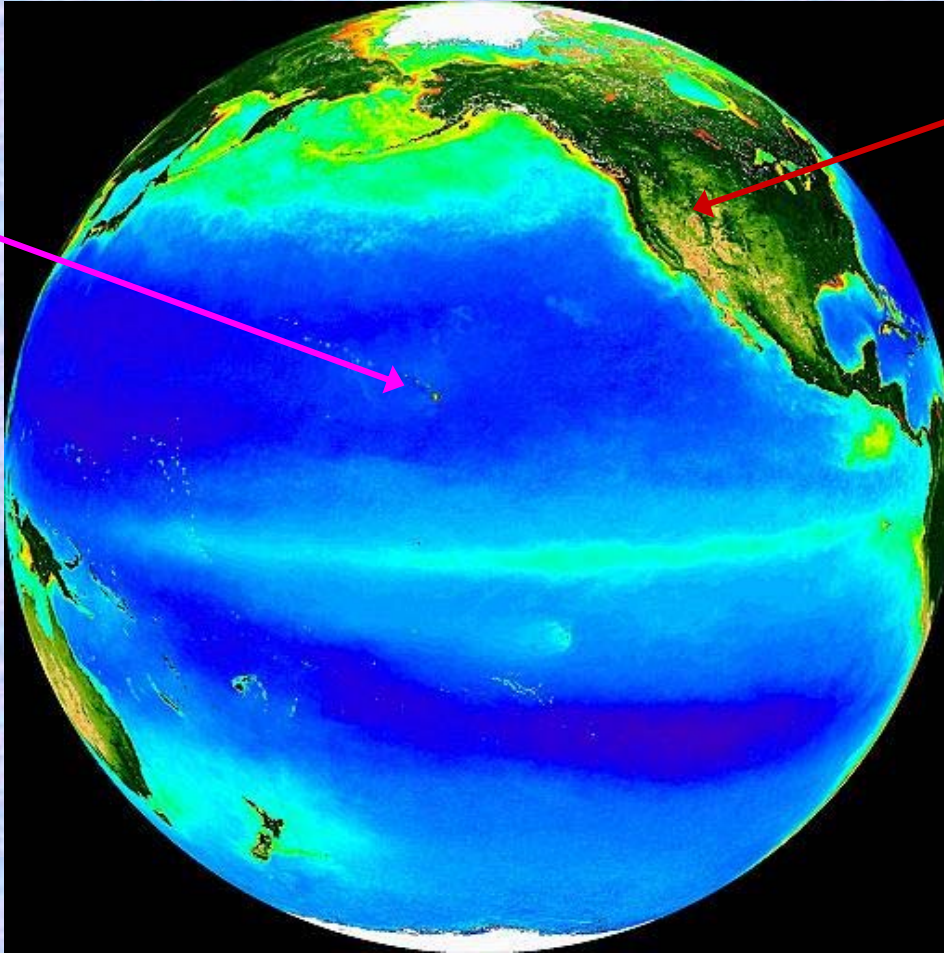


OTHER DISEASES OF CONCERN FOR VECTOR CONTROL IN HAWAII

- ❖ **West Nile Virus:** Surveillance of mosquitoes and birds to hopefully prevent WNV from being introduced and established in the Hawaiian Islands.



**Hawaii is
Here**



WNV is Here

It's not in Hawai'i ... YET

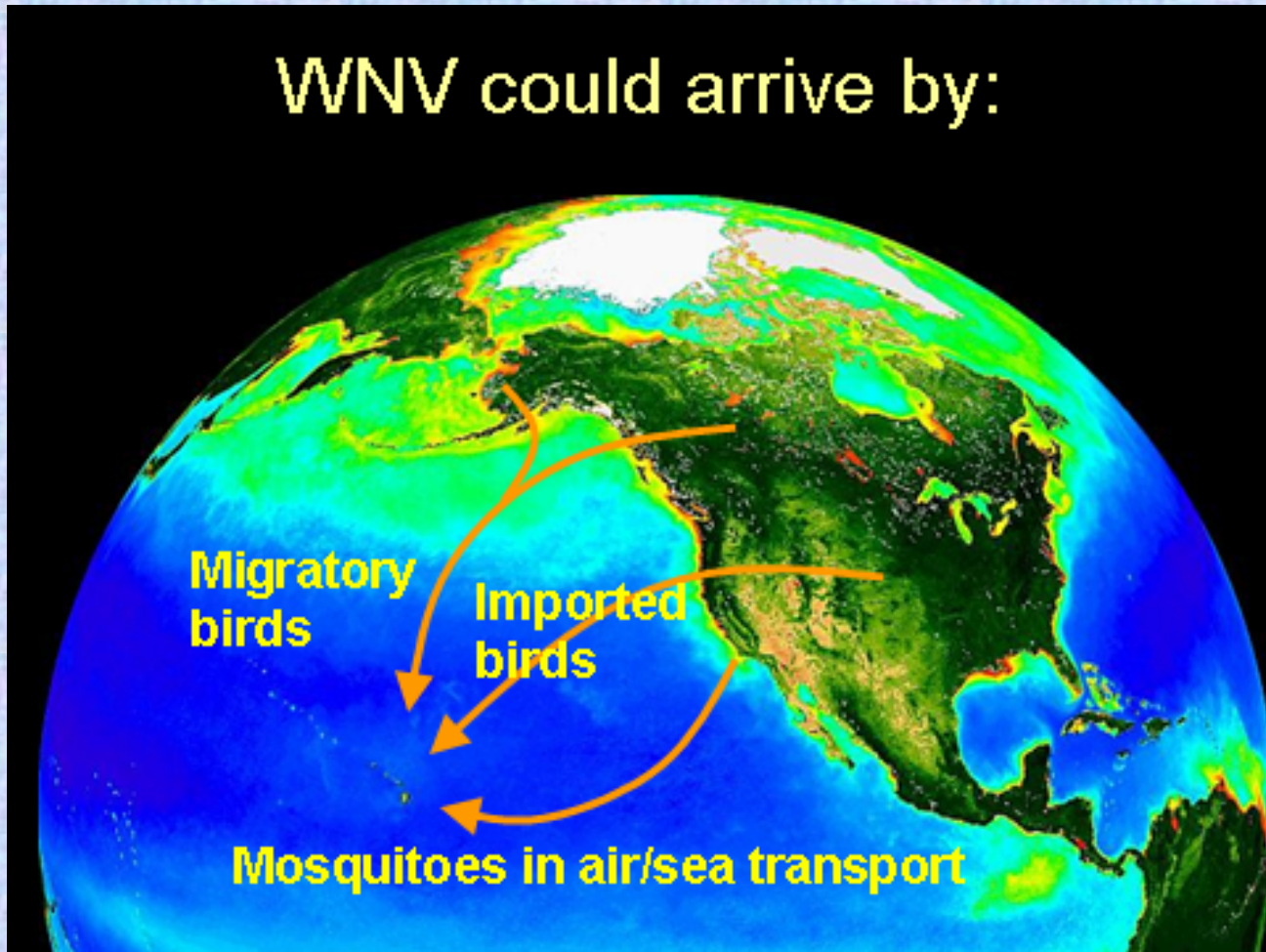
Why the Concern for Hawaii?

- Tropical climate means **year-round threat**
- People can get sick and some will die
- Some native birds could become extinct
- Lifestyle and economy depend on a safe outdoor environment



Pathways for West Nile Virus

WNV could arrive by:



Hawaii: Endangered Species Capitol of the U.S.

**Native birds lack immunity
to foreign diseases**

**Impact to current low
numbers could result in
extinctions**





I'o (Hawaiian Hawk)



Pueo (Hawaiian Owl)



'Akohekohe (Crested Honeycreeper)



Nene (Hawaiian Goose)

**Hawaii has 32 bird species
found nowhere else on Earth**

A Unique Opportunity & Challenge For Hawaii

A chance to control WNV only if:

- **Found early**
- **Confined to a small area**
- **Hit hard with rapid response**
- **Have public support**





VC - Entomology Lab



WN virus Testing During 2007

MOSQUITO POOLS TESTED = 3348

<u>TOTAL</u>	<u>OAHU</u>	<u>HAWAII</u>	<u>MAUI</u>	<u>KAUAI</u>
3348	2549	506	105	188

MOSQUITOES TESTED = 118,659



Call 211

- **To report and find out where to turn in dead birds**
- **To get more information about West Nile Virus**

How to Pick Up a Dead Bird



1.



2.



3.



4.



5.

Keep bird cool/frozen and take to designated drop-off point.

People do not get WNV from birds.

Dead Bird Necropsy – VC Lab



WN virus Testing During 2007

BIRDS TESTED:

<u>TOTAL</u>	<u>OAHU</u>	<u>HAWAII</u>	<u>MAUI</u>	<u>KAUAI</u>
174	132	21	14	7

VECTOR CONTROL BRANCH CURRENT INITIATIVES

Integrated Mosquito Management (IMM)

Integrated Mosquito Management

Public Education and Community Outreach

Physical
Control

Resistance Monitoring

Biological
Control

Chemical
Control

Disease Surveillance

Mapping

Mosquito Sampling and Surveillance

VECTOR CONTROL BRANCH CURRENT INITIATIVES

- **Mouse surveillance and control**
- **Other rodent control at ports of entry**
- **Disease monitoring/surveillance in arthropods, mammals and birds (Leptospirosis, Murine Typhus, Plague, checking for WNV in mosquitoes and birds) through laboratory testing.**

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CURRENT INITIATIVES

- ***Bed bug* information and outreach.** Includes working with the tourism industry, Hawaii Pest Control Association and other groups for public education.
- ***Bed bug* survey of shelters.**



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CURRENT INITIATIVES

- **INVASIVE SPECIES:** Monitor for introduction of invasive species, particularly vector species. In November 2003, *Aedes japonicus japonicus* (*Ochlerotatus japonicus japonicus*) was detected on the Big Island of Hawaii. It has not been detected on the other Islands as of yet.



VECTOR CONTROL BRANCH CURRENT INITIATIVES

- **INVASIVE SPECIES:** In August 2005 and June 2006, *Polistes dominulus* (European paper wasp) was found and eliminated on Maui and Oahu, respectively. VCB continues to watch for these and other wasps.



Image: Steve Jacobs, Penn State University, Entomology Department

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CURRENT INITIATIVES

- **Public education for control of potential pests and vectors. Development of a more informative web page to provide the public short, concise “Fact Sheets” on the most common problem arthropods and other vectors.**
- **WEB SITE:**
<http://www.hawaii.gov/health> then look for VECTOR CONTROL and links.

VECTOR CONTROL BRANCH CURRENT INITIATIVES

- **Identification of arthropod and other animal specimens submitted by other agencies or the public.**
- **Inspect and investigate complaints dealing with potential vectors.**
- **Provide technical assistance to other agencies and technical advice to the public.**

VECTOR CONTROL BRANCH

CURRENT INITIATIVES

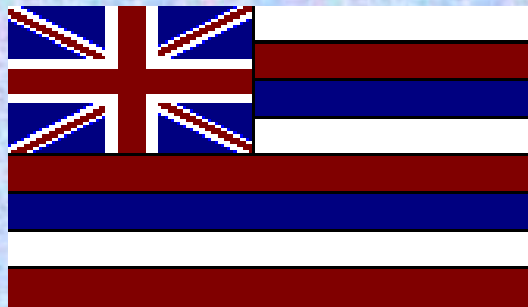
- **Cooperative research with local Universities and CDC (current studies involve Murine Typhus and Leptospirosis).**
- **Continued efforts to educate the public about West Nile Virus and the potential threat. Public outreach at appropriate venues.**

FUTURE CHALLENGES FOR VECTOR CONTROL IN HAWAII

- **Re-establish entomological research as part of the Vector Control Branch concentrating on issues relevant to the health and welfare of humans and animals.**
- **Identify and respond to new vector threats to the Islands.**

FUTURE CHALLENGES FOR VECTOR CONTROL IN HAWAII

- **Protect all residents and visitors in the Hawaiian Islands from vector and non-vector animals and vector-borne disease outbreaks, while preserving the unique and rich environment of our Islands.**



CONTACT US



HAWAII STATE
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Web page:

<http://www.hawaii.gov/health>

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