

The Emerging Times

The Official Mid-Atlantic Mosquito Control Association Newsletter

August 2020

A Message from the Editor

In my relatively short career in mosquito control, there have been a few incidents that have altered the outlook of a single season. The introduction of the Asian Tiger mosquito, *Aedes albopictus*, occurred just prior to my start in Virginia, had jurisdictions on high alert and pushed those jurisdictions to put outreach to the forefront. The introduction of West Nile followed shortly after, which quickly spread across the United States in a matter of a few years. This brought, at least in Virginia, an increase in money for testing, but with it attention from sources of media and citizens checking up on the program. Devastating hurricanes that wreaked havoc on communities the season prior could affect the upcoming season in terms of available personnel or equipment.

COVID-19 seems to be a greater impact in my mind than those before it, but how it will look in a few years may be similar to those other events as just another odd season that we had to make quick alterations to our program before going back to status quo. Budgets have been affected in certain states and jurisdictions which will impact future seasons, however that is something that most states deal with on a fairly regular basis.

Now for the good news. We've all been here before. A new species with vector importance, a new disease which caused mass media to put our profession in the spotlight, or natural disasters which alter our upcoming season in ways we have to learn as we go. Mosquito Control as a whole is very adaptive. We also are a pretty tight-knit group and have resources that span across counties, states, and regions. If you find yourself needing assistance with how to run a program on a lower budget, or how to get the most out of equipment, reach out to those you have met in our state and regional organizations, which is of course why we are here.

Like many states in the region, the Mid-Atlantic Mosquito Control Association has decided to postpone our in-person annual conference for 2021 to 2022. The board is researching ideas to push forward with some type of online conference, so please stay tuned and we will keep everyone up to date on how that and our annual business meeting will proceed.

Everyone stay safe, and we hopefully see everyone soon.

– *Tim DuBois, Newsletter Editor*

In this Edition

MAMCA Annual Meeting Info	Page 2
Upcoming Meetings & Events	Page 3
MAMCA Merchandise Info	Page 4
2020 Annual Meeting Recap	Page 5
Organizational Links	Page 6
News in the Region	Page 7
Sustaining Members	Page 17
Association Officers & Board Members	Page 18

2022 ANNUAL MAMCA MEETING

Atlantic Sands Hotel & Conference Center
Rehoboth Beach, Delaware



The 2021 MAMCA meeting scheduled for Feb. 9-11, 2021 at the Atlantic Sands Hotel and Conference Center on the boardwalk in Rehoboth Beach, DE has been postponed due to COVID-19. However, we are still planning to hold this meeting around the same time in 2022. The MAMCA board will be determining the exact dates this fall. The dates will be determined by when other national, regional and local mosquito control association meetings are planned so as to limit direct competition. The hotel has offered a very competitive price package for our meeting needs and assures us they will be honoring that pricing for 2022. Look for these details plus possible online/training opportunities in lieu of the 2021 cancelled meeting this fall as the details are finalized on the MAMCA website at <https://www.mamca.org>.

Upcoming Meetings and Important Events

<u>Meeting</u>	<u>Location</u>	<u>Dates</u>
Pestworld 2020 <i>National Pest Management Association</i>	Virtual Only	Oct 13 - Oct 16, 2020
GMCA Annual Meeting <i>Georgia Mosquito Control Association</i>	In-Person Cancelled	October 2020
PVCA Annual Meeting <i>Pennsylvania Vector Control Association</i>	Virtual Only	October 8, 2020
SCMCA Annual Meeting <i>South Carolina Mosquito Control Association</i>	Virtual Meeting TBD	November 2020
NCMVCA Annual Meeting <i>North Carolina Mosquito and Vector Control Association</i>	Virtual Meeting TBD	November 2020
ESA 2020 <i>Entomological Society of America</i>	Virtual Only	Nov 15 - Nov 18, 2020
FMCA Annual Meeting <i>Florida Mosquito Control Association</i>	Virtual Meeting TBD	November 2020
NMCA Annual Meeting <i>Northeast Mosquito Control Association</i>	Virtual Meeting TBD	January 2021
VMCA Annual Meeting <i>Virginia Mosquito Control Association</i>	Virtual Meeting TBD	2021
MAMCA Annual Meeting <i>Mid-Atlantic Mosquito Control Association</i>	Virtual Meeting TBD	2021
FMCA Dodd Short Courses <i>Florida Mosquito Control Association</i>	TBD	2021
TMVCA Annual Meeting <i>Tennessee Mosquito and Vector Control Association</i>	TBD	2021
AMCA Annual Meeting <i>American Mosquito Control Association</i>	Salt Lake City, UT	Mar 1 - Mar 5, 2021

For more information on these and other training opportunities, please visit the organizations websites which can be found on Page 6.

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



For ordering information, please contact Special Davison @ specialdavison@gmail.com

2020 MAMCA Annual Meeting Recap

The 45th annual Mid-Atlantic Mosquito Control Association (MAMCA) and the 47th annual South Carolina Mosquito Control Association (SCMCA) meetings were held jointly at the Hilton Greenville in Greenville, SC, February 19 – 21, 2020. Attendance exceeded expectations with one hundred twelve (112) persons from sixteen states attending the conference. True to form, the meeting was like a “reunion”...seeing “family” and making new friends. Southern hospitality was on display and a rare “snowstorm” made an appearance.

The program included various noteworthy presentations with topics ranging from adult/larval operations, education/training, vector/disease surveillance, and CDC initiatives. Special efforts were taken to include a number of student presentations, both poster and oral. MAMCA State Reports and presentations by Sustaining Members rounded out the agenda. PDFs of presentations may be found on the MAMCA website.

During the MAMCA Business Meeting, Robert Cartner (SC) was elected President, Tom Moran (DE) was confirmed Vice President, and Ture Carlson (GA) was elected Vice President Elect for 2020 – 2021. Certificates of Appreciation were presented to the following: Rosmarie Kelly (GA), Kyle Brinson (MD), and Shaun McEntire (PA) for their service as 2017 – 2020 State Directors on the MAMCA Board. According to the State Director rotation, the following will join the MAMCA Board for the 2020 – 2023 term: Tiffany” Thuy-Vi Thi Nguyen (GA), with Kyle Brinson (MD) & Christian Boyer (PA) serving another three-year term.



Left: 2019 Board of Directors; Right: President Tim DuBois presents Kyndall Dye-Braumuller was presented the inaugural Dr. Bruce A Harrison Outstanding Student Award.

At the Luncheon/Award Ceremony, Tim DuBois (VA) was presented a plaque for his service and second term as MAMCA President. Kyndall Dye-Braumuller was presented with the inaugural Dr. Bruce A. Harrison Outstanding Student Award. Joe Andrews, NC State Director and Sustaining Member, received the MAMCA Outstanding Service Award. The MAMCA Rowland E. Dorer Award was presented to Peter Connelly, Sustaining Member, for his exceptional contributions to mosquito control in the Mid-Atlantic region. The South Carolina Mosquito Control Association also presented awards to the following individuals: Trey Reed for his service as SCMCA President, Beverly Whitmire (Technician of the Year), Tammy Brewer (Silver Dipper Award), and Joe Conlon (L.A. Williams, Jr. Award). Congratulations to all the award recipients for their service and contributions.

2020 MAMCA Annual Meeting Recap

During the SCMCA Business Meeting, Larry Motes was elected President and Special Davison, MAMCA's SC State Director, was nominated to serve as SCMCA's Vice President. Regional representatives elected by caucus were: Amber Leonard (Upper Region), Chelsey Reed (Middle Region), and James Brock (Lower Region). Steve Molnar was elected to serve as the At Large representative.



Left: Sue Fergusson presents Peter Connelly with MAMCA's highest award, the Rowland E. Dorer Award; Right: Joe Conlon was presented with SCMCA's highest award, the L.A. Williams, Jr. Award, pictured with L.A. Williams, Jr. himself.

For additional information and upcoming news, please go to <https://www.MAMCA.org> and <https://www.scmca.net>.

Organizational Links for Upcoming Meetings

American Mosquito Control Association: <http://www.mosquito.org/>
 Entomological Society of America: <https://www.entsoc.org/>
 Florida Mosquito Control Association: <http://www.floridamosquito.org/>
 Georgia Mosquito Control Association: <http://www.gamosquito.org/>
 Mid-Atlantic Mosquito Control Association: <http://www.mamca.org/>
 National Pest Management Association: <https://www.npmapestworld.org/>
 North Carolina Mosquito and Vector Control Association: <http://www.ncmvca.org/>
 Northeast Mosquito Control Association: <http://www.nmca.org>
 Pennsylvania Mosquito Control Association: <http://www.pavectorcontrol.org/>
 South Carolina Mosquito Control Association: <http://www.scmca.net/>
 Tennessee Mosquito and Vector Control Association: <http://www.tennmosquito.com/>
 Virginia Mosquito Control Association: <http://www.mosquito-va.org/>

Delaware

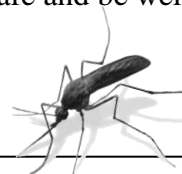
With summer now well underway, the Delaware Mosquito Control season is in full swing. Our woodland pool campaign concluded back in mid-March, successfully treating by helicopter more than 4100 acres of breeding habitat across the state; this combined with a drier winter helped to ease some of the adult emergence from these areas thus reducing some of our early season service request burden. A dry weather pattern continued for most of May and June, resulting in reduced larviciding needs on Delaware's coastal salt marsh habitats. This all changed July 10 and again on Aug. 4 with the passage of Tropical Storms Fay and Isaias, respectively. Each drop anywhere from 3-8" of rain statewide with many other heavy thunderstorms during the same period adding many inches to local areas. Combined with some extreme heat and humidity in late July, we had experienced a huge coastal and inland emergence of *Ae. vexans*, *atlanticus*, *taeniorhynchus*, and *sollicitans*, plus *Ps. Ferox*, *ciliata*, etc. *Ae. albopictus* populations really took off during this time too.

Of course all this was compounded by COVID restrictions causing staffing and operational inefficiencies to respond to this outbreak. However, there was some good news during this time. There were no arbovirus detections in Delaware until the last week of Aug. (2 sentinel chickens seroconverted for WNV). This is very late for us. Normally, we have our first WNV detects beginning in late July/early August. More work will now be upon the full time staff for the remainder of the season as our summer college students are returning to school.

Delaware Mosquito Control's drone program has now increased to two drones, which continue to be used as an aide in surveying potential larval breeding habitats. During our woodland pool inspections in February and March, the use of drones proved pivotal in efficiently determining the extent of woodland pool habitats by incorporating the drones' real-time mapping technology. Our team of scientists continue to explore more operational uses for the drones.

In early May, Delaware Mosquito Control welcomed Dr. Ashley Kennedy as our new tick biologist. She will continue the work which began last summer of completing a statewide systematic survey of the types and relative abundances of ticks in Delaware, coupled with documenting via laboratory analyses the disease-causing pathogens they might carry.

As we all continue to adjust to the restrictions and limitations caused by COVID-19, Delaware Mosquito Control remains committed to reducing nuisance and disease carrying mosquitoes throughout the state so that the outdoors and backyards can remain a place of enjoyment. Be safe and be well.



Submitted by Shaun McIntire

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!

Georgia

Last year ended with mosquito surveillance data collected from all of our 159 counties through the combined effort of State, District, and Local Public Health, mosquito control – both public works based, stand-alone, and contracted services. We also collaborated with the Georgia Department of Agriculture to collect ticks from animals. Tick and Arboviral summaries were created and are available on request. The mosquito summaries from 2017-2019 are available on the GMCA website at <http://www.gamosquito.org/mosquito.htm>. We were heading into winter, and all seemed right with the world. Then along came 2020 and COVID-19 and things changed.

Although mosquito season got off to an early start, and in south Georgia it never really ended, we didn't start serious surveillance until June. In fact, most of the Public Health mosquito surveillance programs ended up delayed because of COVID-19. Because schools and universities were closed, mosquito testing was delayed. Pesticide resistance testing has been delayed for a number of reasons, mostly related to stay at home orders. To add to the fun, the Hurricane Crisis CoAg grant, which funds the GDPH Vector Surveillance Coordinator program, is set to end this fiscal year. Our funding will likely be done by September. We have had one VSC get another job and go to part-time in anticipation of this event, and one has resigned, so we are down to 3 VSCs and 2 entomologists, along with all of our wonderful collaborators. While I hope we manage to collect mosquito data from every county again this year, the hopes are not high. In addition, due to COVID-19 and other factors, the ELC grant we were counting on to continue our program has been level (or possible lower) funded. Since we were funded through the Hurricane Crisis CoAG this fiscal year, we had very little funding from ELC, and this is not likely to change for this coming fiscal year.

Also, because of decreased funding for just about everyone in Georgia, and the uncertainty of COVID-19, we have decided to not hold the GMCA annual meeting this year. This would be the first time cancelling our meeting in over 40 years. We are planning to have the 2021 meeting in Athens on Oct 20-22. It isn't all doom and gloom however, at least one mosquito control program has used this time to make some improvements to their protocols.

Submitted by Dr. Rosmarie Kelly

Richmond County Mosquito Control (RCMC) in Augusta, Georgia, has collaborated with the local city call center for several years to take service requests directly from citizens who have mosquito-related issues. Residents call Augusta 311, then their service requests are sent from the call center to a digital system used by mosquito technicians who visit each property. Many mosquito control entities, whether county, city, or private, operate in a similar manner, using ultralow volume (ULV), truck-mounted adulticide sprays as part of an integrated mosquito management (IMM) program to address these mosquito-related problems. After reviewing service request and response logs from previous years, RCMC determined that many calls were repeatedly made by the same residents and that some callers were perhaps seeking an intervention similar to a residual barrier spray as opposed to a ULV spray. These instances illustrate that gaps exist in residents' knowledge, both about how to reduce mosquito populations on their property and about the nature of the services RCMC provides.

Georgia (cont.)

To address these lapses and improve mosquito control services overall, RCMC has instituted more stringent IMM practices. RCMC mandates that all properties receive a thorough, source reduction and larval control-oriented inspection prior to the use of any adult control measures. The department has also implemented new educational materials and renewed an emphasis on technician-customer consultations. So far, these changes have resulted in an approximately 3-fold reduction in adulticide usage with an overall positive response from citizens.

For example, at several properties, mosquito technicians identified midges, crane flies, or other flying insects that were the reason for the service request but did not require mosquito control, which reduced the department's adulticide usage and served as opportunities for education. Technicians are also deployed with larval control products such as BTI and Methoprene granules so they can address larval sites as they find them, which is a longer-lasting mosquito control strategy than ULV spraying alone.

While RCMC recognizes that ULV sprays are an important part of an integrated mosquito management program, surveillance and inspection prior to their application are crucial to reduce product waste, increase environmental stewardship, and maintain transparency with residents. Additionally, reduced use of the limited classes of product we have can decrease chances of resistance developing in adult mosquito populations.

Submitted by Annie Rich Thompson

Maryland

Maryland, like all, is working around the current pandemic in the best ability possible and we are all working under the safety protocols recommended by the CDC. The pandemic has caused a brief delay in ground-based ULV mosquito control services this year. We typically start ULV spraying the third week of May. It is currently mid-June and there are six county programs providing services. Additional county programs are planning to participate over the next couple of weeks. Typically, eighteen out of the twenty-three counties participate.

Thankfully, the delay has not been detrimental. With the year-round staff we have, MDA provided aerial larvicide services and controlled 5,732 acres via airplane to control the emergence of spring mosquito species in late April. May temperatures were still rather cool and mosquito populations were not abundant, particularly in comparison to previous years (you all remember 2018). Following that was a dry first half of June, so given the circumstances of the pandemic and a delay in service, the outcome was quite well.

As individual counties become activated for services, we (MDA) are working with our Human Resources Department to safely onboard returning seasonal staff. We will conduct over the phone interviews soon to hire new staff to fill vacant seasonal positions.

Adult surveillance started in May, although not at full capacity. We plan to begin the arboviral surveillance and testing program on July 1st and will be coordinating these efforts with CDC this year. PPE has been difficult to procure for us, as other states have mentioned. Inventory from last year has been a big help. Efforts are in place to soon obtain additional PPE that we will need to maintain safe insecticide handling throughout the season.

Maryland (cont.)

The Maryland Department of Agriculture's pesticide container recycling program will offer multiple recycling dates from June through September. This free program allows farmers, certified applicators, and other pesticide users to recycle used plastic containers. The program provides alternative options for disposal of pesticide containers, helping prevent pesticide residues from reaching soil and local waterways while diverting material away from landfills. Maryland's partnership between federal, state, and local agencies and private industries divert these containers from the environment to a chipper to grind the containers into flakes which are then transported to a contractor for recycling. So far, the containers collected in Maryland have yielded nearly 1 million tons of recyclable plastic flakes. We encourage anyone in Maryland with empty pesticide containers to take full advantage of the program, but please remember to triple rinse. A schedule of collection dates and locations is available on Maryland Department of Agriculture's website.

Submitted by: Kyle Brinson

Pennsylvania

COVID-19 has been a major challenge for PA as with all other states. The DEP's lab capacity has been cut as has the number of samples that it is capable of processing. As of August 18th, a total of 6,265 pools of *Culex* mosquitoes have been tested for West Nile virus with 190 positives. This pales in comparison to the 10,475 pools that were tested in 2019 during the same period. There has also been a 44% reduction in the number of samples that have been submitted to the lab. There are no reported bird, equine, or human cases of West Nile virus.

The statewide Mosquito Academy that provides training to new county employees in all aspects of mosquito surveillance and control was cancelled as well. The slated participants received a manual electronically instead of in person training. This was then followed up by a needs-based assessment survey so future training could be tailored to the specific needs of county personnel.

The Pennsylvania Vector Control Association meeting that was scheduled to take place, October 7-9 was cancelled. A virtual one-day meeting has been scheduled for October 8th. Updates will be posted to PVCA's website pavectorcontrol.org.

The State's Tick Program is surveying for nymphal *Ixodes scapularis* on a biweekly basis. All 67 counties are being surveyed in this study. The nymphs are being tested for *Borrelia burgdorferi*, *Anaplasma phagocytophilum*, and *Babesia microti*. To date there have been 1,100 nymphs collected. The results are as follows: *Borrelia burgdorferi*- 29% positive, *Anaplasma phagocytophilum*- 11% positive, and *Babesia microti*- 2% positive.

County and DEP staff are also targeting other species of ticks in conjunction with the nymphal surveillance. To date there have been: 399 *Dermacentor variabilis*, 62 *Amblyomma americanum*, and 765 *Haemaphysalis longicornis*. The longhorn tick continues to expand in both distribution and abundance. It has been found in in three additional counties since surveillance has begun.

Submitted by Christian Boyer

South Carolina

South Carolina was pleased to host the 45th annual Mid-Atlantic Mosquito Control Association (MAMCA) and the 47th annual South Carolina Mosquito Control Association (SCMCA) joint meeting held at the Hilton Greenville in Greenville, SC. Sixty (60) current SCMCA members attended the conference. SCMCA Past President, Robert Cartner, was elected to serve as MAMCA President. Dr. Chris Evans, SCDHEC State Public Health Entomologist, gave a presentation entitled “Eastern Equine Encephalitis Virus and Mosquito Control.” South Carolina’s “2019 Arbovirus Update” was presented during the SC State Report by Special Davison, MAMCA SC State Director.

South Carolina Mosquito Control Association

Due to COVID-19, the SCMCA cancelled its Summer Workshop normally held in June. In addition, the in-person Annual Meeting usually held in November has been cancelled. However, the feasibility of having a virtual meeting is being explored.

SCDHEC Bureau of Environmental Health Services/Entomology Lab

Dr. Chris Evans, State Public Health Entomologist, reports that COVID-19 has impacted and reduced the amount of mosquito trapping and testing. Mosquito pools from the following counties have been submitted: Aiken, Charleston, Greenville, Greenwood, Horry, Oconee, and Richland. Ninety-One (91) mosquito pools have tested positive for virus: 57 specific ID pending, 32 Flavivirus Non-Specified, and 2 West Nile. Since June 24th, eleven (11) horses have been confirmed positive for Eastern Equine Encephalitis (EEE): four from Horry, and one each from Aiken, Berkeley, Colleton, Florence, Jasper, Lexington, and Marion counties. With limited funding from the CDC, plans are in progress to initiate a tick surveillance program. To date, no human cases of mosquito-borne or tickborne disease have been reported. Finally, Lauren Perez has been a welcome addition to the Entomology Lab. Lauren’s first days on the job were attending the MAMCA/SCMCA meeting. She received her MS degree in Entomology from the University of Georgia.

(The following information was gathered some time ago and is reported from municipal and county programs throughout the state):

Upper Region

The City of Clemson began adulticiding several weeks ago and plan to continue as needed throughout the season.

David Coleman with the City of Edgefield stated that they are preparing for this season and will begin operations soon.

Greenville County contracted with a commercial pest control company last season and will continue the service this season. There is a hotline for citizens to call in requests for areas that may require prevention and control services. The hotline number is 864-467-5988 and accepts requests from June to September from citizens in Greenville, Simpsonville, Travelers Rest, and Greer.

Lori Cooper with the City of Fountain Inn stated that they will begin adulticiding as needed with Biomist in the city limits.

South Carolina (cont.)

Middle Region

The City of Columbia reports a low number of complaints. They will be working with Richland County Vector Control to address a mosquito problem on the SC Department of Juvenile Justice property. They have not done any trapping as they are still getting their bearings due to COVID-19. It has been a cool Spring, but they have observed hatching in the last few weeks. Operations have begun. Adulticiding is conducted as needed, approximately 6-8 times throughout the summer. They have been operating and following normal procedures throughout the pandemic.

Clarendon County began adulticiding the first week of June.

Darlington County has not been affected through COVID-19. No adulticiding has been conducted, but larviciding has been done in wetland areas of the county.

Dillon County plans to begin adulticiding operations soon.

Florence County stated that Herbie Christmas retired in July 2019. They have not larvicided yet due to lack of products' availability on the state contract. Normally coordinating with DHEC on trapping and due to COVID-19, no trapping has been done.

Richland County reports that this spring has been like nothing they have ever experienced. To begin, Congratulations to Olin Towery & Chelsey Reed for receiving financial support to attend the Dodd Short Courses in February. Without that support, the training would not have been possible. They both learned a lot at the training and shared the information with the rest of the staff. The full-time staff were all able to attend the joint MAMCA/SCMCA meeting in February. It was a great experience for them. Congratulations to Beverly Whitmire for receiving the Technician of the Year Award and to Tammy Brewer for receiving the Silver Dipper Award. Staff were also able to attend the Clarke Spring Workshop the next week. Congratulations to Chelsey Reed for obtaining her SC pesticide applicator license.

Despite the many challenges and obstacles the COVID-19 pandemic has presented, we have managed to persevere. Richland County closed with the rest of the nation, allowing only essential personnel to work. Since we were at the beginning of our catch basin project, it was determined that the Vector Control staff were essential, and therefore continued working. It began on a limited basis initially, but staff has been working more steadily as time went on and as service requests began to increase. Our processes have altered, staff are all required to wear masks while in county buildings & maintain the 6 foot social distance, schedules have been adjusted, and working from home for those more at risk has been the norm for this spring. The adjustments have also caused delays with our regularly scheduled trapping, training, and responses. We were not able to interview and hire our seasonal crew or post a vacant Administrative Support position. It is unlikely that we will be able to interview and hire any personnel this summer. We will continue to do our best to provide service to the citizens while maintaining the safety of our staff until the pandemic subsides and we can resume some sense of normalcy.

South Carolina (cont.)

Lower Region

Berkeley County reports that COVID-19 gave them a bit of a different start to the mosquito season this year, but staff were all still at work and able to deal with any early hatch-offs. We had some daytime staff working a late night-early morning shift to better practice social distancing. This allowed us to spray more problem areas every night, which worked out well for us. Berkeley County has seen a lot of rain this year so far, especially in February and April. We had a couple of major floodwater hatch-offs in several areas of Berkeley County and were able to get the mosquito population down to acceptable numbers with truck-based adulticiding. On June 3rd, we conducted an aerial spray operation, the first in over 2 years, in parts of the Wando and Daniel Island areas. This was in response to numerous complaints from the public, and high landing rate counts of *Aedes sollicitans* observed in the area. We hope to be able to deal with any further hatch-offs this year by truck but are prepared to spray aerially more times if necessary.

Charleston County reports that March, April, and May of 2020 were much wetter than the same period of 2019, when Charleston County and much of the region experienced near-drought conditions. Multiple severe thunderstorm fronts, unusually high peak high tides, and Tropical Storm Bertha were the stimulus driving the mosquito population this spring. For example, in March, April and May of 2019, a total of 68,103 acres were adulticided by truck mounted ULV units. This year, the total for those months was 258,983 acres. Fortunately, Charleston County had designated mosquito control personnel as essential, and despite the COVID-19 circumstances, the division was able to continue all phases of surveillance and control. The division hired two new Field Inspectors March 13th, to bring Field Inspector staffing to a complement of six.

Horry County reports that things haven't really changed that much for us other than the COVID-19 policies. We have had mosquito complaints all year. We have added a new UTV and liquid larviciding sprayer and two more adulticiding trucks as areas in the county continue to grow. We also added more traps and trapping sites as well to help monitor mosquito populations.

The City of North Myrtle Beach has been hit extremely hard. Multiple employees had to be furloughed. That being said, our program is down to just two full-time positions. We have finished putting out our first round of larvicide this year. We have already applied about 300 gallons of adulticide this year. With the warm winter and excessive rainfall, we have seen quite a few mosquitoes. Our complaints were constant through the winter and have increased as we have moved into the spring and now into summer. Due to the unforeseen economic events, we have not been able to do any upgrades or changes we were planning to do. I hope that this will end soon, and everyone can get back to some form of life, as we knew it.

The City of Myrtle Beach will continue to maintain its level of service in the Mosquito Control Program despite the economic downturn due to COVID-19. Construction of new neighborhoods and the arrival of new residents has not slowed down. We will have to expand our adulticiding, larviciding, and education along with other city services to meet this new growth. We will also continue to plan and prepare for hurricanes and mosquito-borne diseases that may or may not make an appearance in the coming year.

Submitted by Special Davison, Sue Ferguson and Dr. Evans

West Virginia

In 2019, three La Crosse encephalitis human cases and no human cases of West Nile virus infection were detected in West Virginia. West Virginia reported two malaria cases and five dengue cases in the state. West Virginia reported a comparatively high incidence of tick-borne diseases in 2019. There were 898 human cases of Lyme disease, 26 spotted fever rickettsioses cases, 10 accounts of human ehrlichiosis, and three human anaplasmosis cases in the state. In 2018, there were 671 accounts of Lyme disease, 20 human cases of spotted fever rickettsioses, and four human ehrlichiosis cases. West Virginia is increasing tick surveillance activities in response to this increase in tick-borne disease incidence. The West Virginia Veterinary Tick Submission Project will still collect tick submissions and 4DX SNAP test results from local veterinarians. The state health department and West Liberty University will be involved in active tick surveillance projects across the state from April – July and October - December. Due to COVID-19 response, four local health departments (Cabell-Huntington Health Department, Kanawha-Charleston Health Department, Monongalia County Health Department, Wheeling-Ohio Health Department) will have limited capacity to assist with tick surveillance.

An interstate tick surveillance collaboration has been developed among partners from Virginia, North Carolina, Tennessee, Kentucky, and West Virginia, in response to the cluster of human Lyme disease cases developing in southwestern Virginia. The new West Virginia University Vector-borne Pathogen Dynamics Laboratory, under the direction of Dr. Timothy Driscoll, will assist with testing ticks for *Borrelia burgdorferi*, *Rickettsia rickettsii*, *Rickettsia parkeri*, *Rickettsia amblyommatis*, and *Rickettsia montanensis*. The state health department tick surveillance program is based upon guidelines provided through the CDC ‘Surveillance for *Ixodes scapularis* and pathogens found in tick species in the United States’ (<https://www.cdc.gov/ticks/surveillance/index.html>). Tick surveillance objectives include determining tick density, infection rate density, seasonal phenology, and habitats parameters (urban vs. rural, high vs. low elevation) for the blacklegged tick (*Ixodes scapularis*), lone star tick (*Amblyomma americanum*), and Asian longhorned tick (*Haemaphysalis longicornis*).

The West Virginia Department of Health and Human Resources will continue mosquito surveillance from July through September. Mosquito surveillance will be limited to population centers with history of West Nile virus human infection or high West Nile virus infection rate in their mosquito populations. Our program will continue to monitor for adulticide resistance (malathion, prallethrin, bifenthrin) in adult *Aedes albopictus*.

Although SARS-CoV-2 is not transmitted by an arthropod vector, the state health department zoonotic disease team is assisting in the COVID-19 response. The vectorborne disease epidemiologist, state public health entomologist, and zoonotic disease research analyst are assisting in COVID-19 management. To determine the SARS-CoV-2 infection rate in the mammalian population, state health department zoonotic disease programs and state animal health agencies will report SARS-CoV-2 animal investigations to the CDC ‘One Health’ team starting in June 2020. Laboratory personnel and equipment normally used for mosquito-borne disease surveillance in West Virginia are being diverted to COVID-19 response.

Due to concerns about mass gatherings and COVID-19 transmission, many local health department, state association, state agency, interstate agency, and academic meetings and trainings have been cancelled, postponed or teleconferenced. West Virginia public schools were closed indefinitely starting on March 13. Starting March 19, West Virginia Department Health and Human Resources non-essential employees were encouraged to telework from home.

Submitted by Eric Dotseth

Virginia

Northern Virginia

Fairfax County had many of the health department employees pulled into COVID-19 response. Staffing is also reduced on seasonal assistance, down to 4-5 seasonal staff from an average of 15 positions.

Trapping started during epi-week 20 and consists of 73 traps weekly. All trapping has been through gravid traps, focusing on *Culex* populations. Trap numbers and pool submissions have been lower than the 5-year average, testing 1,424 *Cx. pipiens/restuans* for West Nile virus (WNV) and a total of 14 positives through week 33. The first WNV positive pool was in epi-week 29, comparatively lower than in years past.

Ae. albopictus is dominating the complaint calls this year. Routine inspections of county-owned stormwater detention ponds have continued with treatment when thresholds are reached.

Prince William County started the season on various forms of alternative scheduling and since June has moved back onto a more routine scheduling in the office, making sure there is ample room to work for each individual.

Prince William is also seeing a decrease in overall population levels, pools tested, and to date has only received one WNV positive (*Cx. pipiens/restuans*) in epi-week 31. Mosquito population counts are very similar to 2019, which was the lowest year on record.

Two rounds of resistance testing are completed; testing for Etofenprox on *Cx. pipiens* and *Cx. restuans* at 6 locations across the county. A third round will be starting soon. Adulticiding throughout the county is at an all-time low, with an exception of spot spraying via ULV backpacks targeting nuisance species.

Central Virginia

Henrico County is seeing an all-time low in *Cx. pipiens/restuans* populations as well as positive pools.

Southeastern Virginia

Suffolk has been very active this year with Eastern Equine Encephalitis (EEE) with 21 positive mosquito pools to-date, testing 734 pools of *Cs. melanura* (excluding controls). There has been 3 horses 2 chickens that have tested positive for EEE. As for West Nile Virus, there have been 7 positives out of 266 pools (excluding controls). There was also one chicken that has tested positive for WNV within city limits.

Suffolk has completed their resistance testing for the year looking at Chlorpyrifros, Permethrin and Sumethrin targeting *Ae. albopictus* and *Cx. pipiens/quinqfasciatus*.

Virginia (cont.)

Chesapeake is also seeing a very active year with EEE, with sentinel chickens seroconverting in all 9 locations. The *Cs. melanura* infection rate (MIR) for EEE has been unusually high this year in mosquito pools. There has also been 1 equine reported in the city to have tested positive for both WNV and EEE. Chesapeake is also looking into a correlation between *Cx. erraticus* and *Cs. melanura* in the transmission of EEE to equines.

Portsmouth has increased trapping this year with a total of 18 CDC traps, 2 BG traps, and 8 gravid traps weekly. This increase came in a very busy season, seeing a troubling number of *Cs. melanura* city-wide, and multiple broods of *Ae. sollicitans* and *Ae. taenioryhnchus* in the northern portion of the city. After the drought conditions of June and early July, we have seen a lot of rain and with it a lot of mosquitoes.

We have sprayed a total of 50,956 acres this year via ULV, combating high vector numbers as well as salt marsh blooms from Craney Island. This acreage is on par with the past two years.

Portsmouth does not have testing capabilities to-date, so we are using thresholds and keeping an eye on positives from neighboring localities to move forward with control operations.

Norfolk's mosquito populations are well below the 5-year average, with *Cx. pipiens/restuans* counts down 33% overall. A total of 122 pools of *Cx. pipiens/restuans* has been tested, with a result of 4 positives, each from a different location within the city.

Norfolk has also looked at resistance in *Cx. pipiens* against Prallethrin and sent *Ae. albopictus* samples to Cornell's NEVBD program.

Virginia Beach has detected EEE in their sentinel chicken program with a total of 5 chickens at 4 locations. There has not been any positives in mosquito pools for EEE nor for WNV.

York County has revamped their surveillance program to double their trapping efforts. The new trapping schedule alone has decreased the need to adulticide, and the county has added additional thresholds for ULV spraying. The county has also seen an uptick in citizens requesting to be added to the spray-avoidance list and local beekeepers. Reduction in ULV operations has had a positive side-effect in allowing resistance studies and participation in Cornell's NEVBD program.

The new trapping schedule has increased testing pools, from 81 in 2019 to currently 209 in 2020. There has been one positive for WNV in the county from epi-week 28.

Submitted by Betsy Hodson and Tim DuBois

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