

Buzz Words



The Newsletter of the Florida Mosquito Control Association
Sept/Oct 2009

Volume 9, Issue Number 5

**South Carolina Mosquito Control Association
2009 Annual Meeting
Hickory Knob State Resort Park
McCormick, SC: November 4 – 6, 2009
<http://www.scmca.net> for more information**

**Florida Mosquito Control Association
81st Annual Meeting
Hyatt Regency Tampa: November 8 – 11, 2009
www.floridamosquito.org for more information
FINAL CALL for papers in this issue of *BuzzWords***

**Northeastern Mosquito Control Association, Inc.
55th Annual Meeting
Sturbridge Host Hotel, Sturbridge, MA: December 2 – 4, 2009
www.nmca.org for more information**

**2010 FMCA Aerial Short Course – “FLY-IN”
January 12 – 14, 2010
Lee County Mosquito Control District Facilities
Details inside this issue of *BuzzWords***

FMCA News



Silent Auction

The FMCA will again be conducting a Silent Auction at the upcoming Fall FMCA Meeting in Tampa. Please be thinking about what items you may want to contribute so that we can have another successful event. It would be great to see more entries this year! With everyone's help, we can do it. And, of course, the proceeds benefit a great cause – Florida Mosquito Control Foundation scholarships. Bring your items to the meeting and drop them off at registration.

2010 FMCA Aerial Short Course – “FLY-IN”

The 2010 Fly-In will be presented January 12-14 2010 at Lee County MCD Facilities. Program to be announced, but suggestions are welcome! For 2010, there is a

NEW HOTEL LOCATION:

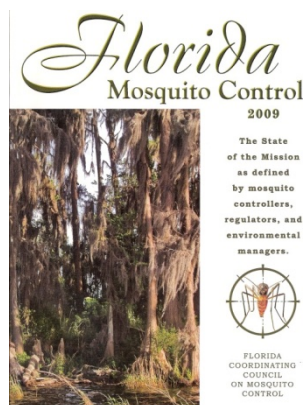
Holiday Inn Fort Myers Airport @ Town Center

9931 Interstate Commerce Drive, Fort Myers, FL 33913

Contact Mark Latham for more information or program suggestions:

manateemcd@aol.com (941-722-3720).

Pilots can contact Pamela Jacobson: pamelafmcpa@aol.com (813-612-7941).



The 2009 Florida Mosquito Control White Paper

is in print and can be downloaded from

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

or contact Roxanne Connelly for hard copies: crr@ufl.edu

NOTICE TO ALL FMCA MEMBERS

Following is a proposed **FMCA Mission Statement** that will be presented at the 2009 FMCA Fall meeting in Tampa for consideration and approval. If you have any comments or suggestions, feel free to contact any of the FMCA board members. This will be presented at the first business meeting and voted on at the final board meeting.

Proposed FMCA Mission Statement:

“Our mission is to promote effective and environmentally sound control of disease-transmitting and pestiferous mosquitoes and other arthropods of public health importance, develop and enhance public interest, awareness and support for the control of mosquitoes, and provide for the scientific advancement of members through our meetings, training and education.”



District News

Anastasia Mosquito Control District

Dr. Janet McAllister from CDC and Dr. Rui-De Xue will offer a training class on insecticide resistance and resistance management at AMCD, St. Augustine, FL, on November 12, 2009. CEU credits will be provided. There is no fee for registration. Contact Adam Holt at adamamcd@bellsouth.net or visit www.amcdsjc.org for more information.

Hands-on Training on Arbovirus Detection and Surveillance co-organized by China CDC and US CDC was held in Xining, Qinghai, July 13-17, 2009. G-D Liang, Q-Y Liu, T-Y Zhao and several other scientists from China, and Roger Nasci, Pollie Rueda, and R-D. Xue from the USA gave

lectures about arboviruses and vector mosquito identification, field collection methods, and surveillance system and techniques. There were 67 students from 27 provinces participating the training.

Dr. Rui-De Xue from AMCD was invited to give a lecture about mosquito-borne diseases at Hainan CDC and visited their field site for malaria eradication program funded by World Bank/WHO, July 16-17, 2009. Anti-malaria drug application, IPM, and the improvement of residential houses/conditions are their successful keys for malaria control/eradication.



Manatee County Mosquito Control District

Position Opening: Entomologist/Assistant-Director

Application Process: Interested individuals should submit a cover letter and a complete and current resume/CV that includes three verifiable references. Those invited to be interviewed will be required to complete a District employment application form.

Please direct all correspondence to:

Manatee County Mosquito Control District
Attn: Mark Latham, Director
2317 2nd Avenue west
Palmetto, FL 34221

Or electronically:

marklatham@manateemosquito.com

Closing Date: November 30, 2009

Salary Range: Commensurate with Experience

Anticipated Hire/Start Date: March 2010

Minimum Requirements:

Bachelors Degree in the Biological Sciences and 5 years of increasingly responsible experience in a mosquito control program. Possession of an advanced degree (MS, PhD) is desirable, although not required. Must be legally permitted to work in the United States. Must obtain a valid Florida Driver's License prior to employment. Must obtain the Public Health Pest Control License issued by the State of Florida within 3 months of employment.

Job Description:

Under the general direction of the District Director, the Entomologist will initially be tasked with managing the entomology department of the district, responsible for mosquito and arbovirus surveillance functions throughout Manatee County. In this capacity the Entomologist will be expected to learn how to identify the major mosquito species found in Manatee County. It is anticipated that the responsibilities of the job will increase as the Entomologist gains experience in all aspects of managing Manatee County Mosquito Control District's programs and takes on the duties expected of an assistant-director. These may include, but not be limited to: daily oversight of all the district's departments through coordination with supervisory personnel, daily spray mission planning, personnel matters, safety issues, research projects, field investigations, budgeting, coordination with other governmental entities, dealing with public issues concerning mosquito control practices and pesticide usage. The Entomologist/Assistant-Director will be expected to work closely with the Director and provide recommendations that may improve District operations in the avenues of safety, efficiency, accountability, employee morale and record keeping.

Knowledge, Skills, and Abilities:

Thorough knowledge of entomology, including natural history and ecology of vectors, biological and physical sciences, research techniques and investigative methods; ability to accurately interpret and

apply applicable rules and regulations; ability to direct, supervise and coordinate various operational functions of the District; ability to apply scientific principles to practical situations; experience and knowledge in the principals and planning of aerial mosquito control applications; ability to establish and maintain effective working relationships with co-workers, professional contacts, and the public; ability to effectively communicate scientific information to peers and the public; experience in the use of office software such as Excel, Word, Power Point, and GIS software such as Mapinfo or Arcinfo; ability to prepare research papers, reports, graphs, charts, or other visual representations of data; knowledge of Federal, State, and Local laws and regulations pertaining to vector surveillance and control;

Physical Demands and Essential Duties:

The position of Entomologist will require work that is varied in nature. Individual must be sighted with the ability to demonstrate measurable depth perception; minimum of single ear aided hearing; ability to speak, read, and write effectively in English; ability to regularly operate a motor vehicle; ability to regularly manipulate small parts and tools; ability to regularly bend at the knees and waist; ability to occasionally reach over head; ability to occasionally traverse uneven ground such as mangrove swamps, pastures, ditches, freshwater swamps, forests; ability to travel as a passenger in helicopters and small boats for the purpose of remote area inspections; ability to periodically perform repetitive motion associated with computer usage; ability to periodically assist in the lifting of objects weighing in excess of 60 pounds; ability to periodically lift objects weighing 40 pounds; ability to periodically climb ladders or other objects; ability to sit in one place while operating lab equipment.



News from FMEL

The 2010 Advanced Mosquito Identification and Certification Course

sponsored by the Florida Medical Entomology Laboratory will be offered March 8th to 19th, 2010. This 2-week course will provide intensive training to experienced mosquito identifiers. The objective of the course is to improve the students' ability to identify mosquito species. This will enable students to complete a comprehensive practical laboratory and written examination at the conclusion of the course. Upon successful completion of the examination, students will be provided with an FMEL/UF/IFAS Certification as a Certified Mosquito Identifier. Attending the course does not guarantee certification. The course will be offered at the Florida Medical Entomology Laboratory in Vero Beach, FL. Students must have knowledge of mosquito morphology and be familiar with binocular and compound microscopes and insect identification keys.



Classes: Monday – Friday 8:00 – 5:00 p.m. Students typically stay after class, or come back to the classroom after dinner to study in the evenings.

Housing: Hotels - we will provide a list of local hotels upon request. FMEL Bunkhouse: The FMEL has a Bunkhouse that sleeps 20; 4 to a room, females and males in separate rooms; \$15.00 per night. Residents must bring towels, sheet, pillow, and blanket. Limited cooking facilities. CONTACT **DORENE KELLEHER** FOR RESERVATIONS : 772-778-7200 X.123 or DORENE@UFL.EDU. Do not contact Dr. Connelly for reservations.

Course fee: \$500.00. Tuition must be paid in full by January 15, 2010 to guarantee a seat in the course. We cannot accept credit cards at this time. **Cancellation policy:** We regret that we have had to create and enforce a cancellation policy. Please understand that we have a waiting list every year, and cancellations that occur at the last minute do not leave time for replacements. Additionally, we purchase the text books and supplies based on reservations for the course, and therefore the amount of refund for cancellations decreases according to the schedule below:

Cancellations must be made in writing and faxed or emailed to Dr. Connelly 772-778-7205 or crr@ufl.edu Amount of refund will be based on the date the written cancellation is received and will be issued as follows: Cancel on or before Feb 1 - 100% (\$500.00); Feb 2 - 14 - 75% (\$375.00); Feb 15 - 21 - 50% (\$250.00); after Feb 21 - no refund.

Course agenda: The course agenda will not be finalized until early February 2010, but the 2009 course agenda is posted at <http://mosquito.ifas.ufl.edu> to provide applicants with the list of topics typically covered. For additional information on course registration, contact Dr. Roxanne Connelly.

Materials: Students are encouraged to bring a binocular and compound microscope. Microscopes will be provided for students who do not bring their own equipment. Textbooks are included in the course fees and will be provided to each student. **Meals:** Morning and mid-afternoon refreshments, a Friday Pizza lunch, and an end-of-course dinner are included in the tuition.

To apply for the course: Applicants are required to include a resume to list previous courses/training in identifying mosquitoes and current job responsibilities related to identifying mosquitoes. Apply on-line at: <http://mosquito.ifas.ufl.edu/Advanced Mosquito ID Course.htm>



News from PHEREC

Distinguished Service Award

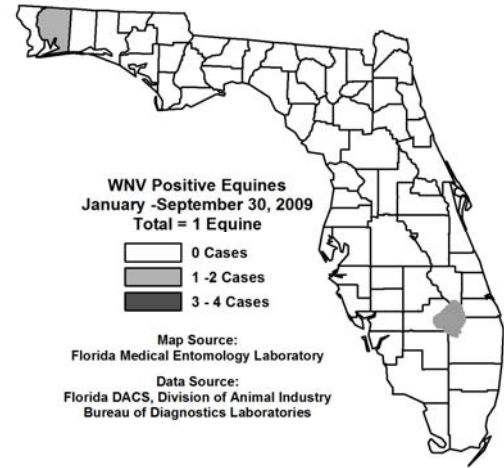
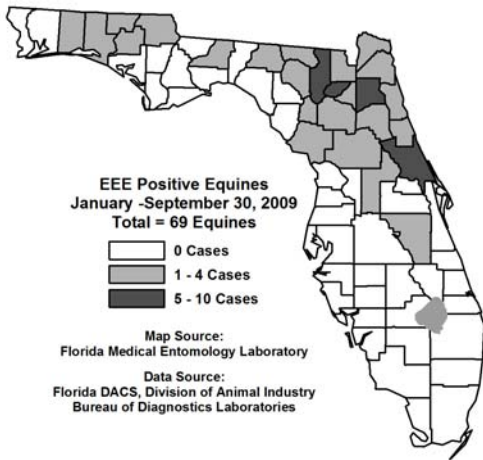
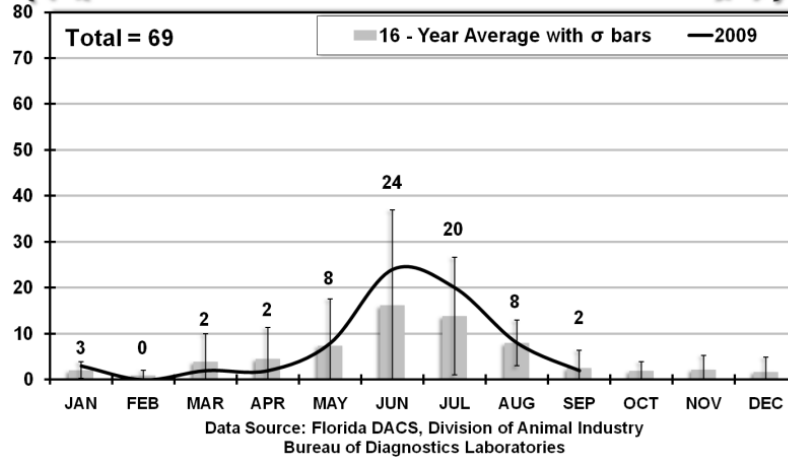
Dr. Jim Cilek has been selected as the recipient of the 2009 Entomological Society of America [ESA] Distinguished Service Award from the Certification Program for his service as Chairman of the Board Certified Entomologist program. As this year's award winner, Dr. Cilek will receive an inscribed plaque and a \$500 cash prize. The Award Ceremony will be conducted at the 2009 ESA Annual Meeting in Indianapolis, Indiana during the Plenary Session.

New website

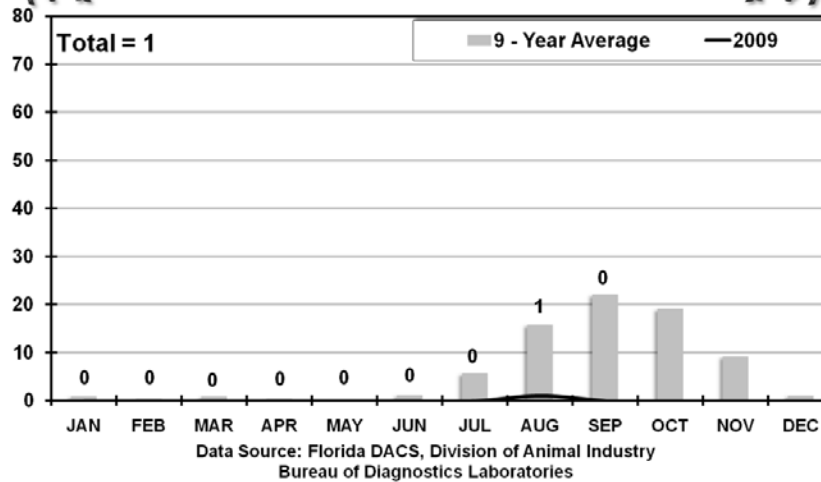
Dr. Jane Bonds has posted a new website that serves as an aerial application equipment guide and possibly more (<http://www.pherec.org/mas/MAS-Welcome1.htm>). Dr. Bonds would like people to be aware that it is up and running and seriously needs input. She would like for more people to showcase their equipment. This is a tool for the mosquito control industry so input, critiques, and resources and links to post would be appreciated. Contact Dr. Bonds to provide input: Dr Jane A.S. Bonds (Barber), Florida A&M University, 4000 Frankford Ave, Panama City, Florida 32405. Phone - 850 872 4184 x25; Fax - 850 872 4733.



EEE Positive Equines in Florida January through September 30, 2009



West Nile Positive Equines in Florida January through September 30, 2009

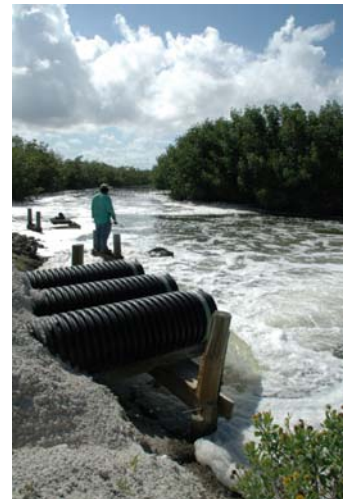


SAINT LUCIE COUNTY MOSQUITO CONTROL DISTRICT

By Jim David, Director

The Saint Lucie County Mosquito Control District headquarters is located at 3150 Will Fee Road, and shares the County Compound with the Road and Bridge Division, the Parks and Recreation Division and the Central Services Department. District facilities on-site include an administration building, an Inspection building, equipment repair bays, a chemical storage bay, two storage/maintenance buildings and a covered vehicle storage bay. Homeland Security-required upgrades have been implemented for the headquarters to protect against chemical tampering and theft. The District employs 21 full-time and 19 shared/part-time/temporary employee positions in the following programs: Administration, Inspection Division, Impoundment Division and additional support from the St. Lucie County Grants Dept., Information Technology and Agricultural Extension Service.

Wetland management facilities open to the public include: approximately 41 miles of dikes and trails in 14 beach-front and river-front parks, totaling over 4,000 acres. Other structures managed include: 1,000 feet of vinyl sheetpile weir, over 250 flushing culverts, 24 pump and aerator stations, 3 elevated bird observation platforms, 9 fishing piers, 10 crabbing platforms and 11 public parking areas.



Personnel

The District Administration Division is staffed by the Director, one Executive Assistant, and a Senior Accounting Clerk. The Impoundment Division is staffed by two Impoundment Foremen, three Heavy Equipment Operators, and three Impoundment Operators. The Inspection Division is staffed by the Inspection Manager, one Executive Assistant, six Entomological Inspectors, and two Ground Larviciding Specialists. The Inspection Division also oversees the ground adulticiding program, which is staffed by one part-time Fog Truck Supervisor, thirteen part-time Equipment Operators, and three Temporary Equipment Operators. Additional support is provided by 0.5 FTE from the Agricultural Extension Service (for Education and Outreach), 0.5 FTE from the County Grants Dept., and 1.0 FTE from the IT Dept.

Equipment

The District operates eight single-use fog trucks, 8 fog/inspection dual-use vehicles, two administrative vehicles, four field pickups/service vehicles, a pump truck, a lift-truck, a front-end loader, fork-lift, one-ton dump truck, one 12/14 yard dump truck, 53 electric pumps, 46 (+/-) Attractant Traps and a variety of other small pieces of equipment (ATVs, disk circulators, tow-behind tanks, trailers, etc.).



Monitoring Programs

District employees monitor many environmental parameters, including water quality, wind speed and direction, temperature, tide water levels, rainfall, relative humidity, etc. Equipment used includes telemetry which reports on impoundment operational

status from field locations through a cell-phone-based reporting system to a public access WEBSITE: "vdv.locherenv.com", USERNAME: "stluciepublic", PASSWORD: "public". Adult mosquito population samples are collected nightly, primarily using Mosquito Magnet Attractant Traps, and are counted and identified the next working day. These traps attract mosquitoes that are attracted to CO₂ and octenol bait when they are flying at night. In combination with landing rate counts and larval inspections, these collections provide the justification for the implementation of chemical and physical control measures.

Control Measures

The primary control methods used for mosquito control in Saint Lucie County are adulticiding, source reduction (which includes physical manipulation of mosquito habitats, aquatic plant control, application of larvicides), adult "ambush" trapping and mosquito fish.

Adulticiding is accomplished using trucks and aircraft. Ultra Low Volume spraying of adulticides from our fog trucks is performed nightly, generally five days per week (weather –permitting), during the mosquito season, using Permanone 30:30 and Zenivex (in areas where pesticide-sensitive individuals reside). The District is sub-divided into 55 (+/-) ground spray zones, and nightly spraying is scheduled to rotate throughout the District, when mosquitoes are abundant and meet minimum state requirements for spraying (25 mosquitoes per trap night). The ground adulticiding spray program has the capability to cover the entire District approximately every 5 spraying nights (once per week in-season), and generally results in treatment of approximately 1million acres per year, from May 1 through October 31.

Aerial adulticiding involves advance notification of the public, and is performed during emergencies, when disease outbreaks (arboviral transmission) and/or large mosquito infestations (which include large vector populations) occur. These treatments are limited in scope to 60,000 acres areas along the District's western agricultural boundary, and are intended to control vector populations during the 5-7 days following post-epic rainfall emergence. Such control measures use aircraft with rotary atomizers applying Dibrom at 0.5 lbs ai per acre, which have achieved a consistent level of control (99 %) of *Culex nigripalpus*, our primary vector species (while they are initially blood-seeking).

We also use Mosquito Magnet Pros to perform barrier control of adult mosquitoes in and around salt-marshes and in areas where pesticide use is limited by heavy outdoor human activity at the normal times of pesticide application. We place traps around unmanaged salt-marsh ditches and wetlands where we get limited control with aerial or ground larvicides. In this process, the traps "ambush" the mosquitoes that emerge in large numbers, intercepting them and directing them (taking advantage of their post-emergence flight and feeding behavior) into the traps instead of allowing them to disperse or migrate. We also place Mosquito Magnets around the County Fairgrounds and Campgrounds to trap mosquitoes before they enter the area, to minimize biting activity, during events.

Source reduction

Source reduction is in place in the form of mosquito impoundments and ditching and/or ponding which provides natural predator access to larval habitats. The District is unique in its management of approximately 4,000 acres of coastal wetlands for mosquito and biting midge control. Active management occurs during the summer months, from May 1-August 31, in which continuous pumping and aeration converts the wetlands into flooded fish-management areas. Such management temporarily converts high marsh into low marsh (increasing estuarine connectivity), provides foraging for post-nesting wading birds (over 27 species), controls mosquitoes and biting midges without pesticides, and eradicates exotic plants. The impoundments also provide



public access through a program of land acquisition and private conservation, which has resulted in the preservation of 54 % of the County's barrier islands and 90 % of its coastal wetlands.

Removal of invasive exotic plants such as water lettuce also removes *Mansonia* spp. habitat from the canals and waterways. The largest proportion of larviciding (by total acres treated) is conducted by air, with treatments of bio-rational compounds (Vectobac G and Altosid XR-G) being applied to unmanaged salt-marsh and mangrove swamp areas along the Indian River Lagoon. The remainder of the larviciding, is conducted through ground larviciding by hand from small pickups with mounted or tow-behind chemical tanks, and small ATVs which are used to treat roadside ditches, flooded woodlands and retention areas.

Biological control

The primary biological control effort employs mosquito-predating fish to control mosquito breeding in permanent water habitats.

The above techniques complement each other, and form the backbone of the Districts Integrated Pest Management (IPM) program, which attempts to employ the most effective, environmentally-sound techniques available, to control pestiferous and disease-bearing mosquitoes.



Control Agents

Pyrethroids are used for ground adulticiding, and include permethrin, sumithrin, resmethrin, etofenprox and other chemicals, which are sometimes synergized (for greater effectiveness) with piperonyl butoxide, and sometimes mixed with carrier mineral oils. Larvicides used in Saint Lucie County include a variety of *Bacillus thuringiensis* and *B. sphaericus* formulations, Altosid and Natular formulations. Treatment varies from granular and briquette applications that are intended to provide longer term control, to one-time control efforts.

Public Access Activities

The District's land acquisition/mitigation donation program is an important impoundment-management-related program, which has been successful in acquiring: Bear Point Sanctuary; John Brooks Park; Green Turtle Beach Addition; Vitolo Family Park at Middle Cove Park – Riverside; Blind Creek Park - Ocean to River; Impoundment 9 (incl. Ocean Bay Preserve); Impoundment 10A (incl. Dollman Tract); Kings Island Preserve; Queens Island Park – Ocean to River; Wildcat Cove Natural Area; Avalon State Park; Jack Island State Park; Inlet State Park; Avalon Addition II; Bear Point Addition; and DJ Wilcox Natural Area. In addition, a wetland mitigation bank has been permitted for 317 acres of the Bear Point Impoundment, and now has met its success criteria for permanent operation.



Public ownership of the impoundments and adjacent natural coastal communities is necessary to achieve maximum public benefits and accomplish ecological improvements at the sites. The improved management resulting from the public acquisition guarantees effective mosquito control through application of non-chemical source reduction techniques, and provides enhanced public access/recreational opportunities along the Atlantic beachfront and Indian River Lagoon, and restores wetland ecology and functioning to

isolated wetlands. This acquisition effort has been accomplished through cooperative state and federal grant programs, with such partners as; Florida Communities Trust, Conservation and Recreation Lands, Save Our Rivers, Save Our Coast, State of Florida Recreation and Parks - Additions & In-Holdings and the National Coastal Wetlands Restoration and Conservation Program.

Ecological Monitoring and Management

Partnerships with several public and private institutions such as Harbor Branch Oceanographic Institution (HBOI), South Florida Water Management District (SFWMD) - Surface Water Improvement and Management program, Smithsonian Institution, Swedish EPA, State of Florida Fish and Wildlife Commission Marine Research Institute, the Indian River Lagoon National Estuary Program, IFAS - Florida Medical Entomology Laboratory, Florida Atlantic University (FAU), the Marine Resources Council, Oslo Riverfront Conservation Area and Florida Institute of Technology, are ongoing.

Monitoring studies focus on improving water quality in the impoundments and increased faunal (especially fisheries and wildlife) use of impoundments, as part of general efforts to increase the productivity and biodiversity of the Indian River Lagoon Ecosystem. We are also examining how freshwater discharge from Lake Okeechobee and major canals impact our coastal management system, and aiding in developing new, inexpensive techniques to establish toxicity measures for use in the estuary. These projects were part of a grant-seeking effort on the part of the District which brought in approximately \$25.5M worth of land acquisition and research grants.

Public awareness of those issues and public access is also promoted through our Mangroves, Mosquitoes and Man, FCT Educational Outreach and Public Access program, which we currently administer through the Marine Resources Council of East Central Florida. We have also initiated development of an eco-tourism program in association with FAU/HBOI and a number of non-profit agencies, which we hope will advance our educational goals.

Major Challenges

As the population of Saint Lucie County continues to grow, and/or budgets become severely constrained, the District must continue to develop greater efficiencies in its control methods, and encourage improved water management practices (such as surface water conservation areas and improved irrigation techniques). As an example, we facilitated a grant program administered by SFWMD and USDA, for widespread application of micro-jet irrigation in Saint Lucie County, which resulted in reduction of flood irrigation of citrus groves, eliminated one species of nuisance mosquito from our county (*Aedes vexans*), and reduced our summer chemical spraying (especially during droughts).

As urban development spreads westward, the growing human population will encounter increased levels of mosquito populations, which are a direct result of limited surface water management activities in the rural areas of the county, as well as agricultural water management practices. Providing increased services to increased populations in these urban expansion areas, and the challenge of responding to arboviral transmission District-wide, offers both budgetary and technical challenges.

Finally, retaining the ability to apply effective chemical control agents in the future will require continued vigilance (both technical and legal), since the number and type of chemicals that can be used is already so limited, and subject to loss of effectiveness over time, due to resistance and possible permitting issues.



Dengue in Key West, 2009: Florida Keys Mosquito Control and the Florida Department of Health Swing into Action

On September 3, 2009 a woman in Rochester NY was confirmed as having had a recent case of dengue due to DENV-1. She had classic dengue symptoms, including malaise, fever, headache, eye, body and joint pain, and petechiae that began on August 10. She likely contracted the virus between August 2 and August 9 while she was vacationing in Key West, Florida since she had not traveled off the island.



Robert Lamontagne and Andy Diaz, Keys Mosquito Control District, inspecting a backyard fountain for *Ae. aegypti*.

Subsequently two additional dengue cases have been identified, all in Key West, and all without travel histories off the island. Patient 2 developed dengue symptoms on September 9 and patient 3 developed symptoms on August 25. Both cases have since been confirmed as DENV-1.

The cases identified so far represent the first documented autochthonous, i.e., local, transmission of dengue in Florida, since 1934 (Ehrenkranz, NJ et al. 1971. Pandemic dengue in Caribbean countries and the southern United States - past, present and potential problems. *New Engl. J. Med.* 285:1460-69). There have been recent dengue cases reported in Florida, but all were from immigrants and travelers from dengue endemic regions. For example, 18 patients were identified with recent dengue in Florida and all had travel history in a country endemic for dengue, making it likely these were all imported cases (Gill, J et al. 2000. Dengue surveillance in Florida, 1997-98. *Emerg. Inf. Dis.* 6(1): 30-35 at <http://www.cdc.gov/ncidod/eid/vol6no1/pdf/v6n1.pdf>).

Previous *Buzzwords* contained information on the potential for *Aedes aegypti* and *Aedes albopictus* transmission of DENV and other pathogens like chikungunya and yellow fever viruses in Florida. *Aedes aegypti* and *Ae. albopictus* larvae develop in containers, the adults transmit pathogens for which humans are the primary hosts, with very little involvement of other animal hosts and therefore these mosquitoes pose a challenge to Florida public health and for mosquito control. Although Florida has been fortunate in not having to attend to these issues to mitigate a disease outbreak from DENV in nearly 70 years, DENV transmission in Key West adds urgency for Florida to have better information to meet the challenges from the threat to public health. Key West and Florida are not strangers to dengue. In 1894, 97 of 115 men (84%) in a Key West barracks came down with dengue (Boyles H. 1965. When 10,000 Citizens of Jacksonville Fled. *Tallahassee Democrat*, May 23, 1965). The 1921 dengue epidemics in Tampa and St. Petersburg had 2905 and 1645 dengue cases, respectively (Bigler, W. J. 1989. Florida Public Health - Yesteryear. *Florida J. Publ. Hlth.* 1(3): 7-19), while there were 15,000 cases estimated among the Miami population of 135,000 (11%) in 1934-35 (Gill et al. 2000).

During the past 30 years or so Florida public health and Florida mosquito control has paid a great deal of attention to West Nile virus, St. Louis encephalitis virus and eastern equine encephalitis virus. Florida's sentinel surveillance and vector control programs have focused on controlling potential outbreaks of these viruses and we have made progress in surveillance for these viruses by taking advantage of their association with bird populations. However, *Ae. aegypti* and *Ae. albopictus* pathogen transmission is a completely different vector-pathogen-host cycle that does not involve birds, does involve mosquitoes from both artificial containers as well as natural habitats, and involves mosquitoes with daytime activity periods. Hence Florida's sentinel surveillance program is not applicable, and mosquito control in natural areas, between dawn and dusk will not be effective for reducing the number of cases of dengue. Surveillance for DENV transmission will depend on the ability to identify human cases quickly, rapid delivery of public health messages to protect people from vector mosquitoes, and mosquito control to reduce the larvae in containers and the adults of these largely urban and aggressive day time active mosquitoes. The challenge to control the DENV cycle has continued to stymie mosquito control and public health around the world. PROMED at <http://www.promedmail.org> provides the current status of dengue outbreaks in different countries. The numbers of cases are staggering. For example, countries with dengue cases so far in 2009 include: Malaysia (30,000 cases), Sri Lanka (26,000), Vietnam (36,000), and Brazil (36,000). So far there have been 2,300 dengue

cases in Puerto Rico in 2009, and there were 11,000 cases in 2008. Worldwide, an estimated 50 million people will be infected with DENV annually and 3 billion people are at risk from dengue (see an interesting news article dated Sept 3, 2009 at:

<http://www.reuters.com/article/healthNews/idUSTRE58011M20090901>

The Florida Keys Mosquito Control District (FKMCD) and the Florida Department of Health (DOH) have addressed the potential for DENV transmission in the Florida Keys.

Ed Fussell, Director of the FKMCD advised that all three confirmed dengue cases had been in Old Town, Key West where homes and businesses are very close together. This the area has an abundance of water-holding containers of all types, and many places that could be mosquito resting sites, including porches with crawl spaces and many plants of all kinds and sizes.

Inspector Kelly Lukins, FKMCD, treating an abandoned swimming pool.



FKMCD began intensive nightly ground ULV spraying with 0.007 lb/ac permethrin from August 1 – August 25, while also treating all of Key West by helicopter with permethrin at the same application rate on a weekly basis. This aggressive campaign was conducted in an attempt to reduce all mosquito activity, but especially *Ae. aegypti*, that FKMCD recognized as being particularly difficult to control. Luckily, this mosquito control campaign against *Ae. aegypti* in Key West occurred during the same period that the three confirmed cases were being infected.

Upon being notified of the first confirmed dengue case on September 3, FKMCD returned to the nightly ground ULV spraying and helicopter spraying twice weekly. Because *Ae. aegypti* adults are active during daylight, helicopter operations were conducted between 8:30 AM – 10:00 AM. Further, 25



Inspector Brian Dillon, FKMCD, looking at dirty water in a vase for *Ae. aegypti*

FKMCD inspectors made sweeps through Old Town eliminating all containers and larval habitats they could find, and hand held ULV sprayers were employed to treat around houses and under porches to kill adult mosquitoes. Florida Keys Mosquito Control District mounted a substantial and impressive mosquito control for *Ae. aegypti* to reduce DENV transmission in Key West. The further absence of substantial dengue cases in Key West is consistent with the possibility that *Ae. aegypti* transmission was interrupted by these activities.

The Florida DOH was active coordinating case analysis and sample processing to confirm dengue cases. Their work is also continuing with a serosurveillance for other dengue infections in Key West. Blood samples will be collected from Key West residents to test for the presence of antibodies to DENV to obtain information on the extent of this dengue outbreak. Just how many people were actually exposed to DENV in Key West this summer? Only time will tell.

Aggressive mosquito control by FKMCD was brought to bear in an attempt to reduce human cases and protect public health. When there is a mosquito borne disease outbreak, the public must be informed to conduct personal protection, reduce exposure to mosquitoes, and help reduce larval habitats, but in the end the only public agency actionable response is active mosquito control to reduce mosquito transmission. This is what professional mosquito control is about and the FKMCD stepped up to the plate! There is still more work to be done to improve mosquito control's ability to effectively mitigate the potential for *Ae. aegypti* and *Ae. albopictus* transmission. There were 3 reported confirmed cases among a resident population of about 28,000 and a visitor population of likely 100,000+. I believe that any of the cities currently battling dengue would envy Key West for this level of incidence. A potential dengue incidence of 10% would result in around 13,000 cases in Key West!

Well done Florida Keys Mosquito Control District. Thanks to Mr. Edsel Fussell, Director FKMCD for providing the pictures of FKMCD operations during the dengue outbreak.

Walter J. Tabachnick, Ph.D., Director, Florida Medical Entomology Laboratory
Professor, Department of Entomology and Nematology, University of Florida, IFAS, Vero Beach, Florida

**Deadline for submissions to be included in the
Nov/Dec 2009 issue of**

***BuzzWords* is December 1, 2009**

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

***BuzzWords* deadlines for contributing articles and news**

Jan/Feb	February 1
Mar/Apr	April 1
May/Jun	June 1
Jul/Aug	August 1
Sep/Oct	October 1
Nov/Dec	December 1