

The Emerging Times

The Official Mid-Atlantic Mosquito Control Association Newsletter

Fall 2021

President's Message

Mosquito season is at its end for most of the country and that means Conference Season is upon us. We're all too familiar though, with the setbacks our industry's educational opportunities have endured due to the coronavirus epidemic. Although a new variant is looming over our heads currently, I'm optimistic that our organization will continue to thrive and spread our positive message.

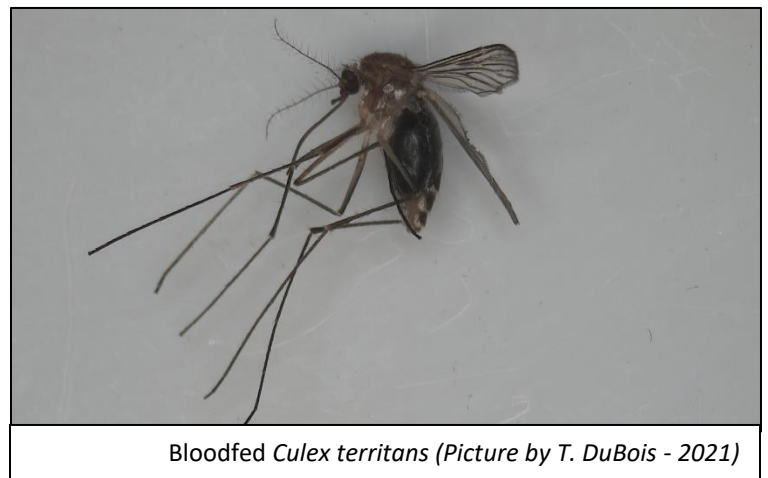
MAMCA VP Tom Moran and the rest of the MAMCA Board are hard at work organizing the upcoming Annual Conference in Rehoboth Beach, DE, February 8-10, 2022. Although our industry's organizations were able to successfully pivot to virtual platforms, there is no substitution for personal connections. I'm excited for our Association to join in person again and I hope to see many familiar and new faces from our 9 member states (Delaware, Georgia, Maryland, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia) and beyond.

Details about the 47th Mid-Atlantic Mosquito Control Association Annual Conference can be found at the following link: [MAMCA Annual Conference](#).

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.

Robert Cartner, MAMCA President

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Bloodfed *Culex territans* (Picture by T. DuBois - 2021)

2022 ANNUAL MAMCA MEETING

Atlantic Sands Hotel & Conference Center
Rehoboth Beach, Delaware



The 47th Annual MAMCA Meeting is scheduled for Feb. 8-10, 2022 at the Atlantic Sands Hotel and Conference Center in Rehoboth Beach, DE. The conference will include professionals from MAMCA's nine supporting member states from across the Mid-Atlantic region. Learn about the latest products, equipment, techniques and applications, network with other like-minded professionals, and support up and coming minds with our Student Competition. Due to the success of our 2021 virtual meeting and feedback regarding this format, we will be looking into the feasibility of either recording it for viewing at a later time. This will be in addition to traditional in-person attendance.

When finalized, more information about the meeting including hotel information, agenda, registration and/or virtual attendance options can be found at www.mamca.org/conference/.

Upcoming Meeting and Important Events

<u>Meeting</u>	<u>Location</u>	<u>Dates</u>
FMCA Fly-In Annual Meeting <i>Florida Mosquito Control Association</i>	Anastasia, FL	Jan. 11 - Jan. 13, 2022
VMCA Annual Meeting <i>Virginia Mosquito Control Association</i>	Newport News, VA	Jan. 25 - Jan. 27, 2022
MAMCA Annual Meeting <i>Mid-Atlantic Mosquito Control Association</i>	Rehoboth Beach, DE	Feb. 8 - Feb. 10, 2022
AMCA Annual Meeting <i>American Mosquito Control Association</i>	Jacksonville, FL	Feb. 28 - Mar. 4, 2022
NJMCA Annual Meeting <i>New Jersey Mosquito Control Association</i>	Atlantic City, NJ	Mar. 16 - Mar. 18, 2022
SOVE 2022 International Congress <i>Society for Vector Ecology</i>	Honolulu, HI	Sep. 19 - Sep. 23, 2022
Entomology 2022 <i>Entomological Society of America</i>	Vancouver, BC	Nov. 13 - Nov. 16, 2022
FMCA Annual Meeting <i>Florida Mosquito Control Association</i>	Palm Coast, FL	Nov. 14 - Nov. 17, 2022

Organizational Links

- American Mosquito Control Association: <http://www.mosquito.org/>
- Delaware DNREC: <https://dnrec.alpha.delaware.gov/fish-wildlife/mosquito-control/>
- Entomological Society of America: <https://www.entsoc.org/>
- Florida Mosquito Control Association: <https://www.yourfmca.org>
- Georgia Mosquito Control Association: <http://www.gamosquito.org/>
- Maryland Dept. of Agriculture Mosquito Control: https://mda.maryland.gov/plants-pests/Pages/mosquito_control.aspx
- Mid-Atlantic Mosquito Control Association: <http://www.mamca.org/>
- North Carolina Mosquito and Vector Control Association: <http://www.ncmvca.org/>
- Northeast Regional Center for Excellence in Vector-Borne Diseases: <http://www.neregionalvectorcenter.com/>
- Northeast Mosquito Control Association: <http://www.nmca.org>
- Pennsylvania Vector Control Association: <http://www.pavectorcontrol.org/>
- South Carolina Mosquito Control Association: <http://www.scmca.net/>
- Southeast Regional Center for Excellence in Vector-Borne Diseases: <https://cdcsercoevbd-flgateway.org/>
- Society for Vector Ecology: <http://www.sove.org/>
- Tennessee Mosquito and Vector Control Association: <http://www.tennmosquito.com/>
- Virginia Mosquito Control Association: <http://www.mosquito-va.org/>
- West Virginia Office of Epidemiology and Prevention Services: <https://oeps.wv.gov/Pages/default.aspx>

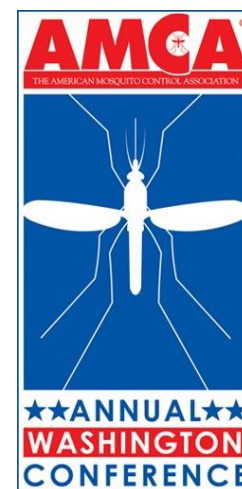
AMCA UPDATE

The American Mosquito Control Association will host its 88th Annual Meeting in Jacksonville, Florida February 18th – March 4th, 2022. Early registration is now available and will continue until February 1st. We have an exciting line-up of speakers and events – the annual meeting is the premier education and networking event for our industry and will include researchers, educators, vector control professional, industry representatives, and students in mosquito control. We are looking forward to being in person and sharing the latest ideas and research as we strengthen and form new collaborations and professional relationships. Please visit the AMCA website, or [click here](#), for more information.



AMCA has very recently (November 2021) published a new “**Best Practices for Integrated Mosquito Management**” manual. This manual is freely available online ([click here](#)) and on the AMCA website. This new edition, developed by mosquito control and public health experts, is an excellent resource for you and your staff. There are quick reference guides, extensive content on surveillance, community engagement, mapping, action thresholds, control measures, and much more.

As you plan your spring 2022 activities, consider being part of AMCA’s annual Washington Conference. You will learn about important regulatory and practice issues that are likely to impact your work. You will also have opportunities to share your knowledge and expertise with legislative aides and policy makers. No experience meeting with legislative offices? Don’t worry! AMCA has extensive experience within our membership, and you will not be alone – you’ll be part of a larger team. To learn more, visit the AMCA website or contact Angela Beehler at angela@mosquitocontrol.org.



Our next AMCA webinar (“The Delicate Balance between Aerial Mosquito Control Applications and a Health Environment”) will be held on December 9th from 1-2pm (Eastern). This webinar is a real-life case study of the benefits of ULV technologies and their ability to decrease non-target impacts, improve efficacy, and reduce costs. Drs. Keria Lucas (Collier Mosquito Control) and Michael Shirley (Florida Department of Environmental Management) will be the webinar speakers. To register [click here](#) or visit the AMCA website.

Finally, I want to welcome Michael Doyle (NC DHHS) as he takes the reins as the AMCA Mid-Atlantic Regional Director beginning in March 2022. Mike has years of mosquito control and public health experience and will no doubt be an asset for our region and represent us all well.

Submitted By Brian Byrd, Mid-Atlantic AMCA Representative

**47TH ANNUAL MEETING OF THE MID-ATLANTIC MOSQUITO CONTROL ASSOCIATION
FEBRUARY 8-10, 2022 – REHOBOTH BEACH, DELAWARE**

MEETING REGISTRATION

The 2022 Annual Meeting will be held at the Atlantic Sands Hotel and Conference Center (1 Baltimore Avenue, Rehoboth Beach, DE 19971) on **February 8-10, 2022**. The full conference registration fee is **\$120.00** and includes all Breaks, Suppliers Social, Lunch Banquet, and Membership for one year. One-Day and Student registrations are available. Payment may be made by cash, check, money order, or credit card.

SUSTAINING MEMBER/EXHIBITOR REGISTRATION

All current Sustaining Members are entitled to one exhibit space at the annual meeting, one (1) full conference registration, one individual membership in MAMCA and recognition in all association sponsored publications. Sustaining Member dues are \$600 and must be paid prior to the Annual Meeting.

HOTEL RESERVATIONS

Conference room rates at the Atlantic Sands for single or double occupancy are \$69.00 + 11% hotel occupancy tax and \$1.50/day resort fee. Rooms can only be reserved by calling toll free 1-800-422-0600 and referencing booking # 10038 / MAMCA Conference to receive the conference rate. Reservations must be made by **Monday, January 10, 2022** after which time the room rate is not guaranteed.

MEMBERSHIP DUES

Regular membership in MAMCA is \$10. If you are unable to attend the annual conference but wish to join or renew your membership in MAMCA, please complete the applicable portion of the form below.

To register, please complete and return this form, with payment, by **Tuesday, January 20, 2022**. Registrations received after this date must contain a **\$10.00** late fee. To avoid a late fee, verify that Andy Kyle has received your information or knows you plan to attend before the above deadline.

Name: _____ Companion: _____

Organization: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ E-mail: _____

Full Registration \$120.00 _____

Late Fee (Assessed after **Tuesday, January 20, 2022**) \$10.00 _____

One-Day Registration (includes Banquet – Wednesday, February 9th) \$65.00 _____

One-Day Registration (Tuesday pm, February 8th OR Thursday am, February 10th) \$30.00 _____

Student Registration \$30.00 _____

Additional Banquet Tickets - Indicate number of tickets (____) \$40.00 _____

Sustaining Member Registration (includes 2022 MAMCA Dues).....\$600.00 _____

Will you be Exhibiting at Meeting? Yes ____ No ____

Dues - Regular MAMCA Membership (if not attending) \$10.00 _____

TOTAL ENCLOSED \$ _____

Payment: (please check appropriate method)

Check _____ Invoice Required _____ (emailed to address provided above) Credit Card _____

Card Number: _____

Expiration Date: _____ CVV code: _____ Billing Zip Code: _____

Credit card information can also be given by phone to Andy Kyle at (717) 793-7705.

Cancellations / Requests for refunds must be received by **February 1, 2022 after which time no refund will be issued.**

Make checks payable to **MAMCA** and mail with this form to: Andy Kyle, MAMCA Secretary-Treasurer
2471 Mayfield Street, York, PA 17406

Questions? Call Andy at the phone number listed above or email: AKLK1@comcast.net



MAMCA Call for Presenters Form

For questions and to submit this form, please contact Thomas.Moran@delaware.gov

by **Monday, December 20, 2021**

Please Check One:

15-20 minute in-person presentation
(please specify anticipated length of presentation _____)

15-20 min. pre-recorded presentation
(please indicate approximate run time of presentation _____)

Presenter Contact Information

Name: _____

Affiliation: _____

Address: _____

Phone: _____

Presentation Information

Presentation Title: _____

Author(s): _____

If sending in a pre-recorded presentation, please remember to include your contact information on the last slide.

I authorize this presentation to be recorded for possible online viewing [at a later date](#) by those not able to attend the conference.

News in the Region

Delaware

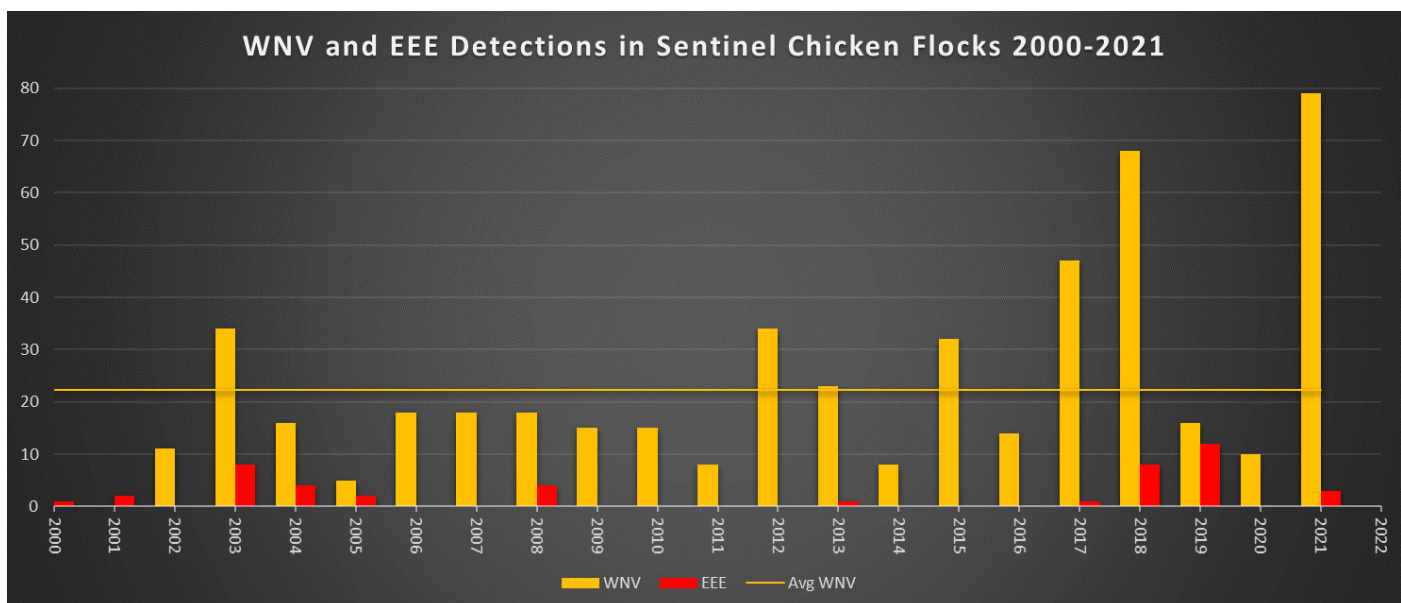
The Delaware Mosquito Control Section has successfully completed yet another mosquito breeding season. The 2021 season was below average regarding aerial adulticide applications with 35,242 acres treated in comparison to 2020's 125,028 acres which is a 72% decrease from the previous year. Statewide, 19,469 acres were treated by aerial larvicide which is a 14% increase from 2020's 17,041 acres treated by aerial larvicide. Also, of note we went the entire season without any treatments at Bombay Hook National Wildlife Refuge which is not the normal for any given season.

The statewide virus activity skyrocketed in 2021 as Delaware saw a record year for West Nile Virus positive results in our sentinel chicken flocks. 79 West Nile Virus positive chickens and 3 Eastern Equine Encephalitis positive chickens as well as 2 human West Nile Virus cases and one horse. Attached is a running graph for the last 20 years of virus activity in the state, the nearest comparison year was 2018 with 68 WNV detections and with the average detections per year at around 22 positive detections and 2021 has set the bar high for the number of detections in a single season.

Staff successfully conducted a wide range of efficacy tests and trials including 2 fogger trials comparing Zenivex RTU with our current product Anvi 10+10 as well as an aerial adulticide efficacy trial for the deltamethrin product Imperium. We also participated again this year in the pesticide resistance monitoring program organized by the Northeast Regional Center for Excellence in Vector-Borne Diseases (NEVBD).

The study of non-target impacts of Bifenthrin barrier treatments that is being conducted by the University of Delaware has completed its first year of applications and data collection with more to come in the following year.

Our Open Marsh Water Management program is gearing up for another winter season of digging and marsh restoration projects for three different sites across the state.



News in the Region

Delaware (cont.)

Lastly, an update from our Tick biologist, Ashley Kennedy: The Asian longhorned tick (*Haemaphysalis longicornis*) is becoming increasingly active in Delaware. First reported in the state in 2019, it is now found statewide in all three counties and has been reported from several host species: domestic dogs, a domestic cat, a red-tailed hawk, and a human. In fact, it has become the most commonly-submitted tick species via the state's passive veterinary surveillance program, with a total of 338 individual ticks submitted from companion animals in 2021. A total of 418 Asian longhorned ticks were collected by flagging and dragging on Delaware public lands in 2021, with the earliest collections occurring on April 6 and the latest collections on October 28.

Mosquito Control personnel assisted with tick collections at deer check stations during the opening weekend of shotgun season in November. More than 1200 ticks representing 5 species were collected from harvested deer at 4 sites across the state. Identification of collected ticks is ongoing, and pathogen testing of collected ticks will take place this winter in cooperation with the University of Delaware Department of Entomology and Wildlife Ecology and Delaware Technical Community College Department of Biology.

Submitted By Rory Badger

Georgia

It was another odd year, with the COVID-19 pandemic taking most of the focus off vector-borne diseases. On the mosquito-borne disease side of things, we have had one California Serogroup Virus disease (probably La Crosse encephalitis), 2 EEE cases, and 4 WNV cases reported and confirmed. We have also had 34 travel-related cases of malaria reported. Tick-borne diseases include 30 cases of Lyme disease, 7 cases of anaplasmosis/ehrlichiosis, and 24 cases of spotted fever rickettsiosis reported. The Asian longhorned tick, *Haemaphysalis longicornis*, has also been found in Georgia for the first time, in one of the northern counties.

There were very few animal cases reported this year, although we had 1 EEE+ horse reported from southeast Georgia and 5 WNV+ alligators reported from southwest Georgia. There was also 1 WNV+ dead bird reported from the Atlanta area.

Due to the COVID-19 pandemic and funding being diverted to deal with it, we were unable to continue our Vector Surveillance Coordinator program, which reduced our ability to do surveillance. We were able to collect mosquitoes from 103 of Georgia's 159 counties. Sixteen counties sent mosquitoes in for testing. There were 5944 pools tested; 31 pools in 5 counties were WNV+ and 1 pool was EEE+. Mosquitoes testing WNV positive were *Culex quinquefasciatus* (30 pools) and *Cx nigripalpus* (1). The mosquitoes testing EEE+ were *Culiseta melanura*. A total of 15583 mosquitoes were collected by early November but not sent for testing.

We have also continued collecting ticks off deer brought in to Wildlife Management Area check stations during quota hunts. This year we collected ticks at 5 WMAs in central Georgia. We will also be collecting ticks during a bear hunt.

Submitted By Rosmarie Kelly

News in the Region

Maryland

The Maryland Department of Agriculture officially ended its 2021 seasonal mosquito control program on October 15th. State-wide statistics are being consolidated and seasonal summaries will be available and presented at the MAMCA conference in February. During the winter months, we will continue what we call our permanent program, performing source reduction via Open Marsh Water Management and tidal ditch maintenance projects.

The Maryland Department of Agriculture facilitated a large project on Smith Island, an island chain that sits on the border of Maryland and Virginia's territorial waters in the Chesapeake Bay. The island has continuously succumbed to land loss due to post-glacial subsidence, erosion, and rising water levels. The loss of over 3,300 acres over the past 150 years has turned the island from farmland to marshland. Erosion obliterates about 2 acres per year: a tremendous, ongoing loss. Building jetties and improving island drainage are restoration efforts aimed at reducing the effects of erosion.

High tides routinely result in flooded backyards, so homes are raised and often rest upon concrete blocks. Water pools under houses and on land, generating significant mosquito populations. Smith Island is only accessible by boat, so our amphibious excavator was barged over where it stayed and operated for nearly three months as it crawled from village to village (the island chain has 3 main villages). Although the island is predicted to become completely overtaken by water within the next 50-100 years, hopefully our efforts will have beneficial impacts to its current occupants.

Arboviral surveillance was conducted from July 1 – October 31. A total of 146 positive WNV pools were confirmed during the 2021 season. The National Capital Region collected one hundred thirty-eight, the Baltimore Metropolitan Region collected seven, and The Eastern Shore Region collected one. Two human WNV cases were reported, one in the Baltimore Metropolitan Area and one on the Eastern Shore. In late August, one EEE positive pool was collected on the Eastern Shore. MDA responded with a public notice and an aerial application to control adult mosquitoes over 6,886 acres. Uncommon to Maryland's arboviral activity was California Serogroup, specifically, 2 human cases of Jamestown Canyon Virus. One case was reported in the Baltimore Metropolitan Region and the other in the Eastern Shore Region.

Aerial applications for adult mosquito control decreased on the Eastern Shore during the 2021 season. In a typical season, we expect large broods of *Ae. sollicitans* from the salt marshes in the Fall months of August, September, and early October; however, this year we witnessed fewer mosquitoes. When comparing the aerial spray program to previous years, we notice tens of thousands of acres that did not need control, which is completely reflective from the reduction in *Ae. sollicitans* populations. Tidal activity played a large role: storms and lunar cycles worked in succession, persistently flooded the marshes, and contributed to a natural reduction in mosquito breeding habitat.

Some state-level projects will continue into next season, such as egg raft collection and testing pesticide resistances to commonly used, effective larvicide and adulticide products. Another project the Department is working toward is testing an array of aerielly dispersed adulticide products to effectively control large numbers of *Ae. sollicitans*. The motivation behind testing new products is the prevention of pesticide resistance by means of product rotation and also an observed reduction in the use of organophosphates on a national level.

Submitted by Kyle Brinson

News in the Region

North Carolina

With the 2021 mosquito season pretty much over, I sit in retrospect, trying to figure out what went right and what went wrong. I'm pretty sure I practice this same contemplation every season about this time. Hoping to mostly learn from the mistakes I may have made during the season. Then trying to figure out how to not repeat them. This practice seems so easy, but I usually end up feeling like the proverbial untrainable dog at the end of every season. I think the one thing I will try to do differently next season, is to start adulticiding a few hot spots earlier in the season to try to get ahead of the late season hatches. To be honest with myself, I am pretty sure I said this exact thing last year, and yet, here I am feeling like that same old dog. Well, maybe next season.

So, this year the weather across the state seemed to start with a lot of moisture but then fizzled out as far as late-season rains and named storms go. In fact it's currently so dry where I am that I can smell smoke from a nearby forest fires. With very little rainfall this autumn, our normal flood plain and flood-dependent mosquito species were pretty dang manageable, if there were any to be found at all. There were a few late *Cx. nigripalpus* and *Cx. salinarius* hatches on our eastern seaboard and we even saw this reflected in the piedmont with the same species. Other than that, our late season flood plain hatches were almost nonexistent. Our *Aedes* container breeding species and *Cx. pipiens complex* were particularly robust this fall in some areas, taking advantage of cryptic breeding sites and containers while most other sites had dried up. Of course, *Aedes albopictus* had a good year, can I ask a question here? When does *albopictus* not have a good year? Every year I am particularly thankful this one species is not playing a major part in disease transmission, that we know of (yet). If that ever happens in our region, it will be a total game changer for us all.

So far this year North Carolina State authorities have evaluated 163 potential Human cases of Arbovirus. Michael Doyle, North Carolina State Entomologist with the Department of Health and Human Service, wanted to emphasize that all of this data is preliminary. To quote Mike regarding the arbovirus data, "Many doctors are sending samples to Quest, LabCorps, etc. instead of the State Lab, so we are only getting WNV positive results back – not negative results for other possible viruses – therefore CDC classifies these WNV-positive cases as probable instead of confirmed"*

Here is the preliminary human arbovirus data as of now:

	Confirmed	Probable	Under Investigation
Chikungunya	0	3	1
Dengue	1	1	2
EEE	0	0	0
LAC	4	3	3
Malaria	22	0	10
WNV	0	6	3

News in the Region

North Carolina (cont.)

Mosquito Pooling:

1,238 Mosquito pools from 9 NC counties were submitted for arbovirus screening during this last mosquito season. Five mosquito pools tested by the CDC were found positive:

Year	Week	Arbovirus	CountyName	SpeciesName	StateID	DateCollected	CaseStatus
2021	32	West Nile	Forsyth County	Culex pipiens complex	FOR-0286-2021	08-12-2021	Confirmed
2021	28	West Nile	Mecklenburg County	Culex pipiens complex	MEC-0002-2021	07-14-2021	Confirmed
2021	30	West Nile	Mecklenburg County	Culex pipiens	MEC-0010-2021	07-28-2021	Confirmed
2021	30	West Nile	Mecklenburg County	Culex pipiens	MEC-0012-2021	07-28-2021	Confirmed
2021	36	Eastern Equine Encephalitis	New Hanover County	Culiseta melanura	NWH-0232-2021	09-07-2021	Confirmed

Veterinary Cases of Arbovirus Reported:

Year	Week	Arbovirus	CountyName	SpeciesName	StateID	OnsetDate	CaseStatus
2021	28	West Nile	Guilford County	Equine	157506697	07-13-2021	Probable Clinical
2021	38	West Nile	Union County	Equine	20210922-98/1	09-19-2021	Probable Clinical
2021	34	Eastern Equine Encephalitis	Brunswick County	Equine	21-025219	08-25-2021	Probable Clinical
2021	35	Eastern Equine Encephalitis	Onslow County	Equine	21-025674	08-30-2021	Probable Clinical
2021	31	Eastern Equine Encephalitis	Pender County	Equine	R2127977	08-01-2021	Confirmed Clinical

It is interesting to note that while local agencies were detecting WNV in some mosquito pools, adjacent counties were showing positive equine cases relative to the same time periods.

Our North Carolina state Tick Entomologist Dr. Alexis Barbarin has provided me with the following write up regarding the NC 2021 tick season: Here are the tick-borne illness events so far in 2021. Please make sure to note that these numbers are preliminary. Also, please note that a large portion of these events are suspected events. Suspected essentially means that there was a confirmatory laboratory test, but there was no clinical information gathered by the county communicable disease nurse. With the onset of COVID-19, the counties are stretched thin investigating other events (like COVID). The Centers for Disease Control and Prevention requires both clinical and laboratory evidence to classify cases as confirmed events or probable events. So in the absence of clinical information, the event will be deemed a suspected case of tickborne illness.

Disease	Confirmed	Probable	Suspect*	Total**
Lyme	113	169	59	341
Ehrlichiosis	12	118	69	199
Anaplasmosis	2	7	4	13
Spotted Fever Group Rickettsiosis	6	165	118	289***

North Carolina (cont.)

** The Centers for Disease Control and Prevention requires both clinical and laboratory evidence to classify cases as confirmed events or probable events. So in the absence of clinical information, the event will be deemed a suspected case of tickborne illness.*

*** These numbers are preliminary for 2021, and may change*

**** In 2020, the Council for State and Territorial Epidemiologists (CSTE) changed the case definition for spotted fever group rickettsioses (SFGR) events to increase the initial titer needed to classify an event from 1:64 to 1:128. Therefore, the number of SFGR events experienced a significant decrease.*

On a different topic the North Carolina Mosquito and Vector Control Association held the 2021 NCMVCA virtual conference earlier in November and the meeting went without any problems. This conference left Mathew Dupont as the incoming NCMVCA president and myself as the past president. Our incoming vice president is Neill Cagle of Transylvania County North Carolina. I wanted to personally thank Neill for his willingness to join the Executive Board. Thank you, Neill, for your dedication to public health! This is also the time of year that I would like to shamelessly plug the North Carolina Mosquito and Vector Control Association. Please, even if you are from another state join our association! If all goes well this year with COVID, we will be having our 2022 meeting within “casting” distance of one of NC’s beautiful beaches. I would also like to ask all those out there reading this to kindly consider contributing to the NCMVCA’s publication, The Biting Times. Just because you may not reside in our state, we are always looking for great articles relevant to our public health mission.

I would like to thank all of those around the state of North Carolina, I literally could not write these reports without all the help from the local agencies. For this report in particular I would like to thank Michael Doyle and Dr. Alexis Barbarin, both of our NC State Entomologists, for providing me with the data provided above.

If anyone has any further questions regarding NC’s programs or this report, feel free to reach out to me and I will be glad to try to help out. Thanks Everyone! Have a happy holiday season and be safe out there!

Submitted by Ryan Harrison



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!

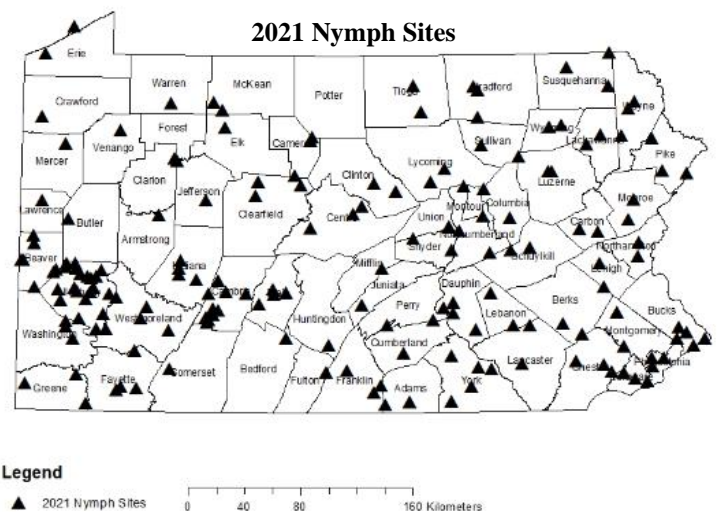
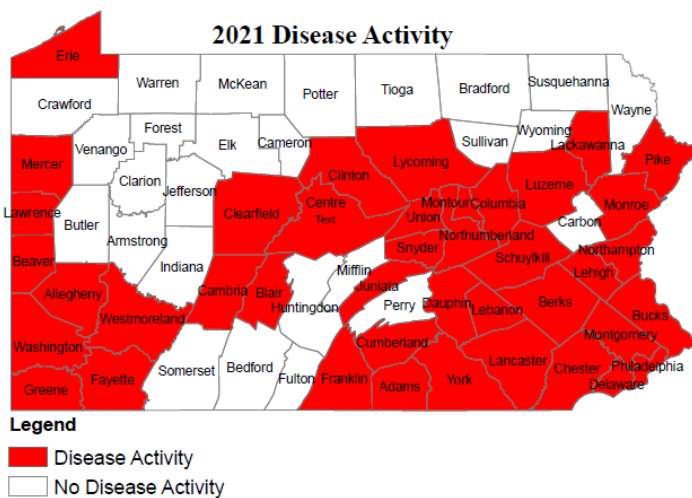
Pennsylvania

The Pennsylvania Department of Environmental Protection's West Nile Virus Program is reporting substantially more West Nile virus activity in 2021 than the previous two seasons. There was a total of 2,358 positive mosquito pools. This is an increase from 623 in 2020 and 547 in 2019. There were 25 confirmed human cases reported with one fatality. The PA Department of Agriculture report 4 horses infected with West Nile virus, along with one horse testing positive for Eastern Equine Encephalitis. Additionally, there were 4 birds that tested positive for West Nile virus.

The Program's laboratory continues to set the national standard related to the identification and testing of mosquito samples. In 2021, the laboratory identified: 1,176,169 adult and 66,647 larval mosquitoes. Additionally, the laboratory tested 13,347 mosquito pools for the presence of West Nile Virus.

The Program received 2,651 complaints in 2021. The rise in nuisance activity is due to increased rainfall and population density explosions of the Asian tiger mosquito. To control disease activity and respond to nuisance complaints, county programs and DEP staff conducted 3,408 larval and 328 adult control applications. The West Virginia Department of Health and Human Resources will continue mosquito surveillance from July through September. Due to state laboratory resources being heavily dedicated to COVID-19 response, CDC will be testing West Virginia mosquitoes for West Nile virus, La Crosse virus, and eastern equine encephalitis virus this year. Kanawha-Charleston Health Department, Monongalia County Health Department, and Cabell-Huntington Health Department will be assisting the state health department with adult mosquito surveillance.

Another integral part of the State's West Nile Virus Program is education and outreach. DEP sponsored habitat reduction and education events directly related to reducing mosquito habitat. During those events, county programs eliminated: 6,405 tires, 2.31 tons of containers and conducted 169 educational programs.



The Department of Environmental Protection's Tick Surveillance and Testing Program again conducted tick surveillance throughout 2021. The spring and summer survey focused on nymphal *Ixodes scapularis* to determine pathogen prevalence throughout the Commonwealth. Active tick dragging was conducted in all 67 counties. During the same season other tick species were surveyed for as well, including *Dermacentor variabilis* (American Dog tick), *Amblyomma americanum* (Lone star tick), and *Haemaphysalis longicornis* (Asian Longhorned tick). It is important to document their establishment and expansion throughout the Commonwealth.

Pennsylvania (cont.)

A total of 3,288 blacklegged tick nymphs were collected from 155 sites. That is an increase of over 2,000 than was collected in 2020. Those ticks were individually tested for *Borrelia burgdorferi*, *Anaplasma phagocytophilum*, and *Babesia microti*. The statewide infection rates were 24.5%, 6.5%, and 1.4% respectively.

Haemaphysalis longicornis continued to expand in Pennsylvania. Specimens were found in an additional 5 counties bringing the total to 14. The new counties included: Berks, Cumberland, Fayette, Franklin, and Schuylkill.

The first established populations of Gulf Coast ticks were found in Philadelphia in July. Prior to that, a single specimen was found in Franklin County in 2020. In addition to both sites in Philadelphia, there was a single specimen found in Bucks County, and 4 specimens found at the same site in Franklin County. Additional surveillance will be conducted to locate other life stages at the established sites. Targeted surveillance will take place in 2022 to document the Gulf Coast tick's phenology and its expansion in the southeastern part of the State.

Submitted by Christian Boyer

Virginia

I hope everyone had a safe and happy Thanksgiving, looking forward to seeing everyone in Rehoboth this February at this year's MAMCA meeting. The Virginia Mosquito Control Association (VMCA) will be holding their 2022 Annual Meeting January 25-27 both in person, as well as having an online option. Check our website out for more information www.mosquito-va.org.

This season like many others was good or bad depending on who you talk to. Testing was down due to supply chain issues, this in some cases reduced the number of mosquito pools that could be tested. Man-power also impacted some localities; the inability to fill open technician positions or hire interns / seasonal help made it hard to be proactive.

Cs. melanura numbers were high in areas affected by the Dismal Swamp, there were a number of EEE positive mosquito pools but not as many in some years. They accounted for 61% of the female mosquitoes collected in Chesapeake (missed being the most collected by a few hundred) and 50% of the females collected by Suffolk.

Cx. pipiens numbers were also high in some cities, Suffolk had the highest total in the last 10 years. Norfolk had the 2nd most WNV positive pools with 40, 77% of all mosquitoes caught in Norfolk were *Cx. pipiens*.

Ae. albopictus numbers were consistent with normal years in most locations they did account for 40% of all mosquitoes caught in Hampton and 17% of Norfolk's total.

At this time, there are 236 positives for West Nile virus and 26 positives for EEE reported. Some are awaiting confirmation, and this data does not include northern Virginia.

Still waiting for a "normal" year.....

Submitted By Jeff Hottenstein

West Virginia

The West Virginia Department of Health and Human Resources conducted active mosquito surveillance from July 5 through September 23. Cabell-Huntington Health Department, Kanawha-Charleston Health Department, and Monongalia County Health Department assisted the state health department with adult mosquito surveillance. Due to state laboratory resources being heavily dedicated to COVID-19 response, CDC tested West Virginia mosquitoes for West Nile virus, La Crosse virus, and eastern equine encephalitis virus this year. West Nile virus was first detected in a *Culex* mosquito sample from Cabell County on August 5. West Nile was also detected in *Culex* mosquito samples from Kanawha County on September 9 and September 23. Conversely, La Crosse virus and eastern equine encephalitis virus were not detected in mosquito samples. The low arboviral infection rates in mosquitoes resulted in low mosquito-borne disease transmission in humans. In 2021, there were no human cases of mosquito-borne disease detected in West Virginia.

West Virginia intensified tick surveillance activities in response to increases in tick-borne disease incidence. The West Virginia Veterinary Tick Submission Project collected tick submissions and SNAP 4DX test results from local veterinarians. Two academic institutions (West Liberty University, West Virginia Wesleyan College), the state health department, and Monongalia County Health Department were involved in active tick surveillance projects.

Active tick surveillance was focused on monitoring the Lyme disease tick vector, the blacklegged tick (*Ixodes scapularis*), in southwestern West Virginia. According to the PetHealth Network (<https://www.pethealthnetwork.com/diseases-near-you>) which provides surveillance results from IDEXX SNAP 4DX tests, there has been an increase in Lyme disease infection rate in dogs from southwestern West Virginia. Conversely, the Lyme disease infection rate in humans from this region has been comparatively low. Standardized environmental collection using tick drags found *I. scapularis* nymphs were not active in many localities in southwestern West Virginia. Multiple collecting excursions to surveillance sites in southwestern West Virginia failed to collect enough *I. scapularis* nymphs for calculating human pathogen infection rate. Most of the collecting localities with the highest *I. scapularis* nymph densities were in the high incidence Lyme disease counties in northwestern and eastern West Virginia.

As of October 29, there have been 988 human cases of Lyme disease, 13 ehrlichiosis human cases, 10 spotted fever rickettsiosis cases, and a single case of human anaplasmosis.

Trypanosoma cruzi, the pathogen responsible for Chagas disease, was detected in eastern bloodsucking conenoses, *Triatoma sanguisuga*, (kissing bugs) from Cabell and Doddridge counties. No local human cases of Chagas disease have been reported from West Virginia. Chagas disease has been detected previously from kissing bugs in Cabell County. Doddridge County is the most northern latitude for Chagas disease detection in West Virginia.

Submitted by Eric Dotseth

Industry Suppliers Update

Adapco

Trey English, Joe Iburg and Ted Bean continue to cover the MAMCA states and look forward to another year of assisting MAMCA customers. Joe is now covering Virginia for Adapco. Dr Casey Crockett and Emily Boothe are also available to assist as Technical Development Specialists. Casey and Emily are very knowledgeable of research related to control of larval and adult mosquitoes and how to avoid resistance issues. I have found them both to be very valuable in our efforts to recommend the best approach for your specific programs. The newest product in Adapco's portfolio is Metalarv-XRP from Valent Biosciences for treating catch basins. Adapco Vector Lab (AVL), an online learning platform, is also new and an excellent way to help you bring new employees up to speed in the areas of :

Mosquito Biology – Classification, morphology, life cycle, common mosquitoes in the U.S.

Mosquito Surveillance – Trap types and methods.

Pesticide Safety and Understanding the Label – What is a hazard, handling pesticides safely, PPE, and reading the label.

Mosquito Identification – Using a taxonomic key and identifying larval and adult mosquitoes.

***New* Pesticide Calibration and Math** – Discover what is required to calibrate various pieces of equipment.

AMGUARD Environmental Technologies

AMVAC® Environmental Products is now AMGUARD™ Environmental Technologies. Now delivering even more of the professional-level mosquito control solutions our customers need – with a new name that fits the job. www.amvac.com/vector. Here you can browse everything from product information to scientific publications. Check out the Mosquito Control Facts section for general information to assist in providing mosquito related information to your constituents and local media.

The AMGUARD™ drum return program allows all DIBROM® CONCENTRATE & TRUMPET® EC users to return their empty 30g drums, free of charge. As carriers adjust their requirements for picking up empty drums, we update this program to help ensure a seamless process. The 2022 program is being finalized and will be available in January.

We are approaching the final stages of DIBROM® CONCENTRATE & TRUMPET® EC reregistration. This is a lengthy process. We will update you as this process continues. Always follow current label instructions, available on our website, and feel free to contact us with any questions.

Each 2022 issue of Wingbeats magazine will include a full-page Aerial Applicator Spotlight sponsored by AMGUARD™. This campaign highlights aerial mosquito control operations with photos and summaries of their aircraft, systems, and crew. If you wish to participate, please contact me. Derek Wright:

DerekW@amvac.com, www.amvac.com 941-737-9883

Industry Suppliers Update

Central Life Sciences

The ALL-CLEAR REBATE PROGRAM will end as of December 31st, for 2021 vector product purchases. There will be a price increase in many formulations starting on January 1st, 2022. NOW is the time to place orders with your vector distributor to optimize your return of cash or free product and save money on your needs for next season. All our granular formulations of Altosid and FourStar will survive wet/dry/wet conditions and continue to perform effectively when flooded again. Enjoy the Holiday Season and stay well. Jeffrey O'Neill: joneill@central.com. 302-312-3950

Clarke Mosquito Control Products

Thank you for the opportunity to give everyone a quick update on what's new at Clarke.

Thank you everyone for your patience this year, with the periodic supply chain issues and all of those who participated in our Voluntary Product Exchange Program (VPEP)

We Manufacture and distribute our own line of ULV sprayers; Promist Dura, Cougar and Grizzly and mosquito control products Merus 3.0, Duet, Duet HD, Anvil and Biomist. And are the exclusive distributor for Biogents and Central Life's Fourstar product line and an Agent for the Central Life Altosid, Zenivex and Duplex products. We also represent Frontier Precisions products for mosquito control.

The Clarke Team wishes everyone a safe holiday season and we will see you in Rehoboth!

Thank you!

Jeff Hottenstein, Sydney Brogden, Kim Geissel, and Brian Deenihan

Frontier Precision, Inc.

With appreciation at the holidays, Frontier Precision, Inc. thanks you and wishes you a joyous holiday season! FieldSeeker Core has new enhancements for offline workflows, improved reports, better lab data management, and better data review. FieldSeeker Windows ULV is being enhanced to integrate with CompassTrac AVL for vehicle tracking, and improvements are being made to data sync, data management, and mobile map capabilities. We have also been growing our UAS department and drone product portfolio. Check out our latest options for inspections, liquid/granular treatments, and mapping/LiDar applications. Linda Glover: linda@frontierprecision.com, 208-324-8006.

Summit Chemical

Happy Holidays! Zach Cohen: zcohen@summitchemical.com

Industry Suppliers Update

Target

Target Distribution: Karen, Sean and Steve would like to thank you for a fantastic year! With your continued support, Target Specialty products has been able to grow and bring you the quality products your program deserves. In 2021, Target Specialty Products (TSP) became the sole distributor of Bayer adulticides. With this wonderful partnership, we have been extremely active bringing Deltamethrin success to the adulticiding community! TSP is also the proud distributor of Leading Edge Drones, DropVision, and FleetVision. These drones have been amazing in our industry; to be able to pinpoint an application with products such as Altosid P35 or XRG-Ultra to a region without a large aircraft is a true accomplishment. We hope to see you in the field in the new season and have more exciting news to share. IF you have any questions, please reach out.

Steve Molnar: steve.molnar@target-specialty.com

Karen Frome: karen.frome@target-specialty.com

Sean Heylek: sean.heylek@target-specialty.com

Veseris

An independent company 100% committed to serving environmental science customers with greater agility and a stronger sense of purpose. With 10,000+ products from 800 supplier partners, and 71 ProCenter locations across North America, we maintain a significant reach as a specialty products distributor. With industry-leading digital services like PestWeb, ProTraining, and Inventory Manager, we're making it easy to do business with Veseris — and empowering managers to do more with their businesses every day. Most importantly, our 400 employees and 40+ years of history have proven to generations of professionals that Veseris will never stop working to create positive impact for our customers. Regards, Jason Conrad: Jason.conrad@veseris.com



2023 MAMCA ANNUAL MEETING

Stay tuned for details on our website www.mamca.org

FINAL CALL FOR MAMCA AWARD NOMINATIONS

The Mid-Atlantic Mosquito Control Association has three awards that may be presented at the Annual Meeting.

Rowland E. Dorer Award

This award honors Rowland E. Dorer of Virginia, one of the founding members of the association. Emphasizing the need for a strong regional association, he was also instrumental in the formation of several of the MAMCA's member state mosquito control associations.

He was the first president of the MAMCA and a Past President of the American Mosquito Control Association. He was the first recipient of the Rowland E. Dorer Award, although posthumously. Ironically, or maybe fittingly, Mr. Dorer passed away at the 1987 MAMCA meeting in Williamsburg, VA.

Outstanding Service Award

This award is given to individuals for dedicated service and contributions supporting mosquito control and the association's mission, goals, and objectives. It is intended to recognize someone whose efforts the MAMCA Officers and Board of Directors judges to be exemplary.

Please think of those individuals that are deserving of the Association's highest honors. Award criteria and applications can be found on the MAMCA website at <https://www.mamca.org/awards>. Please send nominations and accompanying documents to fergussc@bellsouth.net by Monday, December 17, 2021.

Dr. Bruce A Harrison Outstanding Student Award

First awarded in 2007 as the Outstanding Graduate Student Award, the award was renamed in 2020 to honor Dr. Bruce A. Harrison of North Carolina, another founding member of the association. A valuable resource of knowledge, he provided instruction in mosquito taxonomy at many annual meetings and for several of the MAMCA member states.

The award recognizes the contributions of an individual pursuing studies related to the field of mosquito or vector control and to encourage academic pursuits in disciplines related to same. The award recipient must be a resident of one of MAMCA's nine member states or must be attending a school of higher learning in one of MAMCA's nine member states.

Information and applications can be found at <https://www.mamca.org/awards>. Interesting applicants can forward required documents to bdbyrd@wcu.edu by Monday, December 17, 2021.

MAMCA Sustaining Members

A special thanks to our 2021 Sustaining Members without whose generous support these meetings would not be possible.



Bayer Environmental Science



Mid-Atlantic Mosquito Control Association

Officers and Board Members

Robert Cartner (**President**)
 Beaufort County Mosquito Control
 84 Shanklin Rd.
 Beaufort, SC 29906
 Phone (843) 255-5800
rcartner@bcgov.net

Thomas Moran (**Vice-President**)
 Program Manager
 Delaware Mosquito Control Section
 2430 Old County Rd.
 Newark, DE 19702
 Phone (302) 836-2555
thomas.moran@delaware.gov

Ture Carlson (**Vice-President Elect**)
 Chatham County Mosquito Control
 65 Billy B Hair Dr.
 Savannah, GA 31408
 Phone (912) 790-2540
tacarlson@chathamcounty.gov

Andy Kyle (**Secretary-Treasurer**)
 2471 Mayfield Street
 York, PA 17406
 Phone (717) 793-7705
aklk1@comcast.net

Timothy DuBois (**Past-President**)
 City of Portsmouth
 2001 Frederick Blvd.
 Portsmouth, VA 23704
 Phone (757) 393-8666
 FAX (757) 393-8282
duboist@portsmouthva.gov



Shaun McIntire (**Delaware**)
 DNREC, Mosquito Control Section
 2430 Old County Road
 Newark, DE 19702
Shaun.McIntire@delaware.gov

“Tiffany” Thuy-Vi Thi Nguyen (**Georgia**)
 Georgia Department of Public Health
 2 Peachtree St. NW
 Suite 13-404
 Atlanta, GA 30303
 Phone (404) 657-0278
thuy-vithi.nguyen@dph.ga.gov

Kyle Brinson (**Maryland**)
 Maryland Dept. of Agriculture
 27722 Nanticoke Road- Unit #2
 Salisbury, MD 21801
 Phone (Salisbury) (410) 543-6626
 Phone (Somerset) (410) 651-3807
 FAX (410) 543-6660
kyle.brinson@maryland.gov

Ryan Harrison (**North Carolina**)
 Forsyth County Dept. of Public Health
 799 North Highland Ave.
 Winston Salem, NC 27101
 Phone (336) 703-3170
harrisrl@forsyth.cc

Christian Boyer (**Pennsylvania**)
 PA DEP, Vector Management
 PO Box 1467
 Harrisburg, PA 17105
 Phone (717) 346-8221
 FAX (717) 346-8591
chrboyer@pa.gov

Dr. Chris Evans (**South Carolina**)
 SC DHEC
 8500 Farrow Rd.
 Columbia, SC 29203
 Phone (803) 896-3802
evanscl@dhec.sc.gov

Adrianna Sharkey (**Tennessee**)
 Shelby County Health Dept.
 814 Jefferson Ave.
 Memphis, TN 38105
 Phone (901) 222-9000
adrianna.sharkey@shelbycountyttn.gov

Jeff Hottenstein (**Virginia**)
 Regional Sales Director
 Clarke Mosquito Control
 Phone (703) 498-9362
jhottenstein@clarke.com

Eric Dotseth (**West Virginia**)
 West Virginia Department of Health and
 Human Resources
 Office of Laboratory Services
 167 11th Avenue
 South Charleston, WV 25303
 Phone (304) 356-4020
eric.j.dotseth@wv.gov

Jeffrey O’Neill (**Industry**)
 Central Life Sciences
 22 Christina Court
 Bear, DE 19701
 Phone (302) 312-3950
joneill@central.com

Sue Ferguson (**Historian**)
 Phone (803) 381-2750
fergussc@bellsouth.net

Timothy DuBois (**Newsletter Editor**)
 City of Portsmouth
 2001 Frederick Blvd.
 Portsmouth, VA 23704
 Phone (757) 393-8666
duboist@portsmouthva.gov