



**JUNE 2017
SUMMER NEWSLETTER**

INTRODUCTION

The Mid-Atlantic Mosquito Control Association (MAMCA) is a non-profit educational and scientific professional association which represents mosquito control and public health professionals throughout the U.S. with a particular emphasis in the mid-Atlantic states. Those states are Delaware, Georgia, Maryland, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. MAMCA is also a Sustaining Member of the American Mosquito Control Association (AMCA). The organization was founded in 1975 and is incorporated in the state of S.C.

Our membership is made up of government, academia, industry, and other interested parties and organizations. The Association publishes an annual Newsletter in the Fall, holds an annual educational conference each year in one of its member states, and maintains a website (www.mamca.org) providing education, networking, products/services, membership, and employment opportunities.

The Summer newsletter supplements the above and is published on a ‘as needed/requested’ basis. We hope you find the information herein to be both informative and interesting.

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2018 ANNUAL EDUCATIONAL CONFERENCE

A joint meeting of the Mid-Atlantic Mosquito Control Association and the N.C. Mosquito & Vector Control Association (NCMVCA)

February 12-14, 2018
Carolina Beach, North Carolina
Courtyard Marriott Carolina Beach



The 2018 annual conference will be held at the oceanfront Courtyard Marriott Carolina Beach, 100 Charlotte Avenue, Carolina Beach, NC. Carolina Beach is located about 15 miles south of downtown Wilmington (NC). The hotel website may be viewed at <https://www.marriott.com/hotels/travel/ilmcb-courtyard-carolina-beach-oceanfront/?app=resvlink>.

This will be the 43rd Annual MAMCA meeting and the 52nd (and a half) Annual NCMVCA meeting. The conference hotel room rate will be the prevailing North Carolina State government room night rate in 2018, plus local and state taxes. The current State rate is \$67.30/night (plus taxes) and the 2018 rate will be set in SEPT 2017. All standard rooms are 2-queen beds and a limited number of suites are available at a higher rate.

Rooms can be reserved online at the dedicated hotel MAMCA conference page ([https://www.marriott.com/meeting-event-hotels/group-corporate-travel/groupCorp.mi?resLinkIdData=Mid-Atlantic%20Mosquito%20Control%20Association%20\(MAMCA\)%20ilmb%20mammama%2067.30%20USD%20false%202/11/18%202/15/18%201/9/18](https://www.marriott.com/meeting-event-hotels/group-corporate-travel/groupCorp.mi?resLinkIdData=Mid-Atlantic%20Mosquito%20Control%20Association%20(MAMCA)%20ilmb%20mammama%2067.30%20USD%20false%202/11/18%202/15/18%201/9/18)) or by calling the hotel at (910) 458-2030. Make sure you indicate you are with the Mid-Atlantic Mosquito Control Association conference. **Space is limited and reservations must be made by January 9, 2018, after which time neither the room rate nor availability is guaranteed.**

Want more information about the Wilmington/Carolina Beach area? Try starting with the following site: www.wilmingtonandbeaches.com/carolina-beach/.

****CONFERENCE FORMAT NOTES****

The meeting provides 2+ days of educational and technical presentations to attendees as well as exhibit opportunities for companies and organizations which serve the mosquito control profession. Registration and exhibit information, including fees, will be posted on the MAMCA website (www.mamca.org) in the near future. Both onsite and advance registration is available and registration is mandatory for all conference attendees.

The educational program agenda for this conference is scheduled to be available by Fall 2017. MAMCA does not apply for individual state or national CE units or hours for its attendees. Questions about a specific state CEU credit, in one of the listed mid-Atlantic states, may be directed to that state's Director (see website link-http://www.mamca.org/about_board.htm).

Georgia's Collaborative Approach to Expanding Mosquito Surveillance in Response to Zika Virus: A Case Study

R. Christopher Rustin, DrPH, MT, REHS, Sarbesh Pandeya, MPH, Deonte Martin, BS, Haresh Rochani, DrPH, MPH, MBBS, Varadan Sevilimedu, MPH, Rosmarie Kelly, PhD, MPH

ABSTRACT

Zika virus (ZIKV) was declared an international public health emergency by the World Health Organization on February 1, 2016. Due to the known and estimated range of the ZIKV mosquito vectors, southern and central US states faced increased risk of ZIKV transmission. With the state of Georgia hosting the world's busiest international airport, a climate that supports the ZIKV vectors, and limited surveillance (13 counties) and response capacity, the Department of Public Health (DPH) was challenged to respond and prevent ZIKV transmission. This case study describes and evaluates the state's surveillance capacity before and after the declaration of ZIKV as a public health emergency.

Method:

We analyzed surveillance data from the DPH to compare the geographical distribution of counties conducting surveillance, total number, and overall percentage of mosquito species trapped in 2015 to 2016. Counties conducting surveillance before and after the identification of the ZIKV risk were mapped using ArcMap 10.4.1. Using SAS (version 9.2) (SAS Institute, Inc, Cary, NC), we performed the independent 2 sample *t* test to test for differences in prevalence in both years, and a χ^2 analysis to test for differences between numbers of species across the 13 counties. In addition, weighted frequency counts of mosquitoes were used to test (χ^2) an association between major mosquito vector species and 7 urban counties. Lastly, using data from 2012-2016, a time-trend analysis was conducted to evaluate temporal trends in species prevalence.

Results:

From 2015 to 2016, surveillance increased from 13 to 57 (338% increase) counties geographically dispersed across Georgia. A total of 76,052 mosquitoes were trapped and identified in 2015 compared to 144,731 (90.3% increase) in 2016. Significant differences between species ($P < .001$) and significant associations ($P < .0001$) between 7 urban counties and major mosquito vectors were found. Significant differences in prevalence were found between several species and year highlighting species-year temporal trends.

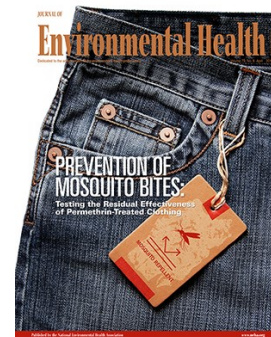
Conclusions:

The DPH collaborative response to ZIKV allowed a rapid increase in its surveillance footprint. Existing and new partnerships were developed with the military and local health departments to expand and share data. This additional surveillance data allowed DPH to make sound public health decisions regarding mosquito-borne disease risks and close gaps in data related to vector distribution.

**A complete copy of the study, courtesy of the Georgia Mosquito Control Association (GMCA), can viewed at <http://www.gamosquito.org/resources/papers/AMEDD2017Article.pdf>. Permission to re-print the ABSTRACT above, and access the full article, was granted by the principal authors in June 2017.

Residual Effectiveness of Permethrin-Treated Clothing for Prevention of Mosquito Bites Under Simulated Conditions

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ABSTRACT

Biological hazards such as exposure to ticks and mosquitoes can affect health. Permethrin-treated clothing is available to the public. We don't currently understand, however, the effects of environmental factors such as fabric type, washing, sunlight, and temperature on permethrin content in treated clothing with respect to mosquito knockdown and mortality. We evaluated the extent to which fabric type (100% cotton denim jeans, 100% polyester work shirt, 35% cotton/65% polyester work shirt), light exposure (0 or 100%), temperature (18 °C, 32 °C), and number of washes (0, 3, 12, 36) affected mosquito knockdown 2 hours post-exposure, mosquito mortality 24 hours post-exposure, and permethrin content.

All fabrics used in this study were treated with permethrin at a concentration of 125 µg/cm². Denim fabric having no washes and no light exposure showed the highest amount of permethrin. Washing and light exposure significantly reduced the ability of permethrin-treated fabrics to induce mosquito knockdown and/or mortality under the simulated conditions used for this test. Temperatures tested did not affect permethrin content or mosquito knockdown and mortality. Long-lasting impregnation of uniforms protects against mosquito bites under simulated laboratory conditions. Employers and employees should consider the use of permethrin-impregnated clothing and uniforms in addition to daily repellent sprays.

Editor note-The complete study, with the abstract above, may be viewed at the following link:

www.neha.org/sites/default/files/jeh/JEH4.17-Feature-Residual-Effectiveness-of-Permethrin-Treated-Clothing_with-cover.pdf

This article was originally published in the *Journal of Environmental Health*, April 2017 (Volume 79, Number 8).

Source: Posted with permission from the *Journal of Environmental Health*, a publication of the National Environmental Health Association, www.neha.org.

ASSOCIATION/PROFESSION NEWS

◆ Conferences

Several MAMCA member state (GA, PA, SC, TN, VA) association annual meetings will be held in Fall 2017 or Winter 2018. The dates can be viewed on page 8. Check the following websites for more information about these events:

GA- www.gamosquito.org/meeting.htm

PA- <http://pavectorcontrol.org/?p=241>

SC- www.scmca.net/

TN- <http://www.tennmosquito.com/>

VA- <http://mosquito-va.org/>

The same section contains a list of future state, regional, and national meetings, conferences, and workshops.

◆ AMCA

Training-AMCA is rolling out the CDC-funded Train-the-Trainer Mosquito Surveillance and Control training and certification programs in 2017. There are 10 states which have been identified as training sites for this training. At the time of this printing, no training dates or locations have been released or posted.

One of the outcomes of this process is an updated manual of “**Best Practices for Integrated Mosquito Management: A Focused Update**” released in January 2017. This publication is available to view, or print, on the AMCA website at www.mosquito.org.

Washington Conference (in Washington D.C.)- AMCA’s legislative conference was held May 15-17, 2017 and, by all accounts, was an excellent meeting. Registration was closed prior to the meeting due to pre-registrants numbers exceeded the space capacity. There is no registration cost for this 2+ day conference to AMCA members and non-members alike, although personal travel costs are the responsibility of attendees. For more information on this event, see www.mosquito.org/washington-conference.

National Mosquito Control Awareness Week (June 25-July 1, 2017)- this recognition week is coming up soon. Many local and state mosquito control programs, professional associations, and industries serving the vector control community use this week as a public education/community awareness opportunity. AMCA has dedicated a resource page to this event which can be viewed at <http://www.mosquito.org/mosquito-awareness-week>. Listed below are a few examples of past and present internet postings recognizing the week.

<http://www.mvcac.org/event/national-mosquito-control-awareness-week/>

http://fmel.ifas.ufl.edu/media/fmelifasufledu/buzz/BuzzWords_2017_No1.pdf

<http://www.coj.net/mayor/docs/proclamations/2016/mosquito-control-awareness-week.aspx>

<https://blogs.cdc.gov/publichealthmatters/2016/06/mosquito-control-awareness-week/>

Federal legislation- the US House of Representatives passed HR 953 *Reducing Regulatory Burdens Act of 2017* on May 24, 2017. The bill essentially eliminates the requirement for NPDES permits by mosquito control programs applying pesticides to surface waters of the US. Passage by the US Senator is now necessary before the bill can go to the President’s desk.

◆ ZIKA

CDC- CDC’s ZIKA website can be viewed at <https://www.cdc.gov/zika/index.html>. A number of updated resources and information have been posted to their site. This includes the updated Zika Response Plan (MAY 2017) and current U.S. case accounts as of June 7, 2017.

ASSOCIATION/PROFESSION NEWS

◆ ZIKA (continued)

Mid-Atlantic states case count 2016-the 9 MAMCA states reported a total number of 765 human cases in 2016 (reported by Arbonet-CDC) out of 5,283 cases reported in all US states. Pennsylvania reported the highest number of cases of the MAMCA states at 175. The case numbers above do not include any reported congenital cases.

ZIKA reporting in 2017 has already started as CDC reports 123 cases in the US states as of May 31, 2017.

◆ Entomological Society of America (ESA)-

ESA has an excellent resource in an internet posting site called Entomology Today which can be found at <https://entomologytoday.org/about/>. Subscribing costs nothing and the reporting is accurate, current, and informative. Citations to various studies and publications usually link to the complete article and not just the abstract. Here a few recent postings of Entomology Today this year:

<https://entomologytoday.org/2017/05/31/bed-bugs-proactive-ipm-strategies-critical-in-multi-unit-housing/>
<https://entomologytoday.org/2017/05/12/study-finds-native-north-american-mosquito-can-transmit-zika/>
<https://entomologytoday.org/2017/04/20/a-model-for-effective-reduced-cost-bed-bug-monitoring/>
<https://entomologytoday.org/2017/04/14/traces-of-zika-found-in-asian-tiger-mosquito-in-brazil/>
<https://entomologytoday.org/2017/04/14/traces-of-zika-found-in-asian-tiger-mosquito-in-brazil/>
<https://entomologytoday.org/2017/04/06/avoiding-the-outbreak-of-mosquito-borne-diseases-in-malaysia/>

◆ MAMCA State news-

selected states reported current (Spring 2017) news of events, trends, changes, projects or other news related to mosquito control programs, mosquito borne diseases, etc. in their respective states. See below:

Delaware- Jamie Joachimowski with the Delaware Mosquito Control Section reports that a drier Spring throughout the state resulted in reduced woodland pool numbers and below average numbers of adult *Aedes canadensis*. Statewide, their program treated about 6500 acres this spring for *canadensis* control. In April, the state has initiated a 'Look About, Dump It Out!' educational campaign, targeting standing water sources, which is now featured as television and radio public service announcements (PSAs) as well as on billboards. Delaware continues to implement the use of drones in their surveillance programs statewide. Two staffers in the Section completed an Unmanned Aircraft Systems (sUAS) training course and successfully obtained their Federal Aviation Administration (FAA) remote pilot certification to operate drones.

Georgia- see the enclosed article on GA's expanding mosquito statewide surveillance in response to ZIKA. Dr. Rosmarie Kelly with the GA Division of Public Health (DPH) returns as the GA State Director to serve on the MAMCA Board of Directors. Fred Koehle with Richmond County (GA) Environmental Health, the prior Director, has rotated off the Board. He has been a great addition to the Board over the last 3 years (2013-2016) and he will be missed.

Maryland- Kyle Brinson reports that the state typically begins its control season with a state-wide spring larvicide program where warranted, including aerial larviciding, on the Eastern Shore. Rainfall in May was continuous through the month of May so control efforts were increased. The state purchased a brand new Titan Atomiser for larviciding urban areas and will implement its use this summer. Maryland's State Mosquito Program has an atypical ZIKA response program whereby every residence of a confirmed ZIKA case in the state, which are all usually travel-associated, are visited by staff to assess *Aedes* container breeding species prevalence and to perform heightened public education on source reduction. MD has an extensive open marsh water management under the state mosquito program.

ASSOCIATION/PROFESSION NEWS

◆ MAMCA State News (continued)

South Carolina– SC has a variety of information, upcoming events, and resources on the SC Mosquito Control Association (SCMCA), including their most recent FEB 2017 newsletter (<http://www.scmca.net/>). Travis Shealy reports SCMCA Summer workshop has already taken place and their Fall Meeting will be NOV 1-3, 2017 in North Myrtle Beach, SC. Information on the conference is available at the same website. In 2017, SC had a considerable amount of federal grant funding available for local mosquito programs. See <http://www.scdhec.gov/HomeAndEnvironment/Insects/Mosquitoes/> for more information.

Tennessee– Ture Carlson reports above average temperatures February-April in much of the state this year. Also, most of the state received large amounts of rainfall regularly between mid-April and mid-May. Shelby County (Memphis) recorded its earliest observation of *Aedes (Ae.) albopictus* larvae which were collected March 8th but no adults were collected or observed until April 17th. The state has already begun mosquito pool West Nile virus (WNV) testing and, as of May 26th, 29 pools have tested WNV positive (+). In both 2016 and 2015, mosquito pool testing prior to JUNE 1 resulted in ZERO(0) positive pools. Two human WNV+ cases have already been reported in Tennessee. A statewide survey investigating container breeding species and specifically searching for the presence of *Ae. aegypti* began May 1st (2017). *Ae. aegypti* has not been identified to date in TN.

Virginia-Ann Herring reports VA received considerably less ZIKA funding via ELC (Epidemiology Laboratory Capacity) funding, from DEC 2016 to the present than they were told in Summer 2016 would be 'coming'. Thus funding to cover the cost of epidemiology and mosquito surveillance work in the state over the winter wasn't covered and with little ELC funding anticipated to be available in 2017, epidemiology and laboratory staff layoffs could occur before Fall. As of June 1st, Virginia has recorded 3 imported Zika cases in 2017, compared with 18 reported by the same date in 2016. This reduced Zika incidence should help reduce the burden on their State Laboratory which was stretched to its limits last year (e.g. tested well over a thousand pregnant travelers from the tropics). Reports from programs in the Tidewater area (SE VA-Suffolk) and Henrico County (central-eastern VA-Richmond) reported the earliest collection of *Ae. albopictus*, in substantial numbers, since the early 2000s. York County received a National Association of Counties (NACo) Achievement award for their 2 year study(2015-16) and implementation of mosquito larvicide control in vacuum sewer systems in the county.

Thanks go out to the following MAMCA State Directors who provided much of the above update information:

Jamie Joachimowski– Delaware
Rosmarie Kelly-Georgia
Kyle Brinson– Maryland

Travis Shealy– South Carolina
Ture Carlson– Tennessee
Ann Herring– Virginia

ANNUAL MEETING ANNOUNCEMENTS

***84th Annual Meeting of the
American Mosquito Control Association (AMCA)
Kansas City, MO***

February 26-March 2, 2018

Information available at <http://www.mosquito.org/meetingsevents>



***Tennessee Mosquito & Vector Control Association Annual Meeting
Nashville, TN***

January 25-26, 2018

See website at <http://www.tenmosquito.com/>



***Virginia Mosquito Control Association 71st Annual Meeting
Portsmouth, VA***

January 23-25, 2018

See website at <http://mosquito-va.org/>



Pennsylvania Vector Control Association Annual Meeting

Location to be announced

November 7-9, 2017

See website at <http://pavectorcontrol.org/> for more information

***South Carolina Mosquito Control Association 45th Annual Meeting
North Myrtle Beach, SC***

November 1-3, 2017

See website at <http://www.scmca.net/>



***Georgia Mosquito Control Association 40th Annual Meeting
Athens, GA***

October 18-20, 2017

See website at <http://www.gamosquito.org/meeting.htm>

2017-2018

STATE, REGIONAL, AND NATIONAL CONFERENCES & MEETINGS

N.C. Mosquito & Vector Control Association (NCMVCA) Workshop	JULY 11-12, 2017
Georgia Pest Control Association Summer Conference (GPCA)	JULY 16-19, 2017
SOVE/2017 International Congress (Mallorca Island, Spain)	OCT 1-6, 2017
Georgia Mosquito Control Association (GMCA) Annual Meeting	OCT 18-20, 2017
PESTWORLD 2017 (NPMA) (Baltimore, MD)	OCT 24-27, 2017
South Carolina Mosquito Control Association (SCMCA) Annual Meeting	NOV 1-3, 2017
2017 Entomological Society of America (ESA) (Denver, CO)	NOV 5-8, 2017
Pennsylvania Vector Control Association (PVCA) Annual Meeting	NOV 7-9, 2017
Florida Mosquito Control Association (FMCA) Fall Meeting	NOV 12-15, 2017
Illinois Mosquito & Vector Control Association Annual Meeting	NOV 16-17, 2017
Northeastern Mosquito Control Association (Plymouth, MA) Annual Meeting	DEC 4-6, 2017
Purdue Pest Management Conference (W. Lafayette, IN)	JAN 8-10, 2018
Florida Mosquito Control Association (FMCA) Fly-In	JAN 9-11, 2018
Virginia Mosquito Control Association (VMCA) Annual Meeting	JAN 23-25, 2018
Tennessee Mosquito & Vector Control Association (TMVCA) Annual Meeting	JAN 25-26, 2018
FMCA Dodd Short Courses	JAN 29- FEB 2, 2018
Mid-Atlantic Mosquito Control Association/NC Mosquito & Vector Control Association Joint Meeting (Carolina Beach, NC)	FEB 12-14, 2018
American Mosquito Control Association (AMCA) Annual Meeting (Kansas City, MO)	FEB 26–MAR 2, 2018
American Mosquito Control Association (AMCA) Annual Meeting (Orlando, FLA)	FEB 25–MAR 1, 2019

**Meeting information can be obtained from organization websites, where available. Some links to those sites can be found on the MAMCA website at www.mamca.org. If not listed there, utilize web search engines to get more information. The cited dates (and locations) came from various organizations, or their websites, as of JUNE 2017. MAMCA is not responsible for the accuracy or the information listed above or for communicating changes in meeting dates or locations. Always verify such with the host organizations before making travel plans.

MAMCA Sustaining Members– 2017

Sustaining members of MAMCA are organizations or companies who provide needed services, products, research, and education to the public health and mosquito control communities. Their support of MAMCA is vital in the association being able to support our memberships' needs and benefits including conference and workshop opportunities for all in the mosquito control profession.

For information on contacting any of the organizations below, please see the MAMCA website LINKS page (<http://www.mamca.org/links.htm>) where links to each of their websites are provided.

Adapco

AllPro Vector Group

AMVAC

Bayer Environmental Science

Central Life Sciences

Clarke

Crabbe Aviation

Dynamic Aviation

Frontier Precision

Leading Edge Associates

The Morrell Instrument Company

Mosquito Authority

Summit Chemical

UNIVAR

Valent Biosciences

The Fascinating Fascicle

By: Kyle Brinson (Maryland)

What exactly happens when that blood thirsty gal lands on you, drives her proboscis into your skin, steals your blood, and pays you for your services with an itchy bump that drives you crazy as you scratch and scratch away? If you can avoid squashing her into red goo, you really can't see much beyond her driving the proboscis into you. Although you cannot see it, she actually has a complex collaboration of six needle-like mouthparts. They are appropriately organized inside her labium, collectively called the fascicle, which she uses to penetrate your skin and feast on your blood.

Each needle-like mouth part performs a particular function that makes it all possible for her to feed. The six needle-like mouthparts are: 2 maxillae, 2 mandibles, a hypopharynx, and a labrum. The maxillae are serrated tipped, super sharp, and saw into your skin. The mandibles are also serrated and are used to help spread the skin tissue. The hypopharynx injects you with an anticoagulant to prevent the blood from clotting, which is also the source for arboviral transmission. Histamines attempt to fight off proteins left behind from the hypopharynx which causes the itchy red bump, also known as the wheal. The labrum is the "straw" part of the fascicle that is used to suck your blood. All these parts are neatly organized and protected by the labium, which is also used for lateral support during insertion. All 7 parts, which includes the labium, work together allowing for successful, surreptitious feeding.

It is truly fascinating to discover the why's and how's of this intricately designed dipteran. Our scientific forefathers have worked hard to provide us with the information we have today. Take advantage of it and read a scientific book, article, or publication as you never know what you can and will learn.

Illustration sourced from Encyclopedia Britannica

