



# Educational Outreach

## A One-on-One Approach

Neill O. Cagle, REHS

Transylvania County Public Health

It's a beautiful summer Saturday, few clouds, with highs in the mid 80's. What better place to be than setting up a vector control outreach booth at a local festival? Right? No, No, No! Grab your fishing pole and get to your favorite fishing spot pronto! But, alas, sometimes we must keep the fishing pole in the basement and ignore the primal urge to hunt and gather. Responsibility, as it seems, is not what it is cracked up to be. A successful vector control program is not without its sacrifices.

Much can be said (and has been said) about vector surveillance and control. What's not to like? You get to run fancy traps, look through a posh microscope, fly drones, spray, fog, and broadcast

larvicide until your mosquito counts stabilize under your action threshold and the best part... when your counts go back up, you get to do it all over again! Some get to fly planes and helicopters in the on-going vector suppression fight. All these things (and more) are necessary and, when done correctly, very effective. There is something that our microscopes, traps, sprayers, drones, airplanes, and helicopters can't compete against - the public!



*Continued on p. 7*

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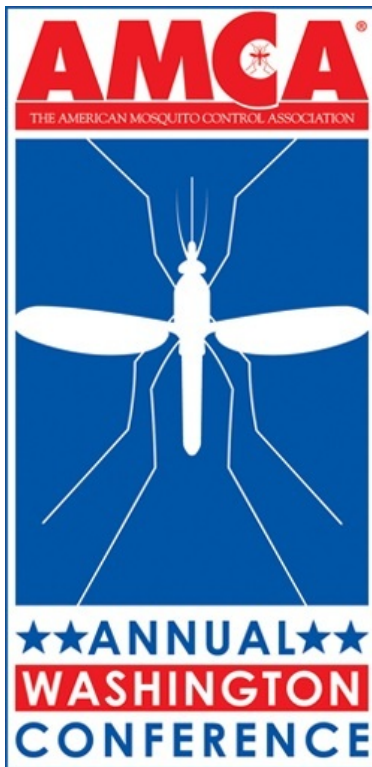
## Legislative Strides

### *An AMCA Washington Conference Review*

**N. Kyle Godbey**

**Forsyth County Department of Public Health**

I am always on the lookout for new ways that I can contribute to public health and vector control. When our Legislative Chair, Dr. Meredith Spence Beaulieu, began the call for attendees to the AMCA Washington Conference earlier this year, I had to consider: Is this a valuable way to make an impact? After some deliberation over the agenda, I decided that, at the very least, it would be a chance to understand other perspectives in the industry. I was vaguely aware that there was financial assistance available, which was a must considering the travel expenses involved and the very small budget available to me. After a bit of encouragement, I applied to and was awarded a stipend. There were a couple of short Zoom meetings to prepare first timers. New attendees are assigned mentors to help them through the process and attend some of their visits on the Hill. Through happenstance, I wound up with two (fantastic) mentors who helped guide me through the process of scheduling visits and making travel preparations.



Soon, I arrived in a new place full of new people. I knew no other attendees, though some I recognised by names on publications and AMCA correspondences. I was intimidated by the level of professional knowledge in the room straight away. However I soon found that, in addition to my mentors, everyone there was warm and welcoming. Many attendees are extremely knowledgeable on both legislative issues and mosquito control in general. In addition to the reward of comradery, I learned a great deal through networking with the other attendees.

There are two avenues in which to gain financial assistance for attending the Washington Conference. NCMVCA contributes funding to ensure that the North Carolina is represented at the Washington Conference. Secondly, Central Life Sciences sponsors up to ten individuals nationally with a one thousand dollar travel stipend. To qualify for this award, you must be an AMCA member in good standing. You also must be attending the conference for the first time. There is a succinct application form that must be filled out to be considered. The funds are awarded as a reimbursement and cover most travel expenses.

The meeting is set up in a format of two days worth of informational sessions followed by one day of Congressional office visits. The first two days consist of presentations aimed at making members aware of the current state of affairs and actions which need to be taken by Congress to improve mosquito control initiatives. While in person visits on the third day are encouraged, AMCA will help facilitate any virtual visits.

The informational sessions on day one ran from 9:00 am to 5:30 pm with lunch and breaks in between. They included several presentations within each of the following topics:

- Endangered Species Act and Mosquito Control Product Uses
- Addressing Potential Chemical Residues on Organic and Specialty Crops from Mosquito Control
- Update from the EPA's office of Pesticide Programs

The second day sessions were a little shorter, beginning at 9:00 am and ending at 3:15 pm. The topics of day two were:

- Unmanned Aircraft Use in Mosquito Control Operations
- Updates from Vector-Borne Disease Network and Industry Partners
- Becoming a Mosquito Control Activist

Each of the initial two days were capped off with a reception. On day three, I had managed to schedule in person meetings with the staff of four representatives, three of which were key committee (committees potentially impacting vector control) members. I attended these meetings with my mentors, Dr. Broox Boze and Dr. Dan Markowski. The experience was engaging and came with a feeling of making an impact.

There were several priority issues on the table this year. The first set of priorities relate mosquito control funding. The Strengthening Mosquito Abatement for Safety and Health (SMASH) Act of

2019 prescribed Centers for Disease Control (CDC) resources, authorized to \$100 million, annually to mosquito control programs. The authorization has presently received no appropriations and remains unfunded. The number one ask of Congress is to fully fund the SMASH act. This would include support for increases to the CDC's Epidemiology and Lab Capacity (ELC) account specifically for mosquito control districts.



Left to right: Author, Angela Beehler, Dr. Broox Boze at the Library of Congress, Washington, D.C.

Another priority request is the allocation of additional funds (an addition of \$5 million dollars) to the \$1,638,496,000 **Agricultural Appropriations Bill- Agricultural Research Service**. This relatively small increase in funding would facilitate the development of AMCA proposed spray drift models to be used by the Environmental Protection Agency (EPA) in pesticide registration decisions. The EPA currently relies only on the USDA's agricultural spray drift models that do not reflect Ultra Low Volume (ULV) and similar technologies that reduce ground deposition in

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**Have something to share in the next issue of Biting Times?**

**Contact Kyle Godbey at: [godbeynk@forsyth.cc](mailto:godbeynk@forsyth.cc)**

mosquito control uses. Funding the **Interior Appropriations Bill- EPA; Science and Technology Account** as well as an additional \$5 million to the **Request for Labor, HHS, Education Appropriations Bill** could also allow spray drift model development.

AMCA is also encouraging funding to the EPA or CDC for nationwide implementation of VectorSurv. The goal of this national database would be to inform the US Fish and Wildlife Service and the National Marine Fisheries Service as well as the EPA in development of Biological Opinions that the EPA is required to acquire from the services in consideration of all pesticide decisions.

Attendees also asked that Congress support reform of the Endangered Species Act (ESA). The concern is that adequate, science-based, methods in which to determine levels of pesticide exposure to endangered species are not present in regards to mosquito control. Until the Services create a methodology to obtain and include data from mosquito control use, further restrictions on public health pesticides should not occur. In order for this to happen, Congress is urged to provide the sufficient resources to the Interagency Working Group responsible for this issue.

Finally, there is growing concern that further legislation could occur that would impede public health uses of drones. Though there is no relevant action being taken nationally, some states and local governments are enacting restrictive regulations. It is asked of Congress that they remain aware of the unique uses of these drones for vector control when these decisions come on docket in the future.

So what's the verdict? Did I find an impactful

method of contributing to public health? I believe that, not only did I do just that, I made some new friends, gained knowledge in aspects of vector control and beyond, and had many new positive experiences. It is worth it just for the opportunity to hang out in the Library of Congress with a group of lovely mosquito nerds.

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### Recognize your peers and colleagues by nominating them for an award from the North Carolina Mosquito and Vector Control Association (NCMVCA).

- Do you know someone who has shown dedication and diligence above and beyond the call of duty?
- Do you know someone who has done something that demonstrates outstanding service to their vector control program?

If so, please nominate them for the **“William F. Strickhouser Award”** (previously known as the “Golden Dipper Award”) by submitting a short (1-2 paragraphs) summary of their contributions and/or successes.

We are also receiving nominations for the **Hamilton Stevens Award**. This is our association's highest award for an individual who has made a significant contribution to mosquito and/or vector control in North Carolina.

Please submit your nominations by August 31, 2022 to Dr. Brian Byrd (Chair, NCMVCA Awards and Nominating Committee) by email ([bdbyrd@wcu.edu](mailto:bdbyrd@wcu.edu)).

# Global Mosquito Resistance Management

## - A Virtual Summit -

Originally published in the  
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[www.publichealthlandscape.com](http://www.publichealthlandscape.com)

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COVID-19 taught us many lessons. It shined a spotlight on what Public Health professionals deal with every day: no matter where in the world we live, our economic status, how old we are, our gender, or the color of our skin, in the end we are all connected. And in times of crisis, that connectivity demands a coordinated response.

In the face of vector-borne disease, global mosquito insecticide resistance poses a more subtle, but no less ominous threat. The tools we have are numbered and for many of them, their effectiveness is waning. How do those entities and individuals charged with protecting human potential harness the collective strength and knowledge of the Global Public Health community to combat the onset of resistance?

To find out, watch the Global Mosquito Resistance Management Virtual Summit that was held on March 24, 2022. The Virtual Summit included presentations by a distinguished list of international Public Health experts from government, academia, and industry, all working collectively with the objective of communicating ideas and strategies for resistance management in the battle against vector-borne disease. Highly focused on research, presentations included information on:

- types of resistance mechanisms
- current resistance trends from the US, Africa, Latin America, and Asia
- alternate vector control tools to combat resistance
- resistance management best practices
- recent field work from those battling with resistance in local mosquito populations

You can find the entire summit, as well as individual presentations, at the following address: <https://tinyurl.com/ResistanceSummit2022>

## Educational Outreach (cont.)

Neill O. Cagle, REHS

### Transylvania Public Health

Abraham Lincoln said, "Public sentiment is everything. With public sentiment, nothing can fail. Without it, nothing can succeed." If you have been in public service for any length of time you understand that whatever the project, it goes much smoother when the public is in favor of it or at least understands the importance. Vector control is an important job. How do we get the public to see and value that same importance?



In [Transylvania County](#) we have tried several things: Billboards, Facebook, Website, Radio, and TV spots. All these things have been acceptable, but it's hard to quantify their effectiveness. I believe our best outreach tools have been those that are more one-on-one, where we set up a booth at various festivals and events throughout the year.

Our exhibits started in 2018 with an invitation to have a booth at a local festival in Rosman called [Riverfest](#). We quickly found a pop-up canopy, gathered up some newly developed handouts, collected some fresh larvae, and crammed my work vehicle full of tables, chairs, and whatever else we thought we would need. Bright and early on a Saturday morning we arrived at Champion Park in Rosman for Riverfest not sure what to expect. The event organizer had set up a scavenger hunt for the kids which meant that they had to visit each booth and answer a couple of questions to earn a sticker for completion.

It was rewarding to see the looks on the kids' faces (parents too) when they learned something new or saw mosquito larvae for the first time. It was surprising to me how many people didn't know what mosquito larvae look like or that maybe they had seen them before but didn't know what they were looking at! We talked about container species and simple treatment options and how small changes around their own homes can make big differences in mosquito populations.

Since then, we continue to make investments in our exhibit setup. We have purchased a better canopy, tables, chairs, carts for transporting, display materials, handouts and of course swag ("Stuff We All Get"). We have been especially thoughtful about what kind of swag we hand out,

ensuring that it is both educational and appealing. We started with "Fight the Bite" wristbands with the life cycle of mosquitoes and ticks printed on them, in sizes that would fit children and adults. We made sure that our frisbees and balsa wood flyers would actually fly well enough for folks to enjoy them. Our drawstring bags are reusable and somewhat durable. All of our swag items feature our "Fight the Bite" message, "Protect Yourself against Ticks & Mosquitoes" with a reference to our website, [transylvaniahealth.org](http://transylvaniahealth.org). Since everything we hand out or present reflects our department, we want that impression to be a positive one!

Following our first Riverfest we have had open door invitations to other festivals and community events, classroom settings at a community college and a charter school, and most recently, the Transylvania County Little League opening day. Everyday discussions with the public and the aforementioned opportunities have been our best educational outreaches so far.

I realize that every vector control program is different and what works for us may not work for others, but I encourage all vector control programs to mingle with the public. Don't let them see you as just those guys that spray up and down the streets of our neighborhoods. Set up a booth, go into the schools (not just with fliers), reach out to civic organizations and nonprofits. I only caution these few things if you are invited, and you accept: Show up! Stay till the end! Be passionate!

I will leave you with a Chinese proverb, "If you are planning for a year, sow rice; if you are planning for a decade, plant trees; If you are planning for a lifetime, educate people."

Now, where is that fishing pole?

## Guess That Skeeter!



Photo credit to Sean McCann

I'm a medium-sized mosquito with large disease potential. In Florida, I'm known as the St. Louis Encephalitis (SLE) mosquito, but here in NC I pose a higher risk for transmitting Eastern Equine Encephalitis (EEE) virus. I lay egg rafts on standing water but am somehow considered to be a floodwater species. I will bite almost any host – commonly birds during dry winter and spring months, and mammals during wet summer and autumn. And no one calls me picky – I'll go after almost any trap – BG Sentinels, CDC light traps, NJ light traps, or even gravid traps. We females have a dangerous habit of storing our eggs during summer droughts then laying them all at once after rainfall begins. Some say that my beautiful dark brown leg scales can dazzle dedicated identifiers with delicate bronze to blue-green highlights. What am I?

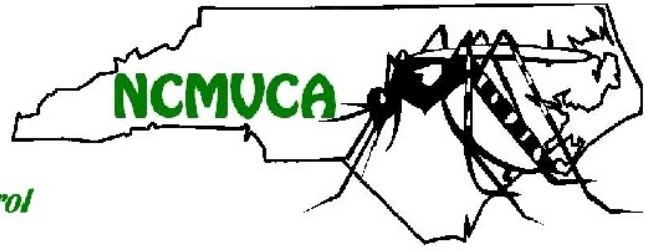
*Answer on p. 10*



SAVE THE DATE



*North Carolina  
Mosquito & Vector Control  
Association*



# ANNUAL NCMVCA CONFERENCE

**When:** November 9-10, 2022

**Where:** Pitt County Cooperative Extension  
403 Government Cir, Suite 2, Greenville, NC 27834

## 1.5 day in-person conference and workshop

**November 9th:**

- A full-day, in-person meeting with a variety of speakers, vendor displays, and product presentations

**November 10th:**

- A half-day workshop consisting of breakout sessions on a variety of topics using hands-on learning

**Agenda coming soon!**

**Keep an eye out for coming information on registration, accommodations and more!**

Visit <https://www.ncmvca.org/annual-conference> for more information

\*At present, the space is limited to an occupancy of 50 as a COVID-19 precaution.

## Member Spotlight



**Avian White**

### Tell us a little about yourself!

I am a teaching instructor and laboratory technician at East Carolina University. I do a lot of work with mosquitoes and insecticide resistance. I love educating future students on environmental health and the importance of what we do in all aspects. I love seeing students' faces when I pull out a petri dish full of mosquitoes. One of my favorite class games (yes, we still play games in college too) is asking my students to guess how many mosquitoes are in a petri dish. They love that assignment!

### How did you get started in the mosquito control industry?

I got started working with mosquitoes as a laboratory technician here at ECU. My work with mosquitoes primarily sees me inside propagating species for insecticide resistance studies (bottle

bioassays). However, I have done some outside work trapping mosquitoes in suburban neighborhoods. This was great because it gave me a chance to speak with people about the mosquito control they can do in their yards. I'm always amazed how many questions we got when we were out setting traps!

### Where do you see yourself in 5 years?

Hopefully, continuing to educate people on why this work is needed and how it fits into the public health and keeping people safe.

### What is your favorite tool used for your job and why?

My favorite tool is the microscope. Identifying can be fun. Plus, I typically don't get bit by mosquitoes like I do when I am out setting traps (Jim Gardner (Pitt County Environmental Health) has a great trapping story of me getting bit by mosquitoes). It's also cool when I see a species I hadn't identified before. There are so many ways to help with mosquito control, I am glad to do just a small part of it.

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## The Biting Times, July 22

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[N. Kyle Godbey](#)

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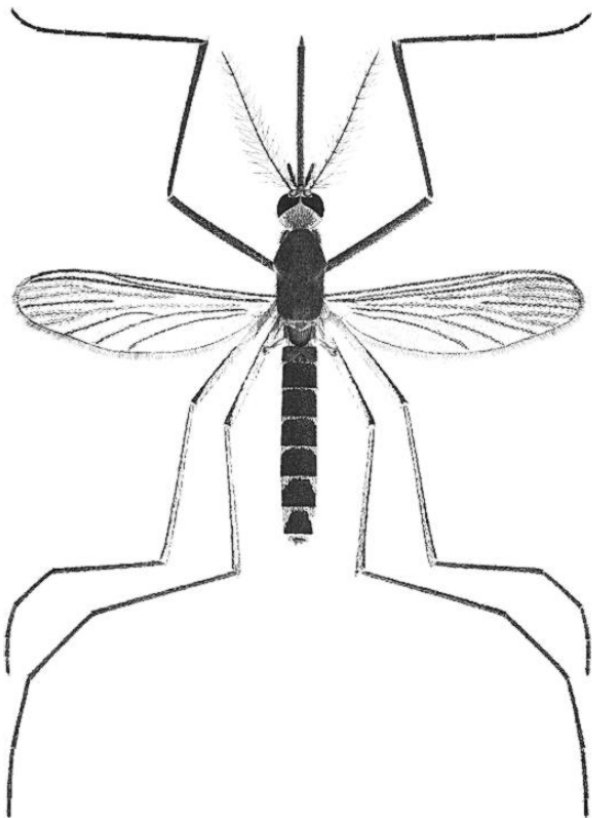
[Neill O. Cagle](#), AMCA, [Dr. Dan Markowski](#), [Sean McCann](#), [Avian White](#), [Carpenter](#) and [Lacasse](#)

# Guess That Skeeter!

## *Culex nigripalpus*

By Michael Doyle, NC DHHS

Although not a visually remarkable mosquito, *Culex nigripalpus* is one of the Southeast's most dangerous species because of their broad host preferences and oviposition habits. Typical of *Culex* species, females must lay their eggs on



Drawing of adult Florida SLE mosquito, *Culex nigripalpus* (Theobald). Drawing by Carpenter and LaCasse, 1955 edition of *Mosquitoes of North America*.

standing water, but the females prefer “new” standing water (e.g., 10-14 days inundation). While waiting for a significant rain event, they have an interesting and dangerous method of holding their eggs for long periods of time until rains fill ditches and other low areas. This allows older (and possibly infected) females to lay eggs almost

simultaneously, then bite new hosts en masse, creating possible synchronous infection cycles. The drought-like conditions we have now in early summer 2022 are favorable to precipitate this type of cycle for EEE .

*Culex nigripalpus* have been found historically in 22 North Carolina counties, according to the late Dr. Bruce Harrison. Over the last 5 years our local vector control programs have reported adults in New Hanover, Brunswick, Craven, Pitt, Wake, Forsyth, and even far west Henderson County. (Special thanks to Jeff Suggs, Jeff Brown, Jonathan Stucky, Jim Gardner, Michael Reiskind, Ryan Harrison, Brian Byrd and their teams for contributing trap data).

Female *Cx. nigripalpus* overwinter as adults and have been collected every month of the year based on our county NC-Surv records. The vast majority of females are caught August through November, with a strong peak in October. See [Brunswick County Mosquito Control](#) for weekly and monthly averages in NJ light traps.

The broad host feeding habits of *Cx. nigripalpus* are reflected in their attraction to almost every trap type in NC. Since 2017 they have been collected in NJ light traps, BG Sentinels/Counters; CO<sub>2</sub>-baited light traps (CDC-style and rotator traps), and gravid traps (CDC, Frommer, and Reiter-Cummings styles). However, BG-Sentinels collected the highest numbers per night – almost 6x the average per trap night compared to CDC light traps, and 40x more per night than any other type of trap. For more information, see the University of Florida's [Featured Creatures: \*Culex nigripalpus\*](#).

# 2022 SUSTAINING MEMBERS



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