

## Upcoming Events

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## Conference Notes

Please register by October 29th to get a discounted registration and to lock in your room. We will still take registrations after that date, but at an increased cost. To make it easier to fill out a registration form, you can go to our website, [www.ncmvca.org/conference.html](http://www.ncmvca.org/conference.html) to print out forms and the agenda.

## MAMCA 2015 Annual Educational Conference by Dennis Salmen

The Mid-Atlantic Mosquito Control Association's (MAMCA) 40th annual conference will be held January 13-15, 2015 at the Hilton Savannah DeSoto in Savannah, GA. Hotel and registration information about the conference can be found on the MAMCA website at <http://mamca.org/conference.htm>. The 2015 conference program should be available online in November 2014 and if you'd like to see past years for a representative sample of educational content, they are available for reviewing on the same webpage.

As in past years, the MAMCA conference offers opportunities for N.C. professionals to earn continuing education credits, be it for State (N.C.) pesticide applicator/operator certification or Registered Environmental Health Specialist (REHS) in N.C.



## **How Mosquitoes Interact with Hot Temperatures, Humidity Levels, and Drought: What mosquito control personnel need to know**

**By Dr. Bruce A. Harrison**

In 2011 this article was featured in the “Biting Times” the N. C. Mosquito and Vector Control Association (NCMVCA) newsletter, but it focused on NC. Recently, our Mid-Atlantic Regional Director for the AMCA, Dennis Salmen, suggested that it might need to be submitted again. This time I have added additional information and modified the article so that it is not specific to NC. With El Nino’s and La Nina’s we never know what our weather will be like during late spring, summer, and early fall mosquito seasons. If this year we experience droughts and hot temperatures again like in past El Nino years, the article will be appropriate. If we have a wet year and cool temperatures like last year just be patient and wait for the next period of drought.

It is almost a “given” that mosquitoes prefer warm weather and that rainfall usually causes more mosquitoes. However, in the “boots on the ground” world of mosquito control things are not that simple because all of the weather factors interact differently. Also, because mosquitoes function as species and not varieties of one organism they interact independently with the weather variables. Thus, what happened last time may not happen the next time. However, there are enough generalities to provide some known interactions and species examples that occur among mosquitoes and high temperatures, humidity levels, and finally as a separate issue, drought. Everyone should understand that I will only be touching the surface with some of the bullets provided below. Nearly all of the known interactions listed below impact you and your mosquito control program, and thus you can use this information to help target where your next problems will come from and how to deal with them.

Adult mosquitoes live longer in temperatures (°F) between 70 to the low 90’s. If the temperatures become too high evaporation increases the loss of body fluids and shortens their life span.

Mosquito also live longer in humidity levels of 70 to 90 percent. That way they are less affected by evaporation. Higher than that and their life is impaired when combined with high temperatures. Thus, the hot temperatures with “muggy” humidity period that we experience during the summer and early fall usually prolongs the life spans of mosquitoes, because they find resting sites that are optimum for their longevity. Prolonging the life span of mosquitoes means more mosquito eggs in habitats that the females find that are suitable for the development of their immature stages when heavy rains come in late summer and early fall. Prolonging the life span also enhances the ability of females of vector species to develop virus infections more quickly and become infectious with virus in their salivary glands. That way they serve as more efficient vectors of those viruses to humans and domestic animals.

As mentioned above, adult mosquitoes do not normally remain active in direct sunlight and temperatures over 93 °F. because of water loss. Thus, most day-biting mosquitoes are more active (seeking a blood source) early in the morning or late afternoon just before dark and into the first hour of darkness. This is reflected in the known bimodal activity curves of day biting (= diurnal) females of *Aedes aegypti*, *Ae. albopictus*, *Ochlerotatus japonicus*, and *Oc. triseriatus*. Such bimodal curves reflect the killing heat and lower humidity of midday. Another advantage for the mosquitoes in having these bimodal curves is the potential blood hosts they are searching for are also more active outdoors during the cooler and more humid early morning and late afternoon/early evening temperatures.

Night-biting (= nocturnal) mosquitoes hunker down in cool forests or vegetation under heavy shade during the hot and humid days. During the day they can be found resting in hollow logs, hollow trees, along creek banks, under bridges, in burrows, and other places that are damp to avoid the searing sun and low day time humidity levels. These species also take advantage of higher humidity levels in the evenings and before dawn to search for their blood hosts. It is likely that one reason many night biting species can fly longer distances in search of blood hosts is they utilize the higher night time humidity levels and lose less body fluids. In Asia one of the current successful malaria vector control methods is to apply a pesticide barrier spray on the underside of low vegetation that is between villages and nearby forests and fruit orchards. During the late afternoon/dusk period the *Anopheles* malaria vectors disperse toward the village from inside the forests or fruit orchards and land and rest on the underside of the vegetation that was sprayed near the homes. After resting for another 20 or so minutes (darkness comes fast in the tropics) they would normally fly across the bare areas to the homes in search of a blood meal, but many are killed by the pesticides. Such barriers can successfully reduce population levels of vector mosquitoes and at the same time dramatically reduce malaria transmission to humans. In the USA, species in the *An. quadrimaculatus* complex and members of the *An. crucians* complex have similar behavior patterns to those described above in Asia and can be effectively controlled by barrier sprays.

High air temperatures also increase the temperatures of water in containers, ground pools and permanent water larval habitats and speed up the developmental times of immatures (larvae and pupae). Thus, a species that occurs from spring to late fall will develop and become adults more rapidly during the hot months. The average difference in time from egg to adult may be shortened as much as 3-5 days during the hot season. This increases mosquito population levels more rapidly. Species like *Ae. albopictus* that normally take about 11-12 days from egg to adult in May, may only take 7-8 days during a hot mid-summer period. Species like *Psorophora columbiae* that are typically found in open sunlight in shallow temporary grassy pools or even muddy pools on gravel roads, can develop from egg to adult in about 4-6 days during the hottest period of summer. However, in such scenarios high temperatures can also have a negative effect on mosquito populations. Hot temperatures increase evaporation of temporary pool habitats and although the larval development rates speed up the pools often dry out before the adults can emerge. So if you are in the middle of an exceptionally hot period and you receive a 1-2 inch rain don't sweat the small stuff because small shallow pools that were created by the rain will generally dry up before the adults emerge. You need to focus on the deeper pools that you know last longer because more eggs will hatch from the rainfall and increase mosquito numbers in those pools.

Hot temperatures usually do not have a major impact on species in tree holes that receive water through plant systemic water circulation. Water temperatures in such tree holes are usually maintained at cooler temperatures throughout the year and the larvae, e.g., *Oc. triseriatus*, *Oc. japonicus*, and *Orthopodomyia signifera*, will develop at approximately the same rate, except during the coldest months of the year. However, those same species will develop faster in the summer if the immature stages develop in warmer water in artificial containers like tires, black gutter extensions, buckets, trash cans, etc., that are exposed to sunlight.

The following interactions address situations with high temperatures, low humidity, and little or no rain (= drought). During the hottest months when drought conditions may develop the following mosquito species scenarios may apply to your area.

During severe droughts mosquito species that utilize temporary ground water pools will usually become uncommon (except possibly *Aedes vexans*). Many *Ochlerotatus* and *Psorophora* species fall into this category. At the same time the permanent ground water *Anopheles* and *Culex* species will become dominant in light traps in more rural areas, while species like *Culiseta melanura* in more shallow semi-permanent water habitats may decline dramatically, and thus reduce the enzootic activity of the eastern equine encephalitis (EEE) virus cycle. Peridomestic species that utilize containers around residences like, *Ae. albopictus*, *Cx. pipiens* complex, *Oc. japonicus*, and *Oc. triseriatus*, may remain abundant during droughts. Why? Because humans inadvertently introduce water into such containers when watering their yards, watering flower pots, bird baths, etc., and thus these species may not experience a drought. It should be noted that most of the viruses causing disease in humans in the Mid-Atlantic Region will be transmitted by the more abundant container species mentioned above and not the temporary ground pool *Aedes*, *Ochlerotatus* and *Psorophora* species. So, even in drought conditions the dangerous vector species are out there and need to be controlled.

Hot temperatures and little rain also has a very real impact on the *Cx. pipiens* complex, the primary enzootic vectors of West Nile (WN) virus in many areas of the continental U.S., because the water in stagnant pools, containers, and ditches where these species occur in the larval stage becomes warmer and more concentrated and organic pollution levels increase. This actually attracts the adult females to lay eggs in those sites because they have high levels of phyto- and zooplankton and bacteria which are a primary food sources for the larvae. Thus, during droughts and hot weather members of the *Cx. pipiens* complex become more abundant and an increased threat for spreading West Nile virus in the bird populations and to humans. This in turn increases the risk of a bridge vectors like *Cx. salinarius* or *Cx. erraticus* (that utilize more permanent water) biting an infected bird, becoming infected and infective, and then transmitting this virus to humans. If large numbers of mosquito pools begin testing positive for WN or EEE viruses in coastal Georgia, this means the enzootic cycles of these viruses are very active and they may spread north into South Carolina, North Carolina, and (?) southeastern Virginia with continued hot dry weather. Remember that late August into October is the primary time for human WN encephalitis cases. In this regard, *Cx. pipiens* populations are an indicator species and can be impacted by larval control, but the more dangerous species that transmit to humans are bridge vectors like *Cx. salinarius*, *Cx. erraticus*, *Ae. vexans*, *Ae. albopictus*, and several other species that are more difficult to control.

*Aedes vexans* is a temporary water mosquito, yet drought seems to have an unexpected positive and more dangerous public health effect on this species. Apparently, *Ae. vexans* is able to rest (=aestivate) for long periods of time during high temperature/drought situations due to a buildup of a fatty substance in the abdomen. During the drought of 2002 in North Carolina, surveillance for West Nile virus in mosquitoes in Charlotte revealed that *Ae. vexans* was the most abundant species in light traps, followed by *Cx. pipiens* complex, and *Ae. albopictus*. During the same year High Rock Lake in the Piedmont of North Carolina shrunk down to the lowest level since the 1920s. This lake of 55,000 surface acres lost 33,000 of those acres and huge areas were exposed and grew up in sedge grasses 3-5 ft. tall. Light trap surveillance revealed an extremely high population of *Ae. vexans*, yet temporary pools could not be found. After concerted efforts Parker Whitt (previously with NC PHPM) found abundant *Ae. vexans* larvae in water in cracks in the dried mud that were 3 to 4 feet deep (see photos below).



Thus, we found a temporary freshwater species in the Piedmont in cracks in the mud just like larvae of *Ochlerotatus sollicitans* and *Oc. taeniorhynchus* are found on dried coastal dredge spoil islands. Of particular interest during that summer *Oc. taeniorhynchus* specimens were collected in two counties adjacent to High Rock Lake, which is nearly 200 miles from the coast.

The above scenarios are intended to assist you in dealing with extreme weather and mosquitoes that are present in drought situations. These scenarios could change quickly and dramatically if a tropical depression or hurricane hits coastal areas of the southern and eastern U. S. during the summer or fall. Hopefully you have saved your records from previous tropical depressions, hurricanes, and frog choking heavy rains. Be prepared and *Good Luck!*

## **Farewell Dr. Jung** by Dr. Brian Byrd

The NCMVCA Board wishes Dr. Jung “Woogie” Kim congratulations as he begins a new career as a Federal Entomologist with the United States Department of Agriculture. Dr. Kim and his family will be moving to El Paso Texas in October and has thus resigned his position as the Vice President of the NCMVCA. Dr. Kim previously served the NCMVCA as past Secretary/Treasurer and has maintained an active role as a presenter during annual meeting. Woogie is well known in NC and in the Mid-Atlantic region for his expertise relating to Bed Bugs. He maintains a very popular bed bug management website ([www.ncbedbugs.com](http://www.ncbedbugs.com)) and has recently published a book detailing bed bug management plans for apartments (“Bed bug action plan for apartments: A step-by-stem approach to implement IPM”). Please congratulate Woogie on his new position with the USDA and wish him best of luck with his new professional endeavors. He will be greatly missed by members of our Association and by the members of many Environmental and Public Health agencies in NC.

You may contact Dr. Kim at: [info@ncbedbugs.com](mailto:info@ncbedbugs.com)

## **Legislative Update** by Dennis Salmen

There have been a number of events of a legislative or regulatory nature in 2014 impacting the mosquito control profession in North Carolina. The first was the February 2014 affirmation by the N.C. Structural Pest Control Committee that government agency employees in N.C., who perform pest control activities (e.g. inspections, surveillance, education, control) for a public health purpose, are not required to have a structural pest control license to perform those activities in N.C. This action was sought by the NCMVCA in response to a concern that most, if not all, municipal employees performing such pest control activities (e.g. mosquito control) do not have structural pest control licenses; that a prior policy affirmation from this same Committee, rendering the same opinion as cited above, was over 22 years old (1991); and that a Fall 2013 guidance document on licensing and mosquito control activities, issued by the N.C. Department of Agriculture & Consumer Services, Structural Pest Control Division, did not address public health pest control performed by municipal employees. The outcome of these efforts was that while municipal mosquito control staff in N.C. are required to have a public health pesticide applicators license to perform their duties, they are not required to have a structural pest control license.

A historic 2014 legislative event in N.C. was the final elimination of N.C.’s State Aid For Mosquito Control fund in the State of North Carolina budget for FY2014-2015. This decision essentially ends a 56-year history of State funding support for local mosquito control programs in N. C. The final eliminated amount for the entire state was \$185,992... a far cry from the approximate \$1 million appropriated for local programs just 14 years ago(2000). Some links to local N.C. community response to this action are listed below.

On the national front, in JULY 2014, the House of Representatives (U.S. Congress) passed the H.R. 935, the Reducing Regulatory Burdens Act of 2013 which would eliminate the NPDES permitting of mosquito control programs throughout the U.S. For over 30 years, the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) has regulated pesticide sales and use. Scientific data gathered during the registration process is used to establish the use rates and conditions under which the pesticides must be applied in order to be effective without causing adverse effects to humans or the environment. Pesticide applicators that violate the product label should be held accountable under FIFRA. However, an improper application to aquatic weeds in an irrigation canal ultimately lead to a federal court ruling requiring Clean Water Act National Pollutant Discharge and Elimination System (NPDES) permits for the application of pesticides to, near, and over Waters of the U.S.

This action, of course, is only half the battle in removing NPDES permitting. Now HR 935 must be introduced into the US Senate where passage clearly will take great effort and a bit of luck. The full Senate is not expected to consider this type of legislative until after they return from the NOV 2014 mid-term elections. The American Mosquito Control Association (AMCA) continues to advocate for NPDES elimination and follow this process in Congress. As many readers are aware, AMCA Regional Directors have regularly solicited support from local mosquito control professionals in contacting their congressional elect officials to express support for NPDES elimination. **This support will be critical in the future to a successful passing of this legislation. Please consider supporting this process, be it contacting elected officials or participating in surveys when requested.**

#### **Other ‘quick’ legislative/regulatory notes for 2014**

The US Fish & Wildlife Service (USFWS) recently issued a new guidance memo ([www.fws.gov/policy/m0365.pdf](http://www.fws.gov/policy/m0365.pdf)) on mosquito control on wildlife refuges. The memo basically rescinds a prior 2005 USFWS Guidance document and establishes the groundwork for refuges to work more harmoniously with mosquito control programs in the future. It’s anticipated that this POSITIVE action should result in all regions of the US, with NWRs, being able to maintain or develop coordinated and collaborative mosquito control plans with NWRs.

The ‘emergence’ of imported Chikungunya (CHIK) in the U.S. (<http://www.cdc.gov/Chikungunya/index.html>) has resulted in a number of Mid-Atlantic states making the disease required reportable, by medical practitioners, in their states. NC and WVA implemented this in early June while MD and DE reported, at that time, that discussions with their state communicable disease divisions were continuing on adopting the same requirement.

#### **LINKS**

<http://pulse.ncpolicywatch.org/2014/07/03/itchy-days-ahead-for-north-carolina/>

[http://www.laurinburgexchange.com/news/opinion-opinion\\_columns/5194271/Cuts-to-NCs-mosquito-program-continue#.VA4QkmOE71U](http://www.laurinburgexchange.com/news/opinion-opinion_columns/5194271/Cuts-to-NCs-mosquito-program-continue#.VA4QkmOE71U)

<http://www.starnewsonline.com/article/20080715/ARTICLE/807150303>

## **Tentative 2014 Program Annual Meeting Agenda**

*Wednesday, NOVEMBER 12, 2014*

*11:00 a.m. - 1:00 p.m. - Registration, Lobby Area*

### **NCMVCA Board Business Meeting**

10:00 a.m. Business meeting of NCMVCA board members

### **First Session (Moderator - Brian Byrd)**

1:00 p.m. Opening Remarks – Brian Byrd

1:15 p.m. Updating the Mosquitoes of NC from 1989 to 2014 – Bruce Harrison

1:35 p.m. AMCA Update – Dennis Salmen

2:05 p.m. What's New with Ticks: It Just Keeps Getting Worse – Marcia Herman-Giddens

2:35 p.m. Pesticide Product/Vendor Updates: Adapco, and AllPro Vector Group

2:45-3:00 BREAK

### **Second Session (Moderator - Dennis Salmen)**

3:00 p.m. Parity Dissections: Using the Tracheal Skeins Method as a Tool for Arboviral Risk assessment – Brian Byrd

3:30 p.m. Environmental Impacts on Effectiveness of Permethrin-treated Clothing Used by Foresters to Prevent Mosquito Bites  
– Stephanie Richards, J. Balanay, V. Banks, J. Harris, S. Meshnick

3:45 p.m. Snakes of NC: Safety Tips for Field Operators – Parker Whitt

4:15 p.m. New Mosquito Baits – Steve Molnar

4:30 p.m. MAMCA Membership – Dennis Salmen

*Thursday, NOVEMBER 13, 2014*

### **Third Session (Moderator - Stephanie Richards)**

8:10 a.m. Evaluation of the Efficacy of a Private Backyard Mosquito Control Company in a Suburban Neighborhood in Eastern North Carolina – Amber VanDusen, S. Richards, J. Balanay

8:35 a.m. Testing a Modified Gravid Trap for Collecting *Aedes triseriatus*, *Aedes japonicus*, and *Aedes albopictus* in a La Crosse Endemic Area – Marissa Taylor

8:50 a.m. Field Efficacy Trials of DeltaGard Public Health Insecticide, a New Product and Active Ingredient for Wide Area Mosquito Control – Gordon Morrison, Kurt Vandock

9:10 a.m. Urban Mosquito Control – Robert Collins

9:30 a.m. Pesticide Product/Vendor Updates: AMVAC Environmental Products, and Bayer Environmental Science

9:45 a.m.- 10:15 a.m. BREAK (Vendors)

### **Fourth Session (Moderator - Bruce Harrison)**

10:15 a.m. Human Surveillance of Vector-borne Disease, and the Ongoing Discussion About Control Measures – Carl Williams

10:35 a.m. Chikungunya in the New World: Seen Enough or More to Come? – Mike Reiskind

**Fourth Session (Moderator - Bruce Harrison)**

- 10:50 a.m. Updates on Dengue Virus– Stephanie Richards  
 11:00 a.m. Forsyth County Operations 2014 – Ryan Harrison  
 11:15 a.m. An Overview of Larvicides – Joe Strickhouser  
 11:30 a.m. Pesticide Product/Vendor Updates: Central Life Sciences and Clarke Mosquito Control Products, Inc.

**11:45-1:10 LUNCH BREAK (On your own)**  
**Thursday, NOVEMBER 13, 2014 (Continued)**  
**Fifth Session (Moderator - Robert Collins)**

- 1:10 p.m. The How, When, and Why of Resistance Management – Rosmarie Kelly  
 1:30 p.m. The Effect of Predators and Conspecifics on the Oviposition Response of *Aedes albopictus* –  
 – Gideon Wasserberg  
 1:45 p.m. Morphological and Molecular Identification of Mosquito Diversity in the Fred Stanback Jr.  
 Ecological Preserve at Catawba College – Joshua York, C. Hartwig  
 2:00 p.m. A Mosquito Control Program in Beaufort County – Eugene McRoy  
 2:15 p.m. A Swimming Pool Inspection, its Techniques, and Mosquito Control – James Bjorneboe  
 2:30 p.m. Pesticide Product/Vendor Updates: Duke Energy, and Summit Chemical

2:45-3:15 BREAK

**Sixth Session (Moderator - James Bjorneboe)**

- 3:15 p.m. Don't Worry BEE Happy – Joe Simmons  
 3:45 p.m. Pesticide Safety – Patrick Farquhar  
 4:00 p.m. NC Licensing Program of Pesticide Applicators – Renee Woody  
 4:15 p.m. Basic Biology and Morphology of Mosquitoes—Parker Whitt  
 4:30 p.m. What is the Purpose of Multiple Lobe Spermathecae in *Aedes aegypti* and *Aedes albopictus*? –  
Carrie De Jesus, M. Reiskind  
 4:45 p.m. Historical Changes in the Local Distribution of Yellow Fever Mosquito (*Aedes aegypti* L.) in  
 South Florida, USA – Kristen Hopperstad, M. Reiskind

**6:00 p.m. - 7:00 p.m. “BITING TIMES” SOCIAL**  
**7:00 p.m. - 8:30 p.m. BANQUET**

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**Friday, NOVEMBER 14, 2014**

**Seventh Session (Moderator - )**

- 8:00 a.m. Mosquito Surveillance and Control – Charles Abadam  
 8:15 a.m. A Report on Mosquito Program of Suffolk Mosquito Control District – Charles Abadam  
 8:30 a.m. Reports from Local Mosquito Control Programs  
 9:10 a.m. Progress on the *Keys to the Mosquitoes of the Mid-Atlantic Region* – Bruce Harrison  
 9:25 a.m. Pesticide Product/Vendor Updates: Univar, and Valent BioSciences  
 10:00 a.m. Break (Hotel Check Out)  
 10:30 a.m. Business Meeting and Door Prizes  
 11:30 a.m. Adjourn

## **Program Reports Just a Month and a Half Away!**

**By Dr. Bruce A. Harrison**

It's not too late to prepare a short report about your mosquito season for the November meeting. It won't take long to prepare, just summarize major things that happened or points you want to make. Below are examples.

- Was it an active year?
- Was the weather weird and caused problems for you?
- Which mosquitoes were dominant this year?
- Was a particular species unusually active this year?
- Did you encounter any uncommon or rare mosquitoes?
- Did you find a new pesticide that performed very well?
- Any new equipment that you found very useful?
- Did you find a new control technique that worked?
- Any unusual virus activity in your area?

**SEE YOU THERE!**

## **Newsletter Editor Change**

**By Will Harrison**

I hope you all are enjoying this issue of the Biting Times, because it's my last. I thoroughly enjoyed putting these together for the last few years, but it's time for me to move on, and time for someone else to try their hand at organizing and editing the work that our members regularly contribute. If you are interested in becoming the editor, or know of someone who is, please contact Parker Whitt, the Chair of the Awards and Nominations Committee. He can be contacted at [pwhitt123@gmail.com](mailto:pwhitt123@gmail.com). Enjoy your downtime this winter, and hope to see you at the Conference.

**North Carolina  
Mosquito & Vector Control  
Association**



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## 2014 NCMVCA Annual Conference Registration

**November 12-14, 2014**  
City Hotel and Bistro  
203 Greenville Boulevard  
Greenville, NC 27834

<http://www.cityhotelandbistro.com/>

*NCMVCA offers discounted registration to those registering by **October 29, 2014**. Registration forms must be received by this date to receive the discount. Confirmation of your registration will be emailed to you. You may pick up your name badge and other materials at the registration desk at the conference.*

<b>Registration</b>	<b>Early Registration (On or before October 29)</b>	<b>Onsite Registration (October 30-November 14)</b>
Member	\$75	\$85
Non-Member	\$80	\$90
Companion/Spouse	\$35	\$45
One Day Conference Registration Only	\$45	\$55
Companion/Spouse Dinner ONLY (if not registered)	\$35	\$45
Student	\$30	\$40
Sustaining Membership	\$175	\$185
Attending the Banquet (circle one)?    YES                      NO		
	Total: _____	

Name:	
Email:	
Address:	
Employer	
Phone Number:	Work) Home)

Method of Payment:  Check (payable to NCMVCA)     Invoice Required (Invoice will be mailed to address given)

*If you have questions, please contact Stephanie Richards ([richardss@ecu.edu](mailto:richardss@ecu.edu)).*

**Mail Registration To:**  
Stephanie Richards (NCMVCA Secretary-Treasurer)  
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# 2014 NCMVCA Officers and Board of Directors

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Ryan Harrison

Larry Modlin

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Stephanie Richards (*Ex officio*)

Joe Andrews

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Will Harrison (Newsletter/Website Editor)

Joe Strickhouser (Industry)

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Brian Byrd

## **Program Committee**

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Larry Modlin

Bruce Harrison

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\*Resigned September 2, 2014

## 2014 Sustaining Members

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 <p>Peter Connelly 772-563-0606 <a href="mailto:PeterC@amvac-chemical.com">PeterC@amvac-chemical.com</a></p>	 <p>Gordon Morrison 919-549-2535 <a href="mailto:gordon.morrison@bayer.com">gordon.morrison@bayer.com</a></p>
  <p>Charlie Pate 706-338-4737 <a href="mailto:cpate@central.com">cpate@central.com</a></p>	 <p>Joe Strickhouser 630-894-2000 <a href="mailto:jstrickhouser@clarke.com">jstrickhouser@clarke.com</a></p>
 <p>Michael Crowe 919-431-9320 <a href="mailto:michael.crowe@univarusa.com">michael.crowe@univarusa.com</a></p>	 <p>Tommy Bowen 980-875-5422 <a href="mailto:Tommy.Bowen@duke-energy.com">Tommy.Bowen@duke-energy.com</a></p>
 <p>Jim Andrews 910-547-8070 <a href="mailto:Jim.Andrews@valent.com">Jim.Andrews@valent.com</a></p>	

## Sustaining Members

Please welcome our newest sustaining members!



**Jonathan Cohen**

**[JCohen@summitchemical.com](mailto:JCohen@summitchemical.com)**

**Zach Cohen**

**[ZCohen@summitchemical.com](mailto:ZCohen@summitchemical.com)**



**Joey Osborne**

**[Osborne.Joey@gmail.com](mailto:Osborne.Joey@gmail.com)**

## Award Nominations

### HAMILTON STEVENS AWARD

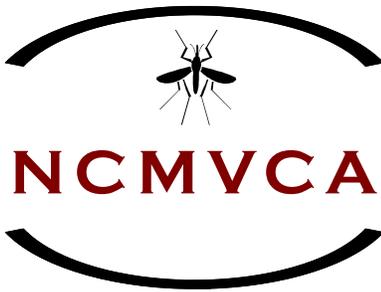
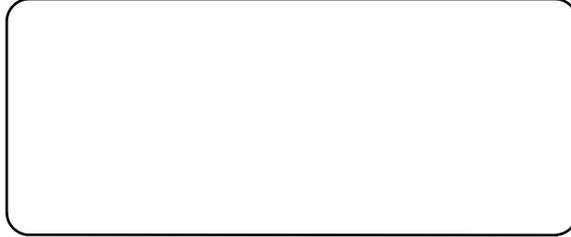
The Hamilton Stevens Award can be given annually to a person who, in the opinion of the Awards Committee, has made a significant contribution to mosquito or vector control in North Carolina. This person must be a member in good standing of NCMVCA and must be nominated by a member in good standing of NCMVCA. 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 his/her love of their fellow man drive this recipient to practice mosquito and vector control.

### WILLIAM F. STRICKHOUSER GOLDEN DIPPER AWARD

The William F. Strickhouser Golden Dipper 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 his or her vector control program.

You can learn more about these awards by clicking [HERE](#). If you know anyone that you believe exemplifies either of these two awards, please send a quick write up to Parker Whitt [pwhitt123@gmail.com](mailto:pwhitt123@gmail.com)

ECU / Dr. Stephanie Richards  
Secretary/Treasurer  
NCMVCA  
3403 Carol Belk Building  
300 Curry Court  
Greenville, NC 27858



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## New Membership Application and Membership Renewal Form N.C. Mosquito and Vector Control Association

Name: \_\_\_\_\_

Organization/Company \_\_\_\_\_

Mailing Address \_\_\_\_\_

\_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone Number (\_\_\_\_) \_\_\_\_\_ E-Mail: \_\_\_\_\_

Dues Payment for Year \_\_\_\_\_ Amount: (\$10.00/year) \_\_\_\_\_

Make check payable to NCMVCA and mail to:

ECU / Dr. Stephanie Richards  
c/o NCMVCA  
3403 Carol Belk Building  
300 Curry Court  
Greenville, NC 27858

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