



Phaëton

The Official Newsletter of the
Maryland Entomological Society

Volume 41, Number 8

May 2021

EDITOR: Aditi Dubey – aditid26@gmail.com

FACULTY SPONSOR: **Frank E. Hanson**
Department of Biological Sciences
University of Maryland Baltimore County (UMBC)
1000 Hilltop Circle
Baltimore, MD 21250

WEBSITE: <http://www.mdentsoc.org/>

MARYLAND ENTOMOLOGICAL SOCIETY MAY 2021 MEETING

Title: The Impact of Climate Change on Butterfly Populations

Speaker: Fred Paras, MES President & Professor, Natural and Physical Sciences Department, Baltimore City Community College



Abstract: This lecture will begin with a close look at the findings published recently in the journal *Science*, which shows a drastic decline in western USA butterfly populations. In order to assess climate change as mitigating factor in declining populations of butterflies, long term sampling and observations over large regions are required. Using a combination of large numbers of Community Scientists, volunteer observations and expert collected data, valid assessments of decline can be made in areas where warming and drying trends are occurring. Students are encouraged to become involved in these kinds studies and contribute important data of all kinds.

Title: Assessing the Impacts of Pesticides on Soil Invertebrates

Speaker: Aditi Dubey, Department of Entomology, University of Maryland



Abstract: This talk will present the results of a recent [publication](#) reviewing the impacts of pesticides on soil invertebrates. We reviewed nearly 400 studies on the effects of pesticides on non-target invertebrates that have egg, larval, or immature development in the soil, encompassing 275 unique species, taxa or combined taxa of soil organisms and 284 different pesticide active ingredients or unique mixtures of active ingredients. We found that 70.5% of tested parameters showed negative effects, which were evident in both lab and field studies, across all studied pesticide classes, and in a wide variety of soil organisms and endpoints. The prevalence of negative effects in our results underscores the need for soil organisms to be represented in any risk analysis of a pesticide that has the potential to contaminate soil.



When: May 21st, 7:00 PM

Where: <https://us02web.zoom.us/j/79977934581?pwd=ZVBrb1ZNZEFNKzY1UU9vY1FWckJVdz09>

Meeting ID: 799 7793 4581

Passcode: iN0cxN

Dial in: +1 3017158592, *770721# US (Washington DC)

**MINUTES OF THE 337th MEETING OF THE
MARYLAND ENTOMOLOGICAL SOCIETY**

16 APRIL 2021

The 337th meeting of the Maryland Entomological Society convened via 'ZOOM' on April 16, 2021. At least 21 people attended according to 'ZOOM' count. The speaker's biography and lecture abstract appear in the April 2021 issue of the *Phaëton*. During a brief business meeting following the lecture, Treasurer Ed Cohen reported a balance of \$6,243.67 in the Society's account. Members discussed the advisability of a field trip; no decision was reached. The meeting commenced at 7:23 PM and ended at approximately 9:15 PM.

16 April 2021 MES LECTURE

Title: What makes a vector a vector and why is that important?

Speaker: Michael J. Turell, Principal Investigator (retired), United States Army Medical Research Institute for Infectious Diseases

Our speaker for the evening, Dr. Michael Turell, opened his talk listing a statistic of >200 million vector-borne cases per year, and 700,000 deaths per year. Diseases listed on his slide included those transmitted by other vectors in addition to mosquitoes. He proceeded to focus on mosquito-borne diseases including malaria, yellow fever, Zika virus, West Nile virus, dengue fever, chikungunya, eastern equine encephalitis, and Rift Valley fever. He briefly discussed mosquito-borne disease in U.S. history - yellow fever outbreaks in Philadelphia, New York, Boston, and other northern cities in the late 18th and early 19th centuries, and the fact that yellow fever and malaria were major causes of death in those years. He stated that the Union army, during the Civil War, had more malaria cases (1.3 million) than they did soldiers, indicating that many individuals were infected more than once.

The speaker discussed vector competence vs. vectorial capacity, and is quoted here:

Vector competence is can mosquito species X transmit the virus. Based on standard laboratory experiments, one can determine the percentage of a given species that would be able to transmit a particular virus after exposure to a particular viremia.

Vectorial capacity is how important a particular species might be. For example let's imagine three species. Species A transmits West Nile virus 90% of the time (in the laboratory), but in nature, only feeds on reptiles. Species B transmits that West Nile virus 50% of the time, but preferentially feeds on birds, and Species C transmits that West Nile virus 90% of the time, but only feeds on mammals. Because in the real world mammals don't become viremic with West Nile virus, Species C would be worthless as a vector despite its very high vector competence. Because birds are the vertebrate hosts that become viremic with West Nile virus and thus serve as a source of virus for mosquitoes, Species B is likely to be the most important, despite its lower vectorial capacity. Species A

would appear to be worthless, and someone did report isolating West Nile virus from a reptile-feeding mosquito at a national meeting, and my comment was who cares. However, a few weeks later there was an outbreak in an alligator farm in Florida, and I instantly knew the vector. Remember, birds are just modern reptiles. Similarly, very high vector competence in a very rare mosquito doesn't mean much. A very common mosquito that feeds on the right host is much more dangerous than a rare mosquito, even if the rare mosquito has a higher vector competence. On the other hand, vector competence can be measured scientifically, but vectorial capacity is a guess.

He went on to discuss ways in which a mosquito can contain viral particles in its body, and not be a transmitter; if a mosquito bites a virus-infected individual and that mosquito species bears no gut receptors for that particular virus, the blood meal and virus will be digested and excreted. If the mosquito species possesses gut receptors for the ingested virus, but the virus does not replicate in the mosquito's body or is not present in the mosquito's salivary glands, the virus will not be transmitted to successive bite victims.

In order for a mosquito to be identified as a vector of a particular virus, four conditions must be met:

1. Repeated isolation of the virus from field-collected specimens.
2. Demonstration that the arthropod feeds on a vertebrate amplifying host.
3. Must be active in the appropriate season.
4. Must demonstrate vector competence.

In order for a mosquito to serve as a vector, several conditions must be met:

1. Viremia must be sufficient to infect that species.
2. The biting mosquito must be of a species in which the virus in question can replicate.
3. The mosquito must bite vertebrate species that the virus can infect.

Mosquito borne disease will not spread through a population, if the following occur:

1. If viremia is not present in the host, the virus will not be transmitted to the mosquito.
2. If viremia is present in the host, the virus will transmit to the mosquito. But if the mosquito is not a species in which the virus will replicate, the transmission cycle ends here.
3. If viremia is present in the host, and the virus infects a mosquito species that can transmit it, but the mosquito bites a species that does not produce a viremia, transmission cycle will end here.

The speaker commented that "For West Nile virus, neither horses nor humans produce a viremia sufficient to infect a mosquito, so if infected, they may get sick and even die, but the transmission cycle ends. It is not disease that is important, but rather viremia level."

Dr. Turell stated that malaria and yellow fever are diseases of the tropics, they are not tropical diseases. He discussed the socio-economic conditions which enable these diseases to be

so prevalent in tropical areas. Among them are hot humid climates, open air kitchens and houses, containers of water transported from community wells and sitting in open containers, lack of screening and air conditioning, and lack of plumbing. It is critical to know which mosquito is the actual vector in a particular area because controlling the wrong mosquito species can actually increase the amount of disease in an area. There was some discussion of bed nets; Dr. Turell stated that netting has no effect on dengue, chikungunya, or Zika virus transmission as the vectors for these viruses are all daytime feeding mosquitoes.

He concluded his talk with a discussion of viruses of concern: Rift Valley fever, Japanese encephalitis, and Venezuelan equine encephalitis. Rift Valley fever is of particular concern in livestock. It is especially dangerous in young animals and pregnant females. Nearly all infected pregnant females abort and most of the other die. For young calves and lambs, nearly all infected animals will die. This virus was only found in sub-Saharan Africa prior to 1970, expanded to Egypt in the 1970's, and to the Arabian Peninsula in the early 2000's.

He listed steps that governments need to undertake, continue, or improve upon:

1. Restore and improve mosquito control programs.
2. Public education regarding how and when various pathogens are transmitted (night biters, day biters).
3. Identify which mosquito species should be prioritized for control.
4. Develop better diagnostic procedures.

In discussion, Dr. Turell commented that one of the real problems with determining the actual number of cases of diseases such as eastern equine encephalitis or La Crosse encephalitis that occurs is that physicians rarely send samples out to make this specific a diagnosis. They need to know if it is caused by a bacteria (then it needs to be treated with antibiotics) or a virus (then supportive treatment only). Thus, when it comes back negative for a bacteria (i.e., positive for a virus), then why waste the time and money to find out which virus as the treatment will be the same, regardless of the virus.

Respectfully submitted,
Janet A. Lydon, MES Secretary

RAMSEY RESEARCH FOUNDATION REQUEST

Firstly, I'd like to thank the Maryland Entomological Society for such a warm reception when I presented my research to your group a couple of months ago. It was really encouraging and I look back on it fondly. I'd also like to request your help if I may. In my aforementioned presentation to MES, I talked about how a parasite of bees showed up and decimated populations of bees before we even figured how it was doing so. Well that threat looms again but this time, I have a plan. I've developed a study designed to answer several pertinent questions about the two most potent biological threats to honey bee health that we currently know of: the *Tropilaelaps* mite [*Tropilaelaps mercedesae* Anderson (Arachnida: Mesostigmata: Laelapidae)] and the Asian giant hornet [*Vespa*

mandarinia Smith (Hymenoptera: Vespidae)]. Unfortunately, many of the usual funding options barely made it through the pandemic. My lab's budget is stretched so far in the red that they won't even be able to cover even the smaller elements of this study. I expected that National Geographic would be covering much of it but they shut down their entire granting arm during the pandemic and don't have word yet on when they'll start up again. So it looks like, if this time-sensitive work is going to get done I've got to get creative!

To conduct these studies, I'll need to get to Asia, support myself there, and relocate a pretty substantial amount of equipment in the process. I actually established a non-profit (The Ramsey Research Foundation) recently so that I would have more options when attempting to fund studies of this nature and I'm glad I did, because now I can offer tax breaks for anyone willing to donate! I know, no one person is going to make this happen but a bunch of small donations really do add up. So I made this [nifty video](#) and the [Ramsey Research Foundation website](#) to help explain some of the work I'll be conducting. Every scientific breakthrough is a team effort so I'm hoping, I can get as many people as possible to join the team. If that idea resonates with you, please consider donating:

Donate: — [Ramsey Research Foundation](#)

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Samuel Ramsey, Ph.D.
Entomologist
USDA-ARS Bee Research Lab
BARC-East Bldg 306
Beltsville, MD 20705
USDA-ARS Bee Research Lab

DEAR BROOD X CICADAS: WELCOME BACK TO OUR MESSED-UP WORLD. HERE'S WHAT YOU MISSED

Hank Stuever – Senior Editor for Style

The Washington Post – April 30, 2021

This commentary about the current state of the world being explained to the 2021 Brood X periodical cicadas can be accessed at:

https://www.washingtonpost.com/lifestyle/style/broodx-cicadas-return-heres-what-they-missed/2021/04/29/60bace78-a772-11eb-bca5-048b2759a489_story.html

USFWS/USGS BEE LAB ONLINE BEE ID CLASSES

Objective: Learn to Identify Bees with a Microscope

The USGS/USFWS Bee Lab is excited to start hosting WEEKLY online bee ID meetings on Wednesdays, 1–2 p.m. ET starting May 12, 2021.

If you don't have a microscope then these classes are probably not for you. We are focusing, ultimately, on allowing people to ID their bees to the species level and that requires a microscope and is pretty darn technical.

These classes will be relevant to anyone in the world doing bee identification because similar bee morphological characteristics and often the same bee genera are present worldwide and much of what we will be talking about will be the approach to identifying a specimen and how to locate the characteristics you will see in keys and identification guides. Even though we will be using online Discover Life Guides and North American specimens.

Discover Life Keys are located [here](#) if you want to start using them.

If you want to do some homework you can look at some how to videos on using Discover Life keys:

<https://www.youtube.com/watch?v=75klhCa2vEM>

<https://www.youtube.com/watch?v=0ws4nwgOfm4>

Thanks to USFS and Craig Larcenaire we have borrowed their fancy smancy microscope and camera so you can see what we can see under the microscope online. In the first class, Sam and Clare will start walking you through using your microscope and Discover Life keys to get to know your bees up-close (Wednesday, May 12th) and on subsequent Wednesdays move on to major characteristics of common bee genera and then dive into the nuances of species identification. These will be in real-time so hop in on the chat with your questions. Sessions will last exactly an hour and be recorded.

The teaching platform will be Microsoft Teams. Because of the vagaries of Government Teams sessions you need to send Clare ("Maffei, Clare J" <clare_maffei@fws.gov>) an email asking to be included and she will send you an invitation.

So, here is what you do.

1. Write an email to clare_maffei@fws.gov
2. In the subject line put "sign me up for bee id class"
3. Click Send
4. Wait for invitation
5. Log in to the session on the day of the class

Clare will send out a new invitation each week to everyone who has sent in an email. You can opt out any time.

USDA PLANTS DATABASE: NEW AND IMPROVED

Speaker: Christine Taliga
Tuesday, May 18, 2021 12 PM EST

The PLANTS Database (Plant List of Accepted Nomenclature, Taxonomy, and Symbols) provides standardized information about the vascular plants, mosses, liverworts, hornworts, and lichens of the U.S. and its territories. Christine Taliga is a plant ecologist on the National Plant Data Team (NPDT) and will provide an overview of the new website including future areas of design and integration regarding pollinator interactions and invasive species.

For additional information and the registration link go to: <https://www.naturalareas.org/docs/051821TaligaAbstractArchivereg.pdf>

FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS WEBINAR

“Pollinating a Dynamic Economy: Prioritizing Pollinators for Better Food Systems

Thursday, May 20, 2021, 11 AM EST



On World Bee Day, join FAO North America and the Slovenian Embassy to the USA for a dynamic webinar examining the vast challenges facing pollination efforts and the potential for creative development methods. Additional information can be found at:

https://fao.zoom.us/webinar/register/WN_LJxK6sTIQMWDjWTn4IWIYg



THE BEE SHORT COURSE FOR COMMUNITY SCIENTISTS

Join fellow bee fans for this free monthly webinar series. We'll explore the world of bees and learn together from bee experts to build skills as community scientists. Whether you're a seasoned wild bee volunteer or just beginning your bee journey, the skills learned in this series will prepare you to help our threatened pollinators.



All sessions are from 10 - 11:00AM EST on the third Friday of the month, May - November 2021

May 21: Randy Mitchell, The University of Akron
“Bee Botany 101”

June 18: Jamie Strange, The Ohio State University
“Melittology 101: An Intro to Bee Science”

July 16: Olivia Carril, author and biologist
“Methods of Collecting and Documenting Bees”

August 20: Heather Holm, author and biologist
“Insect Photography and Using iNaturalist to Observe and Document Wild Bees”

September 17: Sam Droege, USGS Native Bee Lab
“Tips and Tricks from The Handy Bee Manual”

October 15: Mary Gardiner, The Ohio State University
“Contributions of Community Science to Entomology: Benefits for People and Nature”

November 19: Molly Martin, Bee City USA/Xerces Society
“From Community Science to Advocacy in Action: Case Studies in Conservation”

This is a collaborative effort from: OSU Department of Entomology, The Chadwick Arboretum and Learning Gardens, and The US National Native Bee Monitoring Research Coordination Network (RCN).

Find more information and register [here](#).



EXTIRPATED AND ENDANGERED BUTTERFLIES OF MARYLAND

Wednesday, May 26, 7 – 8 PM EST

The State insect of Maryland happens to be endangered in the state. Historically, the species’ distribution in Maryland spanned 15 counties, most of which contained multiple breeding colonies. Today, however, wild colonies are known from only 11 sites in 7 counties. Unfortunately, the checkerspot is not the only species of butterfly in Maryland whose populations are declining or worse yet, have become extirpated (extinct in the state). Fred Paras, president of the Maryland Entomological Society and invertebrate curator for NHSM, will present on those species we used to find a good number of species locally (Balt, Howard, Mont, Carroll, PG, Fred, Charles, Dorchester, many other counties) and they aren’t around any longer. A few species only very scanty observations if at all.



Learn more and register below:

<https://www.marylandnature.org/get-involved/events/event/extirpated-and-endangered-butterflies-of-maryland/>



WATCHING FIREFLIES FOR FUN AND CONVERSATION: COMMUNITY SCIENCE SATURDAY

Saturday, June 12, 2021, 4 – 6 PM EST

One of the great parts of the summer is watching fireflies, but increasingly researchers are concerned that some species of fireflies may be threatened by declining numbers. To collect essential data to assess and hopefully reverse the decline, the Massachusetts Audubon Society created the Firefly Watch Citizen Science Project. Dr. Clyde Sorenson and Chris Cratsley will provide an overview of firefly species, potential threats to their populations, teach how to identify them in the field, and introduce how you can work with Firefly Watch to monitor local populations, helping conserve these beetles in all their amazing diversity.

RSVP to the Natural History Society of Maryland to receive the Zoom meeting details:

<https://marylandnature.wildapricot.org/event-4273926>



I wish I were a glow worm,
 A glow worm's never glum.
 'Cuz how can you be grumpy
 When the sun shines out your bum?
 ~Author unknown



2021 VIRTUAL SUMMER MEETING

On behalf of the organizing committee, I am happy to invite you to the Virtual 2021 Meeting of the American Arachnological Society. General information, a schedule overview, and all you need for registration (by June 14) and abstract submission (by May 17) [is available at this link](#). We fully encourage broad participation in this event. Registration cost is \$20 for everyone (including non-AAS members) and covers access to all events. We have donor support for anyone for whom this fee is prohibitive. Please share this invitation broadly.

Conference events will take place between Thursday, June 24 - Thursday, July 1. A Keynote address by Maydianne Andrade and the announcement of the recipient of the first [Norman Platnick Award](#) will open the meeting on the evening of the 24th. Events will include plenary talks by Mercedes Burns, Lauren Esposito, and Ivan Magalhães; oral and poster presentations; a panel discussion and workshop on actions we can take to dismantle racism and promote equity, diversity, and inclusion in arachnology; a public talk about arachnids by Jillian Cowles; a virtual bioblitz and workshops on collecting arachnids, photography, and online identification communities; two movie nights; happy hours; and a festive "banquet" like event at the end.

This year we welcome presentations from researchers at all career stages. In addition to English, talks may be in Spanish or Portuguese, and we will support pre-recorded talks with presenters present for Q&A following their talk.

We look forward to seeing all of you at this event.

Greta Binford, AAS President, and the Organizing Committee - Catherine Scott, Sebastian Echeverri, Sarah Stellwagen, Rich Bradley, Brian Patrick & Paula Cushing.

NHSM APRIL 2021 RAFFLE

This month we are a \$500 Gift Certificate to REI AND a Lifetime Membership to NHSM!

As an NHSM Lifetime Membership (value \$750) member you will receive discounts on many of our programs—from lectures, workshops, and courses offered in our museum—to canoe trips, nature walks, and fossil hunts in the great outdoors.

Tickets are \$5 and buying more than one ticket increases your chances of winning. Only 1000 tickets will be sold to benefit the Natural History Society of Maryland. Cut-off date to be entered is June 1, 2021 at noon.

Get more information and purchase your tickets [here](#).

2020/2021 PROPOSED MES EVENT SCHEDULE

Due to the COVID-19 pandemic, regular MES lecture/meetings are currently being held virtually on Zoom at 7:00 p.m. on the 3rd Friday of each of 6 months coinciding with UMBC's academic year. Proposed events for the current MES membership year are:

Date	Speaker	Topic
Oct 16	Warren Steiner	Insects Associated with Local Milkweed
Nov 20	Sam Droege	State of Wild Native Bee Populations in MD
Feb 19	Samuel Ramsey	Despicable Mites: Recent Findings in the study of <i>Tropilaelaps mercedesae</i> and <i>Varroa destructor</i>
Mar 19	Mike Raupp	Cicadas-Brood X
Apr 16	Mike Turell	What Makes a Mosquito a Good Vector
May 21	Members Presentations	

OCT 2020-SEP 2021 MES MEMBERSHIP YEAR OFFICERS

President	Frederick Paras
Vice President	Philip J. Kean
Secretary	Janet A. Lydon
Treasurer	Edgar A. Cohen, Jr.
Historian	(vacant)
Faculty Sponsors	Frank E. Hanson
Journal Editor	Eugene J. Scarpulla
E-newsletter Editors	Aditi Dubey

SUBMITTAL DEADLINES

June 2021 issue of the *Phaëton*:

Please send member news items by 11th June 2021.

Send e-newsletter drafts to Addie at aditid26@gmail.com.

September 2021 issue of *The Maryland Entomologist*:

Please send first drafts of articles and notes ASAP

Send drafts to Gene Scarpulla at ejscarp@comcast.net.

CICADA POEMS OF ANCIENT GREECE

“O, shrill-voiced insect; that with dewdrops sweet,
Inebriate, dost in the desert woodlands sing;
Perched in the spray-top with indented feet,
Thy dusky body’s echoing harp-like ring.
Come, dear cicada, chip to all the grove,
The Nymphs and Pan, a new responsive strain;
That I, in the noontide sleep, may steal from love,
Reclined beneath the dark overspreading plane”

- Meleager of Gadara, 1 BCE

“But when the sun’s bright beams fierce thirst in spire,
And shrill cicada all the woodlands tire,
Then, to deep wells and spreading waters guide,
Or oaken troughs by living rills supplied”

- Virgil’s *Georgic* III 29 BCE

“Myro, a girl, letting fall a child’s tears,
Raised this little tomb for the locust that sang in the seed-land,
And for the oak-dwelling cicada;
Implacable Hades holds their double song.”

- Anyte of Tegea, 300 BCE

“We know that you are royally blest
Cicada when, among the tree-tops,
You sip some dew and sing your song;
For every single thing is yours
That you survey among the fields
And all the things the woods produce.
The farmers’ constant company,
You damage nothing that is theirs;
Esteemed you are by every human
As the summer’s sweet-voiced prophet.
Muses love you, and Apollo too,
Who’s gifted you with high pitched song.
Old age does nothing that can wear you,
Earth’s sage and song-enamored son;
You suffer not, being flesh-and-blood-less—
A god-like creature, virtually.”

- *Anacreontea*, 1 BCE – 6 BCE