

The Quarterly Transmission

The Official Mid-Atlantic Mosquito Control Association Newsletter

Pre-Conference Issue February 2019

President's Message

The winter season brings many state mosquito association conferences, as well as the national American Mosquito Control Association conference in Orlando, Florida.

Our MAMCA Vice President Tom Smith has been organizing the program and venue for MAMCA's upcoming (spring) nine state regional 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 MAMCA member states (Delaware, Georgia, Maryland, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia and West Virginia) 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 –
MAMCA President*

If you are interested in getting involved in MAMCA as a Board member or otherwise, please reach out to us for more information. We are always looking for volunteers to keep our Association moving forward and to help mosquito control programs across the region.

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44TH ANNUAL MAMCA MEETING

March 26-28, 2019
Harrisburg Hilton
Harrisburg, Pennsylvania



Please join us for the 44th Annual MAMCA Meeting in late March. Located in the heart of downtown Harrisburg, the conference will play host to professionals from the associations 9 supporting states from across the Mid-Atlantic region. Learn about the latest techniques and applications, network with other like-minded professionals, and support up and coming minds with our student competition. For those interested, there is also a tour of the local Civil War museum after the conference on the last day.

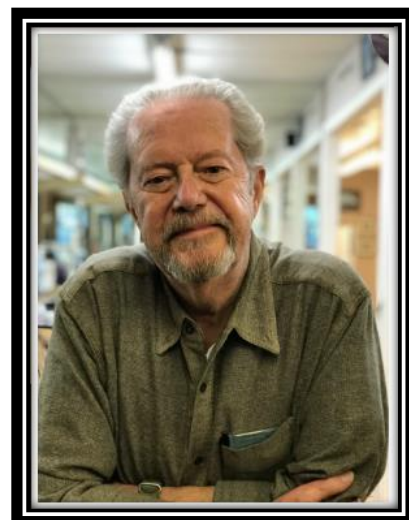
More information about the meeting including hotel information, agenda, and registration forms can be found online at www.mamca.org/conference/.

Upcoming Meetings and Important Events

<u>Meeting</u>	<u>Location</u>	<u>Dates</u>
AMCA Annual Meeting <i>American Mosquito Control Association</i>	Orlando, FL	Feb. 25 - Mar. 1, 2019
NJMCA Annual Meeting <i>New Jersey Mosquito Control Association</i>	Cape May, NJ	Mar. 13 - Mar. 15, 2019
MAMCA Annual Meeting <i>Mid-Atlantic Mosquito Control Association</i>	Harrisburg, PA	Mar. 26 - Mar. 28, 2019
NCMCA Annual Meeting <i>North Central Mosquito Control Association</i>	Andover, MN	Apr. 3 - Apr. 4, 2019
IVMCA Annual Meeting <i>Illinois Vector and Mosquito Control Association</i>	Springfield, IL	May 7 - May 8, 2019
AMCA Washington Conference <i>American Mosquito Control Association</i>	Washington D.C	May 14 - May 16, 2019
Entomology 2019 <i>Entomological Society of America</i>	St. Louis, MO	Nov. 17 - Nov. 20, 2019
FMCA Annual Meeting <i>Florida Mosquito Control Association</i>	St. Augustine, FL	Nov. 17 - Nov. 20, 2019
NMCA Annual Meeting <i>Northeast Mosquito Control Association</i>	Milford, MA	Dec. 9 - Dec. 11, 2019

Dr. Bruce Harrison Celebration of Life Memorial Service

As a reminder, Dr. Bruce Harrison's Memorial Service will be held at 2:00pm on March 16, 2019 at The Village Inn Conference Center, 6205 Ramada Dr. in Clemmons, NC. If you plan to attend, please send RSVP to Ryan Harrison at harrisrl@forsyth.cc.



MAMCA MERCHANDISE

Represent the Association with new merchandise coming this year!

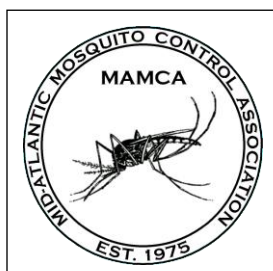
Gildan Soft Jersey Performance Short Sleeve Tee - \$15



Pint Glass with Duel Logo/Design - \$ 5



MAMCA Cut-Out Logo Decal - \$2



News in the Region

Georgia

The Georgia Department of Public Health is sponsoring an adult mosquito ID class on April 15-16, 2019 in Albany, GA. Parker Whitt will be the instructor.

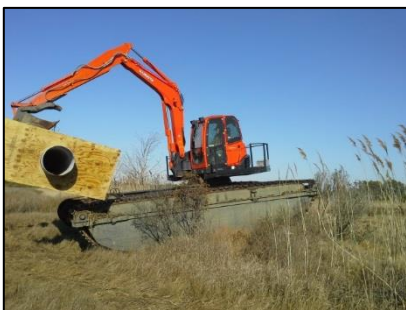
We have also started a collaboration with the Georgia Department of Agriculture to collect ticks throughout Georgia. First, to determine which species are found here in Georgia, and second, to look for invasive species, most notably the longhorn tick.

Maryland

During the winter months, The Maryland Department of Agriculture continues to work on various source reduction projects. Utilizing an amphibious excavator, mosquito control manages tidal and non-tidal ditch maintenance projects to eliminate mosquito breeding habitat. MDA also makes annual repairs to an earthen dike system that protects the City of Crisfield, MD from tidal flooding. Managing the earthen dike system requires building up the berm due to constant erosion as well as repairing / replacing twenty-six tide gates that are emplaced throughout the system. The function of the tide gates is to prevent tidal water from flooding the area. Flappers installed on the outside of the berm allow tidal water and rain water to flow out but not in.

The City of Crisfield's dike is literally a dirt wall surrounding the City. It was built in the early 1900's and is 7 miles long. Due to its age and constant erosion by weather events and burrowing animals, it is in poor condition and has often failed during major storms such as Hurricane Sandy. A study was conducted by the U.S. Army Corps of Engineers to analyze either repairing the existing dike or building a new one. Estimated costs for repairs ranged from \$23.1 – \$44.6 million dollars. Both studies' results indicated that the U.S. Army Corps' Continuing Authorities Program would not implement repairs due to cost limitations.

Due to lack of Federal assistance, the City of Crisfield relies on MDA's Mosquito Control Program to continue to maintain the dike system. Each year, mosquito control staff walk the entire system to map out damaged areas so that the excavator can follow up with repairs. Mosquito Control's involvement with the earthen dike system helps eliminate mosquito breeding areas throughout the City.



Pennsylvania

Each year the Department of Environmental Protection offers a training for new county mosquito control technicians. The Mosquito Academy provides training on IMM, mosquito surveillance, control techniques and habitat recognition. This year the Mosquito Academy will be held on May 22-23 in McKean County. Eldred Borough provides many diverse habitats and the opportunity for new technicians to experience many facets of mosquito biology and control. A class size of 35 is expected.

South Carolina

The South Carolina Mosquito Control Association (SCMCA) will be holding their annual Summer Workshop on June 12, 2019, in Pinopolis, SC. The SCMCA Summer Workshop is a mixture of presentations and breakout sessions geared towards increasing the knowledge of mosquito control professionals in South Carolina. The workshop is free and lunch will be provided as always. SCMCA is anticipating approximately 110 people attending the Summer Workshop this year. Presentations are being solicited and an agenda is expected to be available by mid-April. SCMCA will not be holding an annual meeting in November of 2019, but will be co-sponsoring a joint meeting with MAMCA, February 19-21, 2020, in Greenville, SC.

Tennessee

The Tennessee Department of Health Vector-Borne Diseases Section (VBD) has been actively developing relationships with as many mosquito control districts around our state as possible. The goal is to have ready partners for surveillance and response should a vector-borne disease outbreak occur. In recent years small grants have been awarded to vector control programs purchase equipment and establish mosquito surveillance activities. VBD has also put together trainings called Mosquito University in spring 2017 and Mosquito University 2.0 in the spring of 2018. These trainings covered subjects such as Integrated Mosquito Management (IMM), mosquito taxonomy, mosquito habitat inspection, and trapping techniques.

As part of this continuing effort, VBD participated in the annual meeting of the Tennessee Mosquito and Vector Control Association (TMVCA) in January of this year. Alongside the more academic speakers, a half dozen or so people from small county vector control programs discussed their use of the small grants and also how they maintain their vector control programs. Also, the larger, metro-sized programs from Shelby (Memphis), Davidson (Nashville), and Knox (Knoxville) also shared information and insights about their programs. These presentations and informal discussions allowed a needed flow of ideas.

The Keynote Speaker was David Gaines of Virginia who talked about Lyme disease and the new invasive Asian Longhorn tick. Other speakers included: David Sweat of the Shelby County Health Department who talked about responses to West Nile Virus; Dr. Alexis Barbarin who discussed Zika response by the North Carolina Department of Health; and Dr. Rebecca Trout-Fryxell who announced a new effort to educate people of East Tennessee counties about La Crosse Virus that infects dozens of children in Tennessee each year. The student presentation winner was Janetta Kelly from the University of Tennessee who presented on “***Host Factors and Abiotic Factors Affect the Expansion of Borrelia-Infected Tick Populations into Southeastern States***”.

Virginia

Virginia Mosquito Control Association will be offering our annual Adult Mosquito Identification class this spring. The tentative date for this class is currently scheduled for the second week of May. This identification course is a one day course that includes presentations followed by active identification with assistance from biologists from around the Hampton Roads area. Scopes and materials are needed to attend. A class size of approximately 35 is expected.

The Virginia Mosquito Control Association held its 72nd Annual meeting at the Hilton Oceanfront, Virginia Beach, VA in the first week of February. There were a total of 113 attendees and a great lineup of presentations and special events throughout the three days. Three special awards were given; Joe Strickhouser was awarded the Honorary Member award, Amanda DeVleeshcower the Dr. Jorge Arias Student Competition award and Karen Akaratovic the Distinguished Service award. A total breakdown of the conference along with the presentations can be found on the VMCA website at www.mosquito-va.org.



Left Image: King Neptune just outside of the Hilton Oceanfront on the first morning.

Right Image: The handing of the presidential plaque (President LaToya White on the left, Past President George Wojcik on the right).



CALL FOR NEWSLETTER ARTICLES

The need for sharing information and collaborating with different states and jurisdictions is at an all-time high. This newsletter and others like it need articles to help readers have access to ideas and contacts to further their programs. Articles can be from any facet of mosquito, tick or other pest control operations. Please send any articles, pictures, or news to Tim DuBois at duboist@portsmouthva.gov to submit for the next newsletter!



VIVE LA

PESTICIDE

RESISTANCE

Almost every state in the Mid-Atlantic region is in the process of starting testing for pesticide resistance or is continuing for a second year. Below is a look from the states that have begun this process.

Delaware

One resistance test against *Aedes sollicitans* using our Anvil 10 + 10 that we were using for ULV fogging was done in the 2018 season. This was my first time attempting bottle bioassays with the Delaware Mosquito Control, I had performed them during my time as a research biologist with the Florida Keys Mosquito Control. The bottle bioassay I performed here in Delaware last summer against the *Aedes sollicitans* (which were successfully reared from wild caught larvae) were done using the pipette supplied in the CDC testing kit. Though I had success performing the test, I felt the accuracy of the pipette to be questionable/variable and there are plans to purchase better equipment in the coming weeks. We do plan on performing more bottle bioassays this coming season with hopes of beginning to gauge resistance throughout Delaware. – Shaun McIntire (DNREC)

Georgia

With the continuation of positive human cases of arboviral diseases such as La Crosse encephalitis, St. Louis encephalitis, Eastern Equine Encephalitis, and West Nile Virus in Georgia in 2018, mosquito control methods are critical. Pesticide Resistance has been found to be a component for ineffective mosquito control. There is a lack of insecticide resistance studies conducted statewide in Georgia and minimal knowledge of which pesticides mosquitoes are resistant to.

Mosquito egg collections were performed by Vector Surveillance coordinators and Environmental Health specialists around the state. The state entomologists and regional entomologist are tasked to conduct insecticide resistance testing in all high risk urban regions of Georgia for the next two years.

With the implementation of the first statewide pesticide resistance testing program, a clearer picture of the type of mosquitoes and their resistance to specific pesticides commonly used in Georgia will be provided. This information enables DPH to advise and train current mosquito control operators in using the most effective and cost-efficient pesticide for their target-mosquito. The statewide pesticide resistance testing program is a major component in reducing the exposure of mosquito-borne disease risk to the public. - Thuy-Vi Thi Nguyen, PhD, MPH

North & South Carolina

Dr. Stephanie Richards (EH faculty with East Carolina University [ECU]), with Dr. Brian Byrd (EH faculty from Western Carolina University) and Avian White (ECU EH Research Technician), conducted the 2019 Insecticide Resistance Training Workshop today at ECU to provide training on insecticide resistance testing to mosquito control personnel in North Carolina (NC) and South Carolina (SC). The workshop was funded by the CDC Southeastern Regional Center of Excellence in Vector Borne Diseases. In the workshop, 14 key mosquito control personnel from NC and SC were trained on the principles and procedures of insecticide resistance testing using the CDC Bottle Bioassay procedure. This included oral/visual presentations on methods, as well as hands on implementation of all aspects of the CDC Bottle Bioassay (e.g., how to prepare insecticide stocks and calibrate bottles, coating bottles, carrying out the CDC Bottle Bioassay procedure, data review and analysis).



Pennsylvania

In 2018, insecticide resistance was monitored using live *Culex pipiens-restuans* collected from ten counties in Pennsylvania. PADEP led three insecticide resistance workshops to instruct staff from the counties on the CDC bottle bioassay protocol. This protocol was followed during the testing of three common pyrethroids, Deltamethrin, Permethrin and Sumithrin, for insecticide resistance. Testing results yielded no resistance in *Culex pipiens-restuans* populations to these insecticides.

In 2019, PADEP is supplying bottle bioassay kits to 31 county programs to expand insecticide resistance testing. Additional training workshops are planned by PADEP to instruct these counties how to monitor for insecticide resistance. – Christian Boyer

Virginia

This past year marked the first time a lot of our mosquito control districts in the state of Virginia conducted pesticide resistance testing. Dr. Janet McAllister and Cassie Scott of the Center for Disease Control were gracious enough to hold a one day course in Suffolk on January 26, 2018 to train those interested in learning the bottle bioassay. Eleven districts were represented at the training. Over the course of the 2018 mosquito season most of those individuals attempted pesticide resistance testing in their districts, some were able to perform many tests and others were only able to run a few assays. Either way it's a great start to including pesticide resistance testing as a routine part of our mosquito control operations. Most localities received their testing materials for free from the CDC, they offer the insecticides as well as the supplies for the bottle assay.



Challenges arose with collecting and raising the adult mosquitoes for testing whereas some districts chose to rear mosquitoes from eggs or larvae and others opted to use live caught mosquitoes. Six districts were willing to share their results to be presented at the VMCA's annual meeting in February, Chesapeake, Fairfax County, Norfolk, Prince William County, Suffolk, and York County. Collectively these districts were able to test *Aedes albopictus* against etofenprox, naled, permethrin, prallethrin, and sumethrin.



Results showed *Aedes albopictus* to be susceptible to all of the insecticides listed, minus one site in Chesapeake that showed resistance to etofenprox. Further investigation in that neighborhood showed a high level of private mosquito control, possibly contributing to the resistance in that mosquito population. *Culex pipiens* were tested against permethrin, prallethrin, pyrethrum, sumethrin, malathion, chlorpyrifos, etofenprox, and deltamethrin. Results were widely varied with localities finding resistance to all of the insecticides listed but susceptibility to at least one chemical was found in most districts. *Culex pipiens* mosquitoes

were susceptible to naled in Suffolk and York County, permethrin in Fairfax County, prallethrin in Norfolk and York County, chlorpyrifos in Suffolk, and etofenprox in Prince William County.

Hopefully districts in Virginia will continue to perform the bottle assay and start to see the trends over time in resistance and susceptibility in the mosquito populations. An important takeaway from our experience was the wide variety that can be found in the mosquito populations, not just in the state but in one district you can find resistance and susceptibility to an insecticide in one mosquito species. Testing needs to be conducted on district level and from multiple sites to get a true picture of the resistance present. – Penelope Smelser



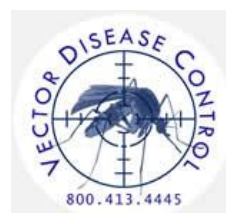
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Bayer Environmental Science



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