Vector Hazard Report:
Pictorial Guide to CONUS Zika Virus Vectors

Information gathered from products of
The Walter Reed Biosystematics Unit (WRBU)

VectorMap
Systematic Catalogue of the Culicidae

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WALTER REED BIOSYSTEMATICS UNIT
Know the vector, know the threat

VECTORMAP

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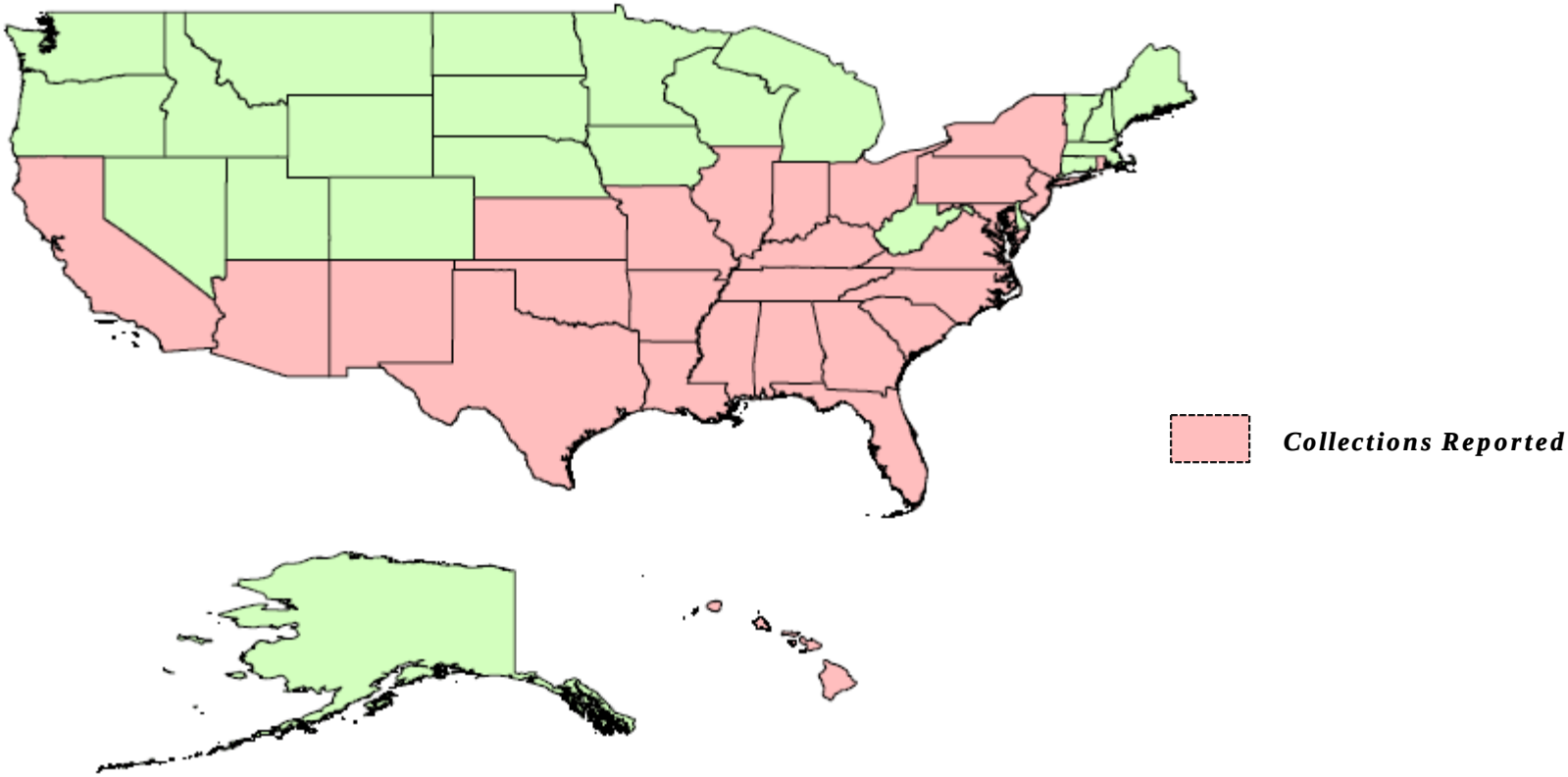
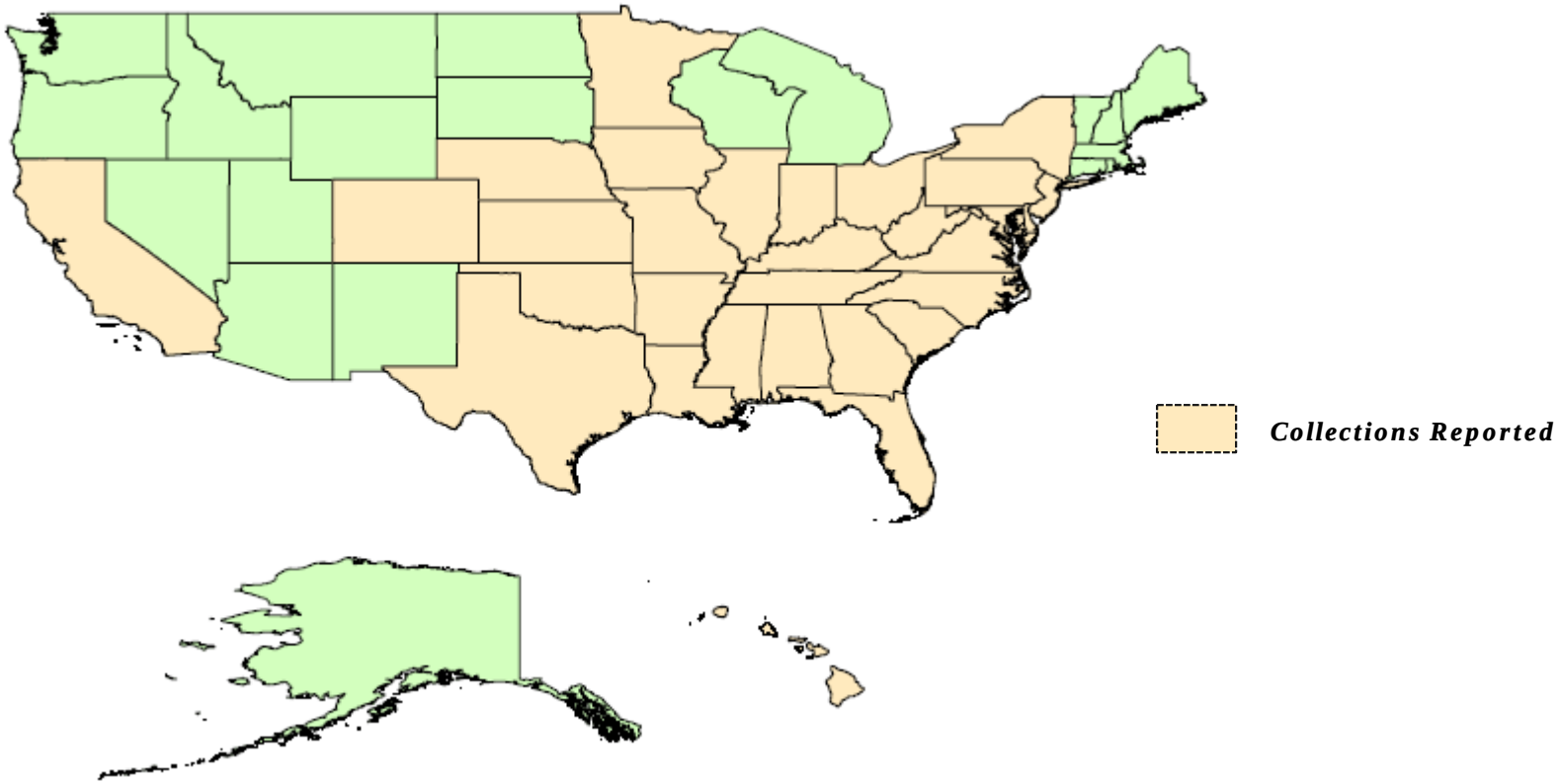
Aedes aegypti Distribution by State



Aedes albopictus Distribution by State



Notes on the Biology of Zika Virus Vectors

Aedes aegypti and *Aedes albopictus*, the major vectors of dengue, chikungunya & Zika viruses, are originally of African and Asian origin, respectively. The spread of these two species around the world in the past 50 years is well documented and facilitated by a unique life trait: their eggs can survive desiccation. This trait allows eggs laid by these species to travel undetected in receptacles like used tires, or lucky bamboo plants, which are distributed throughout the world. When these receptacles are wetted (e.g. by rain), the larva emerge and grow to adults in their new environment. In temperate or tropical environments conditions are highly suitable for populations to quickly become established, as these mosquitoes have done in Brazil and nearly every other country in North, Central and South America.

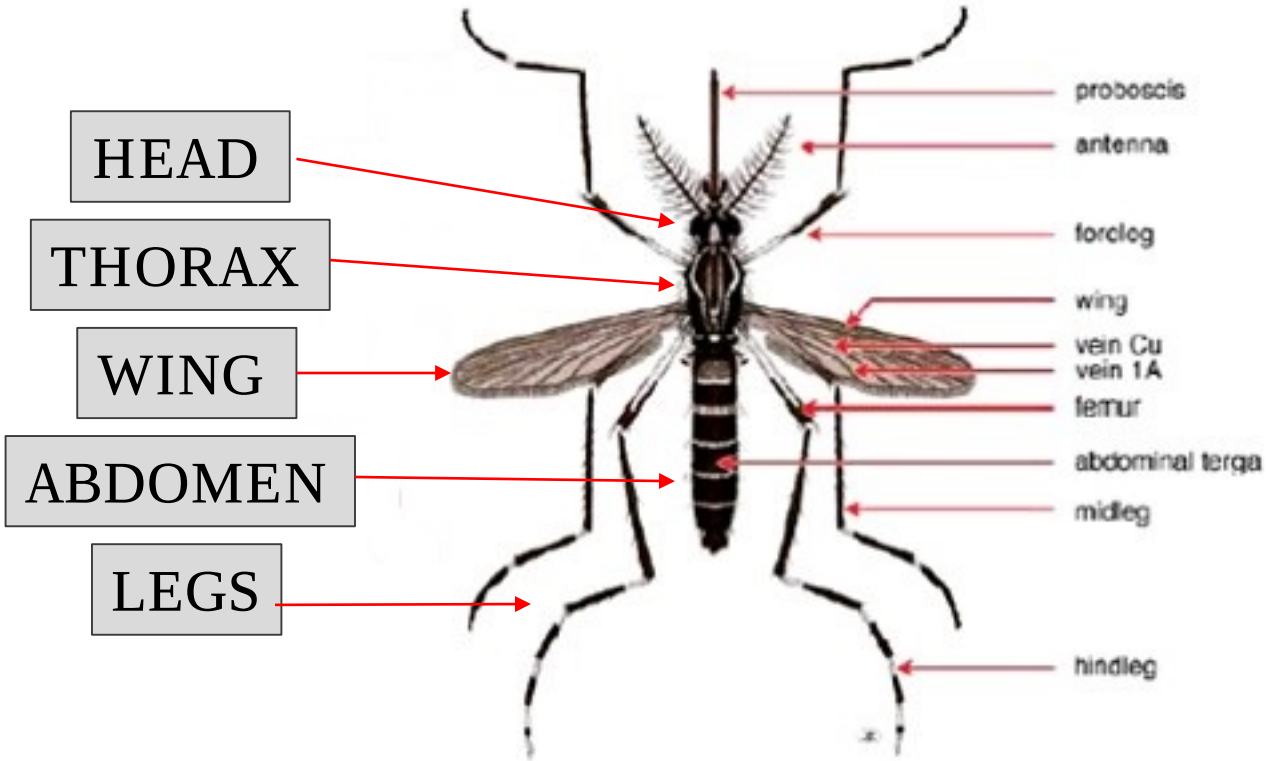
Compounding this problem is that these mosquito species are capable of ovarian viral transmission – meaning that if the mother is infected with a virus, she can pass it on to her offspring through her eggs. Each female mosquito lays 100-120 eggs, every 4-5 days (c.4-8 times in her life time of 1-3 months), and if she is infected, all her offspring emerge ready to infect the first person they bite.

Reducing the exposure of infected people to mosquitoes requires the widespread availability of rapid diagnostic tests, effective treatment and most importantly, containment of the patients. Given that there is currently no vaccine or effective treatment for Zika virus, reducing the opportunity for mosquitoes to bite infected people is critical in slowing the continued spread of the disease.

Further guidance on protecting yourself from the Zika Virus:

CDC Guidance on Zika Virus
CDC Dengue and Chikungunya in Our Backyard: Preventing Aedes Mosquito-Borne Diseases
CDC Preventing Aedes Mosquito-Borne Disease
CDC DEET Factsheet
WHO Zika Virus Background
WHO Microcephaly/Zika virus
U.S. EPA Controlling Mosquitoes at the Larval Stage

Mosquito Body Parts



Click on a label to the left of the diagram to view side-by-side photos of *Aedes aegypti* and *Aedes albopictus*. *Note: If you do not have access to a microscope, the thorax (specifically scutum) can be viewed with a hand lens and should be enough to differentiate these species*

Aedes (Stg.) aegypti (Linnaeus, 1762)

Bionomics:
In association with man, *Ae. aegypti* will use any and all natural and artificial containers as larval breeding sites. Away from urban areas the species tends to favor pools in river beds, tree stumps, tree holes and natural containers. Females are primarily day biters and readily enter buildings to feed. They have also been taken in lesser numbers at night (Christophers 1960).

Medical Importance:
Primary vector of Yellow Fever, Dengue Fever, Chikungunya Virus and Zika Virus (Christophers 1960;).

WRBU Mosquito Catalog Species Page

Distribution:

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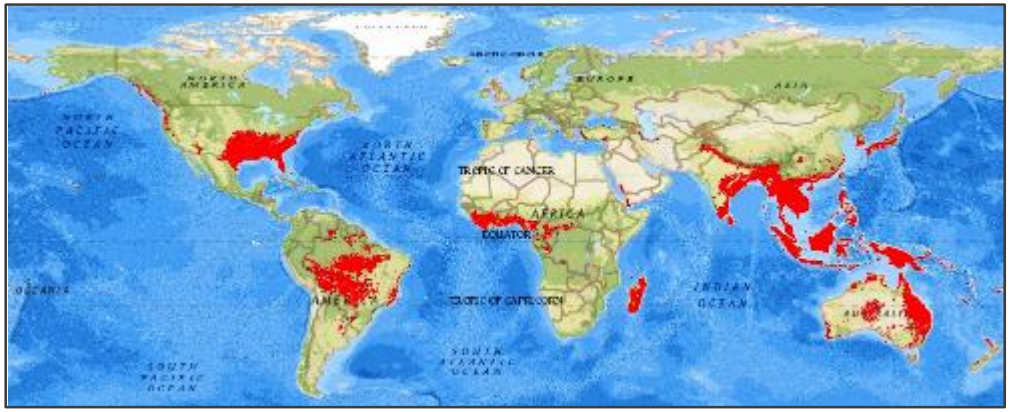
Aedes (Stg.) albopictus (Skuse, 1894)

Bionomics:
Larval *Ae. albopictus* are found in natural containers, including treeholes, bamboo stumps, coconut shells, rockholes, palm fronds, and leaf axils. They are also found in all varieties of artificial containers and will breed indoors. Females readily bite man (Huang 1972).

Medical Importance:
Vector of dengue and yellow fever in the wild. Under laboratory conditions: bird malarias, Eastern and Western equine encephalitis, West Nile, Zika, Chikungunya and Japanese encephalitis viruses (Huang 1972).

WRBU Mosquito Catalog Species Page

Distribution:



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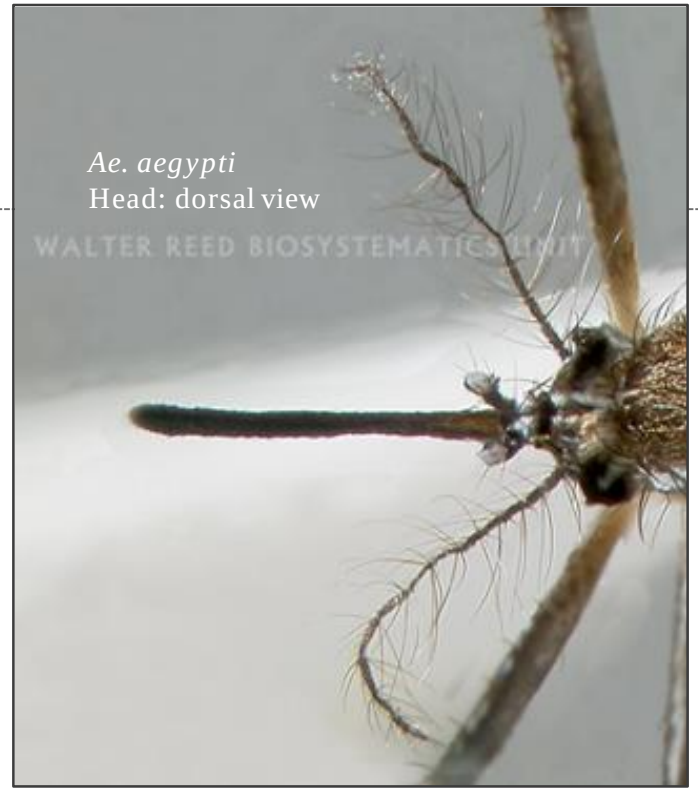
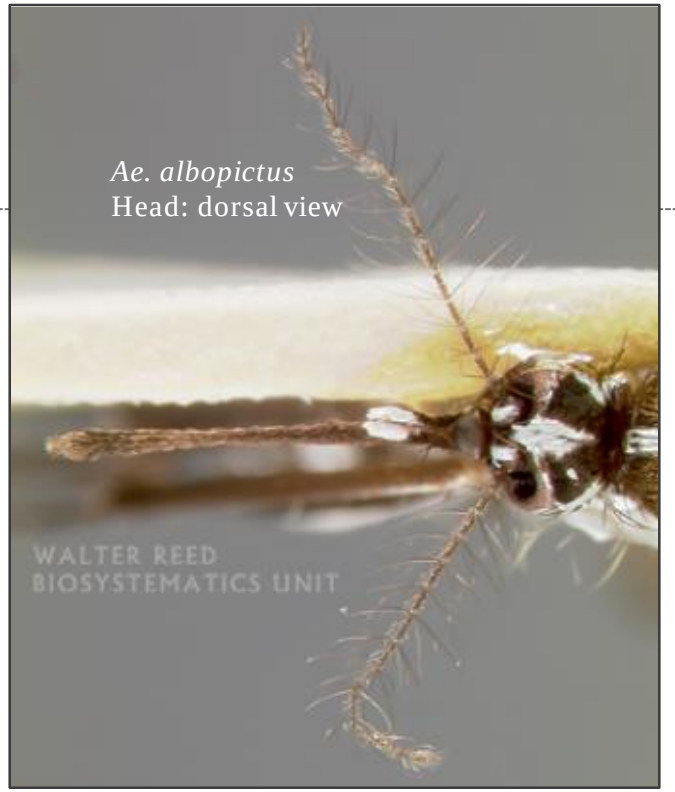
Head


Ae. aegypti
Head: dorsal view
WALTER REED BIOSYSTEMATICS UNIT


Ae. albopictus
Head: dorsal view
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WALTER REED BIOSYSTEMATICS UNIT
Ae. aegypti
Head: lateral view


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Ae. albopictus
Head: lateral view

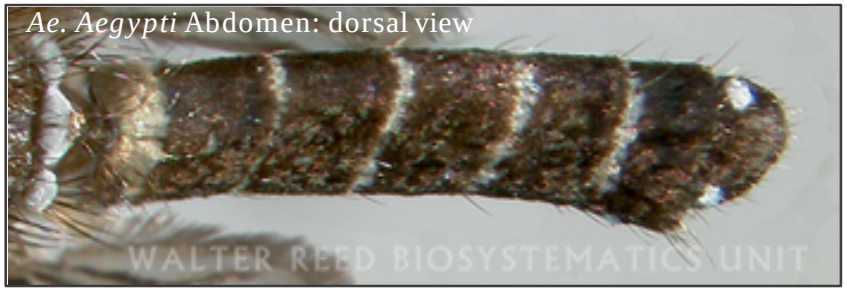
Thorax

Ae. aegypti
Thorax: dorsal view

Ae. albopictus
Thorax: dorsal view

Ae. aegypti
Thorax: lateral view

Ae. albopictus
Thorax: lateral view


Ae. Aegypti Abdomen: dorsal view
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Ae. albopictus Abdomen: dorsal view
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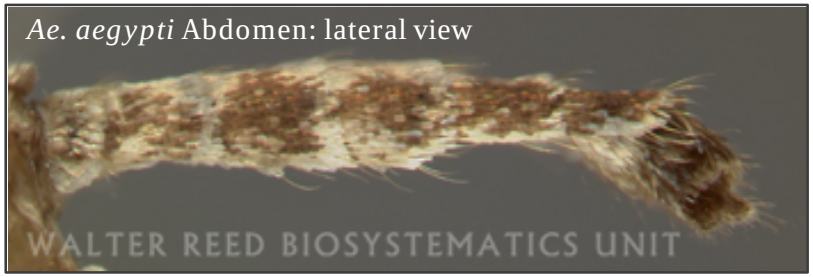
Abdomen


Ae. aegypti Abdomen: lateral view
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Ae. albopictus Abdomen: lateral view
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Ae. aegypti Wing: dorsal view
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Wings


Ae. albopictus Wing: dorsal view
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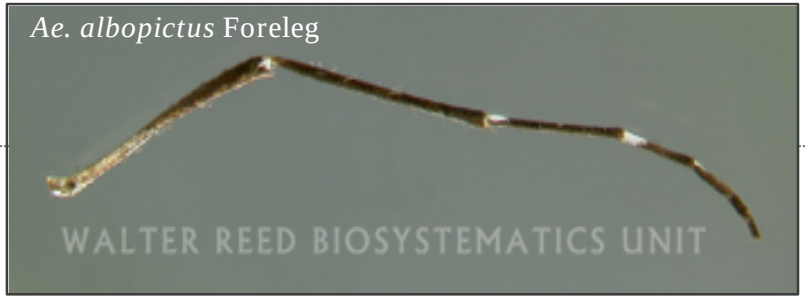
Legs

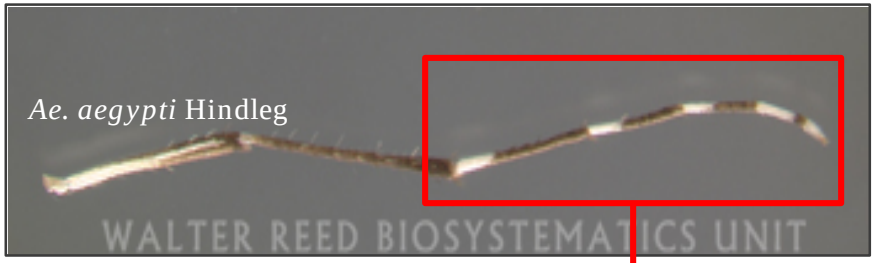
Ae. aegypti: Foreleg



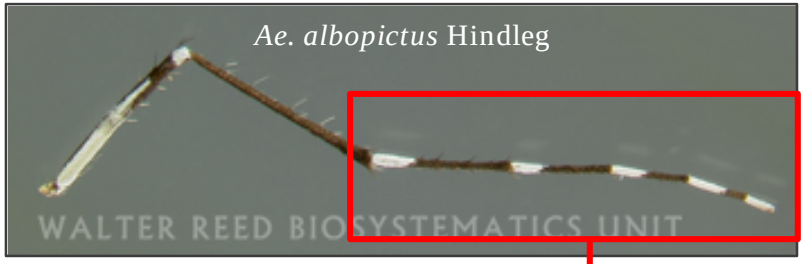
Ae. albopictus Foreleg

Ae. aegypti Midleg

Ae. albopictus Midleg



Ae. aegypti Hindleg



Ae. albopictus Hindleg

Ae. aegypti Hindtarsi

Ae. albopictus Hindtarsi

Taxonomic Keys

WRBU Key to Medically Important NORTHCOM Mosquitos
WRBU Key to SOUTHCOM Medically Important Aedes Mosquitos
WRBU Key to SOUTHCOM Medically Important Aedes Mosquitos
WRBU Key to PACOM Medically Important Aedes Mosquitos of the Paleartic Region
WRBU Key to PACOM Medically Important Aedes Mosquitos of the Australasian Region
Rueda, Leopoldo M. Pictorial keys for the identification of mosquitoes (Diptera: Culicidae) associated with dengue virus transmission. WALTER REED ARMY INST OF RESEARCH WASHINGTON DC DEPARTMENT OF ENTOMOLOGY, 2004.
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Zika Virus Background

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Insecticide Resistance of Zika Virus Vectors

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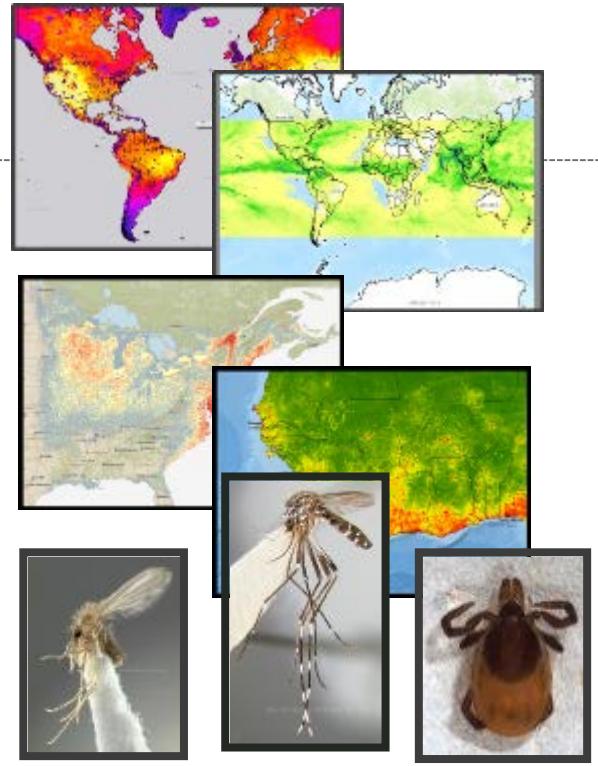
The Walter Reed Biosystematics Unit is part of the Walter Reed Army Institute of Research and is based at the Smithsonian Institution Museum Support Center. To access taxonomic keys, the Systematic Catalog of Culicidae or to learn more about WRBU visit www.wrbu.org.



VECTORMAP

VectorMap is only as good as the data you provide. If you have collection records, models or pathogen testing results please contact the VectorMap team to learn how to contribute data at mosquitomap@si.edu.

Vector Photos Provided by Judith Stoffer, Walter Reed Biosystematics Unit

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