The Landing Rate Count
www.scmca.net
Newsletter of the South Carolina Mosquito Control Association
October 2016 – Vol 42 • Issue 3
Editor: Chris Evans

The President's Message

Stacy Harris

Stacy Harris – 2016 SCMCA President

Hello ALL!!! I hope everyone is having a successful mosquito control year. As we head into the last couple of months of mosquito season, the fight is still on with the warm weather and rain. In sports, athletes often play their hardest during the last minutes of the game. We can't allow the mosquito to finish strong, so stay in the game and fight to the end.

I hope everyone enjoyed the summer workshop in June. We had a large group, and the feedback from the attendees was very good. Thanks again to Santee Cooper and John Grant for making the facility available again this year. I'd like to thank all of the SCMCA board members who helped in putting the program together. I also want to thank the presenters for their talks and break-out sessions; the meeting was very informative in various aspects of mosquito control.

Please remember that the SCMCA Annual Meeting will take place from November 2nd thru November 4th. We will meet again at Hickory Knob State Park located in McCormick, SC. Many outstanding speakers will make presentations on mosquito control issues. The Early Bird dinner will be on the evening of November 2nd, with the conference being held on November 3rd and 4th. The SCMCA board members and I have worked to keep this meeting enjoyable for our members by making sure it will be affordable and informative. Don't forget to nominate one of your deserving mosquito control technicians for the SCMCA Technician of the Year Award. Information about this award and the annual meeting can be found at www.scmca.net.

Please contact your regional representative with any recommendations that would allow the SCMCA board members to better meet the needs of the association. Thank you for your dedication to mosquito control and protecting the public health of South Carolina. I hope to see everyone at the annual meeting in November.

In This Issue

Save The Date

SCMCA
44th Annual Meeting
Hickory Knob
State Resort Park
McCormick, SC
November 2-4, 2016

Registration Deadline is October 18, 2016

2016 SCMCA Sustaining Members

Thank you for your time and contributions!

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2016 SCMCA Sustaining Members, continued

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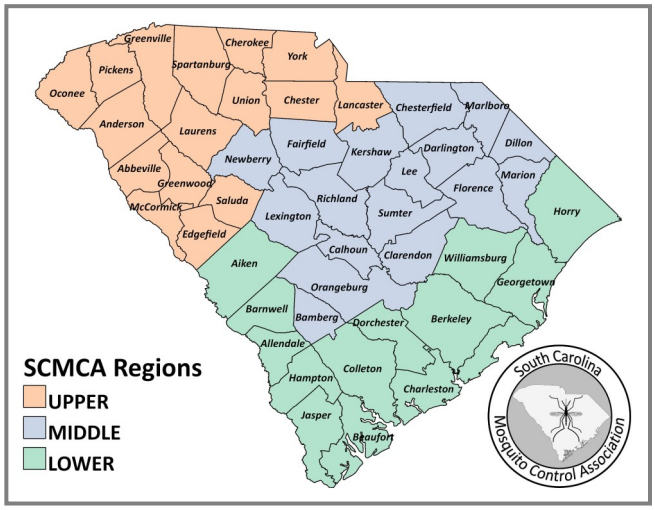
SCMCA Regions

In which region is your county?

Upper Region: Shannon Williams
Phone: (864) 942-8560
SHANNON.WILLIAMS@greenwoodsc.gov

Middle Region: Robert L. Cartner
Phone: (803) 896-0940
CARTNERL@dhec.sc.gov

Lower Region: Ron C. Plunkett, Jr
Phone: (843) 719-4646
ronaldcplunkettjr@gmail.com



Mosquito Control Program Updates

Upper Region

Gaffney SC

Barry Bundy

The Pesticide Applicator's license holder is Mike Teague, who is retired but is kept on retainer. Gaffney has one truck-mounted sprayer. The town is divided into 4 sections, and each section is sprayed twice a month for 4 days.

Fountain Inn SC

Lorie Cooper

The Pesticide Applicator's license holder Jay Gooch. Two people spray twice a week on Tuesdays and Thursdays, using a truck-mounted ULV sprayer.

Greenville County SC

Brenda James

Brenda James is the Administrative Coordinator in the Planning and Code Compliance Division. Greenville County uses an outside mosquito control contractor on an as-needed basis. Spraying is available during evenings between June 1 and September 31 to Greenville County residents in the non-incorporated areas of the County and in the cities of Greenville, Greer, Simpsonville and Travelers Rest. Residents of Mauldin and Fountain Inn should contact their local mosquito control agency. All spraying on private property is by request only.

Lake Greenwood SC

Shannon Williams

Greenwood County Lake Management has 3 people who hold a Pesticide Applicator's license. On Lake Greenwood, stagnant water is treated with larvicides, using a 35-gallon spray tank or briquettes.

Greenwood SC

Billy Allen

The City of Greenwood has two trained mosquito control operators, who use a truck-mounted ULV sprayer for adulticiding and briquettes for larviciding.

Clinton SC

Christopher Sparkman

The City of Clinton is currently training people to operate a truck-mounted ULV sprayer.

Recertification Credits

Applicators certified in Category 3, 5, or 8 must accumulate 10 Continuing Certification Units (CCUs) in each five-year Recertification Block (01 Jan 2014 to 31 December 2018), no less than 3 of which must be specific to each category. Pesticide applicators have 3 options to earn re-certification credits: (1) attending classes or conferences; (2) completing online computer training classes, or (3) attending recurring courses.

Please visit:

http://www.clemson.edu/public/regulatory/pesticide_regulation/category_specific_worksheet.html

Mosquito Control Program Updates

Middle Region

Richland County, SC

Tammy Brewer

We have had a typical season overall, until the seasonal staff returned to school. Dantrell & Jack are still with us, fortunately, because West Nile virus (WNV) decided to visit Columbia and isn't ready to leave yet. We have been working very closely with the City of Columbia trying to get control of the mosquito population. We decided to add a couple of BG Sentinel traps to our WNV surveillance at one of our positive sites to see if other mosquito species were playing a role besides *Culex*. The results are still pending. We were approved to hire a full-time Administrative Support person this fiscal year. The posting is up – now, we need to review the applicant pool and hire someone. We have received numerous questions from people about Zika virus, the new "four-letter word" in mosquito control. At Career Day last week, all of the students had heard about Zika virus and had plenty of questions. We have responded to our share of imported Zika virus cases in Richland County, but West Nile virus has our attention for now. We are really looking forward to some COLD temperatures.

Lower Region

Berkeley County, SC

Jeff Cary

Higher than average rainfall generated by Tropical Storms Hermine and Julia led to high mosquito counts throughout the county, and weather forecasts indicate that the final months of the 2016 mosquito season will be very busy. This fiscal year, our program was authorized to hire a second full-time spray truck operator; Frances Wright was hired to fill the position in August. Frances brings a great deal of experience to the job, having served as a part-time spray truck operator with the department for over 8 years. We have also brought on three new part-time drivers.

Zika virus continues to be a concern to our residents. Members of the staff have attended several Zika training seminars and teleconferences. We increased our mosquito control efforts in and around salvage yards where *Aedes albopictus* are routinely found, and we conducted multiple TV and newspaper interviews.

A single *Aedes aegypti* was caught in a CDC light trap on Daniel Island in mid-September. The mosquito will not be tested for arboviruses since only one mosquito was caught. We are setting BG Sentinel 2 traps to determine the extent of the *Aedes aegypti* population and to increase sample numbers for virus testing.

To date, Berkeley County has had four arbovirus events: 3 Zika virus-positive human cases (all travel-related) and 1 eastern equine encephalitis (EEE) virus-positive horse case. Trapping was done at two of the Zika sites and the EEE site; collected mosquitoes were sent to the SC DHEC lab for testing.

Georgetown County, SC

Tracy Jones, P.E.

Tracy Jones is the new Interim Mosquito Control Supervisor after Tim Chatman resigned in July. She is performing double duty as the Georgetown County Stormwater Division Manager. Currently, the mosquito control program has two filled positions, one technician and one administrative assistant. The program has two positions open, the Mosquito Control Supervisor position and a Mosquito Control Technician position. Tracy looks forward to working with the SCMCA as a partner and as a community extension of Georgetown County's mosquito control program.

2016 SCMCA Summer Workshop

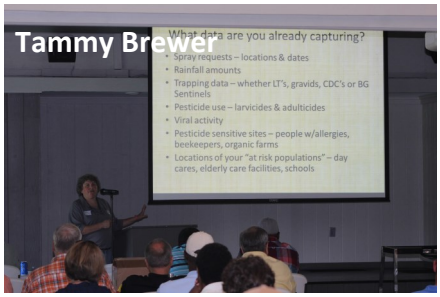
June 2, 2016

Registration

Lunch by Music Man Bar-B-Cue

PRESENTERS

Larvicide Selection for Specific Habitats



Collecting Data Now to Prepare for an Emergency

Zika Virus

Clemson Pesticide Regulatory Update

Mid-Atlantic Mosquito Identification Guide

BREAKOUT SESSIONS

Adulticiding, Droplet Size, ULV Truck

Trapping for Asian Tiger Mosquitoes

Field Personnel Safety

South Carolina Mosquito Control Association

Annual Meeting Registration

Hickory Knob State Resort Park

McCormick, SC

November 2 – November 4, 2016

REGISTRATION DUE BY: October 18, 2016

NAME: _____

ORGANIZATION: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

PHONE: _____

EMAIL ADDRESS: _____

(Email address is important—SCMCA newsletters are sent via email—if you do not have an assigned email address, please indicate an alternate email address that could be used to send you association news and updates. Thanks!)

*Registration fee:	$50.00	_____
Late registration fee:	$55.00	_____
Active Membership Dues:	$10.00	_____
Sustaining Membership Dues:	$150.00	_____
Early Bird Dinner 11/02/16	$12.00	_____
OTHER COSTS		
Additional Banquet Tickets	$20.00	_____
SCMCA Polo Shirts:	$25.00	_____

Please indicate size: M, L, XL, 2XL, 3XL (to be picked up at meeting only)

Total Due: _____

*Registration fee includes one banquet ticket for the Thursday evening meal and one breakfast ticket for Friday.

**The Early Bird Dinner will be a Low Country Boil provided by the Resort. It will be served in the restaurant at 6:00 pm. If you plan to attend, please remember to mark the form for a headcount. We will gather for Biting Time before dinner at 5:00 pm in the Convention Center.

FOR OFFICE USE ONLY

Amount received with pre-registration form $_____

□ Check #_____ □ Cash ~~ Balance due at meeting: $_____

Final amount received: $_____

□ Check #_____ □ Cash

REMEMBER: You are responsible for your own lodging. Hickory Knob State Resort Park; 1591 Resort Dr, McCormick, SC 29835. Call (864) 391-2450 and refer to SC Mosquito Control Association to receive the group rate. **Room rates are valid until October 1st. Make your reservation ASAP**. Approximate room rates: Lodge Room - $77.55; Cabins - $86.19. Tax and resort fee are included at these prices. (Note: These rates will not be valid if reservations are made online.) For information on the resort, visit their website at southcarolinaparks.com/hickoryknob/introduction.aspx.

Return this form to the Secretary/Treasurer: SC Mosquito Control Association, Attn: Olin Towery, Richland County Vector Control; 400 Powell Road; Columbia, SC 29203; (803) 576-2428 FAX (803) 576-2498

Association Website: www.scmca.net

South Carolina Mosquito Control Association
2016 Annual Meeting
Tentative Agenda

Thursday, November 3, 2016

Registration
12:00PM

First Session	**Moderator**	**Stacy Harris**
1:00PM	Call to Order	SCMCA President
1:10PM	Zika response in South Carolina	Dr. Chris Evans
1:30PM	Mosquito Ecology	Dr. Bruce Harrison
1:50PM	Zika - The Threats of Resistance	Janet McAllister
2:10PM	Break	
Second Session	**Moderator**	**Robert Cartner**
2:30PM	What's New With Ticks: It Just Keeps Getting Worse	Marcia Herman-Giddens
3:00PM	Pesticide Container Recycling	Leslie Godfrey
3:20PM	Transportation, Storage and Security	Leslie Godfrey
3:40PM	**Equipment & Pesticide Briefing**	**Joe Andrews**
3:50PM	Break	
Third Session	**Moderator**	**Chris Evans**
4:10PM	A Summer Living the Zika Dream	Joe Conlon
4:30PM	How Larvicides Work	Zane McAllister
5:00 PM	**Equipment & Pesticide Briefing**	**Joe Andrews**
6:00PM	Biting Time	
7:00PM	Banquet	

Friday, November 4, 2016

Fourth Session	**Moderator**	**Shannon Williams**
8:30AM	AMCA Update	Chris Lesser
8:50AM	Zika Response in Fl	Chris Lesser
9:15 AM	MAMCA Update	Travis Shealy
9:30 AM	Mosquito Control - the Meeting Place of Health & Environment	Myra Reece
9:45 AM	Break	
Fifth Session	**Moderator**	**Ron Plunkett**
10:15 AM	SC Arbovirus Update	Chris Evans
10:30AM	Pollinator Update	Dr. Jennifer Tsuruda
10:50AM	Clemson Pesticide Regulatory Update	Dr. Tim Drake
11:10AM	Business Meeting	
12:00PM	Adjourn	

SCMCA
SOUTH CAROLINA MOSQUITO CONTROL ASSOCIATION

PRESIDENT	VICE PRESIDENT	SECRETARY TREASURER	ADVISOR	PAST PRESIDENT
Stacy Harris	Chris Evans	Olin Towery	L. A. Williams, Jr.	John Grant

UPPER REGION	MIDDLE REGION	LOWER REGION	HISTORIAN	AT LARGE
Shannon Williams	Robert Cartner	Ron Plunkett	Tammy Brewer	Joe Andrews

Richland County Vector Control
ATTN: Olin Towery
400 Powell Road
Columbia, SC 29203

2016 SCMCA Officer Ballot

Nominee:		**Write in:**
President:	Chris Evans	x_____
Vice President:	Robert Cartner	x_____

Please return this ballot form by November 1, 2015 (either electronically, by fax, or by US Mail) to the SCMCA Secretary/Treasurer:

SC Mosquito Control Association
Attn: Olin Towery
Richland County Vector Control
400 Powell Road
Columbia, SC 29204

(803) 576-2428 or Fax: (803) 576-2498

Email address: toweryo@rcgov.us

Protecting Honey Bees during Mosquito Spray Operations

Compiled by Chris Evans and Jennifer Tsuruda

Parts of South Carolina may be sprayed with insecticides for the purpose of reducing mosquito populations. Mosquitoes must be controlled in order to reduce the public health risk posed by the large numbers of mosquitoes breeding in stagnant water. The increased risk of mosquito-borne diseases and the large numbers of mosquito bites demand human intervention to control these pests. A mosquito control program may include ground and aerial insecticide applications. Adult mosquitoes will be targeted as well as immatures in the water.

Problems may arise if these insecticides come into contact with honey bees. Honey bees are susceptible to many insecticides, and pesticides are a major cause of honey bee deaths.

Honey bee hives are important not only for providing bees, beeswax, honey, propolis, pollen and royal jelly that are the basis for countless businesses, but honey bees are also essential for producing a substantial portion of our agricultural crops. As pollinators, honey bees are unsurpassed in their service to farmers producing fruits and vegetables such as almonds, apples, cucumbers, squash, melons, blueberries, etc. Without a large and steady supply of bee colonies, commercial growers would not be able to produce these crops.

KNOW WHO TO CONTACT

South Carolina has several agencies that deal with honey bees, each with a different aspect. Please look over the chart below to make sure you contact the appropriate resource. Time can be of the essence, and contacting the wrong agency will likely lead to a delay in response.

CLEMSON COOPERATIVE EXTENSION	CLEMSON PUBLIC SERVICE ACTIVITIES	SCDA
Clemson University Cooperative Extension	**Clemson University Regulatory Services**	**South Carolina Department of Agriculture**
Education **Outreach** **Research**	**Department of Plant Industry** **Apiary Disease Inspections** **Africanized Bee Sampling** **Department of Pesticide Regulation** **Pesticide Use** **Bee Kill Investigation**	**Honey** **Honey Houses**

Clemson University Department of Pesticide Regulation (DPR)

Central Office:

http://www.clemson.edu/public/regulatory/pesticide_regulation/

511 Westinghouse Road
Pendleton, SC 29670
TEL: (864) 646-2150

Local DPR Inspectors:

http://www.clemson.edu/public/regulatory/pesticide_regulation/dpr_inspectors.html

Clemson University Department of Plant Industry (DPI)

Central Office:

http://www.clemson.edu/public/regulatory/plant_industry/index.html

511 Westinghouse Road
Pendleton, SC 29670
TEL: (864) 646-2140

Local DPI Inspectors:

http://www.clemson.edu/public/regulatory/plant_industry/pest_nursery_programs/nursey_program/nursery_inspectors.html

FOR PESTICIDE APPLICATORS

Conditions that Limit Inadvertent Bee Kill during Mosquito Spray Operations

- **Obtain a list of beekeepers in your jurisdiction.**
  - **Consult your local mosquito control office's beekeeper notification list and Clemson University's Voluntary Beehive Mapping/Bee Stewardship Program** to locate and avoid spraying beehives in the designated mosquito treatment zone before any pesticides are applied. In Clemson's system, you can draw your mosquito target zone, and any beekeepers registered within that zone will be notified. Keep in mind that not everyone has registered their beehives on Clemson University's Voluntary Beehive Mapping Program.
    - Pesticide applicator portal: http://www.kellysolutions.com/clemson/pesticideapplicationnotifications/
  - **Consult with beekeepers' associations to assist with locating hives in your jurisdiction.** Not all local association members are members of the state association, so contacting both state and local associations is a good idea. Find out what social media resources they have, so you can post spray notifications in a timely manner.
    - South Carolina Beekeepers Association: http://scstatebeekeepers.com/about-beekeeping/contact-a-beekeeper/
    - Local beekeepers' associations: http://scstatebeekeepers.com/home/local-associations/
- **Notify Beekeepers.** Release your intentions to spray through Clemson University's Voluntary Beehive Mapping Program, the media, individual contacts, or a reverse 911 operating system. PLEASE COMMUNICATE with one another to protect pollinators and human health.
- **Consider pesticide toxicity to bees.** Read the label. Use less toxic pesticides that degrade rapidly to reduce honey bee mortality. Choose a product with a high LD_{50} and a short residual.
- **Consider using ground applications.** They produce less drift and are safer than aerial applications.
- **Consider using Ultra Low Volume (ULV) applications, which may be safer for bees.**
  - Droplet size is important as it directly relates to transport and collection efficiency.
  - Droplets must be small enough to be produced in sufficient numbers for probability of contact and large enough to impact or impinge readily on the body surface of adult mosquitoes.
  - Other flying insects do not appear to be affected by ULV sprays if the body mass is larger than that of a mosquito.
- **Consider time of day**. As the sun begins to set, honey bees return to their hives for the evening. Pesticides should be applied in the early evening for best results in reducing bee kill and maximizing most mosquito spray programs. Evening treatments are preferred over early morning treatments, and daytime treatments are not recommended since exposure to bees will be very high.
- **Consider location.** Honey bees are attracted to blooming flowers of all types. If at all possible, do not spray blooms directly with pesticides.
- **Consider insecticide formulation.** Different formulations of the same chemical are different in their danger to honey bees. In general, heavier formulations drift less and pose less danger.
  - Dusts are generally more dangerous to bees than are sprays or granular applications because of wind drift and the ability of dust particles to adhere to honey bees, which will result in the dust particles being transferred back to the hive and being stored along with the pollen.
  - Sprays are safer than dusts, but differences among spray formulation types should be considered.
    - Generally, water soluble formulations are safer than are emulsifiable formulations.
    - Fine sprays are less dangerous than course sprays.
  - Granular applications, although not suitable for area-wide adult mosquito control, are generally the safest formulations from a drifting standpoint and the accidental killing of bees.

FOR BEEKEEPERS

Reducing the Risk of Pesticide Poisoning to Honey Bees

Mosquito control agencies have an interest in keeping our honey bees safe. SC does not have a mandatory hive registry. As a result, it is imperative that beekeepers identify the locations of their beehives and sign up for pesticide notifications. PLEASE COMMUNICATE with one another to protect pollinators and human health.

- **Contact your local mosquito control program.** Let them know that you have bee colonies and are concerned about the mosquito control spray program. Be prepared to give information for locating your apiary or apiaries on a county map. If the spray applicators don't know where you are, they may very well spray your hives.
  - Contact your local mosquito control: http://www.scdhec.gov/HomeAndEnvironment/Insects/Mosquitoes/LocalMosquitoControl/
- **Map your beehive locations on Clemson University's Voluntary Beehive Mapping/Bee Stewardship Program.** Pesticide applicators can log on to the mapping program and designate their mosquito treatment zone before any pesticides are applied. Any beekeepers registered within that zone will be notified so that beekeepers can take steps to protect their hives.
  - Beekeeper portal: http://www.kellysolutions.com/clemson/beekeepers/
- **Consider becoming a member of the state's beekeepers' association and also your local beekeepers' association.** Encourage your association to establish and maintain a working relationship with local mosquito control.
  - South Carolina Beekeepers' Association: http://scstatebeekeepers.com/about-beekeeping/contact-a-beekeeper/
  - Local beekeepers' associations: http://scstatebeekeepers.com/home/local-associations/
  - Notify mosquito control of any social media your local bee club has so they may post planned treatments.
- **Cover beehives.** The most practical and useful action for protecting bees from mosquito spraying is to cover beehives with wet burlap or other breathable material. The material should be breathable to allow fresh air to penetrate, and damp to keep the colony from overheating. Cover the entire hive to prevent pesticide drift onto the hive. Cover the entrance to prevent foragers from going out to contact the poison in the air, on flowers, or in water. In typical autumn weather, confining a bee colony in this way is safe for 2 days.
  - If your bees are bearding (assembled on the outside of the hive) because of hot and humid weather, make sure the hive has good ventilation (consider screen bottom boards) and a nearby source of water. If possible, hives should have shade in the late afternoon, although this is contradictory to the advice to keep apiaries in sunny locations as a deterrent for small hive beetles, which pupate in the soil.
- **Move beehives if possible.** Move beehives to a location where toxic pesticides are not being applied. Move them at least a mile away to prevent bees from attempting to return to their previous location. If you do not have experience moving hives, please contact someone from your local beekeeping club who can assist you.
- **Consider time of day.** Pesticide applicators will be advised to spray near dusk, or twilight, because that is the time when adult mosquitoes are active and most vulnerable to pesticide spray. Other advantages to spraying in the evening are that the cooler temperatures will keep the pesticide near to the ground where it will do the most good, and less windy conditions experienced in the evenings will reduce pesticide drift. The applicators will be advised not to spray if it is very windy.
  - Applications late in the day also allow the entire night and early morning for the pesticides to decompose before honey bees begin to fly again the next day. An evening spray is better because the vast majority of bees will be inside the hive and not out where they could contact the pesticide in the air, on flowers, or in water.
- **Keep Informed.** Information on mosquito spray programs may be listed in local newspapers, or on local radio and television programming; please share this information with other beekeepers in your area. Though you are undoubtedly concerned about your bees, remember that bees are just one consideration in the mosquito spray program.
- **Do Your Part to Control Mosquitoes.** Become an advocate for mosquito control methods that can lead to fewer pesticide applications and reduced risk for bees. Eliminating standing water and using biological control methods, like *Bti* (*Bacillus thuringiensis israelensis*), can reduce larvae with little risk to honey bees and other bee pollinators. Knocking down the larval population will lead to fewer adult mosquitoes, which lowers the likelihood of bites and disease transmission, as well as the need to apply pesticides that may be toxic to bees.

References

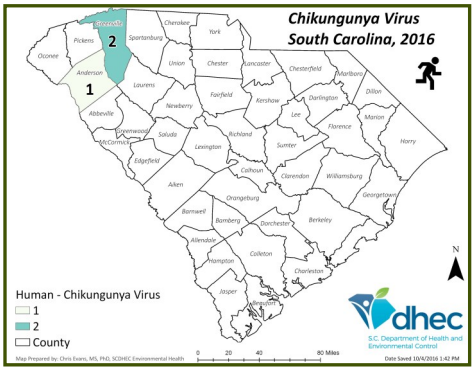
Boyce, W.M., Lawler, S.P., Schultz, J.M. et al. (2007) Non target effects of the mosquito adulticide Permethrin applied aerially during a West Nile Virus outbreak in an urban California environment. Journal of the American Mosquito Control Association, 23, 335–339.

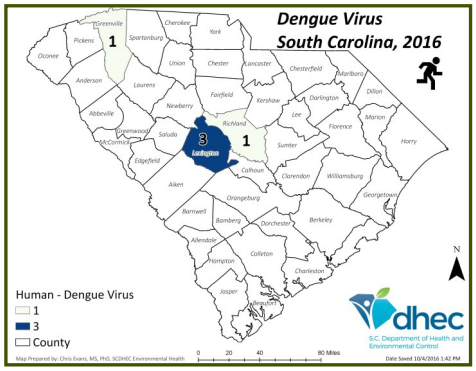
Clemson University Apiculture Program. 2016. News from Clemson's Apiculture Program. http://www.clemson.edu/extension/beekeepers/news_feed.html. Last access date: September 12, 2016.

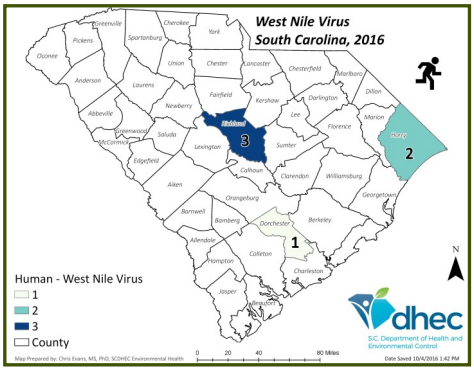
North Carolina State University Apiculture Program. 2011. Protecting honey bees during mosquito spray programs. North Carolina State University Department of Entomology. https://projects.ncsu.edu/cals/entomology/apiculture/mosquito.html. Last access date: September 2, 2016.

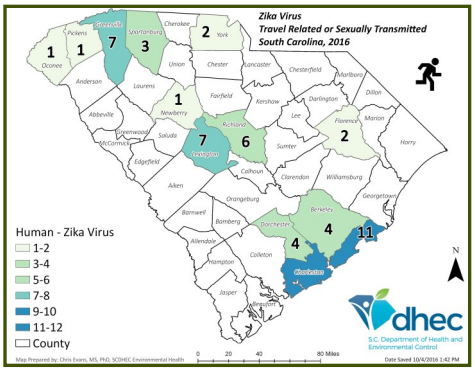
2016 South Carolina Arbovirus Activity

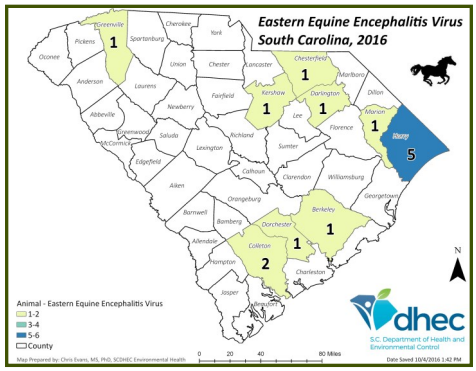
As of October 4, 2016

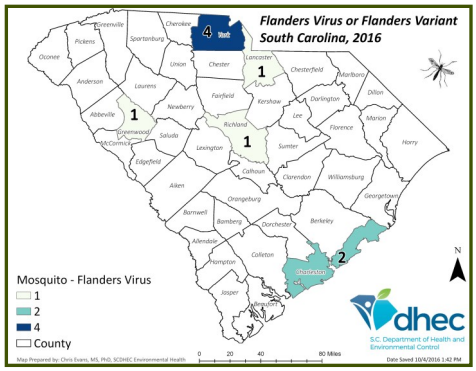


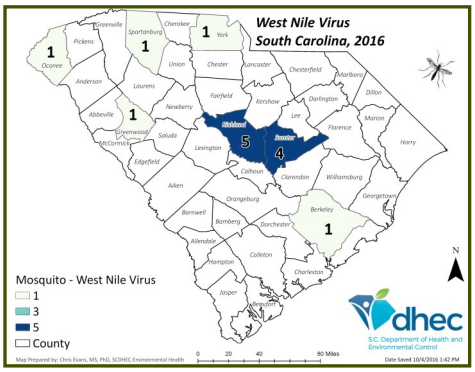












The Story of Clara Louise Maass, U.S. Army Nurse

1876—1901

The Spanish–American War was a conflict fought between Spain and the United States in 1898. Hostilities began in the aftermath of the internal explosion of the USS *Maine* in Havana harbor leading to American intervention in the Cuban War of Independence. American acquisition of Spain's Pacific possessions led to its involvement in the Philippine Revolution and ultimately in the Philippine–American War.

Clara Maass was born in East Orange, New Jersey in 1876. In 1898, during the Spanish American War, Clara Maass volunteered as a contract nurse to care for soldiers with yellow fever in Santiago, Cuba. The Army Nurse Corps did not yet exist. From 1899 to mid-1900, Maass cared for soldiers with malaria and dengue in Manila, Philipines. She contracted dengue herself and was sent home.

In 1900, Dr. William Gorgas sent Maass to Havana, Cuba, to assist with the Yellow Fever Commission. In March 1901, she allowed herself to be bitten by a yellow fever virus-infected *Aedes aegypti* mosquito, and she quickly recovered. On August 14, 1901, Maass allowed herself to be bitten by infected mosquitoes for the second time. Researchers were hoping to show that her earlier case of yellow fever was sufficient to immunize her against the disease. Unfortunately, this was not the case. Maass once again became ill with yellow fever on August 18, and died on August 24. Her death roused public sentiment and put an end to yellow fever experiments on human beings.

Maass was buried in Colon Cemetery in Havana with military honors. Her body was moved to Fairmount Cemetery, Newark, New Jersey, on February 20, 1902. On June 19, 1952, Newark German Hospital (which had since moved to Belleville, New Jersey) was renamed Clara Maass Memorial Hospital, and it is now known as Clara Maass Medical Center.

New case emerging for *Culex* mosquito as unexpected Zika spreader

Early data from new lab tests reopen question of non-Aedes vectors of Zika virus

- Oswaldo Cruz Foundation in Recife, Brazil: reported on 9/26/2016 that captive mosquitoes, which fed on a special card with Zika-tainted blood, had virus growing in their own guts and salivary glands within days.
- China and Canada researchers: showed Zika virus building up in some kind of *Culex* mosquitoes.
- Beijing Institute of Microbiology and Epidemiology: found Zika virus peaking in the house mosquitoes 8 days after their first contaminated drink. Zika-carrying mosquitoes bit baby lab mice, resulting in 8 out of 9 lab mice brains being infected. *Emerging Microbes & Infections*, 9/17/2016.
- Brock University in St. Catharines, Canada: found signs that 11 out of 50 wild-caught *Culex pipiens pipiens* mosquitoes picked up the virus somewhere on their bodies. One completely analyzed mosquito showed virus in its saliva.

Data that contradict Culex as a vector of Zika virus

- University of Texas Medical Branch in Galveston: tests with U.S. mosquitoes found no evidence that *Culex quinquefasciatus* can pick up and pass along a Zika infection.
- Kansas State University in Manhattan: obtained similar test results as University of Texas Medical Branch

Questions

- Do certain virus strains not infect mosquito strains from particular places? *Stephen Higgs (Kansas State)*
- Are the high virus concentrations used to dose the test mosquitoes realistic? George Peck (Clackamas County Mosquito Control in Oregon)

Milius, Susan. 2016. New case emerging for *Culex* mosquito as unexpected Zika spreader: early data from new lab tests reopen question of non-*Aedes* vectors. Science News Online. September 30, 2016. *https://www.sciencenews.org/article/new-case-emerging-culex-mosquito-unexpected-zika-spreader*. Last accessed October 30, 2016.

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SCMCA Polo Shirts Will Be Available at the 2016 SCMCA Annual Conference at Hickory Knob State Resort Park, McCormick, SC, November 2-4, 2016

Zika Virus Resources

CDC | Zika Virus Information | http://www.cdc.gov/zika/

CDC | Vector Surveillance and Control | http://www.cdc.gov/zika/vector/index.html

CDC | Zika Virus Action Plan Template | http://www.cdc.gov/zika/public-health-partners/risk-based-prep.html

CDC | Zika Virus Fact Sheets and Posters | http://www.cdc.gov/zika/fs-posters/index.html

CDC | Zika Virus Infographics | http://www.cdc.gov/zika/comm-resources/infographics.html

SC DHEC | Zika Virus Information | http://www.scdhec.gov/zika

SC DHEC | Fact Sheet: Controlling Mosquitoes Around the Home | http://www.scdhec.gov/mosquitoes > "Protect Yourself / Your Home"

World Health Organization | Zika Virus Information | http://www.who.int/topics/zika/en/

"Recognizing its importance, *Aedes aegypti* should be studied as a long-term national, regional, and world problem rather than as a temporary local threat to the communities suffering at any given moment from yellow fever, dengue or other *aegypti*-borne disease. No one can foresee the extent of the future threat of *Aedes aegypti* to mankind as a vector of known virus diseases, and none can foretell what other virus diseases may yet affect regions where *Ae. aegypti* is permitted to remain." — Fred Lowe Soper, Building the Health Bridge: Selections from the Works of Fred L. Soper

2016-2017 Calendar of Events

Date	Meeting/Event	Venue	Location
Nov 2-4, 2016	South Carolina Mosquito Control Association 44th Annual Meeting	Hickory Knob State Resort Park	McCormick, SC
Nov 10, 2016	Webinar: "Live to Ride, Ride to Kill: Salt Lake City Mosquito Abatement Districts's Urban Catch Basin Program Using Bikes" by Brad Sorenson	http://www.mosquito.org/meetingsevents	Online
Jan 31-Feb 2, 2017	42nd Annual Conference of the Mid-Atlantic Mosquito Control Association	Marriott Newport News at City Center	Newport News, VA
Feb 13-17, 2017	2017 Annual Conference of the American Mosquito Control Association	Town and Country Resort and Convention Center	San Diego, CA
Jun 25-Jul 2, 2017	National Mosquito Awareness Week 2017		USA

Web Resources

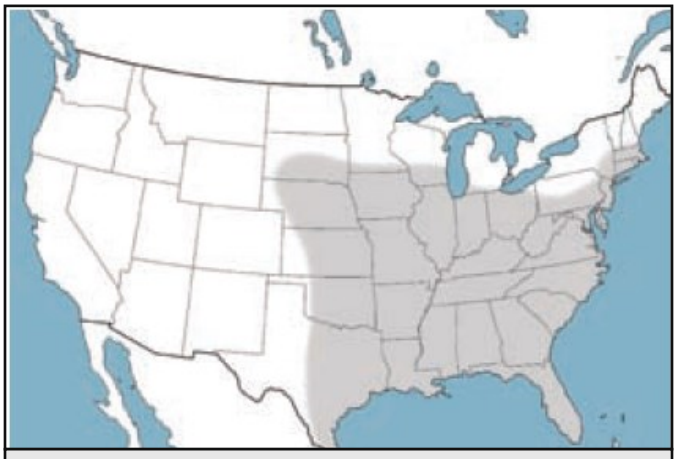
Resource	Website
American Mosquito Control Association	http://www.mosquito.org/
CDC Division of Vector-Borne Diseases	http://www.cdc.gov/ncezid/dvbd
Clemson University CEU Search (See *your* information)	http://regfocus.clemson.edu/dpr/ncommercial.htm
Clemson University Cooperative Extension Beekeeping	http://www.clemson.edu/extension/beekeepers/
Clemson University Department of Pesticide Regulation	http://regfocus.clemson.edu/dpr/
EPA Insect Repellents: Use and Effectiveness	http://cfpub.epa.gov/oppref/insect/
Florida Medical Entomology Laboratory (+ID Guide)	http://fmel.ifas.ufl.edu/
Florida Mosquito Control Association	http://www.floridamosquito.org/Home/
Mid-Atlantic Mosquito Control Association	http://www.mamca.org/
NC Mosquito and Vector Control Association	http://www.ncmvca.org/
SC DHEC Mosquitoes in South Carolina	http://www.scdhec.gov/mosquitoes
SC DHEC Reporting Dead Birds in South Carolina	http://www.scdhec.gov/birdtesting
Society for Vector Ecology	http://www.sove.org/
South Carolina Aquatic Plant Management Society	http://www.scapms.org/
SC Bee Keeper Association (Local assoc. links)	http://www.scstatebeekeepers.org/
SC Mosquito Control Association	http://www.scmca.net/
USGS (Arbovirus Disease Maps)	http://diseasemaps.usgs.gov/mapviewer/

Species Spotlight: *Psorophora ferox*

Big Woods Mosquito; Common White-Footed Mosquito

Description. *Psorophora ferox* adults are medium-sized, colorful mosquitoes. Their legs are iridescent purple and the last 2 segments of the hind legs are bright white, giving the appearance of white socks. One other species in our area, *Psorophora horrida*, also has purple legs with "white socks." These 2 species may be distinguished by the scale patterns on the scutum. *Psorophora ferox* has iridescent gold scales scattered evenly about the scutum, while the scutum of *Psorophora horrida* has a dark median stripe bordered by patches of bright white scales. The abdomen of *Psorophora ferox* adults is ornamented with iridescent purple scales dorsally, and apical patches of bright white scales laterally. Their eyes appear bright green in life.

Larvae. Larvae of *Psorophora ferox* occur in woodland pools, temporary rain-filled pools, particularly in or near thickets, in overflow pools along streams, and occasionally in potholes in stream beds after summer rains.



Distribution of *Psorophora ferox* in the U. S.

Adults. *Psorophora ferox* inhabits wet woodlands, laying its eggs in temporary pools filled with rainwater. They are aggressive, persistent feeders and give painful bites. The mosquito is active during the day, especially in late afternoon in shaded areas and in dense woods, as well as at night. Its hosts include any warm-blooded animal that moves through its haunts, day or night.

Psorophora ferox overwinters in the egg stage. Its desiccation-resistant eggs are laid in ground depressions. Eggs can survive 3-5 years if flooding does not occur. The flight range is 1 to 2 miles.

Medical Importance: *Psorophora ferox* carries a number of diseases, although it is not considered a major vector. It carries dog heartworm and Venezuelan equine encephalitis virus (VEE). It is a minor vector of West Nile Virus (WNV) in New York. Several viruses have been found in this mosquito in the Amazon, such as Una virus and Ilheus virus. In Central and South America, the mosquito carries the larvae of *Dermatobia hominis*, the human bot fly, a parasite whose larvae develop inside the flesh of a mammal host.

Burkett-Cadena ND. 2013. Mosquitoes of the southeastern United States. Tuscaloosa, Alabama: University of Alabama Press.

SOUTH CAROLINA MOSQUITO CONTROL ASSOCIATION, INC.
Attn: Olin Towery, Secretary Treasurer
Richland County Vector Control
400 Powell Road
Columbia, SC 29203

OFFICE PHONE: (803) 576-2428
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***Sustaining Member**	**$150.00**

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E-Mail:
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