

THE 18TH ARBOVIRUS SURVEILLANCE AND MOSQUITO CONTROL WORKSHOP

IN CONJUNCTION WITH EQUIPMENT / TECHNOLOGY DEMONSTRATION
AND THE FMCA'S NE REGIONAL MEETING

Sponsored by AMCD, USDA/CMAVE & FMCA

*Being held at AMCD's Complex at:
120 EOC Drive, St. Augustine, Florida, 32092*

MARCH 28th – 30th, 2023
www.amcdsjc.org

PROGRAM AGENDA

MONDAY, MARCH 27, 2023

3:00 P.M. AMCD'S ADJUNCT AND CONSULTING MEETING

5:00 P.M. Group Dinner at Ruby Tuesday

TUESDAY, MARCH 28, 2023 (MEETING WILL BE HELD IN THE HANGAR)

7:30 A.M. Registration ... AMCD Staff. Welcome to take a tour of the Disease Vector Education Center, SIT mass rearing facility, and other facility during the workshop.

Moderator: Dr. Rui-De Xue, Executive Director, AMCD, St. Augustine, FL

PANEL SESSION:

8:00 A.M. Welcome & Introduction ... **Ms. Gayle Gardner, Chairperson, AMCD's Board of Commissioners; Dr. Ken Linthicum, Center Director, USDA/CMAVE, and Mrs. Sandra Fisher-Grainger, President of the FMCA & Mr. Alden Estep, NE Regional Director of the FMCA.**

8:10 A.M. **KEYNOTE SPEAKER:** Impact of climate change on vector-borne diseases. ... **Dr. Ben Beard, Deputy Director, Division of Vector-borne Diseases, CDC, Ft. Collins, CO.**

8:50 A.M. **KEYNOTE SPEAKER:** Ground & aerial ULV spraying for mosquito control ... **Mr. Mark Latham, Retired Director, Manatee County Mosquito Control District, Florida.**

9:20 A.M. DoD pest management research and the Deployed Warfighter Protection (DWFP) programs ... **LTC Michelle Colacicco-Mayhugh and Dr. Gabriela Zollner, Armed Forces Pest Management Board, Silver Spring, MD**

9:40 A.M. Contribution and accomplishments of the USDA/CMAVE in the past 80 years ... **Dr. Kenneth Linthicum, Center Director, USDA/CMAVE, Gainesville, FL**

10:00 A.M. **BREAK**

Moderator: Dr. Kenneth Linthicum, Center Director, USDA/CMAVE, Gainesville, FL

10:20 A.M. UF's Emerging Pathogen Institute's program overview... **Dr. Glenn Morris, Professor & Director, UF/EPI, Gainesville, FL**

10:40 A.M. Overview of the UF/Florida Medical Entomology Laboratory's programs ... **Dr. Jorge Rey, Professor & Director, UF/FMEL, Vero Beach, FL**

11:00 A.M. Florida's subcommittee on managed marshes-4 decades of progress ... **Mr. Ed Foley, Lee County Mosquito Control District, Lehigh Acres, FL**

11:20 A.M. DACS/DPI Bureau of Entomological program update ... **Dr. Leroy Whilby, Chief, Bureau of Entomology, Nematology, and Plant Pathology, DACS/DPI, Gainesville, FL**

11:40 A.M. The Florida DACS mosquito control program update ... Ms. Marah Clark, Environmental Administrator, Entomology and Pest Control Section, DACS, Tallahassee, FL

12:00 P.M. LUNCH BREAK (HELICOPTER HANGAR, *PROVIDED BY VESERIS, VISIT THEIR DISPLAYS*)

INTERNATIONAL SESSION:

Moderator: Dr. Uli Bernier, Adjunct Senior Chemist, AMCD, Retired National Program Leader from USDA/ARS

1:00 P.M. Mosquitoes and vector-borne diseases in India ... Dr. B. Reddy Nail, Professor, Department of Zoology, Osmania University, Hyderabad, India

1:20 P.M. Attractive Toxic Sugar Baits (ATSB) for control of malaria vector mosquitoes in Mali ... Dr. Gunter Muller, Professor, Malaria Research & Training Center, University of Bamako, Mali

1:40 P.M. Mosquito behavior studies and facilities at Kasetsart University ... Dr. Theeraphap Chareonviriyaphap, Professor, Department of Entomology, Kasetsart University, Bangkok, Thailand

2:00 P.M. Mosquito and vector-borne diseases in Taiwan ... Dr. Err-Lieh Hsu, Supervisor of TEPMA, Emeritus Professor Department of Entomology, National Taiwan University, Taipei, Taiwan

2:40 P.M. Interplay of climate change with physiological and morphological changes in adult *Aedes albopictus* and susceptibility to vector-borne disease dissemination. ... Dr. Asghar Talbalaghi, Lab of Mosquito Control-IPLA Centre Alessandria & Italian Mosquito Control Association, Italy

3:00 P.M. BREAK

INTERNATIONAL SESSION AND OTHERS:

Moderator: Mr. Chris Lesser, Director, Manatee County Mosquito Control District

3:20 P.M. Will mosquito abatement work in Mali, Africa? ... Mr. Richard Loomis, Quelessebougou Malaria Project, Salt Lake City, UT

3:40 P.M. An Australian form of open marsh water management: long term monitoring, ancillary and extended research ... Dr. Pat Dale, Professor Emeritus, Griffith University, Brisbane, Australia

4:00 P.M. Distribution of blood-sucking flies in cattle farm of Bangkok, Thailand ... Dr. Ratchadawan Ngoenklan, Assistant Professor, Department of Entomology, Kasetsart University, Bangkok, Thailand

4:20 P.M. Mosquito surveillance and resistance monitoring of medically important vectors through the Ghana Armed Forces (GAF), Ghana Entomology Center of Excellence (GECE) ... Dr. Ian Sutherland, Office in Charge, NECE, Jacksonville, FL

4:40 P.M. Update on the American Mosquito Control Association ... Mr. Robert Cartner, Regional Director of the AMCA

5:00 P.M. Knowledge, perceptions, and practices of mosquito larval source management in discarded vehicle tires among New Orleans residents... Dr. Imelda K. Moise, Assistant Professor, University of Miami, Miami, FL and Dr. Claudia Riegel, Director, New Orleans Mosquito and Vector Control District, New Orleans, LA

5:20 P.M. Evaluation of malathion applied by aerial against adult mosquitoes ... Mr. Chris Lesser, Director, Manatee Mosquito Control District, FL

5:40 P.M. **END OF THE SESSION**

5:50 P.M. **DINNER & LECTURE** (HANGAR) **(ALL PARTICIPANTS):** The Mosquito Menace: Waging war on six-legged-blood sucking pests BY DR. GORDAN PATTERSON, HISTORY PROFESSOR, FLORIDA TECHNOLOGY INSTITUTE, FL

WEDNESDAY, MARCH 29, 2023

DISEASE SURVEILLANCE (IN HANGAR):

Moderator: Dr. Michael Turell, Adjunct Senior Arbovirologist at AMCD, US Army Medical Research Institute of Infectious Diseases (retired), Fort Detrick, MD

8:00 A.M. 2022 Arbovirus surveillance report in Florida ... Dr. Andrea Morrison, Vector-borne Disease Surveillance Coordinator, Bureau of Epidemiology, DOH, Tallahassee, FL

- 8:20 A.M.** 2022 Georgia arboviral State report... **Dr. "Tiffany" Thuy-Vi Thi Nguyen, Public Health Deputy State Entomologist, Georgia Department of Public Health, Atlanta, GA**
- 8:40 A.M.** Arbovirus surveillance and mosquito control programs in North Carolina. **Mr. Michael Doyle, Medical Entomologist, N.C. State Department Health and Natural Resources**
- 9:00 A.M.** Risk of the introduction of exotic mosquito-borne pathogens into the United States ... **Dr. Michael Turell, Senior Arbovirologist (retired), US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD**
- 9:20 A.M.** West Nile virus surveillance in sentinel chickens and mosquitoes in Panama City Beach, Florida, from 2014-to 2022...**Mr. Michael Riles, Dale Martin, Cindy Mulla, Eddie Summers, Lee Duke, James Clauson, Lindsay P. Campbell, and Bryan V. Giordano**
- 9:40 A.M.** West Nile virus risk estimation and viral transmission dynamics within a two-vector system. **Dr. Mark Clifton, Executive Director, North Shore Mosquito Abatement District, Northfield, IL**
- 10:00 A.M.** **BREAK**

DISEASE VECTORS AND BIOLOGY (IN HANGAR):

Moderator: Dr. Jerry Hogsette, Lead Scientist & Research Entomologist, USDA/ARS/CMAVE, Gainesville, FL

- 10:20 A.M.** Salinity changes in different location on *Aedes aegypti* breeding in St. Johns County, Florida ... **Dr. Vindyha Aryaprema, Biologist, St. Augustine, FL**
- 10:40 A.M.** La Crosse encephalitis in NC – emerging and persistent risk factors ... **Dr. Brian Byrd, Professor, Western Carolina University, NC**
- 11:00 A.M.** WNV surveillance in St. Johns County, Florida in 2022 ... **Dr. Steve Peper, Molecular Entomologist, AMCD, St. Augustine, FL**
- 11:20 A.M.** Impact of landscape on mosquito populations ... **Dr. Lindsay O. Campbell, Assistant Professor, UF/IFAS/FMEL, Vero Beach, FL**
- 11:40 A.M.** Ceratopogonidae and Tabanidae: the other biting Diptera causing nuisance problems in Florida. **Dr. Daniel L. Kline, Research Entomologist, USDA/CMAVE, Gainesville, FL and Karen McKenzie**
- 12:00 P.M.** **LUNCH BREAK (PROVIDED BY AZELIS/ADAPCO & AMVAC)**

BEHAVIORS AND ECOLOGY (IN HANGAR):

Moderator: Dr. James E. Cilek, Medical Entomologist, Navy Entomology Center of Excellence, Jacksonville, FL

- 1:00 P.M.** Targeted mosquito control in cryptic habitats. **Dr. James E. Cilek, Medical Entomologist, Navy Entomology Center of Excellence, Jacksonville, FL**
- 1:20 P.M.** Will history repeat itself? Could *Aedes aegypti* be re-displaced by *Ae. albopictus* from the re-established area in the City of Gainesville, Florida? ... **Dr. Peter Jiang, Director, Gainesville Mosquito Control, Dr. Estelle Martin, Assistant Professor, UF/Dept. of Entomology & Nematology, Gainesville, FL**
- 1:40 P.M.** Analysis of trap data from Brevard County...**Mr. Maxwell Reynolds, Environmental Specialist, Bridget Coffey, Jonathan Linder and Joseph Faella, Brevard Mosquito Control District, Titusville, FL**
- 2:00 P.M.** Attractants and trapping techniques for biting flies ... **Dr. Jerry Hogsette, Lead Scientist & Research Entomologist, USDA/ARS/CMAVE, Gainesville, FL**
- 2:20 P.M.** The Insecto Mosquito Trap, a durable dual action lethal trap ... **Dr. Phil Koehler, Professor Emeritus, University of Florida/Urban Entomology Laboratory, Gainesville, FL**
- 2:40 P.M.** Update on the Florida Mosquito Control Association ... **Mrs. Sandra Fisher-Grainger, President of the FMCA**
- 3:00 P.M.** **BREAK**

LARVAL & ADULT CONTROL(IN HANGAR):

Moderator: Dr. Whitney A. Qualls, Entomologist/Scientific Manager, AMCD, St. Augustine, FL

- 3:20 P.M.** Overview of Department of Entomology and Nematology, UF/IFAS... **Dr. Daniel Hahn, Professor & Acting Chair, Department of Entomology and Nematology, University of Florida, Gainesville, FL**
- 3:40 P.M.** Efficacy of sterile male releases against *Aedes aegypti* in St. Augustine ... **Dr. Chao Chen, Scientist, UF/Dept of Entomology and Nematology, Gainesville, FL**
- 4:00 P.M.** Many tools in the toolbox: Autocidal strategies based on mosquito mass reared in Anastasia, FL... **Dr. Stephen Dobson, Professor, University of Kentucky & MosquitoMate, Lexington, KY**
- 4:20 P.M.** Controlling *Aedes aegypti* in the Californian desert... **Ms. Jennifer Henke, Laboratory Manager, Coachella Valley Mosquito & Vector Control District, CA**
- 4:40 P.M.** Automated sex sorter and mass release technology for SIT mosquitoes ... **Mr. Ralph Breslauer, Senecio Robotics**
- 5:00 P.M.** KDR mutations in vector mosquitoes ... **Dr. Ke Dong, Professor, Department of Biology, Duke University, NC**
- 5:20 P.M.** Getting a handle on managing insecticide resistance: effective integrated vector management in a landscape of resistant mosquitoes ... **Mr. Alden Estep, Research Entomologist, USDA/CMAVE, Gainesville, FL**
- 5:40 P.M.** MGK's new larvicide products for mosquito control ... **Dr. Caleb Corona, Entomologist, MGK, MN**
- 6:00 P.M.** **END OF THE SESSION**

WEDNESDAY, MARCH 29, 2023

INSECT REPELLENT SYMPOSIUM (IN BOARD ROOM, BLD 100):

MODERATOR: DR. DANIEL KLINE, RESEARCH ENTOMOLOGIST, USDA/CMAVE, GAINESVILLE, FL

- 8:00 A.M.** Repellents for uniform and clothing treatment ... **Dr. Ulrich Bernier, Research Scientist (retired), USDA/ARS/CMAVE, Gainesville, FL**
- 8:20 A.M.** Lauric and capric acid efficacy in biting fly vs mosquito spatial repellency methods ... **Mrs. Kim Benz, Onederings Lavender Farm, Clarksville, OH**
- 8:40 A.M.** Recent advances of natural product repellents against medical, veterinary, urban and other agricultural insect pests... **Dr. Jerry Zhu, Research Entomologist, USDA/AMRU, Lincoln, NE**
- 9:00 A.M.** Exploring the potential of natural product repellents in a modified small tube assay... **Dr. Edmund Norris, Research Chemist, USDA/CMAVE, Gainesville, FL**
- 9:20 A.M.** New formulation of repellents against mosquitoes. **Mrs. Amy Hickox, President, Scents Fur You, LLC.**
- 9:40 A.M.** Excitorepellency of local plant extracts against mosquitoes ... **Dr. Chutipong Sukkanon, Department of Medical Technology, Walailak University, Nakhon Si Thammarat, Thailand**
- 10:00AM** **BREAK**

STUDENT SESSION (IN BOARD ROOM, BLD 100):

Moderator: Dr. Steve Peper, Molecular Entomologist, AMCD, St. Augustine, FL

- 10:20 P.M.** **Special Lecture:** Update about good laboratory practice (GLP) in mosquito control product evaluations ... **Dr. Karl Malamud-Roam, Vector Control Consultants, CA**
- 10:40 P.M.** Semi-field evaluation of mosquito repellent from *Andrographis paniculate* against *Aedes aegypti* and *Anopheles minimus* in Thailand... **Miss Patcharawan Sirisopa, Ph.D. student, Department of Kasetsart University, Bangkok, Thailand**
- 11:00 P.M.** Effect of transfluthrin-treated jute cloth on life history traits of resistant and susceptible *Aedes aegypti* under semi-field conditions ... **Mr. Alex Ahebwa, Ph.D. student, Department of Kasetsart University, Bangkok, Thailand**
- 11:20 P.M.** Protective efficacy of topical repellents against malaria vector *Anopheles dirus* in a semi-field system... **Mr. Manop Saeung, Ph. D. student, Department of Kasetsart University, Bangkok, Thailand**
- 11:40 P.M.** Irritant and repellent behavioral responses of sterile *Aedes aegypti* males developed for SIT disease control strategies ... **Mr. Jirod Nararak, Ph.D. student, Department of Kasetsart University, Bangkok, Thailand**

12:00 P.M. LUNCH BREAK_(IN HELICOPTER HANGAR, PROVIDED BY AZELIS/ADAPCO & AMVAC)

STUDENT SESSION CONTINUE & OTHERS (IN BOARD ROOM BLD 100):

Moderator: Mrs. Sandra Fisher-Grainger, President of the FMCA

- 1:00 P.M.** Toxicity of commercialized herbicides to mosquitoes and ticks... **Ms. Sarah McComic, Graduate Student, Dr. Daniel Swale, Associate Professor, University of Florida/EPI, Gainesville, FL**
- 1:20 P.M.** Update on evaluation of nanoparticle formulation of mosquito adulticides ... **Mr. Kai Blore, UF/Ph.D. Student / Laboratory Manager, AMCD, St. Augustine, FL**
- 1:40 P.M.** *Wolbachia* infection differentially impacts *Culex quinquefasciatus* fitness and West Nile virus infection under different levels of larval competition ... **Mr. Abdullah Alomar, UF/FMEL, Ph.D. student, Vero Beach, FL**
- 2:00 P.M.** Insecticide resistance and metabolic detoxification in the mosquito *Aedes aegypti* .. **Mr. Dylan Brown, Ph.D. student, Dr. Nannan Liu, Professor, Department of Entomology and Plant Pathology, Auburn University, AL**
- 2:20 P.M.** Machine learning of *Aedes* mosquito population dynamics in Alabama .. **Mr. Yifan Wang, Ph.D. student, Dr. Nannan Liu, Professor, Department of Entomology and Plant Pathology, Auburn University, AL**
- 2:40 P.M.** Overview of AMCD intern student training program and opportunity ... **Dr. Rui-De Xue, Executive Director, AMCD, St. Augustine, FL**
- 3:00 P.M.** BREAK
- 3:20 P.M.** Overview of 2022 operations on the Space Coast through Hurricanes Ian and Nicole**Mr. Joseph Faella, Director, Jonathan Linder, Maxwell Reynolds, Bridget Coffey, Michael Buono, Jonathan Koagel and Steven Whitt, Brevard Mosquito Control District, Titusville, FL**
- 3:40 P.M.** Yeast interfering RNA larvicide facilitates sex separation in multiple species of disease vector mosquitoes... **Dr. Molly Duman-Scheel, Professor, Indiana University School of Medicine, IN.**
- 4:00 P.M.** Interrupting Dengue-mosquito interactions to reduce pathogen transmission... **Dr. Zhilin Li, Postdoctoral Associate, Dr. Daniel Swale, Associate Professor, University of Florida/EPI, Gainesville, FL**
- 4:20 P.M.** Characterization of potassium-chloride cotransporter in insect neural systems... **Dr. Rui Chen, Postdoctoral Associate, Dr. Daniel Swale, Associate Professor, University of Florida/EPI, Gainesville, FL**
- 4:40 P.M.** Expression, activity, and biochemical inhibition of a- and b-glucosidases in different life stages of *Culex quinquefasciatus* ... **Dr. Edwin R. Burgess IV, Assistant Professor, Entomology and Nematology Department, University of Florida, Gainesville, FL**
- 5:00 P.M. Research program overview from Anastasia Mosquito Control District ... **Dr. Whitney Qualls, Scientific Manager, Anastasia Mosquito Control District, St. Augustine, FL**
- 5:20 P.M.** END OF THE SESSION

THURSDAY, MARCH 30, 2023

OTHER PROGRAM I (IN HANGAR):

Moderator: Dr. Dave Hoel, Executive Director, Lee County MCD, Lehigh Acres, FL

- 8:00 A.M.** Executing population-dependent threshold SIT for control of *Aedes aegypti* in Southern California in 2023... **Dr. Michelle Brown, General Manager, West Valley Mosquito and Vector Control District, CA.**
- 8:20 A.M.** Overview: Navy Entomology Center of Excellence (NECE), Jacksonville, FL ... **Dr. Ian Sutherland, Officer in Charge, NECE, Jacksonville, FL**
- 8:40 A.M.** Science research initiative and community engaged learning programs in Salt Lake City Mosquito Control Abatement ... **Dr. Chris Bibbs, Lab Manager, Salt Lake City Mosquito Abatement, Salt Lake City, UT**
- 9:00 A.M.** Help and assistant to local mosquito control programs from the AMCA's Technical Advisor **Dr. Daniel Markowski, AMCA, Technical Advisor**

9:20 A.M. Overview of Volusia mosquito Control program ... **Mr. Marcus McDonough, Director, Volusia Mosquito Control District, New Smyer Beach, FL.**

9:40 A.M. Comparison of different larval diets and an ammonia reducing compound on the mass rearing of *Aedes aegypti*...
Mr. Steven Stenhouse, Johanna Bajonero Cuervo, Rachel Morreale, Aaron Lloyd, David Hoel, Lee County Mosquito Control District, Lehigh Acres, FL

10:00 A.M. **BREAK**

OTHER PROGRAM II (IN HANGAR):

Moderator: Dr. Chris Bibbs, Lab Manager, Salt Lake City Mosquito and Vector Control Abatement

10:20 A.M. Global perspective on immature adaptation through natural selection of the immatures in the culicomorpha infraorder... **Mr. Herb Nyberg, New Mountain Innovation, Florida Keys, FL**

10:40 A.M. Update about sensory smart cages development for mosquito adulticide evaluation... **Dr. William Eisenstadt, Professor, Department of Electronic Engineer, University of Florida, Gainesville, FL**

11:00 A.M. Evaluation of three backpack sprayers against adult mosquitoes ... **Dr. M. Farooq, Mosquito Control Engineer, AMCD, St. Augustine, FL**

11:20 A.M. Brevard County community outreach and education program ... **Ms. Bridget Coffey, Environmental Specialist, Maxwell Reynolds, Jonathan Linder and Joseph Faella, Brevard Mosquito Control District, Titusville, FL**

11:40 A.M. A review of Florida's mosquito diversity based on DNA barcodes ... **Dr. Lawrence E. Reeves, Assistant Professor, University of Florida/FMEL, Vero Beach, FL**

12:00 P.M. Calibration, Characterization of UAS for adulticiding and larviciding ... **Mr. Bill Reynolds, CEO, Leading Edge Associates, Daytona Beach, FL**

12:20 P.M. **LUNCH BREAK (provided by CENTRAL LIFE SCIENCES)**

1:10 P.M. ***DEMONSTRATION IN THE FIELD***

Industry equipment and drone demonstrations **Mr. Bill Reynolds, CEO, Leading Edge Associates & Dr. Whitney Qualls, AMCD, St. Augustine, FL**

New technological demonstration, new backpacking sprayer, smart cage, & droplet analysis **Dr. M. Farooq, AMCD, St. Augustine, FL, Dr. James Cilek, NECE, Jacksonville, FL, Dr. William Eisenstadt, Professor of University of Florida**

3:00 P.M. **End of Demonstration**

3:30 P.M. **END OF THE 18th WORKSHOP**

Welcome to join the 19th workshop, St. Augustine, FL, March 26th - 28th, 2024.

Dr. R. Connelly from CDC's DVBD will give the keynote Speaking about Insecticide Resistance and Resistant Management: Global Challenge for Control of Vector-borne Diseases.

Dr. J. Lyell Clarke will give another Keynote Speaking about the World Needs Mosquito Control: Industry Plays an Important Role in the Pipeline.