

THE SKEETER Vol. 79. No.2

2019 Summer Newsletter

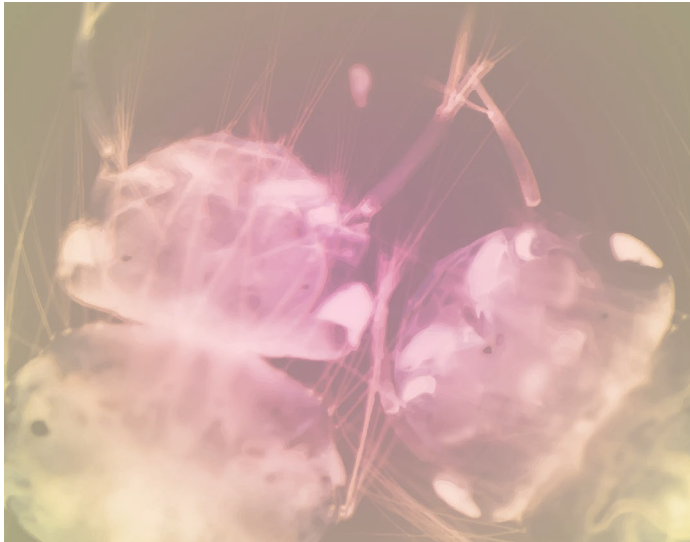


Official Newsletter of the Virginia
Mosquito Control Association

What's in this issue

Announcements, What's That?	3
2019-2020 Student Poster Competition	4
2020 Silent Auction	5
2019 VMCA Adult ID Course	6-7
2020 VMCA Award Nominations	7
2020 VMCA Annual Meeting Presentations	8
2020 VMCA Executive Board Nominations	8
2019 'Tour de Skeeter'	9-12
Field Studies of Larvicides with <i>Cx. pipiens</i>	13
Unpublished Character for Identifying <i>Cx. salinarius</i>	14-15
VMCA Membership Form	16
Developing Monthly Virginia Activity Reports	17-19
New Invasive Tick in the Netherlands	20-21
Merchandise Sales Continue	22
What's That? Answer	23-25
2019 VMCA Committees	26
2019 Sustaining Members	27
Jurisdictions & Other Resources	28
2019 Executive Board	29

Announcements



Upcoming Events

ESA Annual [Meeting](#) “Entomology 2019”

November 17-20, 2019

St. Louis, MO

Student Poster Competition Submission [Deadline](#)

December 2, 2019

NMCA 65th Annual [Meeting](#)

December 9-11, 2019

Milford, MA

VMCA Annual [Meeting](#)

January 28-30, 2020

Virginia Beach, VA

MAMCA/SCMCA Joint Annual [Meeting](#)

February 19-21, 2020

Greenville, SC

AMCA 86th Annual [Meeting](#)

March 16-20, 2020

Portland, OR

VMCA Organizational Mailing Address

Virginia Mosquito Control Association

Jay Kiser, Secretary/Treasurer

800 Carolina Rd

Suffolk, VA 23434

Phone: (757) 514-7608

Email: virginiamosquito@gmail.com

You can sign up for or renew your VMCA membership online! Visit our website and fill out the form [here](#)



What's That...?

Answer on [page 22](#)



Virginia

Mosquito Control Association

Founded 1947

2019-2020 Student Poster Competition in Vector Borne Sciences

Virginia Mosquito Control Association is hosting our fourth annual student poster competition during the 2020 VMCA conference
January 28-30 in Virginia Beach, Virginia

- **First place** poster receives

\$500

- Top 5 posters receive

Free registration to the
2020 VMCA annual
conference

- For more information please visit

http://mosquito-va.org/?page_id=806



Who is eligible?

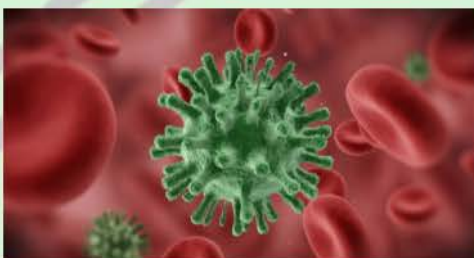
Students enrolled in accredited Virginia colleges and universities.

Acceptable poster topics:

Posters should reflect original research in areas of vector borne sciences: Vector borne diseases, arthropod vectors, surveillance methods, pesticides, repellants or control methods, and diagnostic or laboratory methods.

Deadline for submissions:

All poster submissions should be submitted by email no later than **12/2/2019**.



SILENT AUCTION 2020

PLEASE DONATE

All proceeds benefit the VMCA Student Poster Competition

**Fourth Annual Silent Auction taking place during
the 2020 VMCA Annual Meeting
January 28-30, 2020**

**Please drop off items at the meeting registration desk by Noon,
January 28, 2020**

We are looking for a variety of new or gently used items of good quality
including, but not limited to:

Vector themed items Tools
Artwork Antiques/Historical items
Gift certificates Treasures
Themed prize baskets Apparel

Group donations by committee, agency, or vendors are always appreciated.

Items may also be sent/dropped off before the meeting to:

Suffolk Mosquito Control, 800 Carolina Road, Suffolk, VA 23434

For more information please contact: [Ann Herring mherring@suffolkva.us](mailto:Ann.Herring@suffolkva.us)

2019 VMCA Adult ID Course

Submitted by: Karen Akaratovic



The VMCA sponsored its annual adult mosquito identification course on Monday, May 13th, 2019 at Suffolk Mosquito Control. Seventeen students attended from 9 jurisdictions: Chesapeake Mosquito Control, JEB Little Creek, Longwood University, Portsmouth Public Works, Rocky Mount Development Services (NC), Suffolk Mosquito Control, US Air Force, Virginia Beach Mosquito Control, York County Mosquito Control. The course was taught by local biologists: Karen Akaratovic, Jennifer Barritt, Michael Bowry, Tim DuBois, Jay Kiser, Ryan Levering, Janice Pulver, Wes Robertson, and Penelope Smelser. Their time, efforts, and shared expertise were greatly appreciated.



New this year, we tried a couple online presentations using GoTo Meeting as we have done at VMCA meetings. The transmission of the slides didn't go quite as well as we expected due to the different hardware being used by presenters. However, I still think it was beneficial for the several people who linked in to be able to hear/see the presentations as they were unable to attend in person. Hopefully going forward we can work out some more kinks and fine tune the process to be a bit better.



All seventeen students turned in a survey of the course, and all agreed that the knowledge gained was beneficial and they would recommend the course to others. The primary complaint was "information overload" and for presenters to slow down and offer more insight on each species. While we aim to be as thorough and as accommodating as we can, there is a lot of material to cover in one day; however, the majority of those surveyed agree that one day works better for scheduling.



Overall, it was another successful year for the Education Committee's adult ID course and we thank everyone involved. A huge thank-you goes to the VMCA Executive Board who funded meals for the event and thanks to the merchandise committee for bringing all the mosquito swag for students to purchase. Also, thanks to Ann Herring and Alyx Riley for picking up lunch for everyone and to Charles Abadam for spearheading the Go To Meeting and monitoring it throughout the day.

For anyone interested in learning more about the course, how the day is planned out, and viewing the presentations, check out our webpage on the VMCA website by [clicking here](#).



Call for VMCA Award Nominations

Submitted by: Jennifer Barritt, Awards Committee Chair

Each year at the annual meeting, VMCA recognizes individuals or a group of individuals who have contributed to making the VMCA the best it can be. The Awards Committee and VMCA Executive Board are currently accepting nominations of members and peers who deserve recognition. Please send your nominations and supporting documentation via email to Awards Committee Chair Jennifer Barritt (JBarritt@vb.gov) by January 1st. Below is a list of VMCA awards and their descriptions. If you are interested in who has received awards in the past, the VMCA website has a [page devoted to those individuals](#)

VMCA award descriptions

R.E. Dorer Award: The highest honor award that may be given to a very elite individual that has contributed much to VMCA.

Honorary Membership: Award that may be given to someone that has contributed to VMCA and may be near retirement.

Distinguished Service Award: Awarded for exceptional service with VMCA organizational work.

Outstanding Service Award: Awarded for exceptional service in field work.

Certificate of Appreciation: Award given to some non-member that did some special service for VMCA.

Dr. Jorge Arias Student Competition Award: Award given to the Winner of that year's VMCA student competition.

Call for 2020 Annual Meeting Presentations

Submitted by: Andy Lima, Agenda Committee Chair

Your presentations are *essential* to the success of the VMCA's annual meeting.

Summertime is a great time to start thinking about what you'd like to present at the 2020 annual meeting in Virginia Beach, January 28-30. We want to know all the cool research, control, and outreach activities that your jurisdiction is doing in 2019.

We hope you'll consider giving a presentation to a warm, accepting audience who help protect the public from vector borne illness day-in and day-out. Or maybe you know someone working on something interesting that membership should know about. Although most people present in-person, we have slots available for video presentations, too!

Please email the Agenda Committee Chair, Andy Lima (andrew.lima@fairfaxcounty.gov), with any suggestions or ideas regarding the agenda for the upcoming meeting. There will be a deadline of November 30th for presentations, but please don't wait. Getting a robust agenda early in the game helps us ensure a successful program for the meeting.

If you are interested in giving a presentation yourself, please [email Andy](#) the following information:

Your Name:

Your Organization/Affiliation:

E-mail:

Presentation Title or Topic:

Amount of time requested for presentation (allow a few extra minutes for questions):

Presenting in person or remotely:

2020 VMCA Executive Board Nominations

Submitted by: George Wojcik, Nominating Committee Chair/Past President

VMCA's Nominating Committee is seeking nominations for the 2020 VMCA executive board.

Are you or a VMCA member you know interested in being on the VMCA board? If so, please contact the Nominating Committee Chair, George Wojcik (wojcikg@portsmouthva.gov), with the name and contact information of your nomination. We are seeking nominations for the First Vice President, Secretary/Treasurer, and Industry Representative positions on the 2020 executive board. Both the secretary/treasurer and industry representative serve 2 year terms. The member voted into the first vice president position typically moves up the ranks of the executive board each successive year; a five year commitment. VMCA needs the help of dedicated and enthusiastic individuals to keep our organization running great. Deadline for submissions will be November 1st, but the earlier we hear from you the better.

2019 'Tour de Skeeter'

Submitted by: Karen Akaratovic (and others)

The VMCA Student Competition Committee held its inaugural Tour de Skeeter on Saturday, June 22nd, kicking off National Mosquito Control Awareness Week (June 23-29). It was a beautiful day for bike-riding with a nice breeze and a high temperature around 80 degrees. A total of 30 people and 4 kids signed up and about half were actually able to make the trip and bike some amount of the trail. One group (Jay Kiser- Suffolk Mosquito Control and 2 friends)



rode from Jamestown to Richmond on Friday night and then rode down to the meeting point (Indian Fields Tavern, Charles City County) Saturday morning with Michael Rollins of Prince William County and Ryan Levering of Henrico County. Another group (Lisa Wagenbrenner- Chesapeake Mosquito Control and Tim DuBois- Portsmouth Mosquito Control with wife and friend) rode up from Jamestown to the tavern. The final group (Karen Akaratovic- Suffolk Mosquito Control and Penny Smelser- Norfolk Mosquito Control, both with their families) parked at the tavern and rode a few miles north and back. Ann Herring of Suffolk Mosquito Control graciously volunteered to be emergency support and was stationed at the tavern. Although some of us felt pretty exhausted at the end, luckily no one had a catastrophic issue. Everyone met up at the Indian Fields Tavern to relax and socialize for a couple hours. The tavern supplied some delicious appetizers and everyone had a great time visiting, playing corn hole and Frisbee while the kids played with bubbles, chalk, and a good old-fashioned game of tag. Afterwards everyone left on their separate ways, some had people pick them up and others rode back to their original starting point where their cars were parked.

Next year, there are a few things the committee would like to do differently. For one, we would like to get the word out about the event a little earlier. This year we were only able to give regular registration a 2 week notice. Getting set up took a fair amount of planning with more details than any of us realized, so it took us a bit to get the ball rolling. Secondly, we would like to better organize riding groups if possible. This happened pretty last minute for most people but fixing this will come with getting the announcement/registration deadline out earlier. A third point worth considering is setting up different locations for the event. For example, if people in the northern or western areas of Virginia were interested in participating but not wanting to make the drive down to the Lower Peninsula for the Capital Trail, perhaps we could set up another trail or two in different areas. This would require some help from committee members or volunteers in these areas but is definitely something the committee is willing to explore if there is interest. Finally, several people suggested making the event an overnight/weekend long activity via campgrounds. The Chickahominy Riverfront Park at mile marker 7 could be a great location for such a proposal with over 120 campsites, boat access/rentals, fishing, walking trails, playground and pool, and many other features.

A huge thank-you goes out to Ted Bean with Adapco, Jeff O'Neill with Central Life Sciences, Zach Cohen with Summit Chemical, and Jim Andrews with Valent Biosciences who all sponsored the event so that we could purchase items (t-shirt, water bottle, tick spoon, etc.) to give to the participants and order food for the break time. Without their support, we would not have been able to raise as much money as we did, which was just shy of \$300!

Below are some personal stories from the trail.

Tour de Skeeter was an awesome time by Jay Kiser

Two of my friends (Matt Absi and Travis Bowman) and I rode our bikes 52 miles from Jamestown to Richmond on Friday afternoon (6/21/2019). The ride kicked our butts, but we were still able to explore downtown Richmond on Friday night. Saturday morning, we met up with Ryan Levering (Henrico County) and Mike Rollins (Prince William County) in Richmond and rode 30 miles to the Indian Fields Tavern. The tavern was a great place to have our event: good beer, delicious food, and great times. After the event, we rode back to Jamestown. I will definitely do this again next year.

My experience at the Tour de Skeeter was all positive! by Penny Smelser

I appreciated the late registration and would recommend offering different registration options from the beginning. After examining and reexamining the trail map we decided to park at the Indian Fields Tavern and I think that was the best choice. Whether you rode 2 miles or 20 miles, you were there to support the VMCA, the Student Competition Committee, and spend some time with your valued colleagues. We rode about 3 miles north of the Tavern and returned. It was the perfect distance for myself, my 9 year old daughter, and my 2 year old son who was riding shotgun with me. I enjoy riding my bike but don't get to explore much with 2 young kids so the Capitol Trail was a delightful discovery for me. We loved the rolling hills. I want to say thank you to everyone who worked so hard to put it together and I will definitely do it again next year!

Trials on the Trail by Karen Akaratovic

It should go without saying to check your equipment before embarking on a bike ride, even a short one of less than 5 miles. However, with 2 children under the age of 5 sometimes you think you've checked everything but...you soon find out to the contrary. The day before the ride, I pulled my bike and trailer out of the shed, wiped everything down, hooked it all up, and did a quick check of the tires, making sure they were filled and everything was connected and running smoothly. Since it had been several months since I'd hauled the kids in the trailer, I decided to do a test ride. A short trip with the kids around the yard and down our gravel road felt a little tough but I just assumed it was due to recent rains and rough terrain. I was sure I could handle a few miles.



Pictures taken on the Capital Trail heading to the tavern (Jay Kiser, Ryan Levering, Mike Rollins, Travis Bowman, and Matt Absi).

The next day we arrived at the tavern, unpacked all our gear, and got ready to head out. Within the first minute of riding I was struggling hardcore. It felt like there was a ton of resistance holding me back, almost like I was holding the brakes. I thought it was the incline of the trail, the kids weighing more than last time, or my muscles just were not in the condition I was thinking. Finally, after a few minutes of no improvement I hopped off and had my dad and brother help me look things over. It didn't take them long to see my front brake cable was kinked up and sticking on one side to the front tire. My brother fixed the cable using a small bike tool kit and pumped some more air into my trailer tires (which I also apparently didn't fill enough) with a mini tire pump. After that, the ride felt exponentially better, but was still difficult pulling about 80 pounds of kids+trailer. The trail has some slight inclines here and there but is nicely paved with beautiful scenery and patches of both sun and shade. Overall, the ride was quite enjoyable, especially considering my dad and I switched bikes on the way back.

I will definitely plan to do this ride again next year; key word being "plan." I learned the importance of knowing your equipment and knowing your abilities as well as having tools on hand to fix little issues that arise. I absolutely overestimated my ability to pull my kids while riding a bike, having not done that activity in quite a while. Next year, I will either ride a bit more beforehand or have the kids riding their own bikes, which will be another adventure for the books, I'm sure.

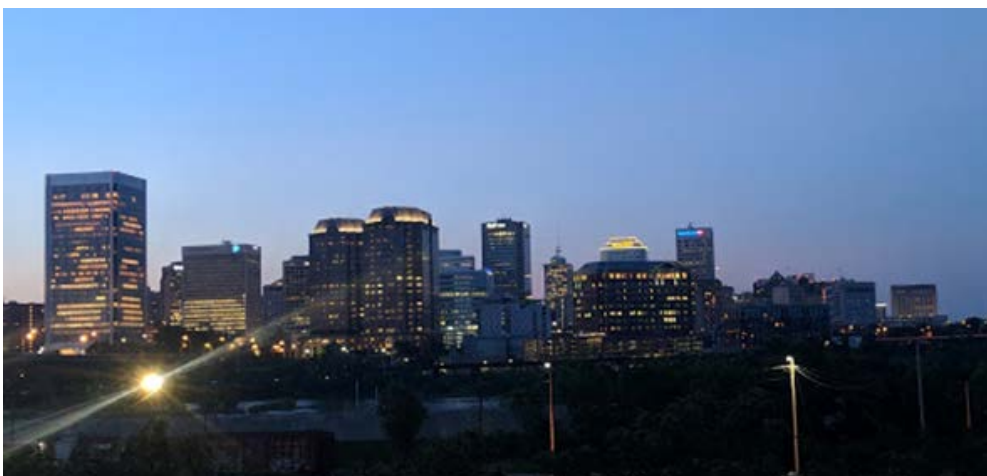
Skeeter on the Trail by Tim DuBois

I was immediately interested in the 1st Annual Tour de Skeeter as soon as I heard about it. I knew of the Capital Trail, as I had recently looked at riding the trail on a random weekend to stay active, so this was just an easy way to lock it in. When I found the 'summit' to be about half way, I signed up and said I would ride there and back without a second thought. Flash-Forward to 22.5 miles in, I immediately regretted the notion that I would still ride back. Unfortunately, or fortunately depending on the moment, I had rode in with Lisa from Chesapeake, my wife, and a good friend, all of whom were way more in shape than I was. I made a deal with my friend that if he would have a couple of beers with me that I would highly consider it. 45 miles later, we rode towards our cars, all of us extremely exhausted, but feeling like we accomplished a great feat.

I am definitely looking forward to next year, and I hope that they can expand on the options to enjoy the wonderful area. Adding a hiking or kayaking component would be a blast, and just having a main campsite area to hangout, cook, etc. at would be a great addition.

My take on the Tour de Skeeter by Lisa Wagenbrenner

It was my first time biking the Capital Trail and I found it very enjoyable. The Indian Fields Tavern was great! A wonderful meeting place for us all! In the future it would be nice to have a sign-up sheet for the starting point/time of each biker. It's also helpful to know what degree of biking (average speed) of each participant. I was able to match up with someone just by chance who rides similar to myself so it made for a more enjoyable bike ride. The swag bag was awesome with lots of great goodies and the laminated trail map was very helpful.



Downtown Richmond after sunset, picture taken from Legend Brewery's side deck.

More pics on the next page!



2019
"Tour de
Skeeter"

Field study on the efficacy of larvicides with *Cx. pipiens*

-Submitted by Lisa Wagenbrenner

We are using Vectomax WSP in the 49sq foot pool and Fourstar 180 day microbial briquette in the 100sq foot pool. The products were placed in the center of each pool.

Egg rafts were collected from the field (25 for the 49sq foot and 50 for the 100sq foot) and raised to 2nd instars then added to the pools. 2nd instar larvae were also added to control buckets placed beside the pools. The pools were monitored for active larvae each day until none were found alive.

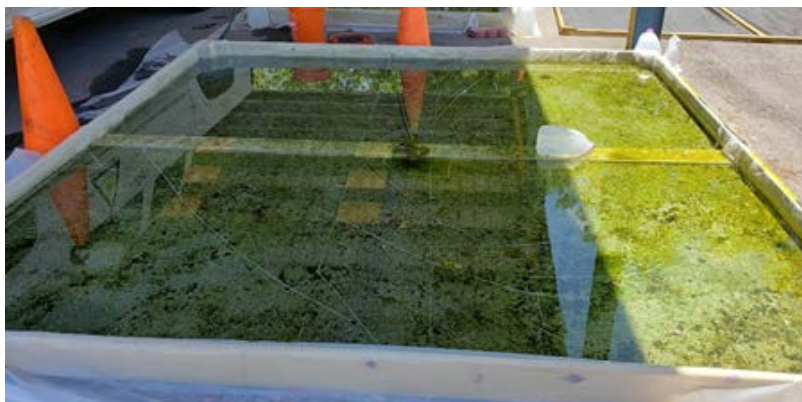
We are currently working on constructing another 100sq foot pool to test Fourstar 45 day microbial briquette. The pools were each fitted with a removable screen top to prevent access to outside mosquitoes. More information to come, possibly at the next VMCA meeting!



Katherine Reutt, Carla Caulkins and Mike Powell rolling the 100sq foot pool outside to the resting spot under the carport.



Lisa Wagenbrenner adding 2nd instar larvae to the 49sq foot pool. Control bucket with screen top pictured in bottom right corner.



The 2 pools with covers removed. We have nice natural algae growth!



Carla Caulkins adding 2nd instar larvae to the 100sq foot pool.

Helpful unpublished character for identifying *Cx. salinarius*

-Submitted by Andy Lima

As all of you know, the mosquitoes we see in traps are often beat up and rubbed of many of their distinguishing scale patterns, which can make ID difficult. Here in Fairfax County, the *Cx. salinarius* we see in our traps rarely have “abdominal segments VII - VIII nearly covered with copper-colored scales” as stated on page 64 of Harrison’s “The Mosquitoes of the Mid-Atlantic Region: An Identification Guide”. Those indistinct or very narrow basal bands can be a tricky character to see on a rubbed specimen, especially with as much variability as can be seen in the abdominal banding for this species. Over the past couple of seasons, I’ve used an additional character that I’ve never seen published, which seems to hold true for me to separate *Cx. salinarius* from *Cx. pipiens* and *Cx. restuans*.

Try zooming way in on those abdominal bands. Most of the time, if it’s a *Cx. salinarius*, especially for the segments closer to the end of the abdomen, I can see at least one row of pale scales (or even a single scale) on the apex of the previous segment, which kind of “blends in” with the basal banding described in the key. I personally think that’s one thing that makes the banding look a bit indistinct, or even blurry, from a zoomed out glance. For me, this is a great confirmatory characteristic that can help me ID as *Cx. salinarius* and avoid the less-accurate “*Cx. spp.*” identification for specimens that are a little roughed up.

So basically, any time you suspect you might be looking at *Cx. salinarius*, take a closer look at that abdominal banding and see if it’s got at least one pale scale or a row or two of pale scales that bleeds over to the apex of the previous segment. If so, you’re probably looking at *Cx. salinarius*! I’m curious to know whether this feature holds for other jurisdictions, or if you find it to be a useful character for you!

Happy ID’ing!
Andy Lima

Cx. salinarius as it is commonly seen, with golden to copper scales mostly absent.

Even on this specimen, largely devoid of pale banding, we can see a line of pale scales at the apex of the previous abdominal segment.



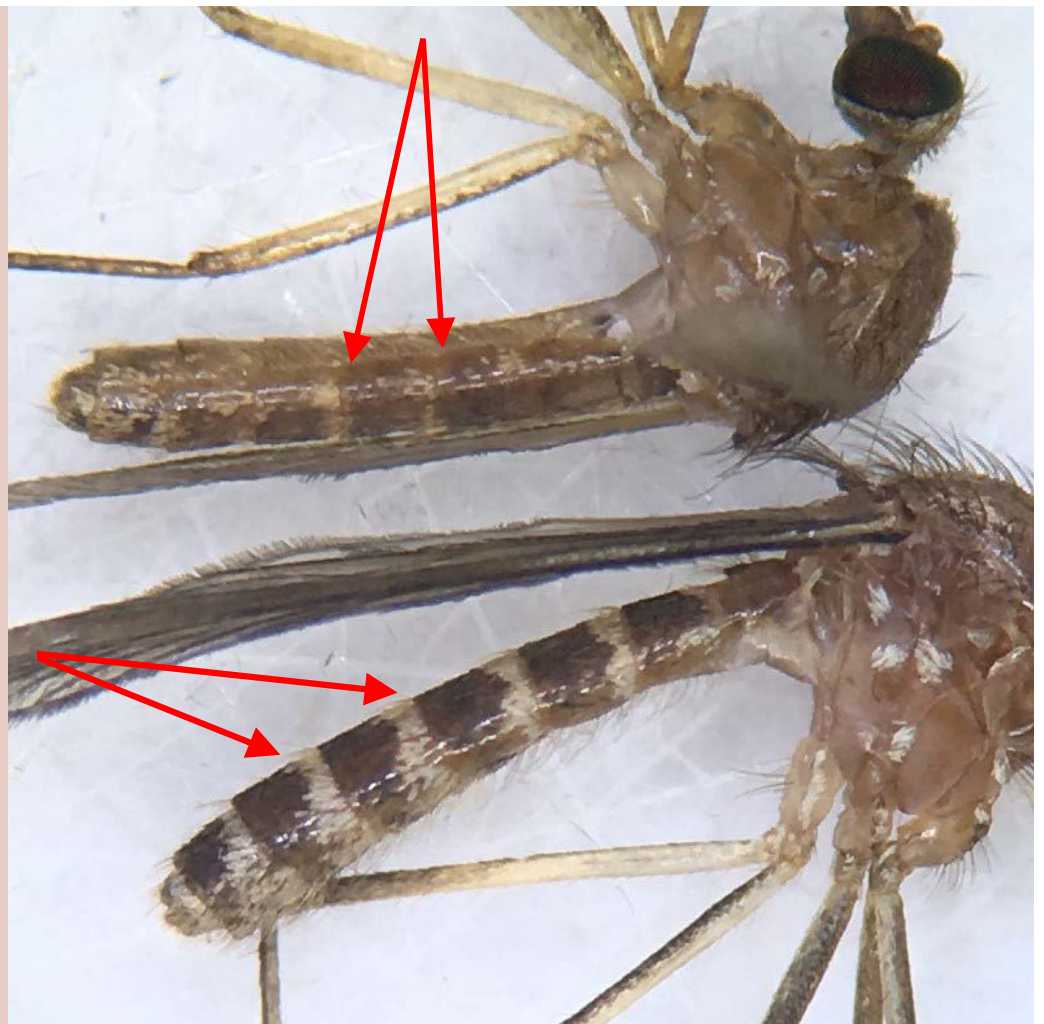
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Cx. salinarius as it is rarely seen: with abdominal segments VII and VIII completely covered in copper/golden scales and distinct pale abdominal bands.

Note the row(s) of pale scales on the apex of the previous segment.

Cx. salinarius showing pale scales at apex of one or more abdominal segments.



Cx. pipiens, distinct basal banding only. Pale scales never found at apex of any abdominal segment.

Virginia Mosquito Control Association
New Membership & Member Renewal Application

MEMBERSHIP TYPE: () RENEWAL () NEW
Mark an "X" in the appropriate box

If you register for the annual meeting, membership will be complimentary and this form/ payment is not needed. If you don't plan on attending the Annual Meeting, please fill out this form.

NAME:	Regular \$15	
PHONE:	Associate \$10	
ADDRESS:	Student \$10 *Enclose proof of student status	
EMAIL:		
ORGANIZATION:		
	Total Submitted	

Questions or comments can be directed to Jay Kiser, Secretary-Treasurer, 757-514-7608 or email to: Virginiamosquito@gmail.com

The VMCA accepts cash, check, and credit card. Membership forms and payments are accepted on our website at www.mosquito-va.org.

Jay Kiser
VMCA Secretary-Treasurer
800 Carolina Rd
Suffolk, VA 23434
757-514-7608 office phone
757-923-2484 office fax

Regular Member - VMCA Newsletter, hold office, serve on committees, propose motions, vote, and participate in business meetings.

Associate Member - VMCA Newsletter, participate in business meetings.

Student Member - VMCA Newsletter, serve on committees and participate in business meetings. (Student must be enrolled as part-time or more in an accredited college or university. Student must produce valid College or University ID Card).

Sustaining Member - Exhibit space during the annual meeting and registration for one person. VMCA Newsletter, participation in commercial presentation session, listing in VMCA Newsletter and meeting program, listing on VMCA website.

Online submission form can be found [here](#)

Development of Virginia Monthly Activity Reports

-Submitted by Elena Mircoff

Virginia Department of Health developed the Virginia Monthly Mosquito Activity Report in an effort to improve transparency and public awareness of arboviral diseases detected by mosquito surveillance. VDH compiles and standardizes statewide arboviral testing efforts for annual reporting to CDC as well as for regular presentations and analysis. However, we had never previously shared this information with the public on the external website. I wanted to create a reporting process that would take minimal reformatting and redundant work to update and create a product that would be easy to understand, while not overwhelming the reader with information. This was accomplished by creating a dashboard in a data visualization program called Tableau. With this program, you can link to an excel sheet (or anything) and arrange data in infinite ways. This allows flexibility to design a template that will be refreshed after updating the linked database. In Tableau, I was able to create sentences that automatically fill in with new numbers and calculations as well as graphs and maps that update seamlessly. The workflow of data cleaning from this year compared to last year is significantly better, entirely due to the standardized excel template submitted on a bi-weekly basis by each jurisdiction.

The significant missing data point from previous years was the coordinates of trapping sites. I am grateful that each jurisdiction willingly shared their trap site geo-coordinates, allowing the inclusion of maps with pool testing sites. I hope the maps encourage enhanced mosquito prevention behavior by those residing near or around positive pools. I also hope the bar graphs help to link a time component and convey when peak WNV activity, and thus high risk, typically occurs in VA.

It is challenging to know the audience this report is reaching and grasp if they understand the material or find it useful. I often share these reports with mosquito-competent stakeholders, such as members of NEVBD or TRAST, and have received positive feedback. However, I would be interested to hear feedback from the general public. Likely the biggest challenge is conveying this complex information without misleading the viewer. For example, I do not want someone to see the map of Virginia and assume that mosquito surveillance is only occurring in three regions because this is where the dangerous mosquitoes are located. I also struggled with how to convey the concept of mosquito pool testing and portray what is the “normal” or expected activity during a mosquito season. It has been a great experience to develop and maintain these reports and I look forward to continuously improving the content and layout and sharing it widely.

See next two pages for May-July reports

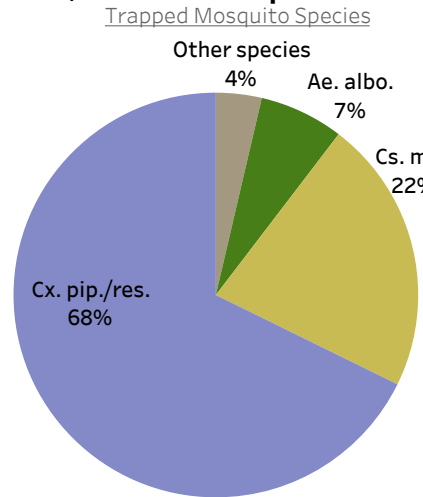
VDH Monthly Mosquito Activity Report

Report generated 8/2/2019 3:00:04 PM

Surveillance of mosquitoes that transmit disease allows public health officials to identify high risk situations and target interventions when mosquito populations or infection rates are higher than expected. Mosquitoes are trapped, identified, and pooled into groups of ~50 mosquitoes of a single species and tested for West Nile Virus (WNV) or Eastern Equine Encephalitis (EEE).

The VDH Monthly Mosquito Activity Report describes routine mosquito surveillance conducted by local mosquito control jurisdictions and the state public health laboratory in Virginia, as compiled and reported by the Virginia Department of Health (VDH).

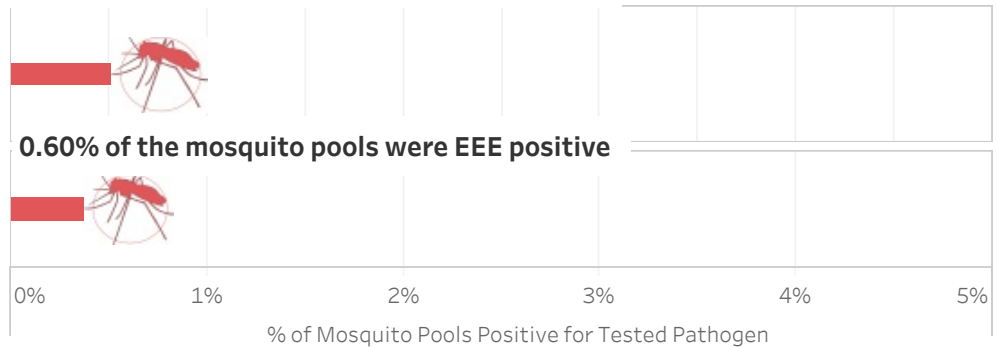
106,013 mosquitoes trapped in 3,068 pools from May 1, 2019 to July 31, 2019



- **Culex pipiens [Cx. pip.]**, the Northern house mosquito, is the primary vector of WNV in VA. It is often grouped together with **Culex restuans [Cx. res.]**.
- **Culiseta melanura [Cs. mel.]**, the black tailed mosquito, is the primary vector of EEE in VA.
- **Aedes albopictus [Ae. albo.]**, the Asian tiger mosquito, is known to transmit WNV as well as Chikungunya, Dengue, Zika virus, La Crosse virus, and other viruses.
- Other trapped mosquitoes include **Aedes japonicus**, **Aedes triseriatus**, **Culex erraticus**, and **Culex salinarius**

Testing Results*^

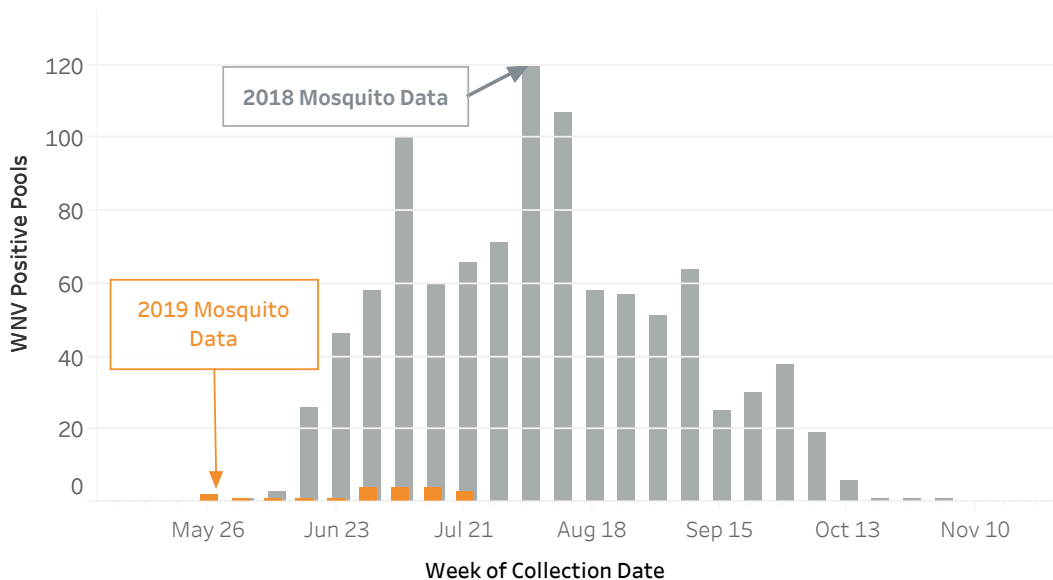
0.76% of mosquito pools were WNV positive



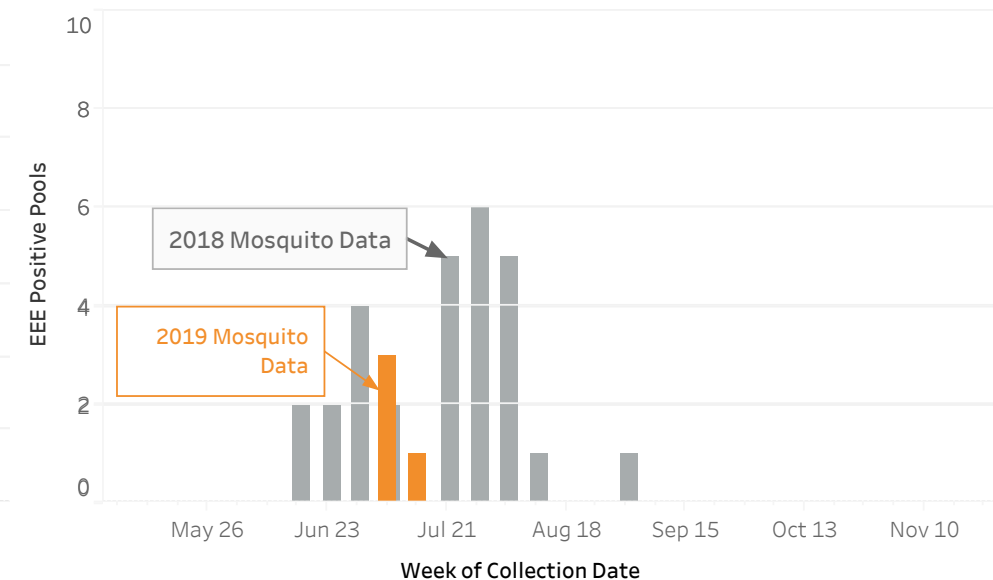
*Pools may be tested for both WNV and EEE.

^A mosquito pool is a group of ~50 mosquitoes of a single species. A positive pool indicates at least one mosquito in the pool was infected with the pathogen.

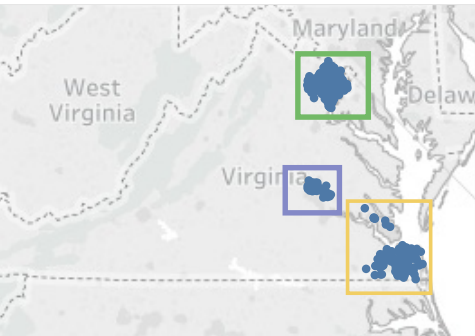
West Nile Virus Positive Mosquito Pools



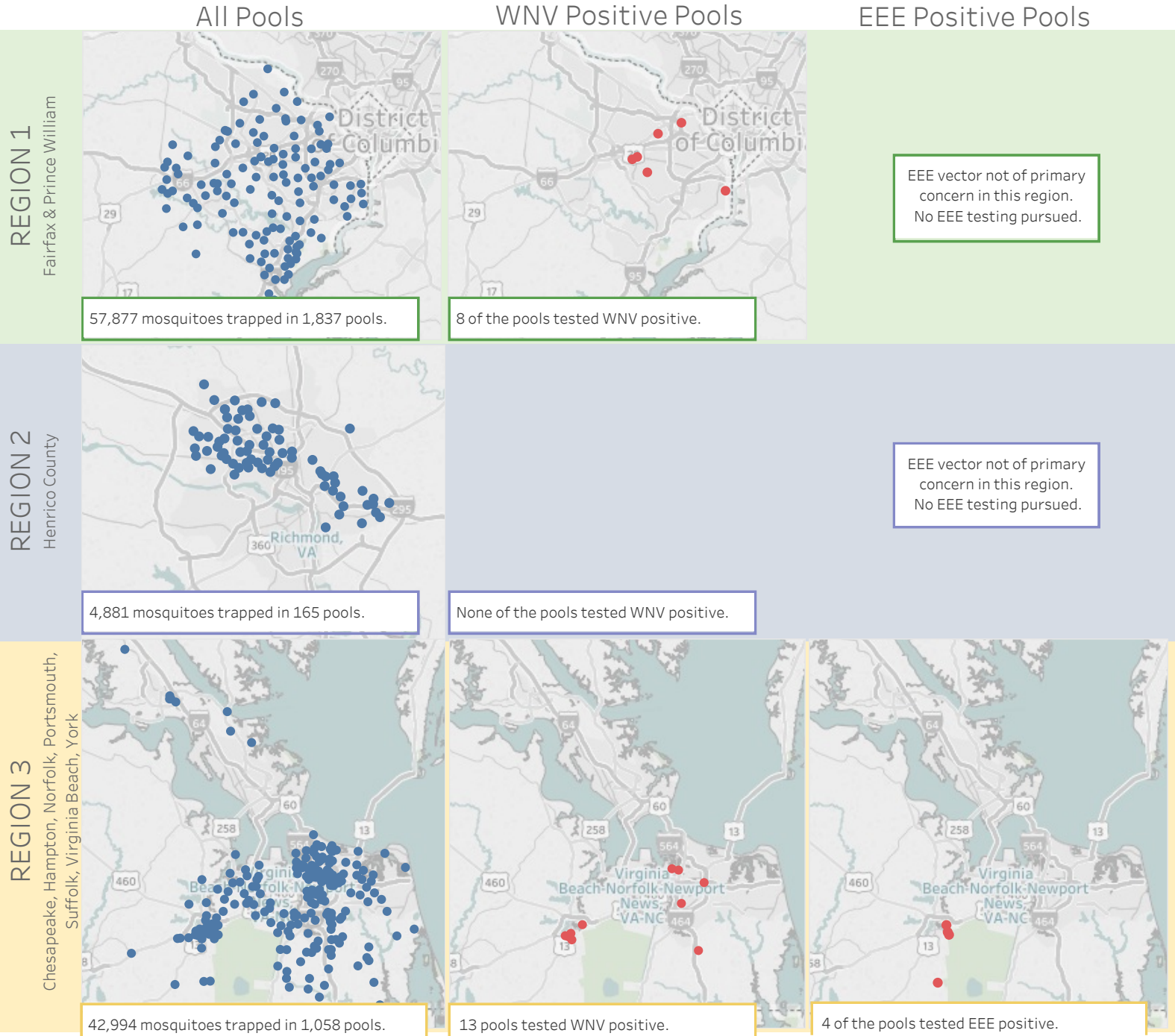
Eastern Equine Encephalitis Positive Mosquito Pools



In Virginia, there are **10 active mosquito control** jurisdictions that trap and test mosquitoes.



There have been **106,013** mosquitoes trapped and tested in **3,068** pools during 2019 surveillance season.



New invasive tick spotted in the Netherlands

-Article written by Mindy Weisberger for Live Science



Photo: Adam Cuerden

Ticks in the *Hyalomma* genus are nearly twice the size of sheep ticks (*Ixodes ricinus*).

“As If Ticks Weren’t Terrifying Enough, This Giant Bloodsucker Will Hunt You Down”

Giant, invasive ticks have been spotted in the Netherlands, and they do something that's frankly horrifying: They run after their hosts.

An unusually large adult tick was found on July 13 in Drenthe, a province in the northeastern part of the Netherlands. The arthropod, *Hyalomma marginatum*, is not native to the country. Another of these ticks had been discovered in the region one week earlier, officials with the National Institute for Public Health and the Environment (RIVM) said in a statement on July 24.

The invasive newcomers can measure up to 0.2 inches (6 millimeters) long — about twice the length of the more common sheep tick (*Ixodes ricinus*) — and grow to 0.7 inches (2 centimeters) when engorged with blood. And while *Ixodes* ticks sit and wait for animal hosts to wander close by, *Hyalomma* ticks actively pursue their hosts, hiding on

the ground and then scuttling toward them, according to the European Centre for Disease Prevention and Control (ECDC).

Certain signals broadcast to *Hyalomma* ticks that a likely meal is near, among them body heat, vibrations or scents. Ticks can visually identify a target from a distance of 30 feet (9 meters) away. Once the host is spotted, ticks may track them for upward of 10 minutes and over hundreds of feet, the ECDC says.

As adults, the ticks prefer feeding on large mammals, while nymphs target smaller victims for their blood meals. Birds are also on the menu; the parasites are thought to travel far and wide by hitchhiking on their hosts — especially when those hosts are migrating birds, said Alicja Buczek, a tick researcher with the Department of Biology and Parasitology at the Medical University of Lublin in Poland.

"The transfer of *H. marginatum* larvae and nymphs by long-distance migratory birds, including intercontinental migrations, takes place during seasonal bird migrations and breeding," Buczek told Live Science in an email. Meanwhile, climate change is altering ecosystems and reshaping birds' migration patterns, enabling ticks to colonize geographic areas where they haven't lived before, Buczek said.

Hyalomma ticks are widespread in Northern Africa and Asia and are also found in Southern and Eastern Europe. There have been sporadic sightings in parts of Northern Europe and in Russia, but these are not thought to represent established populations, the ECDC reported.

The Dutch tick sighting raised public health concerns because *Hyalomma* ticks are known vectors for Crimean-Congo hemorrhagic fever, a serious illness that causes fever, joint pain, vomiting and uncontrolled bleeding, according to the U.S. Centers for Disease Control and Prevention (CDC).

Tests showed that neither of the ticks carried the pathogen for hemorrhagic fever. However, the tick from Drenthe carried the microbe *Rickettsia aeschlimannii*, which causes spotted fever. The first sign of spotted fever is usually a dark scab forming at the site of the bite; symptoms include rash, fever, muscle pain and headaches, but the disease is treatable with antibiotics, the CDC says.

Future suspected *Hyalomma* sightings in the Netherlands should be reported to the Netherlands Food and Consumer Product Safety Authority, RIVM representatives said in the statement.

[Read the published article here.](#)



Merchandise Sales Continue!

*Didn't get what you wanted at the VMCA Annual Meeting?
Couldn't attend due to weather, funding, time?*

There's still time to get all that mosquito swag you just have to have!



2019 Blue T-shirt
Sic Semper Design

\$15



2019 Blue Heather
Alt Mosquito Zip-
up Hoodie

\$30



2018 VMCA
Lettered T-shirt
Design

\$15



2018 VMCA Flying
Mosquito Zip-up
Hoodie

\$15



2017 Gray T-shirt
with MAMCA/
VMCA Design

\$10



2017 Gray Hoodie
with MAMCA/
VMCA Design

\$20



Heat Sensitive Color
Changing Mug with
Blood-Filled
Mosquito Design

\$5



VMCA pint glass
with Etched Sic
Semper Design

\$8



Stemless Wine Glass
with Albopictus
Design

\$8



Blue Can Coolie
with Mosquito
Silhouette

\$2



Black Leatherette
Portfolio with
VMCA Design (pad
& pen included)

\$5



2017 MAMCA/
VMCA tumbler

\$5



2018 VMCA
lettered logo cork
coaster set

\$4



VMCA sticker with
Aedes albopictus
design

\$2



Messenger Bag
with VMCA
Crossbones Logo

\$15

The Merchandise Committee is continuing to sell the items listed through local pickup or shipment. If you have any questions or are interested in purchasing something, please contact VMCA Merchandise Chair, Tim DuBois (duboist@portsmouthva.gov). Payments can be made by cash (local pickup only), check, or credit card. Shipping will be paid by the purchaser and will be done through the lowest cost method (unless otherwise requested). This information is also available [online](#).

What's That? Answer

-Submitted by Karen Akaratovic

-Article written by Carl Zimmer for National Geographic



Photo: Pattaya Chonburi

“If You’re Going To Live Inside A Zombie, Keep It Clean”

If you haven’t already met *Ampulex compressa*, otherwise known as the jewel wasp, now is as good a time as any. Someday you may be very grateful that you did.

This gorgeous animal, which measures just under an inch from mandibles to tail, lives across much of Africa and Asia, as well as a few Pacific Islands. Don’t be fooled by its lovely glittering appearance, though. This is a deeply sinister creature. Jewel wasps don’t rear their young in a familiar paper nest. For them, home is the inside of a cockroach.

When the female wasps are ready to lay their eggs, they take to the air and search for roaches. They find them on trees, on the ground, and even in people’s apartments. Since cockroaches don’t want to play host to their young, the wasps have to sneak up on their victims and subdue them—without killing them. So a wasp will sneak up and clamps her mandibles on the roach. As the roach tries to shake her off, the wasp hooks her tail underneath and stings her victim just below the head, temporarily paralyzing the roach’s front legs. Now the roach is easier to handle. The wasp then conducts brain surgery.

As I’ve written about in greater detail here and here, the jewel wasp snakes its stinger up into the cockroach’s brain, using sensors at its tip to feel its way to specific regions where it then releases cocktails of neurotransmitters. The wasp removes her stinger and walks away to find a crevice that will serve as a suitable burrow. Her first sting wears off, and the roach is now free to run away. Except it doesn’t. It becomes the insect equivalent of a zombie, having lost all will.

The wasp returns—sometimes as long as half an hour later—and bites off one of the roach’s antenna. She slurps some roach juice from the wound, like a kid drinking a milkshake through a straw. Then she bites down on the antenna stump and guides the roach to her burrow, leading it as if it were a dog on a leash. The roach goes without a fight. The wasp leads the roach into the burrow and then lays an egg, shaped like a grain of rice, on its underside. Then she leaves the burrow, sealing it up to leave the roach in darkness.



The egg hatches, and out comes a larva. It chews a hole into the roach's underside, from which it feeds. It grows larger and larger over the course of a week. And then it crawls inside.

Remember, the roach is still healthy. It could push away the larva, bolt for the exit, push aside the pebbles blocking the burrow, and scramble away. But it can't, or it won't—I'll leave it to philosophers to find the right language to describe the free will of cockroaches. It just stands where it was led, while the wasp larva feeds on its insides and grows to fill the roach's entire body cavity. Eventually the roach dies, and inside the cadaver, the wasp spins a cocoon around itself, inside of which it grows eyes and legs and wings. And then it pops out, ready to meet the world. The wasp shakes itself off, climbs out of the burrow, dries out its wings, and flies away. It leaves behind the dead husk that was the roach.

There's a world of adaptations that the jewel wasp deploys in order to turn this science fiction story into natural history. Many of those adaptations have to do with brains: how the wasp brain manages to carry out its complex stinging maneuver, and what exactly it does to its victim's brain to make it a zombie. But scientists are also discovering adaptations of an entirely different sort. In order for the jewel wasp to make roaches its home, it has to be more than a brain surgeon. It also has to be a pharmacologist.

Gudrun Herzner, a biologist at the University of Regensburg in Germany, was curious about how the larvae manage to stay alive inside a cockroach. To a jewel wasp, the inside of a roach may be an all-night diner but it's also a hot zone. Cockroaches carry plenty of microbes—including antibiotic-resistant pathogens that are the bane of hospitals and nursing homes. The pathogens aren't just dangerous to humans, though. When Herzner looked inside roaches, she found them to be rife with a microbe called *Serratia* that's both a medical menace and a threat to insect larvae. If the inside of a cockroach is an all-night diner, it's a diner where the short-order cook douses all the orders with deadly bacteria before the waitress delivers the dishes.

Obviously the wasps are not dying inside their roach hosts, even after their hosts die and presumably start to rot. So they likely have some kind of defense against infection. To see what that defense might be, Herzner created a hole on the side of infected roaches, which she covered with a little window. She then spied on the wasp larvae inside.

Herzner saw something no one had seen before. The larvae produced clear droplets in their mouths, which they carefully applied to the inner walls of the cockroach's body cavity. The wasps then crawled around the cavity, smearing the droplets smoothly across all the inner surfaces of their host.

Fortunately for Herzner, the wasps also applied some of the drops to the window. She was able to extract chemicals from the drops, which she then analyzed. Once she had identified those compounds, she gathered more of them by grinding up infected roaches.

She found a number of molecules in the droplets, two of which were especially interesting. They're called mellein and micromolide. And Herzner found that they stopped the growth of *Serratia* she isolated from the cockroaches, along with other pathogens. When the wasp enters its cockroach diner, in other words, it sponges down the walls, the tables, the dishes, and the food with an antibiotic soap.

In my book *Parasite Rex*, I wrote about how parasites long had a reputation as degenerates. They supposedly evolved from free-living species by losing the adaptations necessary for a rugged life of self-reliance, trading their autonomy for a life as a moocher. This is merely a case of our imposing our own social anxieties on nature. In fact, parasites have to gain many adaptations in order to enter the alternate universe that exists inside living hosts. It's true that for a wasp larvae, it's great to grow up inside a roach where your next meal is one slurp away. But it also means that you're cheek-by-jowl with bacteria that could kill you.

The antibiotics that the jewel wasp has evolved are not entirely new. Scientists have found other forms of mellein in fungi, for example. Micromolide was first discovered in a citrus plant called *Micromelum hirsutum*. The wasps, in other words, have unwittingly hit on the same solution for fighting off bacteria that radically different organisms did on their own.

The jewel wasp is worth getting to know just because it exists. But now it's possible that we might someday benefit from that knowledge in the most practical way imaginable. What is good for jewel wasps might prove good for us.

The mellein found in fungi is effective against MRSA, the deadly strain of skin bacteria that is resistant to most antibiotics. When scientists tested out the micromolide from plants on the bacteria that causes tuberculosis, it proved to be among the most powerful anti-TB drugs ever found. Now the jewel wasp turns out to be a factory for similar antibiotics, which might turn out to be even better than what's been found in fungi or plants. To Herzner, that possibility cries out for exploration, because right now the antibiotics we use to cure our own infections are failing at a distressing rate. "I personally believe that we have no other choice but to look for alternatives to the commonly used antibiotics," says Herzner.

Of course, just finding a natural antibiotic does not mean that tomorrow we will be able to buy it in pill form, as Ed Yong recently reminded us. But the first step on the long road to replenishing the antibiotic cabinet is to start looking in unexpected places. Places like zombie cockroaches.

Read the original National Geographic article [here](#).

Read the published journal article [here](#).

Watch the video [here](#).



2019 VMCA Committee List

[Table of Contents](#)

The VMCA is successful because its members get involved in the operations of the association. Below are the current committees and their chairs. Please join a committee by contacting any executive board member listed on the last page of this edition of The Skeeter!

Committee	Chair(s)	Members	Projects
Annual Meeting (Local Arrangements)	Charles Abadam, Tim DuBois	George Wojcik, Ann Herring, Josh Smith, Ryan Levering, Stephen Rehak	Decides location of future meetings
Annual Meeting (Program/Agenda)	Andy Lima	Jay Kiser, Charles Abadam, Tim Dubois, Mitch Burcham	Organize annual meeting program
Annual Meeting (Vendor Planning)	Ted Bean	Caitlin Sculli, George Wojcik	Vendor correspondence/setup
Audit	Mitch Burcham	Michel Bowry, Penelope Smelser	Annual audit of financial record
Bylaws	Jay Kiser	Charles Abadam, Luz Grant, George Wojcik	Bylaw revision/maintenance
Education	Karen Akaratovic, Lisa Wagenbrenner	Jay Kiser, Ann Herring, Wes Robertson, Jennifer Barritt, Ryan Levering	Recertification, Adult ID course
Elections	LaToya White	Luz Grant, Penelope Smelser	Sets up online voting, sends out voter information, counts votes, announces winners during annual business meeting
Historian	Tim DuBois	John Orr	Historical Archives
Hospitality Room	Luz Grant	MonaLisa Smith	Annual meeting hospitality room
Information	Rachel Kempf, Karen Akaratovic	Charles Abadam	The Skeeter, Facebook, Instagram
Legislative	Randy Buchanan		NPDES, VPDES, PESP
Membership	Jay Kiser	Ann Herring	Keeps updated list of membership
Merchandise	Tim DuBois	MonaLisa Smith, Ann Herring, Luz Grant, Lisa Wagenbrenner, Penelope Smelser, Rachel Kempf	Coordinating sales merchandise for annual meeting
Nominating	George Wojcik		Finds candidates for election, prepares/gathers profiles of nominees for ballots
Photography	Janice Gardner	Caitlin Sculli	Takes photos of VMCA-related events for website, The Skeeter, Facebook, and Instagram
Public Relations	Ann Herring	Ryan Levering	Mosquito Awareness Week/Outreach & Education
Special Awards	Jennifer Barritt	Charles Abadam, Karen Akaratovic, Dreda Symonds, Phil Meekins	Annual meeting awards– R.E. Dorer, Outstanding Service
Student Competition	Jay Kiser	Charles Abadam, Karen Akaratovic, Ann Herring, Ryan Levering, John Orr, Wes Robertson, Dennis Salmen, Francis Valera, George Wojcik	Organizes a student research/poster project competition with an award to be given at the annual meeting, raises funds for award
Technical Support	Charles Abadam	Eli Hosen, Ciro Monaco	Maintains/advises on VMCA hardware/software; operates computer/projector during annual meeting
Website	Karen Akaratovic	Penelope Smelser	Maintains/revises website

2019 Sustaining Members

The VMCA gratefully acknowledges the support of the following sustaining members for 2019. Without their generous contributions, much of what we do would not be possible. Please do not hesitate to contact them. They are here to help you!



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Virginia Mosquito Control Jurisdictions & Other Resources

As a result of revisions to the VMCA By-Laws, the organizational member category was eliminated. In order to facilitate communication among mosquito control programs, jurisdictions with known mosquito and vector control programs are listed below. If there are other jurisdictions that should be listed, please submit them to the editor.

Virginia Mosquito Control Jurisdictions

[Alexandria Health Department](#)
Boykins, Town of
[Chesapeake Mosquito Control Commission](#)
[Chincoteague Mosquito Control](#)
[Fairfax County Health Department](#)
Fort Eustis
[Gloucester County Mosquito Control](#)
[Hampton Environmental Services](#)
[Henrico County](#)
[Newport News Vector Control](#)
[Norfolk Vector Control](#)
[Poquoson Mosquito and Drainage](#)
[Portsmouth Mosquito Control](#)
[Prince William County Mosquito & Forest Pest Management](#)
[Suffolk Mosquito Control](#)
US Air Force / Langley Air Force Base
[Virginia Beach Mosquito Control](#)
[Williamsburg Mosquito Control](#)
[York County Mosquito Control](#)

Other Mosquito Control Organizations

[American Mosquito Control Association](#)
[Mid-Atlantic Mosquito Control Association](#)

Other Resources

[Virginia Department of Health](#)
[Centers for Disease Control & Prevention](#)
[Fairfax County Education and Outreach Materials](#)

Wanted: Submissions!

Do you have information you'd like to include in the next issue of The Skeeter or a photo you'd like to share? We are always looking for organizational updates, operational news, education and outreach activities, pictures, stories, and anything remotely vector-related to include in upcoming newsletters as well as on [Facebook](#) and [Instagram](#).

Please send all items to the Skeeter editor, Rachel Kempf at rkempf@pwcgov.org

THE SKEETER

Newsletter of the [Virginia Mosquito Control Association](#)

Virginia

Mosquito Control Association

Founded 1947

2019 Virginia Mosquito Control Association Executive Board

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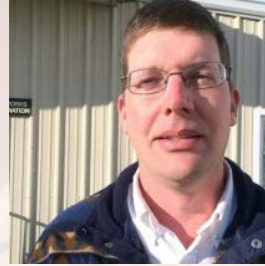
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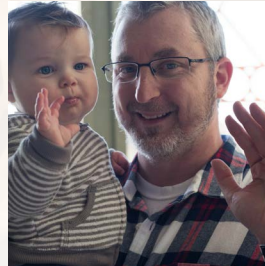
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*Non-voting member of the Board

Take the time to volunteer on a committee! An active membership makes for a stronger organization. Contact anyone on the Board to participate.

The Skeeter is the official production of the Virginia Mosquito Control Association. The VMCA membership is encouraged to submit articles, reviews, and any other interesting facts or tidbits for publication. Submissions can be sent to Rachel Kempf at rkempf@pwcgov.org or Karen Akaratovic at kakaratovic@suffolkva.us