



NCMVCA  
The Official  
newsletter for  
the North  
Carolina  
Mosquito &  
Vector Control  
Association

## THE DRAIN GAME

### STORM DRAINS AND MOSQUITO CONTROL IN URBAN AREAS OF FORSYTH COUNTY

**N. Kyle Godbey**

**Forsyth County Department of Public Health-**



**Figure 1.** A storm drain on the Salem College campus. The grass provides a source of organic mater, increasing viability for larvae.

Here in Forsyth County, our vector borne disease of primary concern, as in much of the state, is West Nile Virus (WNV). Many of

our key vectors are container breeding species, such as *Culex pipiens complex*, *Culex restuans*, and *Aedes albopictus*. Controlling these vectors is never a small task in any setting, as there are many cryptic breeding habitats to contribute to the issue. Many of these less-than-obvious locations with standing water can be a challenge to access for both surveillance and treatment.

In our county, much of our focus during peak WNV season is on the Downtown and Salem areas of Winston-Salem, as they have a high population density and feature surveillance sights with histories of WNV positive pools. These environments are rife with these hard-to-find standing water habitats that are often ideal at insulating both larvae and adults from predation and environmental conditions that might negatively impact the population. There are many

varieties of form which these habitats take. Perhaps the most prototypical examples that come to mind for many are stormwater catch basins.

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# North Carolina Mosquito and Vector Control Association

## 2022 NCMVCA Annual Conference November 9-10

**Pitt County Cooperative Extension Center  
403 Government Circle  
Greenville, NC**

**Day 1 (November 9) will include a full day of vector-related presentations (lunch is provided) and the NCMVCA business meeting. Day 2 (November 10) will include a half day (morning) of hands on interactive activities (breakout sessions).**

Click [here](#) for the conference agenda.

Registration link [here!](#)

Check the [website](#) for updates and additional information.



## LEGISLATIVE COMMITTEE UPDATE

**Meredith Spence Beaulieu**

**NCMVCA Legislative Chair**

Fiscal Year 2022 Appropriations were finalized this summer, with a number of mosquito and vector control priorities funded at the requested levels. This includes the Centers for Disease Control and Prevention (CDC) receiving an increase of \$45 million over the FY21 enacted levels, including \$12 million specifically to fund the Centers of Excellence in Vector-Borne Diseases (COEs) and an additional \$4 million to support surveillance and real-time data reporting for tick-borne diseases.

Since the federal funding cycle never ends, we're now enmeshed in the FY23 Appropriations process. The Biden administration's requests included \$703 million for Emerging and Zoonotic Infectious Disease (NCEZID) activities at CDC overall, which would represent a \$10 million increase over the FY22 enacted levels, including \$58.6 million for vector-borne diseases broadly and \$16.5 million specifically for Lyme. This matches with the CDC's FY23 budget request. It is looking like the CDC may end up with even higher levels of funding than this, as the House Appropriations committee's approved FY23 spending bills include \$799.3 million overall for NCEZID and \$87.1 million for vector-borne diseases specifically, and the Senate Appropriations committee's approved FY23 spending bills include \$793.8 million for NCEZID and \$69.6 million for vector-borne diseases. We are now waiting on reconciliation to see what the enacted FY23 funding levels will be, and are operating under a continuing resolution in the meantime.

In addition to requesting funding for CDC, the American Mosquito Control Association (AMCA) led an ef-

fort to coordinate Appropriations requests from its members reflecting language that, among other things, directs funding to the development of improved public health pesticide spray drift models in FY23 Appropriations. I sent this AMCA-led Appropriations request to all of our North Carolina Representatives and Senators on behalf of NCMVCA. I'm pleased to report that the requested language provisions related to improvement of spray drift models, pesticide licensing, and aerial applications have been included in a number of the House Appropriations bills.

On the regulatory side, over the summer the US Fish and Wildlife Service (FWS) released their final Biological Opinion (BiOp) for malathion. This was the first final BiOp to result from the Environmental Protection Agency (EPA)'s consultation with FWS for a pesticide under registration review, reflecting a major milestone to EPA's efforts to improve the pesticide consultation process. AMCA worked with FMC (the registrant of malathion), EPA, and FWS to fine-tune labels and mosquito control applications to avoid impacts to species and habitats listed for protection, and the FWS determined that the new mitigation measures will provide adequate protection. There will be label changes coming soon for malathion (if they haven't already), but this is a positive step forward in the inclusion of mosquito control and public health perspectives in the registration consultation process. EPA also recently expanded and extended testing of genetically modified mosquitoes, including through an approved experimental use permit amendment to Oxitec for *Aedes aegypti* population reduction.

Finally, in the last legislative update that I wrote in the spring, I mentioned a petition filed with the EPA in November 2021 to revoke tolerances and cancel registrations for all remaining organophosphate pesticides, including malathion and naled. This is simply a petition at this stage, but there was an open comment period and AMCA submitted comments. Of 199 comments submitted in total, 90% were in support of continued tolerances and registrations. AMCA will continue monitoring this issue closely.

If you have any questions about these or other legislative and regulatory issues, please feel free to contact me at [meredithspence@gmail.com](mailto:meredithspence@gmail.com). I will be visiting Capitol Hill next week as part of the Entomological Society of America's Science Policy Fellowship and

would love to hear from you on arising matters that I can bring to our legislators on your behalf.

## LEADING CONCEPTS: LITERATURE PREVIEW

OPERATIONAL INSIGHTS INTO MOSQUITO CONTROL DISASTER RESPONSE IN COASTAL NORTH CAROLINA: EXPERIENCES WITH THE FEDERAL EMERGENCY MANAGEMENT AGENCY AFTER HURRICANE FLORENCE



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### ABSTRACT

Preparation for post-hurricane mosquito control is essential for an effective emergency response to protect public health and promote recovery efforts. Effec-

tive pre-hurricane planning includes laying the groundwork for a successful reimbursement application to the Federal Emergency Management Agency. The critical and overlapping need to sustain funding for mosquito control programs is highlighted here in the context of both normal and emergency responses. Community support is an integral component of an effective integrated pest management program and is established over time with appropriate communication and engagement. Experienced mosquito control operators who are familiar with treatment areas are an essential component of successful operations. Here, practical advice is provided to plan, prepare, and implement a successful ground- and aerial-based mosquito control response.

## 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 *as soon as possible* 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>

Continued from p. 1

## THE DRAIN GAME

N. Kyle Godbey

Well-designed stormwater systems may not contribute significantly to mosquito populations but, as with all infrastructure, parts of the system will be subject to wear and antiquated design that make them able to hold standing water that is accessible to these target species. For example, some drains have formed dips in the floor of them, while others have been damned with debris. While the factors likely contribute to whether a storm drain is competent as larval habitat are complex and not fully understood, some of those factors appear to be "...rainfall, salinity, type of structure, structure setting, and presence or absence of predators..." (Rey et al. 2006), as well as whether the structure is exclusively for stormwater, or is a combined sewer system (Marini, et al. 2020).

It has become evident over the years that an increased effort needs to be made to reduce larval populations in any habitat with breeding potential, including storm drains and similar systems, as a component to comprehensive control of vector species in our most high-risk areas. To this end, in 2020 we deployed our Downtown storm drain initiative to seek out and manage these systems.

Initially, we explored storm drain treatment with very little dedicated tools. In this early stage, storm drains were mapped out manually in the field on a printed GIS map and a clipboard and were limited to a very narrow area consisting of 2 city blocks. We treated with a multi-brood granular *Bacillus thuringiensis israelensis* product to any storm drains actively holding standing water, applying the product manually through the grate.

Early into 2020, we received a massively useful tool for the vector program in the form of Fieldseeker, a dedicated mosquito GIS based toolkit. Fieldseeker and systems like it are capable of consolidating and managing most aspects of vector control from surveillance to treatment to service requests. In some cases, other GIS layers, such as municipal storm drain maps can be imported. Even when added manually, however, these systems can track when treatment is

## GUESS THAT SKEETER!



I am a drab mosquito that is very common this time of year. In fact, I am often the most common species (other than *Ae. albopictus*) during the fall along NC's coast – between 30 and 50% of traps will find me there. In the rest of the state, I am found less than 10% of the time. By sight, I am difficult to tell apart from my sisters in the same genus – except for my dark proboscis.

My name won't help you to guess who I am... it means "pertains to salt", but my young grow best in freshwater. I prefer to bite birds because their blood will give me twice as many eggs as from mammals. However, when there are many of my kind on the wing, we form large swarms at twilight, then come inside houses and bite humans. Therefore, I have a bad reputation as both a nuisance mosquito and for "bridging" West Nile virus between birds and humans.

**Who am I?**

**Answer on p. 12**

*Photo Credit: Galveston County, TX Mosquito Control*

due on each individual drain as well as other statuses such as "dry".

Another boon to our storm drain initiative was a dedicated larvicide specifically made for the task. One issue with direct granular applications in storm

drains is that they are limited in effectiveness when not applied directly to existing standing water, as it is difficult to know when and if that drain will hold water

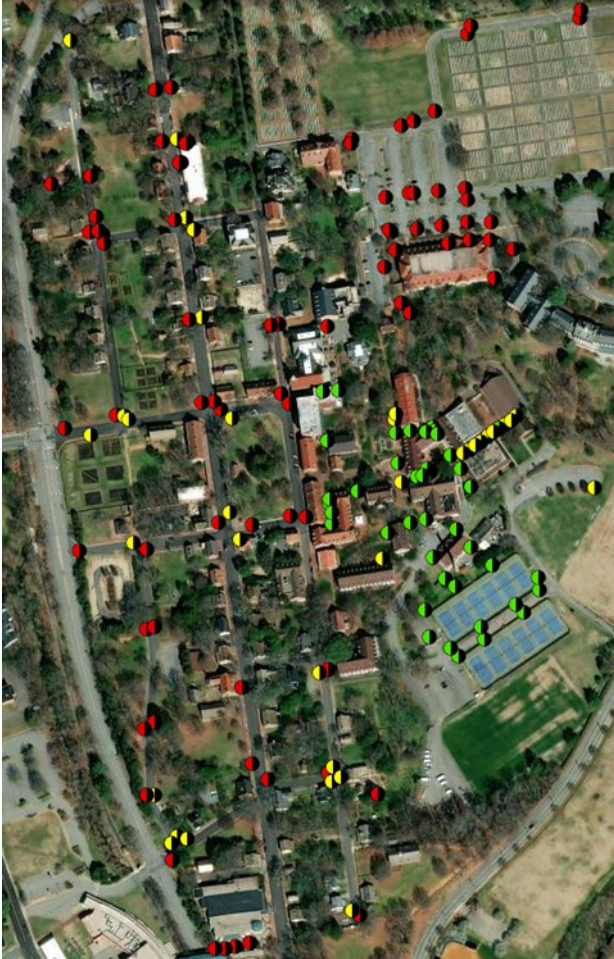


Figure 2. Satellite image of Old Salem showing storm drains indicated by colored dots that correspond to their treatment status.

and what level of efficacy will be lost in that exposed dry granule in that time. It is also difficult to properly apply at the ideal rate manually and requires direct interaction with the product. Perhaps the most ubiquitous solution would be briquets, however we quickly found them to be too inflexible (literally) given some drain grate shapes. While we do still employ other products, our primary solution has been to treat with water soluble pouches containing granules of *Bti* and *Bacillus sphaericus*. These pouches help protect the granules from exposure to the open air, allowing them to be effectively deployed to currently dry storm drains with less concern that most of the residual control may be lost before the product even touches water. This is a significant advantage, as it allows the

treatment of each drain on a regular schedule rather than working around the last rainfall.

The current process uses the Fieldseeker in-field app to track treatment of each storm drain in real time. With the water-soluble pouch, the treatment itself is as easy as dropping it through the grate into the bottom of the drain. If a storm drain appears to be holding a substantial amount of water, high amounts organic matter, and is accessible, larval surveillance may be conducted prior to treatment. The challenge comes from getting comprehensive coverage by identifying all storm drain devices in the area and determining whether there is any threat of holding water, revising periodically as is appropriate. Regardless of its capability to hold standing water, the new storm drain is added to the GIS workflow where it can then be assigned a status. Currently, we have *treated*, *needs treatment*, and *dry*, the latter of which is used to designate those incapable of holding water and removes them from the automated scheduling. The others will turn from *treated* to *needs treatment* at the end of whatever period of days has been set for the product used.

While there is some driving from cluster to cluster or block to block, parking challenges generally make walking the more conducive method of locomotion between drains. Some programs utilize bicycles to expedite storm drain missions in urban environments, however, the prospect of operating a bicycle through downtown would no doubt need to be assessed for risk to the operator. I also believe that one can treat a storm drain too quickly. We have found that it is important to stop at the drain and observe where you are dropping the pouch for maximum efficacy. These storm water systems can have ledges, pipes and other obstacles between where the water collects and the grate that can prevent the haphazardly thrown pouch from reaching the desired habitat.

There are 24,137 storm water drains just inside of the city of Winston-Salem, not mentioning the other seven smaller municipalities within the county and private drainage devices. Being that our vector team consists of two individuals that are responsible for the entire 413 m<sup>2</sup> of territory within the county, our capacity to address this task is severely limited. Currently we have determined to concentrate on a rela-

tively small selection of closely clustered storm drains that service the Downtown and Old Salem areas. The current number of individual storm water structures targeted is 783 with new ones added as found. This may seem like a low number of drains in which to target, however, the time required to treat that amount without personnel dedicated to the task prohibits us from getting anywhere near this goal.

Our current slice of labor given each week to the storm water program is bottle-necked by the need to fulfil more established duties such as complaint investigations, surveillance activities, and larger scale larvicide applications. This has left the role of storm drain treatment a small portion of each week. The number of storm drains a technician is able to service in these few hours is subject to several variables and subsequently may easily range from 30 to 120. However, the average amount has more than doubled since initiating the program in 2020 to this year's mean of 50 drains physically treated, with some additional number of drains that are determined to not require treatment and designated as *dry*. The amount of the year in which we are servicing storm drains has also nearly doubled. In 2020, the program ran from April to July whereas this year's program has been operating since March and will end within the next few weeks. Given the length of efficacy of product, and environmental factors that shape when treatment is appropriate, our current rates only allow for approximately 200 drains treated before the cycle begins anew. With complete coverage of the target area as the goal post, we are well under the mark with less than 31% coverage.

The disparity between the quota of comprehensive Downtown coverage and current progress highlights a need for a multifaceted strategy for improvement. We need to increase both efficiency and manhours, while considering the primary product's label allowances to lengthen the period between each treatment. We did not have our typical summer position filled this year due to a variety of factors, however, in future years we plan to leverage the peak season assistance, making storm drains not only a larger priority for myself, but also integrating them into the duties of the seasonal position. With help in place, we can rotate routes in a way as to allow for periodic inspection of water presence and the collection of larvae, while the other routes receive a faster treatment approach.

Treatment of each drain will be determined by the status established on the last thorough inspection, allowing the seasonal technician to quickly treat the drains with the "needs treatment" symbology and ignore all drains marked as "dry" in our GIS program.

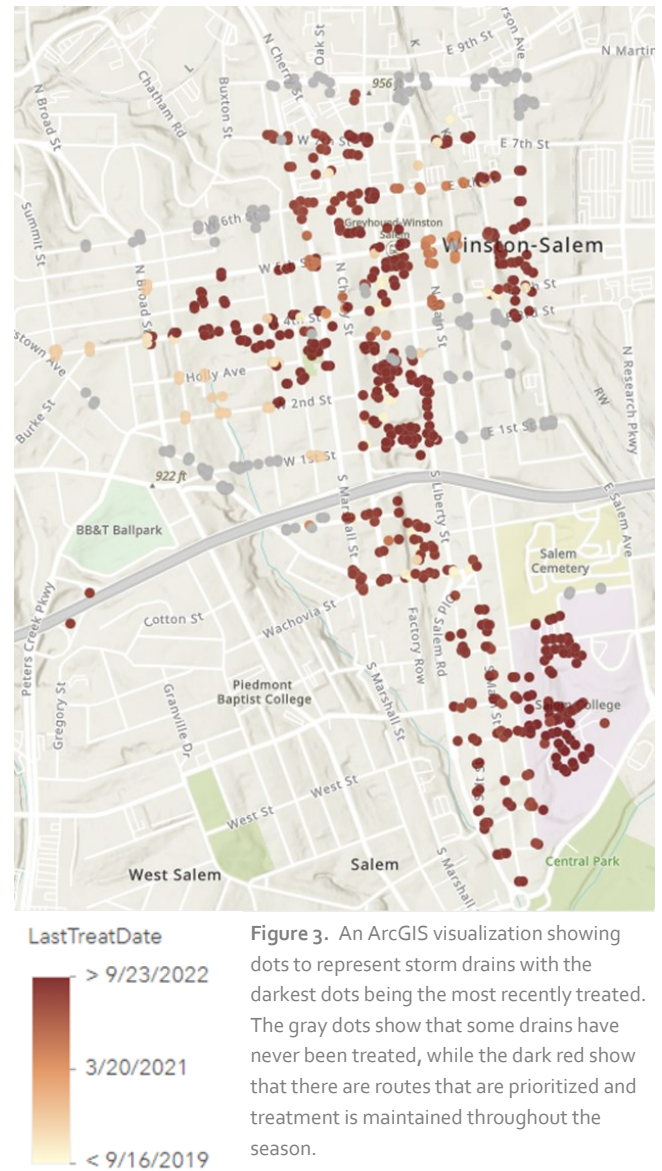


Figure 3. An ArcGIS visualization showing dots to represent storm drains with the darkest dots being the most recently treated. The gray dots show that some drains have never been treated, while the dark red show that there are routes that are prioritized and treatment is maintained throughout the season.

This shift would act as a solution to both the efficiency of process and time investment issues currently impeding adequate storm drain coverage.

Our primary product in storm drains, Vectomax WSP, has a standard life of one to four weeks under typical standing water conditions. However, the label specifies that in catch basins and storm drains, the product need only be applied "after 6-8 weeks under typical environmental conditions" (Valent Biosciences, 2015). We are exploring elongating our current 30-



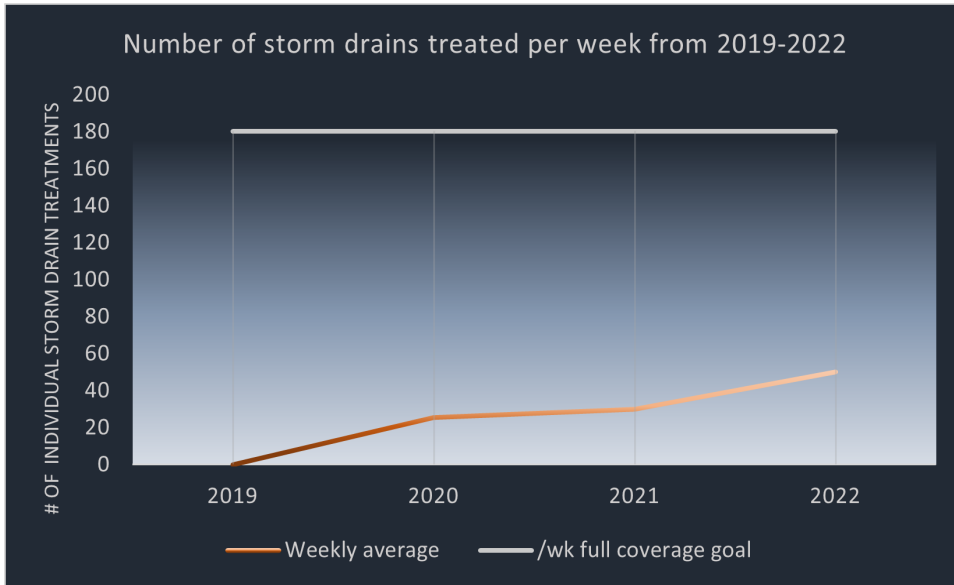


Figure 4. A graph serving as a visual indication of our need to further develop the storm drain initiative in order to increase its effectiveness.

day cycle in accordance with this to help provide breathing room in the form of another week or two of treatment routes before needing to return to previous priority locations.

Our storm drain treatment initiative here in Forsyth County is still quite young, and though we have learned much and have made advancements in our processes and targeted some of our weaknesses with plans for further improvement. I hope that our endeavors bring insight to others interested in beginning or improving stormwater system mosquito control efforts in their own districts.

## REFERENCES

- Marini AG, Lieberthal BA, Gardner AM. 2020. Production of *Culex pipiens* in stormwater and combined sewer catch basins. *J Am Mosq Control Assoc* 36 (4): 249–252. doi: <https://doi.org/10.2987/20-6934.1>.
- Rey JR, O'Meara GF, O'Connell SM, Cutwa-Francis MM. 2006. Factors affecting mosquito production from stormwater drains and catch basins in two Florida cities. *J Vector Ecol* 31(2): 334-343. doi: [https://doi.org/10.3376/1081-1710\(2006\)31\[334:FAMPFS\]2.0.CO;2](https://doi.org/10.3376/1081-1710(2006)31[334:FAMPFS]2.0.CO;2).
- Valent Biosciences. 2015. Vectomax WSP: specimen label. [accessed 2022 Oct 8]. <https://myadapco.com/wp-content/uploads/2018/09/VMXWSPI.pdf>.

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THE BITING TIMES

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## MEMBER SPOTLIGHT

### Jim Gardner

#### **Tell us a little about yourself!**

I am a 76 year old Navy veteran. I did my undergraduate studies at Francis Marion University in Florence, SC and graduate studies in Textile Chemistry at North Carolina State University. In 2008, after 35 years in the textile industry and not wanting to chase the industry overseas, I decided it was time to make the change because I didn't want to relocate from Eastern North Carolina. I have work closely with the Environmental Health Program at East Carolina University and have had the privilege of sponsoring three to five interns each year for which I was surprised and humbled to receive the Hamilton W. Stevens award for in 2018. Over the years I have had at least a dozen REHS's intern in our program. My favorite off time activities are going on cruise's to the Caribbean, fishing and traveling.

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

I took the Vector Control job with Pitt County Government originally for 5 years to get to full social security retirement. I credit Dr. Bruce Harrison and Parker Whitt for their training and kindling my interest in the field and after 14 years I still look forward to the start of every season. Pitt County is a CRE county and we

have helped several surrounding counties get surveillance programs started and are a resource for the municipalities in the county for trapping and identification of mosquitoes.

#### **Where do you see yourself in 5 years? What advice would you most like to impart on the next generation of mosquito and vector control professionals?**

Probably retired but coming in to look at mosquitoes for the county and assisting the county where I can. For the young professionals if this is your passion go for it. I really can't see myself stopping. There is nothing like the thrill of seeing something new under the scope and providing a service to the community.

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

I think my favorite tool is taking every opportunity to educate the public about mosquitoes and what they can do to help. Watching a child's eyes light up the first time you say, "no those are mosquitoes not tadpoles."

## GUESS THAT SKEETER

By Michael Doyle, NC DHHS

### My name is *Culex salinarius*!

*Culex salinarius* adults are drab like many other *Culex*, but scales on the proboscis are dark, allowing (relatively) easy differentiation between *Culex pipiens* complex, *Culex restuans*, and others.

The larvae often grow in huge numbers in freshwater pools in or near saltmarshes, which may have caused the misnomer of “pertaining to salt” in their name, but they can be found in ditches, ponds and occasionally containers – especially recently flooded sites

that contain dead vegetation. Their breathing tube is REALLY long (e.g., ~7x longer than wide) which helps to identify their larvae in the water. Adults are often found with *Aedes sollicitans*, and ULV treatments against *Ae. sollicitans* can be effective against *Cx. salinarius*.

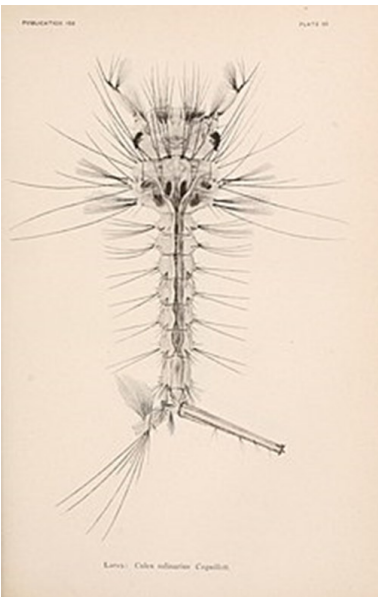


Fig 1. *Cx. salinarius* larva.

*Cx. salinarius* blurs the lines between artificially dichotomous “nuisance” and “disease vector” designations. It creates large swarms like many floodwater *Aedes*, but also functions well as a bridge vector between birds and humans. For example, wild-caught *Cx. salinarius* tested positive for WNV 6 times in NC since testing started in 2003 – approximately 14% of all positives. These positives adults were collected by Bertie, Currituck, Pasquotank, and Brunswick County vector control staff.

*Cx. salinarius* females prefer birds as hosts, will produce more than double the number of eggs using bird

blood vs. feeding on a mammal ([WRBU](#)). However, when *Cx. salinarius* adult populations are high they shift to feeding on mammals and other humans – commonly entering homes. In North Carolina *Cx. salinarius* adults are most common late in late September

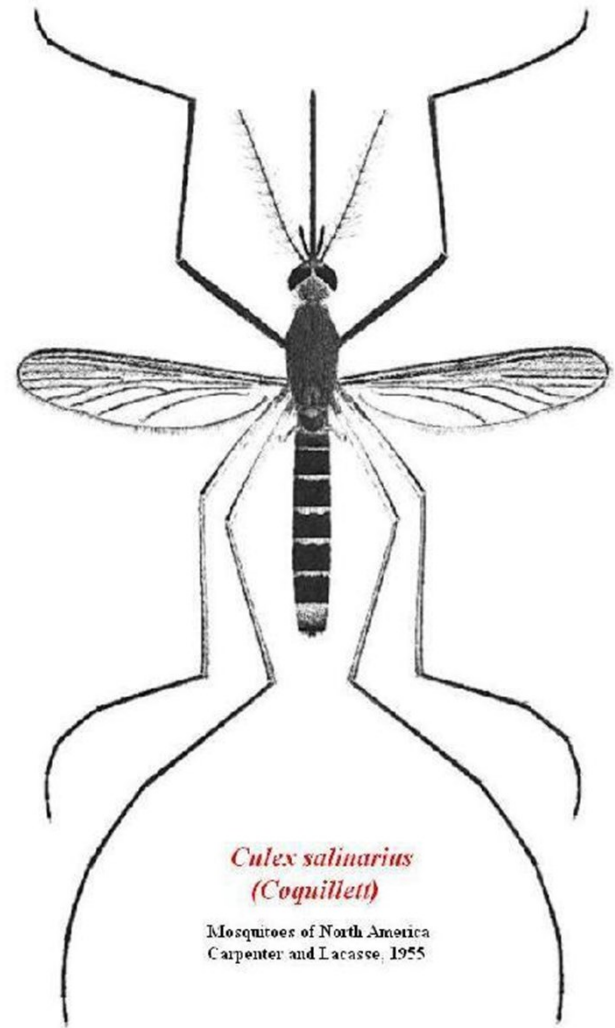


Fig 2. *Cx. salinarius* rendering from Carpenter and Lacasse

to mid-November but we can see population spikes almost anytime except in mid-July to mid-August ([Brunswick County Vector Control](#)). This species can be found as adults or larvae any week of the year in the southern states. In the north, adults can be found every month of the year, but larvae are rare to nonexistent after late fall. In short, they are similar in many ways to *Cx. pipiens/quinqüefasciatus*, but definitely not as cold-hardy.

In NC during the fall months (Oct., Nov, Dec) between 2017 and 2021, *Cx. salinarius* was detected more

commonly than any species except *Ae. albopictus* according to collection records submitted to MosquitoNet/NC-Surv. Of 1,102 collections statewide, 326 (30%) caught at least one *Cx. salinarius*. The vast majority of these collections (81%) were recorded by Marie Hemmen with Jeff Suggs and staff in coastal New Hanover County, although there were also reports in Brunswick, Albemarle RH, Craven, Forsyth, Nash, Pitt, and Wake counties. For example, Forsyth

County reported *Cx. salinarius* in 9% of their collections during these months, with an average of 10 females per trap. The remainder of the counties reported mostly single digit collections. Although New Hanover averaged 75 females per collection, they also hold the highest catch record. In a CO<sub>2</sub>-baited CDC light trap collection at Fort Fisher State Park, they identified 2,096 females *Cx. salinarius* on Nov. 14, 2018. This is not your typical summer mosquito!

## REFERENCES

Walter Reed Biosystematics Unit. 2022. *Culex salinarius* species page. Walter Reed Biosystematics Unit Website. <http://wrbu.si.edu/vectorspecies/mosquitoes/salinarius>.

Brunswick County Government. 2022. Mosquito species with monthly and yearly distribution. <https://www.brunswickcountync.gov/mosquito-control/species/>.

## THE BITING TIMES, OCTOBER 2022

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**Images:** N. Kyle Godbey, *Journal of Environmental Health*, Galveston County, TX Mosquito Control, Carpenter and Lacasse, Jim Gardner



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## MEMBER REVIEW:

### CHANGES TO MANUAL OF PROCEDURES

The Constitution and Bylaws Committee has proposed changes to the NCMCVA Manual of Procedures in order to bring the document in line with the most recent changes to the NCMVCA Constitution. In the proposed changes, the roles of Treasurer and Secre-

tary are separated and small changes have been made in favor of more inclusive language.

The changes have been reviewed by the Executive Committee and are now in the Member Review period to be voted on in the November business meeting during our Annual Conference.

The following pages are a copy of the revised document for your convenience. All changes are indicated in red.



# NORTH CAROLINA MOSQUITO AND VECTOR CONTROL ASSOCIATION MANUAL OF PROCEDURES

**ADOPTED 1996**

**Revised Aug. 22, 2006**

**Revised July 10, 2007**

**Revised March 11, 2008**

**Revised November 12, 2014**

**Revised October 4, 2022**

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***PURPOSE OF MANUAL***

The “Manual of Procedures” is designed to guide the officers and committees of the North Carolina Mosquito and Vector Control Association (NCMVCA, herein referred to as Association) in meeting the objectives of the Association and the intent of the Constitution and Bylaws of the Association. The duties and responsibilities are stated herein for the officers and committees. The President shall direct **their** Executive Committee and committee chairs to the Association’s website and request each person review the Manual of Procedures. The records of the Association shall be maintained by the Secretary **and the** Treasurer of the Association. The records may be reviewed by any officer upon request. **The following types of information shall be maintained by the Secretary of the Association as records: minutes of the educational and business meetings, minutes of the Executive Committee meetings, membership lists, lists of Association officers and award recipients, and other pertinent written material. The following types of information shall be maintained by the Treasurer of the Association as records: records of receipts and disbursements, bank account and other related financial documents necessary to comply with state and federal tax laws and accepted accounting practices.**

**MISSION STATEMENT OF THE NORTH CAROLINA  
MOSQUITO AND VECTOR CONTROL ASSOCIATION**

It shall be the aim of the North Carolina Mosquito and Vector Control Association to attain, among other things, the following objectives:

1. To promote and foster the professional status and skills of its members;
2. To conduct meetings for the education, discussion, and study of problems in the field of vector control;
3. To act as a clearing house among its members for the receipt, exchange, and dissemination of information on vector control policies and procedures;
4. To foster and promote integrated pest management;
5. To cooperate with public health agencies and all other organizations and groups that are interested in improving public health through the control of vectors;
6. To develop a cooperative relationship with local, state, and federal agencies, professional organizations, and accredited colleges and universities in North Carolina;
7. To provide an opportunity for and to promote congenial and harmonious social and professional relationships within the membership of the Association.

## GENERAL

The Association in considering its objectives should not hesitate to ask the Program Committee to plan and develop training opportunities for the membership that meet the needs of this Association. To this end, business may be discussed as part of any educational meeting but the Program Committee may also plan meetings solely for the purpose of education.

### **PRESIDENT:**

The President shall be responsible for providing leadership to the Association. They shall direct the Association's activities to include the regular educational and/or business meetings. The President shall be assisted by the Executive Committee of the Association, the standing committees, and the membership. The President shall serve as the official spokesperson for the Association.

### **OTHER RESPONSIBILITIES OF THE PRESIDENT**

1. Upon election the President shall call a meeting (within eight weeks) of the new Executive Committee for the purpose of getting acquainted and developing a plan of action for the year. Any member in good standing may be invited to attend this meeting to provide information on projects already in progress.
2. The President shall direct the Secretary to provide the Newsletter Editor of the Association a listing of the newly elected officers and a membership list of this Association to include names and mailing addresses.
3. The President is the official representative of this Association. In the event the President cannot represent this Association at a meeting, hearing, etc., the Vice President shall represent the President in these matters.
4. The President of this Association shall with the assistance of the Executive Committee review the financial status of the Association and present at a regular annual business meeting appropriate information pertaining to the Association's financial solvency.
5. The President shall preside over the business component of any regular and/or called meeting.
6. The President shall notify in writing, within six weeks of taking office, the appointed Chairperson of each standing committee.
7. The President shall appoint as specified herein the following standing committee chairpersons: Awards and Nominating, Constitution and Bylaws, and Legislative.
8. The President shall be an ex-officio member of all committees of this Association and is encouraged to attend such meetings as may be called by the chairperson of the committees.
9. The President shall also be ready to appoint when needed special and/or advisory type committees (ad hoc).

10. The President shall make sure that those appointed to committees are members in good standing, i.e. are current with their dues and any other promises.
11. The President shall also appoint the members at large of the Executive Committee as specified in the Constitution.
12. Annually, the President shall assure that the **Treasurer's** financial records have been audited before the last meeting of the Association during **their** term of office.
13. The President shall assure that the records of the Association are transferred in an orderly fashion to the incoming officers.
14. The President shall assure that each Committee and its Chairperson are aware of their responsibilities and are ready to handle the assignments of the Committee.
15. The President shall work closely with the Vice President to assure that an adequate number of education programs are presented through the Program Committee.
16. The President shall call at least quarterly, Executive Committee meetings to determine the progress of committees and address any other business that might need to come before the Association. To this end, the President shall invite the Chairpersons of Committees to appropriate Executive Committee meetings for progress reports. The President shall also ask, at least four weeks prior to the educational/business meeting for a report from each Committee to be given at the last annual educational/business meeting.
17. The President shall appoint a Sergeant at Arms as needed, to maintain order at all business meetings and a Parliamentarian to assure decent and orderly procedures are followed during the business meetings.
18. The President serves as Chairperson of the Membership and Communications Committee. The President also serves as a member of the Finance Committee.

### **VICE PRESIDENT:**

The office of Vice President serves the President and membership to perform special functions of the Association. The Vice President shall preside over the meetings of the Association and other business in the absence of the President. The Vice President is a member of the Executive Committee of the Association.

### **OTHER RESPONSIBILITIES OF THE VICE PRESIDENT**

1. If for some reason the office of the President of the Association is vacated, then the Vice President shall serve the remainder of the term as President.

2. The Vice President shall coordinate and plan under the direction and leadership of the President.
3. The Vice President serves as Chairperson of the Program Committee. The Vice President shall call at the appropriate time(s), a sufficient number of committee meetings to develop the education component of the annual meeting and/or called meetings. The first meeting of the Program Committee shall be within six weeks of the Vice President taking office.
4. The Vice President or their designated Program Committee member, prior to implementation of the Program Committee's recommendations for educational programs shall consult with and report to the President and Executive Committee during an Executive Committee meeting the proposed programs and possible speakers. The Vice President then shall inform the Program Committee of the approved recommendation of the Executive Committee regarding the format and content of the proposed educational/business meetings.
5. The Vice President shall notify each speaker and/or participant of the education/business meetings of meeting dates, location, and time slot, etc.
6. The Vice President shall assure that each member of the Association is informed of educational/business meeting dates and locations, etc.
7. The Vice President shall work with the Local Arrangements Committee to assure adequate meeting space and other accommodations, etc.
8. The Vice President shall notify the Awards and Nominating Committee of the deaths of any members.
9. The Vice President shall upon installation as President, present the plaque to the Past President.

### **SECRETARY:**

The Secretary is the officer responsible for recording the business and maintaining the records of the Association. The Secretary is a member of the Executive Committee and an ex-officio member of the Constitution and Bylaws Committee.

### **OTHER RESPONSIBILITIES OF THE SECRETARY**

1. The Secretary shall collect, maintain, and keep the records of the Association.
2. The Secretary shall be responsible for maintaining an accurate record of instructional hours for members attending an Association sponsored educational meeting. When appropriate, they shall submit an agenda for approval of instructional hours to the North Carolina Department of Agriculture and Consumer Services Structural Pest Control and Pesticides Division. Subsequent to the educational opportunity, the Secretary/Treasurer shall provide the Pesticides Division a copy of the sign-up sheet for those requesting credits.

3. The Secretary shall meet with the Vice President for the exchange of records within six weeks of taking office. It is suggested this be completed at or before the first Executive Committee meeting.
4. The Secretary shall serve as an ex-officio member of the Constitution and Bylaws Committee.
5. The Secretary shall serve as secretary of the Association's Executive Committee and shall assist the President in developing an annual report to the Association from the minutes of the Executive Committee and other business meetings.
6. The Secretary shall maintain up-to-date lists of award recipients for use by the President, Executive Committee, and membership.

### **TREASURER:**

The Treasurer is the officer responsible for maintaining the finances and financial records of the Association. The Treasurer is a member of the Executive Committee and Chairperson of the Finance Committee.

### **OTHER RESPONSIBILITIES OF THE TREASURER**

1. The Treasurer shall be the custodian of the funds and other property of the Association and shall safely keep or dispose of these funds or other property as ordered by the President acting within the limitations in the Constitution and Bylaws and future amendments thereto and/or as ordered by a majority vote of those members attending a scheduled and publicized regular or called meeting of the Association.
2. The Treasurer shall meet with the Vice President for the exchange of records within six weeks of taking office. It is suggested this be completed at or before the first Executive Committee meeting.
3. The Treasurer shall chair the Finance Committee and submit the financial records of the Association annually to an auditor(s) appointed by the Committee for their examination before the annual business meeting.
4. The Treasurer shall relinquish and transfer to their successor in office, being duly elected and installed, all funds and property of the Association which shall have been in their hands as keeper and custodian.
5. The Treasurer shall upon receiving funds in the name of the Association, deposit such funds in a bank in the name of the "North Carolina Mosquito and Vector Control Association". The Secretary/Treasurer accumulates funds and deposits such funds at least monthly in the bank under the signature of the current Treasurer.
6. The Treasurer shall receive all applications for membership and process them accordingly. The Treasurer deposits the membership dues in the appropriate account and provides receipts to the members.

7. The Treasurer shall receive and give receipts for the Association's income and pay out funds on approval of the Executive Committee.
8. The Treasurer along with the Finance Committee shall provide if requested, an operating budget to the Executive Committee of the Association for each year.
9. The Treasurer shall maintain an up to date paid membership list.
10. The Treasurer shall handle the mailings, payments, and receipts pertaining to the annual meeting, etc. They shall receive and process all attendee, speaker, and exhibitor registration forms maintaining an electronic database of all information (e.g. name, address, email, payments, etc.) on the forms. Within 60 days following the annual meeting, they shall provide a copy of this database to the President or his designee.

**IMMEDIATE PAST-PRESIDENT:**

The office of immediate Past-President serves this Association as:

1. A member of this Association's Executive Committee; and
2. A valuable resource to the incoming officers of the Association.

**COMMITTEES**

**EXECUTIVE COMMITTEE:** The Executive Committee is composed of the President, Vice President, Secretary, Treasurer, immediate Past-President, Chairpersons of all standing committees, and two members at large. The Executive Committee acting on behalf of this Association shall meet at least quarterly to conduct the administrative affairs of this Association.

1. The President and Secretary also serve as Chairperson and Secretary respectively of the Executive Committee.
2. Members of the Executive Committee shall be members in good standing in this Association.
3. The first meeting of the Executive Committee shall be called by the President within eight weeks of taking office.
4. The Executive Committee annually shall review the cost of dues for this Association and bring a recommendation to the membership for a vote. If a dues change is recommended, a simple majority vote by roll call of those members attending a regularly called business meeting with at least 30 days' notice to the membership shall be required to increase the financial obligation of the membership with respect to annual dues.



5. Email voting by the Executive Committee is an accepted voting practice and may be needed during the year. All Association business handled by email will be included in Executive Committee minutes at the next regularly scheduled meeting. Email voting by other committees is an accepted practice as well and should adhere to the same guidelines stated above.

**AWARDS AND NOMINATING COMMITTEE:** The Awards and Nominating Committee shall be composed of a Chairperson, a previous recipient of the Hamilton W. Stevens Award, and up to two other members in good standing. This Committee shall be responsible for recognizing through awards, special achievements of the members. Only members in good standing can nominate a member for an award. This Committee shall be responsible for nominating from the membership individuals for the offices of President, Vice President, **Secretary, and Treasurer**. This Committee shall review incoming resolutions for consideration by the membership and prepare and present resolutions as directed by the President, Executive Committee, and/or the membership.

1. The Awards and Nominating Committee shall determine that a nominee for an award is actively engaged in mosquito and vector control or in education, research, advocacy, or support of vector borne disease prevention.
2. No award shall be given to a nominee unless **they are** a member in good standing of the North Carolina Mosquito and Vector Control Association. Exceptions to this policy are at the discretion of the Executive Committee (e.g. awarding posthumous recognitions, etc.).
3. Possible annual awards of this Association shall be:
  - a. The Past Presidents Award;
  - b. The Hamilton W. Stevens Award;
  - c. The William F. Strickhouser Award (formally Golden Dipper Award);
  - d. Lifetime Membership or Service Awards; and
  - e. Additional awards as directed by the President.
4. The Awards and Nominating Committee shall ask for award nominations from the membership. The Chairperson shall ask that award nominations be received at least one month before the start of the annual meeting.
5. The Awards and Nominating Committee, upon determining the recipients of the awards, shall prepare written citations fully describing the recipients' contributions to the profession. The citation shall be suitably framed for presentation along with the plaque or other recognition.
6. The Awards and Nominating Committee shall determine the cost of the awards and submit a request for the appropriate funds to the **Treasurer** for payment.
7. The Awards and Nominating Committee is reminded that they do not have to present an award every year. The presentation of our professional awards shall be for outstanding service to the profession. If

the nomination(s) are inadequately prepared in the opinion of the Committee or if the nomination(s) lack the substance and tradition of past award recipients, it is imperative that the Committee wait.

8. The Awards and Nominating Committee also shall be responsible for recognizing the immediate Past-President's efforts by presentation of a plaque at the end of **their** Presidential term.
9. Criteria for the William F. Strickhouser, Hamilton W. Stevens, and Lifetime Membership Awards:

#### HAMILTON W. STEVENS AWARD

The Hamilton W. Stevens Award can be given annually to a person who, in the opinion of the Awards and Nominating Committee, has made a significant contribution to mosquito or vector control in North Carolina. This person must be a member in good standing of the Association and must be nominated by a member in good standing of the Association. Typically, this award is for an individual whose commitment goes beyond local endeavors. The recipient of this award generally has 360-degree mosquito and vector control vision and has demonstrated a willingness to provide statewide leadership and passion for the work. The passion for conscientious public health efforts and **their** love of **their** fellow man drive this recipient to practice mosquito and vector control.

#### WILLIAM F. STRICKHOUSER AWARD

Formally the Golden Dipper Award, the William F. Strickhouser Award may be awarded to up to three outstanding vector control operators or technicians (front line field workers). Ideally, the awards will be spread across the state. Nominees should show dedication and diligence "above and beyond the call of duty", and have done something specific to demonstrate outstanding service to **their** vector control program.

#### LIFETIME MEMBERSHIP AWARD

The receipt of a Lifetime Membership Award bestows upon the recipient the following gratuities from the Association: no annual membership dues and no registration fees at the annual educational meetings. Nominations for Lifetime Membership in the Association shall be reviewed by the Awards and Nominating Committee with subsequent recommendations made back to the Executive Committee.

1. The Awards and Nominating Committee reviews incoming resolutions for consideration by the membership and prepare and present resolutions as directed by the President, Executive Committee, and/or the membership.
2. The Awards and Nominating Committee shall prepare resolutions for the Association upon the retirement, death, successes, etc. of one of our members.
3. The Awards and Nominating Committee shall report its activities during the last business meeting of the year.
4. The Awards and Nominating Committee shall be responsible for nominating from the membership individuals for the offices of President, Vice President, Secretary, and Treasurer.

5. The nominations shall be presented at the last business meeting of the year for a vote from the membership.
6. The Awards and Nominating Committee shall insure prior to nomination that the nominees for officers of this Association shall be:
  - a. members in good standing in this Association;
  - b. recognized as having a history of service within this Association (e.g. served on one of the standing committees of this Association); and
  - c. able to devote sufficient time to carry out the duties of the office.

**CONSTITUTION AND BYLAWS COMMITTEE:** The Constitution and Bylaws Committee shall be composed of a Chairperson and up to two other members in good standing. The **Secretary** shall be an Ex-officio member of this Committee. The purpose of this Committee is to present in writing, recommended changes in the Constitution and Bylaws.

1. This Committee shall report its activities during the last business meeting of the year.
2. This Committee shall also review and recommend changes to the Manual of Procedures.
3. This Committee shall present any recommendations for changes to the Executive Committee for approval, prior to presenting such recommendations for a vote by the general membership at the last business meeting of the year.

**FINANCE COMMITTEE:** The Finance Committee shall be chaired by the **Treasurer** of this Association. This Committee shall be composed of the President and up to two other members in good standing to assist the **Treasurer** in developing a recommended operating budget, if requested by the Executive Committee.

1. The Finance Committee Chairperson shall request from committees, etc. their annualized costs.
2. The Finance Committee shall develop an operating budget for this Association, if requested.
3. All matters of finance shall be referred to the Finance Committee for consideration. Such matters after due consideration by this Committee shall be subsequently reported to the Executive Committee or at a regular called business meeting whichever occurs first after their election/appointment.
5. An auditor(s) appointed by the Finance Committee is/are to review the accounts and books of the Association held by the Treasurer and to report its findings at the last Executive Committee meeting prior to the annual business meeting. The auditor(s) serves at the pleasure of the membership and the Executive Committee and may at their pleasure be asked to review the accounts and books of the Association.
6. The Committee shall execute a full written report of the audit and make available to the membership, both at the business session of the next annual meeting and publication in the next Newsletter Edition.

**LEGISLATIVE COMMITTEE:** The Legislative Committee shall be composed of a Chairperson appointed by the President and up to two other members in good standing. Members of the Legislative Committee must be able on short notice to take appropriate actions to express the viewpoint of this Association on matters of a regulatory, legislative, or public health concern. This committee must be prepared to act on short notice, to perform scientific legislative research, and to communicate in a variety of settings with diverse audiences. The Legislative Committee shall be responsible for:

1. Identifying legislative, budgetary, or regulatory issues of a local, state, or national nature, which may or will affect mosquito or vector control in NC;
2. Notify the President of such issues or events and develop courses of action to respond on behalf of the Association;
3. Implement action steps determined may include email or printed distributions to Association members, government agencies, industry, other organizations or associations, the media, or elected officials. Other outcomes may include the Association taking formal written positions by the President, postings on the website or in social media, etc.;
4. Attend meetings with various issue stakeholders to include elected or government officials, community groups, licensing boards, other professional associations, academia, industry, and others;
5. Acting on behalf of this Association as spokesperson as directed by the President or membership.

**MEMBERSHIP AND COMMUNICATIONS COMMITTEE:** The Membership and Communications Committee shall be composed of the President as Chairperson, the Newsletter Editor, the Webmaster, Vice President, and the industry liaison.

1. The Membership and Communications Committee shall review applications for membership, if necessary.
2. The Membership and Communications Committee shall maintain a proper application suitable enough to explain the rights and privileges of membership. To this end, this Committee shall use appropriate methods to maintain appropriate representation of counties in this Association and to obtain new members.
3. The Membership and Communications Committee shall develop, review, and distribute information and literature which advertises the merits of the Association and to assure distribution of the same information to new members.
4. This Committee shall produce, but not be limited to, two newsletters; a pre-conference newsletter published in months of July-September, and post conference newsletter published in months of December-February.

5. The Committee shall maintain an active web presence for and about the Association, its mission, objectives, and activities.
6. The Committee shall design and update the website with the purpose of disseminating information pertinent to the membership and the public at large where appropriate.

**PROGRAM COMMITTEE:** The Program Committee shall be composed of the Vice President as Chairperson and up to three other members in good standing. The Student Competition Chair appointed by the Vice President also serves on this Committee.

1. This Committee shall have the responsibility and authority to plan an educational/business meeting(s) for the benefit of the membership and Association.
2. This Committee shall submit to the Finance Committee, if requested, an itemized estimated cost of conducting the annual meetings. To meet this need, the Program Committee shall utilize a Local Arrangements Committee if one is appointed for an annual meeting.
3. This Committee shall be responsible for promoting its meetings under the leadership of the Vice President.
4. The Program Committee shall be responsible for announcing upcoming meetings upon approval of the Executive Committee.

**PARLIAMENTARIAN:** A Parliamentarian shall be appointed by the President. This person shall have sufficient knowledge of the current "Robert's Rules of Order Revised for Deliberate Assemblies". In the absence of the rules proscribed in the Constitution and procedures in the Manual of Procedures for this Association, "Robert's Rules of Order for Deliberate Assemblies" shall be utilized to conduct regular and special meetings.

**DISCIPLINARY ACTION:** Reserved

**DISSOLUTION:** The Association may be dissolved at any time by a written consent of not less than two thirds (2/3) of the members in good standing. In the event of dissolution of the Association, whether voluntary or involuntary or by operation of law, none of the property of the Association, nor the proceeds thereof, nor any assets of the Association shall be distributed to any members of the Association, but after all debts have been settled, its properties shall be donated to a charitable organization selected by the Executive Committee.