



# Mid-Atlantic Mosquito Control Association (MAMCA)



**NOVEMBER 2018 Newsletter**

## President's Message

As we close the 2018 mosquito season in the mid-Atlantic region, the aftermath of Hurricane Florence (September 13/14, 2018) and Tropical Storm Michael (October 10/11) still lingers. In late-September, my region in eastern North Carolina was significantly impacted by hurricane damage, flooding, and a substantial spike in abundance of flood water mosquitoes. Some areas in North Carolina conducted emergency aerial insecticide treatments in response to citizen pleas for assistance and there are still many areas with structural damage from the storms.

It is our hope that the mosquito-related aftermath of these storms reminds leaders and communities of the absolute importance of supporting and sustaining organized mosquito surveillance and control programs in NC and other MAMCA regions to protect public health. It is essential that we have a proactive approach to mosquito surveillance, targeted control, and community outreach. Although Florida is not in our mid-Atlantic region, we also extend our thoughts to them as they recover from the damage inflicted by Hurricane Michael.

North Carolina is preparing to host a hands on training workshop on insecticide resistance on February 12, 2019 funded by the Centers for Disease Control and Prevention's Southeastern Center of Excellence in Vector Borne Disease. Workshop attendees will learn about the importance of insecticide resistance testing, the entire process for conducting a CDC bottle bioassay, and how to analyze the resulting data to help make control decisions. This event will be held at East Carolina University and will train approximately 15 people (primarily from NC and SC). Space is limited for this initial workshop and you can let me know if you have questions about this and any future resistance training ([richardss@ecu.edu](mailto:richardss@ecu.edu)). We would like this type of workshop to be expanded and repeated in the future to serve additional states in the MAMCA regions.

Six of our member states (GA, NC, SC, PA, TN, VA) have conferences/workshops between October 2018 and our MAMCA conference in 2019. I encourage all MAMCA members to attend meetings of state associations, when possible.

Robert Cartner (SC) is taking on a new role as webmaster for MAMCA as Jeff Heusel transitions into retirement. We wish Jeff well and thank Robert for handling this new responsibility. Tom Smith (MAMCA VP) is organizing the program and venue for MAMCA's upcoming conference to be held in Harrisburg, Pennsylvania March 26-28, 2019. I am looking forward to the conference and hope that all of you are planning to attend and participate in discussions. Bringing together personnel from the nine MAMCA member states provides a great opportunity to share experiences and ideas so we can all stay informed about best management practices for mosquitoes and other public health pests.

**Stephanie Richards, MSEH, PhD**

**MAR 26-MAR 28, 2019.....MARK THE DATE!**

**44th Mid-Atlantic Mosquito Control Association Annual Conference**

**Harrisburg Hilton  
Harrisburg, Pennsylvania**

See page 2 for details

## *44th MAMCA Annual Meeting*

**March 26-28, 2019  
Harrisburg Hilton  
Harrisburg, Pennsylvania**



The annual conference will be held March 26-28, 2019 at the Hilton Harrisburg, 1 North Second Street, Harrisburg, Pennsylvania 17101. The conference hotel room night cost is \$139.00/night. Reservations must be made by or before February 19, 2019 to guarantee the room rate and reservation.

More information about the hotel, conference registration, and the city of Harrisburg can be found on the MAMCA website at <https://www.mamca.org/conference/>

# STATE REPORTS



## Delaware

The 2018 season was one for the record books for the Delaware Mosquito Control Section. The state received a total of 6,373 service requests, approximately 108% higher than the seasonal average. Record breaking rain events throughout the state combined with tidal flooding on the coastal salt marshes resulted in an increased magnitude of breeding habitats and extreme adult mosquito emergence. These rain events also hampered larviciding efforts. There were only 22,284 acres aerially larvicided, a 13% decrease when compared with that of the ten year average.

Given the timing and magnitude of these weather events, much of the mosquito control response was successfully conducted through adulticiding. A total of 284,043 acres was conducted aerially, a staggering 270.5% increase when compared with that of the ten year average. Mosquito control employees also tirelessly worked evenings and weekends ground fogging to treat 52,529 acres, in a statewide effort to provide as much mosquito relief as possible during a record season.

Arbovirus activity was very persistent leading to the highest number of seroconversions ever recorded in our sentinel chicken program. We had 68 sentinel chickens test positive for West Nile Virus and 8 sentinel chickens test positive for Eastern Equine Encephalitis. Additionally, 40 wild birds and 5 horses test positive for West Nile Virus. There were 9 human cases of West Nile Virus, with one resulting in death.

Summer weather patterns came to an abrupt end in mid-October, following the passing remnants from Hurricane Michael, consequently bringing an end to much of the 2018 mosquito season in Delaware.

Shaun McIntire



## Georgia

The establishment of 5 Regional Vector Surveillance Coordinators (VSC) has begun to rebuild Georgia's capacity to detect and respond to existing and newly introduced vector-borne diseases. Eleven of 18 Health Districts have been assigned a VSC, whose responsibility is to conduct and improve mosquito surveillance for arboviral diseases such as West Nile Virus, Eastern Equine Encephalitis, Lacrosse Encephalitis, Zika and other mosquito-borne diseases. Duties include establishing surveillance locations throughout the PH Districts, setting up traps and collecting mosquitos, mosquito identification, complaint response, community assessments, and community education programs. When necessary, the VSC will coordinate mosquito control activities with existing city/county/contracted mosquito control agencies and assist with localized control efforts. In addition, the VSC supports the Environmental Health Team by assisting with surveillance for other public health pests of concern, including tick-borne diseases, rabies, and bedbugs. They also may participate in outbreak detection and response activities for emergency preparedness.

Due to limited funding, not all Health Districts were assigned a VSC to assist with mosquito surveillance. These Districts (1-1, 1-2, 2-0, 3-4, 3-5, 6-0, and 10-0) were assigned to the State Entomologists. However, some of these Districts already had mosquito surveillance programs, and some of them had an Environmental Health Director or Environmental Health Specialists (EHS) who had an interest in doing mosquito surveillance within their District or county.

Our goals for the 2018 mosquito surveillance season included doing some level of mosquito surveillance in every county in Georgia, providing equipment and training to Environmental Health Specialists in all 18 Public Health Districts, and having the ability to support local outreach for mosquito complaints. This task was begun in 2017 and continued in 2018. The accomplishment of these goals will allow the Georgia Department of Public Health to be better prepared for the next mosquito-borne disease to emerge.

*(continued on page 4)*

# STATE REPORTS

(continued from page 3)

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In 2017, mosquito surveillance was done in all 159 of Georgia's counties. This is compared to surveillance being conducted in 60 counties in 2016, and only 13 counties in 2015. This is the first time surveillance data have been collected in every county in Georgia, and while surveillance was limited in many counties, these data can serve as an initial baseline. In 2018, mosquito data were again collected in every county in Georgia.

So, what happened as far as arboviral diseases in 2018? We had a really early spring, which segued right back into winter before warming up again. Spring and early summer were mostly rainy and humid. We saw a lot of WNV+ mosquitoes, but human and horse cases were slow to be reported.

As the season progressed, the weather became extremely variable. Mosquito populations also varied considerably throughout Georgia, with some areas dealing with massive numbers, and others having few, if any, mosquito problems.

Finally, after a slow start, we started getting reports of positive mosquitoes and human cases nearly every day. And to add spice to the whole thing, there was the hurricane. Once the hurricane went through, high temperatures, which had been lingering long after autumn should have begun, dropped down to lower than normal, then jumped back up to higher than normal, before finally cooling off. In South Georgia, the *Psorophora* spp and other floodwater mosquitoes are becoming a problem, even with nighttime temperatures in the low 40s.

Currently, 294 WNV+ and 3 Eastern equine encephalitis (EEE)+ mosquito pools have been reported from the 6 counties submitting mosquitoes for testing, including one EEE+ pool from the metro Atlanta area. EEE is endemic in South Georgia, and while occasional EEE+ horses are reported in the northern and central part of the State, there has never before been an EEE+ mosquito pool reported in these areas.

We currently have 6 EEE+ and 1 WNV+ horses reported from the Georgia Department of Agriculture. We also have one WNV+ bird reported.

Human cases as of October 14 include:

CHIK: 1 travel-related case

DEN: 1 travel-related case

EEE: 1 case

SLE: 1 case

WNV: 26 cases, 1 presumptive viremic donor

ZIKV: 2 travel-related cases

Of note, Georgia has not had a case of SLE reported since the 70s, when there was a nationwide outbreak.

Rosmarie Kelly



## Maryland

Maryland, along with many of the Mid-Atlantic States, experienced heavy rainfall in June. The prolonged rain events created environmental factors favorable to a larger than normal emergence of fresh water species throughout the state, particularly, various *Psorophora species* and *Aedes vexans*. The Eastern Shore performed aerial applications as early as the first week of June to control abundant freshwater species. To date 138,219 acres have been treated by aerial adulticide applications. Total adulticide and larvicide air spray applications sum 144,158 acres thus far this year.

The metropolitan areas of Maryland received persistent rainfall throughout the summer, resulting in unusual mosquitoes collected in CDC light traps. *Psorophora horrida* and *Aedes infirmatus*, which have not been seen since the 1950's, appeared in several traps located in Prince George's and Anne Arundel Counties. It is believed that *Aedes tormentor* and *Aedes dupreii* were also collected and the specimens found will be sent to Rutgers University this fall for confirmation. If results indicate that *Aedes dupreii* was trapped this season it will be a state record for the first one ever recorded in Maryland.

Other unusual species being collected are *Aedes fulvus pallens*, *Aedes cinereus*, and *Aedes aegypti*. As part of Maryland's *Aedes* Surveillance and Control Plan, the areas that trapped the *Aedes aegypti* were controlled by targeted ground barrier applications.

As of August 21, 2018 Maryland observed eleven imported Zika cases. As of September 26th, human WNV+ cases total ed 26.

Kyle Brinson



## North Carolina

North Carolina experienced an unusual year with high rainfall totals. Counties vary in peaks, some as high as 17.1 inches, and a lot of counties experienced heavy flooding in the late season. These high rainfall totals equaled less human outdoor activity, were heavy rains and flooding flushed stagnate streams, temporary pools, and artificial containers to prevent sustained breeding sites. Trap data has indicated increases in adult populations in *Cx. erraticus*, *Ps. horrida* and even a few *Ps. mathesoni* in Forsyth County; *Ps. ferox*, *Ae. infirmatus* and *Ae. atlanticus* in New Hanover County; and high numbers of *Ae. albopictus* have been recorded across the state, especially after the rainfall fell back to usual amounts.

Very low numbers of *Cx. pipiens* were recorded in multiple jurisdictions as compared to last year but they have a very high MIR. Service requests across the state peaked with heavy rainfall, but later calmed down and most were attributed to *Ae. albopictus*.

In outreach and education news, Ryan Harrison had the honor to teach a mosquito ID course to some biology students at UNC- Greensboro, several of the states mosquito control staff were able to participate in training across the state and region. Jim Gardner of the Pitt Co Health Dept. has been assisting with multiple jurisdictions in mosquito identification. Several NCMVCA board members attended a workshop in Plymouth NC, August 8th. Key leadership from three coastal counties (Martin, Washington and Tyrell) were present to discuss the values and possibilities of developing a multi-county vector control district. The workshop was well received. It now rests upon the counties to move forward with the effort.

NCDACS continues to promote our BeeCheck and Fieldwatch programs. Gaston County and Craven County just completed their first years as a state recognized basic vector program. Haywood County completed their second year of their mosquito control program. These counties had the opportunity to utilize training across the state and abroad to include the Dodd Short courses, NACCHO Vector Control Summit, Train the Trainer course in Carolina Beach, and both the 43<sup>rd</sup> and 52<sup>nd</sup> Annual Meetings of NCMVCA and MAMCA, respectively.

Joe Andrews



## Pennsylvania

It was an unprecedented year in Pennsylvania. Mosquito activity, complaints, West Nile virus levels, and rainfall were at an all-time high. Pennsylvania experienced the highest level of virus activity in mosquitoes since the program began in 2000. There has been a total of 6,561 positive pools reported. This is over 2,200 more than the highest previous year in 2012. One third of the pools tested this year were positive for WNV. As of the beginning of November, there have been a total of 100 human cases reported, including 6 deaths. This ranks second only behind 2003. There have been 109 avian positives, as well as, 108 veterinary cases reported. These cases are also substantially higher than any in recent memory.

The mosquito surveillance season began in April and ended in late September. Throughout the season total of 1.7 million mosquitoes were collected and identified by the State lab. That is 300,000 more than the previous record. This increase can be attributed to the amount of rain and flooding that Pennsylvania received throughout the season, and the subsequent generations of floodwater mosquitoes that were present.

Along with that came the record number of complaint calls that were received. In a two-day span in late August, there were over 1,000 complaints from an area in Luzerne County. This spurred an aerial adulticiding event where a total of 46,080 acres were treated. Post control trap averages were 13 as compared to 475 before the event.

A notable collection was made on October 2<sup>nd</sup>. A single *Aedes aegypti* was collected in a BGS trap in southern PA. This was the first specimen collected since 2002. The site will be monitored in the spring to see if this was a single occurrence or if some eggs may have survived the winter.

The State provided funding to begin a statewide survey of ticks beginning in November 2018. The goal of the survey is to determine exposure risk in public use areas throughout the Commonwealth. Once the risk assessment is completed, habitat management strategies can be conveyed to reduce exposure.

Fifty adult ticks will be collected and tested from each county this fall/winter. Another fifty nymphal ticks will be collected and tested in the spring/summer 2019. The individual ticks will be tested for Lyme disease, human babesiosis and human granulocytic anaplasmosis. After the initial testing, the ticks will be pooled and tested for Powassan and *Borrelia miyamotoi*.

Christian Boyer



## South Carolina

The unofficial end of mosquito season in South Carolina has finally come, coinciding with the SCMCA Annual Meeting in Greenville, SC. The end couldn't come soon enough as this year has seen a 70% increase in WNV+ birds, compared to 2017. There were 248 birds submitted for WNV testing, with 83 returning positive results. Ninety-five percent of WNV+ bird collections originated in the northwest two-thirds of the state. As of November 8, 2018, there have been 18 confirmed human WNV cases, including one death. There have been 6 reported, travel-related arboviruses: CHIK (1), DENV (3), and ZIKV (2). The State Medical Entomology Lab had a few major bumps in 2018, which resulted in a lack of disease surveillance in mosquitoes. As for veterinary animals, there were 4 WNV+ horses and 1 EEE+ horse.

For much of the state, mosquito populations and complaints were down overall, compared to 2017. This does not include the areas inundated with water from Hurricane Florence. Counties in the northeastern portion of SC were flooded by the storm, resulting in reported high numbers of floodwater mosquitoes, including *Psorophora ciliata*. Areas hit hardest by the floodwater are rural and lack modern mosquito control capabilities, so actual mosquito population increases were not analyzed. Contracted aerial applications in some affected counties totaled over 400,000 acres.

Zika virus supplemental funds, ~\$500,000, from the 2017 CDC ELC Grant, were distributed to county and local mosquito control programs in SC through a sub-recipient grant. This money was used by qualifying programs to purchase new equipment and pesticides, most of which were purchased in 2018.

(continued on page 7)

(continued from page 6)

The main goal being to improve the mosquito control infrastructure in the state.

*Aedes aegypti* and *Aedes albopictus* population surveys began around the state this summer by distributing LBJs around the state to collect eggs. Mosquito rearing will continue through the winter with further field collections pending. Insecticide resistance testing in SC is in the early stages, but plans are underway for initial testing to begin in Spring 2019.

South Carolina lost a valuable member of its mosquito control family in 2018. John C. Grant, of Santee Cooper Vector Management, passed away in July unexpectedly. SCMCA honored his memory by creating the John C. Grant Presidential Recognition Award. The first award was presented at the SCMCA Annual Meeting to his wife Julie and son Aaron.

Robert Cartner



## Tennessee

The Tennessee State Report was not completed in time for the publication of the Fall 2018 Newsletter.



## Virginia

The Virginia State Report was not completed in time for the publication of the Fall 2018 Newsletter.



## West Virginia

During the period of January 1 through October 31 2018, five human cases of La Crosse encephalitis and one human case of West Nile encephalitis were detected in West Virginia. West Virginia also reported three malaria cases and one dengue case in the state.

During the period of May 17 through October 25 2018, the West Virginia Department of Health and Human Resources Mosquito Surveillance Program initiated adult mosquito surveillance at 49 localities in 25 counties: Boone, Cabell, Doddridge, Fayette, Greenbrier, Hardy, Harrison, Jackson, Kanawha, Lewis, Marion, Marshall, Mercer, Mineral, Monongalia, Nicholas, Ohio, Pleasants, Raleigh, Randolph, Ritchie, Taylor, Wayne, Wetzel, and Wood counties. Additional mosquito surveillance in more counties in northern West Virginia this year was due to the efforts of two new mosquito surveillance partners, Wheeling-Ohio Health Department and Monongalia County Health Department.

Cabell-Huntington Health Department and Kanawha-Charleston Health Department continued to collect mosquitoes in their respective jurisdictions in 2018. In 2018, 15 *Culex* mosquitoes, 11 *Aedes albopictus*, 1 *Aedes* spp., and 1 *Psorophora/Aedes* spp. sample tested positive for West Nile virus (WNV). Listed below were the number of WNV positive mosquito samples detected from each county: Cabell (15), Doddridge (1), Fayette (4), Kanawha (1), Mercer (1), Nicholas (2), Raleigh (3), and Wood (1). In comparison to previous years, WNV was more active in the mosquitoes from central and southern West Virginia this year. The human risk for WNV infection was 'low' in June but increased to 'moderate' in July, August, and September, based upon the WNV minimum infection rate in *Culex* mosquitoes.

La Crosse virus, St. Louis encephalitis virus, and Zika virus were not detected in the mosquito populations.

The Asian tiger mosquito, *Aedes albopictus*, is widely distributed throughout West Virginia. New county records for *Aedes albopictus* include Doddridge, Lewis, Marshall, Pleasants, and Ritchie counties in northwestern West Virginia and Hardy and Mineral counties in eastern West Virginia. Based upon CDC pesticide bottle bioassays, *Aedes albopictus* is susceptible to malathion, bifenthrin, and prallethrin in the Charleston area.

This year, West Virginia recorded a comparatively high incidence of human Lyme disease cases. As of October 31, there have been 508 human cases of Lyme disease. In addition to Lyme disease, there have been 14 spotted fever group rickettsioses cases, five accounts of human ehrlichiosis, and one human babesiosis case in West Virginia.

The Asian longhorned tick, *Haemaphysalis longicornis*, has been detected in 10 West Virginian counties distributed across the state. The West Virginia Department of Health and Human Resources, in conjunction with West Virginia Department of Agriculture Animal Health Division, United States Department of Agriculture Veterinary Services, West Virginia Division of Natural Resources, West Virginia University Extension Services, and veterinary practitioners involved with the West Virginia Veterinary Tick Submission Project, have been monitoring *Haemaphysalis longicornis* activity across West Virginia. Asian longhorned ticks have been recovered from cattle, white-tailed deer, dogs, and cats. *Haemaphysalis longicornis* larvae were collected in autumn. Asian longhorned tick nymphs were detected in both autumn and spring. During the summer, adult *Haemaphysalis longicornis* females were active. No male *Haemaphysalis longicornis* have been discovered in West Virginia.

Eric Dotseth



## Member Notifications/Acknowledgements

**R. E Dorer Award**-The Mid-Atlantic Mosquito Control Association (MAMCA) has one major award, the R.E. Dorer Award. This award honors Rowland E. Dorer of Virginia, one of the founding members of the association. Mr. Dorer always emphasized the need for a strong regional association. He was the first president of the MAMCA and was the first recipient of the R.E. Dorer Award, although posthumously. The criteria for the Rowland E. Dorer Award are as follows:

- Nominees for the award should be selected on the basis of their exceptional contributions, of whatever type, to mosquito control in the Mid-Atlantic region.
- The nominee must be a member in good standing of the MAMCA.
- Nominees are to be submitted to the MAMCA Awards Committee in writing with justification. Written nominations should include a cover letter from the individual(s) making the nomination and a resume/CV of the nominee's background/career/accomplishments in the MAMCA and mosquito control.

At least three (3) accompanying letters of support are requested. A maximum of one award per year will be given. (From the draft Procedures Manual: "The Awards Committee is reminded that they do not have to present an award every year. If the nominations are inadequately prepared, in the opinion of the Committee, or if the nominations lack the substance and tradition of past award recipients, it is imperative that the Committee wait.").

Please think of those MAMCA members that are deserving of the Association's highest honor and submit a written nomination and accompanying documents to the MAMCA Awards Committee, c/o Sue Ferguson, fergussc@bellsouth.net, **by Monday, February 11, 2019**. Any questions regarding the award may also be directed to Sue at the email address listed.

**State/Industry Director Nominations** - The term for Board members from North Carolina, Delaware, Tennessee, and Industry **will expire in MARCH 2019**. Delegates from these states and Industry need to select replacements prior to the Business Meeting at the 2019 Annual Conference in Harrisburg, PA. Terms for State Directors are 3-year while the Industry Director is a 2-year term. If you are a MAMCA member in one of the listed states or Industry and have an interest in serving in this capacity, please contact your listed State/Industry Director (see page 6).

**SUSTAINING MEMBER RECOGNITION** - MAMCA would like to recognize Zach Cohen and Summit Chemical for their offers of donated mosquito control assistance to several eastern N.C. counties following Hurricane Florence's hit on the coast of North Carolina from September 15, 2018 onward. Summit's staff contacted Stephanie Richards (President, MAMCA) and offered to provide larvicide pesticide products to local programs in need in the state. More than 14 counties took advantage of the offer to assist in controlling floodwater mosquito populations.

Appreciation also goes out to the City of Greenville (NC) Public Works Department who agreed to act as a distribution point for the Summit products shipped to N.C. and where the local programs could pick up products.

Thanks can be communicated to Summit at the addresses below:

Zachary E. Cohen, Vice President  
Summit Chemical Company  
235 South Kresson Street, Baltimore, MD 21224-2616  
800-227-8664  
[www.summitchemical.com](http://www.summitchemical.com)

## MAMCA Sustaining Members– 2018

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**

**Catchmaster**

**Central Life Sciences**

**Clarke**

**FMC**

**Frontier Precision**

**Leading Edge Associates**

**Mosquito Authority**

**Slingshot**

**Summit Chemical**

**Target Speciality Products**

**UNIVAR**

**Valent Biosciences**

**Vector Disease Control International**

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