



DIDEEBYCHA

Georgia Mosquito Control Association

www.GAmosquito.org



The GMCA Newsletter - DIDEEBYCHA - is a means of spotlighting various programs throughout Georgia, as well as a way of providing the membership with information about topics of interest to mosquito control.

Chikungunya

Is Georgia at risk?

In 2001, the CDC and the Pan American Health Organization jointly released a document entitled "Preparedness and Response for Chikungunya Virus Introduction in the Americas"

(<http://www.cdc.gov/chikungunya/>). In late 2013, Chikungunya was found for the first time on islands in the Caribbean, where it has persisted and continued to spread.

Chikungunya fever is an emerging, mosquito-borne disease caused by the Chikungunya virus. It is transmitted predominantly by *Aedes aegypti* and *Ae*

albopictus, the same species involved in the transmission of dengue. Chikungunya is an RNA virus that belongs to the Alphavirus genus in the family Togaviridae. The name chikungunya derives from a word in Makonde and roughly means "that which bends," describing the stooped appearance of persons suffering with the characteristic painful arthralgia.

Epidemics of fever, rash, and arthritis

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Mosquito Surveillance: Using the Data

Mosquito surveillance is an important part of mosquito control. Where arboviral diseases occur, mosquito testing is an equally important component of mosquito surveillance.

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Tiger, tiger...*Aedes albopictus*

The introduction of the Asian tiger mosquito, *Aedes albopictus*, had a profound impact mosquito control in Georgia.

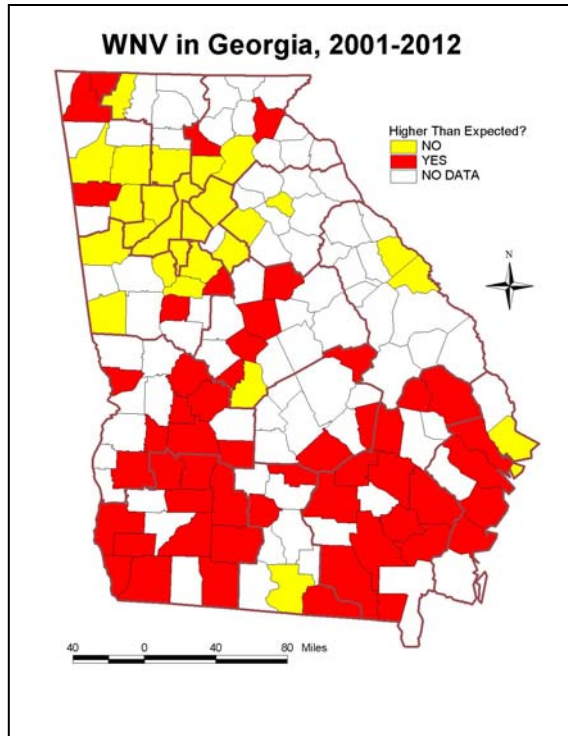
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Program Spotlight

Jack Vereen, former director of the Liberty County Mosquito Control program, passed away on March 10, 2014.

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Mosquito Surveillance: Using the Data



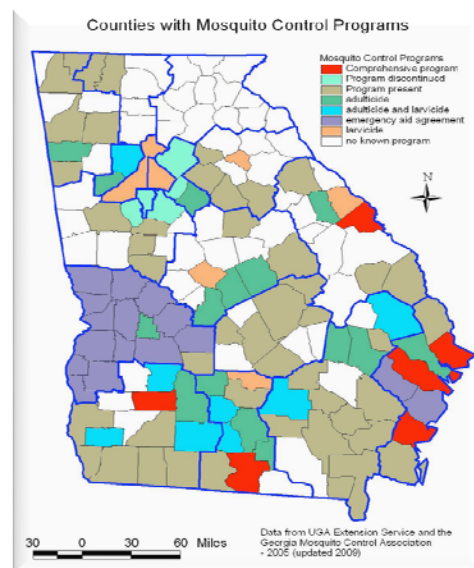
Mosquito surveillance is an important component of any mosquito control program. Where arboviral diseases occur, mosquito testing is an equally important component of an arboviral surveillance program. Arboviral encephalitis can be prevented in two major ways: personal protective measures to reduce contact with mosquitoes and public health measures to reduce the population of infected mosquitoes in the environment (mosquito control). Analysis of surveillance data provides information about the timing of arboviral transmission and the risk to the public, which can trigger county-level educational programs to help reduce risk.

A study comparing two mosquito control districts showed that the program with the most mosquito surveillance and best documented larviciding and adulticiding operations had the fewest number of WNV cases. This study indicated that people in areas with no mosquito control program had a tenfold greater risk of WNV than those in areas where mosquitoes were controlled.

What are the roadblocks to arboviral surveillance in Georgia? We really do not have enough data to do

good predictive calculating, particularly at the State level. Predicting where and when WNV outbreaks will occur is difficult, especially in areas with endemic transmission, which is what occurs in Georgia. Most of our sentinel data do not match up with our case data, as counties doing mosquito surveillance are not necessarily the same counties where human cases are occurring. *Culex quinquefasciatus*, our primary WNV vector, are not evenly distributed, so neither is risk of human cases. However, we do not have sufficient surveillance to know where risk is occurring, and maintaining mosquito monitoring systems is costly even though it is essential according to the CDC.

Where data are available, the best predictor of risk is the Vector Index, the minimum infection rate (MIR) times the number of mosquitoes per trap night (abundance), which provides 2-4 weeks lead time in advance of human cases. Where adequate surveillance is maintained, this gives sufficient lead time to implement adult mosquito control efforts, which have demonstrated success in reducing human risk, resulting in fewer WNV cases (Carney, 2008).



Carney, R.M., Husted, S., Jean, C., Glaser, C., & Kramer, V. (2008). Efficacy of aerial spraying of mosquito adulticide in reducing incidence of West Nile Virus, California, 2005. *Emerging Infectious Diseases*, 14(5), 747-754.

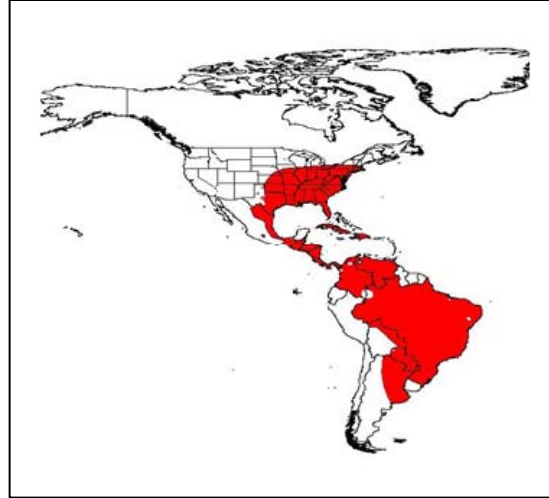
Tiger, tiger...*Aedes albopictus*



Aedes albopictus was introduced into the Port of Houston in 1985 in shipments of used tires from northern Asia. Movement of tire casings has spread the species to more than 20 states since 1985.

The Asian tiger mosquito is a small black and white mosquito. The name "tiger mosquito" comes from its white and black color pattern. It has a white stripe running down the center of its head and back with white bands on the legs. These mosquitoes lay their eggs in water-filled natural and artificial containers like cavities in trees and old tires; they do not lay their eggs in ditches or marshes. The Asian tiger mosquito usually does not fly more than about ½ mile from its breeding site and generally flies a considerably shorter distance.

Aedes albopictus associates closely with people and is an aggressive, daytime biting mosquito. It is native to the tropical and subtropical areas of Southeast Asia, and is now found in 1/3 of the United States; New Jersey, southern New York, and Pennsylvania are currently the northernmost boundary of established *Ae albopictus* populations in the eastern United States.



The tiger mosquito is an important disease carrier in Asia. In North America, *Ae albopictus* is among the most efficient bridge vectors of WNV. In addition to vectoring exotic arboviruses, this species can also transmit the endemic eastern equine encephalitis and La Crosse viruses in the laboratory and in the field. It is a competent vector of both Dengue and Chikungunya virus. In fact, *Ae albopictus* is a competent vector for at least 22 arboviruses.

A lot of work has been done recently on control of *Ae albopictus*. Since it is a daytime biting species and an asynchronous emerger, conventional truck-based ULV spraying doesn't always work well. According to one study, an integrated pest management approach can affect abundances, but labor-intensive, costly source reduction is not enough usually to maintain *Ae albopictus* counts below a nuisance threshold.

References

Fonseca, et al, Area-wide management of *Aedes albopictus*. Part 2: Gauging the efficacy of traditional integrated pest control measures against urban container mosquitoes. 2013. Pest Management Science, 69 (12): 1351–1361.

Chikungunya: Is Georgia at Risk? (cont)

resembling CHIK were reported as early as the 1770s. However, the virus was not isolated from human serum and mosquitoes until an epidemic in Tanzania in 1952–1953. Subsequent outbreaks occurred in Africa and Asia, many of them affecting small or rural communities.

In Asia in the 1960s, CHIKV strains were isolated during large urban outbreaks in Bangkok, Thailand. These large outbreaks also occurred in Calcutta and Vellore, India, during the 1960s and 1970s. After the initial identification of CHIKV, sporadic outbreaks continued to occur, but little activity was reported after the mid-1980s. In 2004, however, an outbreak originating on the coast of Kenya subsequently spread to Comoros, La Réunion, and several other Indian Ocean islands in the following two years.

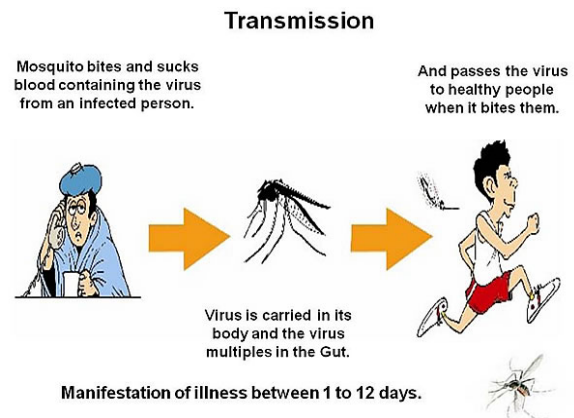
From the spring of 2004 to the summer of 2006, an estimated 500,000 cases had occurred. Since 2004, Chikungunya virus had been causing large epidemics of chikungunya fever, with considerable morbidity and suffering. The epidemics had crossed international borders and seas, and the virus had been introduced into at least 19 countries by travelers returning from affected areas. Because the virus had been introduced into geographic locations where the appropriate vectors are endemic, it was thought likely that the disease would establish itself in new areas of Europe and the Americas.

What about Georgia? There certainly is a risk of introduction and spread; there is no immunity and appropriate vectors and hosts exist here. McTighe and Vaidyanathan (2012. *Vector-Borne and Zoonotic Diseases*, Vol. 12:867-871) tested the vector competency of Virginia and Georgia strains of *Ae albopictus* for CHIK virus and determined that they were all highly competent vectors of this virus. In their conclusions these last authors stated, “Only early and specific detection of human cases coordinated with vector control can reduce the risk of local transmission of CHIKV in the US.”

Human Disease Symptoms:

- High fever (103-104 F)
- Rash
- Severe incapacitating arthritis/arthralgia.
 - Generalized
 - Usually acute (several days to several weeks, though 20% of individuals have long-term joint complaints)
- Hemorrhagic manifestations have been reported (rare)
- Rarely if ever fatal – may cause encephalitis

These symptoms appear on average 4 to 7 days (but can range from 1 to 12 days) after being bitten by an infected *Aedes* mosquito. Infected individuals develop a high titer viremia and can infect mosquitoes during this time period.



References

- <http://www.cdc.gov/chikungunya/>
- <http://www.who.int/mediacentre/factsheets/fs327/en/>
- http://www.paho.org/hq/index.php?option=com_content&view=article&id=9053&Itemid=39843
- [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60185-9/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60185-9/fulltext)

GMCA Board of Directors 2013-2014

The President, Vice-President, Secretary/Treasurer, and Commercial Board Member serve a one-year term of office beginning in October. The Directors serve a three-year term, while the term for representatives is indefinite. Nominations are accepted during the annual October meeting.

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It is with a heavy heart that I must report that Jerry DeRamus, Secretary-Treasurer of the GMCA Board of Directors, recently passed away. He had been improving from a stroke when he took ill and was rushed to hospital. Unfortunately, he was unable to recover from this latest illness.

Jerry was a friend who made a great contribution to our organization. He will be missed.



PROGRAM SPOTLIGHT

Liberty County Mosquito Control Program

Jack Merrill Vereen Jr, 71, of Midway passed away on March 10, 2014.



Jack was born in Savannah on Nov 16, 1942. He started at the Chatham County Mosquito Control Commission in 1970 and retired after 30 years as an Entomology Technician in 2000. His coworkers say that, "Jack was an excellent technician involved with all the various aspects of larval inspection and control. He had a keen interest in source reduction efforts and was involved with a number of those projects. Jack also served as night dispatcher for our fleet of spray trucks and he was witness to the conversion from thermal fogging to ULV application. He left Chatham County Mosquito Control with a great deal of knowledge about mosquito control and the citizens of Liberty County benefited from that knowledge."

After retiring from Chatham County, Jack went to work for the Liberty County Mosquito Control, where he was director for 10 years. The Liberty County Mosquito Control program provides mosquito control for the county; several of the cities have their own control programs.

Liberty County has a total area of 602.5 square miles, of which 519.1 square miles (86.2%) is land and 83.5 square miles (13.8%) is water. It is a coastal county, so the program has to deal with both saltmarsh and freshwater mosquitoes. Fort Stewart, home of the 3rd Infantry Division, is located in Liberty County.

Jack took his job in mosquito control seriously. He said, "Anyone that knows me and how I do work at Mosquito Control knows I take my work seriously and expect my employees to do the same. I have been doing this work since June 1970. I have functioned in all phases of Mosquito Control from how to operate a mosquito egg separator to how to plan and implement source reduction projects and seeing them to completion."

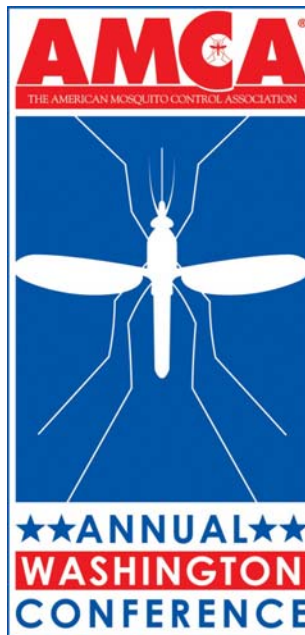
Jack Vereen was active in the Georgia Mosquito control Association, serving as president in 1999.

Frazier Sylers, who worked with Jack for the past several years, has been promoted to the position of director of Liberty County Mosquito Control. Chris Reisinger has taken over the mosquito surveillance position.



Washington Day, 2014

On May 5-7, 2014 the Georgia Mosquito Control Association will once again be sending a board member to represent Georgia during the American Mosquito Control Association's Day on the Hill. This Washington Conference is the venue to identify issues or concerns that can only be examined and resolved at the federal level or on a nationwide basis.



The 2014 Position Papers

[Clean Water Act NPDES Permit Impacts on Mosquito Control Programs](#)

[Epidemiology and Laboratory Capacity Grants for Mosquito-borne Disease Surveillance](#)

[Mosquito Control on Federal Lands](#)

http://www.mosquito.org/index.php?option=com_content&view=article&catid=19%3Asite-content&id=48%3Aspring-washington-conference&Itemid=123

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