

Exotic Mosquitoes in the USA: Updates and Trends

Chester G. Moore

Dept. of Microbiology, Immunology & Pathology

Colorado State University

Fort Collins, CO 80523-1692

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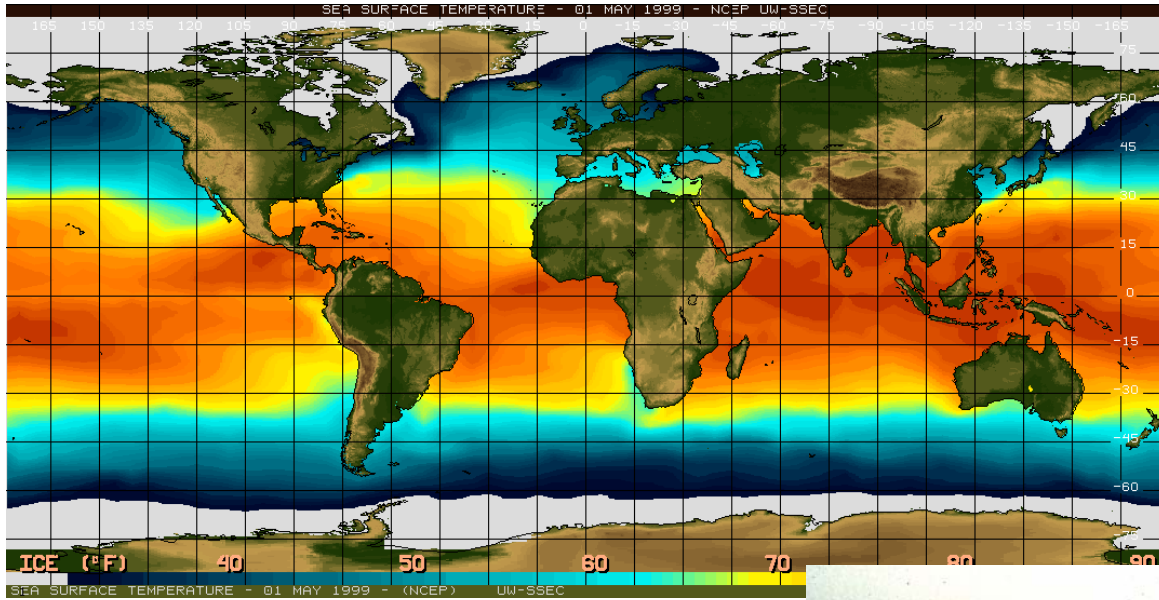
March 25-26, 2008



Knowledge to Go Places



Causes of Invasions?



**Global
warming?**

**Increased
global
commerce?**





Causes of Invasions?



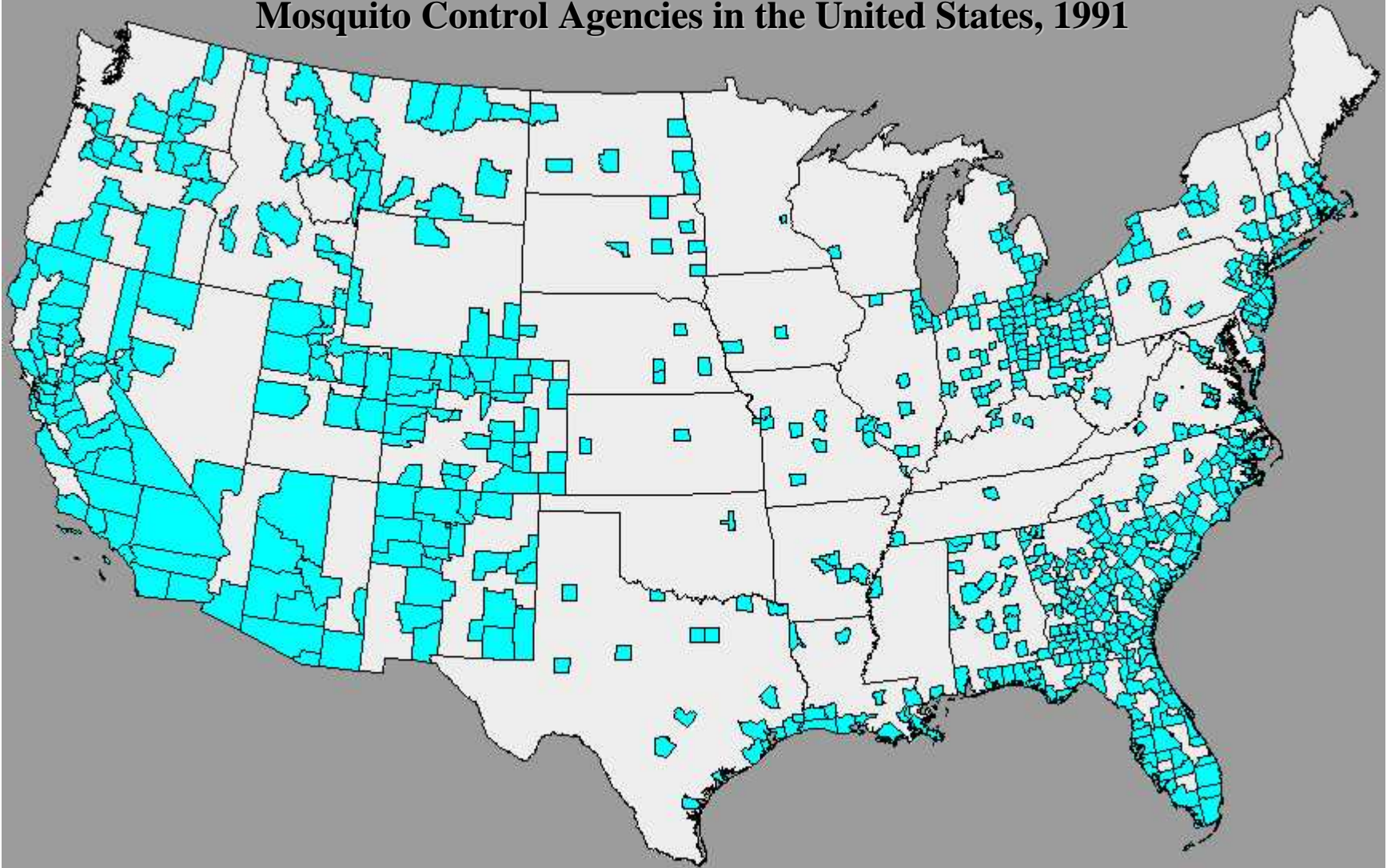
National Exotic Vectors Database

- Started at CDC/DVBID in 1986
 - Track and map movement of *Ae. albopictus*
 - Expanded to include *Oc. japonicus*, etc.
- Now maintained at Colorado State Univ.
 - Include other exotic vectors (ticks, fleas, etc.)
 - Merge with larger invasives/exotics database
- Provide periodic updates, maps, & publications
 - Web sites (CDC, CSU)
 - JAMCA, etc.



How Can We Get a Spatially Representative Sample?

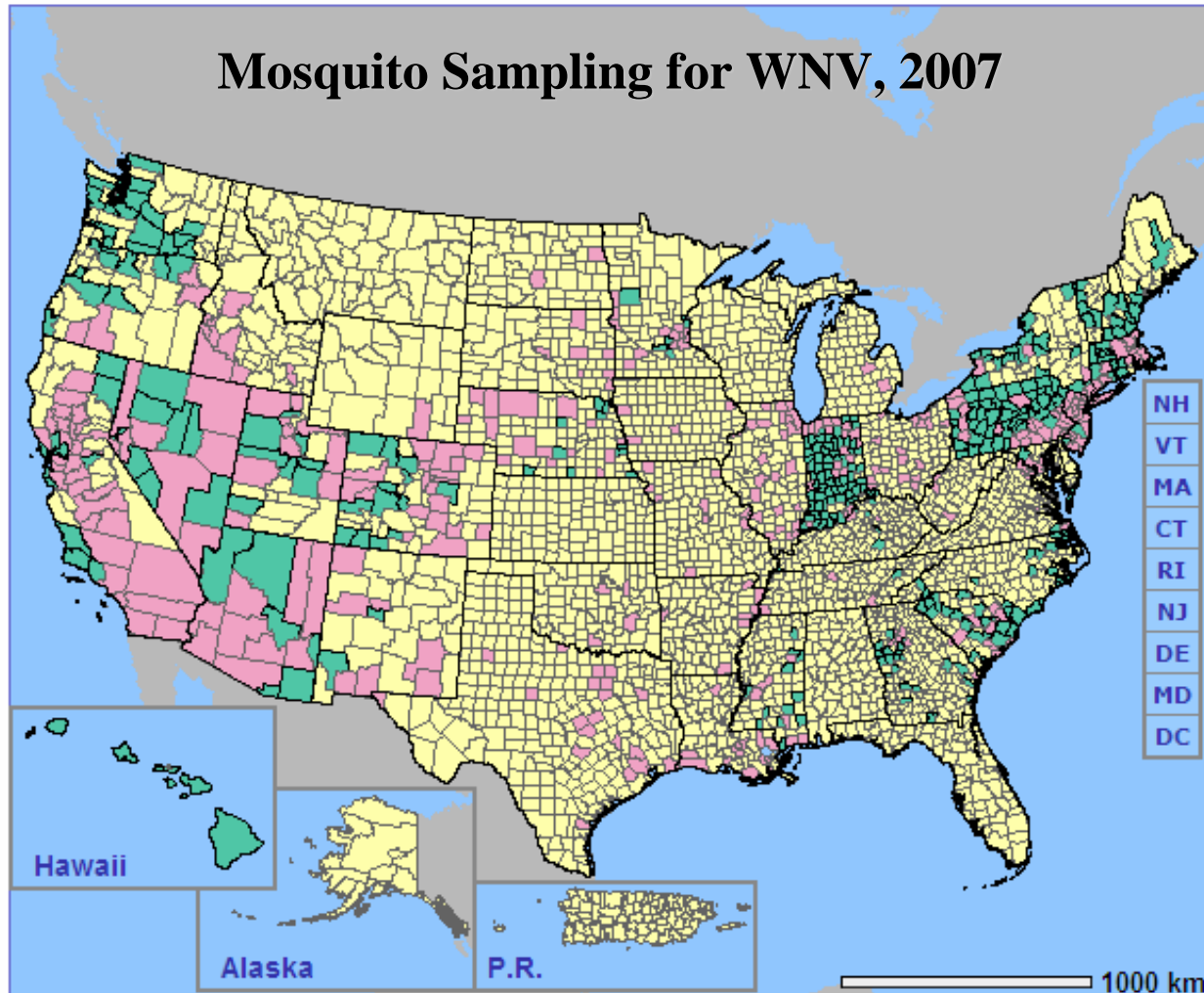
Mosquito Control Agencies in the United States, 1991



Source: *Directory of Mosquito Control Agencies in the United States and Canada*. AMCA, 1991.



How Can We Get a Spatially Representative Sample?



[Background](#)

[Historical Data](#)

[FAQs](#)

[Links](#)

Did You Know?

You can also navigate to Adjacent States by clicking on them.

Legend

- Positive Test Results
- Samples Submitted
- No Positive Test Results*

* States and counties in yellow either did not perform surveillance or did not report any positive test results from their surveillance.



Cumulative 2007 Data as of 3 am, Mar 04, 2008

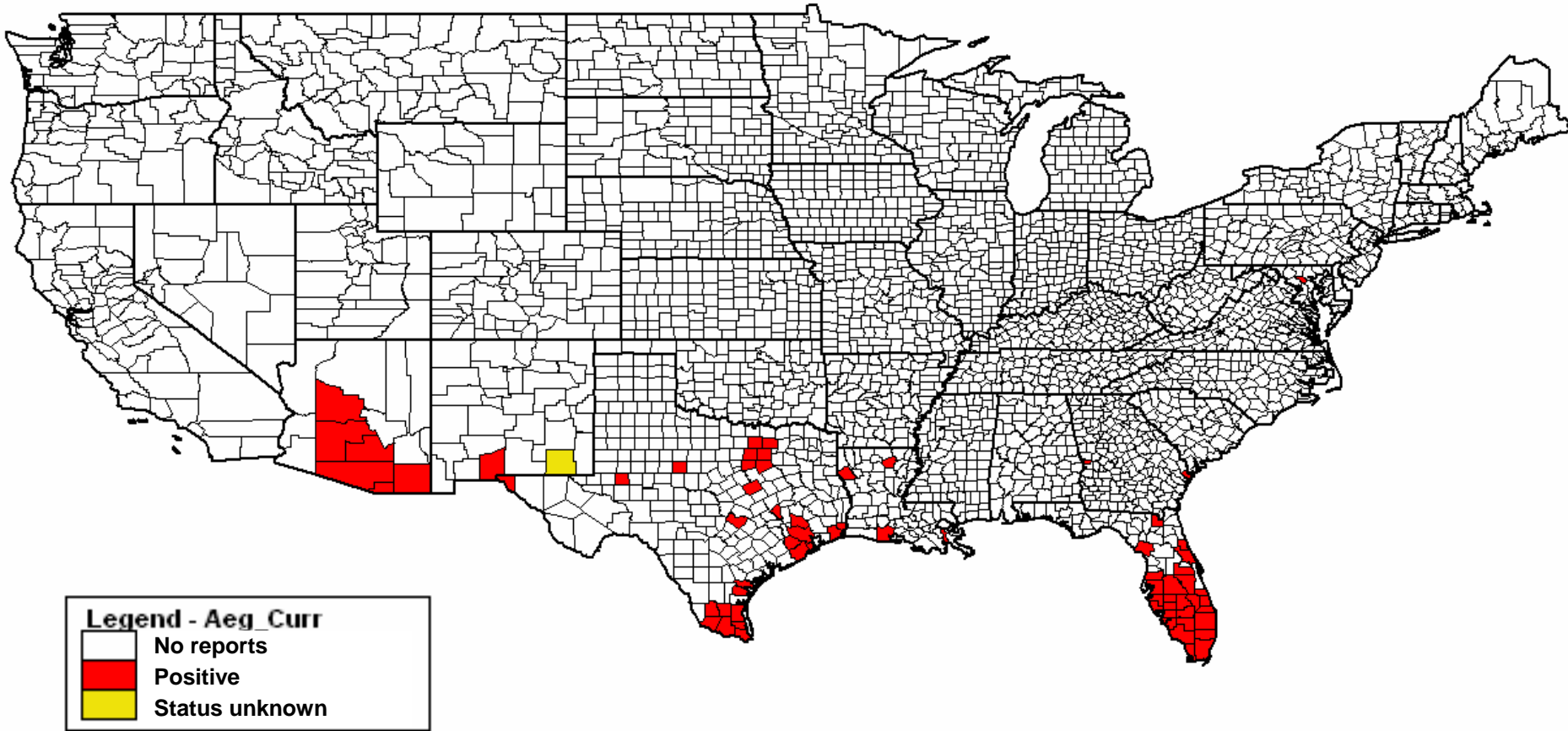
National Cumulative Mosquito Infections: **8029**



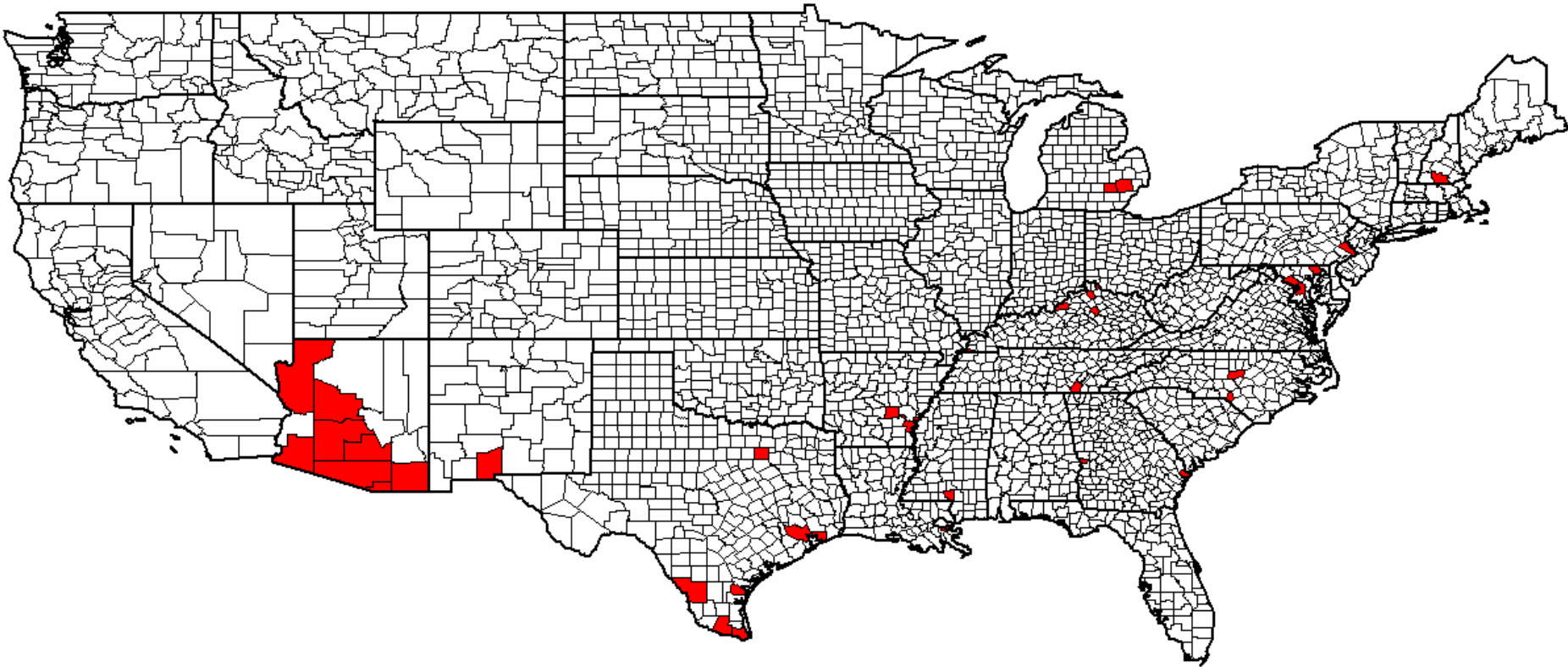
Aedes aegypti, the yellow fever mosquito



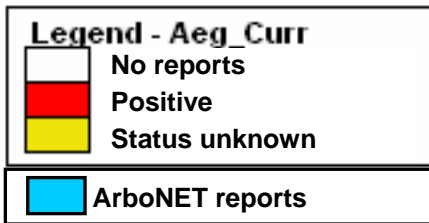
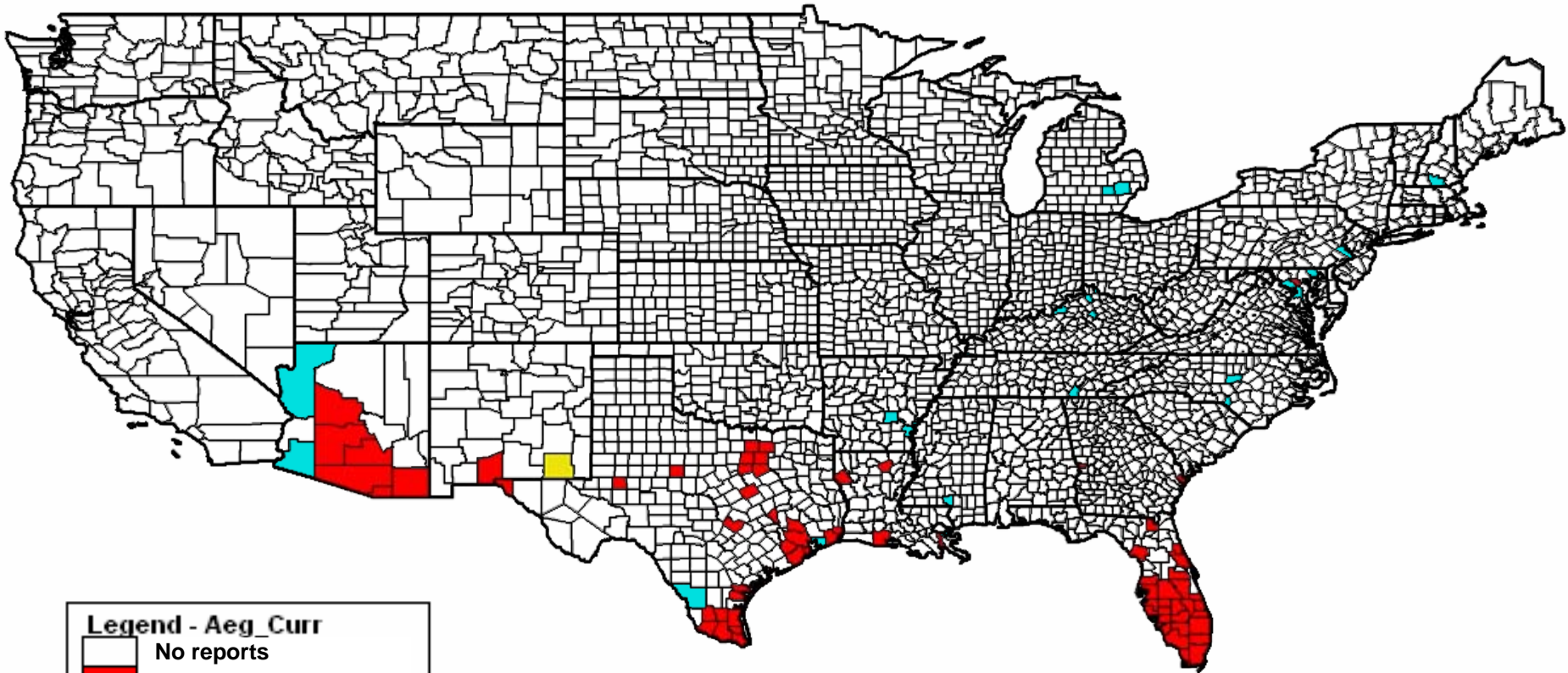
Aedes aegypti Reported Distribution, 2007



Aedes aegypti-positive Counties Reported Via CDC's ArboNET System, 2002-2006



Aedes aegypti – Reports From All Sources



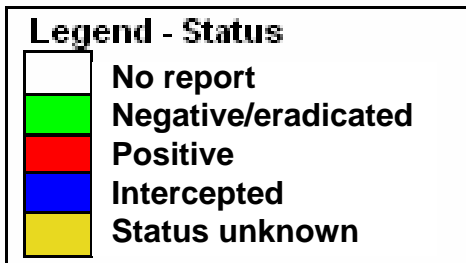
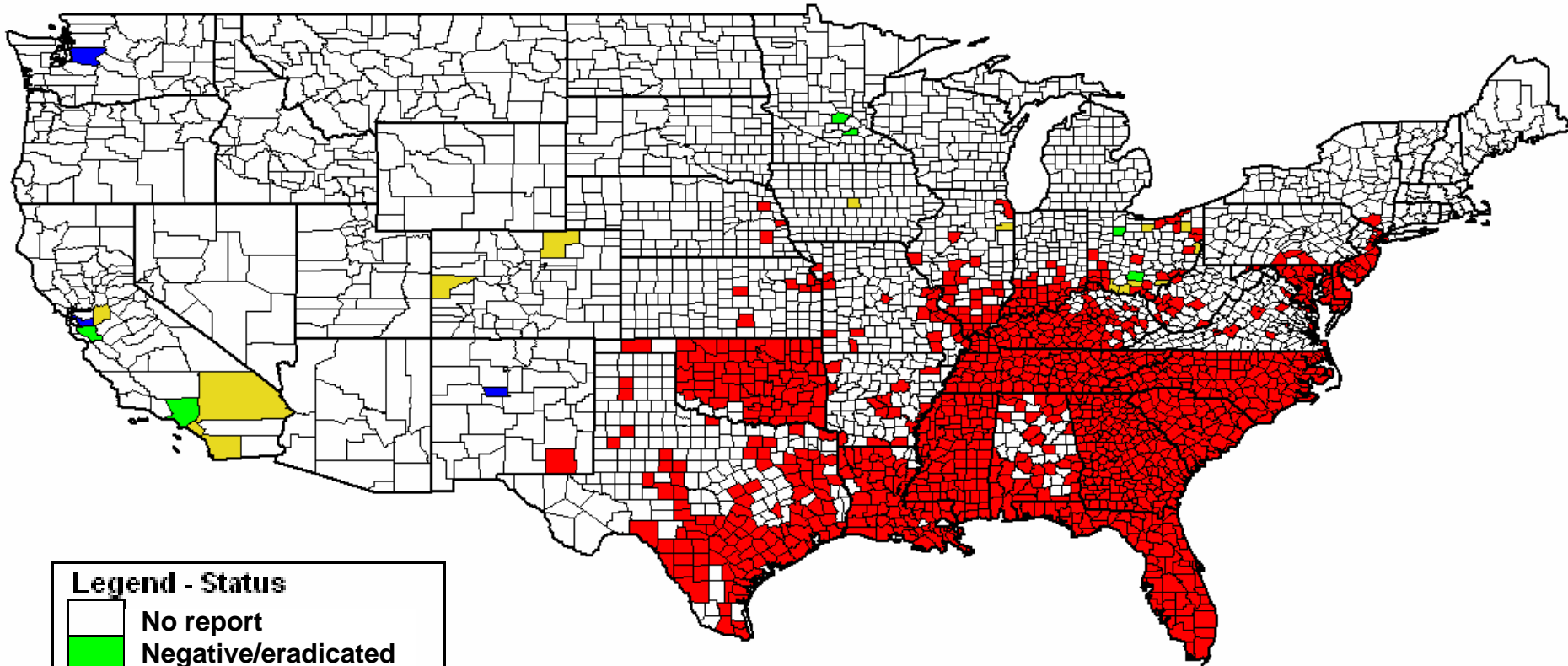
Aedes albopictus, the Asian tiger mosquito



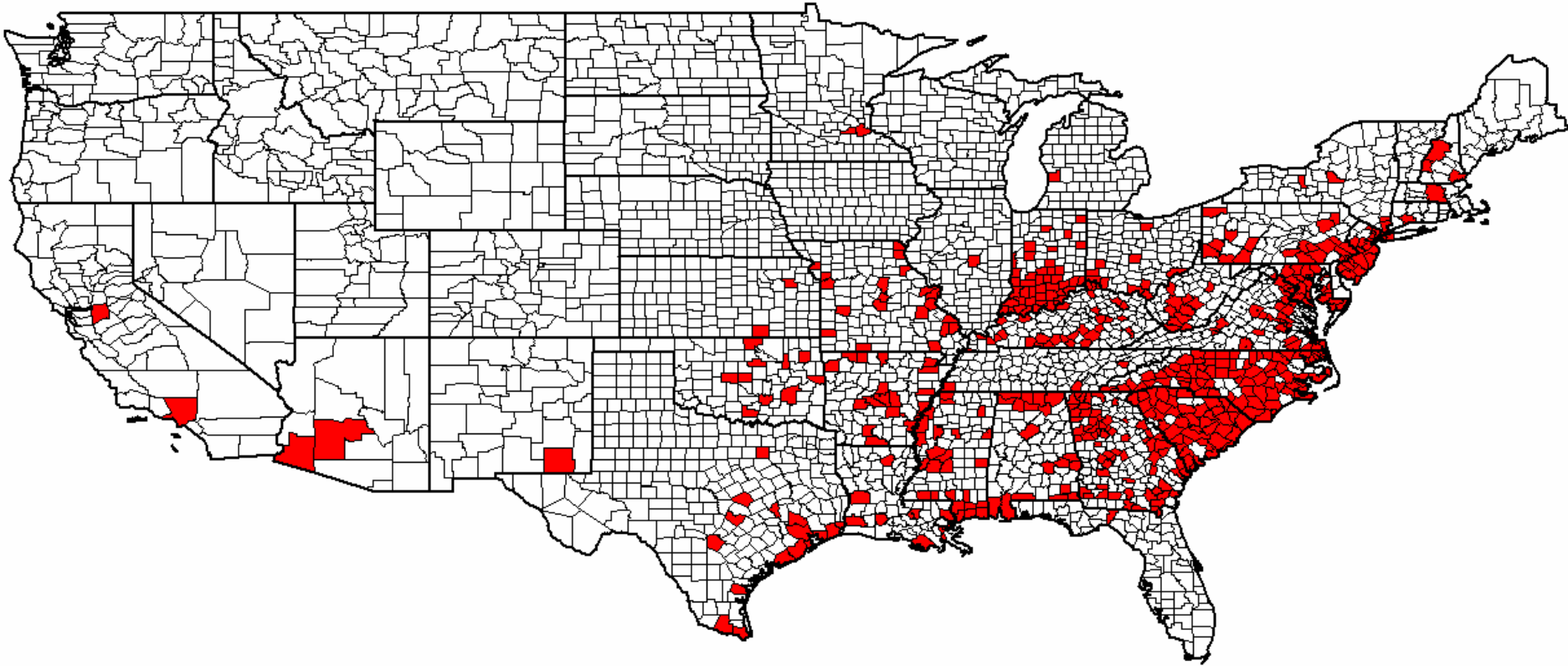
Photo by Leonard Munstermann



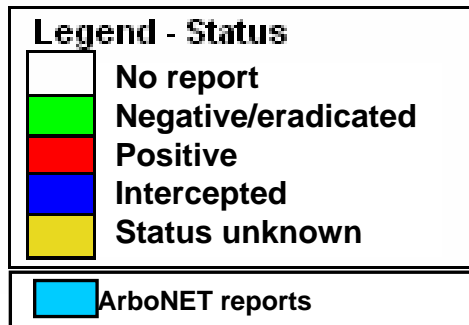
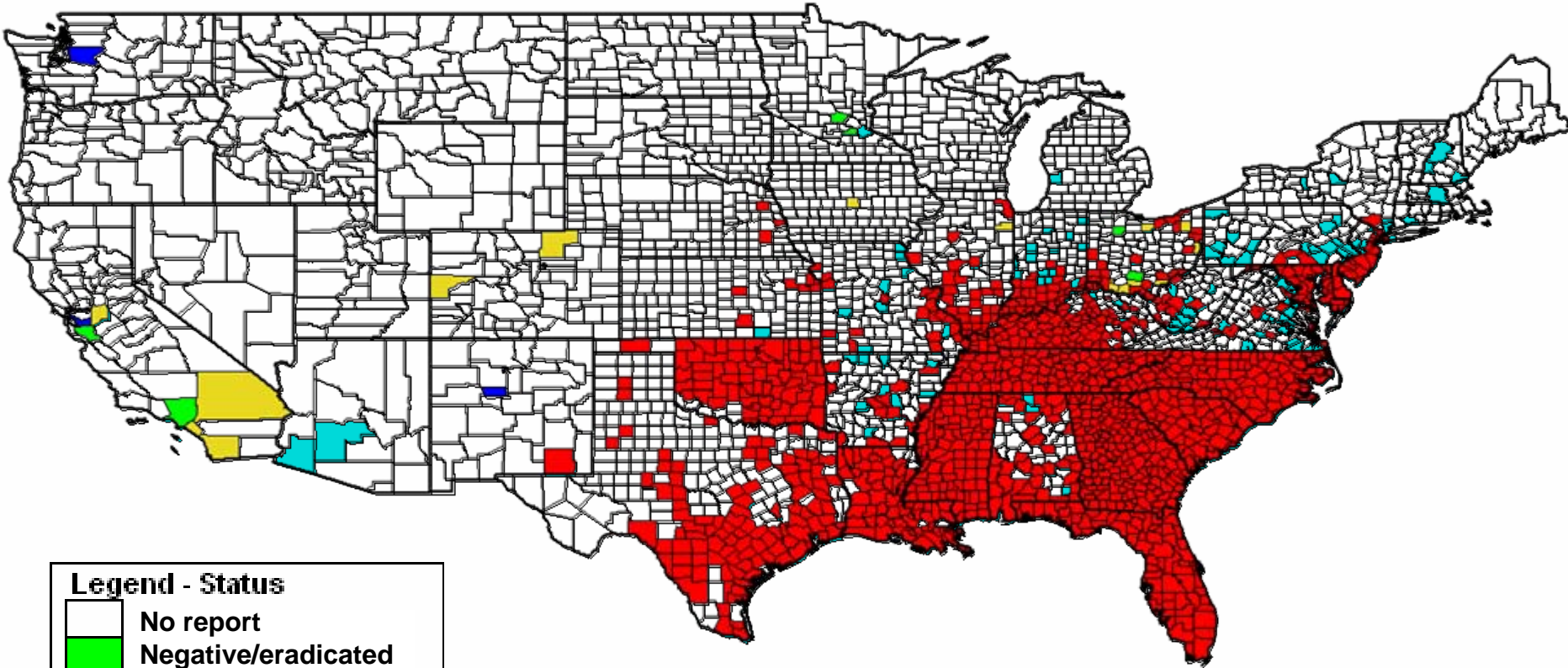
Aedes albopictus Reported Distribution, 2007



Aedes albopictus-positive Counties Reported Via CDC's ArboNET System, 2002-2006



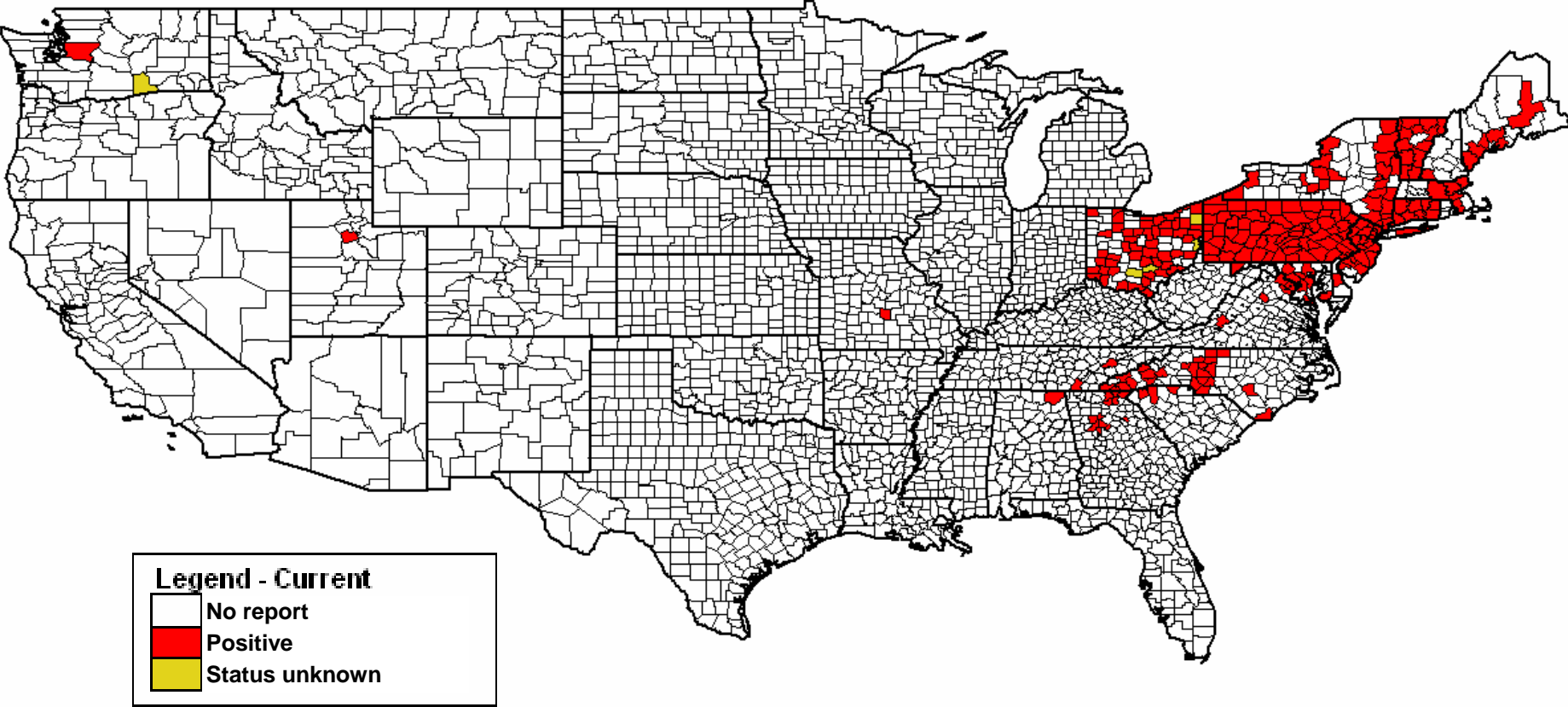
Aedes albopictus – Reports From All Sources



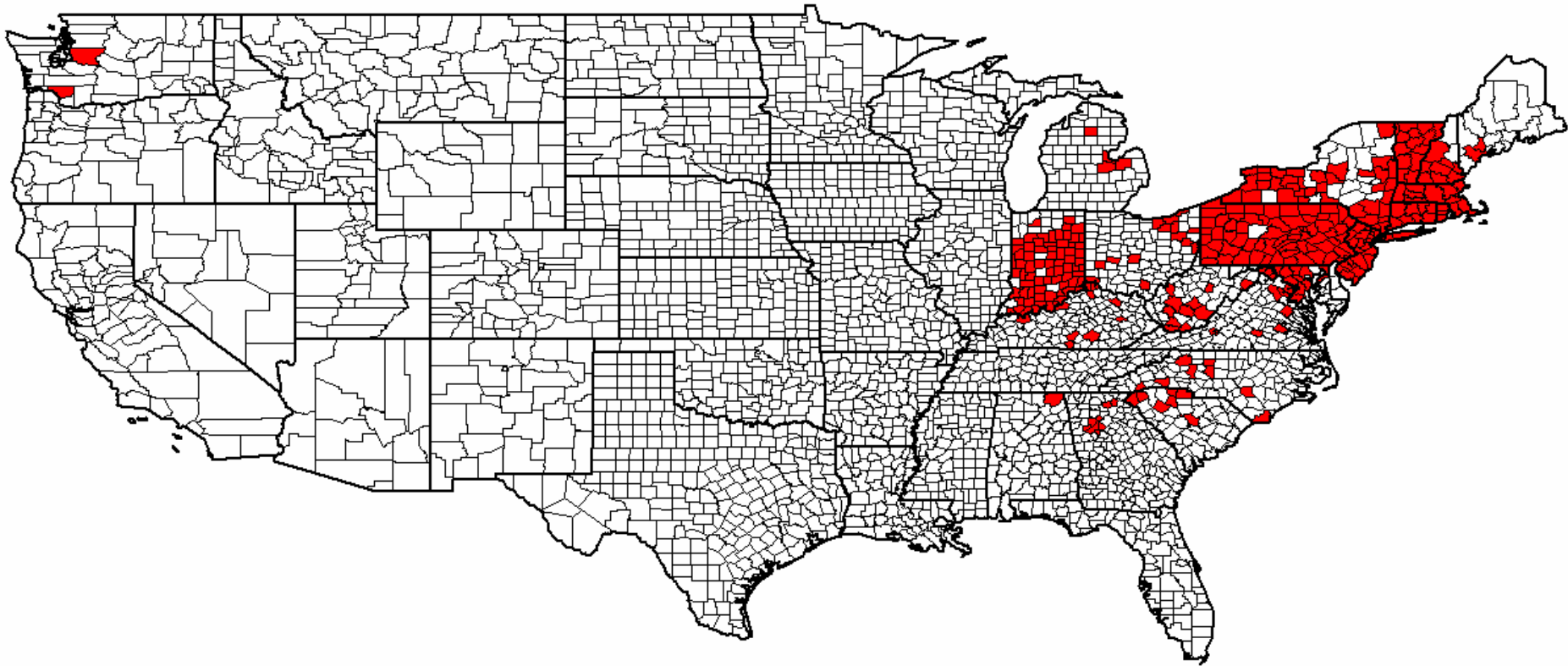
Ochlerotatus japonicus japonicus



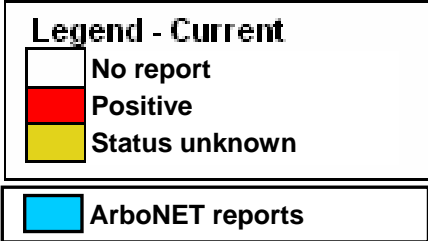
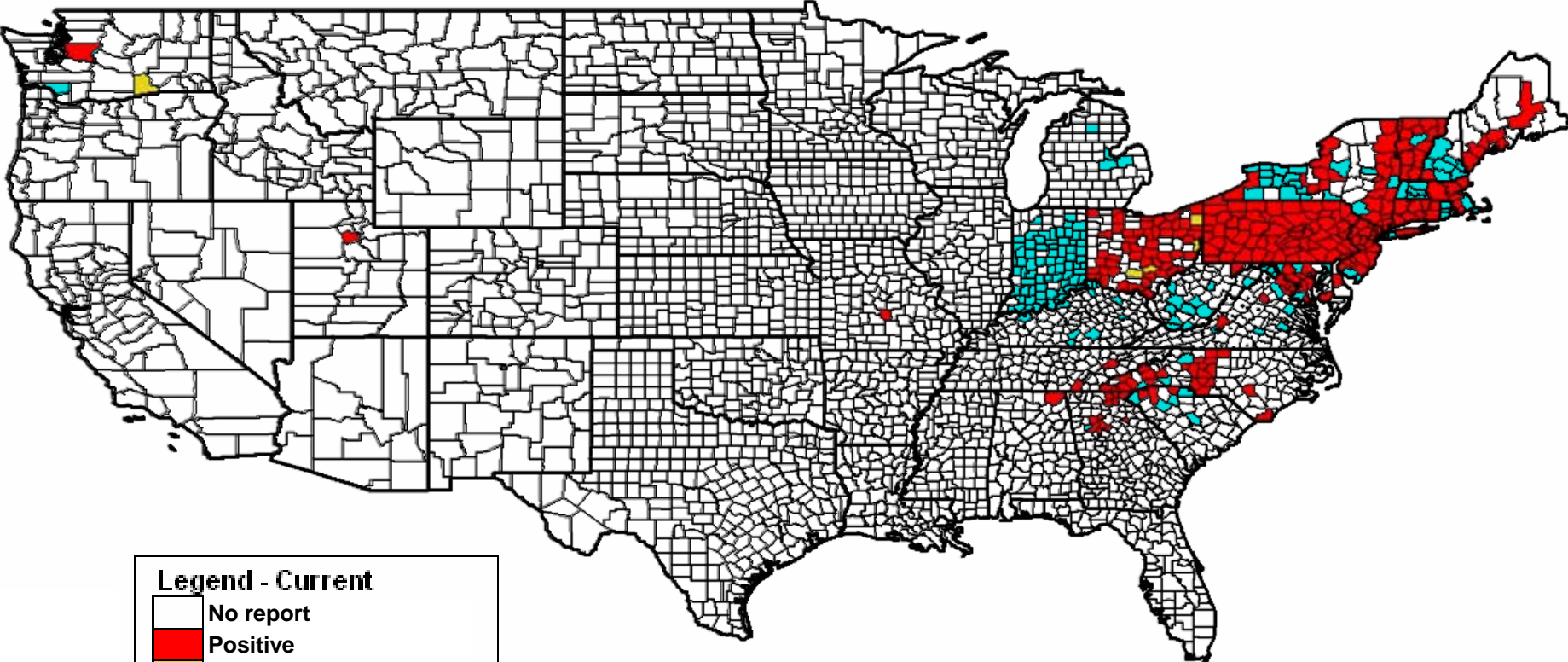
Ochlerotatus japonicus Reported Distribution, 2007



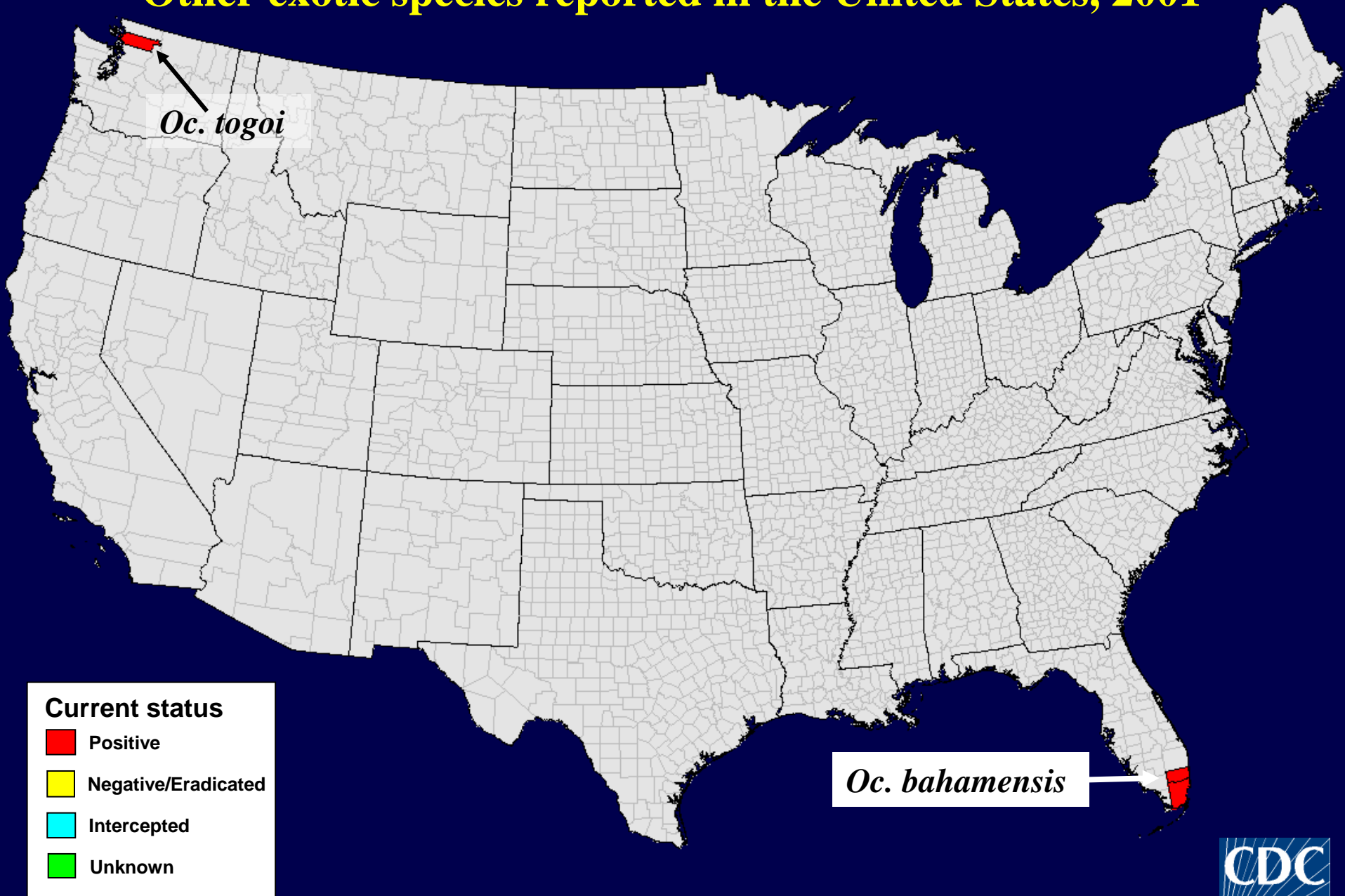
Ochlerotatus japonicus-positive Counties Reported Via CDC's ArboNET System, 2002-2006



Ochlerotatus japonicus – Reports From All Sources



Other exotic species reported in the United States, 2001



Domestic Species on the Move – Welcome to the “Homogenocene” Era

- Southward extensions
 - *Oc. atropalpus*
 - *Cs. minnesotae*? (Hutchinson et al., JAMCA 24:1; 2008)
- Northward extensions
 - *Cx. coronator*
 - *Ps. ferox*? (Hutchinson et al., JAMCA 24:1; 2008)
- Eastward extensions
 - *Cx. tarsalis*
 - *Cx. coronator*



National Exotic Vectors Database

- All exotic vectors (insect, acarine)
- In collaboration with Nat'l Institute of Invasive Species Science at CSU
- New records can be sent to:
Chester.Moore@ColoState.edu
- Data:
 - Species, locality (county, lat/lon, etc.), date found, discoverer, current status (pos, neg, eradicated, etc.)
 - Excel spreadsheet form available on request



Questions?



Other Vector Groups



Exotic ticks in the United States

(99 species in 11 genera)

- Argasidae
 - *Ornithodoros* (4)
 - *Otobius* (1)
- Ixodidae
 - *Amblyomma* (44)
 - *Anocentor* (1)
 - *Aponomma* (11)
- Ixodidae (Cont'd.)
 - *Boophilus* (1)
 - *Dermacentor* (4)
 - *Haemaphysalis* (8)
 - *Hyalomma* (10)
 - *Ixodes* (5)
 - *Rhipicephalus* (11)

Source: Keirans JE, Durden LA, *J. Med. Ent.* 38:850-861; 2001.



Points to Consider

- Increased international commerce and travel will likely lead to more introductions
- There are multiple paths of introduction
- Species with resistant stages (Aedines) are more likely to be successfully introduced
- The fact that a species is not an important vector in its native environment does not mean it will not be a vector in a new environment

