NEVBD QUARTERLY DIGEST

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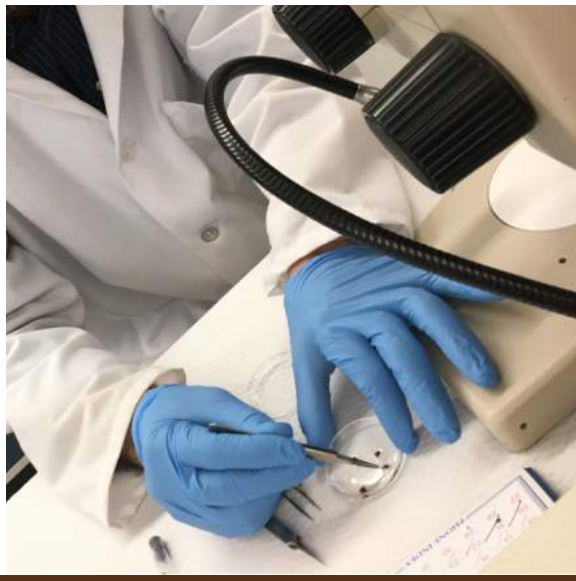
NEVBD

NORTHEAST REGIONAL CENTER FOR EXCELLENCE IN VECTOR-BORNE DISEASES



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MESSAGE FROM THE DIRECTOR

BY LAURA C. HARRINGTON, PHD
NEVBD PROGRAM DIRECTOR

Welcome Partners, Students, and Friends to the inaugural NEVBD Quarterly Digest!

NEVBD's programmatic goals are to investigate and develop solutions that reduce the burden of vector-borne diseases throughout the northeastern United States, train the next generation of public health entomologists, and create an inclusive community of practice. In this, and subsequent, Quarterly Digest issues we will keep you informed of new NEVBD events, research and training activities. We provide only a snapshot of our efforts here, and those who are unfamiliar with NEVBD's overarching goals, collaborative research projects and partners, can find more details on our website http://neregionalvectorcenter.com.

Among the exciting news in this issue, we are welcoming our newest NEVBD team member, Dr. Sarah Michaels, who comes to us from her previous position in the New Orleans Mosquito Control Board. She will contribute to our academic and professional training efforts. In addition, we are pleased to introduce our inaugural class of Entomology MS students, whose studies will focus on the biology of vectors and their associated pathogens. You can read more about Dr. Michaels and the MS students matriculating August 2018 in this issue. Additionally, we feature two innovative tick projects from our partners and a report on the first NEVBD Vector Biology Boot Camp, held in May 2018! The Boot Camp was a resounding success with a cohort of fantastic and insightful public health professionals who convened within the beautiful setting of Fordham University's Louis Calder Center grounds. We are already refining plans for a second Boot Camp in 2019, so please stay tuned!

I am writing this message just one month after release of CDC's alarming Vital Signs Report, showing a nearly 3-fold national increase in vector-borne diseases since 2004. The report is a grim reminder of the challenges we face in the Northeast, as we aim to tackle these vectors and reduce the burden of human infections. Fortunately, **I am confident in the strength, expertise and commitment of our partners. We are ready to face these challenges head-on and we hope you will join our efforts!** As always, please do not hesitate to let us know your thoughts, concerns and ideas for the NEVBD program.

Sincerely, *Laura C. Harrington*

NEVBD TEAM MEMBER SPOTLIGHT

Welcoming Sarah Michaels, PhD MSPH, to the NEVBD

Dr. Sarah Michaels will be joining us as a lecturer for the Entomology MS program at Cornell University this August, 2018. Sarah has a wealth of experience in public health operations, research, and vector surveillance and control, most recently serving as Entomologist and Mosquito Control Supervisor for the City of New Orleans Mosquito, Termite, and Rodent Control Board. Sarah is a Master Trainer for the American Mosquito Control Association's Integrated Mosquito Management program, and has recently served as an instructor for the Western Gulf Center of Excellence in Vector-Borne Diseases' Vector Certification Course. Sarah earned both a PhD in Tropical Medicine and MSPH in Parasitology from Tulane University. Her dissertation work focused on urban transmission of arboviruses in New Orleans, LA.

Sarah will have a leading role in the NEVBD's academic program operations and instruction. She will provide mentorship support to our MS students, contribute to the development of innovative curricula, and engage with our regional partners to support student internship opportunities.

Sarah's talent and experience in the field make strong additions to our team, and we are excited to start working together soon!

NEVBD warmly welcomes Sarah Michaels, PhD MSPH, to our team!

INAUGURAL CLASS, VECTOR BIOLOGY PROGRAM AT CORNELL UNIVERSITY

BY EMILY MADER, MPH MPP
NEVBD PROGRAM MANAGER

NEVBD and Cornell University are pleased to welcome three students into the Master of Science in Entomology curriculum this Fall 2018. Students in this program will follow a new curriculum focused on vector biology and public health, developed under the NEVBD. Our goal is to provide an innovative and updated educational experience, which serves as a foundation enabling graduates to immediately enter the workforce in public health vector-borne disease surveillance, vector control, and related fields. Students will be mentored by NEVBD expert collaborators and partners within regional state and local agencies to conduct a 10-week summer internship. Read below to learn more about our first class of students for this innovation program!

Erin Hassett, BS

Erin Hassett graduated from Westminster College, PA, with a BS in Environmental Science. Erin spent her undergraduate career exploring the way human health is impacted by environmental factors. She discovered the importance of medical entomology during her training and work experience at the Tennessee Department of Health Vector-Borne Disease Program, where she became proficient in both laboratory and insectary techniques. Erin led investigations of pesticide resistance in mosquitoes from eastern Tennessee. She also was responsible for rearing *Aedes* and *Culex* mosquitoes and assisted with field collections of adult mosquitoes, identification to species and detection of arboviruses. Her research interests include understanding population dynamics of vector-borne disease and developing better methods of prevention, management, and control for both disease and vectors. Erin loves long distance backpacking trips, traveling, art, outdoor recreation, tea shops, and her adopted cat.

Phurchhoki Sherpa, BS

Phurchhoki earned her Bachelor of Science degree in Environmental Studies from Colby-Sawyer College, NH. Even though she experienced the effects of mosquito-borne disease epidemics on everyday life during her childhood in Nepal, it wasn't until 2017, when Phurchhoki learned about 'vector-borne' diseases. Working as a field technician for Vermont's Lemon Fair Insect Control District sparked her interest in vector-borne diseases, mosquito surveillance and identification. Now, Phurchhoki is excited to take public health and entomology courses at Cornell. With the in-depth knowledge and skills that she will acquire from classes and research, Phurchhoki hopes to contribute to vector control and reduce the public health effects of vector-borne diseases on a national and possibly international level. In her spare time, Phurchhoki likes to read crime/historical fiction, hike or just be outside, and sketch botanical illustrations.

James Stewart, BS

Raised in Poughkeepsie, NY, James earned his Bachelor of Science in Biology, with minors in chemistry, ecology, and biological anthropology, from SUNY Plattsburgh. He caught "the bug" for entomology while working as an undergraduate technician for the Lake Champlain Research Institute, an ecology lab responsible for monitoring zooplankton and mosquito populations in and around Lake Champlain and Clinton County. During this time, his interest in medical entomology was kindled by the opportunity to investigate the relationships between mosquitoes and their ectoparasites. His research interests focus on understanding how mosquito ecology and behavior can inform the development of effective surveillance and control strategies. During his free time, James enjoys reading, running, hiking (sometimes running while hiking), and playing music.

THE TICK APP

A Citizen Science Approach to Study Human Behavior & Tick Exposure

BY MARIA DEL PILAR FERNANDEZ, PHD
POSTDOCTORAL RESEARCHER, COLUMBIA UNIVERSITY

NEVBD collaborators from Maria Diuk-Wasser's lab at Columbia University and the Midwest Center of Excellence in Vector-Borne Disease (University of Wisconsin-Madison) have worked in partnership to launch a new smartphone app: The TickApp!

Researchers will use information gathered through the TickApp to assess how human behaviors and practices affect tick exposure risk. **This will help them gain a better understanding of how, where, and under what circumstances people are at most risk of encountering ticks.**

Users of the TickApp will complete a tick diary for 15 days, reporting information on whether they found ticks on themselves or pets, what activities they did during the day, and if they took any preventive measures.

Partners at UW-Madison will provide free tick ID services to TickApp users. The TickApp also lists contact information for additional tick ID services (including Cornell's Animal Health Diagnostic Center), and provides access to resources on tick biology and ecology, and information on personal protection against tick bites - all through the convenient smart phone app.

The versatile TickApp was developed as a research tool that can be used across different regions in the US. It is also a great way for NEVBD partners to connect with the public on best practices for personal prevention of tick-borne diseases.

Previous methods to gather information about human activity and tick exposure have relied on the use of questionnaires. The information gathered from these surveys has issues, including recall bias of respondents and the inability to gather information about people's behaviors across time. This new app overcomes several of these issues by tracking in real-time how people interact with their environment and ticks. **Understanding how people are exposed to ticks is key to developing interventions that can reduce the burden of tick-borne disease on human health.**

The TickApp is available on the iTunes app store and Google Play store.

A version of the TickApp is also available online for non-app users. Individuals can sign up at www.thetickapp.org to download the tick diary surveys or complete them via email.

DON'T GET TICKED, NY

BY JODY GANGLOFF-KAUFMANN, PHD
NEW YORK STATE COMMUNITY IPM COORDINATOR

The New York State Senate Task Force on Lyme and Tick-Borne Disease, led by Senators Serino and Hannon, announced that combating tick-borne diseases is a top priority for the state. **They funded the New York State IPM (NYSIPM) Program to work intensely on raising awareness about ticks and tick-borne disease.**

This financial support enabled the NYSIPM program to develop the "Don't Get Ticked, NY" campaign, which features a Tick ID Card, tick removal kits, and 10 graphic posters.

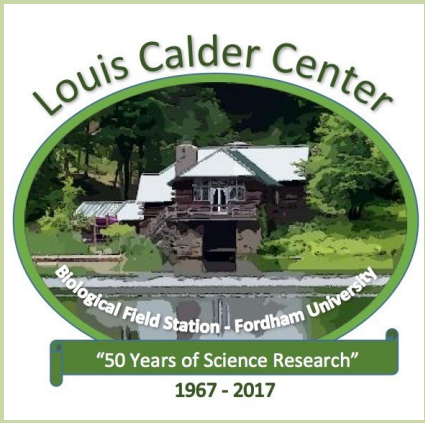
Additionally, a new website features a new Tick FAQ, a video titled "Life Cycle of the Blacklegged Tick and Lyme Disease Prevention", made in old-fashioned Claymation style, and links to many other resources about ticks and tick management.

The program's IPM specialists frequently speak to a variety of audiences to raise awareness on tick biology, ecology, habitats, and management. On August 7th, 2018, the NYSIPM program is hosting the 4th Annual IPM Conference titled "Integrated Management of Ticks and Mosquitoes" in White Plains, NY, in cooperation with the NEVBD, Westchester County Parks, and Cornell Cooperative Extension.

Find out more about these materials and events at www.dontgettickedny.org!

2018 VECTOR BIOLOGY BOOT CAMP

BY EMILY MADER, MPH MPP
NEVBD PROGRAM MANAGER



The first annual NEVBD Vector Biology Boot Camp, held on May 22-24, 2018, was a resounding success!

Twenty-two attendees from 12 states converged at the Louis Calder Center campus in Armonk, NY, for the 3-day training program.

Highlights of the program included:

- **Hands-on practice conducting field collections of ticks and mosquitoes.** Attendees learned how to sample for ticks and use protective clothing to minimize exposure during tick dragging and flagging, and how various mosquito traps are used to target different vector species and physiological stages.
- **Tick and mosquito identification labs** using updated taxonomic keys
- Discussions and lectures on **best practices for communicating with the media and with the public** on importance topics for vector-borne disease
- **Key concepts and tools for control** of mosquito and ticks in different environmental conditions

Calder Center Director Thomas J. Daniels, PhD led the team of instructors to deliver a curriculum targeting key concepts in the biology, ecology, surveillance and control of tick and mosquito vectors in the Northeastern US.

The instructional team represented over 500 cumulative years of experience working with tick and mosquito species of medical importance to the region. Students stayed on Calder Center campus for the full 3-day program, attending lectures, hands-on activities, and meals together in true Boot Camp style. This approach to the program allowed attendees to network with each other and make new professional connections to colleagues in the region.

LEARNING MODULES
Arthropod Surveillance
Arthropod Collection & Testing
Taxonomy & Identification
Vector Control
Data Interpretation & Management

NEVBD will evaluate the Vector Biology Boot Camp in two ways: through anonymous evaluations of the overall programs, and through pre/post knowledge assessments completed by each attendee. Evaluation results will inform Vector Biology Boot Camp program improvements for future years.

Stay tuned for announcements about the 2019 Vector Biology Boot Camp later this fall.

Learn more about the Louis Calder Center by visiting:
https://www.fordham.edu/info/21457/the_louis_calder_center

UNDER THE MICROSCOPE:

Biosketch of a Vector Villain

Blacklegged Tick

Ixodes scapularis

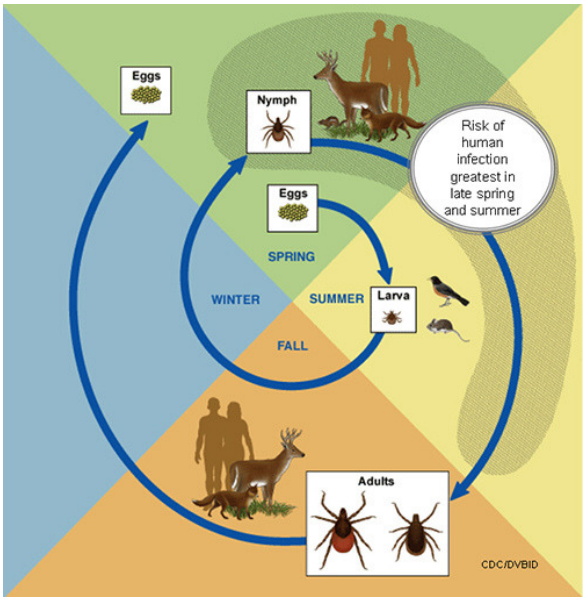
The **blacklegged tick** (also known as the "deer tick") is a menace! This tick can carry and spread several pathogens that make people and animals sick. Some of these include:

Bacteria that cause:	Lyme disease Anaplasmosis Ehlichiosis
Parasites that cause:	Babesiosis
Viruses that cause:	Powassan disease

Where do they live?
Blacklegged ticks live across the Northeast and Midwest regions of the US. They like to be in areas with leaf litter, shrubby plants, and forest grasses.

When should you be on the lookout for them?
Blacklegged ticks can actually be out and looking for a meal every month of the year if it is warm enough. Generally, in the Northeast they come out in the Spring (May) and stay active until around Thanksgiving (late November).

Blacklegged ticks have 3 life stages when they bite animals: larvae, nymph, and adult. Take a look at this picture to see when each of these life stages are most active. **You should be on the highest look out for nymphs starting in the spring and adults in the fall.** These two stages are most important in spreading disease to humans and animals



Remember to wear repellent, check yourself for ticks frequently, and try to shower within 2 hours after being outside in an area where the blacklegged tick lives.

Get more tips on tick safety at https://www.cdc.gov/ticks