



Phaëton

The Official Newsletter of the
Maryland Entomological Society

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Meeting Announcement

The Maryland Entomological Society's 311th regular meeting will be held **Friday, 20 May 2016, at 8:00 pm, in Room 004** (one floor below the street level), **Biological Sciences Building**, University of Maryland Baltimore County (UMBC). Bring a friend, specimens, observations, or books to share. Refreshments will be provided. Presentations are scheduled to begin at **8:15 pm**.

Members Potpourri Night

Speaker: **Harold J. Harlan, Ph.D., Medical Entomologist**
Title: **"Help Yourself Avoid Mosquito-borne Zika Virus"**

Zika virus is mainly spread to humans by certain local-breeding *Aedes* mosquitoes. After a concise bit of background, self-help steps will be recommended to reduce local vector mosquito populations, as well as some simple ways to reduce or prevent their biting.

Speaker: **Richard H. (Dick) Smith, Secretary – Maryland Entomological Society**
Title: **"Developments in the Past Year on Selected Maryland Heritage Listed Butterfly Species"**

Dick Smith is a Coordinator of butterfly records for the national website Butterflies and Moths of North America (BAMONA) at <http://www.butterfliesandmoths.org/>, and he also collaborates on state surveys of listed butterfly species for the Maryland Department of Natural Resources, Wildlife and Heritage Service (WHS). Dick will summarize some of the survey findings obtained in the past year for selected WHS-listed butterfly species. This will be both a follow-up for the species presented at his talk at the May 2015 MES meeting and will include some new findings for other listed butterfly species.

Speaker: **Fred Paraskevoudakis, President – Maryland Entomological Society, Professor – Natural and Physical Sciences department, Baltimore City Community College, Baltimore, MD**
Title: **"The National Forests and Parks of Oregon"**

Abstract: Oregon has a great variation of biomes across the state, shaped in large by relatively recent geological forces, primarily volcanism. These natural areas offer stunning beauty and great biodiversity as well as a host of recreational opportunities. This photo presentation will show many of the wide variety of habitats, a sampling of the plant life, and commentary on insects which inhabit the areas.

Meet for Dinner before the Lectures

If you are interested in meeting for dinner before the lectures, you are invited to join the guest speaker and your fellow MES members at [Kibby's Restaurant and Lounge](#), "Home of Baltimore's Best Shrimp Salad Sandwich." Kibby's is located inside the Baltimore Beltway at 3450 Wilkens Avenue, Baltimore, MD 21229, just 15 minutes from UMBC. Meet at the restaurant **promptly at 6:00 p.m.**

WELCOME TO NEW MEMBERS

MES welcomes the following new members to the Society:

Humberto F. Boncristiani Odenton, MD

ANNUAL ELECTION OF MES OFFICERS

The annual election of MES officers will be held at the 20 May 2016 meeting. Nominations for officers are currently being solicited. Nominations can be made by any paid member. Officers serve for a one-year term (which is renewable). If nominees run unopposed, the election slate is voted on as whole. If there are two or more nominations for an office, that office will be voted on individually by secret ballot. Please forward nominee names to the *Phaëton* Editor at aditid26@gmail.com. Members must be present at the May meeting to vote.

Current Slate to be voted on in May:

President	Frederick Paras
Vice President	Philip J. Kean
Secretary	Richard H. Smith
Treasurer	Edgar A. Cohen, Jr.
Historian	(vacant, nominee sought)
Faculty Sponsors	Frank E. Hanson & Austin P. Platt
Journal Editor	Eugene J. Scarpulla
E-newsletter Co-Editors	Aditi Dubey & Hanna Kahl

15 APRIL 2016 MES MEETING MINUTES

The 310th general meeting of the Maryland Entomological Society was held on Friday, 15 April 2016 at UMBC and began at 8:27 p.m. with a welcome by President Fred Paras. The meeting moved immediately into the scheduled lecture which is summarized below. After this, attendees enjoyed a period of conversation and fine refreshments, and then a business meeting was convened. A summary of the short March 2016 minutes was given by the Secretary, and then the Treasurer's report was delivered showing a balance in the current General Funds of \$4586.94. There was no old business to discuss. Next, under new business, we discussed potential locations for the society annual field trip. Sites visited in Maryland in past years and the necessary travel arrangements for the more distant locations were considered, but these stirred only mild interest from those at the business meeting. Dick Smith then mentioned that the Maryland Department of Natural Resources, Wildlife & Heritage Service (WHS) had been awarded a grant, starting this year, from the U.S. Fish & Wildlife Service to establish large floral pollinator plots for insects in several of the Maryland state parks. For potential field trips, Dick said that the WHS may be interested in hosting the MES to survey the present insect populations in the vicinities of one or more of the planned pollinator plot locations. Insect surveys could then be repeated in a subsequent year after the plots had been given a chance to draw in pollinator populations. Comparison of results, before and after, would demonstrate the level of effectiveness of the plots. Members were encouraged by this proposal for a field

trip option, so Dick offered to talk to Jennifer Frye of the WLS to find if this is feasible and then, if so, to make arrangements for the surveys. The next item of new business was speakers for the Member's Potpourri May meeting. After some discussion, a final plan was reached that included a slate of three short presentations, which are those included in the Meeting Announcement in this current newsletter. Speakers were to send Gene Scarpulla titles and short abstracts of their talks by May 6. Gene announced also that after a surge in MES membership in the past 3-4 years, unfortunately about 25% of last year's membership had not yet renewed and would be receiving "lost member" letters. However, the society's funds status is in fine order currently for supporting the journal publication and society mailing costs. For displays, Phil Kean brought in one Cornell drawer showing several species of dark female birdwing butterflies (native to the Malay Archipelago) and their quite contrasting male counterparts.

Respectfully submitted, Richard H. (Dick) Smith, MES Secretary.

15 APRIL 2016 MES LECTURE

Speaker: Dr. Humberto Boncristiani, Research Associate, Department of Entomology, University of Maryland, College Park, MD.

Title: "Honey Bee Die Off from a Virology Perspective"

Dr. Boncristiani began his talk by discussing some of his Ph.D. research he conducted on human viruses at Sao Paulo University in Brazil. These were the human enteroviruses, a genus having 65 described serotypes in the family Picornaviridae and order Picornavirales. All members of order Picornavirales have positive-sense single-stranded RNA genomes. The enteroviruses are common, widespread, and transmitted from person to person via direct contact with molecules from the gastrointestinal or upper respiratory tract. Poliovirus, the prototypical enterovirus, can cause a range of illnesses from the subclinical or mild, to aseptic meningitis, or to the extreme - paralytic poliomyelitis. The non-polio enteroviruses, group A and B Coxsackieviruses, Hepatoviruses, and Echoviruses, are responsible for a wide spectrum of diseases in persons of all ages, although infection and illness occur most commonly in infants. These include encephalitis, meningitis, hepatitis A, and foot-and-mouth disease (akin to hoof-and-mouth disease in cattle).

With his father being a beekeeper in Brazil, Dr. Boncristiani learned of the Israeli Acute Paralysis Virus (IAPV), a widespread honey bee disease, also in the order Picornavirales (but in a different family, Dicistroviridae) that infects honey bees and that was shown by emerging research to play a role in Colony Collapse Disorder (CCD). His research interests subsequently shifted to honey bee viruses. Honey bee die off has been linked to a variety of growing problems and bee afflictions in our present-day environment. Aside from viral, bacterial, and fungal pathogens, honey bee die off has also had obvious connections with increasing bee hive parasites, modern pesticides, habitat destruction and conversion to floral monocultures, poor nutrition during major seasonal periods, and

shortcomings in present-day bee hive management. There is actually a wide assortment of bee viruses in the family Dicistroviridae. In addition to IAPV, these include Acute Bee Paralysis Virus (ABPV), Black Queen Cell Virus (BQCV), Sacbrood Virus (SBV), and Big Sioux River Virus (BSRV). Another virus family in the order Picornavirales is Iflaviridae. Some members of this group are Deformed Wing Virus (DWV), Kakugo Virus (KV), and Slow Bee Paralysis Virus (SBPV) which cause diseases bearing these names. Two additional viruses, Chronic Bee Paralysis Virus (CBPV) and Lake Sanai Virus (LSV), which have notably different virion (complete virus particle) structures than those of the above groups, are considered to be in new, yet-to-be-named families in the order Picornavirales.

Picornavirus infection and replication within a host cell follows a distinct multi-step process. The viral particle first binds to specific cell surface protein receptors. This causes a conformational change in the viral capsid proteins, and myristic acid is released. These acids form a pore in the cell membrane through which viral RNA is injected. Once inside the cell, the viral RNA synthesizes polyprotein that binds to cell ribosomes. Picornaviruses have an Internal Ribosome Entry Site (IRES) nucleotide sequence, a complex part of their RNA genome and analogous to that of their host cell's mRNA that is able to confuse the cellular machinery and incite its ribosomes to start translation of the virus proteins. It is also able to prevent the host cell from producing its own proteins by cleaving an important protein from the cellular mRNA and rendering it unrecognizable to subsequent cellular ribosomal attention. The virus simultaneously synthesizes polyprotein that contains all of its protein sequences. The viral RNA un-coats its (+) strand genome from which a negative-strand or a complementary template is formed. From this, more (+) strand RNA genomes are produced using an RNA-Dependent RNA polymerase. The viral genome replication process rapidly repeats in a cumulative fashion with tens of thousands of viral genomes being synthesized within an average of 8 hours. Viral capsids containing the viral genomes are then produced. For the host cell, in as little as 30 minutes after initial infection, its protein synthesis declines and shuts down. Over the next 1–2 hours as the viral proteins start their synthesis, there is a loss of margination of chromatin and homogeneity in the host cell nucleus, and the cell plasma membrane becomes permeable. In 4–6 hours the viral particles assemble. At around 8 hours, starved of protein, the host cell dies, and its membrane lyses to release the viral particles.

When a majority of specific bee organ cells are involved, bee death usually follows. As with most insects, hemocytes within bee hemolymph confer some degree of immunity to infections. However, as with human viruses, honey bee viruses are constantly mutating, and hemocytes must be generated to recognize each new viral strain. The hemocyte formation is not as versatile as is antibody development in humans. Nevertheless, honey bee immunity responses have been effective in combatting viruses in past decades. However, modern pesticides have actually ramped up the generation of

effective viral mutations, so that honey bee adaptation is more challenged. In addition, it used to be that viruses usually only entered bee tissue through the mouthparts as a result of pollen and nectar transfer. The prevalence however in current times of Varroa mites (*Varroa destructor* Anderson and Trueman), which carry bee viruses and feed on bee hemolymph from a variety of tissue sites on immature and adult bees, has sped up the viral mutation rate even more. In addition, viral development and spread is further facilitated by its ability to replicate within mite tissue without killing the mite. Bee immunities are not able to adapt as quickly as the viral clades evolve and the new strains are spread.

Dr. Boncristiani next discussed his research into the molecular interactions between viruses and honey bees during his former position at the USDA-ARS Bee Research Laboratory. An experimental protocol was developed by injecting IAPV into honey bee pupae reared ex-situ under laboratory conditions. The infected pupae developed pronounced but variable patterns of disease. Symptoms varied from complete cessation of development with no visual evidence of disease to rapid darkening of a part or the entire body. Among the results, Dr. Boncristiani's team observed considerable differences in IAPV titer of the lowest concentration that still infects cells, which suggested significant variation in resistance to IAPV among and possibly within honey bee colonies. Thus, selective breeding for virus resistance should be possible. Additionally, gene expression analyses of three separate experiments suggested IAPV disruption of transcriptional homeostasis of several fundamental cellular functions, including an up-regulation of the ribosomal biogenesis pathway. These results provided first insights into the mechanisms of IAPV pathogenicity. They also mirrored a transcriptional survey of honey bees afflicted with Colony Collapse Disorder and thus supported the hypothesis that viruses play a critical role in declining honey bee health. Other research used spectrometry-based quantitative proteomics to compare IAPV-infected and healthy honey bee pupae. Results involving ribosomal translation and proteasome pathways will be useful in identifying host proteins required for viral infection. Additional research papers involved (1) analysis of the DWV replication process in honey bees and *V. destructor* for possible future development of control measures and (2) providing the first evidence that *V. destructor* is IAPV replication-competent and capable of vectoring IAPV in honeybees. Further results indicated that the mite-virus association could possibly reduce host immunity and therefore promote elevated levels of virus replication. In Dr. Boncristiani's current position at University of Maryland, he has begun a study of the "Black Muscle Bee" disease, which colors thoracic muscle black. Comparing affected and unaffected bees in the same apiary, he found that the "black bees" had an abnormally high level of the enzyme prophenyloxidase (PPO) and that the melanin formation process was induced by a serine protease cascade that utilizes this enzyme. These bees were screened for other viruses and it was discovered that the Deformed Wing Virus was more prevalent in the affected colonies. Additionally, the genetic diversity of

these DWV strains was much higher in the colonies containing the black bees. Dr. Boncristiani is currently collaborating with Dr. Gaetana Lanzi (University of Brescia, Italy), an expert on DWV, to identify relationships on the molecular level between Black Muscle Bee and DWV.

YOUTH INSECT SUMMER CAMP

The University of Maryland [Entomology Department](#) will be running a **Youth "Bug Camp" this summer!** Camp counselors are trained and accredited by the 4-H Youth Development program and the staff to camper ratio will be approximately 1:10. The camp is non-residential and will be held daily from 8:30am – 4:00pm on the UMD College Park campus. After-care will be available until 5:00pm for an additional charge. Parents/guardians are responsible for providing transportation and lunch for the campers. Snacks will be provided by the camp. The total enrollment fee is \$295, including a \$50 deposit upon registration. The deposit fee is non-refundable. The enrollment fee covers all materials for the camp.

Session 1: July 18 - 22, ages 7 - 9

Session 2: July 25 - 29, ages 10 – 12

There are still spots available in either session, but the deadline for registration is approaching fast: **June 15.**

Additional information can be found

at: <http://entomology.umd.edu/insect-camp.html>

HOPEWELL FURNACE NATIONAL HISTORIC SITE AND FRENCH CREEK STATE PARK BIOBLITZ

Fri-Sat, 20-21 May, 2016

Insect expertise needed!

Hopewell Furnace National Historic Site and French Creek State Park (Pennsylvania) are working together to host an all taxa BioBlitz on May 20-21, 2016. This event is not open to the general public, they are seeking taxa experts to help identify and catalog as many species as possible as part of a biodiversity inventory initiative in National Parks.

More information can be found at:

<http://www.nature.nps.gov/biology/biodiversity/bioblitz2016.cfm>

WASHINGTON D.C. BIOBLITZ AND BIODIVERSITY FESTIVAL

In the decade leading up to the National Park Service centennial, National Geographic and the National Park Service have collaborated on a BioBlitz in a different national park each year. In 2016, to celebrate the centennial, over 250 BioBlitzes are happening across the country and throughout the year. The cornerstone Bioblitz will take place in the Washington D.C. region. You can sign up for a free inventory by choosing a park, the day, time you're available, and what species interests you. Advanced online registration is required to ensure a spot on an inventory team. The two-day Biodiversity Festival will be held on the National Mall at Constitution Gardens and will feature hands-on science exhibits, food and art, as well as family-friendly entertainment and activities.

Deadline for online registration: 19 May, 2016

More information can be found at:

<http://nationalgeographic.org/projects/bioblitz/washington-dc-2016>

PHILADELPHIA CBP INTERCEPTS NEW PEST ON COSTA RICAN PINEAPPLES

A 5 May 2016 United States Customs and Border Protection (CBP) news release reports that a scarab beetle that U.S. Customs and Border Protection (CBP) agriculture specialists intercepted in a shipment of Costa Rican pineapples is the first recorded find of this species in Philadelphia. CBP discovered the beetle March 11 in a container of 1,500 cases of fresh pineapples. CBP secured the pineapple shipment for fumigation, and submitted the pest specimen to the local USDA entomologist for identification. The entomologist identified the species as *Aspidolea singularis* of the Scarabaeidae family, a species known to occur in Panama, Nicaragua, Colombia, and Costa Rica, and advised CBP that the insect is a pest new to the Philadelphia area. The national pest identification database confirmed this claim on Monday. According to the USDA, beetles of the family Scarabaeidae pose a significant threat to the agriculture industry as some cause significant damage to plants when feeding thereby reducing crop yield.

The full news release can be accessed at:

<https://www.cbp.gov/newsroom/local-media-release/2016-05-05-000000/philadelphia-cbp-intercepts-new-pest-costa-rican>



Central Maryland Beekeepers Association

Supporting and promoting beekeepers and the viability of honeybees in central Maryland

MEMBERS MEETINGS

Tue, 7 June 2016; 7:00 p.m.

Karen Rennich discusses "BIP: News From the Front Lines", analysis on the latest results from the [Bee Informed Partnership](#).

Tue, 5 July 2016; 7:00 p.m.

Frank Linton talks about his book "The Observation Hive" and what can be learned from having a window on the world of the hive (tentative).

Members meetings are held at the Oregon Ridge Nature Center, 13555 Beaver Dam Road, Cockeysville, Maryland. Additional information can be found at:

<http://www.centralmarylandbees.org/meetings-3/membership-meeting-schedule/>

ENTOMOLOGICAL SOCIETY OF WASHINGTON PUBLIC MEETING

Thu, 2 June 2016; 7:00 p.m.

National Museum of Natural History, Smithsonian Institution, Washington, DC. (If you do not have after hours access to the NMNH, please plan to meet at the Constitution Avenue lobby at 6:30 p.m., and we will arrange escort to Room WG-33.)

<http://entsocwash.org/>

NATIONAL POLLINATOR WEEK 2016

20-26 June 2016

Pollinator Week was initiated and is managed by the [Pollinator Partnership](#).

Nine years ago the United States Senate's unanimous approval and designation of a week in June as "National Pollinator Week" marked a necessary step toward addressing the urgent issue of declining pollinator populations. Pollinator Week has now grown to be an international celebration of the valuable ecosystem services provided by bees, birds, butterflies, bats, and beetles. The growing concern for pollinators is a sign of progress, but it is vital that we continue to maximize our collective effort. The United States Secretary of Agriculture signs the proclamation every year. Additional information can be found at:

http://www.pollinator.org/pollinator_week_2015.htm.

2016 DRAGONFLY SOCIETY OF THE AMERICAS ANNUAL MEETING

15-17 July 2016
Provo, Utah

The 2016 Annual Meeting of the Dragonfly Society of the Americas (DSA) will be held in Provo, Utah on 15-17 July 2016. The indoor conference sessions will be held at Monte L. Beam Museum at Brigham Young University on Saturday, 16 July 2016, with local field trips on Friday and Sunday. Pre-meeting field trips will include an Odonate Bioblitz at Zion National Park on 13 July and a trip to Lytle Ranch Preserve on 14 July. The post-meeting trip will be to the Fish Springs National Wildlife Refuge on July 18. More information can be found at: <https://sites.google.com/a/udel.edu/dragonfly-society-of-the-americas---2016-meeting/home>

NATIONAL MOTH WEEK 2016
Invites Citizen Scientists to Celebrate Moths

23-31 JULY 2016

Registration is in full swing for the fifth annual National Moth Week 2016 23-31 July, a global citizen-science project that celebrates the beauty, diversity and ecological importance of moths. Events will take place worldwide and anyone can participate in National Moth Week. More information can be found at: <http://nationalmothweek.org/>.

2015/2016 PROPOSED MES EVENT SCHEDULE

Regular MES lecture/meetings are held at the University of Maryland Baltimore County (UMBC) on the 3rd Friday of each of 6 months coinciding with UMBC's academic year. Proposed events for the upcoming MES membership year are:

Date	Speaker	Topic
Oct 16	David Rivers	Forensic Entomology
Nov 20	James Brighton	Maryland Biodiversity Project
Feb 19	Jon Gelhaus	Aquatic Insects of Mongolia
Mar 18	Kirsten Traynor	Lecture
Apr 15	Humberto Boncristiani	Lecture
May 20	Members' & Students' Presentations & Elections	

TBD Survey/Field Trip
Sep 18 Crab Feast/Meet-&-Greet at J. KING'S restaurant

OCT 2015 – SEP 2016 MES MEMBERSHIP YEAR OFFICERS

President	Frederick Paras
Vice President	Philip J. Kean
Secretary	Richard H. Smith
Treasurer	Edgar A. Cohen, Jr.
Historian	(vacant)
Faculty Sponsors	Frank E. Hanson & Austin P. Platt

SUBMITTAL DEADLINES

MAY 2016 issue of the *Phaëton*:

Please send member news items by June 10, 2016 to aditid26@gmail.com.

SEP 2016 issue of *The Maryland Entomologist*:

Please send first drafts of articles and notes by 1 April 2016 to ejscarp@comcast.net.

A TALE OF HORROR¹

In Nature there are creatures that always do appeal
By looks and seeming innocence that our feelings steal.
One of these, the firefly, enchants us with its light.
A swarm of them across a field captivates the sight.

What adds to its attractiveness is the knowledge that
It ignites its fire not just for us to look at.
Love has caused the female to twinkle o'er the nighttime scene.
She lights up to call him in; he lights, and they convene.

But that light that signals love brings terror and alarm
When a sly impersonator seeks to effect harm.
The genus *Photuris* mimics flashes of *Photinus*,
So that she can devour males of that hapless genus.

This femme fatale is hideous; she has long spidery legs.
A pointed face and grim hunched back completes this flashing
plague.
She grasps her victim with her little praying mantis claws
And proceeds to feast upon her meal with ghastly jaws.

What makes this Mata Hari insect so uniquely grim
Is that it specializes and does not dine on a whim.
There is but one thing on its menu: the charming little bug
That lights up to make our summer nights so warm and snug.

¹from *Nature Observations*, A Book of Poems by Henry Meurer
Ditman
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