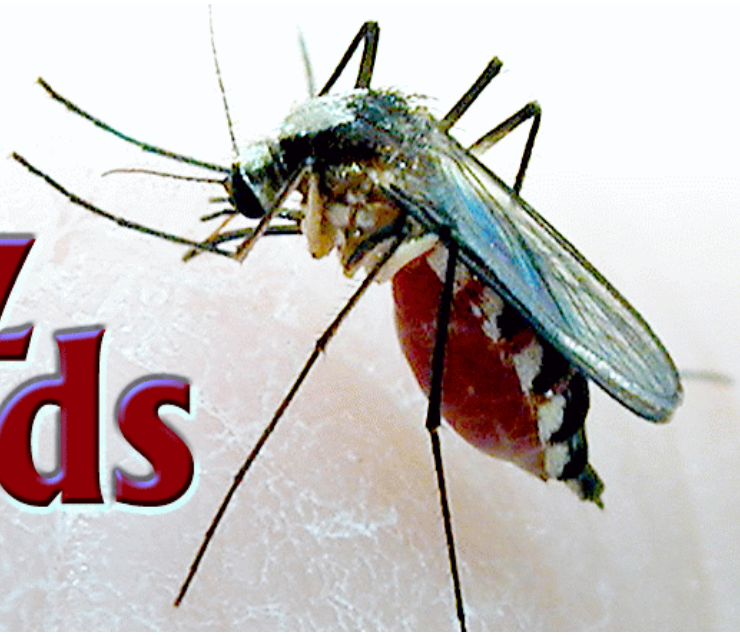


Buzz Words

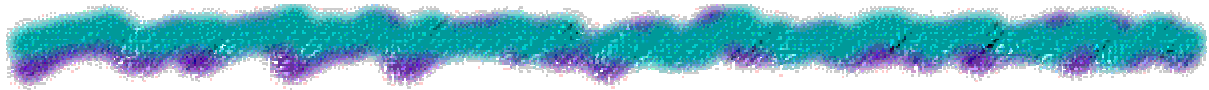


The Newsletter of the Florida Mosquito Control Association
May/June 2003

Volume 3, Issue No. 3

Upcoming Events

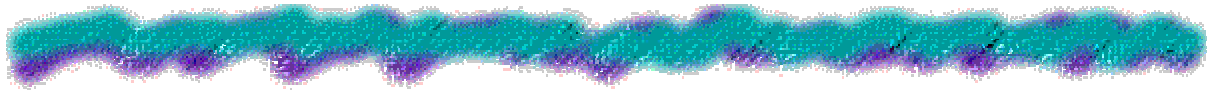
The **Florida Entomological Society** annual meeting will be held July 27 – 30, 2003, at the Hutchinson Island Marriott Beach Resort in Stuart, Florida. Registration information can be found at www.flaentsoc.org and hotel arrangements can be made by calling 1-800-775-5936 or 772-225-3700.



Subcommittee on Managed Marshes will meet July 29 – 30, 2003.

July 29: Field trip to St. Lucie County salt marshes

July 30: Business meeting at the Indian River Mosquito Control District Office
CEU's will be awarded for attendance.



47th Annual Livestock Insect Workers' Conference

Atlantic Beach, North Carolina, June 22 -25, 2003. Sheraton Atlantic Beach Oceanfront Hotel (1-800-624-8875). The conference is an informal gather of primarily Veterinary Entomologists focusing on pest management developments within commodity groups.

The program will begin on Sunday afternoon with a symposium of interest to medical and veterinary entomologists. For more information go to the LIWC website

<http://www.cals.ncsu.edu/entomology/stringham/LIWC2003/LIWC.htm>

FMCA Web Site News

Congratulations to our editor and Peter Connelly on their recent (April 5th, 2003) marriage. May they share many happy years together.

At the recent Spring FMCA Meeting at Ft. Pierce/Vero Beach, during the wrap-up of the West Nile Workshop, a couple issues developed that might affect our web site. One was the need for a clearinghouse for arbovirus information. The FMCA web site was mentioned as a possible location, along with the FMEL site. We can and will develop an arbovirus page with links to available WN, SLE, EEE and other arbovirus sites. We will contact James Burgess, Wayne Gale, FMEL and the Bureau of Epidemiology about establishing other links. Our aim will be to develop a site with up-to-date information/links.

Another suggestion was to develop a chat room. That seems a good idea but a listserve might serve us better. A **chat room** allows users to talk real time to other network users from any and all parts of the world while a **listserve** is a program that manages mailing lists by distributing messages posted to the list, adding and deleting members automatically. A chat room requires a monitor. What do you readers think of this? Email me with your opinion. Do we need a chat room or listserve or not and what issues do we want to discuss?

Cornell University Environmental Risk Analysis Program's new URL is <http://environmentalrisk.cornell.edu/> .
The CDC's West Nile Virus Update Current Case Count site is <http://www.cdc.gov/od/oc/media/wncount.htm>.
APHIS horse information may be found at http://www.aphis.usda.gov/oa/pubs/ada_ah_wnv.html.

The USGS web site is <http://westnilemaps.usgs.gov/>.
The Florida Bureau of Epidemiology web site is http://www9.myflorida.com/disease_ctrl/epi/index.html.

In case you haven't seen our editor's new web site, visit it at: <http://mosquito.ifas.ufl.edu>.

---- Tom Floore
Tomfloo@knology.net
FMCA Web Master

FMCA News

Congratulations to Marin Brouillard, Collier Mosquito Control District, on her new position as Editor-in-Chief of Wing Beats.

Call for Submissions

The Technical Bulletin of the Florida Mosquito Control Association is soliciting submissions for future publication consideration. Manuscript submissions should be at least 40 double spaced pages (this equates to about 40 printed pages in the Technical Bulletin). The subject should be applicable to public health arthropod concerns of Florida or the southeastern US. Submissions may focus on a single subject or be composed of an edited series of chapters or conference/workshop proceedings around a central theme. There are no page charges for publishing in the Technical Bulletin. Authors should contact the Editor prior to submission of manuscripts for further information. Dr. Jim Cilek, Editor, John A. Mulrennan, Sr. Public Health Entomology for Research and Education Center, Florida A & M University, 4000 Frankford Avenue, Panama City, FL 32405, tel: 850-872-4184, email: cilek_j@popmail.firn.edu.

**Recognize the individuals who have made outstanding
contributions to mosquito control:
Nominate them for the *2003 FMCA Awards!***

Any Florida Mosquito Control Association member in good standing may nominate a candidate for any award by submitting supporting information to the Awards Committee, to include a short biographical sketch of the nominee, emphasizing those accomplishments deemed worthy of the award. There is no official nomination form. Endorsements and written support from other colleagues are encouraged. All submissions will be acknowledged. Nominations must be received by August 8, 2003.

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. Recipients have been instrumental in developing sound management and operational methods to reduce pesticide levels and to minimize habitat alteration while reducing mosquito populations; in increasing our knowledge of mosquitoes and other biting insects and their habitats; and in 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 Joseph Y Porter Distinguished Achievement Award recognizes the first president of the Florida Anti-Mosquito Association and first State health officer of Florida, and recognizes scientists who have made significant contributions to entomology, with special emphasis on the abatement of arthropods of public health importance. The recipient must have meritoriously contributed to the advancement of entomology research in the field of mosquito and other biting arthropod control in the State of Florida.

The Fred Stutz Memorial Award honors the former director of Dade County Mosquito Control, and was intended to recognize an outstanding contribution to mosquito control by development of procedures that increase effectiveness in mosquito and other arthropod control, or the design and manufacture of equipment that helped revolutionize the control of mosquitoes and other arthropods of public health importance. Supporting information should also include an evaluation and appraisal of the nominee's accomplishments.

The Sherrie Yarberry Award was named for a dedicated employee of Jacksonville Mosquito Control, and was intended to recognize continued outstanding contributions to operational program activities by veteran, non-administrative personnel of Florida mosquito control related agencies. The recipient must demonstrate exemplary performance resulting in enhanced unit efficiency or public recognition of excellence of the parent organization. Supporting information from senior mosquito control administrators and supervisors should also include an evaluation and appraisal of the nominee's accomplishments.

The FMCA Merit Award is intended to recognize the outstanding individual contribution to 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 recipient should represent those characteristics generally associated with responsible leadership, good citizenship and personal integrity. The recipient need not be a member of the Association.

Please submit all inquiries and nomination documents to: Stephen L Sickerman
Bureau of Entomology & Pest Control, 3920 Frankford Avenue, Panama City, FL 32405-1953
phone 850-872-4250 *fax* 850-872-4271 *e-mail* sickers@doacs.state.fl.us

From Florida DACS

Training Courses Are Now Being Offered by DACS, Bureau of Entomology and Pest Control: We Say "Yes!"

Yes, we are now offering training courses with no fees!
Yes, we can tailor our courses to meet your needs!
Yes, we offer CEU's!

The following courses are being offered at the Bureau of Entomology and Pest Control in Tallahassee and are no charge. Material covered in each course is flexible and can be tailored to meet the specific needs of each participant. Our current course line-up includes:

Mosquito Identification: A 2-day course covering larval and adult ID to the genus level, and ID of some of the more common Florida species. There will also be some field collecting (weather permitting!). 16 CEU's for full participation.

Mosquito Collecting Methods: A 2-day course covering collection methods, identification of various mosquitoes, and recognizing various breeding habitats. This course is designed to show how to use various traps and the importance of trap placement. 16 CEU's for full participation.

Preservation and Mounting Techniques: A 1-day course showing proper methods for collection, storage, preservation and mounting of insect specimens. Emphasis will be placed on mosquitoes but include techniques for other insects as well. 8 CEU's for full participation.

VCMS (Vector Control Management Software) Training: Due to limited computer access there will be a maximum of 6 students / class. Instruction is tailored to the level of experience of those taking the course. 8 CEU's for full participation.

Exam Review Session and Certification Exams: This is for people who are preparing to take the Core, Public Health, or Aerial exams. After the review session, students may take the exam. No CEU's are available for exam reviews.

All courses (except VCMS) need 6-10 participants. Please contact the Bureau of Entomology and Pest Control if you need any additional information and to schedule your group for your course of choice.

Bureau of Entomology and Pest Control
Mosquito Control Section
(850) 922-7011
SUNCOM 291-7011

Tom Loyless: loylest@doacs.state.fl.us
Jennifer Simpson: simpsoj@doacs.state.fl.us
Angela Weeks: weeksa@doacs.state.fl.us

From the Editors of Wing Beats

Wing Beats is looking for interesting field-related or technical articles about mosquitoes, mosquito control, and related topics. The articles are usually 1 – 4 pages in length (including graphics and figures). A considerable amount of applied research, equipment modifications, and application technique changes are being conducted at mosquito control programs, universities, and military installations throughout the world that would be of interest to the Wing Beats audience. We encourage you to consider publishing in Wing Beats. Please send articles to: Marin Brouillard, Editor-in-Chief, Collier Mosquito Control District, 600 North Road, Naples, FL 34104 or Marin@collier-mosquito.org

News from PHEREC

"Florida CROSSROADS," a Public Broadcasting System television program that looks at the people, places, and events shaping the state, featured West Nile research at the John A. Mulrennan, Sr., Public Health Entomology Research and Education Center.

The program "West Nile's Sting" aired the week of May 5-9, 2003 on local PBS stations.

Thursday, April 9, 2003, a film crew spent the entire day videotaping field and lab activities of the Disease Ecology and Control Section headed by Dr. John P. Smith. Activities included mosquito and wild bird trapping for West Nile surveillance.

The laboratory component focused on mosquito repellent studies and processing techniques used to test mosquitoes for West Nile and other mosquito-borne viruses.

Also included were video out-takes of lab research to evaluate mosquito larvicidal formulations in outdoor, screened-in enclosures.

In addition to research activities at PHEREC, the film crew interviewed mosquito control personnel at Lee County Mosquito Control District in Ft. Myers, Dr. Lillian Stark of the Florida Bureau of Laboratories in Tampa, and Dr. Lisa Conti of the Florida Department of Health in Tallahassee.

"Florida CROSSROADS" is a service of the Florida Department of Education, Florida State University, and WFSU-TV/The Florida Channel.

News from FMEL

The dates for the next 2-week advanced mosquito identification workshop are March 8 – 19, 2004. Please visit <http://mosquito.ifas.ufl.edu> for details and to download the registration form. Once at the site, click on "Upcoming Events".

Position Announcements

Director of Mosquito Control

The Board of Commissioners of the Amelia Island Mosquito Control District of Nassau County, Florida, is seeking applications for the position of Director. The successful applicant must be a graduate of a four (4) year college or university with a degree in the basic sciences or engineering and have two years work experience in mosquito control. Salary range is \$50,000 - \$55,000 annually with benefits. The Board will consider a multi-year contract with the successful applicant. The Board will also consider compensation for reasonable relocation expenses. Questions regarding this position may directed to: Jack Bass, Chairman, Amelia Island Mosquito Control District of Nassau County, Florida, Post Office Box 62, Fernandina Beach, Florida 32035-0062. Telephone (904) 261-5283; Fax (904) 261-2622.

Entomology in the Navy

Navy entomologists perform a wide range on interesting duties, primarily focused towards preventing the threat of vector-borne diseases to the operational forces of the Navy and Marine Corps. Military medical entomologists plan, direct, and participate in operational, consultative, training, and research programs for the prevention and control of arthropod pests and vectors of disease. Depending on the billet and the type of unit assignment, entomologists may direct or monitor the control of vectors and pests in the field, may conduct research on medically important arthropods, or provide training to military and civilian personnel of the Medical and other Commands of the Navy. Navy entomologists are utilized in operations and consultative roles on the staffs of Preventive Medicine activities in the Continental United States and several overseas locations.

Basic Requirements: a. Master's degree or Doctoral degree in Entomology or closely related degree in which the course work taken had an emphasis in Entomology. b. GPA 3.2/4.0 scale in graduate study and a 3.5 or better in Entomology course work. c. Course work taken should include 30 or more hours (graduate or undergraduate) in Entomology including courses in the areas of Medical Entomology, Pest Management, Insect Taxonomy, Insect Morphology, Immature Insects, Mosquito Biology, Medical-Veterinary Entomology, Insect Ecology, Insect Toxicology, and Insect Physiology. Competitive Profile: a. Completion of a minimum of 3-5 hours in each of the following areas are highly desirable: Acarology, Parasitology, Insect Virology, Invertebrate Zoology, Computer Science, Statistics, Epidemiology, and Environmental Health. b. Experience in surveillance and control of disease vectors or medically important insects is also highly desired.

Contact: HMC(SW) Angel Garcia; 954-275-1352 (cell); 954-845-0101 (phone); 954-845-8855 (fax); OR_MIAMI@CNRC.NAVY.MIL

or: LCDR MSC Loring J. Crepeau; 954-818-4300 (cell); 954-858-1420 x.123 (phone) or 800-445-4625; opo_miami@cnrc.navy.mil.

Assistant Professor of Entomology: Medical Entomology-Mosquito Biological Control

The John A. Mulrennan Sr., Public Health Entomology Research & Education Center of Florida A&M University located in Panama City, Florida is accepting applications for a 12-month, tenure-track Assistant Professor of Entomology position with specialization in mosquito biological and alternative control. A Ph.D. in entomology is required with experience in medical entomology, mosquito biological control and integrated pest management preferred. Applicant should possess good communication skills and be well versed in experimental design, statistics, computer and Internet applications. Refer to detail job announcement at <http://pherec.org>. Interested applicants must submit a letter of application for position #18141 including research interest and goals, completed Florida A&M University job application available at: www.famu.edu/about/admin/vpad/hr/joblistings/index.htm, curriculum vita, academic transcripts as well as phone number and email address of three references who have supervised the applicant for more than 2 years to the Office of Equal Opportunity Programs, Florida A&M University, Unit 5 Ardelia Court, Tallahassee, Florida 32307 by no later than JUNE 30, 2003. Call (850) 599-3076 for application questions and (850) 872-4184 X23 or smith_j@popmail.firn.edu for more information on the position.

In the News

ALABAMA MAN ARRESTED ON CHARGES OF SELLING COUNTERFEIT AND ADULTERATED PESTICIDES (Press Advisory 5/22/03)

William C. Murphy of Glencoe, Ala., was arrested on May 15 and appeared in U.S. District Court in Birmingham, Ala., to face charges that he violated the Federal Insecticide, Fungicide, and Rodenticide Act. The indictment alleges that the defendant, operating under the name of Sierra Chemical, sold counterfeit, misbranded, adulterated and mislabeled pesticides to numerous municipalities in Alabama and Georgia. Selling altered, counterfeit or improperly branded and labeled pesticides to cities can present a significant public health and environmental risk if the pesticides are used to control mosquitoes and other insects that carry West Nile Virus and other diseases. The case was investigated by the EPA's Criminal Investigation Division and the FBI. It is being prosecuted by the U.S. Attorney's Office for the Northern District of Alabama and the Environmental Crimes Section of the U.S. Department of Justice. An indictment is merely an allegation and all defendants are presumed innocent unless or until proven guilty in a court of law.

EPA Pesticide Program Update
from EPA's Office of Pesticide Programs 05/22/03
<http://www.epa.gov/pesticides>

Research Highlights: Recent Publications

Research Highlights is a new feature that will be part of every issue of the Buzz Words newsletter. This information is provided in response to a request from the attendees of the 2003 Florida Mosquito Control Association Spring Meeting in Vero Beach, FL. At a half-day workshop led by the Florida Medical Entomology Laboratory (UF/IFAS), a discussion of the needs of the group resulted in a voiced desire to point out current

research on mosquito-borne disease research and surveillance with a brief summary of findings.

Rutledge, C. Roxanne, Jonathan F. Day, Cynthia C. Lord, Lillian M. Stark, and Walter J. Tabachnick. 2003. West Nile Virus Infection Rates in *Culex nigripalpus* (Diptera: Culicidae) Do Not Reflect Transmission Rates in Florida. *Journal of Medical Entomology*. Volume 40, Number 3, May 2003. p. 253-258

Study: Intensive mosquito trapping and surveillance program conducted for four nights to assess mosquito transmission of West Nile virus.

Important finding: A total of 11,948 mosquitoes was collected. Fourteen mosquito pools were found to contain WN giving a minimum infection rate between 1.08 and 7.54 per 1000. One of eighty sentinel chickens seroconverted to West Nile giving a transmission rate of between 0.8 and 1 per 1000.

First documented field transmission of West Nile virus by a North American mosquito.

Culex nigripalpus and *Culex quinquefasciatus* were found infected with WN. *Culex nigripalpus* was responsible for WN transmission to the sentinel chicken.

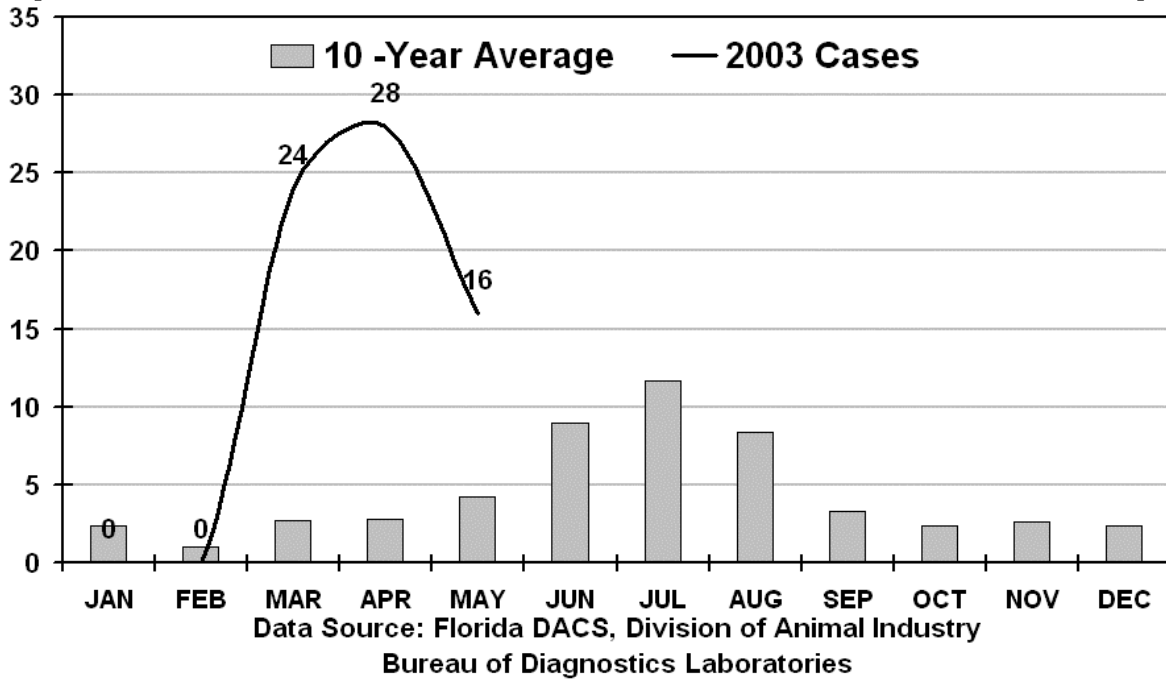
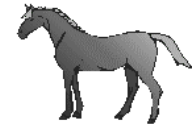
Weingartl, H. M., M. A. Drebot, Z. Hubalek, J. Halouzka, M. Andonova, A. Dibernardo, C. Cottam-Birt, J. Larence, and P. Marszal. 2003. Comparison of assays for the detection of West Nile virus antibodies in chicken serum. *Canadian Journal of Veterinary Research*. 67(2): 128-132.

Study: Adult chickens were experimentally infected with WN virus to compare six WN virus detection laboratory tests. Tests evaluated were: HI (hemagglutination-inhibition), IgM and IgG ELISA (enzyme-linked immunosorbent assay), standard PRNT (plaque reduction neutralization test), Micro-PRNT (microtitre PRNT), and microtitre virus neutralization test.

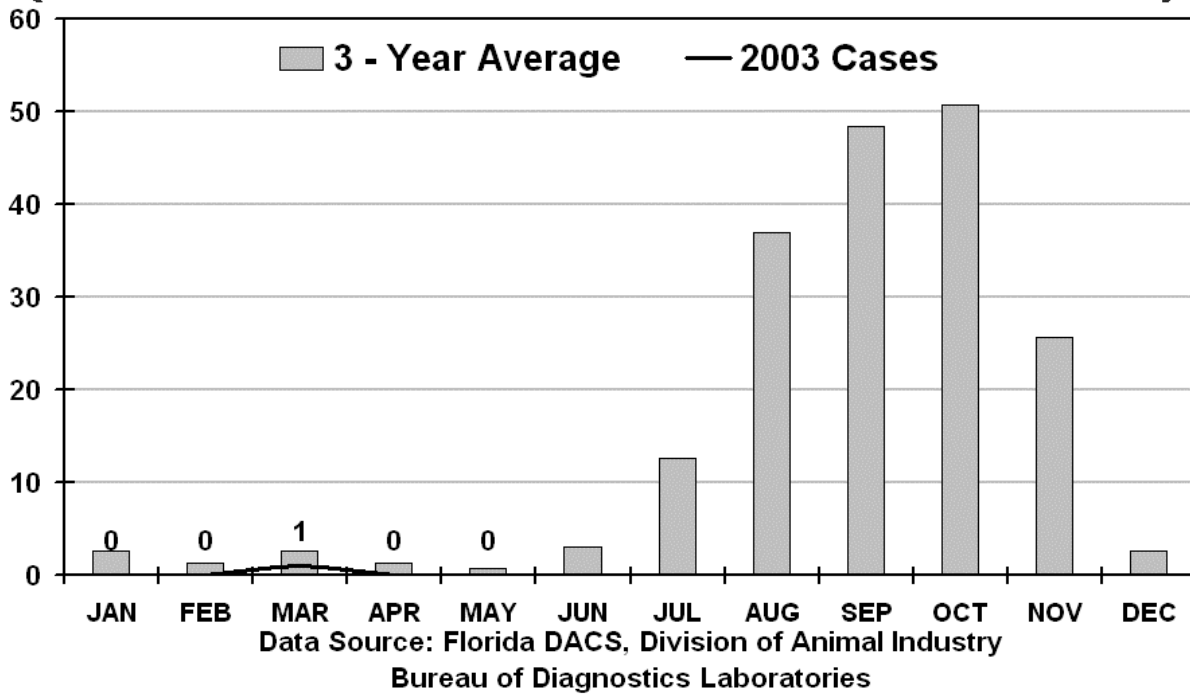
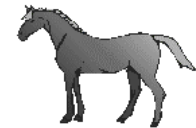
Important findings: Micro-PRNT is capable of detecting the highest antibody titres during both early and late infection. Combination of IgM and IgG ELISA is recommended for serologic screening; positive samples can then be tested by micro-PRNT to determine the specificity of antibodies to WN virus.

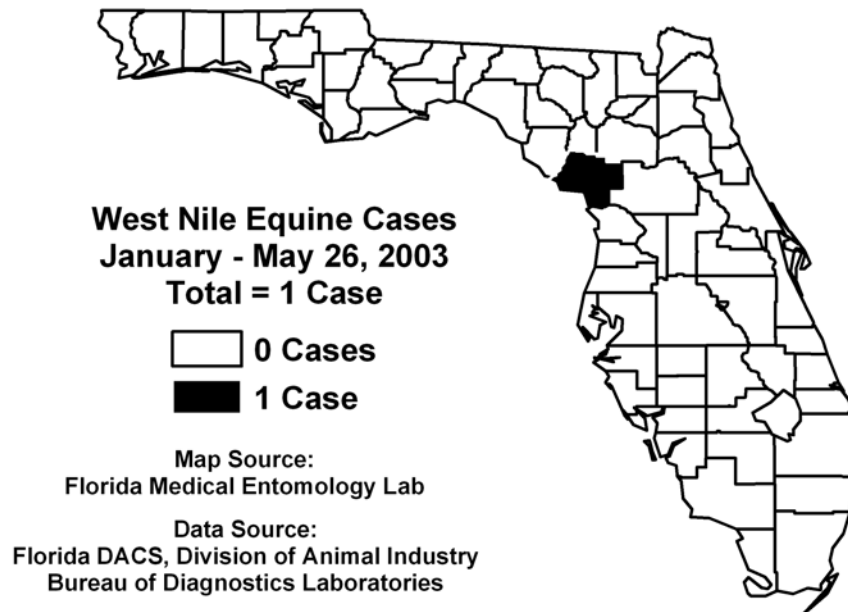
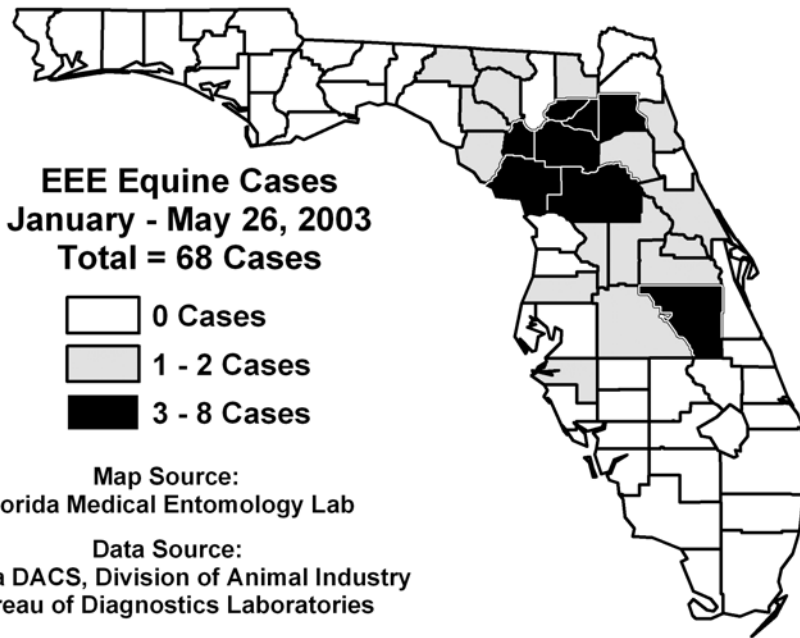


EEE Equine Cases in Florida January through May 26, 2003



West Nile Equine Cases in Florida January through May 26, 2003





Models 101: Types of models

Models are everywhere. We all use them to try and understand the world around us. Science consists of developing a model of a system, making predictions from that model, testing them, and then revising our model from the results. All models start out as a verbal explanation of a process. For example, we might hypothesize that a major rainfall will result in large populations of host-seeking mosquitoes. We can test this, by collecting mosquitoes in conjunction with rainfall. After examining the data, we modify this model based on the results. If we found large populations 10 days after heavy rain, our model now might be that rainfall provides oviposition sites, and larval development takes 10 days. However, something weird happens when a “modeler” converts a verbal model into a mathematical one. All of a sudden it’s something esoteric, slightly scary, and to be avoided at all costs! But mathematical models are an increasingly important part of science and management and are being used in many ways, from populations of mosquitoes to aerial spray drifting. It is important to be able to assess models and decide if the results are meaningful. You can do this without going through the detailed mathematics! The first thing to consider is the basic type of model. Models can be characterized in many different ways, but one of the most important is whether they are statistical, describing relationships between observed patterns; or process based, describing underlying biological processes.

Statistical models are methods for finding and describing the relationships between observed variables in a data set without determining the mechanism. They range from simple, such as a single variable linear regression, to complex models such as multiple and nonlinear regression, principal components analyses, or GIS-based analyses. In our example, we might use linear regression to look for a relationship between rainfall and mosquito populations. Past rainfall might be included to consider delayed effects. Or, if we had data on different locations, we could use GIS analyses to look for a spatial pattern. A more complex model might include other weather variables or spatial variables such as the type of habitat. Significant associations in the analyses tell us there is a relationship between variables. Statistical models describe these relationships without making any assumptions about how they work.

Process based models incorporate a biological description of the processes in the system. These, also, can range from simple to complex, and are used to study biological processes from the molecular level to entire ecosystems. In our example, we hypothesized that rainfall affects mosquito populations by providing oviposition sites. To study this, we could start with a simple model looking at larval development. With estimates for larval development rates from experiments or the literature, we could build a model predicting when we expect to see adults emerge. This model could be developed further by considering other biological factors such as mortality, searching ability, or fecundity, which might give us more information on about the number of adults we expect as well. One of the most powerful aspects of this type of model is the ability to consider how changes in the input parameters (e.g. larval development time) affect our outcome variable (when adults emerge). We can compare the outcome of the model with data on the number of adults emerging over time, and ask whether our hypotheses about larval development seem valid. Simple models may consider basic factors common to many systems, and provide insights about broad questions, but not

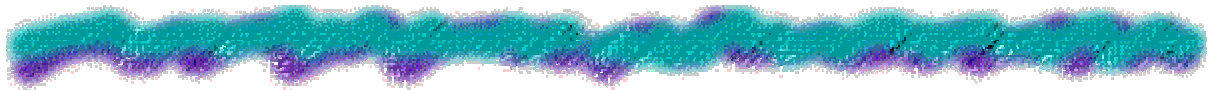
about the specifics of one particular species. More complex models can incorporate biological details about one system, and answer questions about that the biology of that system, but we may not be able to generalize the results.

The purpose. Surprisingly enough, people often misunderstand the purpose of a model. First, it is important to understand "prediction". We are always trying to predict things, whether it's when we expect to see mosquito populations increase or the effect of a control treatment. However, predictions can be general (e.g. mosquito populations increase after rain) or very detailed (e.g. a 10-fold increase 10 days after rainfall greater than 1"). Frequently, the purpose of a model is not detailed prediction, but we learn a great deal from models at all levels of prediction. With statistical models, the goal often is to determine the relationships between variables for future research and for general rather than detailed predictions. In some cases, this seems obvious, but until we do the statistics we may not realize there are more complex relationships. With process based models, we are testing a hypothesis of the underlying processes, considering alternative hypotheses or investigating variation in parameters. Our predictions can be general, such as the factors important in mosquito populations, or detailed, with expectations of precise patterns of abundance. When a process based model is compared with data, we are testing our hypothesis of the mechanism. We often learn more from a model that doesn't 'fit' the data than one that does, since we can then ask what was left out or what assumptions were incorrect. All models leave things out, just as all experiments control some variables to focus on others. A model must be designed with particular questions and hypotheses in mind, just as an experiment is designed. In any modeling study, you should be able to identify the purpose of the model, the type of model and the basic assumptions (which we will discuss in a future article). Based on those features, you can decide if the results are meaningful, and how applicable they are to your interests.

Cynthia C. Lord, Ph.D.

Associate Professor

UF/IFAS/Florida Medical Entomology Laboratory



Sentinel Chicken Surveillance Programs: Pay Attention to Safety

The danger from West Nile virus is very real in Florida. There is great potential in Florida for a substantial number of human and horse cases. There will likely be a West Nile virus epidemic in Florida within the next five years. This epidemic could produce 1000-2000 human cases of West Nile in Florida.

The Florida Medical Entomology Laboratory (FMEL) has been a strong advocate for Florida's West Nile, eastern equine and St. Louis arbovirus sentinel surveillance programs. These programs can provide advance warning of mosquito transmission. Most

importantly as pointed out repeatedly in Buzz Words, sentinel surveillance is a means to provide information for mosquito control to be more effective. We applaud the efforts of those Florida localities which had not previously had surveillance, that are now developing sentinel chicken surveillance programs.

It is essential that sentinel chicken surveillance programs be designed correctly to acquire the desired information. It is even more important that those responsible for operating surveillance have the appropriate training and experience to conduct the required operations in an absolutely safe manner. This is not a trivial concern. Everyone conducting sentinel chicken surveillance must be attentive to this issue. Surveillance personnel are likely to come into close contact with dangerous pathogens that are listed as biosafety level 2 or 3 pathogens. There is potential, of varying risk, that a surveillance worker could be infected as part of their work duties. Whenever such a situation is possible it is incumbent on the responsible organization to do the following:

- Develop safe standard operating procedures (SOPs) designed to protect workers from infection.
- Require appropriate safety training of all workers that clearly explain risks and the precautions instituted to prevent the risks.
- Ensure that all workers are capable of following and adhering to SOPs.
- Provide supervisory oversight by individuals considered expert in the methods and also with demonstrated proven ability to work safely in such a program.
- Develop the appropriate program that ensures continual monitoring of worker activities to maintain high levels of safety.

Clearly West Nile virus poses new twists on surveillance operations. Langevin et al. (2001) (<http://www.cdc.gov/ncidod/eid/vol7no4/langevin.htm#Figure>) showed the following:

- Chickens develop a short and relatively low viremia, compared to many other birds, upon infection with West Nile virus.
- Chickens may shed virus from the cloaca and virus may be found in feces.
- Chickens have the capability of infecting cage mates through shed virus in the absence of mosquitoes.

The magnitude of these risks is certainly less in chickens compared to many other species of birds, yet the risk is real and there is potential. Accordingly the authors advise that animal care handlers should take personal protection precautions in handling and working with sentinel chickens. This advice is simply a standard precaution for these pathogens. These are dangerous pathogens and potentially infected animals should not be handled cavalierly or by inexperienced personnel.

There are several possible routes for West Nile virus infection that should be considered for workers involved in a sentinel chicken surveillance program:

- Infection via the bite of infected mosquitoes that are near or have fed on the sentinel birds.
- Infection via contact with viremic chicken blood, through accidental autoinoculation, spilled blood and entry through abrasions, etc. The aerosol route for West Nile infection is less of a possibility, though not impossible, and should not be ruled out.
- Infection through contact and exposure via infected tissues, feces, etc.

There are SOPs to protect workers from any risk from West Nile and other pathogens stemming from their job duties. Safety and training programs can be found in a variety of documents: CDC-NIH Guidelines: Biosafety in Microbiological and Biomedical Laboratories, <http://bmbi.od.nih.gov/> ; University of Florida Safety Manuals and Documentation <http://www.ehs.ufl.edu/Bio/default.asp> ; Arthropod Containment Guidelines <http://www.astmh.org/subgroup/acme.asp#archive>).

It is unethical to place ill trained workers in situations where their chance of infection is higher due to inadequate safety, unsafe procedures, inadequate training and lack of appropriate supervision. This responsibility on the part of the supervisor or leader is absolutely required even if there is similar risk outside the work environment.

A sentinel chicken surveillance program can be run and operated safely. It has been done so for many years in Florida through trained, experienced professionals who are specifically trained and dedicated to this important program. It requires planning, training and a commitment to protect workers from dangerous agents. My advice is to have well thought out SOPs in place to protect your employees.

Walter J. Tabachnick, Ph.D.

Director

UF/IFAS/Florida Medical Entomology Laboratory