



# The Landing Rate Count

[www.scmca.net](http://www.scmca.net)

Newsletter of the South Carolina Mosquito Control Association

May 2016 – Vol 42 • Issue 2

Editor: Chris Evans

## The President's Message

**Stacy Harris**



**Stacy Harris – 2016 SCMCA President**

Greetings from Columbia, South Carolina. The weather here is very warm, and temperatures are on the rise every day. A lot of the areas are now drying up from the "1000-Year Flood," but some recent rains have given more mosquitoes the opportunity to spread their wings. Our job is to combat this in every way possible to protect the public

from mosquito-borne diseases. Two of the South Carolina Mosquito Control Association purposes are to promote mosquito control in South Carolina and maintain public interest in mosquito control.

Richland County and some surrounding counties are getting their Zika virus plans ready. No one knows when and where Zika virus is going to show up. Here in Columbia, after this year, our motto will be: "Being Proactive, not Reactive to the Bite". This year, we will initiate our mosquito control program a few months earlier by educating the public on ways to help reduce mosquito-breeding sites. Reducing these breeding sites will lower the number of *Aedes aegypti* and *Aedes albopictus* mosquitoes, which are the main vectors of Zika virus; we all have a part in accomplishing this task.

I hope to see you all at the summer workshop in Pinopolis, South Carolina, at the Santee Cooper Somerset Recreational Building on June 2nd, starting at 9:00 AM. At the workshop, you will learn information on Zika Virus, larviciding, and collecting data to prepare for public health emergencies. There will also be four break-out sessions that will include instructions on proper dipping methods, calibrating droplet size for truck-mounted ULV sprayers, trapping methods for the Asian Tiger Mosquito, and field personnel safety. At the end of the workshop, there will be a SCMCA-sponsored barbeque lunch provided by Music Man's Bar-B-Que.

Please continue to fight the bite.

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## Save The Dates

**SCMCA  
Summer Workshop**  
Pinopolis, SC  
June 2, 2016

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

# 2016 SCMCA Sustaining Members

*Thank you for your time and contributions!*

## ADAPCO,

an AZELIS Americas Company

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[WWW.AZELISAMERICAS.COM](http://WWW.AZELISAMERICAS.COM)



## Allen Aviation, Inc.

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## Backed By Bayer

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Environmental Science  
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Science For A Better Life

## Central Life Sciences

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## Duke Energy Carolinas

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## EcoChem, LLC

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## Electronic Data Solutions

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(208) 324-8006  
elecdata@elecdata.com  
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# 2016 SCMCA Sustaining Members, continued

## Gil Manufacturing

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## MCES, LLC

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2499 Old Lake Mary Rd STE 102  
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## Santee Cooper

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## Univar Environmental Sciences

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3225 S MacDill Ave STE 129-190  
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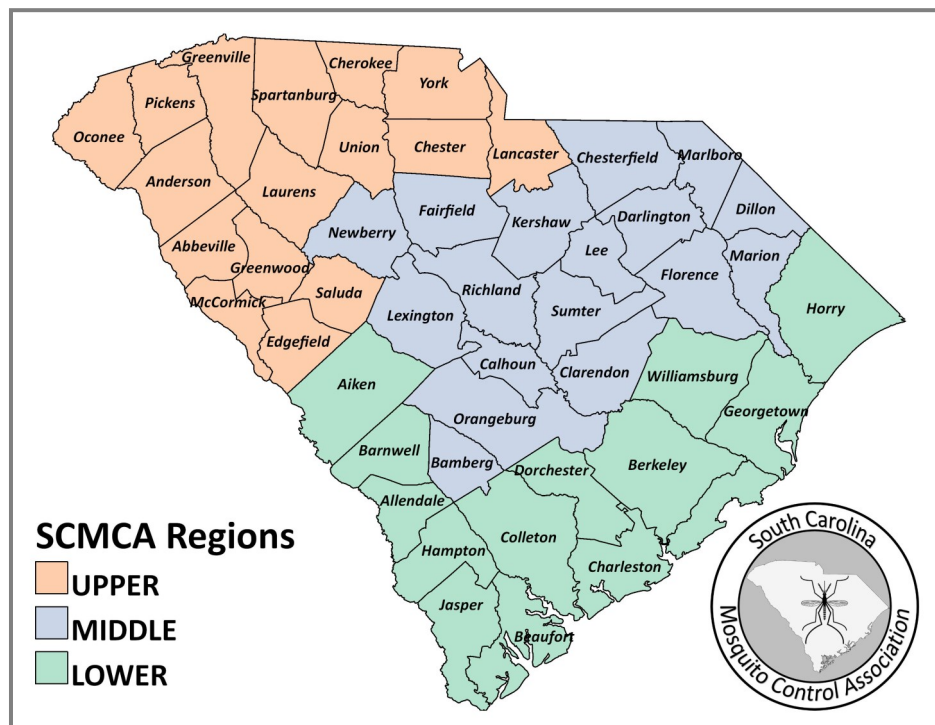
## Williamsburg Air Service, Inc

Guy McClary  
77 Birchwood Dr  
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(843) 382-8289 office  
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WILLIAMSBURGAIRSERVICE@yahoo.com  
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[WWW.WILLIAMSBURGAIRSERVICE.COM](http://WWW.WILLIAMSBURGAIRSERVICE.COM)



## SCMCA Regions

*In which region is your county?*



# Register for the 2016 SCMCA Summer Workshop

## Registration Deadline: May 19, 2016

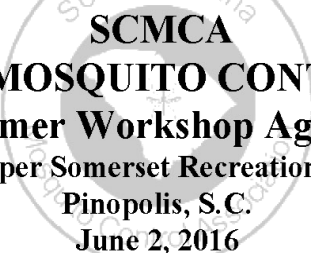
Registration and lunch are free. Contact Olin Towery (ToweryO@rcgov.us) to let him know the name of your organization and how many people from your organization will be attending.

The 2016 SCMCA Summer Workshop will offer 2.5 Continuing Certification Units (CCUs):

- 2.0 units in Category 8 Public Health Pest Control and
- 0.5 unit in Core

Applicators certified in Category 3, 5, or 8 must accumulate 10 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. Please visit:

[http://www.clemson.edu/public/regulatory/pesticide\\_regulation/category\\_specific\\_worksheet.html](http://www.clemson.edu/public/regulatory/pesticide_regulation/category_specific_worksheet.html)



## SOUTH CAROLINA MOSQUITO CONTROL ASSOCIATION

### Summer Workshop Agenda

Santee Cooper Somerset Recreational Building  
Pinopolis, S.C.  
June 2, 2016

- 9:00 – 9:30      **Registration**
- 9:30 – 9:35      **Welcome and Opening Remarks**
- 9:35 – 9:55      **Larvicide Selection for Specific Habitats - John Grant**
- 9:55 – 10:55      **Breakout Sessions:**
  - Proper Dipping Methods - Joe Andrews**
  - Adulticiding, Droplet size, ULV Truck - Trey English**
  - How to Trap for Asian Tiger Mosquitoes - Robert Cartner**
  - Safety Among Field Personnel - Jason Lightsey**
- 10:55 – 11:10      **Break - Drinks and Snacks**
- 11:10 – 11:30      **Collecting Data Now to Prepare for an Emergency - Tammy Brewer**
- 11:30 – 12:00      **Zika Virus - Dr. Chris Evans**
- 12:00 – 12:15      **The Mosquitoes of the Mid-Atlantic Region: An Identification Guide –**  
**Dr. Bruce Harrison, Author presented by Joe Andrews**
- 12:15 – 12:30      **Clemson Pesticide Regulatory Update - TBA**
- 12:30              **SCMCA Sponsored Barbeque Lunch - Music Man**



# Mosquito Control Program Updates

## Middle Region

### *City of Hartsville, SC*

#### *Arnold Floyd and Stephen Wild*

We took over the program in 2013, when our learning process began. Larviciding began in May, and spraying about twice a month seemed to work. We continued this process in 2014. The year 2015 was mostly uneventful due to the dry weather in the summer; larviciding began in June, and we sprayed only in November after the “1,000-year” floods in October 2015.

We knew we needed to move forward with our program this year, and make it more efficient. Larviciding was done on a bicycle to save time. Alternative methods and products are being considered. With only two people in the Hartsville mosquito control program, we will strive for efficiency and education. This year, calls about Zika virus began in March, and people wanted to know what we were doing to prepare for it. We had already been watching the situation and looking at our options on how to lessen the impact in our city. Our first step was to put a mailer in the water bills. The mailer explained what steps the citizens could do to help and what our plans were at that time. Next, we started larviciding ditches and storm drains, which was completed at the end of April.

We set up a trapping program with SCDHEC to help monitor mosquitoes for Zika virus, as well as other arboviruses. We are also adding information to the city’s website and plan to distribute news releases to local news outlets. We have ordered 5,000 mosquitofish to be placed in ditches and in retention ponds. We have also ordered new ULV equipment. The new ULV sprayers will have GPS tracking and will store data for permit requirements and public information. On April 19, 2016, we were asked to participate in the South Carolina Zika Virus Forum to demonstrate a mosquito control program from a small city’s perspective. This was quite an honor for our city to be asked to participate, as well as learn more about what others are doing to combat Zika virus.

### *Richland County, SC*

#### *Tammy Brewer*

Mother Nature’s “fire hose” that was pointed at SC last October has left some lasting damage. Roads are still closed, and bridges are in need of repair. It will be a long time before the dams that breeched along the Gill Creek Floodplain will be repaired. While much of the water has receded, water still remains standing in some places. Since our temperatures were so unseasonably warm this spring, the standing water began breeding mosquitoes earlier than usual. We began conducting our surveillance activities with approximately 24 NJ light traps set out across the county. Fortunately, some recent cooler temperatures have made our catches low, with predominantly *Anopheles* and *Culex* species making up the majority of our catches.

Olin Towery & Tammy Brewer attended the AMCA meeting in Savannah in February, 2016. They heard some of the initial presentations about Zika virus from the CDC. We also learned about mosquito control techniques that use male mosquitoes to obtain species-specific control and about the use of a variety of autocidal gravid ovitraps. Tammy also attended the MAMCA conference in Nashville and learned how some of the other states in the Mid-Atlantic Region are preparing to respond to Zika activity. We have been watching webinars by NEHA and AMCA in addition to listening to the CDC’s conference call prior to the summit in Atlanta to learn all we can about Zika. The staff attended DHEC’s SC Zika Virus Forum on April 19<sup>th</sup> to learn specifics about the role DHEC expects to provide in regard to Zika virus activity.

# Mosquito Control Program Updates, continued

## ***Richland County, SC, continued ...***

With community outreach and education, Tammy has provided interviews to WIS and WLTX, as well as *The State* newspaper. Katherine Sandel, Caleb McBride, and Tammy participated with career days at: Sandel, Gadsden, and Webber elementary schools. Katherine and Caleb plan to participate with “Richland Recycles Day” on May 13<sup>th</sup>, which is also Katherine’s birthday. Tammy was approved for a stipend from Central Life Sciences to participate with the Washington Days Conference in May.

Trey English was nice enough to help us with our annual ULV round-up. Newberry and Lexington Counties joined us and brought their trucks to ensure their sprayers were properly calibrated and droplets were in compliance. Thanks Trey!

We are happy to welcome back Dantrell Jones, Jack Hinson, Charlie Guenther, and Kealan Weldon from last season. We hope to fill our final two hourly vacancies soon. We hope to bring the entire staff to the upcoming Summer Workshop in Pinopolis. We look forward to seeing you there!

## **Lower Region**

### ***Beaufort County, SC***

#### ***Liz Hager***

Earlier this year, we attended the AMCA conference in Savannah in February, and Russel Appleton was hired as a pilot. Public health education programs have begun through local media outlets. All trucks have been calibrated and droplet sized tested for the upcoming season. By late April, the helicopter and airplane will be calibrated and ready for service.

### ***Berkeley County, SC***

#### ***Ron Plunkett***

The staff attended a one-day mosquito control seminar hosted by Clarke Mosquito Control on March 9, 2016. Jeff Cary attended the SC Zika Virus Forum on April 19, 2016. We completed all calibration and droplet size testing in early March, and we began adulticiding in late March. Due to the October 2015 floods, we still have a great deal of standing water throughout the county.

### ***Georgetown County, SC***

#### ***Tim Chatman***

Our mosquito-breeding season normally starts early in the spring (April/May). Recent news events concerning Zika virus found in Brazil and recently spreading to the Americas have prompted Georgetown County Mosquito Control to remind our residents of preventive measure they can take to avoid and limit their risk of infection with Zika virus.

We are taking this time before our season startup to surveil the county, by looking for potential hot spots that could promote mosquito breeding. We are also updating educational information and providing it to county residents through the use of social media.

### ***Horry County, SC***

#### ***James Brock***

Horry County Mosquito Control has an opening for a full-time field inspector. We kicked off our public education programs this year by running Public Service Announcements on radio and television. We attended the SC Zika Virus Forum on April 19<sup>th</sup> in Columbia, SC. Adulticiding began in mid-March.

# Mosquito Control Program Updates, continued

## ***Santee Cooper Vector Control — Lakes Marion and Moultrie***

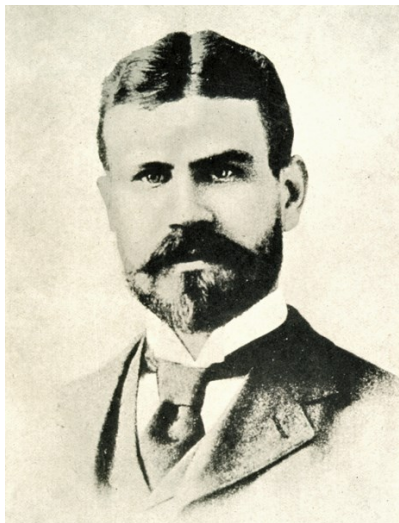
### ***John Grant***

Continued wet weather conditions and elevated water levels in Lake Marion and Lake Moultrie have resulted in a busy, early mosquito control season. We have continued to provide larvicide services through the winter and early spring. Ground larvicide treatment totals have been higher than the historic average for every month since the floods in October, 2015.

As of early April, no significant adult mosquito activity has been observed. Service requests to date have come from folks who mistakenly thought the hordes of midges rising from grasses and resting on the sides of their homes were mosquitoes. Operational crews, under the direction of crew leaders, Derrick Ward and Chuck Boatright, have pretreated impacted areas with extended residual briquettes. Technicians Kathy Tallman and Tim Hutto placed light traps at surveillance locations in early March and both have set traps to collect specimens for arbovirus testing by SC DHEC. All truck-mounted ULV spray machines were prepared, and droplet sizes were calibrated to label specifications with assistance from ADAPCO's representative, Trey English.



**Carlos Juan Finlay, MD**  
1833 — 1915



**Jesse William Lazear, MD**  
1866 — 1900



**Henry Rose Carter, MD**  
1852 — 1925

### **Pioneers in Yellow Fever Research:**

#### **Carlos Juan Finlay, MD ; Jesse William Lazear, MD ; Henry Rose Carter, MD**

In 1881, Dr. Carlos Finlay was the first to theorize that yellow fever virus was carried by mosquitoes. His theory lacked the information on the extrinsic incubation period in the mosquito to complete his otherwise near-perfect theory on yellow fever virus transmission.

In 1881, Dr. Jesse Lazear confirmed Dr. Carlos Finlay's theory that mosquitoes transmitted yellow fever. As part of the US Army Yellow Fever Commission in Cuba, Dr. Lazear allowed himself to be bitten by yellow fever virus-infected mosquitoes and died at the age of 34.

In 1898, Dr. Henry Carter's discovery of the extrinsic incubation period in mosquitoes was the key to the success of the US Army Yellow Fever Commission.

## Get Your Official SCMCA Polo Shirt at the Annual Conference

*Graphite, Wicking Mesh Sport Shirt, with Embroidered SCMCA Logo*



Contact Olin Towery (ToweryO@rcgov.us) to Pre-order Shirts (Specify Size, Male/Female, & Quantity)  
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/>

*"Mosquitoes are the greatest mass murderers on planet Earth."*

*- Katherine Applegate*



# 2016 Calendar of Events

Date (2016)	Meeting/Event	Venue	Location
May 9 — 11	American Mosquito Control Association Annual Washington Conference	The Melrose Georgetown Hotel	Washington, DC
Jun 2	South Carolina Mosquito Control Association Annual Summer Workshop	Santee Cooper Somerset Employee Recreational Park	Pinopolis, SC
Jun 26 — Jul 2	National Mosquito Control Awareness Week	<a href="http://www.mosquito.org/meetingsevents">http://www.mosquito.org/meetingsevents</a>	
Nov 2 — 4	South Carolina Mosquito Control Association 44 <sup>th</sup> Annual Meeting	Hickory Knob State Resort Park	McCormick, SC
Nov 10	Webinar: “Live to Ride, Ride to Kill: Salt Lake City Mosquito Abatement Districts’s Urban Catch Basin Program Using Bikes” by Brad Sorenson	<a href="http://www.mosquito.org/meetingsevents">http://www.mosquito.org/meetingsevents</a>	



## Web Resources

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

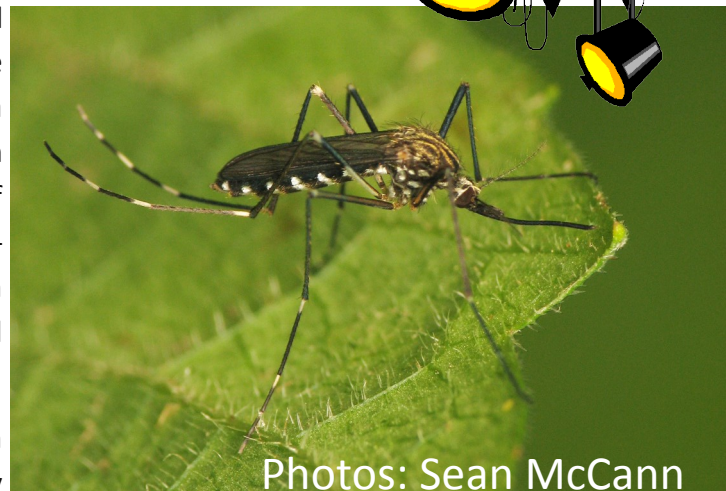
# Species Spotlight: *Aedes j. japonicus*

*The Asian Bush Mosquito ; The Asian Rock Pool Mosquito*

**Description.** *Aedes j. japonicus* is a medium-sized mosquito with black, white, and golden markings. The scutum is black, with golden stripes arranged in a pattern reminiscent of the lyre-shaped markings on the scutum of *Aedes aegypti*. The lateral portions of the thorax and abdomen have patches of silvery-white scales. The hind legs have broad pale bands on the first 3 tarsal segments, but the last 2 tarsal segments are entirely dark scaled.

**Larvae.** Larvae are most commonly encountered in discarded automobile tires and rock pools but may also be collected from a host of other man-made and natural containers.

The rapid spread of *Ae. j. japonicus* is likely related to its cold hardiness and expansive use of container habitats for oviposition and larval development. Transport via used tires is clearly involved, but a wide variety of artificial containers moved through commercial or domestic means would also serve in dispersal. An additional propensity to utilize rock pool habitats along river corridors may play a role.



Photos: Sean McCann



Distribution of *Aedes japonicas* in the U. S.

**Adults.** *Aedes j. japonicus* has a preference for forested and bushy areas, be they in agricultural, rural, suburban or urban settings. Females are persistent biters and attack when the vegetation where they rest is disturbed. They attack most frequently during the early evening hours but will bite at virtually any time of day. Females feed mainly on the blood of mammals, including people, but also on birds.

The flight range is less than one mile.

**Medical Importance:** In its native range, *Aedes j. japonicus* transmits the virus that causes Japanese encephalitis. However, since this mosquito was

introduced to the United States in the mid-to late 1990s, it is not yet known what role it will play in the transmission of mosquito-borne pathogens in the United States. In the United States, *Ae. j. japonicus* has been found infected with West Nile virus and La Crosse encephalitis and has been found to be a highly competent vector of several other viruses in laboratory studies, including eastern equine encephalitis, chikungunya, dengue, Rift Valley, and St. Louis encephalitis viruses.

# Order Form

## The Mosquitoes of the Mid-Atlantic Region: An Identification Guide

Bruce Harrison, Brian Byrd, Charles Sither, and Parker Whitt

**Available February 2016**

This 201 page spiral-bound 8.5 X 11 inch guide includes dichotomous keys to the adult females and fourth instar larvae for 8 states (DE, GA, NC, MD, PA, SC, VA, and WV) with more than 585 novel Adobe Illustrator figures. Printed on 100 lb gloss paper, this guide includes sections such as: 1) Taxonomic Interpretations, 2) State Records, 3) Basic Morphology, 4) The Acquisition of Characters to Separate Larval Instars, 5) Extensive Notes, 6) Couplet Sequences, 7) Illustration Index, 8) How to Use a Dichotomous Key, 9) Glossary, and others. The keys were thoughtfully reviewed by experts from the Smithsonian Institute, North American Mosquito Control Districts, and Academia. This long awaited guide will be available for shipping in February 2016.

Item	Quantity	Price per key	Total
Mosquito key		\$30	
		<b>Grand total:</b>	

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

Email Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

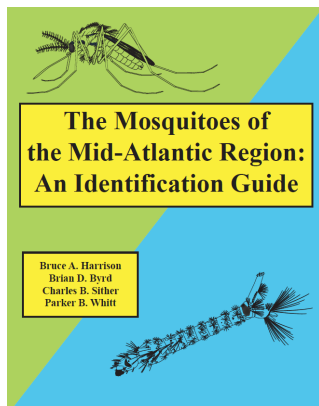
Employer: \_\_\_\_\_

Mailing Address (where key will be mailed): \_\_\_\_\_

Method of Payment: ☐ Check (payable to NCMVCA) ☐ Invoice required (emailed to address given) ☐ Credit card (see below)  
☐ Credit card (Please check here if you wish to be contacted by phone to provide information)

Card number: \_\_\_\_\_ Expiration date: \_\_\_\_\_

Code on back of card: \_\_\_\_\_ Billing zip code: \_\_\_\_\_



### Email or Mail Completed Form and Payment To:

Stephanie Richards (NCMVCA Secretary-Treasurer)  
3403 Carol Belk Building, 300 Curry Court  
Greenville, NC 27858

[richardss@ecu.edu](mailto:richardss@ecu.edu)

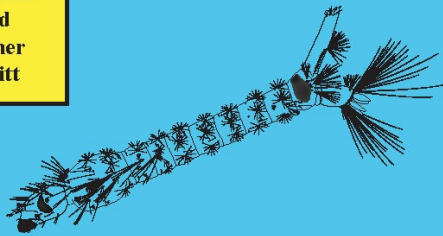
**See example pages from this book on the next page.**





# The Mosquitoes of the Mid-Atlantic Region: An Identification Guide

Bruce A. Harrison  
Brian D. Byrd  
Charles B. Sither  
Parker B. Whitt



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29(28). Abdominal segments VII-VIII flattened laterally like a flea from dorsal view (Fig. 146); tip of abdomen rounded from side view (Fig. 147); scutum with silver-white lateral areas (Fig. 148); head scales entirely white or cream colored, including long erect forked scales (Fig. 149)..... 30

Abdominal segments VII-VIII not flattened laterally from dorsal view (Fig. 150); tip of abdomen pointed from side view (Fig. 151); scutum with lateral pale areas yellow or bronze colored (Fig. 152); head with submedian or lateral dark scale patches and with pale or dark erect forked scales (Fig. 153)..... 31

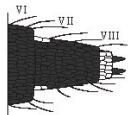


Fig. 146

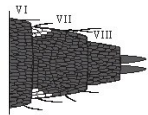


Fig. 150

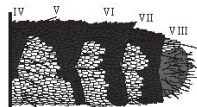


Fig. 147

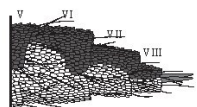


Fig. 151

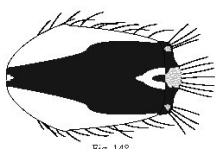


Fig. 148

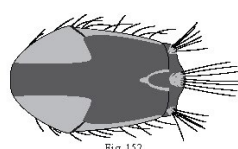


Fig. 152

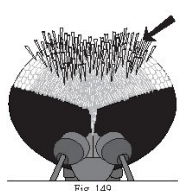


Fig. 149

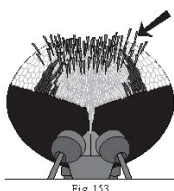


Fig. 153

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## Key to Species of Fourth Instar Larvae of *Orthopodomyia* (= *Or.*)

1. Abdominal segment VIII (and often VI and VII) with large saddle-like plate (Fig. 552); siphon seta 1-S with more than 4 branches (Fig. 552); seta 3-VIII very large (Fig. 552); abdomen usually red or orange..... *Or. signifera*

Abdominal segments VI-VIII without large plates (Fig. 553); seta 1-S short with 2-4 branches (Fig. 553); seta 3-VIII small (Fig. 553); abdomen usually pale creamy white..... *Or. alba*

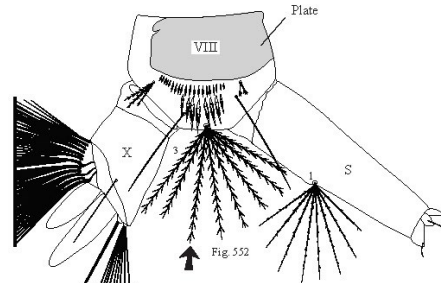


Fig. 552

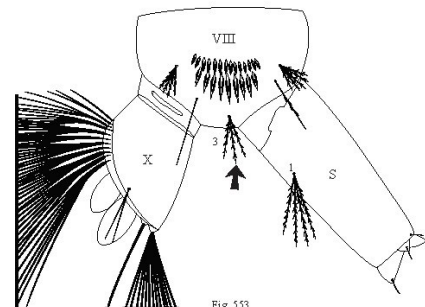


Fig. 553

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