Society for Vector Ecology

SOVE Newsletter

President's Message

Isik Unlu

Dear SOVE Members,

Last few years my most favorite quote has been "I believe it when I see it". I wish I was wrong but this was my reaction when everybody could not wait 2020 to away so we can go back to normal. My concern was what if it gets worse. I can't even decide if I should be reading or watching news about the Delta strain of Covid-19. I wish I can promise and talk about in-person meeting next year but we may have Gamma, Beta and whatever else may come, but I personally would like to have the strain "enough is enough, we need a break strain". Board of SOVE directors had to make a very difficult decision about this year's annual meeting after canceling last year's meeting for the obvious concerns. Although having a virtual meeting was not the most popular amongst us, but we had to assess benefits and drawbacks of both in-person and virtual meeting and make a decision. With the Delta strain soaring and bringing back mask mandates and travel restrictions again, I am very proud of the decision board of directors made. I have never thought I would take over presidency of SOVE virtually and have virtual meetings throughout. This was a difficult task for me and all board members. With that please allow me thank few individuals.

I would like to thank each board member for their hard working during 2021 with our executive director Michelle Brown. I don't know what would we do without her? She kept all of us informed about deadlines, organized meetings for each committee. I don't know how she does it but I would like to thank her from the bottom of my heart for making these difficult times easier for us. To Steve Mulligan who worked with Kyndall Braumuller and Nicole-Solano Asomoah to put together this year's program together.

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In this issue

President Message *cont'd from P.1*

This was not an easy task either. Thank you Steve, Kyndall and Nicole. I would like to thank Lyle Peterson who chairs bylaws and nomination committee, our past president who spent countless hours to update bylaws with Doug Norris, Kara Fikrig, Alex Chaskopoulou, Filiz Gunay, Jason Kinley's and myself. I would also like to thank all board members representing different regions of SOVE, and kept everyone updated challenging time: Lal Mian (Southwestern), Jason Kinley (Northwestern), Nicole Achee (Central), Steve Presley (South-Central), Doug Norrris (Northeastern), Rui-De Xue (Southeastern), Nicole-Solano-Asamah (student), Ashwani Kumar (India), Gunter Miller (Asian), Filiz Gunay (European), and Paulo Pimenta ((Latin American). We all adapted to the changes as much as we can during this unpresented time and continue in our mission to enhance quality of life and protect public health as an association. This would not be possible without our members so I would like to thank all SOVE members for their support.

I am very proud of the new initiation our association took on with webinar series. I would like to thank my dear friend Alex, our incoming president for all her effort for the fantastic webinar series she and her committee put together. Having involved with AMCA webinar years, I have to tell she had greater challenges she had to face with. With AMCA webinars our time difference concern is minimal compared to SOVE webinars. Alex did great with taking into consideration almost every possible scenario including her joining meetings with members in the US when it was pass 7:00 pm in Greece.

Before I conclude my last presidential address, I would like to bring up a very important topic. With the new normal Covid-19, many of us have made changes to limit personnel and public contact; increase sanitation measures; initiate changes with schedules; But, we have adapted to continue delivering the essential services we provide to protect people from mosquito-borne disease and support public health. In order to keep Mosquito Inspectors safe during their call-out duties, we have eliminated some protocols and replaced those with contactless ULV adulticiding and LV larviciding.

Although many residents applauded our operations, we have had issues with others unhappy with any spraying operations whatsoever; another effect of the pandemic perhaps. As in my Presidential vision, when I said, "Think outside the box for challenges in front and ahead of us", I think this now fits perfectly for more challenges awaiting. As Operations Manager for Miami-Dade County, I am constantly on my toes to provide the best service we can, just like everyone else here.

We are fortunate in Miami-Dade County to have the full support and backing from our administrators and financial overseers, with interested involvement from the Mayor's office and affiliated departments; plus a robust Public Information & Outreach program, with the valuable addition of two officers dedicated to Mosquito Control information and outreach.

It is such an honor to be the President of SOVE, and I hope that we all keep supporting each other and SOVE during these difficult times. I always think I could have done better, so I wish I could have accomplished more. However, I will continue to be part of SOVE and contribute by helping committees, and in whatever capacity I can help in the coming years.

Isik

NORTH East USA

Doug Norris
Regional Director

Dear Colleagues and Friends,

It has been a tumultuous 2021 so far – a busy spring, a summer that never seemed to quiet down and now going into a busy fall with kids and universities headed back into session. Despite the constant hum and disarray that the pandemic may have introduced to your life, I am constantly impressed by our species ability to compensate, adapt and thrive. I hope you have been able to find moments of peace and that you and your families are safe.

As many of my colleagues have noted in prior newsletters, COVID-19 has not only disrupted our lives, but also our professional efforts to combat vector-borne diseases. A quick search of PubMed reveals a slew of articles published in the last 6 months on the impact of COVID-19 on malaria, dengue, tick-borne encephalitis, yellow fever virus, and uber-vectors such as *Aedes aegypti.* Luckily many domestic vector-borne disease control programs have seemed to find ways to weather the storm. However, for those of us that conduct international work, we have seen the dramatic impact of COVID-19 on public health programs first hand, with prolonged spates of interruptions/suspensions of surveillance and control programs that have created gaps in evaluation metrics or in worst case scenarios, loss of momentum and gains we had made against vector-borne diseases.

Although Maryland just reported its first human case of West Nile virus this year, the number of positive WNV pools is over fifty times that of last year and ten times that of 2019. There has even been a report of a California serogroup arbovirus human infection – unusual for Maryland (see https://health.maryland.gov/phpa/OIDEOR/CZVBD/pages/Data-and-Statistics.aspx). But hopefully cases will remain low for the region as they have for the last few years (see cdc.gov). Of course this could change rapidly as we enter another potential record-setting hurricane season, on top of increasingly unpredictable weather due to climate change – droughts in the west and a wet and soggy year here in the mid-Atlantic – I have moss growing in my driveway and I should have taken up mushroom farming.

It is not all doom and gloom though. Throughout the pandemic we are continuing to train future generations of vector-borne disease professionals, conducting control in the field and research in our laboratories. This cannot be better demonstrated than the upcoming sessions at our virtual SOVE conference. Many of our trainees and young professionals also presented at the American Mosquito Control Association meeting and the Entomological Society of America conference this year and will have presentations at the upcoming American Society of Tropical Medicine and Hygiene meeting in November. It is worth paying attention – many of these will be the stars of our profession and society in the very near future!

Doug

SOVE –Indian Region

Ashwani Kumar
Regional Director

Dear Colleagues,

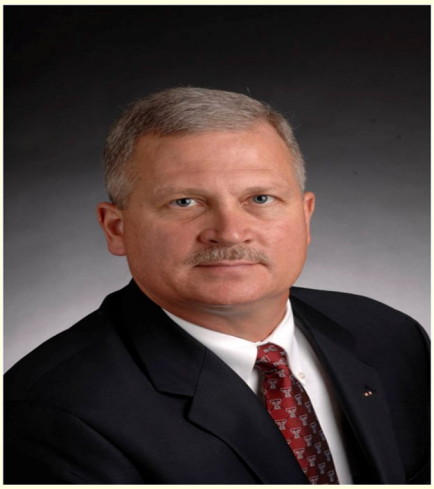
The SOVE (Indian Region) is in pursuit to promote scientific research, dialogue, discussion, exchange of ideas and training for better understanding of vector ecology and for effective control of vectors and vector borne diseases (VBDs). In this context the scientists from the Indian region participated in the SOVE Webinar Series entitled "Vector-borne Disease (VBD) Preparedness and Response: Status of VBD across the SOVE Regions". The aim of this webinar series was to provide a platform for leading experts across the different SOVE regions to present and discuss some of the main vector-borne disease management challenges faced world-wide. The series comprised of 3 webinars covering the following topics: 1. Current status of VBDs, 2. Roles and challenges for VBD surveillance, what are the lessons learned and are we adapting sufficiently? 3. Capacity and key needs for VBD interventions, are the tools currently used sufficient? The second webinar is scheduled for October 2021.

A. N. Shriram, Scientist from the ICMR-VCRC, Puducherry and member of the Indian SOVE, shared his knowledge in the field of vector-borne diseases among the SOVE community with a 12-min oral presentation on the "Status of Vector-borne Diseases (VBDs) in India". He set the tone to his presentation by highlighting the hierarchy of the apex body involved in the control of vector borne diseases in India. Further he dealt on the status of the reportable VBDs and control strategies adopted for their containment. He discussed the important challenges related to VBDs in India. Shriram concluded his presentation with points to ponder on aspects like real time surveillance linked to cartography, Artificial intelligence, App based surveillance and stressed the importance of case based investigation, monitoring interruption of transmission and xenomonitoring of vectors with special reference to lymphatic filariasis, visceral leishmaniasis and malaria, moving towards elimination.

The second wave of COVID-19 pandemic has relented in India. With 42.909 million new cases on August 30, 2021, the COVID-19 case load in India descends to 0.376 million) including 7,766 active cases, 31.92 million cured/discharged and 0.438 million) deceased. COVID-19 Vaccination stands at 634.38 million as on to-date with COVISHIELD, COVAXIN and SPUTNIK being administered. The Government of India (GOI) is taking all necessary steps to ensure that we are prepared well to face the challenge and threat posed by the growing pandemic of COVID-19 the Corona Virus and its mutants. The Ministry of Health & Family Welfare, Govt. of India, is empowering the citizens with right information, advisories and precautions to be taken for preventing the spread of the virus. The raging pandemic is posing a challenge to the routine functioning of the control program and field research projects alike and a firm control of the pandemic will pave way for resumption of normal operations hopefully soon.

The Indian Council of Medical Research-Vector Control Research Centre at Puducherry, located in South Eastern part of India is currently the second home for the SOVE Indian Region. The active cases in the Union Territory of Puducherry, have also dropped below 700. The territory reported 67 fresh cases on August 30, 2021, as 136 patients recovered bringing down active cases to 698.

Kumar *cont'd on p. 5*



South Central US
Steve Presley
Regional Director

Dear Colleagues:

I hope you have enjoyed a healthy and happy Spring and Summer season, including taking advantage of the brief lull in COVID-19 activity to travel, visit friends and family in-person, and eat at your favorite restaurant. Regardless of new variants of the SARS-CoV-2 virus and the surge in COVID-19 transmission and case numbers across the country, the "normal" challenges of vector-borne disease surveillance and control continue. Whether it is the historically horrible wildfires in California, or the recent landfall, inland movement and extensive devastation caused by hurricane Ida in the New Orleans area and beyond, vector-borne disease surveillance and control is critical during recovery efforts.

As we go into the early Fall there are many areas within the South Central Region in which West Nile virus transmission typically occurs in September and October. So far this year, as of the August 24, the South Central Region had recorded 13 cases of West Nile neuroinvasive disease cases (1 in Arkansas, 1 in Kansas, 3 in Louisiana, and 8 in Texas), as well as three deaths attributed to West Nile virus. There have been three cases of imported dengue fever (2 in Texas and 1 in Louisiana). All in all, and like 2020, there have been a comparatively low number of arthropod-borne disease cases.

I wish you all a safe, healthy and enjoyable Fall 2021, and I hope to visit with you all virtually during the 2021 Virtual SOVE Meeting, September 16 and 17.

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Kumar *cont,d from p. 4:*

Beginning July-August this year we have again kick started all our field projects/activities, which were grounded due to the second wave of the pandemic. Vector biologists, like others, are increasingly participating in online webinars, which have become an order of the day. The teaching of M.Sc. Public Health Entomology Course has also resumed in VCRC, which is a good sign.

The second wave of coronavirus had seriously gripped the country and inflicted mortality. While we aren't yet out of the grip of the deadly virus, there is threat of an upcoming third wave of COVID, due to delta+ and other variants which could be less intense as predicted and impose lesser pressure on healthcare resources as the vaccination is being ramped up. As a country, I believe we are prepared to tackle this imminent exigency. Undoubtedly as in other walks of life elsewhere, the Pandemic has been a serious obstacle in VBD research and control.

We envisage organizing webinars on important themes in the realm of insecticide resistance and other VBD pressing issues in India in the coming months. ————————***Kumar*** *cont'd on page 5*

Current Mosquito Ecology and Control Issues in Australia

Brian Johnson, brian.johnson@qimrberghofer.edu.au

QIMR Berghofer Medical Research Institute, 300 Herston Road, Herston, QLD 4006, Australia

Dear Colleagues and Friends,

It is with great pleasure that I can provide SOVE members a brief update on major mosquito control and ecology issues in Australia. The writing of such updates in lieu of formal presentations at society meetings is rather cathartic and I thank you for the opportunity to do so. Current control issues in Australia center around the consequences of climate change and increased global trade and air travel. We also face many issues related to the development and transformation of coastal landscapes to accommodate the continual influx of people relocating to the coast. Australia is also unique in that we must decide what the future of *Aedes aegypti* and dengue control will look like in a post-Wolbachia world. I hope that we will someday soon be able to discuss these and other challenges facing our respective regions face-to-face at an upcoming society meeting.

Kind regards,

Brian

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Climate change, sea level rise and the potential loss of critical mosquito control tools

Although the consequences of climate change on the future distributions and seasonal abundances of major Australian nuisance and vector species are still very much in debate, it is becoming clear that continued sea level rise will have major impacts on current area-wide aerial control programs. Sea level rise is currently driving a rapid landward expansion of mangroves into saltmarsh habitat, and in some areas, saltmarsh loss has exceeded 70%. Continued mangrove encroachment will have significant negative operational consequences for widely used liquid *Bacillus thuringiensis israelensis* (*Bti)* larviciding products. This is because liquid products fail to adequately penetrate the mangrove canopy and reach underlying breeding areas when mangrove density is high. The potential loss of these products will result in substantial increases in operational costs if operators are required to shift to costlier and logistically unfavorable granular alternatives. It will be near impossible to maintain current high standards of control if such costs cannot be accommodated or absorbed elsewhere.

Continued reliance on liquid *Bti* products will require us to improve our understanding of how such products perform in dynamic systems. We are also investigating the potential benefits of increased application rates of key products. We have recently adopted drone-based technology to improve habitat mapping, potentially enabling us to identify precisely where control may be inhibited by high density mangrove canopy cover. Fortunately, Australian registrations for liquid *Bti* products (e.g., Vectobac 12 AS) are half of that in other parts of the world, providing us much room for improvement as well as information to support the environmental safety of these higher rates. Preliminary assessments have produced promising results and we are hopeful that we will be able to successfully lobby for a re-registration of key products soon.

***Johnson** cont'd on p. 7*

Coastal migration and urban development

As in many parts of the world, the development and transformation of coastal Australia has greatly increased in recent decades and more than 85% of Australians now live within 50 km of the coast. This is perhaps most evident around southeast Australia's metropolitan centers due to the agreeable climate and easy access to coastal recreational activities. Continued growth in the region has seen human developments encroach further and further into marginal coastal wetland and saltmarsh environments. This encroachment has resulted in a predictable increase in complaints of mosquito nuisance by new residents, thereby placing much political and economic pressure on existing control programs. These programs put forth commendable efforts to effectively manage coastal mosquito populations, but complete control is extremely challenging due to a variety of factors, including those described above.

Urban planners and developers are therefore considering landscape-based alternatives such as open-space buffer zones and vegetation barriers. The hope is that such features will interrupt and minimize the dispersal of mosquitoes from primary larval habitats to adjacent human developments. Despite the mention of buffer zones and vegetation barriers in various mosquito management guidelines, the utility of such features is poorly supported by applied research. We have recently contributed to these observations by demonstrating that coastal mosquitoes disperse from primary breeding sites to nearby residential developments frequently and in large numbers despite having to traverse considerable expanses of empty space. Observations from these studies suggest that planned open-space buffer zones will do little to reduce the biting burden caused by mobile saltmarsh mosquitoes. Thus, there is a clear need for new, empirically informed planning directives guided by local and regional mosquito ecologists and control professionals.

Despite obvious enthusiasm by those involved in mosquito control to be included in the formation of these new planning directives, there have been few opportunities for them to do so at critical policy levels. It is widely acknowledged that an integration of science, policy, and practice is required to minimize the risks of biting insects to residents, but this is not the current model of engagement. Expert knowledge of the ecology and control of mosquitoes and other biting insect is still being routinely ignored. We're continually seeking new pathways that may get us a seat at the planning table, so to speak, as the increasing number of people relocating to coastal areas is putting ever greater political and budgetary pressure on local control programs. Fortunately, we can draw inspiration from successful engagement models developed elsewhere in the world to address similar issues. There have been both minor wins and setbacks recently, but we're hopeful that the tide will turn in everyone's favor soon.

Preventing the establishment of exotic mosquitoes

Australia has been rather lucky in that we have not yet had an exotic mosquito successfully invade the mainland in recent memory. Some may still consider *Ae. aegypti* an exotic mosquito to Australia, but it has

***Johnson** cont'd on p. 8*

***Johnson** cont'd from p. 7*: comfortably resided here for a couple hundred years and we will not include it in the current discussion. The lack of introductions is quite remarkable considering the high number of known and unknown introduction pathways. Increased international travel and trade across the country, at least before COVID-19, is a constant risk factor and biosecurity resources are being spread thin to address a steady increase in exotic mosquito detections. Fortunately, rapid local responses to these detections appear to have thwarted successful establishment so far. There is no doubt that a good deal of luck and circumstance have also played a key role. Significant investments in biosecurity and response resources will be needed to accommodate continual increases in global trade, air travel, growing insecticide resistance in global populations, and the immediate threat of *Aedes albopictus* to the mainland.

Many of you will be familiar with the myriad operational and jurisdictional crises created when *Ae. albopictus* is introduced to a new region. Regrettably, such troubles are only a stone's throw away from mainland Australia. Self-sustaining *Ae. albopictus* have existed in the Torres Strait islands, the region that separates mainland Australia from Papua New Guinea, since 2005. The nearest population is alarmingly close, being only 40 km from our northernmost point. Initial elimination programs targeting highly invasive species like *Ae. albopictus* often deteriorate quickly into programs focused on containment, which then often end in a good deal of frustration as defeat becomes inevitable. Luckily, we've only experienced the initial slide to containment, a long-term impasse that has been hard fought. Since 2008, the containment program has successfully established a cordon sanitaire around the innermost islands that represent the highest risk introduction pathways to mainland Australia. The cornerstone of the program is periodic harborage spraying with λ-cyhalothrin on the targeted islands. This program has been extremely successful in containing *Ae. albopictus* to the Torres Strait and elimination often looks like a renewed possibility. Unfortunately, success doesn't bestow permanence and there are major issues with the sustainability of the current program. Operations must be reviewed periodically for continued funding, subjecting the survival of the program to political and budgetary whims. Another issue is the potential evolution of resistance of local *Ae. albopictus* populations to residual pyrethroids that form the cornerstone of the current program. None of these issues present an immediate threat to the program but contingency plans are sorely needed to keep the tiger at bay.

Aedes aegypti control in a post-Wolbachia landscape

SOVE members likely need no introduction on the history and success of the Eliminate Dengue (now the World Mosquito Program) *Wolbachia* program in Australia. In short, northern Australia represents the world's longest and largest living experiment of Wolbachia-infected mosquitoes. This year marks the 10th anniversary of the original releases of wMel-infected *Ae. aegypti* in North Queensland to reduce the local transmission of dengue, and so far, so very good. Releases have now resulted in the near elimination of locally-acquired dengue cases in most cities and regional communities with a history of dengue outbreaks. It is also worth noting that *Wolbachia* infection rates in local *Ae. aegypti* populations have remained remarkably stable since first establishment. The success of the *Wolbachia* program has resulted in local control programs shifting their focus from population suppression to population monitoring to ensure the viability of replaced populations. Such changes have greatly reduced the implementation of conventional control strategies in historic dengue hotspots and this trend has many asking what the future of *Ae. aegypti* control will look like. Should Australia continue to invest in conventional and emerging control strategies? I believe many of us would respond to this question with a resounding yes. Despite the extent of current Wolbachia releases, remnant wildtype *Ae. aegypti* populations remain . . . . . ***Johnson** cont'd on p. 9*

in several locations in rural Queensland. These populations represent a real risk to large population centers if establishment would to occur considering the high number travel-related dengue cases occurring in these cities annually. It is obvious that intensive elimination campaigns would be implemented if introductions were to occur. It is therefore imperative that Australia maintain an ability to respond to such introductions with a variety of conventional and emerging control tools. It has recently been demonstrated that simply enforcing proper rainwater tank maintenance complemented by traditional larval control measures can reduce *Ae. aegypti* populations to the brink of elimination in small regional communities. It has also been recently demonstrated that releases of Wolbachia-infected males in a sterile insect technique approach can reduce *Ae. aegypti* populations by more than 80% in modestly sized communities. Combined, these studies suggest that targeted, small-scale elimination campaigns using both conventional and emerging control tools is a real possibility, at least for *Ae. aegypti.* The successes of these programs reaffirm the need for local, state and federal agencies to maintain regional capacity to deploy traditional insecticide-based techniques where viable (i.e., where insecticide resistance is minimal or absent), as well as continue to invest in emerging alternative control strategies to attempt *Ae. aegypti* elimination when warranted or when rapid population reduction is needed following a dengue or other urban *Aedes*-vectored disease outbreak. We should not become complacent in our success.

Author disclaimer: The views expressed are my own and do not express the views or opinions of my employer and partner institutions.

Supporting Publications:

Saintilan N, Rogers K and McKee KL. The shifting saltmarsh-mangrove ecotone in Australasia and the Americas, in Coastal Wetlands, ed. By Perillo GME, Wolanski E, Cahoon DR and Hopkinson CH. Amsterdam, Netherlands: Elsevier, pp. 915–945 (2019).

Johnson BJ, Manby R, Devine GJ. Performance of an aerially applied liquid Bacillus thuringiensis var. israelensis formulation (strain AM65-52) against mosquitoes in mixed saltmarsh-mangrove systems and fine scale mapping of mangrove canopy cover using affordable drone-based imagery. *Pest Manag Sci* 76: 3822–3831 (2020).

Johnson BJ, Manby R, Devine GJ. What happens on islands, doesn't stay on islands: patterns of synchronicity in mosquito nuisance and host-seeking activity between a mangrove island and adjacent coastal development. *Urban Ecosystems* doi: 10.1007/s11252-020-00998-0 (2020).

Johnson BJ, Manby R, Devine GJ. Further evidence that development and buffer zones do little to reduce mosquito nuisance from neighboring habitat. *J Am Mosq Control Assoc.* Sep 1;36(3):204-207. doi: 10.2987/20-6951.1. PMID: 33600590 (2020).

Webb C E, Porigneaux PG, & Durrheim, DN. Assessing the risk of exotic mosquito incursion through an International Seaport, Newcastle, NSW, Australia. *Trop Med Infect Dis.* 6(1), 25 (2021).

van den Hurk AF, Nicholson J, Beebe NW, Davis J, Muzari OM, Russell RC, ... & Ritchie SA. Ten years of the Tiger: Aedes albopictus presence in Australia since its discovery in the Torres Strait in 2005. *One health,* 2, 19-24 (2016).

Ryan PA, Turley AP, Wilson G, Hurst TP, Retzki K, Brown-Kenyon J, ... & O'Neill SL. Establishment of wMel Wolbachia in Aedes aegypti mosquitoes and reduction of local dengue transmission in Cairns and surrounding locations in northern Queensland, Australia. *Gates Open Research*, 3 (2019).

Rašić G, Filipović I, Wu SL, León TM, Bennett JB, Marshall JM, & Trewin BJ. Eliminating Aedes aegypti from its southern margin in Australia: insights from genomic data and simulation modeling. bioRxiv, doi: https://doi.org/10.1101/2021.08.21.457232 (2021).

https://www.csiro.au/en/news/news-releases/2018/trial-wipes-out-more-than-80-per-cent-of-disease-spreading-mozzie.

CDC Northeast Regional Center of Excellence In Vector Borne Diseases (NEVBD)

Updates from the NEVBD on Our Applied Research, Training, and Community Engagement: The Northeast Regional Center for Excellence in Vector-Borne Diseases (NEVBD) is one of five Regional Centers of Excellence (CoEs) formed through cooperative agreements with the Centers for Disease Control and Prevention in 2017. NEVBD covers a geographic catchment area of 14 state-level jurisdictions in the mid-Atlantic and Northeast regions of the United States. Our network of collaborators has conducted a large number of applied research projects over the past four years in pathogen biology as well as tick and mosquito biology and behavior. In addition, the NEVBD has provided training to nearly 900 vector-borne disease professionals and students, and supported strong connections between academic, public health, and vector control organizations across our region.

NEVBD Applied Research Updates: Our applied research program at NEVBD is focused on understanding of the habitat and host associations, exposure risk, and control of vectors and vector-borne diseases across Northeast communities. We briefly highlight here a few recent project findings and publications. We encourage readers to visit our recently updated website to learn more about our research objectives and read infographics and publications from our diverse program.

Burtis JC, Poggi JD, Duval TB, Bidlack E, Shepard JJ, Matton P, Rossetti R, Harrington LC. 2021. Evaluation of a methoprene aerial application for the control of *Culiseta melanura* (Diptera: Culicidae) in wetland larval habitat. *J Medical Entomol.* tjab108. https://doi.org/10.1093/jme/tjab108

Authors conducted aerial application of a granular methoprene formulation in a focal area of eastern equine encephalitis virus (EEEV) transmission. Results suggest that aerial methoprene applications can effectively treat open water in wetlands but may not provide efficacious control of *Cs. melanura* due to an inability to penetrate larval habitats.

Kache PA, Eastwood G, Collins-Palmer K, Katz M, et al. 2020. Environmental determinants of *Aedes albopictus* abundance at a northern limit of its range in the United States. *Am J Trop Med Hyg*. 102(2):436-447. https://doi.org/10.4269/ajtmh.19-0244

Authors conducted an analysis of how trapping methodology, land cover, and temperature and precipitation influenced *Ae. lbopictus* abundance across 12 counties in New York and Connecticut. *Aedes albopictus* populations are undergoing invasion and establishment in areas north of New York City and Long Island. Authors recommend that mosquito surveillance programs targeting this species use BG-Sentinel traps placed at sites with low- and medium-intensity urban development and low deciduous land cover.

Molaei G, Little EAH, Khalil N, Ayres BN, Nicholson WL, Paddock CD. 2021. Established population of the Gulf Coast tick, *Amblyomma maculatum* (Acari: Ixodidae), infected with *Rickettsia parkeri* (Rickettsiales: Rickettsiaceae), in Connecticut. *J Med Entomol* 58(3):1459-1462. https://doi.org/10.1093/jme/tjaa299

Authors identified an established population of the Gulf Coast tick, *Amblyomma maculatum*, infected with *Rickettsia parkeri* in Connecticut, representing the northernmost range limit of this tick species. These

findings highlight the important of tick surveillance and the public health challenges posed by geographic expansion of tick vectors and associated pathogens. ***NEVBD** cont'd on p. 11*

NEVBD *Cont'd from p. 10:* NEVBD Training Program Updates: NEVBD supports an innovative Master of Entomology program at Cornell University that combines coursework in entomology, vector biology, and public health. Students enrolled in this 2-year program complete an applied field project with a public agency partner, and our current class of students has just completed their field research for the 2021 season. Our students conducted surveillance for triatomine bugs in six southwestern National Parks to improve our understanding of Chagas disease risk for National Park Service staff; identified potential *Borrelia miyamotoi* infection hotspots and led a citizen science Tick Blitz (Fig. 1)to better understand lone star tick and Asian longhorned tick distribution in New York State; trapped mosquitoes in southeastern coastal Virginia to better understand the role of potential bridge vectors in the eastern equine encephalitis virus cycle; and collected mosquitoes from Jamestown Canyon virus focal areas to identify potential vectors in New Hampshire. The Vector Biology Boot Camp is an annual event offered by NEVBD and the Louis Calder Center of Fordham University, providing hands-on instruction in vector surveillance program operations. The 2021 Vector Biology Boot Camp was hosted online due to ongoing COVID-19 constraints. Fifty-seven individuals working in public agencies across the U.S. attended nine lectures over a two-week period in May 2021. Content covered arthropod biology, behavior, and control; collection and processing methods; taxonomy; communication and more.

"This was an exceptionally great course that touched the novice to beyond the novice level in my opinion. One of the greater things about the program for me, is the take home material. Thanks so much again for allowing my participation." – Testimonial from 2021 Virtual Vector Biology Boot Camp Participant

NEVBD Community of Practice Updates: NEVBD has been active in 2021 with our regional community engagement programming. We supported virtual annual meetings for the Mid-Atlantic Mosquito Control Association, New Jersey Mosquito Control Association, Northeastern Mosquito Control Association, Pennsylvania Vector Control Association, and hosted our own annual NEVBD network meeting in spring 2021. NEVBD also partnered with Amelia Greiner Safi of the Cornell Master of Public Health program to host a free 4-part webinar series on Strategic Public Health Communication for Vector-Borne Disease Prevention. The NEVBD Pesticide Resistance Monitoring Program opened services for the 2021 season in June. Our program provides two primary services to our network: specimen submissions to Cornell University for testing and kits for programs to test larval and adult mosquitoes for resistance at their own facilities. NEVBD supports arboviral surveillance across the region during the active season by hosting bi-weekly roundtable calls with state and large municipality programs in our catchment area. These bi-weekly arbovirus surveillance calls connect colleagues across neighboring jurisdictions to share timely updates on activity in their areas.

***Kumar** cont'd from p. 5:*

We are looking forward to attending SOVE 2021 virtually.

Fig. 1. Foley Tick Blitz ….J. Meore

Friends! Stay focused, safe and healthy and we shall soon overcome this pandemic and say it a good bye never come again! The Key to Safety Is in our Hands!

Ashwani Kumar

Resources

BEI Resources for Vector Biology Research
NIAID's BEI Resources program (www.beiresources.org) provides Vector Biology resources for free to registered, approved researchers in domestic and foreign institutions with appropriate facilities and containment procedures for vector research. Our widely requested holdings include LIVE arthropod vectors of human disease, including anopheline and culicine mosquitoes, reduviids, ticks and sand flies, associated reagents and genomic materials for entomological research, along with insectary protocols. For the cost of nothing, recipients are only required to acknowledge the use of the individual resources in publications and presentations of the research in which the materials are used.

BEI Resources arthropod colonies are made available by the deposit contributions of investigators throughout the world. Deposited materials undergo review by NIAID prior to acceptance. Please notify BEI Resources through the Suggest A Reagent Form if you have a request for inclusion or the Deposit Inquiry Contact Form if you have a unique strain for consideration.

Vector Biology resources available through BEI Resources will remain available throughout the current coronavirus pandemic. Orders and/or shipping of certain live vectors may be delayed or temporarily on hold depending on the current operating status of individual insectaries for mosquitoes, ticks, reduviids and sand flies. BEI Resources is pleased to announce the upcoming availability of black fly life stages through a partnership with the University of Georgia Black Fly Rearing and Bioassay Laboratory, which has operated the only known colony of black flies (Diptera: Simuliidae) for over 20 years. Since its establishment, the *Simulium vittatum* colony has been used for a variety of research projects, including vector transmission studies, environmental monitoring, vector control and larval feeding studies. For mor information contact:
Adriana Costero-Saint Denis, PhD
Vector Biology Program, NIH,
Phone: 240-292-4284
Email: acostero@niaid.nih.gov
https://www.niaid.nih.gov/research/vector-bio

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Training Opportunities

Cornell University offers
Biology of Mosquitoes,Ticks, and Other Disease-Causing Arthropods

Next course begins on September 1, with additional offerings in November 2021and January 2022. Enroll Today! Learn to describe the physiology, behavior, and ecology of different types of arthropods that affect human health.
Excellent Foundation 4-week online course 5-7 hours per week. Course cost $399 Save $50 when you enroll by August 31 with code INTRO50. This certificate course provides an overview of the biology of arthropods —both insects and related forms — that impact human health. You will explore the fascinating biology, behaviors, and disease-transmission processes of a range of organisms, with special emphasis on the most important groups, including ticks and mosquitoes.
Course Description: https://bit.ly/ArthroBioCourse

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University of Idaho offering
Biology of Vector-borne Diseases

The University of Idaho Center for Health in the Human Ecosystem (CHHE) is hosting its annual Biology of Vector-borne Diseases six-day course, Monday through Saturday, June 13-18, 2022, on the UI campus in Moscow, Idaho. Applications will be start reviewed starting December 1, 2021. Registration for the course includes lodging, meals, course materials, and social activities. A link to our event is:
https://www.uidaho.edu/cals/center-for-health-in-the-human-ecosystem/education/vector-borne-diseases.

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Job Opportunity

AMCA Technical Advisor Search

The American Mosquito Control Association (AMCA) is officially opening a search for a new AMCA Technical Advisor. AMCA is trying to get the word out to to the SOVE membership so as not to miss any quality candidates from applying for the position. For a detailed information on the position, please go to: https://www.mosquito.org/news/579266/AMCA-Opens-Request-for-Proposal-for-Technical-Advisor.htm

Academic Job Announcements

California State University San Bernardino

Department of Health Science and Human Ecology invites applications from a diverse group of qualified applicants for the following positions:

1. Tenure-track **Assistant Professor** in Environmental Health to begin August 2022. Requires a Ph.D. in Environmental Health/Occupational Health or a related field. Candidates with Registered Environmental Health Specialist or Certified Industrial Hygienist credentials will be given preference. The successful candidate will be expected to demonstrate excellence in teaching, to develop an externally funded research program involving student participation, and to participate in service activities. Teaching responsibilities could include undergraduate and/or graduate courses in environmental health science, occupational health, industrial hygiene, core public health, as well as courses in health and human ecology. The successful candidate will be expected to advise undergraduate students.

Application review will begin **December 06, 2021** and the position will remain open until filled. For a detailed job description, please use the following link: https://careers.csusb.edu/en-us/job/504985/assistant-professor-department-of-health-science-&-human-ecology. Salary is commensurate with experience.

2. Tenure-Track **Department Chair and Professor (**open rank) to begin August 2022 . Requires a Ph.D. in Health Sciences with preference to applicants from Environmental Health Science, Health Service Administration, Nutrition and Food Sciences, and Public Health. . Candidates should be capable of appointment at the level of Professor The successful candidate should have demonstrated excellence in teaching, leadership, have a record of scholarship and experience obtaining external funding, and have a commitment to working with a diverse body of students, faculty, and staff. We particularly invite applications from candidates with administrative experience as a department chair and/or other supervisory/leadership experience. Given the need for high level of collaboration among programs in the Department of Health Science and Human Ecology, the ideal candidate should exhibit excellent communication skills, and be able to thrive in an interdisciplinary environment.

Application review will start after **October 4, 2021** and the position will remain open until filled. For a detailed information on the position and application process, please visit: https://careers.csusb.edu/en-us/job/501966/health-science-and-human-ecology-department-chair-tenured-full-or-associate-professor.

Salary is commensurate with experience.

The Department serves over 1,000 students majoring in 4 undergraduate (environmental health science, health care management, nutrition and food sciences, public health education) and 2 graduate programs (Master in Public Health, Master of Science in Health Service Administration). The newly hired faculty member would join a well-established department of 13 full-time and over 20 adjunct faculty members.

Society for Vector Ecology

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www.sove.org

About SOVE . . . . .

The Society for Vector Ecology is a nonprofit professional organization formed in 1968 by a group of individuals involved in vector biology and control programs in California. The membership has since grown to represent an amalgamation of diverse research, operational, and extension personnel from all over the world. The Society is committed to solving many complex problems encountered in the field of vector biology and control. Among these are the suppression of nuisance organisms and disease vectors through the integration of various control options, such as environmental management, biological control, public education, and appropriate chemical or non-chemical control strategy.

The Society publishes the biannual Journal of Vector Ecology that contains research and operational papers covering many phases of vector biology, ecology, and control. The Society also issues a quarterly newsletter and holds an annual conference in September/October.

2021 SOVE Board Members, Editors

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