The Newsletter of the Florida Mosquito Control Association Volume 7, Issue Number 3
May/June 2007

FMCA Annual Fall Meeting

November 11 – 14, 2007
Crowne Plaza, 1201 Riverplace Blvd., Jacksonville, FL 32207
904-398-8800 ext. 500; Rooms will be $119.00 before 10/11/2007

First call for papers inside this issue of *BuzzWords*

2008 FMCA Dodd Plenary Short Courses

January 28 – February 1, 2008
Ocala Hilton, 3600 SW 36th Avenue, Ocala, FL, 352.854.1400
Rooms: $109.00 S/D before 12/7/07.
On-Line reservation code will be available soon at www.floridamosquito.org

Southeast Regional Public Health & Vector Management Conference
February 19 – 21, 2008
www.pherec.org

FMEL Advanced Mosquito Identification & Certification Course
March 10 – 21, 2008
Registration will open on August 1, 2007
http://mosquito.ifas.ufl.edu

FDACS News

FDACS Projects funded for 2007-08:

Using Modeled Water Table Depth to Help Reduce Emergency Mosquito Control Insecticide Applications in Florida. Dr. Jonathan F. Day, PI. Amount $41,475.

Isolation of Mosquitocidal Bacteria with Improved Efficacy from Various Mosquito Habitats in Florida. Dr. Hyun-Woo Park, PI. Amount $42,174.

Examining a Method to Increase Testing Efficiency of Mosquito Pools for Arboviruses. Dr. Christopher Mores, PI. Amount $24,415.

Non-pesticidal Mosquito Control Pilot Study in St. Andrew State Park. Dr. John Smith, PI. Amount $32,252.

Effects of Droplet Size, Air Blast Strength and Application Angle for Barrier Treatment Equipment. Dr. Jane Barber, PI. Amount $23,837.

Spread, Larval Habitat, Seasonal Abundance and Vector Status of Culex coronator: A New Invasive Species in Florida. Dr. John Smith, PI. Amount $58,092.

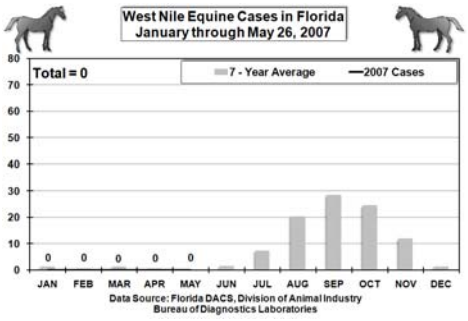
Describing the External Morphology of Culex nigripalpus Female Antennae. Dr. Roxanne Connelly, PI. Amount $5,806.

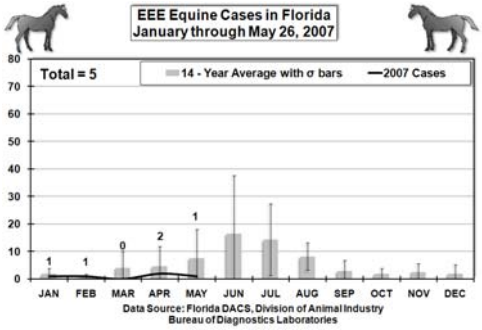
Updating and Reprinting the Florida Mosquito Control "White Paper". Dr. Roxanne Connelly, PI. Amount $21,000.

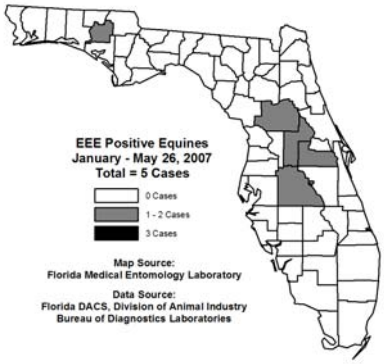
The total amount awarded: $249,024.

News from PHEREC

Two new Technical Memoranda have been added to the PHEREC web site. Go to http://www.pherec.org/bottleassay/technicalmemoranda/ for protocols detailing steps for preparing "off the shelf" DUET® and PYROCIDE® for insecticide resistance testing by the bottle bioassay. For more information, please contact Dr. Jack Petersen at drjack3@hotmail.com







Recognize the individuals who have made outstanding contributions to Mosquito Control by nominating them for the 2007 FMCA Awards!

Any Florida Mosquito Control Association member in good standing may nominate a candidate for any of the 6 FMCA awards by submitting to the Awards Committee a short biographical sketch and an appraisal of the nominee's accomplishments deemed worthy of the award. There is no official nomination form. Endorsements and written support from other colleagues are encouraged, and all submissions will be acknowledged.

Nominations must be received by August 3, 2007.

Please submit inquiries and nomination documents to Awards Committee Chair: Stephen L Sickerman, FDACS, Bureau of Entomology & Pest Control, 3920 Frankford Avenue, Panama City, FL 32045-1953

***phone* 850-872-4250 / *fax* 850-872-4271 / *e-mail* sickers@doacs.state.fl.us**

The **FMCA Merit Award** recognizes outstanding individual contributions in promoting control of disease-transmitting and pestiferous mosquitoes or other arthropods of public health importance, for scientific advancement of the discipline, or for developing or extending the public interest in the control of such mosquitoes or other arthropods. The candidate should represent those characteristics generally associated with responsible leadership, good citizenship and personal integrity. The candidate should be an FMCA member and have made significant contributions to the Association.

The **Joseph Y. Porter Distinguished Achievement Award**, which honors the first President of the Florida Anti-Mosquito Association and first State Health Officer of Florida, recognizes scientists who have made significant contributions to entomology, with special emphasis on the abatement of arthropods of public health importance. The candidate must have meritoriously contributed to the advancement of entomology research in the field of mosquito and/or other biting arthropod control in the State of Florida. The candidate should be an FMCA member and have made significant contributions to the Association.

The **Fred Stutz Memorial Award**, which honors the former director of the Dade County Mosquito Control office, recognizes an outstanding contribution to mosquito control by development of procedures that increase effectiveness in mosquito or other arthropod control, or the design and manufacture of equipment that helped revolutionize the control of mosquitoes and/or other arthropods of public health importance. The candidate should be an FMCA member and have made significant contributions to the Association.

The **Sherrie Yarberry Award**, named for a dedicated employee of the Jacksonville Mosquito Control office, recognizes continued outstanding contributions to operational program activities by veteran, non-administrative personnel of Florida mosquito control related agencies. The candidate must demonstrate exemplary performance resulting in enhanced unit efficiency or public recognition of excellence of the parent organization. The recipient of the Sherrie Yarberry Award will receive $500 cash, a commemorative certificate, and funding to attend the Annual Fall Meeting.

The **James W Robinson Memorial Award** was established in 2005 as a memorial to Jim Robinson, Director of the Pasco County Mosquito Control District, who was renowned for his innovative development of new equipment and adoption of new technologies. This award recognized innovation and ingenuity in optimizing the safe and efficient operations of Florida public health pest control programs. The candidate must have contributed an outstanding improvement to equipment or techniques used by a non-commercial mosquito control related agency. This advancement may not be proprietary in nature, and must be freely shared with the Association. The recipient of the award will receive $500 cash, a commemorative certificate, and funding to attend the Annual Fall Meeting.

The **Maurice W. Provost Memorial Award**, established as a memorial to the first Director of the Florida Medical Entomology Laboratory, honors persons who have made outstanding contributions to mosquito control and/or biting fly biology in Florida. Candidates must have been instrumental in one or more of the following areas: developing sound management and operational methods to reduce pesticide levels and to minimize habitat alteration while reducing mosquito populations; increasing our knowledge of mosquitoes and other biting insects and their habitats; and educating students and the general public about the importance of various environmental issues facing the citizens in protecting the fauna and flora in Florida. The candidate should be an FMCA member and have made significant contributions to the Association.

Florida Mosquito Control Association

FIRST CALL FOR PAPERS
2007 ANNUAL FALL MEETING
Crowne Plaza Jacksonville Riverfront
1201 Riverplace Boulevard
Jacksonville, FL 32207
904.398.8800
November 11 – 14, 2007

You are invited to submit a title for a paper to be presented at the 2007 Annual Fall Meeting of the Florida Mosquito Control Association, to be held at the Crowne Plaza Jacksonville Riverfront hotel, 1201 Riverplace Boulevard, Jacksonville, FL from November 11-14, 2007. Type the title, author(s), organization(s), and address (es) exactly the way they are to appear on the program. If more than one author is listed, place an asterisk after the name of the author who is to present the paper. **Send this form to Dr. Frank Van Essen, Collier Mosquito Control District, 600 North Road, Naples, FL, 34104-3464, E-mail: cmcd@collier-mosquito.org, Telephone: 239.436.1000; FAX: 239.436.1005.** Please submit as soon as possible so there is time to plan and organize the program.

TITLE: _____

_____

AUTHOR: (INCLUDE E-MAIL, TELEPHONE AND FAX NUMBERS OF PRESENTER)

1. _____

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2. _____

3. _____

ORGANIZATION:

1. _____

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3. _____

MAILING ADDRESS:

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3. _____

REQUESTED DURATION OF PRESENTATION: ____ 10 min ____ 15 min ____ Symposium ____ Other

AV EQUIPMENT REQUIRED: ___ Slide ___ LCD ____ Overhead _____ Other (please specify)

PAPER CATEGORY: ___ Research ___ Operations ____ Regulatory _____ Other (please specify)

Florida 2006 Arbovirus Activity

During 2006, Florida experienced uncharacteristically low levels of arbovirus activity, likely due to prolonged spring drought conditions throughout the state. Twenty of Florida's 67 counties reported confirmed West Nile virus (WNV) activity and 22 counties reported confirmed Eastern Equine Encephalitis virus (EEEV) activity. In comparison, 50 counties reported confirmed EEEV activity and 35 counties reported confirmed WNV activity during 2005. Eight counties reported confirmed St. Louis Encephalitis virus (SLEV) virus activity in 2006, compared to 4 in 2005. Six counties reported Highlands J virus (HJV) activity in 2006, compared to 16 in 2005.

Human Surveillance

No locally-acquired human cases were reported in 2006. However, three Florida residents became ill with WNV infection while traveling to other states, and one resident became ill with LaCrosse Encephalitis while visiting another state. In 2005, 21 locally-acquired cases of WNV illness and 5 cases of locally-acquired EEE were confirmed in Florida residents. No mosquito-borne illness advisories or alerts were issued in Florida during 2006.

In 2006, imported cases of dengue fever were reported in residents who had traveled to dengue-endemic countries. Of these, three were confirmed and the remaining cases were probable. Dengue cases were reported in residents of Alachua (2), Broward (3), Citrus (1), Marion (2), Miami-Dade (5), Orange (1), Palm Beach (3) and Pinellas (4) counties. Table 1 is a summary of human activity from 2001-2006.

Table 1. Human arbovirus activity, Florida, 2001-2006

Human Cases	2006	2005	2004	2003	2002	2001
WNV illness	**0**	**21 (4)***	**42 (7)**	**94 (29)**	**35 (17)**	**11 (8)**
EEE	**0**	**5 (5)**	**0**	**3 (3)**	**1**	**3 (3)**
SLE	**0**	**0**	**0**	**0**	**1**	**0**
DEN	**21 (8)**	**18 (8)**	**12 (10)**	**15 (8)**	**21 (6)**	**21 (5)**

*Number of affected counties in parentheses

Animal Surveillance

Eastern Equine Encephalitis Virus: Positive samples from 120 live wild birds in 5 counties, 75 sentinel chickens in 13 counties, and 17 horses in 12 counties were received. Twenty-two of Florida's 67 counties reported EEEV activity in 2006. In 2005, 49 of Florida's 67 counties reported EEEV activity in animals (plus one county, Monroe, reported only mosquito EEEV activity).

Highlands J Virus: Highlands J virus is a close relative to EEEV but is not as pathogenic in humans or as virulent in animals. Positive samples from 7 sentinel chickens in 6 counties were received in 2006. Sixteen counties reported HJV activity in 2005.

California Serogroup viruses: A positive sample from 1 dead bird was received from Gilchrist County.

St. Louis Encephalitis Virus: Positive samples from 37 sentinel chickens in 8 counties were received in 2006. Many of the live wild birds reported under the West Nile virus heading, below, tested positive to indeterminate flavivirus, so it is not clear whether they were reactive to antibody to SLEV or WNV. During 2005, four counties reported SLEV activity.

West Nile Virus: Positive samples from 40 live wild birds in 7 counties (16 of which were reactive to indeterminate flavivirus antibodies) and 30 sentinel chickens in 16 counties were received. Twenty of Florida's 67 counties reported WNV (or indeterminate flavivirus) virus activity. Many of the live wild birds tested positive to antibodies to indeterminate flavivirus (could be SLEV or WNV). In 2005, 35 of Florida's 67 counties reported WNV (or indeterminate flavivirus) activity.

Mosquito Surveillance

California serogroup (CAL) viruses were isolated from 7 of the 1,261 mosquito pool specimens received from 13 counties this year. No other arbovirus was isolated from mosquitoes.

Bird Mortality Surveillance

During 2006, residents of 64 Florida counties reported dead birds to the website maintained by the Florida Fish and Wildlife Conservation Commission (www.myfwc.com/bird/). This resulted in 1,745 reports representing a total of 3,299 dead birds (147 crows, 150 jays, 113 raptors, and 2,889 others). In 2005, 992 reports representing a total of 1,864 birds were received from 59 counties. Of the 366 dead birds tested at the Tampa State Laboratory, one was positive for antibodies to a California serogroup virus.

Acknowledgements and data sources: Thank you to the many partners who contribute to this comprehensive surveillance program, including county health departments, Department of Health Laboratories, Department of Agriculture and Consumer Services, mosquito control agencies, Florida Fish and Wildlife Conservation Commission, medical providers and veterinarians. Equine cases are determined by the Department of Agriculture and Consumer Services. Wild captured bird information is provided by the Florida A&M University, John A. Mulrennan Sr., Public Health Entomology Research & Education Center. For more information, go to http://www.pherec.org/DECS, and click on “Arbovirus Ecology” to download the database, then the "Bird Serology" tab. For complete surveillance information by county for 2006, please visit our website at www.doh.state.fl.us/environment/community/arboviral/index.html.

Rebecca Shultz, MPH; Caroline Collins; Daneshia Roberts; & Carina Blackmore, DVM, PhD, State Public Health Veterinarian, State Environmental Epidemiologist, Florida Department of Health

An Outlook for Arborival Transmission in Florida During the Second Half of 2007

The efficient amplification and transmission of mosquito-borne Flaviviruses (West Nile virus (WNV) and St. Louis encephalitis virus (SLEV)) in Peninsular Florida depends on a fine balance between wet and dry conditions during the spring and early summer months. Modeled Water Table Depth (WTD) provides a measure of the intensity of drought and wetting at a particular recording site throughout the year. The drier it is (the more intense the drought), the deeper below the surface is the water column. Figure 1, shown below, is a composite of WTD data collected in Indian River County (IRC), Florida during two SLE epidemics (1977 - top line and 1990 - bottom line), and the average of the WTD data reported during both epidemic years (middle line).

The epicenter for both the 1977 and 1990 SLE epidemics occurred in IRC, indicating that the ecological and environmental factors driving the epidemics had their beginnings in IRC. Both of the epidemic WTD lines in Figure 1 are remarkably consistent. They begin with an initial dry-down (IDD) from week 1 through week 22. The IDD is followed by a period of initial wetting (IWET) from week 22 through week 27. The IWET period is followed by a secondary dry-down (SDD) from week 27 through week 32. Finally, the SDD is followed by a period of secondary wetting (SWET) from week 32 through the end of the year.

This dry-wet-dry-wet cycle in Peninsular Florida favors the amplification of SLEV and WNV by forcing vector mosquitoes and avian amplification hosts into contact in freshwater habitats during the IDD period. The forced contact of vectors and amplification hosts facilitates arboviral amplification and the IWET period allows the dispersal of infected vector mosquitoes and avian amplification hosts. The SDD period again forces mosquitoes and avian amplification hosts into focal habitats that contain freshwater and allow a second round of amplification. The SWET period allows dispersal of infected mosquitoes into habitats where they encounter and blood feed on humans and, in the case of WNV, horses, initiating epidemic and epizootic arboviral transmission.

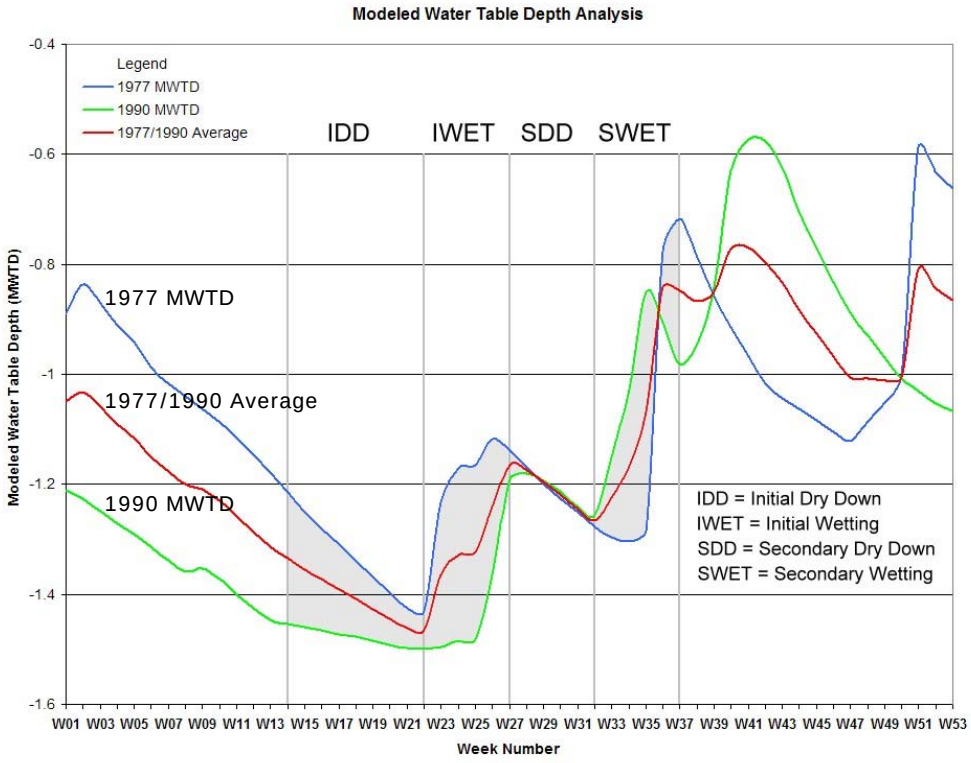

Figure 1. The ideal sequence of dry and wet conditions that result in the efficient amplification and epidemic transmission of SLEV in Peninsular Florida.

The meteorologically-driven amplification and transmission of eastern equine encephalitis virus (EEEV) in North Florida and the Florida Panhandle is somewhat different than that for the Flaviviruses in Peninsular Florida described above. The EEEV is amplified between *Culiseta melanura* and resident/migratory birds in a hardwood swamp cycle during the autumn and winter months. Heavy spring droughts prevent the dispersal of EEEV from these swamp habitats while wet spring conditions allow infected mosquitoes and birds to disperse from the swamps carrying the EEEV with them. Once outside of the swamps, EEEV undergoes secondary amplification and transmission to humans and horses in habitats that are adjacent to the original amplification sites.

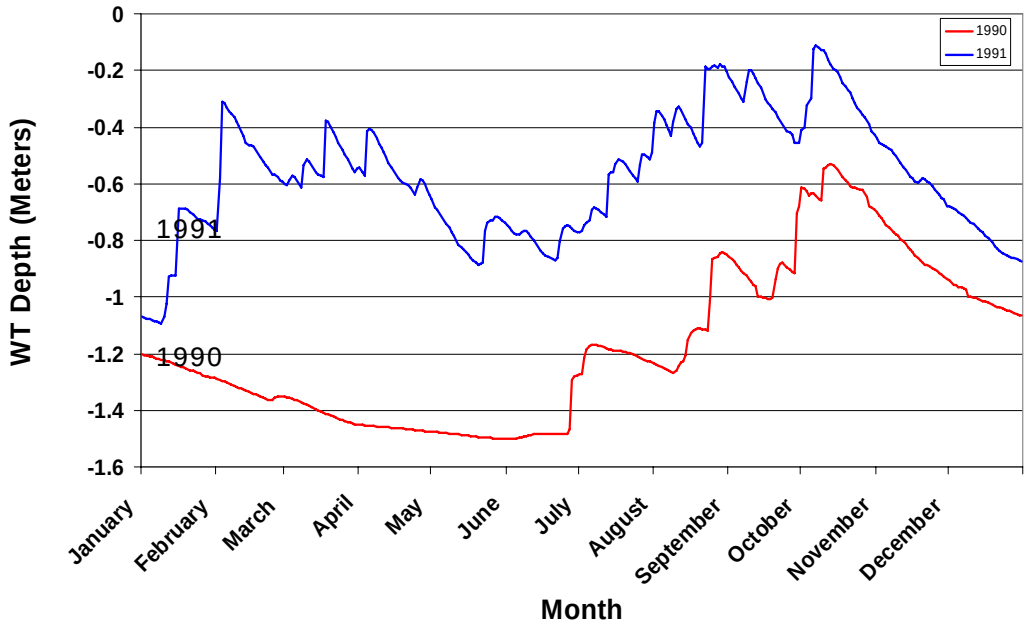

Figure 2. The ideal sequence of drought and wetting that results in the efficient amplification and transmission of SLEV in Peninsular Florida (bottom line) and EEEV in North and Panhandle Florida (top line).

A comparison of the ideal modeled WTD curves for EEEV and Flavivirus amplification and transmission is shown in Figure 2. The basic meteorologically-driven amplification and transmission dynamics differ for EEEV and Flaviviruses. In general, wet springs (top curve in Figure 2) favor EEEV dispersal and transmission while dry springs (bottom curve in Figure 2) favor the amplification, dispersal, and transmission of Flaviriruses in Florida.

This brings us to the risk of arboviral amplification and transmission in Florida during the second half of 2007. As you undoubtedly know, Florida and the southeastern United States are suffering one of the worst droughts in recorded history. Figure 3 shows the Keetch-Byram Drought Index (KBDI) map for Florida from May 23, 2007. The KBDI map indicates the amount of moisture at the ground surface. The KBDI scale goes from 0 to 800. A reading of 0 indicates saturated soil while a reading of 750 to 800 is indicative of what one would expect to find in a desert.

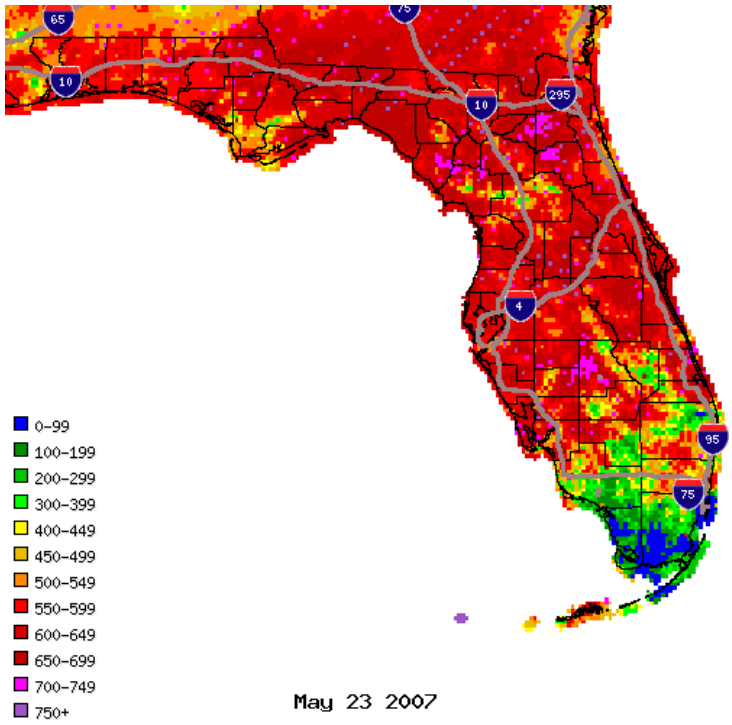

Figure 3. The May 23, 2007 Keetch-Byram Drought Index (KBDI) map for Florida. Drought Index values greater than 550 (dark grays if the map is being viewed in black and white) indicate severe drought. The entire state of Florida, with the exception of southern Dade and northwestern Monroe Counties, is currently dangerously dry.

As noted above, severe droughts do not favor mosquito production or arboviral amplification and transmission. The last time Florida experienced a severe, multi-year drought was in 1987, 1988, and 1989. It is evident from surveillance data (mosquito and arboviral) during those years that mosquito populations and arboviral transmission was greatly reduced in Florida (Day and Curtis, 1993). Figure 4 below shows the number of emerging *Cx. nigripalpus* females during a six year period from 1986 through 1991. It is evident that there was little mosquito reproduction, and consequently little arboviral transmission, during the period from 1987 through 1989. This period coincided with a severe drought in the Florida peninsular. These years also helped to set the stage for a major SLE epidemic in the same region during the late summer and autumn of 1990.

The severe drought under which Florida now suffers makes the likelihood of a major arboviral epidemic during the next six months unlikely. As we saw in 1987-1989, dry conditions curtail mosquito blood feeding and egg laying and severely impact the reproductive abilities of important arboviral vectors. This reduces host contacts and mosquito reproduction in general and, in so doing, reduces the amplification and transmission of mosquito-borne viruses.

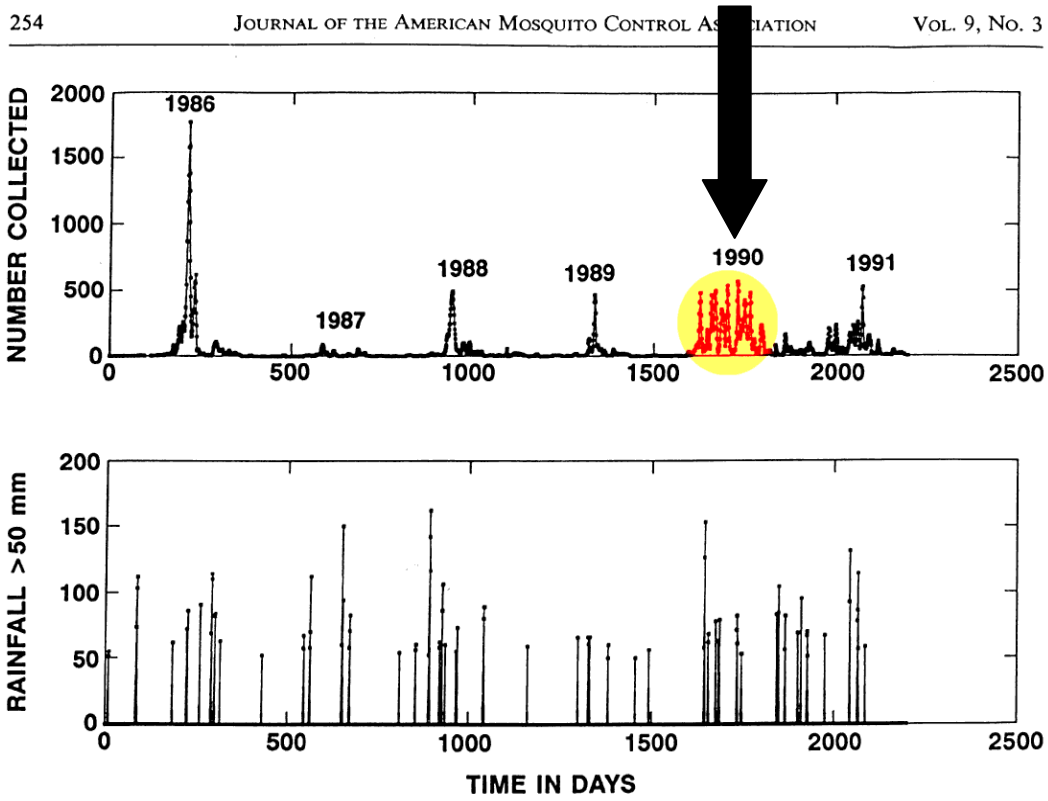

Figure 4. *Culex nigripalpus* emergence patterns in Indian River County, Florida from 1986 through 1991 (top frame). The mosquito emergence patterns are compared with heavy rainfall events (> 50mm during a 72 hr time period) during the same years (bottom frame).

Severe droughts, whether they last for three months or for three years, do end. The lesson from the 1987-1989 droughts and the subsequent SLE epidemic in 1990 is that these droughts may set the stage for major arboviral transmission events. Droughts reduce arboviral transmission to wild birds and serve to increase the number of susceptible wild birds when the drought ends. In addition, droughts prevent the flooding to temporary pools that are the favorite oviposition sites of *Cx. nigripalpus*, the major arboviral vector in the Florida peninsula. While remaining dry for months, or even years, these sites accumulate vegetation that, once flooded, produces a highly attractive and nutritious development site for larval mosquitoes. These oviposition sites become unusually productive for multiple generations of mosquitoes (see the highlighted *Cx. nigripalpus* emergence pattern for 1990 in Figure 4). While we may escape a major epidemic during this drier than normal year of 2007, we need to keep our mosquito and arboviral surveillance efforts current and we need to remain vigilant of all of the signs that will indicate conditions that are favorable to a severe mosquito-borne virus epidemic in the future.

References

Day and Curtis. 1993. Annual emergence patterns of *Culex nigripalpus* females before, during and after a widespread St. Louis encephalitis epidemic in south Florida. J. Am. Mosq. Control Association 9 (3):249-255

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Caution on Proposals to Reduce Florida Mosquito Control Budgets: Dangerous Times and a Step Back for Public Health and Well Being

Florida mosquito control and public health professionals anxiously await the outcome of the Florida Special Legislative session in Tallahassee where Florida's taxation policy including property taxes and millage rates are likely to be changed. County governments and local taxing districts throughout Florida are preparing now for the impact of some of the proposed changes that are being discussed that will impact their budgets and ability to maintain current infrastructure and services. Many Florida county governments have requested plans from their agencies to adjust to 10% and 25% reductions in their budgets.

What does this mean for Florida mosquito control and the future for Florida's capabilities to protect the public health and well being? The bottom line is that reducing budgets translates into reducing Florida's mosquito control capabilities. This is a step in the wrong direction for Florida. Decisions to reduce budgets for mosquito control are fraught with danger that will impact Florida with increased risk from mosquito-borne disease and increased mosquito populations.

The Florida State Legislature through Chapter 388, F.S, mandated that Florida's public policy is to achieve and maintain such levels of arthropod control as will protect human health and safety and foster the quality of life of the people, promote the economic development of the state, and facilitate the enjoyment of its natural attractions by reducing the number of pestiferous and disease-carrying arthropods.

Mosquito control in Florida provides a basic critical public health function and is essential to maintain the well-being of Florida's citizens by keeping Florida's prodigious pest mosquitoes under control. This is something that Florida's citizens take for granted and have come to expect. Florida mosquito control can take great pride in providing services that have reduced the incidence of several diseases. Florida has escaped so far the anticipated large scale West Nile outbreaks that have occurred elsewhere in the U. S. However, Florida remains at risk from West Nile (see Day in this issue), and the threat remains for other mosquito transmitted diseases like Eastern Equine Encephalitis, St. Louis Encephalitis, Dengue, Malaria and Chikungunya.

The economic impact of reduced mosquito control on Florida is hard to measure, but the results of a failure to provide effective mosquito control could be very dramatic. 10% -25% reductions in budgets are drastic and will place almost every mosquito control agency in Florida in the unenviable position of determining which mosquito control operations will be reduced or eliminated entirely. Clearly surveillance capabilities for mosquito-borne diseases are in jeopardy and the potential negative impact in mitigating West Nile outbreaks is discussed elsewhere (Tabachnick 2007) Likely there will be reductions in larviciding, adulticiding, source reductions and almost all operations used to keep mosquito populations at bay. Make no mistake, mosquito control Directors will make the required cuts and will reduce their budgets. However the delusion is that what will remain will provide the public with the mosquito control and protection that Florida is accustomed to. Frankly, it will not. Despite rhetoric preaching "do more with less," the reality is that reductions of this nature mean "doing less with less." This will mean more mosquitoes, greater risk of a disease outbreak, and when the conditions are right, more human cases. Some agencies may believe that funds could be held in reserve to increase mosquito control in an emergency. Reductions of 10%-25% mean that capabilities will be lost in infrastructure that will not readily become available in time even with emergency funding. Make no mistake, reducing mosquito control is a dangerous gamble that could result in a catastrophe for Florida. It is certainly not the right direction for Florida on such an important issue.

Mosquito control and public health professionals have a professional responsibility to advise government policy officials and administrators that reductions in mosquito control will jeopardize Florida's capacity to mitigate mosquitoes and mosquito-borne diseases. An increase in mosquito populations, with increased risk for a mosquito-borne disease outbreak, reduced ability to mitigate outbreaks, and more human cases could result in severe economic and public health problems that will cost the state far more then any savings made by even 25% reductions in mosquito control funds. Reducing Florida mosquito control is counter to providing Florida's citizens adequate and timely mosquito control that will protect public health and well-being.

It is dangerous and irresponsible to believe one can reduce mosquito control capabilities with no risk or consequences. I urge the responsible officials to exercise extreme caution in making these decisions.

Tabachnick, W. J. 2007. Tough choices for West Nile Virus surveillance programs. *BuzzWords* 7(2): 6-7.

Walter J. Tabachnick, Ph.D.
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Vero Beach, Florida

Looking for articles related to mosquitoes? The databases listed below provide links directly to a PDF or HTML version of many mosquito-related journal articles and/or abstracts

Mosquito News and Mosquito Systematics Searchable Database:
US Army Center for Health Promotion and Preventative Medicine

http://chppm-www.apgea.army.mil/mosquitonews/users/index.aspx

Mosquito Publications by WRBU Staff
Walter Reed Biosystematics Unit

http://www.wrbu.org/mosqpubsa-m.html

Walter Reed Biosystematics Unit
2001 Systematic Catalog of Culicidae

http://www.mosquitocatalog.org/main.asp

University of Florida, IFAS, Electronic Data Information Source

http://edis.ifas.ufl.edu

Mosquito Information Page (FMEL)

http://mosquito.ifas.ufl.edu/BuzzWords.htm
http://mosquito.ifas.ufl.edu/Mosquito_Control_White_Paper.htm

USDA, Center for Medical, Agricultural, and Veterinary Entomology

http://www.ars.usda.gov/Services/Services.htm?modecode=66-15-00-00

Armed Forces Pest Management Board

http://lrs.afpmb.org/rlgn_app/ar_login/guest/guest

Florida Medical Entomology Laboratory

http://fmel.ifas.ufl.edu/pagestart.htm

The deadline for submissions to be included in the July/Aug 2007 issue of *BuzzWords* is July 6, 2007.

Please send change of address or newsletter submissions to:

Roxanne Connelly, Editor, 200 9th Street SE, Vero Beach, FL 32962

or buzzwords@ifas.ufl.edu