The Skeeter

Volume 68, No. 2 July 2008

President's Message

Jennifer Armstead,
VMCA President 2008

Summer is officially here and mosquito season is well under way. With higher than average temperatures throughout much of the state, many jurisdictions are already detecting arboviruses in local mosquito populations. I know that VMCA members are working hard to ensure that both mosquito surveillance and control activities continue as normal despite the major cut our state suffered in federal funding for arboviral surveillance from CDC this year.

As president of the VMCA I want to ensure that the organization is meeting the needs of the membership in supporting mosquito control throughout the state. The recent addition of an Organizational Membership in the VMCA has led to great communication and collaboration among jurisdictions across the state on a variety of mosquito control issues. Our new Mid-Atlantic Representative to AMCA, Captain Stanton Cope, is doing an excellent job to keeping us up to date on national vector control issues that may affect us.

The VMCA continues to garner support from the Governor in officially recognizing Mosquito Control Awareness Week each June. Many of you do the same in your own jurisdictions, emphasizing the importance of mosquito control among to your public and local officials. The VMCA has had the pleasure of supporting some of these educational activities, such as the Mosquito Control Awareness Poster Contest in York County.

We had another successful mosquito surveillance and identification course this year, and would like to continue to offer this and possibly other training events in Virginia. A number of our members have expressed an interest in attending a larval identification course. The Executive Board encourages member feedback – we want to know what else we can do to support you.

I wish you all the best this mosquito season. Have a great summer!

Jennifer S. Armistead
President, VMCA

Announcements

New co-editors of the Skeeter

It is time for me to move on and let a fresh perspective handle the newsletter. Circumstances have forced me to scale back as editor of the Skeeter. After some intense arm twisting Jennifer Martin and Olivia Hall are the new co-editors of the Skeeter. The transition is under way, production of future issues will originate from the Henrico County office. I will continue to provide technical assistance through the transition period.

The last 3 years have been interesting and rewarding for me. I am glad that I was able to help move the newsletter to a more cost effective and responsive format. Thank You to everyone that has taken the time to send in some great articles, please send any materials for the newsletter to the Jennifer Martin (mar98@co.henrico.va.us) at the Henrico County office.

Volunteer your time for the VMCA

The VMCA is dependent on its members to get things done. Take the time to volunteer for a committee in 2008. You can also contact any board member or committee chair at any time to participate.

Job Announcement

City of Portsmouth seeking Public Works Analyst, Work primarily involves using GIS in support of mosquito control operations. Full job posting and application process will be available on the City's Web Site www.portsmouthva.gov in the next few weeks. Anyone interested in the position can contact George Wojcik @ 757-393-8666.

Board Meeting Minutes To Be Posted On The Web

The issue of printing the board meeting minutes in the Skeeter was brought up at the annual meeting. The board thoroughly discussed this issue at the last board meeting. The VMCA board minutes will not be posted in the Skeeter due to the fact the Skeeter is only published quarterly. Instead the board voted to post approved minutes (minutes are approved at each board meeting) on the web site as soon as possible. Web updates can be performed at any time thus providing the quickest way to make the board minutes available to the membership.

The VMCA organization has a new mailing address, make sure you send all forms to the proper address.

Virginia Mosquito Control Association
Jo Ann Beasley, Secretary/Treasure
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CERTIFICATE of RECOGNITION

By virtue of the authority vested by the Constitution in the Governor of the Commonwealth of Virginia, there is hereby officially recognized:

MOSQUITO CONTROL AWARENESS WEEK

WHEREAS, mosquito borne diseases, including Malaria, Yellow Fever, Encephalitis, and the West Nile Virus, have historically been a source of human and animal suffering, illness and death in the United States and worldwide; and

WHEREAS, an excess number of mosquitoes diminishes enjoyment of the outdoors, public parks and playgrounds, hinders outdoor work, decreases livestock productivity and reduces property values; and

WHEREAS, the American Mosquito Control Association (AMCA) was established on June 26, 1935 to provide a nationally organized network to help mosquito control professionals develop and encourage effective and environmentally safe mosquito control activities; and

WHEREAS, the Virginia Mosquito Control Association (VMCA) serves to facilitate communication and education among Virginia's mosquito control professionals to improve the efficiency and effectiveness of mosquito control operations in Virginia; and

WHEREAS, the Virginia Department of Health is constantly working with multiple state agencies and government organizations in a public awareness campaign to prevent the spread of the West Nile virus and other mosquito borne viruses by eliminating mosquito breeding areas around the home; and

WHEREAS, it is important for individuals and organizations to work with the Virginia Department of Health to help decrease the effects of mosquito born illnesses;

NOW, THEREFORE, I, Timothy M. Kaine, do hereby recognize June 22-28, 2008, as **MOSQUITO CONTROL AWARENESS WEEK** in the **COMMONWEALTH OF VIRGINIA**, and I call this observance to the attention of all our citizens.

Governor

Katherine K. Hanley

Secretary of the Commonwealth

What localities did for national mosquito awareness week.

Fairfax County

Team Mosquito, Fairfax County VA.

L. to R. Front: Oscar Garcia, Kathy Spencer, Debora Brown, John Vander Voort, Hina Bhalala, Carl Sivertsen.

Back: Josh Frescholtz, Maryam Adil, Sonya Graves, Joshua Smith, Jorge Arias.

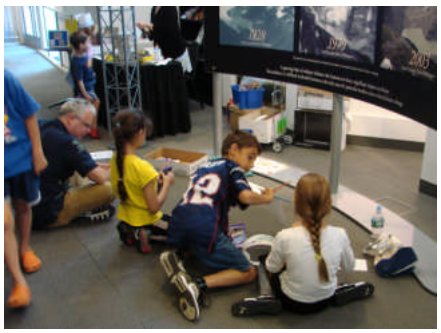
Declaration (and plaque) designating June 22-28 Mosquito Awareness Week

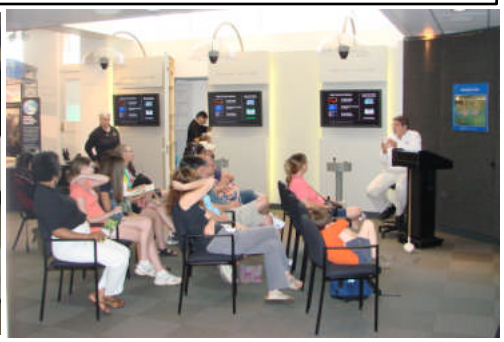
Front Row: Carl Sivertsen (Disease Carrying Insects Program Outreach Coordinator), Jerry Connolly (Chairman of the Board of Supervisors), Jorge Arias (Disease Carrying Insects Program Supervisor), Thom Crow (Director Environmental Health).

Back row: Supervisor Catherine Hudgins, Supervisor Michael Frey, Supervisor Linda Smyth, Supervisor Gerry Hyland, Supervisor Sharon Bulova, Supervisor John Foust, Supervisor Jeffrey C. McKay, Supervisor Pat Herrity, Supervisor Penny Gross.

Banners were placed at various localities around county.

Free Family Day: Mosquitoes and Larvae and Ticks, at the Koshland Science Museum.





York County Mosquito Control

In York County for mosquito awareness week, we set up displays at our libraries. We have a Board of Supervisors awareness week proclamation on it along with mosquito prevention information in addition to student mosquito prevention posters from our elementary school program. It is displayed every year as one of our outreach initiatives.

10th ANNUAL AMCA WASHINGTON DAYS

The American Mosquito Control Association held their 10th annual Washington Days Conference May 5 through May 7, 2008. Stanton E. Cope, AMCA Director, Mid-Atlantic Region, writes:

Greetings!

AMCA just concluded the 2008 version of "Washington Days". This was the 10th annual event, and major kudos go to Bill Meredith and Karl Malamud-Roam for all the hard work they did in pulling this off. Monday afternoon consisted of several interesting presentations. Tuesday was the "meat" of the event, when AMCA members visited Senate and House offices to meet with members of Congress and/or their staffers. Wednesday morning were more interesting presentations, particularly the one by Dr. Gordon Patterson on Politics, Power and Mosquito Control. Here are some points regarding this event:

1. The attached pdf contains the 6 issue papers that were prepared for this year. They are well-written, concise and should serve us all well.
2. There were about 78 attendees from 17 states. Florida led the attendance with 21 delegates, followed by California with 16. The Mid-Atlantic region had 9 delegates from Virginia (4), North Carolina (2), Delaware (2) and Maryland (1).
3. The AMCA members who attended Washington Days did so on their own dime and time. They repre sented all of us, and the AMCA in general, well on Capitol Hill.
4. This was my first time at this event, and it was well worth it. I encourage you to try and attend next year.

Good day to all.
Sincerely,
Stan
Stanton E. Cope, PhD
Director, Mid-Atlantic region, AMCA

The 6 issue papers referred to in Stan's update may be viewed on the VMCA web site (www.mosquito-va.org). A special thank you goes out to Stan for the update and to those individuals that took their time to represent Virginia: Gene Payne & Jason Pevear, Chesapeake Mosquito Control Commission and Jeff Hottenstein from Clarke Mosquito Control

Randy B Buchanan
VMCA Legislative Committee Chairman

A special thanks goes out to all of our sustaining members for 2008. Without their generous contributions much of what we do would not be possible. Please do not hesitate to contact any of the sustaining members, they are here to help you.

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True North Mapping, Inc Suzanne Luinis 31 Home Depot Drive #165 Plymouth, MA 02360 (781-710-8933 Suzanne@tnmapping.com	**Univar USA** Joe Andrews P.O. Box 177 Mars Hill, NC 28754 (252) 342-4651;Fax (828) 689-9139 Joe.Andrews@univarusa.com	**Valent Bio Science** Jim Andrews 4908 Wedgefield Drive Wilmington, NC 28409 (847) 778-8673;Fax (910) 392-7621 JamesAndrews@valent.com

2008 Adult Mosquito Surveillance & Identification Course

The VMCA held a 2-day adult mosquito identification course May 28 & 29 in Suffolk, VA. Dr. David Gaines was the primary instructor and Dr. Bruce Harrison made the trip to VA again this year to offer his assistance. Students spent class time identifying adult mosquitoes and learning proper surveillance techniques.

A special thanks to Dr. David Gaines and Dr. Bruce Harrison, as well as assistant instructors Jennifer Halpaus, Jason Williams, Charles Abadam and Lisa Wagenbrenner.

A very big thanks to the following sponsors who helped provide microscopes, lunch for both days, T-shirts for our participants and lodging for our educators. Without their support, this course would not have been possible.

Charlie Pate, Central Life Sciences/Zoecon

Doug Hill, Nikon Instruments, Inc

Eric Lentz & Joe Barile, Bayer Environmental

Virginia Arboviral Update

Human Arbovirus Cases

Thus far, there have been no human cases of arbovirus infection (of any kind) confirmed in Virginia in 2008. However, there have been a handful of imported human cases of dengue fever identified in Virginia since the beginning of 2008.

West Nile Virus

To date Virginia's mosquito surveillance programs have collected six WNV positive mosquito pools. These six positive pools were collected in the following jurisdictions: Portsmouth (1 pool collected on 7/1); Richmond City (3 pools collected on 7/2); and Fairfax County (2 pools collected on 7/8). This collection of multiple positive pools is particularly early this year; positives do not usually occur before mid to late July. The Portsmouth positive sets an early WNV record for the Tidewater Region with the previous earliest pools both having been collected on 7/9/03 in Hampton and Chesapeake. The last occurrence of such early and widespread WNV positives in Virginia was in 2003 when there were 26 human WNV cases, and again in 2004 when there were five human cases. As of yet, no WNV positive equines or sentinel chickens have been seen in Virginia.

A total of the 2,888 pools (117,703 mosquitoes) have been submitted, thus far, to Virginia's testing labs in 2008. Of these, 2,692 (108,804 mosquitoes) have been tested for WNV. *Culex* [*pipiens* + *restuans*] account for the largest portion of the pools tested for WNV (1,631 pools, 69,496 mosquitoes). In addition to the WNV positives seen to date, there have been seven equivocal WNV test results (five equivocal pools of *Cx.* [*pipiens* + *restuans*] from Fairfax Co.(1), Arlington Co. (1), Alexandria (1) and Richmond (2); and two equivocal pools of *Ae. albopictus* from Richmond). These equivocal results are earlier than any seen in Virginia in the past, and although equivocal results suggest the presence of WNV and have only ever been seen in pools of mosquito species that typically test positive for WNV, we cannot definitively conclude that the equivocals are actually WNV positives.

The higher than normal environmental temperatures seen in June may have accelerated the amplification of WNV (i.e., the WNV extrinsic incubation rate) in mosquitoes. This could explain the advent of earlier than normal WNV positive pools this year. An analysis of Virginia's mosquito testing data since 2002 has shown that early positive pools are one of several factors that correlate with increased human risk from WNV.

Eastern Equine Encephalitis

In spite of a lot of early EEE activity seen farther south in Georgia and Florida this spring, there have been no equine EEE cases seen in Virginia in 2008. Furthermore, none of the sentinel chicken flocks managed by surveillance programs in Virginia's Tidewater region have detected EEE activity. To date, 775 pools (33,802 mosquitoes) have been tested for EEE in 2008, but there have been no positive pools detected.

The detection of EEE infected mosquitoes appears to be later that usual this year because EEE positive pools are often detected by mid June in Virginia. In most other years, *Culiseta melanura* account for the majority of pools tested for EEE, but this year, the majority of mosquitoes tested for EEE have been *Culex salinarius*. According to sources in surveillance programs around the Great Dismal Swamp (a source of most of the Tidewater regions *Cs. melanura*) the *Cs. melanura* numbers may be down due to excessively dry conditions and low water tables in the Dismal Swamp this June and during this spring season. Among mosquito species tested for EEE in 2008, *Cx. salinarius* accounted for 340 pools (14,805 mosquitoes), *Cs. melanura* accounted for 224 pools (10,240 mosquitoes), and *Coquilletidia perturbans* accounted for 122 pools (5,497 mosquitoes).

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*MAMCA Representative: Kirby Foley (757) 673-3932 kfoley@cityofchesapeake.net
* Denotes a non voting member of the board.

2008 Organizational Members

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City of Poquoson Jerry Cagle 500 City Hall Ave Poquoson, VA 23662 jcagle@ci.poquoson.va.us 757-868-3519	**City of Hampton** Mike Elberfeld 419 N. Armistead Ave. Hampton, VA 23669 melberfeld@hampton.gov 757-727-2807	**Norfolk Dept Public Health** Norman Greefe 2800 Tarrant Street Norfolk, VA 23509 norman.greefe@vdh.virginia.gov 757-683-2841

Are you a director, manager, lead mosquito control person for your area. Consider signing up as an organizational member, the cost is only $15 but includes one regular membership.

What are the odds?

Here is a quick note from Portsmouth about our first WNV positive pool this year. This was the first WNV positive pool for Portsmouth in 2008, the first positive pool for the state, it was collected on first day of July. If that was not enough to freak you out. This was the also the first week we had poolable numbers from our gravid traps and this was the very first pool (#P-0001) we submitted this year from Portsmouth.

George Wojcik, City of Portsmouth

MAMCA Update

The MAMCA Board met April 23rd at the Sheraton Oceanfront Hotel in Virginia Beach. The planning meeting went well and George has selected an excellent location for the annual meeting in 2009. The Annual Meeting is scheduled for February 25 – 27, 2009. Pre-conference ID class will be skipped this year because of cost and number of students. In place of an ID course there will be a Mosquito 101 course offered February 24th. There are plans being made for pre-conference golf and fishing events …more information will follow later.

The only Eastern Equine Encephalitis and West Nile virus positives that I know of from the Mid-Atlantic region are the two sentinel chickens in the Edenton area of North Carolina. Virginia has had multiple positive WNV positive pools in July.

Thanks,

Kirby

TMVCC Update

Greetings all! Mosquito season is about half over, and as we all know there never seems to be a "normal" year. Things started off slow, but have picked up rather dramatically in the Tidewater area over the past few weeks. Even with the new activity, we have managed to have, what I feel, to be a very productive meeting season for the TMVCC. We have had some very interesting and educational demonstration-style meetings this year, and I think that everyone has really enjoyed the change of pace. We have covered proper larvaciding techniques and application rates, barrier sprays, RAMP testing, and lastly proper use of a backpack sprayer. I think that everyone has learned something from our vendor presentations this year. On behalf of the TMVCC, I would like to thank our vendors for their time and effort in creating successful meetings this year.

One announcement of note, I will be leaving the City of Portsmouth and the world of mosquito control on July 17, 2008. I have really enjoyed my time working with all of you, and feel privileged to have been able to serve as TMVCC president for the time that I did. Lisa Wagenbrenner and Mitch Burcham will be taking over the presidential duties, and the remaining scheduled meetings. I would like to thank them as well for all their help with the TMVCC planning and logistics. Thanks again, and I hope the best for you all.

Mike Harrison

Richmond Area Regional News

Waging War on Mosquitoes in the Richmond Area Get's Front Page Coverage

The Richmond Times Dispatch article "Waging War on Mosquitoes" ran on the front page of Saturday's Memorial Day Weekend edition. The article features a front page picture of Henrico's Jennifer Martin applying liquid larvicides to roadside ditch lines from a truck mounted applicator.

Outlined in the article were Henrico's mosquito control efforts including their proactive larviciding program as well as their Asian Tiger Mosquito Neighborhood Initiative Pilot program in Spottswood Park neighborhood.

Dr. David Gaines mentioned the Culex mosquitoes being produced in the Combined Sewer System (CSS) in the City of Richmond. The City of Richmond, Department of Public Utilities, went on record as planning to start a larviciding program for the CSS in the City starting in July 2008. Other Richmond Area municipalities were contacted by Times Dispatch personnel with no other localities acknowledging having organized mosquito control programs.

Mosquito Researchers Converge on the Fall of The James

Dr. George F. O'Meara, Florida Medical Entomology Lab, UFL, and Dr. Aparna Telang, Assistant Professor of Biology, University of Richmond, organized a research outing to examine the production of mosquitoes from the rock pools along the fall line of The James River.

Other participants included in this expedition were Dr. David Gaines and Jennifer Halpaus of the VDH Epi Team, three University of Richmond student research assistants (John Frey, Julie Rechel and Bennett Peterson), VCU graduate student Jayne Deichmeister, and other mosquito professionals from the area. In addition to documenting the mosquito production from these rock pools, there was a great exchange of information and knowledge. Preliminary observations of these rock pools revealed significant production of several *Aedes* spp., including *Ae. atropalpus*, and *Culex* spp. We hope to provide a speciation list of the mosquitoes collected in our next regional update.

City of Richmond Embarks on Mosquito Abatement Program

The beginning of July 2008 marks a monumental advance in mosquito control in the Richmond Metropolitan area. The City of Richmond has started an organized, proactive larviciding program for the combined sewer system, storm water catch basins. There are tens of thousands of these basins in the portions of the city that utilize a combined sewer system. Dr. David Gaines and Jennifer Halpaus , VDH mosquito folks, initially uncovered the impact that these units had on the amplification of WNV in the Richmond metro area. Randy Buchanan, Lane Carr and Jennifer Martin, of neighboring Henrico County, headed up observations and documentation of the impact that these catch basins have on Henrico's collections of *Culex pipiens* complex mosquitoes testing positive for WNV. The sharing of information between organizations prompted cooperative efforts to address these tremendous breeding sites. Thanks to Tarron Richardson and Richmond's Public Utilities Department for addressing this issue on the inlet side.

Submitted by Lane Carr

Variations on Female Mosquitoes that Cause Identification Problems in Keys

Bruce A. Harrison, Ph.D.
PHPM, NCDENR

One shortcoming of most mosquito keys is they do not address common or uncommon variations that occur on most species. A specimen that does not possess a particular character that it is supposed to have, or that has additional scale patterns that are not normally there will not go correctly through a couplet and can lead you down a blind alley where the specimen does not appear to fit any species in the key. A major priority in devising keys is to keep it short and thus, the taxonomist tries to find one to three unique characters for each species at the expense of infrequent or even common variations. However, identification problems occur most often when only one character is used in a key couplet. Ideally each key booklet should contain a section for each species that discusses known variations that are frequent or infrequent on that species. This would aid identifiers and greatly reduce confusion and misidentification of species.

Population genetics affects mosquitoes just as it does humans. Variations on a given mosquito species can be as common as black, blond, or red hair (or eye colors) are in humans. Did you know that some mosquito species produce albino individuals or melanistic (black) individuals (Sucharit et al. 1979), when the normal species coloration is black and white spotted? Usually the most commonly encountered species or species that emerge in huge numbers are the ones expressing the most variations. This is because they are living in optimum habitat and very successful in that area and because the dense populations (millions) increase chance mutations that can change characters, or changes in the environment can stimulate the expression of less common alleles (hence traits) found in the genetic makeup of the species.

Below I am initiating a series of artides that address variations on commonly encountered species. These articles will each focus on several species and initially tell you (1) the problem encountered in current keys, (2) what the variations are and how they impact the keys, and (3) comments and characters to assist you in correctly identifying the variable specimen(s).

I. *Ochlerotatus mitchellae* (Dyar)

Problem. In Darsie and Ward (2005, page 25, couplet 3) and Slaff and Apperson (1989, page 5, couplet 5), species are separated by either having or not having a pale-scaled band near the middle of the proboscis. There are only three species of *Ochlerotatus* that occur in North Carolina and Virginia that normally have a pale band on the proboscis. Those three species, *Oc. mitchellae*, *Oc. sollicitans*, and *Oc. taeniorhynchus* are all most common in the coastal plain. The first is a freshwater species that can also occur in the piedmont, while the last two are salt marsh species that normally occur only along the coast. When this pale proboscis band is absent the specimen will not come out at the correct couplet in the keys.

Variation. Occasional specimens of this species will lack a pale band on the proboscis. I have one specimen collected in 1995 from Bolivia, Brunswick Co., NC, with this variation. This specimen will not go through couplet 3 in Darsie and Ward to couplets 4 and 5 where it would be correctly identified, but instead the specimen will come out in couplet 14 as either *Oc. bahamensis* or *Ae. albopictus*. In Slaff and Apperson, this specimen will not key out where it should in couplet 7, but will take you to couplet 12 and *Oc. stimulans,* which does not occur in North Carolina.

Solution. Specimens of *Oc. mitchellae* without a pale band on the proboscis are still easily identified by having the following combination of characters: (1) dark wing scales, (2) a median longitudinal yellow stripe down the abdomen, (3) speckled white scales on the femur and tibia of each leg, and (4) hindtarsomere 5 entirely white.

II. *Ochlerotatus sollicitans* (Walker) – Eastern Salt Marsh Mosquito

Problem. The same problem as in "I" above, i.e., the presence or absence of a pale band on the proboscis

Variation. Mahmood (2008) recently pointed out that occasional specimens of *Oc. sollicitans* lack a pale band or only have an incomplete pale band on the proboscis. If the band is completely missing (e.g., a specimen from New Hanover Co., NC, collected in 2005), it will not go to couplet 4 in Darsie and Ward, and eventually to *Oc. sollicitans*, but will go to couplet 7 and then on through other couplets to possibly end in couplet 17, where the average individual would identify the specimen as *Oc. nigromaculis* (a western U.S. species) because of the median longitudinal yellow stripe on the abdomen. However, the specimen would not fit the first character in couplet 17, as *Oc. sollicitans* usually has a few pale scales at the tip of the palpi, while the palpi of *Oc. nigromaculis* are entirely dark. So, correctly identifying the specimen in couplet 17 and beyond is impossible. In Slaff and Apperson, the specimen will not go to couplet 6 and then to *Oc. sollicitans* in couplet 7, but will go to couplet 8 and beyond to *Oc. stimulans* in couplet 12.

Solution. First, it is important to understand that *Oc. sollicitans* normally emerges in moderate to huge numbers, so you will probably have a considerable number of specimens that key correctly through couplet 3 (i.e., they have a pale band on the proboscis). So, if you suddenly encounter a specimen with the proboscis entirely dark, but it otherwise looks like an *Oc. sollicitans*, check the color of the wing scales. If the wing scales are speckled black and white, then it is *Oc. sollicitans*. The wings on both *Oc. mitchellae* and *Oc. taeniorhynchus* have only black scales. Also, the specimen will have a median pale band on hindtarsomere 1 on *Oc. sollicitans*, while the middle of hindtarsomere 1 on *Oc. mitchellae* and *Oc. taeniorhynchus* are dark scaled. Caution, *Psorophora columbiae* has speckled scales on the wing and a median pale band on hindtarsomere 1, but this species has a broad imprecise pale band on the proboscis, and a narrow preapical pale band on the hindfemur. I have never seen a *Ps. columbiae* with the proboscis entirely dark.

II. *Ochlerotatus taeniorhynchus* (Wiedemann) – Black Salt Marsh Mosquito

Problem. Again the same problem as in "I" and "II" above, i.e., the presence or absence of a pale band on the proboscis.

Variation. Gargan and Linthecum (1986) conducted a study based on specimens from Assateague Island, VA, and determined that nearly two percent of *Oc. taeniorhynchus* specimens they examined lacked a pale band on the proboscis. I have three specimens from NC exhibiting this variation (2 from Carteret County and 1 from Craven County). These specimens would not be identified as *Oc. taeniorhynchus* in Darsie and Ward, but would go through couplet 11 to *Ae. vexans* and *Oc. cantator*, or on to later couplets and *Oc. stimulans* in Slaff and Apperson.

Solution. Again, like *Oc. sollicitans*, this is another species that emerges in the huge numbers, so if you find a specimen of that looks like *Oc. taeniorhynchus,* but it lacks a pale band on the proboscis, think *Oc. taeniorhynchus*. Specimens of *Oc. taeniorhynchus* without a pale band on the proboscis have the following unique combination of characters: (1) wing scales are dark, (2) abdomen lacks a pale median longitudinal stripe, (3) hindtarsomere 5 is usually entirely pale, or with some apical dark scales on the venter and with pale scales dorsally, (4) lower mesepimeron with 1-2 setae (compare with *Ae. vexans* – without these setae); and (5) hindtarsomeres 1-4 have a few dorsal pale scales at the apex of each segment and occasionally these extend around the segment and appear as a narrow apical pale band. This last character condition could fool some identifiers into keying this species as having apical and basal pale bands on the hind legs. However, normally this is not the case as the pale apical scales are usually only on the dorsum of each segment (Belkin et al. 1970).

This first installment about variations was slanted toward people working in the coastal plain and dealing with salt marsh mosquitoes. The next installment will deal with species that are common throughout NC and VA. If you have found a particular variation on a given species confusing, please let me know and I will address it in a future installment. Comments about these notes are welcome.

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The Skeeter is the official publication of the Virginia Mosquito Control Association.

The VMCA membership is encouraged to submit articles, reviews, and any other interesting facts or tidbits for publication. Submissions can be sent to Jennifer Martin at mar98@co.henrico.va.us

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Interesting species of Suffolk, VA

In the last year the City of Suffolk's Mosquito Control Program expanded its service from a few special taxing districts to the whole city. The only way to understand the mosquito population dynamics of environments within the city is to increase our adult mosquito surveillance sites and expand our larval surveillance. This year we have gained access to the Dismal Swamp and have chosen four sites from four different ditches that originate from the swamp. We increased our weekly trap nights from 30 in 2007 to 60 in 2008. To say the least we are keeping busy.

Ochlerotatus japonicus

With all this trapping going on we have found some interesting species, all belonging to the *Ochlerotatus* genera. In the beginning of the season we found a small population of *Ochlerotatus atropalpus* inhabiting unused storm drain piping on the public works lot. The next interesting find was *Ochlerotatus aurifer* in the swamp and areas bordering the swamp, followed by *Ochlerotatus thibaulti* a species also found in the swamp. *Ochlerotatus japonicus* was found next. It has been found three different times at three different sites all located on the north western side of Suffolk. We finally identified *Ochlerotatus hendersoni* at three sites which run from the Southeast to the Northeast of the city. These specimens were all found on the same day after a rain event. We believe that they inhabit more areas but they are hard to find because adults are difficult to identify and live in the canopy of trees, where most CDC traps are not placed.

Ochlerotatus aurifer

Ochlerotatus hendersoni

Ochlerotatus atropalpus

Ochlerotatus thibaulti

Charles Abadam, Suffolk Mosquito Control

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