

Vector Hazard Report: CHIKV in the Americas and Caribbean

Notes, photos and habitat suitability models gathered from
The Armed Forces Pest Management Board, VectorMap and
The Walter Reed Biosystematics Unit



[VectorMap](#)
[Systematic Catalogue of the Culicidae](#)

All material in this brief is provided for your information only and may not be construed as medical advice or instruction. No action or inaction should be taken based solely on the contents of this information; instead, readers should consult appropriate health professionals on any matter relating to their health and well-being.

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Background

Chikungunya (pronounced: \chik-en-gun-ye) virus (CHIKV) is transmitted to humans by mosquitoes. The most common symptoms of chikungunya virus infection are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Currently, there is no vaccine to prevent or medicine to treat chikungunya virus infection ([CDC, 2014](#)).

Outbreaks of CHIKV have been reported in Africa, Asia, Europe, and the Indian and Pacific Oceans. In December 2013, the virus was found for the first time in the Americas on islands in the Caribbean ([CDC, 2014](#)).

As of March 2015, local transmission of CHIKV has been reported to the CDC from 44 countries in the Caribbean, Central and South America and over 1.2 million suspected cases have been reported to the [Pan American Health Organization](#) ([CDC, 2014](#)).

VectorMap provides a platform for reporting vector distributions, disease occurrences and modeling of diseases and vector hazards in a geo-spatial environment.

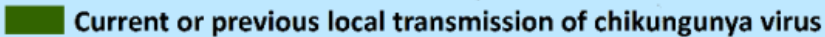
The Walter Reed Biosystematics Unit provides valuable knowledge to aid vector identification and pathogen detection.



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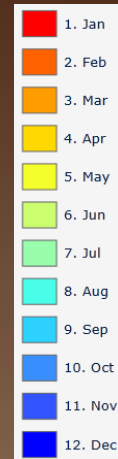
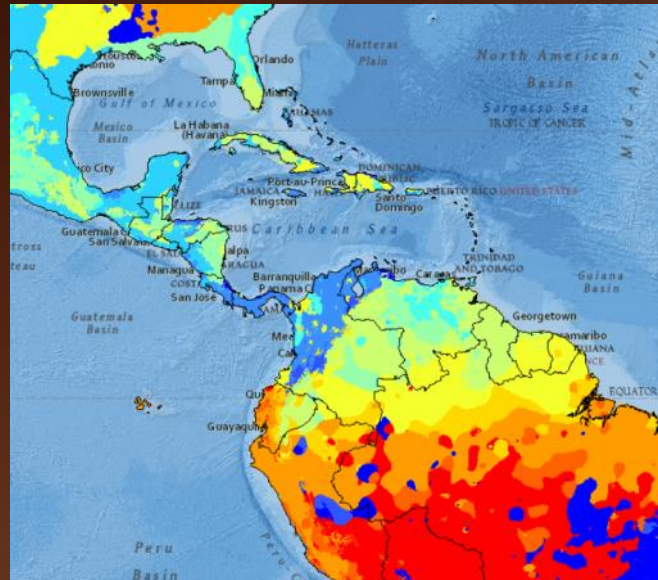
CDC



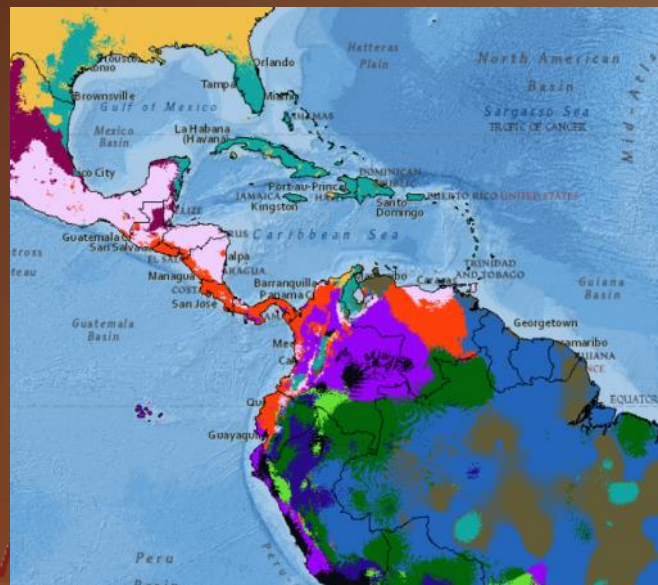
de countries or territories where
virus transmission.

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Climate of Americas and Caribbean



Month of maximum precipitation, [WorldClim](#) (50 year average)



Month of maximum temperature, [WorldClim](#) (50 year average)

Monthly Climate Maps

[Click here](#) to view the maps described below

Rainfall

This map shows the accumulated rainfall for the past month. Updated monthly.
-NASA Earth Observations

Consistent Above and Below Average Precipitation

Areas with consistent above average monthly rainfall over the past 3 months may indicate increased mosquito breeding sites which may lead to increased mosquito-borne disease transmission. Areas with consistent below average rainfall may also indicate increased water storage or ponding which can provide additional habitat for mosquito species that lay eggs in human containers, protected micro environments, or long lasting pools. Updated monthly. -NASA Earth Observations.

Drought Breaking Rain

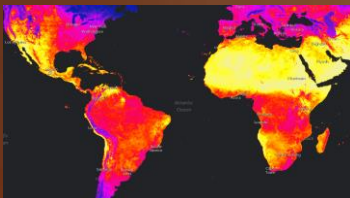
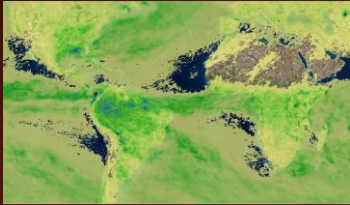
Areas receiving above average rainfall for the past month and below average rainfall for the previous 12 months. Drought breaking rain may indicate recent suitable conditions for vectors and diseases in a stressed environment or human population. Updated monthly. -WorldClim, Giovanni online data system NASA GES DISC, Tropical Rainfall Measuring Mission (TRMM).

Temperature anomaly

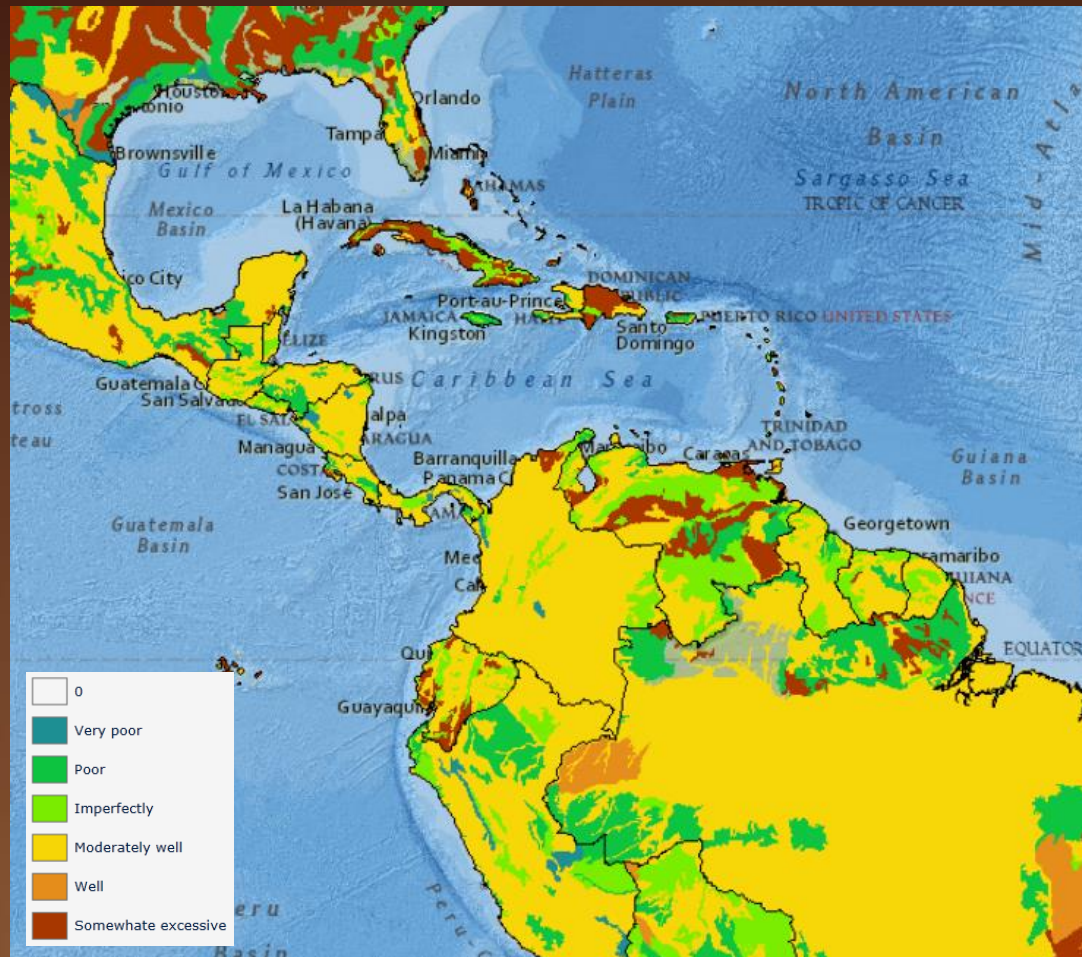
This map shows where earth's temperatures were warmer or cooler in the daytime for the past month than the average temperatures for the same month from 2001-2010. Updated monthly.
-NASA Earth Observations

Land Surface Temperature

This map shows the temperature of the earth's lands during the daytime. Updated monthly.
-NASA Earth Observations



Soil Drainage



Soil Drainage (Harmonized World Soil Database 1.1; 0.02 Deg resolution)

Human Density

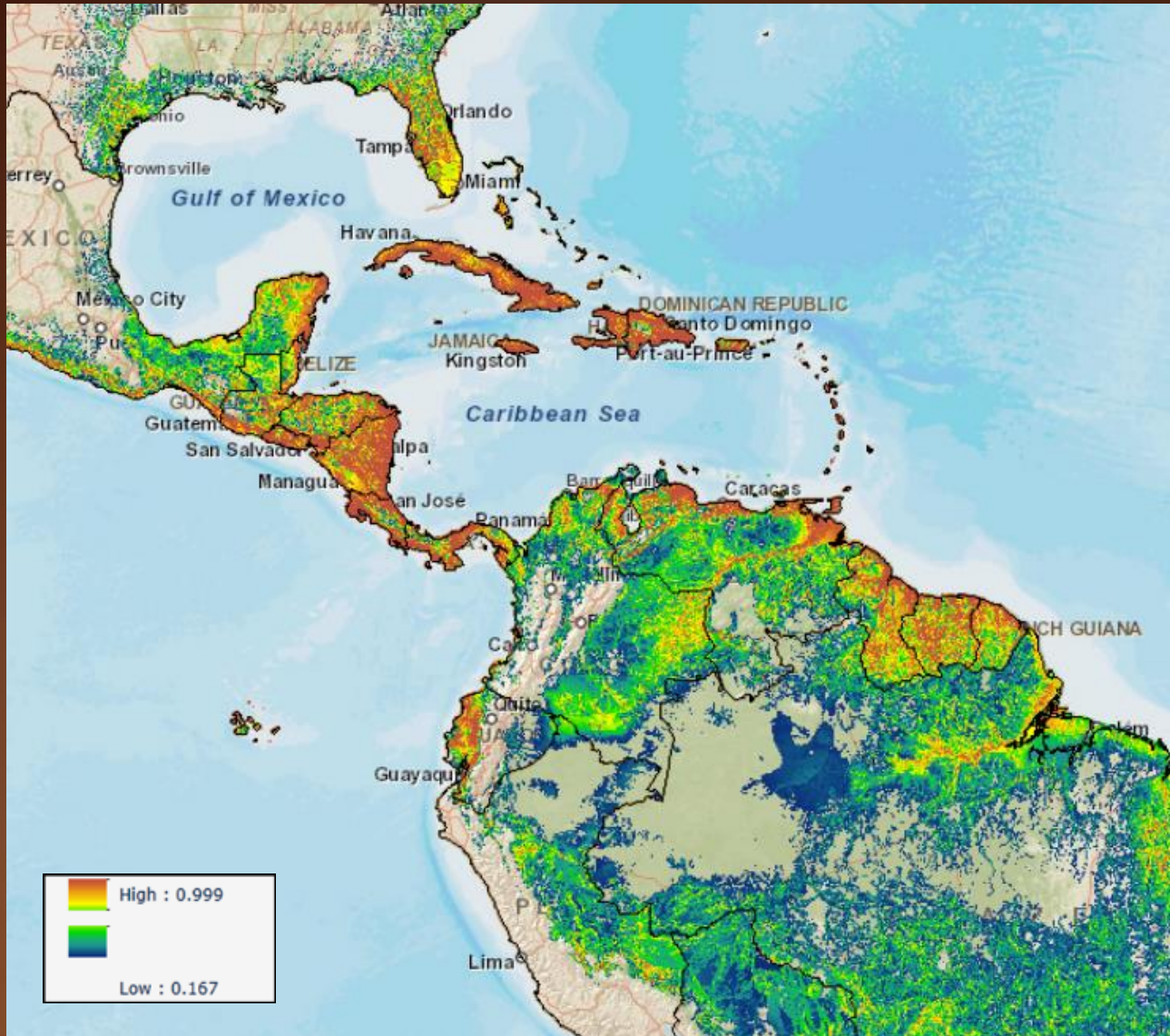
LandScan 2011



People/1 sq Km. This product was made utilizing the LandScan (2011)[™] High Resolution global Population Data Set copyrighted by UT-Battelle, LLC, operator of Oak Ridge National Laboratory

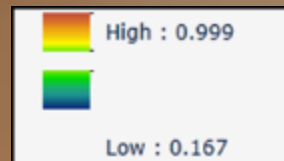
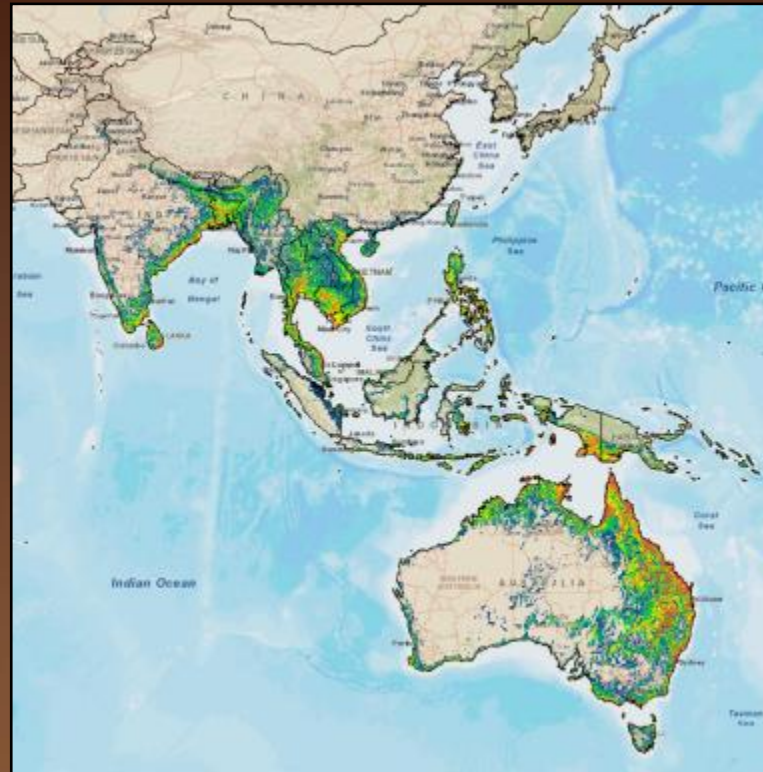
Aedes aegypti

(Habitat suitability modeled using Maxent)



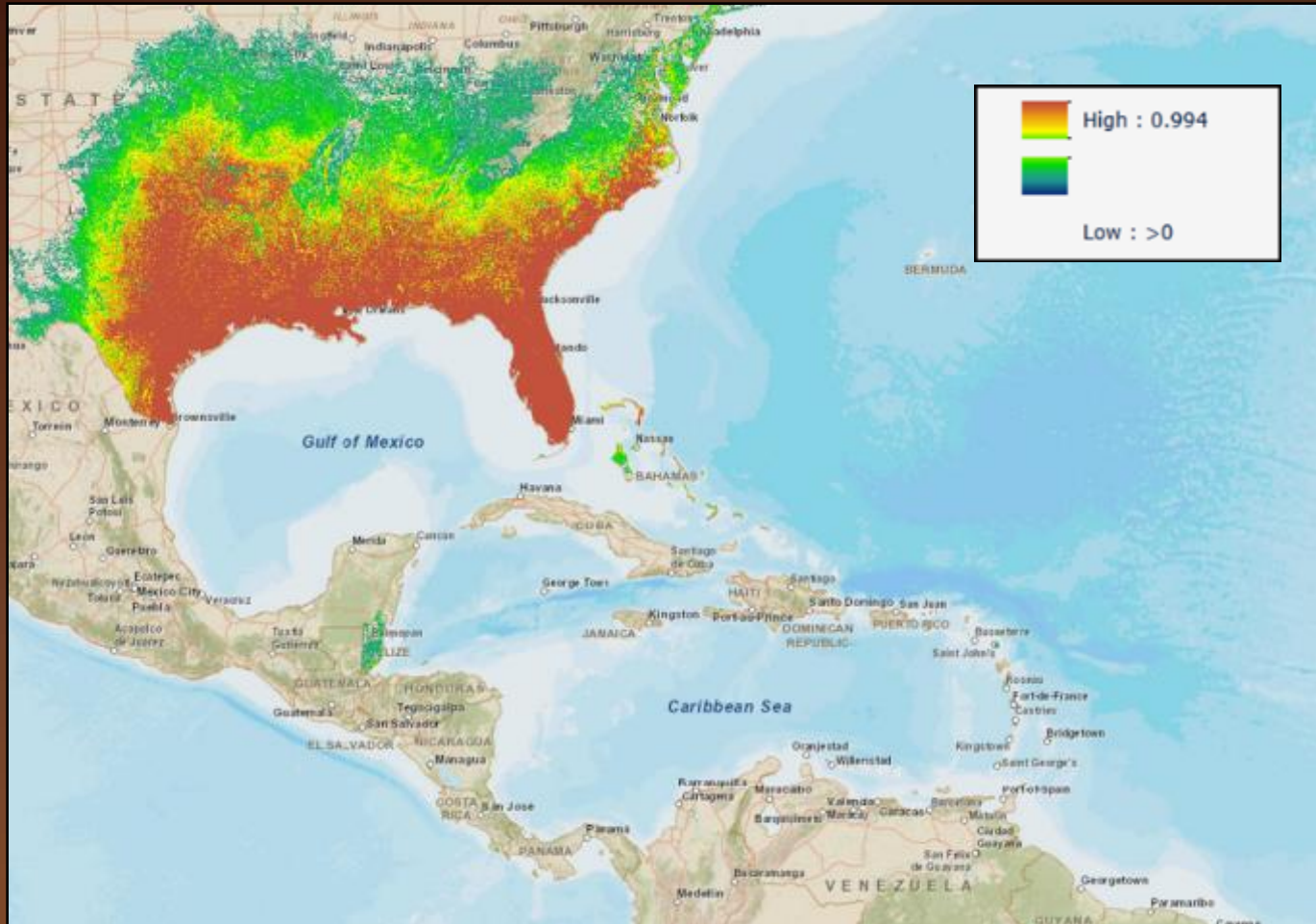
Aedes aegypti

(Habitat suitability modeled using Maxent)



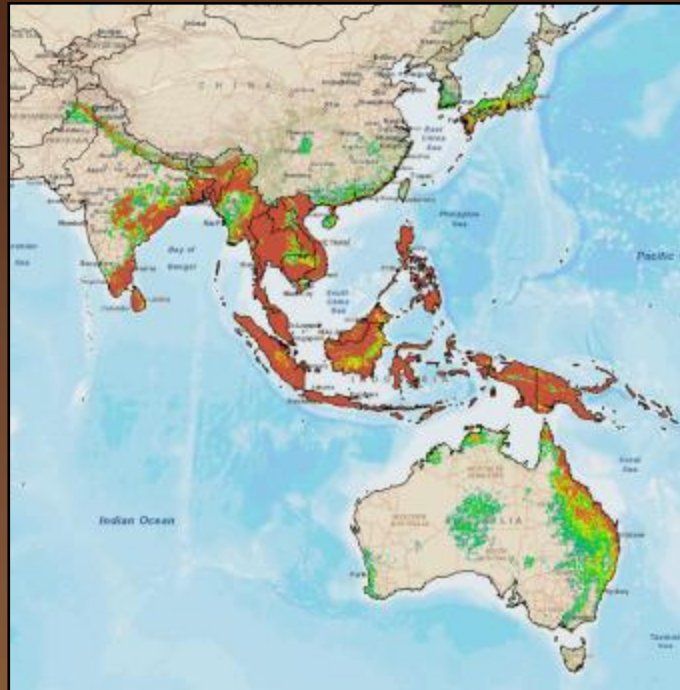
Aedes albopictus

(Habitat suitability modeled using Maxent)



Aedes albopictus

(Habitat suitability modeled using Maxent)



Primary Vectors of CHIKV

Aedes (Stg.) aegypti (Linnaeus, 1762)

“Yellow Fever Mosquito”

Bionomics:

In association with man, *Ae. aegypti* will use any and all natural and artificial containers. 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:

This species is a primary vector of dengue, chikungunya virus and yellow fever (Christophers 1960).

[WRBU Catalog species page](#)



Primary Vectors of CHIKV

Aedes (Stg.) albopictus (Skuse, 1894)

“Asian Tiger Mosquito”

Bionomics:

Also known as the “Asian Tiger Mosquito”, the immatures 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. The females readily bite man (Huang 1972).

Medical Importance:

This species is a known vector of dengue and yellow fever in the wild. Under laboratory conditions it has also been shown to vector bird malarias, Eastern and Western equine encephalitis, West Nile, chikungunya and Japanese encephalitis viruses (Huang, 1972).

[WRBU Catalog species page](#)

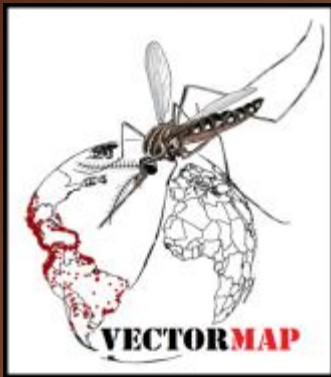


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Know the vector, know the threat

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 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 Courtesy of Judith Stoffer,
Walter Reed Biosystematics Unit

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