

AMCA[®]

NEWSLETTER

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Upcoming Events



AMCA 90th Annual Meeting

March 4-8, 2024
Sheraton Dallas Hotel
Dallas, TX

View our event [calendar](#).

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On The Cover

Photo by Egor Kamelev - pexels.com

Our mission is to enhance health and quality of life through the suppression of vector-transmitted diseases and the reduction of mosquitoes and other public health pests by providing leadership, information, collaboration, tools, and education.

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AMCA RESEARCH FUND

Mosquito control is science-based. Mosquito control professionals use observation of mosquito populations, evaluation of novel control technology and predictive modeling to determine the best way to manage mosquito populations and prevent pathogen transmission. Mosquito control has benefited from a long history of research within mosquito abatement agencies, at public and private universities, and at other qualified research institutions examining how to improve mosquito control to provide a better quality of life for the public.

2023 RESEARCH FUND AWARDEES

Julianne Miranda-Bermúdez, PhD., *“Infrastructure to evaluate community engagement efforts for an Integrated Vector Management Program.”* Puerto Rico Vector Control Unit.

Emily Mader, *“Analysis of perceived risks and benefits of mosquito abatement and person protection strategies.”* Northeast Regional Center for Excellence in Vector-Borne Diseases, Cornell University

CONTRIBUTIONS TO THE AMCARF ARE NOW BEING ACCEPTED!

The AMCA Research Fund is currently accepting contributions for future research on mosquito control and related topics. Contributions can be made online through the [Research Fund webpage](#) or by check payable to:

**AMCA Research Fund
ATTN: Megan MacNee
1 Capitol Mall, Suite 800
Sacramento, CA 95814**

AMCA WOULD LIKE TO THANK THE FOLLOWING CONTRIBUTORS

- ADAPCO
- Anonymous Contribution
- Canyon County Mosquito Abatement District
- Contra Costa Mosquito and Vector Control District
- Michigan Mosquito Control Association
- Sacramento-Yolo Mosquito and Vector Control District
- Schools First Federal Credit Union
- Valent BioSciences



President's Message

Kristen Healy, PhD

It was a warm summer Saturday in August, and I was sitting outside on the porch eating breakfast. It was hot and humid, but the fans over my head made it feel tolerable, and the day just felt calm and relaxing. I closed my eyes to take in the warmth of the day and gave a sigh of relief of being able to sit outside without being covered in mosquitoes. I nearly started to fall asleep outside when I heard the familiar ping sound of a text on my cellphone. I assumed it was spam, as it was far too early in the morning for most of my friends to be texting me. Anyways I picked up my phone and felt a knot in my stomach when I read the words “please call me” on the screen. As the new sensations of anxiety running in my blood stream took over my body, I immediately ran inside to grab a cup of coffee and to begin to compose myself.

“ A week later, I received a text from the beekeeper. These were their words: “My yard was absolutely loaded with pollinators today, and mosquitoes.” They went on to ask more questions about future sprayings, but overall, I could tell they felt reassured. ”

The text message had come from a respected beekeeper in the state. One of “the” people that local beekeepers call when there is a problem or issue, they don’t know what to deal with. While I continue to maintain positive relationships with beekeepers in Louisiana, I recognized that this call probably had something to do with the aerial applications of Naled that had occurred the night prior. The applications that gave me my peace to sit outside again, had most likely also caused anxiety for others. Regardless, I knew I couldn’t wait too long before calling back the beekeeper. His trust has always been important to me, and I wanted to make sure I remained a trusted source for those reaching out to me.

After a few minutes of deep breaths, I called back the beekeeper, and we started off by asking about each other’s families and

wellbeing. Perhaps it is southern hospitality, but I respect that at the end of the day, we are all in this great big world together. The beekeeper told me about several phone calls, emails, and texts messages they had already received that morning. They had been inundated with questions about the spraying of Naled, and anecdotes of the lack of flying insects in the area. They had expressed concerns about the loss of dragonflies and the potential impact to local bees and pollinators. They were concerned that the Naled application had drastically impacted the ecology of the environment in which we live. Part of the call was to make me aware, but another part was asking me questions. I approached the call as I do any other, with empathy.

After an hour or so on the phone, I got to understand a lot about the concerns in the community. I appreciated that I was the one they called to ask questions. As empathy and trust are important to me, they also quickly realized that I too care about dragonflies and pollinators. We talked about what we know so far about non-target impacts and ecology. I reassured them that those dragonflies would be flying again soon, and that if those bee hives were strong, meaning not impacted by mites and virus, they would be ok. I reassured them that the Naled application was one of the best tools our local mosquito control district had at the time to protect human health. We had a lot of viruses in the area and people were at risk. I helped them understand the importance of different tools in integrated mosquito management. And they left the phone call feeling heard and reassured that things would be ok.

A week later, I received a text from the beekeeper. These were their words: “My yard was absolutely loaded with pollinators today, and mosquitoes.” They went on to ask more questions about future sprayings, but overall, I could tell they felt reassured. And while these calls are scary for me to approach as well, I now truly appreciate the value of listening and trying to understand other points of view.

I wanted to tell this story, as I think it’s something that many mosquito control districts can relate to. At some point, most districts will have to deal with a potential non-target issue or concern. While dealing with these concerns can be challenging at times, I suggest starting with just a friendly ear, and kindly listening to their concerns. Continue to be empathetic, and remember, they don’t always have the same knowledge of IMM that we do. It’s only when you gain trust, that they will be open to being educated on the topic. I’m always here if you need help! ■

SWAMP GOSSIP

Katherine Schmitz
Federal Affairs Assistant
The Normandy Group

In Washington, the new year brings Congress back to work and the beginning of the Presidential Primary season. For AMCA, our work focusing on Farm Bill priorities and appropriations remains in full swing. We continue to advocate for the Farm Bill and our other priorities as an association as well as the coalitions we are a part of.

Farm Bill: On November 15th, the President signed a continuing resolution into law which included an extension of the 2018 Farm Bill. The bill extends the Farm Bill through September 2024. Not only did the bill avert a government shutdown, but it also included extensions for so-called “orphan” farm bill programs that would otherwise have lost funding at the end of the previous fiscal year. Although the recent stopgap appropriations bill provides an additional 10 months to pass a new farm bill, there are still ongoing negotiations and a comprehensive five-year reauthorization is still pending. We continue to monitor this closely and will provide updates as warranted.

Get Involved: We also want to highlight the importance of staying involved and the impact each of our association’s members has on our legislative and regulatory priorities. We are diligently working to ensure all of our priorities reflect our member’s needs, but we can’t do it without your help! Please continue to review our engagements on Voter Voice to ensure through your participation that our concerns are heard by Members of Congress. Just in case you haven’t heard it enough, each of your letters, emails, phone calls, social media posts, etc makes a difference. We appreciate your support in ensuring that our message continues to be heard.

Hill Meetings: The American Mosquito Control Association is

one of among 55 members of the Pesticide Policy Coalition (PPC) which represents agriculture, food, fiber, public health, pest management, landscape, environmental, and related industries, including small businesses/entities, which are dependent on the availability of pesticides. This coalition supports development and implementation of public policies and laws that utilize the best available science and technology to ensure protection of human health and the environment. As a coalition, we have established a number of legislative priorities for the upcoming reauthorization of the farm bill and engage in bi-weekly meetings with Members of Congress and their staff to discuss these and other priorities. This is part of the relationship building that your communications with your congressional delegations support. Most recently, on Monday, November 27th AMCA was honored to participate in meetings with the offices of Senator Raphael Warnock (D-GA), Representative Jim Costa (D-CA-21), and on December 11th we met with the office of Senator Richard Durbin (D-IL).

Senator Warnock was elected to the United States Senate on January 5, 2021, in a special election runoff for the term ending January 3, 2023, to fill the vacancy caused by the resignation of Senator Johnny Isakson, a seat previously held by appointed Senator Kelly Loeffler. He took the oath of office on January 20, 2021. Currently, Senator Warnock serves on the Agriculture, Nutrition and Forestry Committee; Banking, Housing and Urban Affairs Committee; Commerce, Science and Transportation Committee, as well as the Special Committee on Aging. We met with staffers Alexa Fox and Jack West.

Representative Costa has represented the San Joaquin Valley in the United States House of Representatives since 2005. Costa proudly represents California’s 21st Congressional District, which includes parts of Fresno and Tulare counties. Growing up, Costa worked on the family dairy and now farms almonds in the San Joaquin Valley. In the 118th Congress, Congressman Jim Costa represents



Photo by Jordan Whitefield on Unsplash

his constituents on the House Committee on Agriculture and House Committee on Foreign Affairs in the United States House of Representatives.

Senator Dick Durbin, a Democrat from Springfield, is the 47th U.S. Senator from the State of Illinois, the state’s senior senator, and the convener of Illinois’ bipartisan congressional delegation. Durbin also serves as the Senate Majority Whip, the second highest ranking position among the Senate Democrats. Senator Durbin has been elected to this leadership post by his Democratic colleagues every two years since 2005. Durbin serves as Chair of the Senate Judiciary Committee and sits on the Appropriations and Agriculture Committees. Elected to the U.S. Senate on November 5, 1996, and re-elected in 2002, 2008, 2014, and 2020, Durbin fills the seat left vacant by the retirement of his long-time friend and mentor, U.S. Senator Paul Simon.

The PPC farm bill priorities include:

- Enhance the Role of USDA’s Office of Pest Management Policy (“USDA Crop Act of 2023” (S. 2472/H.R. 5070))

- Support and Enhance the Role of the FIFRA Interagency Work Group
- Support the Use of Adjuvants
- Reaffirm State Pesticide Preemption and the Role of States as Co-Regulators of Pesticides
- Promote Uniformity in Pesticide Labeling by Reaffirming that EPA is the Primary, Federal Authority under FIFRA for Making Pesticide Findings and Decisions (bipartisan H.R. 4288, Agricultural Labeling Uniformity Act)
- Support Voluntary Adoption of Precision Agriculture Technologies and Services
- Support USDA’s Foreign Agricultural Service’s Engagement in International Intuitions, Especially Related to Codex and Pesticide Standards.
- Eliminate Duplicative and Burdensome Permits for Pesticide Applications (Rep. Rouzer’s bill (H.R.5089 - Reducing Regulatory Burdens Act of 2023) ■



International Director Report

Catalina Alfonso-Parra, PhD • International Director

It is increasingly evident that vector control programs in some parts of the continent have not been completely successful. Case in point: dengue incidence, where the number of infections had an unprecedented increase in 2023. In the Americas, more than 4.1 million new infections have been registered to date, making 2023 the year with the highest historical record of dengue cases. Several factors are associated with an increase in dengue cases, including climate change, population movement and political instability. Given that these challenges will undoubtedly persist into the future, the vector control community needs to adapt to successfully respond to new and continuing challenges.

On a brighter note, the annual meeting is rapidly approaching. As always, there will be a big Latin American contingent present, talking about the latest work being done in our part of the world. During the meeting, there will be the Latin American discussion on Tuesday afternoon, where we will discuss important topics that affect us. There will be 2 sessions for the Latin-American student competition on Wednesday, and on Thursday we will have 2 Latin-American symposiums. So, I hope to see you all there!!

At the end of November 2023, the Asian Pacific Conference on Mosquito and Vector Control happened in Chang Mai, Thailand. The theme of the meeting was Reimagining Vector Control: Innovations

for our changed world. The conference was a big success. It was a great experience to see and discuss vector control efforts and results in mosquito biology from groups in Korea, Japan, China, India, Malaysia, Singapore, Indonesia, Cambodia, as well as European, American and African countries and, obviously, Thailand. Topics covered were diverse ranging from mosquito biology, ecology and genomics to the implications of climate change in relation to vector distribution, community engagement, evaluation and efficacy of vector control operations, insecticide resistance and management, among others. One of the aims of the conference was to strengthen the regional mosquito and vector control capacity and to allow networking among the various groups present. I can personally attest that this last goal was successfully achieved.

Finally, this is the last article I write as the international director, so I just want to say thank you to all of you for the support I have received throughout the years. Also, a special thanks to the people and industry who supported the Latin-American symposium because without your help, it could have been much more difficult, if not impossible, to do. Lastly, thanks to all board members (past and present), with whom I have shared so much, thanks for all the things you have taught me, and for supporting me and listening to what I have had to say.

See y’all in Dallas. ■



Technical Advisor Report

Daniel Markowski, PhD

For those readers that attended the Annual meeting in Reno last March, you may remember a presentation during the plenary session outlining our plans for a virtual training project. I'm proud to report that this past summer the AMCA, in cooperation with the CDC, developed a comprehensive course designed to complement our recent Best Management Practices (BMP) manual update. This virtual training course is now online and as of this writing over 400 people have already begun the course and over 30 have received their certificate!



You may be asking yourself, "How did such an amazing resource come to be?" Well, beginning last spring, AMCA hired Jennifer Gordon (Bug Lessons Consulting, LLC), and together with the expert guidance from the Education Committee steering us along the way, she and I began the work to complete this project. Our initial task was to meet and discuss with the membership the gaps that existed, and the best way to dovetail this training with our existing BMP manuals. After meetings with the Education Committee, we decided the best approach would be to use a diverse group of presenters from varied backgrounds and regions. Their input would be critical for presenting diverse perspectives and ensuring that the training standard would reflect the needs of ALL regions of the country.

Initially, it was determined that 13 modules or videos would be sufficient to cover the material. Furthermore, we decided having 2 speakers per training module would provide a certain level of interaction and expert input. But with 13 modules, that meant we

needed 26 speakers! Ultimately, we ended up with 24 instructors located throughout the U.S., Puerto Rico, and Australia. We were fortunate that so many people willingly gave their time resulting in an impressive list of industry experts covering each category within the BMP. In addition to a video lecture featuring this cast of experts, each module also contains a reading from the AMCA's *Best Practices for Integrated Mosquito Management* manual and a focused 10-question quiz covering both the reading and lecture. Now all we had to do was make each module! Beginning in May, we set an aggressive agenda of content creation, video recording, and editing every 2-3 weeks. Miraculously, we stayed on schedule and finished recording the last module in early September.

Module Topic	Trainers
Module 1 - Mosquito Biology and Integrated Mosquito Management	Jennifer R. Gordon, Ph.D. Daniel Markowski, Ph.D.
Module 2 - Community Engagement	Kristen Healy, Ph.D.
Module 3 - Larval Surveillance	Isik Unlu, Ph.D. Larry Reeves, Ph.D.
Module 4 - Adult Surveillance	Diann Crane, M.S. Chris Fredregill, M.S.
Module 5 - Arbovirus Surveillance	Kyndall Dye-Braumuller, Ph.D. Jonathan Darbro, Ph.D.
Module 6 - Mapping and Data Management	Chris Barker, Ph.D. Daniel Markowski, Ph.D.
Module 7 - Setting Action Thresholds	Roger Nasci, Ph.D. Sarah Wheeler, Ph.D.
Module 8 - Larval Source Reduction	Paul Bauman, M.S. Roger Wolfe, Ph.D.
Module 9 - Biological and Novel Control	Constance Darrisaw Elizabeth Hart
Module 10 - Larval Mosquito Control	Peter DeChant Manuel Lluberas, M.S.
Module 11 - Adult Mosquito Control	Angela Caranci, Ph.D. Broox Boze, Ph.D.
Module 12 - Insecticide Resistance	Alden Estep, Ph.D. Lindsay Baxter, M.S.
Module 13 - Record Keeping and Data Integrity	Nina Dacko, M.S. Angela Beehler

To evaluate both the students and the program itself, we also developed two tests. A 26-question pre-exam that we can use to establish a baseline level of knowledge for each student, and a 100-question post-exam students must take to earn their certificate. We can compare the results from these to two exams to

1) gauge overall retention of the material, and 2) assess the efficacy of the modules to help guide improvements in future training videos. Upon completion of the full program, participants get a very nice Certificate of Completion. Additionally, all participants that successfully complete the program will be recorded so that passing of the course can be verified, which may be useful in the future (for example, if we are able to get CEU approval from states for applicators taking the course).

Understanding that not all users may need to take the full program, there is an option to take as many (or as few) of the modules as a user wishes and in any order. In this case, there is not a pre- and post-exam; however, the user will not get an impressive Certificate of Completion- just a mundane email confirmation of each module completed. To easily access the individual modules, just go to the “On Demand” section under the “Media Types” pull down menu on the [Virtual Training Program’s Classroom page](#).

While we hope everyone finds this training course useful, we also hope you will check back regularly for updates and improvements. One of the advantages to a virtual program is that we can update the modules as new information becomes available or as participants provide feedback for improvements. Also, we have plans to expand the training modules with content from the Emergency Response BMP. And we would like to also develop content related to UAS Operations, Endangered Species Act (ESA) Mitigations, etc. In short,

this is the first step, but it is by no means our last!

Finally, Jennifer and myself will host a symposium at the 2024 AMCA Annual Meeting in Dallas covering many of the topics of the training program. Several of the module trainers will be presenting additional content and expand upon the material within their module. This symposium will be an excellent opportunity for students to interact directly with the experts and allow the virtual training program to come alive. Hopefully, we will stimulate discussion and have constructive feedback for future enhancements. There may even be a few surprises and laughs in store for those who attend.

We hope this is just the beginning of a broader initiative to set a new national standard for training and recruitment of vector management professionals. A national standard for training our vector control workforce is integral to the Association’s core mission of providing leadership and education to our members. We hope that this training course not only enhances the capabilities of professionals in the field but also contributes to broader public health initiatives and international collaboration.

AMCA’s Virtual Training Course can be found online at AMCA’s website and is free for all participants. We hope everyone enjoys it, learns something, and provides feedback for how we can improve it in the future! [AMCA’s Best Practices for Integrated Mosquito Management Virtual Training Program](#). ■



Science & Technology Committee Report

Jennifer A. Henke • Chair

The Science and Technology Committee, like all committees of AMCA, has a responsibility to the members of AMCA. For us, we take on projects to maintain the capability to provide information and guidance for the AMCA membership, the Board of Directors, and the larger research and academic community. Our goals are the development and ethical implementation of best scientific practices in research and modern technology.

As we look forward to 2024, I’m pleased to share the results of the AMCA Research Fund proposals process. Dr. Ed Norris worked as the subcommittee chair with President-Elect Dr. Rui-de Xue to include reviewers from across the membership. Of the 21 pre-proposals submitted, five were invited back for full proposals. Ultimately, the AMCA Board of Directors elected to fund one proposal.

Bradley Willenberg – New Attractive Toxic Sugar Baits with Propylene Glycol as a Sugar Substitute and Toxicant in Capillary Alginate Gel Biomaterials

This project, like all of those proposed, aims to understand how we can apply novel control strategies for improved mosquito control. Despite living in a golden age of innovation and novel technologies, mosquito control still relies upon careful application of chemicals to finely target select species in hopes of improving life for people and for animals susceptible to diseases. Examining new application methods could greatly improve our ability to maintain this delicate balance.

As we often are, reviewers of the projects were impressed by the wealth of excellent ideas and work that could be completed. Unfortunately, donations to the AMCA Research Fund have been lower than what is needed to sustain and support more work. While there are some generous donors, I wish to remind you that each of us making a small contribution can lead to much larger impacts. As you look towards the AMCA Annual Meeting, please look for how you can add to this important organization, improving our ability to fund excellent research. ■



North Atlantic Director Report

Priscilla Matton, MS • North Atlantic Director

The North Atlantic region experienced above rainfall throughout the season – significant difference from the extensive and extended drought throughout the 2022 mosquito season. Increased eastern equine encephalitis activity in the region, including new hot-spot activity poses a concern for the 2024 arboviral season. The Pennsylvania Vector Control Association and the Northeastern Mosquito Control Association successfully held in-person annual meetings in November and December respectively. Please attend the New Jersey Association’s meeting in March 2024.

A huge thanks to all who contributed to this report, without the region’s input this report would not be possible.

MAINE

In 2023, Maine had an unusually active arboviral season. Yet despite the level of activity this year, zero human arboviral cases were reported in Maine. Following three years of dry summer conditions, the above-average summer rainfall in 2023 resulted in a mosquito population boom with nearly every surveilled county seeing very high *Culiseta melanura* activity. 1,565 mosquito pools were tested this year with 5 EEE, 3 Jamestown Canyon virus (JCV), and 1 WNV positive detections. This is the first year Maine reported all three of these endemic arboviruses in a single surveillance season. In addition, Maine saw 20 veterinary arboviral infections: nine lab-confirmed EEE cases (4 emus, 4 horses, and 1 wild bird), three lab-confirmed WNV cases (1 horse and 2 wild birds), and eight epi-linked EEE cases (8 emus). This was the most EEE activity ever reported in emu populations in Maine, and it was the first year Maine recorded EEE activity in 50% of counties. Maine also saw non-human arboviral activity at times and locations not previously seen before. This included the furthest north active EEE and WNV viruses have been detected in non-human populations in Maine, and the first ever positive non-human case reported in November. As we move into 2024, Maine anticipates there will be a lot of reflecting on what happened this year and how to better prepare for next year.

VERMONT

The 2023 Vector Surveillance season was a busy one for Vermont. Our stalwart team of 6 field staff spent more time than usual collecting ticks and mosquitoes and our lab staff were similarly taxed. Work with the VT Dept of Health (VDH) Laboratory and the Centers for Disease Control and Prevention in Ft Collins CO was conducted to test ticks and mosquitoes for pathogens.

Vermont conducts spring tick surveillance in partnership with

VDH from 48 established sites every spring. We continue to collect ticks from every VT town over a 5-year period, visiting 25-30 established sites each spring and fall to track population numbers, geographic expansion, and infection rates in ticks. A study in partnership with VT Fish & Wildlife to inspect harvested deer in southern VT for Asian Long-Horned Ticks (ALHT), a highly invasive tick species not yet reported in Vermont but found in an adjacent New York. No collections to date.

“ In 2023, Maine had an unusually active arboviral season. Yet despite the level of activity this year, zero human arboviral cases were reported in Maine. ”

Mosquitoes were collected and identified to species with more than 160,000 mosquitoes statewide (about double our historic average) and submitted over 4,000 mosquito pools for testing. Our collection season ran June 26 through October 20. We found 11 WNV+ mosquito pools between July 25 and September 28, and 1 WNV+ horse. No human WNV cases have been reported to us this year.

This year saw an outbreak of Eastern Equine Encephalitis (EEE) in Franklin and Grand Isle counties. Our program did not find EEE in any other areas, but we detected EEE in 14 mosquito pools from 7 sites in the northwest between August 8 and September 25. One EEE horse death was reported from the area. We collected more than double the historic average number of VT’s primary vector mosquito species (*Culiseta melanura*), and historic flooding resulted in impounded waters that bred large numbers of mosquitoes. The Agency was poised to conduct an aerial adulticide treatment of the affected areas should VDH have declared an elevated risk to human health, but this was not the case. We are putting in place the required permits and contracts if we need to do an aerial treatment in the future, as EEE tends to increase and then decrease in an area every few years.

NEW HAMPSHIRE

In New Hampshire, arboviral illnesses such as those caused by

WNV, EEE and Jamestown Canyon virus (JCV) are reportable to the Department of Health and Human Services. Since NH’s Arboviral Illness Surveillance Program was established in 2000, 9 human cases, 5 non-avian veterinary specimens, 516 birds and 174 mosquito batches have tested positive for WNV, with the first human cases occurring in 2003. During the same period 15 human cases, 45 non-avian veterinary species, 64 birds and 238 mosquito batches tested positive for EEE, with the first human case occurring in 2004. Since the first human case of JCV in 2013, a total of 22 cases have been identified in NH. In 2023, two human cases of JCV were detected in 2023. In 2024, NH plans to continue surveillance activities, further develop the Arboviral Illness Surveillance, Prevention and Response Plan and continue community education efforts through distribution of informational materials and outreach to the public, veterinarians, and physicians.

“ **New York City Health Department reported 1,146 pools of WNV-infected mosquitoes. There were 33 WNV human cases reported in 2023.** ”

NEW JERSEY

The NJ State Mosquito Control Commission state-aid programs in 2023, included air spray missions, fish provided for biocontrol, mosquito testing, and equipment leasing. The Office lost 2 employees by mid-season 2023, which led to sacrifices by personnel but no sacrifice of service to the Counties. There were 22 successful air spray missions (larvicide and adulticide) in the 2023 season. The biocontrol program hit a snag when a flock of cormorants ate the stock of minnows from the vendor’s ponds, however 266,901 fish (fatheads and *Gambusia*) were distributed to the 13 counties who requested them for biological control throughout the season. The Office acquired several new pieces of equipment and equipment accessories to provide to the counties as part of the equipment lease program. The State Mosquito Control Commission provides free mosquito testing to the county programs. This year, 10,387 mosquito pools were tested for various mosquito-borne pathogens. This was a slightly above average year for positive WNV (w/ 846+ pools) and LAC (w/ 1+ pool) pools, below average for EEE (w/ 18+ pools), and about average for JCV (w/ 5+ pools). We are looking forward to receiving support from our colleagues on NJ Assembly bill A5657 & companion Senate bill S4038 which provides annual funding for State Mosquito Control Commission at \$3M per annum continue and increase services to the counties.

NEW YORK

New York City Health Department reported 1,146 pools of WNV-infected mosquitoes. There were 33 WNV human cases reported in 2023. The City conducted both aerial and ground-based ULV applications during the summer beginning in June and ending late September. *Ae. albopictus* has not been identified in any counties outside of NYC. Outside the City, 335 mosquito pools tested positive for WNV and 30 additional human cases. Five equine cases were reported. Outside the City, 19 EEE- infected mosquitoes and 9 equine cases were reported. EEE activity was present in the typical upstate areas resulting in an aerial adulticide application on September 21, 2023.

PENNSYLVANIA

The 2023 mosquito season in Pennsylvania yielded 20 human WNV cases with 2,529 infected mosquito pools, 9 equines, 1 alpaca, and 18 birds. There was no SLE or EEE activity reported for the year. For the first time in Pennsylvania, we are reporting 38 JCV infected mosquito pools across 9 counties. These positives came from *Aedes sticticus*, *Aedes sticticus-trivittatus*, *Aedes triseriatus*, *Aedes trivittatus*, *Aedes vexans*, and *Anopheles punctipennis*. The program received 898 complaints across the Commonwealth and completed 471 education events to help remove larval habitat and teach folks how to protect themselves. We continue to partner with Department of Health regarding human cases and Department of Agriculture with veterinary cases.

“ **Pennsylvania also has robust tick and black fly programs. The tick program completes adult and nymphal tick drags in all 67 counties.** ”

Pennsylvania also has robust tick and black fly programs. The tick program completes adult and nymphal tick drags in all 67 counties. The 2022-2023 adult collections resulted in 4,795 *Ixodes scapularis* ticks being collected and tested for *Borrelia burgdorferi* (60%), *Anaplasma phagocytophilum* (15%), *Babesia microti* (6%) and Deer Tick Virus (1.2%). The 2023 summer and spring tick collections produced the second highest nymph numbers in program history with 3,053 being collected across the state. The non-ixodes drags continue to show expansion of the Asian Longhorned Tick and Gulf Coast Tick through Pennsylvania. There were 2 human Powassan cases reported. The black fly program had an early start and end to their

season (April 6th – September 7th). Over 2,000 samples from 44 counites were collected which led to 99 flight days of BTI application and 39 days of hand BTI applications totaling 92,374 gallons of BTI. They are currently working on non-target sampling for the areas BTI has been applied.

CONNECTICUT

Mosquito surveillance for eastern equine encephalitis (EEE) and West Nile virus (WNV) is integral to the public health response to these mosquito-transmitted diseases in Connecticut and provides an effective early warning system for citizens of the State. The Connecticut Agricultural Experiment Station scientists and technicians monitored mosquito and encephalitis virus activity at 108 trapping sites from May 30 through October 26, 2023. A total of 357,448 mosquitoes were trapped, represented by 21,760 pooled samples tested for arboviruses.

EEE was isolated from 107 pooled samples 12 mosquito species: *Culiseta melanura* = 67, *Anopheles crucians complex* = 13, *Ochlerotatus canadensis* = 7, *Psorophora ferox* = 5, *An. punctipennis* = 3, *Oc. trivittatus* = 2, *Coquillettidia perturbans* = 2, *Uranotaenia sapphirina* = 2, *Aedes cinereus* = 2, *Ae. vexans* = 2, *Culex pipiens* = 1, and *Cx. restuans* = 1. EEE activity was found throughout eastern CT at 18 trap sites in 18 towns in New London, Tolland and Windham counties. Veterinary cases of EEE were reported from 3 horses (New London, Windham counties) and an emu (Windham County). The first isolation of EEE was made from mosquitoes collected on August 24 and the last on October 26. WNV was isolated from 188 pools, obtained from 7 species: *Culex pipiens* = 110, *Cx. restuans* = 64, *Cs. melanura* = 9, *Cx. salinarius* = 2, *Ae. vexans* = 1, *Oc. trivittatus* = 1, and *Ps. ferox* = 1.

WNV isolates were obtained from 49 trapping sites in 44 towns located among seven counties. The first WNV positive mosquitoes were collected on July 17 and the last on October 2. The majority of WNV activity was detected in densely populated urban and suburban regions in Fairfield, Hartford and New Haven counties. Four human cases of WN virus-associated illness were reported (1 neuroinvasive, 3 WNV fever), with no fatalities. Dates of onset of symptoms ranged from July 17 to September 22. Patients ranged from 53 to 69 years of age. All human cases were locally acquired, with no out of state travel reported. Additionally, 9 birds were reported with WNV infections with mortality ranging between August 9 and September 18. Other mosquito-borne viruses isolated included: Jamestown Canyon virus = 16 isolates from 7 species (June 7 – August 21), Highlands J virus = 39 isolates from 7 species (September 5 – October 25), Potosi virus = 44 isolates from 8 species (August 8 – September 21), Cache Valley virus = 12 isolates from 5 species (July 26 – September 18), Flanders virus = 5 isolates from 2 species (July 11 – September 5), and

Trivittatus virus = 2 isolates from 2 species (June 29 – July 25).

RHODE ISLAND

The mosquito surveillance program within the Department of Environmental Management (DEM) yielded eight WNV positives from 2,957 pools tested. One human case of WNV was detected. DEM distributed larvicide to 23 towns and 3 agencies this season. *Ae. albopictus* continues to be detected in new locations in the state. Rainfall in 2023 was ideal for the enzootic vector *Cs. melanura* and other epizootic species. An aerial larvicide was applied in southern RI at the typical EEE hot-spot swamp. Seven EEE mosquito isolates and a donkey and deer tested positive. EEE was not found in the usual spots which caused several state parks to close due to human health risk.

“ The Connecticut Agricultural Experiment Station scientists and technicians monitored mosquito and encephalitis virus activity at 108 trapping sites from May 30 through October 26, 2023. A total of 357,448 mosquitoes were trapped, represented by 21,760 pooled samples tested for arboviruses. ”

MASSACHUSETTS

The MA Department of Public Health (MDPH), in partnership with the State Reclamation and Mosquito Control Board and regional Mosquito Control Projects conduct surveillance for mosquito-borne viruses that pose a risk to human health. Surveillance currently focuses on WNV and EEE. In 2023, MDPH tested 10,765 mosquito samples and detected 164 WNV and 28 EEE mosquito isolates. MDPH also tested 215 human samples and detected six human cases of WNV. EEE was detected late in the season in both enzootic and epizootic vectors in counties adjacent to CT and RI isolations. EEE reoccurrence is a concern for the 2024 season. In addition to early season surveillance MDPH will pursue sequencing of EEE samples. *Ae. albopictus* continues to be detected in new locations each season but few established permanent sites are detected each year except along the RI border. ■



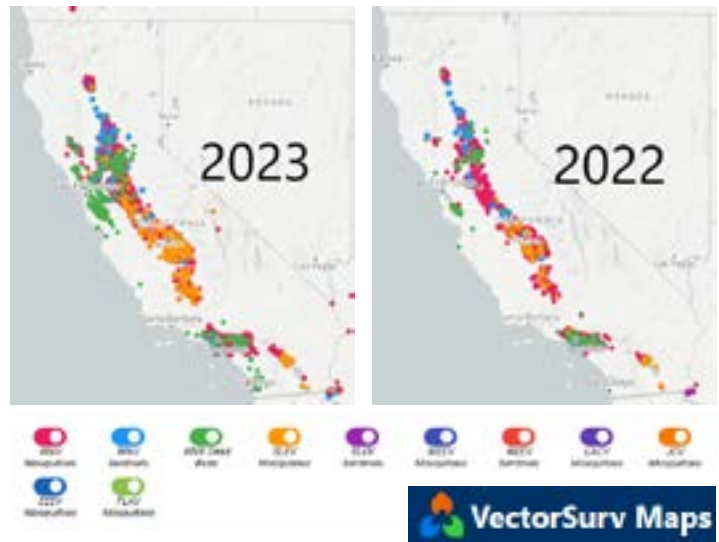
South Pacific Director Report

Peter Bronkrude • South Pacific Director

CALIFORNIA'S SEASON OF EXTRAORDINARY VECTOR ACTIVITY

This year, the term “unprecedented” has been a recurring theme in our discussions, and rightfully so. In California, we’ve seen a threefold increase in West Nile virus cases, surpassing any previous records. Notably, the resurgence of St. Louis Encephalitis (SLE) in both mosquitoes and sentinel chickens in Shasta County marks a significant event, as this virus hadn’t been detected in the area since 1972. This year’s peculiar vector activity can be primarily attributed to the abnormal precipitation patterns experienced both before and during the season – an unusual occurrence for California’s typically dry mid-summer.

In the Central Valley, the revival of Tulare Lake, dry since 1998, led to unexpected mosquito problems, requiring a concerted effort from local, state, and federal agencies to manage. In Southern California, just as the region was adjusting to the earlier part of the wet year, Hurricane Hillary brought a deluge, causing substantial increases in *Ae. aegypti* populations. The Coachella Valley, for instance, received more rainfall in three days than it usually does in an entire year, and parts of Los Angeles saw over 3 inches of rain. This, combined with the summer heat, created ideal breeding conditions for mosquitoes. The last time we observed similar vector activity was in 2015.



IN-DEPTH UPDATE FROM ARIZONA: A CLOSER LOOK AT THIS YEAR'S VECTOR CONTROL EFFORTS

Arizona’s vector control data for 2023 aligns with expected patterns but with some notable variations. The state reported a total of 82 human cases of West Nile virus (WNV), a slight increase from last month. Additionally, there were two equine and one avian WNV positive reports. Mosquito activity, as indicated by positive pools, includes 183 for WNV across five counties and 44 for St. Louis Encephalitis (SLE) across two counties. The most recent positive pool was detected at the beginning of November, marking a relatively quiet end to the season.

Interestingly, dengue cases in Arizona have surged to 27 this year, tripling the 5-year median. All these cases are travel-associated, with most travel links to Southeast Asia, as well as to Mexico and Central and South American countries. This significant increase in dengue cases could be partly attributed to heightened awareness among healthcare providers and some adjustments in investigation practices. These changes stem from the state’s experience with its first locally acquired dengue cases in 2022.

Post-2021 West Nile virus outbreak, Arizona continues to implement various initiatives. These include a study on the long-term effects of WNV in collaboration with Maricopa County Public Health and the CDC, as well as partnerships with academic institutions to develop predictive models for future outbreaks and conduct detailed phylogenetic analyses to understand transmission dynamics more accurately. Maricopa County Vector Control has launched a new mosquito control toolkit and expanded its team with an Educational Outreach

	2022	2023
Total No. Dead Bird Reports	4,802	6,609
No. Positive Counties	33	42
No. Human Cases	148	343
No. Positive Dead Birds / No. Tested	185 / 1,266	849 / 1,953
No. Positive Mosquito Pools / No. Tested	3,185 / 40,446	4,512 / 52,375
No. Serokonversions / No. Tested	145 / 5,229	187 / 3,704

County	Humans	Mosquito Pools	Sentinel Chickens
Fresno	3	100	
Imperial		3	
Inyo		1	
Kern	2	75	
Kings	1	44	
Los Angeles	1		
Madera		47	
Marin	1		
Merced		12	
Napa		1	
Placer		1	
Riverside	1	116	
Sacramento	1		
San Joaquin		9	
Shasta		3	1
Stanislaus	5	23	
Tulare		228	
Yolo	1	3	
Totals	16	728	1

We extend our gratitude to the MVCAC Regional Representatives for their crucial support in assembling this comprehensive report.

Specialist, focusing on mosquito awareness in schools, HOAs, municipalities, and other community groups.

NEVADA BATTLES EXPANDING MOSQUITO POPULATIONS

The Southern Nevada Health District is closely monitoring the rapid spread of the *Aedes aegypti* mosquito across Clark County, NV. First identified in North Las Vegas in May 2017, the vector has expanded from being present in 6 zip codes in 2021 to a staggering 32 in 2023. The year's abnormal rainfall has exacerbated the situation, leading to a significant increase in mosquito activity complaints. In September 2023 alone, complaints to the SNHD's mosquito surveillance hotline soared from 21 in the previous year to 406, with *Ae. aegypti* being trapped at most of these homes. This trend of increased

service calls is expected to continue as *Ae. aegypti* mosquitoes become more entrenched in the community.

HAWAII'S PROACTIVE RESPONSE TO INCREASED TRAVEL-RELATED RISKS

Hawaii saw a return to nearly pre-COVID travel levels this summer, with a notable increase in international visitors. This surge in travel heightened the risk of travel-related arbovirus cases, particularly since Hawaii does not have endemic arboviruses such as Dengue, Zika, or Chikungunya. Any such case is treated with the utmost urgency. Our team of dedicated epidemiologists and vector control professionals have worked tirelessly to prevent local transmission. We are pleased to report that, thanks to these efforts, there have been no locally transmitted cases this summer. ■



South Central Director Report

Colby Colona • South Central Director

As the winter holidays approach (at the time of this writing), we are all grateful for the needed, yet brief, respite from the hot and dry weather that has plagued us this year. I know in Louisiana, we thought we were getting off "scot-free" with extremely low mosquito populations during the busy summer season, but then autumn entered the picture!

LOUISIANA

Many parishes experienced a lower-than-average mosquito population until October. Nearby tropical systems caused a tremendous spike in populations, leading to a need for an increase in control efforts toward the end of the season. In Louisiana West Nile virus news, there have been over 750 positive mosquito samples reported at the time of this writing. As of CDC week 47, there were 62 total WNV human cases, with four deaths. Additionally, there was one Chikungunya case and eight Dengue cases across the state (all imported).

The annual Louisiana Mosquito Control Annual meeting was held from December 5th-7th in Lafayette, Louisiana. AMCA President Dr. Kristen Healy gave an AMCA update, and an excellent keynote address was given by Dr. Chris Barker of UC Davis. His talk regarding the use of data from VectorSurv as evidence for vector control operational decisions was extremely informative for all in attendance. Main topics of discussion included: drone usage, ongoing studies and projects, and the aforementioned mosquito population increases in many parishes.

Regarding upcoming events, the annual spring workshop is tentatively planned for mid-February in Baton Rouge Louisiana, as well as the mosquito academy in New Orleans in April (more details and dates to follow on the LMCA website).

TEXAS

Arbovirus results for Texas as of CDC week 48 include over 930 West Nile virus positive mosquito samples, and over 120 human cases. There were nearly 40 dengue human cases for the year, with one being a local transmission in Val Verde County. The 2024 TMCA Spring Workshop will be held on April 9th-10th in Tyler, Texas. Check their website for more information.

MISSISSIPPI, ARKANSAS, AND OKLAHOMA

Mississippi had 45 WNV human cases so far for the year (eight blood donors) and nearly 30 WNV positive mosquito samples reported. Arkansas has had nine human West Nile virus cases and one locally transmitted malaria case. Oklahoma experienced nearly 60 WNV human cases. Arbovirus information for Arkansas and Oklahoma were collected from the CDC website.

With these numbers, we clearly have a need for continuing surveillance and control efforts all along the southern region. I would like to thank all who contribute to these efforts by continuing to report mosquito samples and human cases, so that we can continue to contribute to bettering public health.

Happy New Year to you and your families! See you all in Dallas! ■

Thank you to our 2024 Sustaining Members

Renew your membership today for the 2024 year!

DISTRICTS

- Adams County MCD
- Alameda County Mosquito Abatement District
- Anastasia Mosquito Control District
- Animas Mosquito Control District
- Atlantic County Office of Mosquito Control
- Beach Mosquito Control District
- Beaufort County Mosquito Control
- Benton County Mosquito Control District
- Butte County MVCD
- Canyon County Mosquito Abatement District
- Cape Cod Mosquito Control
- Citrus County Mosquito Control District
- Clackamas County Vector Control District
- Coachella Valley Mosquito & Vector Control District
- Collier Mosquito Control District
- Consolidated Mosquito Abatement District
- Contra Costa Mosquito & Vector Control District
- Davis County Mosquito Abatement District
- Delano Mosquito Abatement District
- East Flagler Mosquito Control District
- East Side Mosquito Abatement District
- EBRP Mosquito & Rodent Control
- Florida Keys Mosquito Control District
- Fresno Westside MAD
- Greater Los Angeles County Vector Control District
- Iberia Parish MAD
- Indian River Mosquito Control District
- Jackson County Vector Control District
- Klamath Vector Control District
- Lake County Vector Control District
- Lee County Mosquito Control District
- Macon Mosquito Abatement District
- Magna Mosquito Abatement
- Manatee County MCD
- Merced County Mosquito Abatement District
- Metropolitan Mosquito Control District
- MVMD of Santa Barbara County
- North Morrow Vector Control District
- North Shore Mosquito Abatement District
- Northwest MAD
- Northwest Mosquito & Vector Control District
- Orange County Mosquito and Vector Control District
- Osceola County Mosquito Control
- Otter Creek Watershed Insect Control District
- Pasco County Mosquito Control District
- Placer Mosquito & Vector Control District
- Placer Mosquito & Vector Control District
- Sacramento-Yolo Mosquito and Vector Control District
- Salt Lake City Mosquito Abatement District
- San Gabriel Valley Mosquito and Vector Control District
- San Joaquin County MVCD
- San Mateo County MVCD
- Santa Clara County Vector Control District
- Shasta Mosquito & Vector Control District
- South Salt Lake Valley MAD
- South Walton County Mosquito Control District
- St. Lucie County Mosquito Control District
- Sutter-Yuba MVCD
- Tangipahoa Mosquito Abatement District
- Teton County Weed & Pest District
- Toledo Area Sanitary District
- Warren County Mosquito Commission
- West Side MVCD

INDUSTRY

- AMGUARD Environmental Technologies
- Azelis A&ES
- Central Life Sciences
- Clarke
- Envu Environmental Science
- GroPro Corp.
- Leading Edge
- London Fog, Inc
- Target Specialty Products
- Valent BioSciences LLC
- Vector Disease Control International (VDCI)

REG/STATE ASSOC.

- Georgia MCA
- Idaho MVCA
- Louisiana MCA
- Michigan MCA
- Mid-Atlantic MCA
- New Jersey MCA
- North Carolina MVCA
- Northeastern MCA
- Pennsylvania VCA
- South Carolina MCA
- Utah MCA
- Virginia MCA

STATE AGENCIES

- Hawaii Dept. of Health, Environmental Services Division
- Pennsylvania Dept of Environmental Protection Vector Management



REGISTRATION NOW OPEN! AMCA's 90th Annual Meeting March 4 - 8, 2024

**The Sheraton Downtown
Dallas, Texas**

The AMCA Annual Meeting

is the premier education and networking event for researchers, educators, vector control professionals, industry representatives, and students in mosquito control. Every year since 1938, hundreds gather to hear the latest research, share ideas, and form collaborations. Our educational sessions and exhibit hall help to put attendees on the cutting-edge of this ever-expanding field!

[CLICK HERE TO REGISTER!](#)

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Reservations Deadline: February 7, 2024

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