



# THE SKEETER



## President's Message

**Fall must be coming to a close;** the phones have stopped ringing (almost), the Houston Astros won the World Series. It is hard to believe it is November! A string of tropical systems kept everyone busy and the late season heat added to the virus isolations for WNV and EEE.

The VMCA board is working hard on our annual meeting next year in Portsmouth from January 23rd to 25th. Please make sure to put the meeting in your calendar as it is earlier than normal this year. The board is still planning to hold a pesticide recertification class again this year in Hampton at the library.

Virginia was also selected as a hub for the CDC mosquito training program for communities that are interested in starting a vector control program: December 14th and 15th in Fairfax and Suffolk, VA. Other meetings of interest to our members are as follows:

- Northeast Mosquito Control Association Dec. 4th-6th, Plymouth, MA
- Mid-Atlantic Mosquito Control Association Feb. 12th-14th, Carolina Beach, NC
- American Mosquito Control Association Feb. 26th-March 2nd, Kansas City, MO

And as always please get involved and support your association! See the attached list of committees on page 16.

Please contact the committee chairs if you wish to participate.

**-Jeff Hottenstein**



**Jeff Hottenstein**  
VMCA President  
2017

**Volume 77, Issue 4**

**November 2017**

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# Announcements

## Upcoming Meetings

### Northeastern Mosquito Control Association Annual [Meeting](#)

December 4-6, 2017  
Plymouth, MA

### Purdue Pest Management [Conference](#)

January 8-10, 2018  
W. Lafayette, IN

### Florida Mosquito Control Association (FMCA) [Fly-In](#)

January 9-11, 2018  
Fort Myers, FL

### 71st Annual VMCA [Meeting](#)

January 23-25, 2018  
Renaissance Hotel, Portsmouth, VA

### Tennessee Mosquito & Vector Control Association (TMVCA) Annual [Meeting](#)

January 25-26, 2018  
Nashville, TN

### FMCA DODD [Short Courses](#)

January 30- February 2, 2018  
Altamonte Springs, FL

### NCMVCA/MAMCA Joint Annual [Meeting](#)

February 12-14, 2018  
Carolina Beach, NC

### AMCA Annual [Meeting](#)

February 26-March 2, 2018  
Kansas City, MO

## VMCA Organizational Mailing Address

Virginia Mosquito Control Association  
Penelope Smelser, Secretary/Treasurer  
2600 Tarrant Street  
Norfolk, VA 23509  
Phone (757) 683-8662  
Email: [Penelope.Smelser@norfolk.gov](mailto:Penelope.Smelser@norfolk.gov)

## Save the Date!

### Virginia Mosquito Control Association 71st Annual Conference



Portsmouth Renaissance Hotel  
January 23-25, 2018

Have information on a meeting that may be of interest to VMCA members? Attend a meeting and want to submit a summary? Please send it to the [Editor!](#)

What's that?

answer on page 17

# PLEASE DONATE TO VMCA'S 2018 SILENT AUCTION

All proceeds benefit the VMCA Student Poster Competition

We are conducting our second Silent Auction during  
the 2018 VMCA Annual Meeting  
Renaissance Portsmouth-Norfolk Waterfront Hotel  
January 23-25, 2018

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

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

Group donations by committee, agency, or vendor are appreciated.

**Drop off items at the meeting registration desk by Noon,  
January 23, 2018**

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

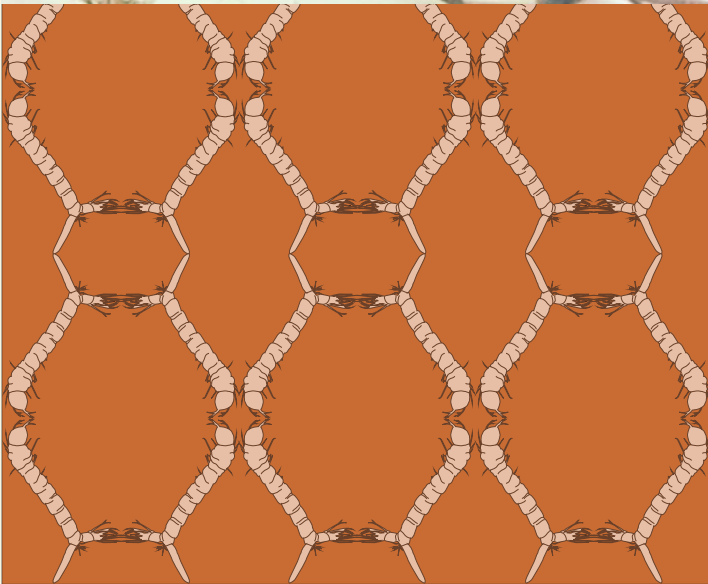
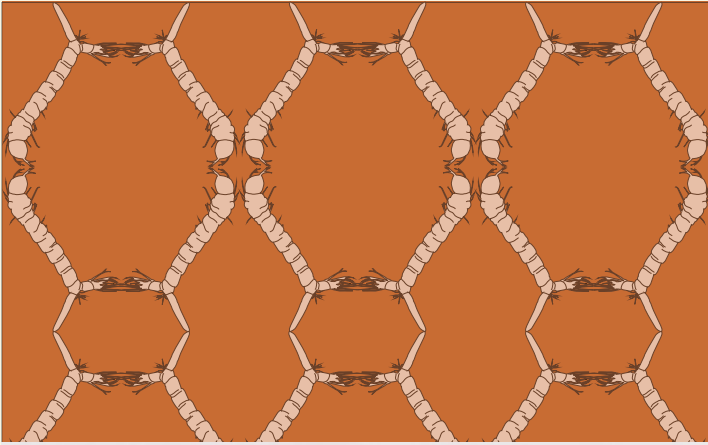
Items may also be sent/dropped off before the meeting to:

Suffolk Mosquito Control  
800 Carolina Road, Suffolk, VA 23434





# Candidates for 1st Vice President



**Tim DuBois** is the Biologist for the Environmental Services Division in Hampton, VA. He started his career in mosquito control as a seasonal worker for Suffolk Mosquito Control in 2001 while looking to finish his Associates in Biology from Paul D. Camp Community College. In Suffolk, he assisted with larviciding and adulticiding efforts, while learning surveillance techniques and identification whenever available. After two years in Suffolk, he landed a full time job working for Norfolk Vector Control as a technician, and eventually moved into the assistant biologist job where he translated his years of experience in the field to the lab.

In 2006, Newport News Vector Control offered him a position with the intent to build a full surveillance program that included testing in-house for vector-borne diseases. Having a chance to build a surveillance program, he immersed himself in his work both for the city and in the Hampton Roads area becoming TRAST Coordinator from 2006-2010 and on the TMVCC Board from 2009-2010. After three years of experience in the program, he was offered the Biologist position where he currently works, Hampton Environmental Services.

In 2010, Tim joined the Mid-Atlantic Mosquito Control Association as the state representative for Virginia for two terms. He was then elected to serve on the MAMCA Executive Board and is currently President-Elect. He has also served as the MAMCA representative on the VMCA Executive Board and is on multiple committees including Education, Photography, Merchandise, Newsletter, and is the Historian.

When he is not working, Tim enjoys all things beer, MMA, gaming, and dabbling into making his own podcast. He also enjoys hanging out with his wife, Jessica, and their three cats, Jynx, Dakota, and Oswald.

# Candidates for 1st Vice President

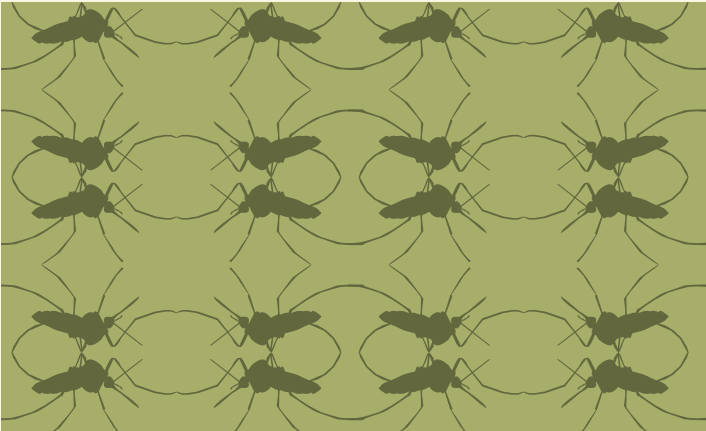
**Wes Robertson** is a medical entomologist who works as an Environmental Inspector with the Henrico County Standing Water Initiative (SWI). Wes joined the Henrico County Department of Public Works SWI team in 2013. He works to actively identify, monitor, test, and analyze mosquito species. He also works as a public and private educator on pathogen transmission, insect identification, and IPM best practices. He advises and aids the local cooperative extension office, health department, and Henrico County Schools on insect identification and control methodologies. He is also a regular contributor to various academic and general publications.

His professional experiences include working as a volunteer instructor/trainer for the Virginia Master Naturalist Training Certification Program, the Governor's School for Medicine and the Health Sciences, and the Henrico, Hanover, and Chickahominy Health Districts. Wes also has experience as an Avian Point-Count Technician, Biological Community Coordinator, and Entomology Field and Laboratory Technician.

Wes started studying mosquitoes while working with Dr. Kevin Caillouett and Dr. Lesley Bulluck on vector contact rates on Eastern Bluebird nestlings. As an undergraduate student at Virginia Commonwealth University, Wes received an honors degree for his contributions, research, and publications on West Nile Virus transmission in Henrico County and the effects of avian predation on mosquito driven West Nile Virus transmission. Wes' passion for insects and education deepened during his time as a graduate student at the University of Florida where he received a certification in medical entomology from the University of Florida's College of Agricultural and Life Sciences in 2015 and a master's degree in medical and veterinary entomology in 2017. He regularly speaks to various interest groups, clubs, associations, and conference audiences about mosquitoes, pathogens, and other arthropod/insect related topics. He also serves as a resource for insect questions and identification via the social media Twitter platform [https://twitter.com/insect\\_outreach](https://twitter.com/insect_outreach). In his free time, he enjoys spending time with his family, teaching classes, collecting insects, playing chess, and watching sports.



## Secretary Candidate

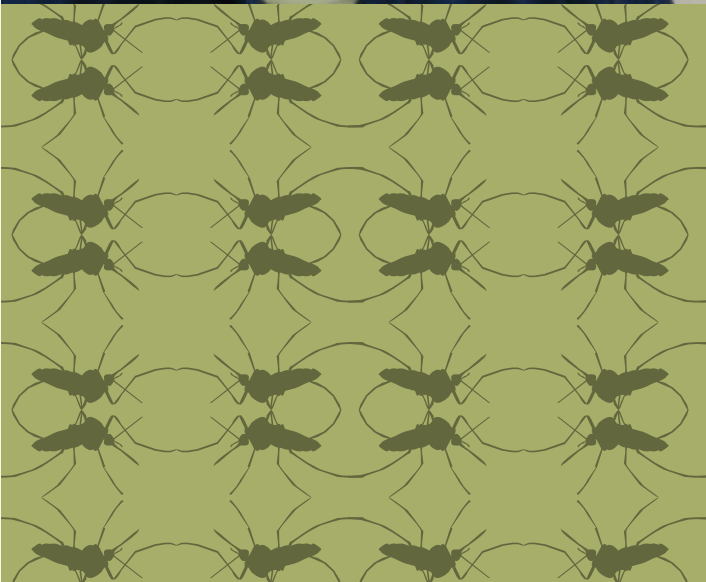


**Jay Kiser** has been member of VMCA and a student of mosquito biology for over 10 years. He started his path at George Mason University and Old Dominion University where he received a Bachelors and Masters Degree (respectively) in biology.

In 2007, he started his mosquito career as a biology intern for the City of Chesapeake Mosquito Control Commission, and since January 2008, he has been a biologist for the City of Suffolk Mosquito Control.



During this time, he has remained active in local and state mosquito control associations: Coordinator for Tidewater Regional Arboviral Surveillance Team (TRAST) from 2011 to 2013, on the board of Tidewater Mosquito and Vector Control Council (TMVCC) from 2011 to 2013, and on the executive board of Virginia Mosquito Control Association (VMCA) from 2012 to 2016. As a VMCA member, he has contributed numerous presentations during the annual meetings, participated in several committees, and helped created VMCA's first student competition.






## Your Vote Counts!!!

Within the next month or so, you will be receiving an email from our current Secretary-Treasurer Penelope Smelsor with a weblink and instructions on how to cast your vote.

As always, the VMCA is looking for interested peoples to Take part in the organization. Volunteer for the various Committees, or even run for office!

# YOUR



# VOTE

# COUNTS

## 2018 VMCA Annual Conference Call for Presentations

### Dear VMCA Members,

This coming year, the VMCA will be putting on an annual meeting that will take place January 23-January 25, 2018. We are looking for members to share their mosquito/vector control or related research experiences with an opportunity to share with neighboring counties and cities. This year's conference will be held at the Renaissance Hotel in historic downtown Portsmouth, Virginia. This is your opportunity to share your knowledge with other mosquito folks from across the state and we encourage a wide range of topics including, but not limited to, the following:

**Adult Control • Larval Control • Larval habitat management • Operational • Field work • Management • GIS/GPS • Equipment • Disease/Vector Studies • Outreach/Education • Public Relations • Legislative • Biology • Behavior • other pests/vectors**

If you have a topic you would like to present at the meeting, please complete the attached VMCA Presentation Submission Form and return to George Wojcik (gwojcik@portsmouthva.gov). DEADLINE: **December 1, 2017.**

If, at this time, you are not sure of a presentation title but know you would like to present something, please let George know by filling out the VMCA Presentation Submission Form so they can be sure to include you. We hope to see you there!

**Regards, VMCA Executive Board**



## Free Training Workshops In Virginia

### **AMCA's Best Practices for Integrated Mosquito Management Receive Training Certification from AMCA and CDC**

- Emphasis on AMCA's 2017 "Best Practices for Integrated Mosquito Management: A Focused Update"
- Focus is on *Aedes aegypti* and *Aedes albopictus* control
- Upon completion, you can receive AMCA certification to train others
- Each workshop will be a two day course

#### **Southeastern Virginia**

**November 30 - December 1, 2017**

City of Suffolk Dept. of Public Works  
800 Carolina Rd  
Suffolk, VA 23434

#### **Northern Virginia**

**December 14 - 15, 2017**

Hilton Garden Inn Fairfax  
3950 Fair Ridge Dr  
Fairfax, VA 22033

Space is limited to 35 students for each class so early registration is recommended. Limits may be placed on numbers of individuals per jurisdiction/organization. Training manuals, breakfasts, and lunches will be provided.

Registration deadline for each class is November 17th, 2017:

Please register online at: <https://form.jotform.com/72892894718173>

For questions about the Suffolk training, please contact Jay Kiser ([jkiser@suffolkva.us](mailto:jkiser@suffolkva.us)). For questions about the Fairfax training, please contact Lauren Lochstampfor ([lauren.lochstampfor@fairfaxcounty.gov](mailto:lauren.lochstampfor@fairfaxcounty.gov)).

For additional information about other Train the Trainer locations please visit [www.mosquito.org](http://www.mosquito.org).



# 2018 MAMCA Draft Schedule

## Monday, February 12, 2018

- 8:30 a.m. **NCMVCA Board Meeting**  
(NCMVCA Board Members Only)
- 10:00 a.m. **MAMCA Board Meeting**  
(MAMCA Board Members Only)
- 11:30 a.m.—1:00 p.m. **Onsite Registration**  
**First session (Moderator - Dr. Brian Byrd)**
- 1:00 p.m. **Welcome & Opening Remarks**  
-Tim Dubois (MAMCA President)  
-Dr. Michael Reiskind (NCMVCA President)
- 1:10 p.m. **Updates from the Northeast Regional Center for Excellence in Vector Borne Diseases**  
-Dr. Laura Harrington
- 1:30 p.m. **Reproductive biology and behavior of *Aedes*: potential targets for next generation control strategies.**  
-Dr. Laura Harrington
- 1:50 p.m. **Global climate change and what history tells us about the risk of new pathogens being introduced into the United States**  
-Dr. Mike Turell
- 2:30 p.m. **Patterns and consequences of mosquito diversity**  
-Dr. Mike Reiskind
- 2:45 p.m.—3:15 p.m. **Break** (Sustaining Members)
- Second session (Moderator - Dr. Michael Reiskind)**
- 3:15 p.m. **Oh, the places you'll go and the mosquitoes you'll know**  
-Dr. Brian Byrd
- 3:30 p.m. **NC mosquito control programs**  
-Michael Doyle
- 3:45 p.m. **Tracking the spread of *Ae. albopictus* in a county**  
-Tom Smith
- 4:00 p.m. **1 and 2 Sustaining Member Presentations**
- 4:10 p.m. **Public Education in Maryland**  
-Jeannine Dorothy
- 4:25 p.m. **Dog heartworm and mosquito diversity**  
-Meredith Spence
- 4:40 p.m. **Coordinating a centralized arbovirus surveillance program in SC**  
-Robert Cartner

## Monday, February 12, 2018 (cont.)

- 4:55 p.m. **3, 4, 5 Sustaining Member Presentations**
- 5:10 p.m. **AMCA Update**  
-Dennis Salmen
- 5:25 p.m. **6 and 7 Sustaining Member Presentations**
- 5:35 p.m. **Adjourn**
- 6:30 p.m. —7:30 p.m. **"Biting Times Social"**  
(All Attendees)

## Tuesday February 13, 2018

- 7:00 a.m. **Registration and Light Breakfast**
- Third session (Moderator - James Joachimowski)**
- 8:00 a.m. ***Culex coronator* distribution**  
-Marie Hemmen
- 8:15 a.m. **Drones in mosquito control**  
-Matt Du Pont
- 8:30 a.m. ***Toxorhynchites rutilus*: Novel insights into the subgeneric status of *T.r. rutilus* and *T.r. septentrionalis***  
-Cory Day
- 8:45 a.m. ***Ae. albopictus* population genomics**  
-Emily Reed
- 9:00 a.m. **Rock pool mosquito ecology in southern Appalachia**  
-Charlie Sither
- 9:15 a.m. **An update on the status of the invasive mosquito, *Aedes j. japonicus*, in North America**  
-Mike Hutchinson
- 9:30 a.m. **8 and 9 Sustaining Member Presentations**
- 9:40 a.m. **Update on NC bee registry**  
-Dwight Seal
- 9:55 a.m. —10:25 a.m. **Break** (Sustaining Members)
- Fourth session (Moderator - Eric Dotseth)**
- 10:25 a.m. **Impact of the insect growth regulator pyriproxyfen on life table characteristics of *Aedes albopictus***  
-Megan Rhyne
- 10:40 a.m. **NC Tick Surveillance**  
-Dr. Alexis Barbarin
- 10:55 a.m. **Attempts to understand the range expansion of *Amblyomma maculatum***  
-Dr. Rebecca Trout-Fryxell
- 11:10 a.m. **10 and 11 Sustaining Member Presentations**
- 11:20 a.m. **Tick-borne diseases in VA**  
-Dr. David Gaines

# 2018 MAMCA Draft Schedule

## Tuesday February 13, 2018 (cont.)

11:40 a.m.—12:20 p.m. **Break** (Luncheon Room Setup)  
 12:20 p.m.—2:00 p.m. **Luncheon and Awards** (All attendees)  
 2:00 p.m.—2:40 p.m. **Break** (Sustaining Members)

### Fifth session (Moderator - Kyle Brinson)

2:40 p.m. **Impact of Espirito Santo virus on dengue virus replication**  
 -Avian White  
 2:55 p.m. **Mosquito Authority: An update on current and future research and development goals and needs**  
 -Dr. Craig Stoops  
 3:10 p.m. **Effectiveness of pyrethroid barrier treatment insecticides on *Aedes albopictus***  
 -Ben McMillan  
 3:25 p.m. **Impact of insecticide exposure on vector competence for Zika virus**  
 -Heidi Knecht  
 3:40 p.m. **The efficacy of homemade mosquito repellents on *Aedes albopictus***  
 -James Carver  
 3:55 p.m. **Repellent response in La Crosse-infected mosquitoes**  
 -Kevin Chan

4:10 p.m. —4:40 pm **Break** (Sustaining Members)

### Sixth session (Moderator - Dr. Abelardo Moncayo)

4:40 p.m. **Diapause in La Crosse virus vectors**  
 -Jake Bova  
 4:55 p.m. **Trapping efficacy of a 3D printed trap for host-seeking and gravid mosquitoes**  
 -Joshua Bernick  
 5:10 p.m. **Serologic response in Alpacas during a public health response to a rabid Alpaca in SC**  
 -Travis Shealy  
 5:40 p.m. **Adjourn** (Dinner On Your Own)

## Wednesday, February 14, 2018

7:00 a.m.—8:00 a.m. **Breakfast Buffet**

### Seventh session (Moderator - Joe Andrews)

8:00 a.m. **Mosquito University and mosquito grants in Tennessee**  
 -Dr. Abelardo Moncayo  
 8:15 a.m. **Georgia's response to arboviruses: The vector surveillance program and increased statewide mosquito surveillance**  
 -Dr. Thuy-Vi Nguyen

## Wednesday, February 14, 2018 (cont.)

8:30 a.m. **Spread of Lyme disease into NC from VA: Tick survey along the VA/NC border**  
 -Jimmie Teague

8:45 a.m. **Does larval conditioning enhance attraction of sand flies to rearing medium?**  
 -Matt Miller

9:00 a.m. **Attraction of gravid sand flies to conspecific materials**  
 -Danielle Kowacich

9:15 a.m. **Circadian rhythm of oviposition behavior of sand flies**  
 -Lindsey Faw and Nima Hajhashemi

9:30 a.m. **Rat control program in Tennessee**  
 -Ture Carlson

9:45 a.m. **Detection of West Nile virus in *Culex* mosquitoes in Wayne County, North Carolina**  
 -Ivan Vargas

10:00 a.m.—10:30 a.m. **Break** (Hotel Check Out)

### Eighth session (Moderator - Tom Smith)

10:30 a.m. **MAMCA Member State Presentations** (5 minutes each)  
**Delaware** - James Joachimowski  
**Georgia** - Dr. Rosmarie Kelly  
**Maryland** - Kyle Brinson  
**North Carolina** - Joe Andrews  
**Pennsylvania** - Christian Boyer  
**South Carolina** - Travis Shealy  
**Tennessee** - Ture Carlson  
**Virginia** - Ann Herring  
**West Virginia** - Eric Dotseth

11:15 a.m. **NCMVCA Business Meeting, Elections**  
**MAMCA Business Meeting, Elections**  
**Door Prizes**  
 (All Attendees)

12:25 p.m. **Adjourn**

*\*Student Scholarship Award  
 Thanks to our judges: X and X*

*Thanks for your participation!*

# Do Ticks Transmit Cat Scratch Fever?

It is well known that ticks transmit many pathogens to humans, resulting in cases of Lyme disease, ehrlichiosis, Powassan encephalitis, and many others. Recently, ticks have been implicated in transmitting the agent of another disease: cat scratch fever. (Cue the Nugent!)

Cat scratch fever (or cat scratch disease) is caused by the bacterium *Bartonella henselae* and can be acquired by being...well...scratched by a cat. Cat scratch fever is generally not a particularly serious illness, with symptoms possibly including pustules where scratched, fever, and enlarged lymph nodes. Antibiotic treatment is usually not required, and the infection should resolve on its own. In rare cases, more severe disease may manifest (CDC, 2017). *Bartonella henselae* is transmitted from cat to cat by fleas, with little evidence for transmission by scratch among animals. It seems possible that cat fleas may also transmit the pathogen to humans directly (Mosbacher et al., 2011).

Anecdotally, Lyme disease patients coinfecting with *B. henselae* are reported to have exacerbated symptoms (e.g. Eskow, et al., 2001). However, a systematic review of the literature found little evidence of human coinfection (Lantos and Wormser, 2014). Numerous studies have identified *B. henselae* in ticks from around the world, and many suggest that it is a tick-borne infection in humans. In North America, *Ixodes scapularis* harboring *B. henselae* have been reported from New York, Pennsylvania, and New Jersey (Nelder et al., 2016). In spite of frequent isolations from ticks, no experimental evidence has been provided for transmission of *B. henselae* by ticks (Lantos and Wormser, 2014). Of note, though, *Ixodes ricinus* ticks have been shown to transmit *Bartonella birtlesii* in the laboratory (Reis et al., 2011). Some *Bartonella* species are transmitted by a number of other invertebrates, including fleas, sandflies, and lice (Billeter et al., 2008), and they have been detected in leeches (Kang et al., 2016).

In conclusion, experimental evidence proving that *Bartonella* species can be transmitted to a vertebrate host by ticks has not yet been provided. Applying Mitchell's (1995) criteria for determining arbovirus vector status to a possible *Bartonella*-tick system, we have evidence that the pathogen can be identified in the vector and that the vector occurs in association with the host. However, there does not seem to be literature documenting that *B. henselae* can infect ticks in the laboratory, and we are therefore lacking the critical demonstration that infected ticks can transmit the pathogen to a new host by bite.

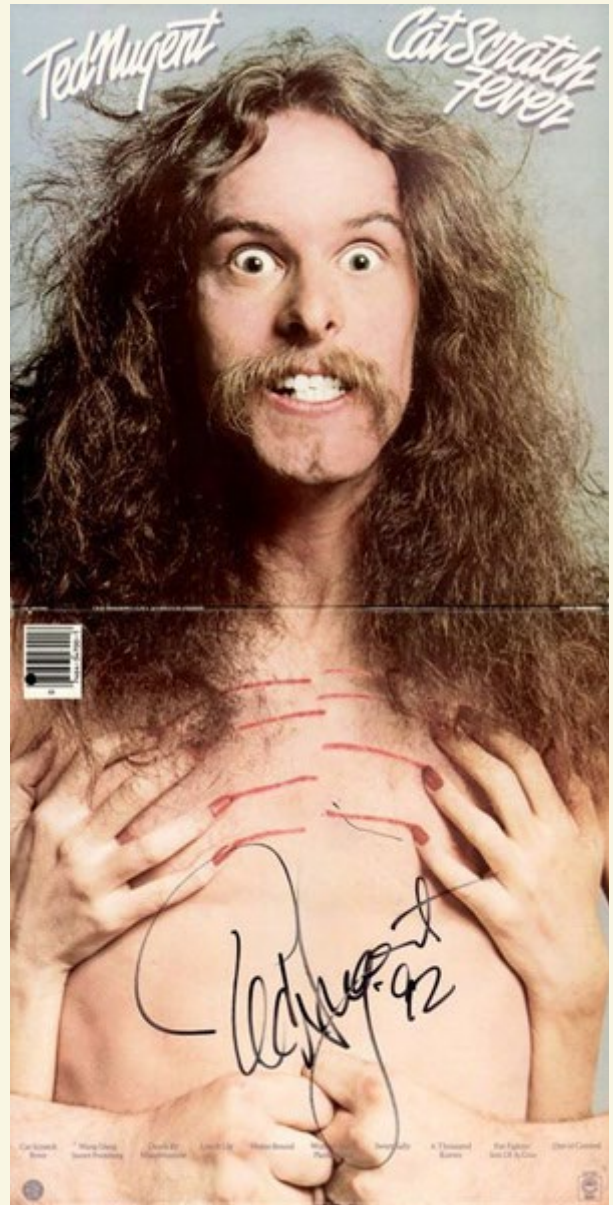


Image from <http://ultimateclassicrock.com/ted-nugents-cat-scratch-fever-turns-35/>

Submitted by Justin Anderson

References on next page



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- Reis C, M Cote, D Le Rhun, B Lecuelle, ML Levin, M Vayssier-Taussat, and SI Bonnet. 2011. Vector competence of the tick *Ixodes ricinus* for transmission of *Bartonella birtlesii*. *PLoS Neglected Tropical Diseases* 5(5):e1186.

## York County Update

York County's Mosquito Control had 575 trapping events over the summer and trapped approximately 45,000 mosquitoes, this trapping data is the most successful year in the recorded history of the program. Two new species were identified this summer, *Aedes atropos* and *Psorophora cyanescens* bringing our number of known species of mosquitos in York County to 34.

Also a highlight of the year is the capturing of a near perfect *Uranotaenia sapphrina* which the photos below show.

**Submitted by Betsy Hodson**



# What's this doing in Virginia?

Bruce A. Harrison, Karen I. Akaratovic, Jay P. Kiser, and Charles F. Abadam



**Figure 1.** Arrow showing lack of scales on mesepimeron



**Figure 2.** Arrow showing basolateral patches on abdominal terga.

**We suspect** you won't immediately recognize this species, but you better start learning about it and look for it in your trap collections. Basically this is a fall mosquito that can: remain around until late November, become very common, and should be considered for pooling because in some states it is a known vector of arboviruses that cause human disease.

In the past this species has not been considered a migratory species. Now, with strong evidence supporting climate change, it should be considered an opportunistic species in the US that expands its distribution during warm winters similar to other "emerging emigrant species" like *Culex coronator* (Dyar and Knab), (Akaratovic and Kiser 2017) and *Mansonia titillans* (Walker), (Moulis et al. 2015). After several sequential warm winters it can alter its previous distribution by hundreds of miles. That is exactly what has happened in Virginia, as it apparently surged northward in North Carolina during the last 3-4 years and into Virginia in 2017. In eastern North Carolina this species was previously considered found only in the southeastern coastal counties, but this year specimens have been found much further north and over halfway to Virginia in Beaufort County (Eugene McRoy, personal communication) while in the southeastern counties hundreds of specimens have been collected (Jeff Brown and Marie Hemmen, personal communication). Now it has spread into Virginia and has been detected in Suffolk in widely separated collections.

By now you probably know its name is ***Culex nigripalpus*** Theobald, and it represents another new species record for Virginia. Below are some important facts about this species.

**Suffolk Collection.** Four females were collected in Suffolk, Virginia on October 13, 2017 from 3 trapsites (Figure 4). One specimen was collected in a CDC light trap in the southwestern portion of the city that is a small suburban outpost with adjacent residential and industrial properties, surrounded by agricultural land. This is the same site at which *Cx. coronator* was found one year prior. The other 3 specimens were collected over 30 km away, in northwest Suffolk. Two were collected in a CDC light trap from a rural site bordered by fresh water to the north (Chuckatuck Creek) and south (Nansemond River) with adjacent abandoned dilapidated housing and ditches/tire ruts that occasionally flood. The last specimen was collected in a BG-Sentinel 2® trap from the most northwest tip of the city, within 500 m of where the Nansemond River meets the James River. It is a suburban site with pockets of mostly loblolly pine (*Pinus taeda* L.) forest.

*Continued on next page*

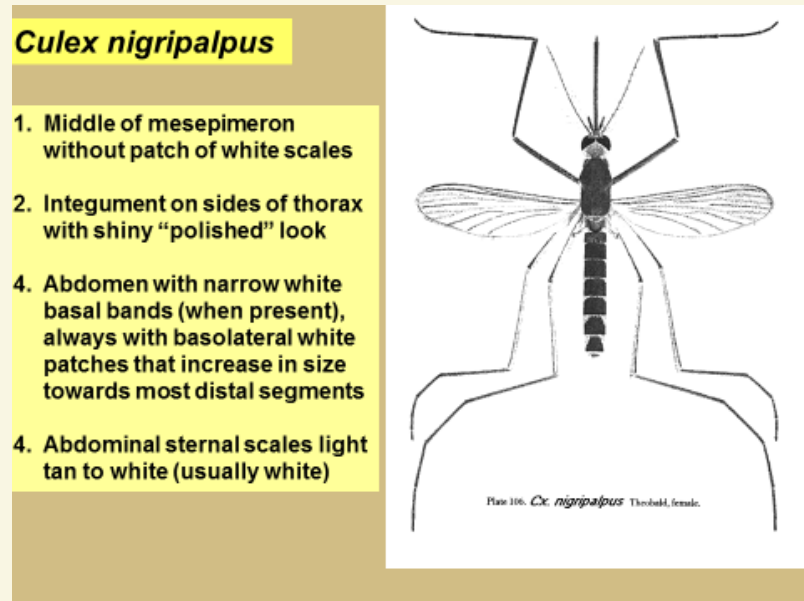
**Identification.** *Culex nigripalpus* belongs in subgenus *Culex* of genus *Culex*, like many of our other *Culex*. Figure 3 shows slide photos that outline the important differences between the females of *Cx. nigripalpus* and *Cx. salinarius* Coquillett.

Besides the characters in Figure 3, the tarsomeres are entirely dark scaled, the proboscis is usually dark scaled but occasionally may have pale ventral scales, and the dorsomedian portion of tergum VII of the abdomen is dark scaled back to the posterior margin.

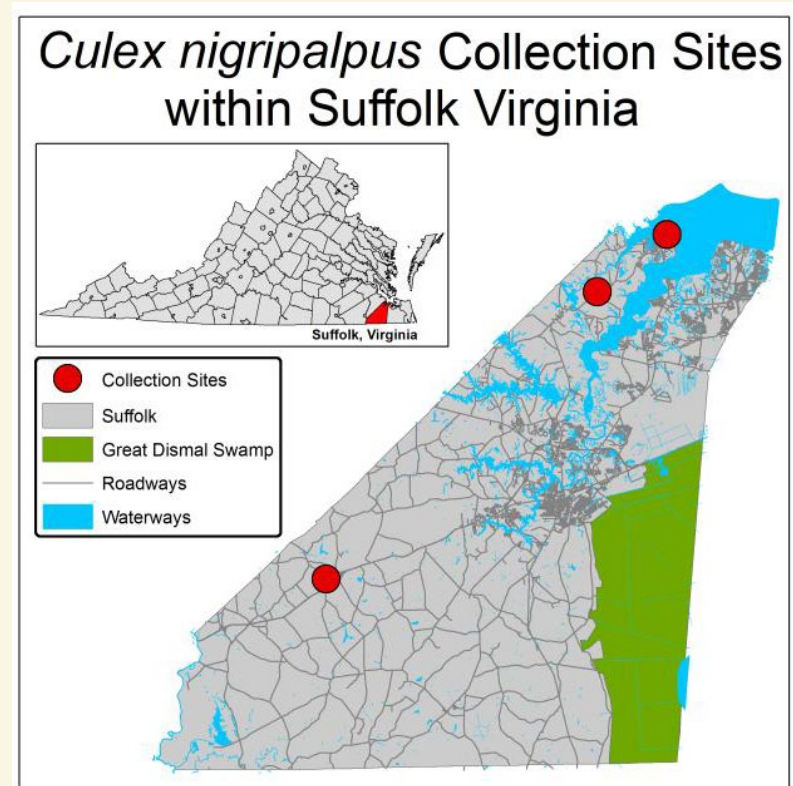
Larvae have a long siphon that typically ranges 6-7 times the width at the base, with 4 pairs of siphon setae (1-S), most basal pair single and longer than width of siphon at base, often with more than one pair of 1-S setae single, mesothoracic seta 1-M extremely short, thoracic integument often covered with tiny aciculae (spicules), and head setae 5, 6-C with 3-4 branches (Figure 5).

**Distribution.** *Culex nigripalpus* is a Western Hemisphere species that extends from the USA down through the Caribbean, Central America and into South America as far as Brazil and Paraguay. In the US it extends from Texas across the southeastern states and up through Tennessee into Kentucky (Burkett-Cadena 2013) and now through North Carolina into Virginia. In Suffolk it is not confined to one site, but has been collected from widely separated trap sites (Figure 4). This suggests it is likely to occur in some of the other nearby VA mosquito programs (i.e. Chesapeake, Norfolk, Portsmouth, Virginia Beach) and possibly north of the James River.

**Bionomics.** The information below is based primarily on Florida specimens (Nayar 1982), with some additional information from Carpenter and LaCasse (1955) and King et al. (1960). Larvae have been collected from a wide range of habitats including: temporary freshwater, slightly brackish pools, grassy pools, ditches, catch basins, permanent pools in forests and swamps, and in 37 different types of artificial containers including some leaf axils. Habitats containing high levels of organic pollution are not attractive to this species. A wide range of species have been collected in association with *Cx. nigripalpus* larvae, based primarily on the type of habitat. Females oviposit eggs in rafts (about 200) like most other *Culex* (*Culex*). Females have been known to fly between 1-3 miles



**Figure 3.** Key morphological features to distinguish *Cx. nigripalpus* from *Cx. salinarius*



**Figure 4.** Map of Suffolk depicting collection sites



(5 km) and are attracted to traps using animal baits and artificial attractants. Edman (1974) determined that *Cx. nigripalpus* was opportunistic in searching for a blood host, feeding on a wide range of vertebrate species like cattle, rabbits, and many different wading birds, passerine (perching) birds, and gallinaceous birds like quail and turkeys. Basically it prefers birds and mammals, but is not really attracted to humans. However, Edman and Taylor (1968) found a mid-season shift in the blood feeding hosts of *Cx. nigripalpus*, from birds to mammals, which may help explain its role in the fall transmission of St. Louis encephalitis to humans.

### ***Culex nigripalpus***

1. Upper and lower head setae (5,6-C) 3-4 branched
2. Antennae shorter than head, with setal tuft beyond middle
3. Siphon setae usually 4 pairs not in line, usually with 1 or 2 pairs of most basal setae long, single and lacking branches
4. Siphon index 5.0-10.0 (normally 6.0 or more)
5. Mesothorax with seta 1-M extremely short
6. Thoracic and abdominal integument usually covered with fine aciculae (tiny needle-like spicules)
7. Saddle seta 1-X usually single

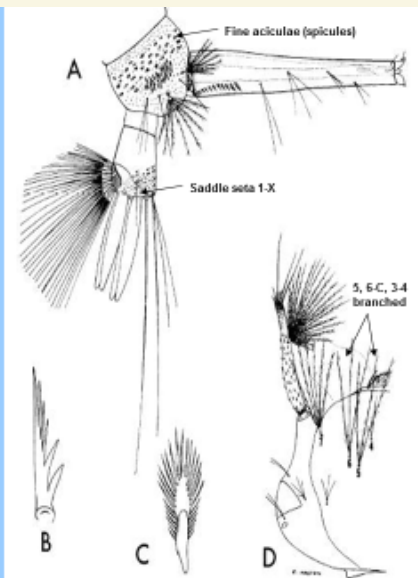


Fig. 290. Larva of *Culex nigripalpus* Theobald. A, Terminal segments. B, Pecten tooth. C, Comb scale. D, Head.

Figure 5. Larval morphology

**Vector Status.** Regardless of its apparent lack of attraction to humans it was incriminated as the primary vector of St Louis encephalitis (SLE) virus in Florida in the 1950-60s, and has also been found positive for eastern equine encephalomyelitis (EEE), Trivittatus (TVT), and West Nile encephalitis viruses. In Florida it was incriminated as a primary vector of West Nile virus.

**Acknowledgements.** We thank Chris Evans, SCDHEC and M. Cutwa-Francis, FMEL, for the use of the two photographs, and Eugene McRoy, Beaufort County, Jeff Brown, Brunswick County, and Marie Hemmen, New Hanover County, North Carolina, for providing information.

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# 2017 VMCA Committees

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
<b>Annual Meeting (Local Arrangements)</b>	Tim DuBois	George Wojcik, Lisa Wagenbrenner, Ann Herring, Jamie Durden, Maggie Rivera	Decides location of future meetings
<b>Annual Meeting (Program/Agenda)</b>	George Wojcik	Randy Buchanan	Organize annual meeting program
<b>Annual Meeting (Vendor Planning)</b>	Ted Bean	George Wojcik	Vendor correspondence/setup
<b>Audit</b>			Annual audit of financial records
<b>Bylaws</b>	George Wojcik, Jay Kiser	Charles Abadam, Randy Buchanan	Bylaw revision/maintenance
<b>Education</b>	Lisa Wagenbrenner	David Gaines, Jay Kiser, Jennifer Pierce, LaToya White	Recertification, Adult ID course
<b>Elections</b>	Jeff Hottenstein	Penelope Smelser	Sets up online voting, sends out voter information, counts votes, announces winners during annual business meeting
<b>Historian</b>	Tim DuBois	Connie Hartsfield, Andy Lima, John Orr	Historical Archives
<b>Hospitality Room</b>	Ann Herring	Jay Kiser	Annual meeting hospitality room
<b>Information</b>	Tim DuBois	Karen Akaratovic, Jay Kiser, Justin Anderson, Rachel Kempf, Wes Robertson	The Skeeter, Facebook, Instagram
<b>Legislative</b>	Randy Buchanan	Betsy Hodson, Lane Carr	NPDES, VPDES, PESP
<b>Membership</b>	Penelope Smelser		Keeps updated list of membership
<b>Merchandise</b>	Tim DuBois	Lisa Wagenbrenner, Ann Herring, Maggie Jackson, Michelle Slosser, Andy Lima, Karen Akaratovic	Coordinating sales merchandise for annual meeting
<b>Nominating</b>	Joshua Smith	Michelle Slosser, Lauren Lochstampfor	Finds candidates for election, prepares/gathers profiles of nominees for ballots
<b>Photography</b>	Charles Abadam	Jay Kiser, Maggie Jackson, Andy Lima	Takes photos of VMCA-related events for website, The Skeeter, Facebook, and Instagram
<b>Public Relations</b>	Rachel Kempf	Randy Buchanan	Mosquito Awareness Week/Outreach & Education
<b>Special Awards</b>	Phil Meekins	Jennifer Pierce, LaToya White	Annual meeting awards– R.E. Dorer, Outstanding Service
<b>Student Competition</b>	Jay Kiser	Francis Valera, Charles Abadam, Karen Akaratovic, Dennis Salmen, Lane Carr	Organizes a student research/poster project competition with an award to be given at the annual meeting, raises funds for award
<b>Technical Support</b>	Charles Abadam, Jason Pevear		Maintains/advises on VMCA hardware/software; operates computer/projector during annual meeting
<b>Website</b>	Penelope Smelser	Lane Carr, Andy Lima	Maintains/revises website
<b>Ad-Hoc 2022 AMCA Committee</b>	Charles Abadam	Jay Kiser, Tim DuBois, Dennis Salmen, George Wojcik	

## What's that? Answer



**The life of a mosquito trapper** is tedious to say the least. Day-in and day-out trappers prepare, construct, and erect carbon dioxide and gravid traps in hopes of collecting enough specimens to test for various mosquito-borne pathogens. When the trapping is good, hundreds, or even thousands, of mosquitoes can be caught within a single 24-hour period. Like cast net fishing, mosquito traps frequently produce a "bycatch." This bycatch typically includes spiders, flies, moths, along with copious other insects and arachnids. Luckily for me, this bounty of samples is provided with little to no effort, at least not my own. And we all know the best things in life are free!

This past week was no exception as the Trap Gods were feeling benevolent. One of the best specimens I stumbled across was a relatively unscathed, vibrant Rosy Maple Moth (*Dryocampa rubicunda*). These native moths come in several colors but none are as eye popping as the yellow and pink maculation (spotted) variant.

While prevalent, their nocturnal nature helps them remain somewhat ambiguous. They can typically be found in direct contact with maple trees, oaks, and box elder maples. This means backyards are not out of the question. Each moth starts off as a green-striped mapleworm but come in variable colors depending on their stage of development. However, all Rosy Maple moth caterpillars have a black head, and longitudinal (lengthwise) stripes. Their second thoracic segment adorns a set of black horns while their back end has segments with up to four large spines. While other *Saturniidae* moths have these strategically placed horns, they are not as vibrant in color.

These moths are not frequently considered pests as they only feed during pupal (caterpillar) stages and require large aggregations to significantly defoliate trees. Damage from Rosy caterpillars can be identified if the entire host tree maintains vegetation that is missing entire leaf blades.

Why are these caterpillars and moths so color vibrant when compared to other family (*Saturniidae*) members? Primarily, to warn potential predators (birds) that eating them would be like you eating maggot filled piece of steak.....just plain gross.

*Submitted by Wes Robertson*



# VMCA Membership Application/Renewal

**Virginia Mosquito Control Association**  
 New Membership & Member Renewal Application

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

Membership payment is by calendar year

Name:	Regular \$ 15.00	
Phone:	Associate \$ 10.00	
Address:	Student: *Enclose proof of student status \$ 10.00	
Email:		
Organization:		
	Total Submitted	

Please "X" here if you cannot receive the newsletter by email

Questions or comments can be directed to Penelope Smelser, Secretary-Treasurer, 757-683-8662 or mail to: [Penelope.smelser@norfolk.gov](mailto:Penelope.smelser@norfolk.gov)

Send payment (made payable to **VMCA**) and mail/fax this form to Secretary/Treasurer –or- fill out the form, save and submit by email.

Penelope Smelser  
 VMCA Secretary-Treasurer  
 2800 Tarrant Street  
 Norfolk, VA 23509  
 757-683-8662 office phone  
 757-683-2500 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 at least 1/2 time in an accredited college or university and produce valid College/University ID Card.)

# Merchandise Sales Continue!

Didn't get what you wanted at the VMCA annual meeting?  
Weren't able to attend due to weather, time, funding?

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



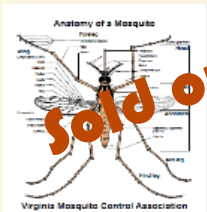
Black t-shirt with *Aedes albopictus* design (\$8-12)



Black zip-up hooded jacket & gray hooded sweatshirt with white *Ae. albopictus* design (\$25-35)



Blue can cooler with mosquito silhouette (\$2)



Blue or gray t-shirt with mosquito anatomy design (\$8)



Black leatherette portfolio with VMCA logo paper pad and pen, included (\$10)



Black/white decal/stickers with *Ae. albopictus* design (\$1-2)



Tan or gray long sleeve shirt with mosquito swarm design (\$10)



Pint glass with *Ae. albopictus* design (1 for \$6, 2 for \$10)



Black/white pen with VMCA & website print (2 for \$1)



Gray *Aedes albopictus* pullover hoodie (\$18-20)



Green reusable tote bag with VMCA logo (\$3, free with \$50 purchase)



2017 MAMCA/VMCA gray zipup hoodie (\$20-25)



2017 MAMCA/VMCA yellow onesie (\$10)



2017 MAMCA/VMCA gray short sleeve t-shirt (\$8-12)



2017 MAMCA/VMCA gray toddler tee (\$10)

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 ([tdubois@hampton.gov](mailto:tdubois@hampton.gov)) AND VMCA Secretary/Treasurer Penelope Smelser ([Penelope.Smelser@norfolk.gov](mailto:Penelope.Smelser@norfolk.gov)). Payments can be made by cash (local pickup only), check, or credit card. Local pickups will be conducted at Hampton Environmental Services (419 N. Armistead Ave). 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](#).



2017 MAMCA/VMCA tumbler (\$8)

## 2017 Sustaining Members

The VMCA gratefully acknowledges the support of the following sustaining members for 2017. 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

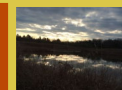
[Virginia Department of Health](#)

[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: Tim DuBois at [tdubois@hampton.gov](mailto:tdubois@hampton.gov)

**THE SKEETER**

Newsletter of the Virginia Mosquito Control Association

**Contact: Tim DuBois**

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Editorial Review :  
VMCA Executive Board

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 Tim DuBois at [tdubois@hampton.gov](mailto:tdubois@hampton.gov)

Virginia

Mosquito Control Association

Founded 1947

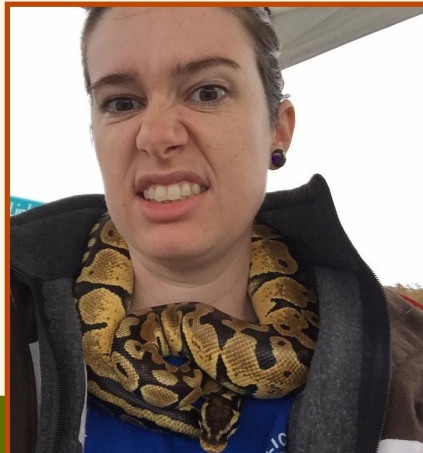
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- \*Sustaining Member/Industry Rep:** Ted Bean (814) 671-6516 [tbean@myadapco.com](mailto:tbean@myadapco.com)

**\*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.**

**VMCA is on Instagram!**



VMCA now has an Instagram account (@virginiamosquitocontrol)! The account is currently being piloted by Rachel Kempf of Prince William County's Mosquito & Forest Pest Management branch, and will feature photos meant to foster community engagement, spread VCMA's message across a broad range of audiences, and widen our social media reach.

Rachel is currently compiling a photo inventory for future posts, and would love for VMCA members to send her submissions for the page. Any pictures or short videos depicting mosquitoes, mosquito larvae, mosquito lookalikes, mosquito predators, habitats, sentinel chickens, field and lab staff at work, outreach and community events, general entomology, and cool finds out in the field are welcome and greatly appreciated.

Please email submissions to [rkempf@pwcgov.org](mailto:rkempf@pwcgov.org) or [tdubois@hampton.gov](mailto:tdubois@hampton.gov), follow and engage with us if you have an IG account, and help spread the word!

**Top:** Current IG photos  
**Bottom:** Rachel Kempf of MFPM (with Wilson the Ball Python)