



SOVE Newsletter

President's Message



Lal Mian
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Dear Colleagues,

Continuing on the SOVE history, the Society had 47 annual conferences since its inception. These conferences were mostly held in southern California, but with the passage of time and expansion in the society, the meetings were held through out the US. Since 1993, however, the pattern was changed with the introduction of the First International Congress which was held in San Diego, CA, to hold the International Congress every 4th year, alternating between the US and abroad. Since the First International Congress in San Diego in 1993, we have had seven Congresses with the last one held in Mallorca, Spain in 2017. Of the SOVE affiliates, the European or E-SOVE and the Asian-SOVE have their conferences held every other year. Both E-SOVE and the Brazilian SOVE have meetings scheduled this year, whereas the Asian-SOVE and the India SOVE will have theirs held next year.

Apart from the conferences by the parent SOVE and its affiliates, per the by-laws, SOVE has maintained four membership categories—*regular membership*, *honorary membership*, *sustaining membership*, and *student membership*. While the regular and sustaining memberships have remained steady, the student category needs im-

provement. The honorary membership category, I am told, has been dormant in recent years; however, we do have a limited number of individuals who were awarded this membership. While I could not retrieve all the names, there is one name that comes to mind by past association, and he is Mino Madon who has served the Society in every role possible, from editor to the president (1988).

Going forward, you may be anxious to hear about the annual conference, which is only days away. According to a rough tally, we are expecting a record number of attendees. We have a diverse and exciting program put together by vice president Lyle Petersen (thanks Lyle for the job well done!). The scientific program offers 10 symposia with titles starting with: genomics and genetic manipulation of vectors, followed by vector-borne zoonosis; pathogens and disease outcomes, viral evolution altering vector/host dynamics and adaptation and disease transmission, vector competence; emerging tick-borne diseases; vector control in various parts of the world; CDC regional centers of excellence in vector-borne diseases; student oral presentations; vector-borne disease outbreaks and trends; challenges of vector control in the USA; and vector host interactions and their implications for pathogen maintenance, surveillance and vector control. Besides the symposia, there will be the First Women of Science meeting, Field Ecology Day at Yosemite Park, and the poster session.

With that I will wrap up my message and will be looking forward to seeing you all at the once in-a-50-years meeting at the Tenaya lodge, Fish Camp, Yosemite National Park, California.

Best,

Lal

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Regional Reports



NORTHEASTERN USA

ISIK UNLU, regional director

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New Jersey was persistently green throughout the entire summer season and drought conditions seen in recent summers were a distant memory this year. The statewide summer average was about 15 inches of rain which is 2 inches above the normal. The heat took a little while to arrive but by the time late June arrived, the southern style hot weather crept up the coast and stayed for the duration of the summer months. There were numerous heat waves when the high temperature reached 90 degrees for 3 consecutive days or longer and in total, Trenton NJ so far has reached the 90 degree mark 35 times this year. Consistent rain events coupled with hot weather (5th warmest Fall on record) provided perfect condition for mosquito production. If you have any problems or concerns that you would like the Association Board of Directors to discuss, please contact me (iunlu@mercercounty.org).

The 2018 mosquito control season has been one of non-stop action. Routine mosquito surveillance operations got off to a slow start with programs overrun addressing service requests. Both eastern equine encephalitis (EEE) and West Nile virus (WNV) were detected in mosquito populations early in the surveillance season. May, June and July were the busiest on recent record for the State Airspray program operations. Local programs reported higher than normal operations through this same period, spending considerable time addressing service requests. The Adult Mosquito Surveillance program, once data has been obtained and analyzed, has been running well above average for a variety of mosquito species throughout this time period. Programs are running two to three weeks behind with respect to processing and transferring data. Unfortunately, the arbovirus activity detected early continued to amplify and is widespread across the State. Bird deaths are again being reported to local programs. Positive WNV mosquito pools, over 900 with numbers changing daily, are now at record highs surpassing 2012 numbers with the majority of September yet to follow. Higher than normal WNV activity in the Northwestern portion of the State stands out as particularly unusual this year. Suspected human case reports are being passed on to local programs for any required mosquito suppression follow-up as soon as reliable information is available. Again, these numbers are always changing at this time of the year but 9 human WNV cases have been confirmed thus far. One WNV positive case in equines has been reported to

date. Eastern encephalitis has likewise been fairly active with 10 positive mosquito pools and four confirmed equine cases (Scott Crans).

Throughout this busier than normal season the State has also been in the process of rolling out a new arboviral data entry system to keep track of and report mosquito testing results. This is a project that had been in the works since the old system was taken offline in 2015. All the participating programs came together in May for an overview of how the system would be rolled out this season. In July our State contracted vendor, Premium Element, came in and provided hands on administrative and basic user training over a period of three weeks. These sessions were attended by all participating in the system. A phased rollout then followed with a goal to get everyone on board and using the system before the end of this mosquito season. To date, 14 of the 21 programs are online and using the new system.

This year the Rutgers Center for Vector Biology was awarded a Partnership Grant from the Northeast IPM Center to develop and test a methodology for obtaining baseline tick surveillance data by training and mobilizing existing personnel within local agencies with relevant experience, using the New Jersey mosquito control community as an example. We organized a 1-day training workshop, open to representatives from the 21 counties, and teaching tick biology, identification and surveillance techniques. This was followed by a 1-day "Tick Blitz" where participants in each county followed a standardized methodology to simultaneously collect ticks in their local area.

There was an overwhelming positive response from the counties who were able to obtain important baseline data on ticks in the state, including identifying new counties with populations of the exotic Asian longhorned tick (*Haemaphysalis longicornis*) just discovered last year in NJ, and an expansion of lone star tick (*Amblyomma americanum*) farther north in the state than previously documented. Ticks were brought to the Center for Vector Biology for identification and pathogen testing (the former completed and the latter still ongoing) and these data are shared with our county partners via a newly developed website with statewide mapping. Details on our methodology and surveillance results, as well as a presentation from the perspective of our participants, will be presented in an organized symposium at next year's American Mosquito Control Association meeting entitled, "Tackling Ticks: Moving beyond mosquito control."

.....see participants group photo on p. 3

Regional Reports



SOUTHEASTERN REGION

Rui-De Xue, regional director

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Recently there have been a number of human cases of arboviral diseases reported in the region. These included WNV human cases in Florida, Alabama, Georgia, Mississippi, Tennessee, and North Carolina; EEE cases in Florida and Georgia; imported dengue fever in Florida, Georgia, Tennessee, and North Carolina; imported chikungunya cases from Florida, Georgia, and NC; and imported Zika cases from Florida and Alabama.

In Florida, eight counties are under mosquito-borne illness advisories and two counties under mosquito-borne illness alerts due to multiple WNV cases. So far, there have been 8 travel-related cases of WNV, 3 EEE, 14 dengue, 1 chikungunya, 64 cases of Zika with 47 pregnant women, and 40 cases of malaria.

Anastasia Mosquito Control District (AMCD) hosted the CDC's 12 delegate training on May 17, 2018. The AMCD also assisted the Florida Entomology Society (FES) to successfully hold the FES 101 annual meeting at the World Golf Village, July 22-25, 2018. The phase II construction project

at the AMCD is back on track and the whole project is anticipated to be completed by the end of this year. The AMCD purchased a helicopter (Bell 206) from Lee County mosquito Control District in July. Both AMCD and USDA/CMAVE are scheduled to hold the 16th Arbovirus Surveillance and Mosquito Control Workshop at the AMCD facility in St. Augustine, FL, March 26-28, 2019.

Several Faculty members from the University of Florida, Florida Medical Entomology Laboratory and Department of Entomology and Nematology received the Florida Department of Agricultural and Consumer Service (DACS)'s mosquito control research grants in July. More information about the grant funds could be found from the DACS website.

Eva Buckner, Biologist at Manatee County Mosquito Control District, Florida accepted a faculty position as Assistant Professor in Medical Entomology at the University of Florida/IFAS/FMEL, Vero Beach, FL in August this year. Congratulation and welcome to the academic world, Eva!.



Continued from p. 2—group picture of Tackling Ticks Workshop, New Jersey

Regional Reports



NORTHWEST REGION

David Sullivan, regional director

As usual this has been another strange year in the Northwest Region. Winter hung on in many areas far more than usual, spring was wet and cold, and summer was cool. Fall is just starting with the first high mountain snow arriving in Montana on the last day of August and lasted only for a few days.

Mosquitoes were found in all normal locations but ticks are on the increase. Lyme disease is in every state, according to CDC, including Montana (a similar disease to Lyme was noted a few years ago but it was determined to be another bacterium (not *Borrelia burgdorferi*) according to the Montana Health Dept). CDC reports that Montana now has Lyme disease.

The Northwest Mosquito & Vector Control Association (NWMVCA) will hold its annual meeting on October 3-5, 2018 at Campbell's Resort, Lake Chelan, WA .

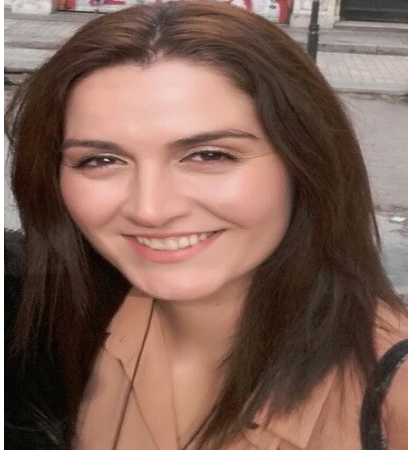
Officers of the NWMVCA will be: David Herter, President; Curtis Fediuk, President-Elect; Randy Gerard, Vice President; Past President Annie Belchik-Moser.

West Nile virus was lower in the Northwest with only 51 Neuroinvasive cases and 3 deaths with North and South Dakota having the most cases with 2 deaths in South Dakota and 1 in Utah. A comparison between 2015 and 2018 surveillance data is below.

Northwest regional outlook of West Nile virus surveillance

State	Neuroinvasive		Total		Deaths	
	2015	2018	2015	2018	2015	2018
Colorado	47	8	83	16	2	0
Idaho	5	3	13	4	0	0
Montana	2	4	3	10	0	0
North Dakota	7	19	18	74	1	0
Oregon	1	0	1	1	0	0
South Dakota	11	14	37	57	0	2
Utah	4	3	6	4	0	1
Washington	7	0	23	0	1	0
Wyoming	2	0	4	0	0	0
Total	86	51	188	66	4	3

Regional Reports



EUROPEAN SOVE

Alexandra Chaskopoulou
regional director

As of September 7, 798 West Nile virus (WNV) human cases have been reported in Europe with the majority of them reported from Italy, Greece, Hungary and Romania. The 2018 transmission season started earlier than usual and a higher number of cases have been reported compared to the same period in the previous years. More specifically, when compared to the 2017 transmission season, the number of cases has increased by a factor of 4. To decrease the number of infected adult mosquitoes and help minimize the impact of the ongoing epidemics, government agencies have intensified vector control measures, including but not limited to residual and space spray applications in the affected areas.

A worldwide problem associated with the intensive use of insecticides is the development of resistance. Scarce information is available regarding the resistance status in sand fly populations. A recent study analyzed the presence and frequency of target-site knockdown resistance mutations on the voltage-gated sodium channel (Vgsc) gene in sand fly populations from Turkey and Greece. The mutation 1014F associated with pyrethroid resistant phenotypes, was detected in the sand fly, *Phlebotomus papatasi* from Sanliurfa at an allele frequency of 48%. This study presents the first detection of resistance mutations in the major leishmaniasis vector, *P. papatasi*, and emphasizes the need for pyrethroid resistance monitoring and investigation of the underlying molecular resistance mechanisms in sand fly, *Leishmania* vectors. For more information, visit: <https://doi.org/10.1093/jme/tjy066>

The XI European Congress of Entomology took place in Naples, Italy earlier this summer. More than 900 experts from 65 countries attended the conference that covered a wide range of entomological disciplines including but not limited to: agricultural and forestry entomology, biological control and integrated pest management, ecology and toxicology of insecticides, genetics and evolutionary entomology,

medical and veterinary entomology. A session was dedicated on European Networks & Infrastructures in Vector Research, during which representatives from INFRAVEC2, MalariaGEN, WIN Initiative, Gnatwork, AIM COST ACTION provided with exciting updates on their projects. Very lively discussions took place during this session regarding the need to increase communication among the different project groups, to maximize synergies and avoid duplication of effort. To address these important issues a roundtable discussion will be organized during the upcoming Euro-SOVE conference held October 22-26 in Palermo, Sicily, Italy, October 22-26. Hope to see you all there!

One of the networks that will be represented during the Euro SOVE meeting in Palermo is the Gnatwork (www.gnatwork.ac.uk). This network looks to bring together researchers on sandflies, blackflies and biting midges to work in solving difficulties relating to research on small, neglected vectors of pathogens. The network is seeking to fund projects in low and middle-income countries to underpin expertise in these vectors and a new call for projects will be issued towards the end of 2018. There will also be a workshop for early career researchers in Brazil during 2019, and making a broad range of resources and datasets available at the Gnatwork website. You can follow the progress of the project @the_gnatwork on Twitter (Information kindly provided by Simon Carpenter, Principal Investigator of the Gnatwork).

The ECDC and EFSA published the first protocols for sampling populations of mosquitoes, sand flies, *Culicoides* and ticks. The protocols were developed within the VectorNet project. For more information, go to:

<https://ecdc.europa.eu/sites/portal/files/documents/Vector-sampling-f>



Students Page

Casey Parker

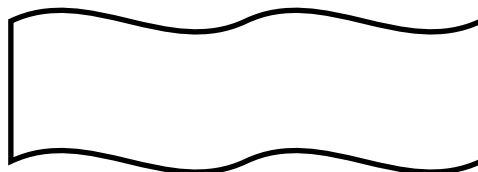
Bethany McGregor

University of Florida

First off, the students invited to speak in the SOVE student symposium would like to extend a huge thank you to the SOVE organizers, particularly Major Dhillon, for continuing to prioritize student attendance at the meeting. This year, 9 students received \$500 in travel funding, waived registration, and hotel accommodations to attend and present at the SOVE meeting being held in Yosemite, CA. These students represent 7 universities and during the meeting, they will have the opportunity to share their research on a variety of topics ranging from extension campaigns, to mosquito foraging cues, to Chagas disease.

If any student members have ideas for increasing student involvement, leadership, and participation within the organization, please be sure to attend the Monday meeting in Yosemite. If you are unable to attend this year's meeting, please email your ideas to Bethany McGregor (bmcgreg@ufl.edu). Together, we can work towards a stronger SOVE student community!

The future of professional organizations relies heavily upon student membership, participation, and leadership. Each year, SOVE supports a group of students in traveling to the annual conference to present their research. This incredible opportunity has showcased the strength and impact of student research in vector ecology for years. However, we believe that we can do more to support and involve students within this organization. This society fills an important professional niche for vector ecologists and is a great community to promote mentorship and opportunity for students within the field. This year, a student representative will be present at the SOVE board meeting in Yosemite, to represent student interests and promote ideas that will lead to a stronger student body. This will set the stage for increased student leadership and opportunity within the society for years to come. Michael Kaufman is also arranging a meeting with students at Yosemite on Monday, October 8, immediately following the end of presentations at 5:15 to discuss ideas and work towards formalization of student roles and involvement within the organization.





Vector Brief

Long-horned Tick, Haemaphysalis longicornis

by

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Reports from the spring and summer of 2018 have thus far confirmed what medical entomologists in the Northeastern Region dreaded regarding the overwintering capacity of *Haemaphysalis longicornis*, the longhorned tick. Initially reported by New Jersey animal health experts in November 2017, the USDA has since confirmed the first appearance of *H. longicornis* in the United States (APHIS 2018). Through August 2018, additional specimens have been collected and confirmed from New York, Virginia, West Virginia, Arkansas, North Carolina, Pennsylvania, and Connecticut.

Originally native to eastern China, Japan, Russia, and Korea, *H. longicornis* also invaded and established populations in Australia, New Zealand, and islands in the western Pacific in the nineteenth century, where it has maintained its economically destructive status as a threat to livestock. While the investigation into possible routes of introduction is ongoing, retrospective analyses of historical tick samples have since confirmed the presence of a specimen collected in West Virginia in 2010 (APHIS 2018).

Longhorned ticks are parthenogenic, allowing individual blood-fed females to seed the establishment of invasive populations, which has likely played a role in the apparent rapid colonization of several US states. As three-host ticks, *H. longicornis* have been collected from a range of hosts in the US, including but not limited to, cows, white-tailed deer, dogs, opossums, humans and several bird species (including the potentially migratory). This level of seemingly opportunistic feeding behavior could potentially lead to the spread of zoonotic pathogens — which *H. longicornis* have been known to vector in their native range — or may create new opportunities for the spread of pathogens already endemic to the US, such as *Borrelia* spp. (Yang et al. 2018).

Publications from New Zealand have covered the propensity of *H. longicornis* to invade and establish in different climate types. In a 2015 review, Heath proposed that although longhorned ticks thrive in moist, warm climates, the species can also withstand a wide range of temperatures (12-40°C). Similar to other tick species, moisture requirements appear to

be the limiting environmental factor for the geographic expansion of this invasive tick, disproportionately impacting the larval stage of development. Additionally, control of *H. longicornis* has remained problematic in other introduced regions due to the wide array of available hosts and lack of attachment time, rendering acaricide treatments ineffectual.

One thing is for certain: There is a new tick on the block that has garnered the attention of much of the Northeast/Mid Atlantic region. While working out the distribution and local ecology of the invader is a veterinary and public health imperative, we should not allow this to distract from ongoing battles with established tick-borne disease cycles that remain some of the largest vector-borne threats in the US.

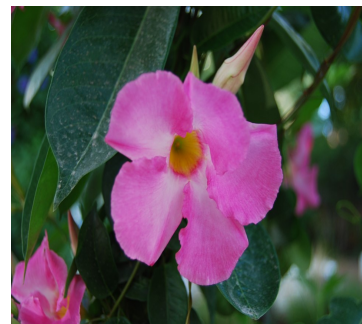
References:

APHIS 2018 (August) Factsheet: Longhorned Tick – Information for Livestock and Pet Owners

APHIS 2018 National *Haemaphysalis longicornis* Situation Report – July, 2018.

Heath, A. (2016). Biology, ecology and distribution of the tick, *Haemaphysalis longicornis* Neumann (Acari: Ixodidae) in New Zealand. *N Z Vet Journal* 64 (1): 10-20.

Yang, Y., Yang, Z., Kelly, P., Li, J., Ren, Y., and Wang, C. (2018). *Borrelia miyamotoi* sensu lato in Pere David Deer and *Haemaphysalis longicornis* Ticks. *Emerg Infect Dis.* 24 (5): 928-931.



One Last Reminder!
... it is just around the corner ...

48th Annual Conference
Society for Vector Ecology

October 8-11, 2018

Tenaya Lodge, Yosemite National Park

California



For Your Calendar

The 85th Annual Meeting of the American Mosquito Control Association will be held February 26—March 2, 2018 in Orlando, Florida. Visit www.mosquito.org

The Florida Mosquito Control Association (FMCA) will hold the 90th annual meeting in St. Petersburg, Florida, November 4-7, 2018. For more information about the meeting, visit the FMCA websites at www.floridamosquito.org

Member News

None

Resources

FREE Resources for Investigators are available!

Please visit:

<http://www.niaid.nih.gov/labsandresources/resources/dmid/Pages/default.aspx> to see the full range of available services that provide access to research tools and technologies and preclinical and clinical services to facilitate product development.

Visit [Vector Biology Resources for Studying Vectors](#) for a listing of available resources. Key among the resources for studying vectors is provision of LIVE vectors and reagents and genomic materials offered through the [BEI Resources Repository](#). (See Vector Resources in the BEI [online catalog](#).) These resources are available free of charge to REGISTERED users in domestic and foreign institutions and NIH grant funding is not required. For information on all resources for researchers provided by DMID, visit the [DMID Resources for Researchers website](#).

[Adriana Costero, PhD](#)

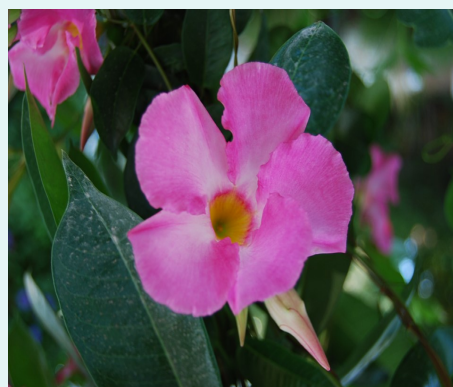
Email: acostero@niaid.nih.gov

VectorBase population biology (PopBio) resource

You may think of VectorBase as a genomics-focused bioinformatics resource, but we are also a population biology (PopBio) resource. We currently host [insecticide resistance](#) assay data (with phenotypes and/or [genotypes](#)), population [abundance](#), [pathogen](#) infection status (image below), [genomic variation](#) data and blood-meal identifications for any vector of human pathogens. Our PopBio tools include a text and map-based analysis tool and as is open access worldwide. We are keen to expand our data acquisition to other data types where the community can benefit from meta-analysis of data from multiple research groups/data generators. Our database can handle complex scenarios and data types. We host data from both scientific papers and also from non-published sources. This represents a quickly growing collection of data. For example we have population count records from 100863 trap collections from 3493 trapping locations, representing over 22 million mosquitoes. [Follow this link](#) for sample queries. If you have ever thought "I wish I could query my data alongside the rest of the community's" then please get in touch with us at info@vectorbase.org.

The VectorBase population biology resources can be explored at www.vectorbase.org/popbio

Gloria Giraldo-Calderon <ggiraldo@nd.edu>





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We are on the Web!
www.sove.org

About SOVE

The Society for Vector Ecology is a 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 and 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 integration of control elements, such as environmental management, biological control, public education, and appropriate chemical control technology.

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 distributes a periodic newsletter and holds an annual conference in the months of September/October.

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