

The Maine Entomologist

A forum for students, professionals and amateurs
in the Pine Tree State

The Official Newsletter of the Maine Entomological Society

Vol. 20, No. 3

August, 2016



PRESIDENT'S CORNER



by Charlene Donahue

I have been thinking about websites that encourage people to submit photos and observations of insects and all the rest of the forms of life on earth. It seems that there are lots of them out there. This is good – lots of people are engaged. And it's bad – information is spread out and it is hard to find everything for a particular taxon or location. A few of the sites that I know are used in Maine are Bugguide.net, mothsandbutterflies.org, inaturalist.org, noahproject.org, mothphotographersgroup.org, and Vitalsigns.org. This is just off the top of my head, without even researching anything.

At the Acadia National Park Lepidoptera Bioblitz in July, people collected records of Leps both by physically capturing them and using a camera and the iNaturalist website. Carrie Seltzer from the Washington, D. C., National Geographic office headed up the photography side and Michael Sabourin from Vermont was the lead taxonomist for the specimen collecting. These two collecting methods will need to be melded together to get complete documentation of what was found over the weekend.

Again, more people were engaged, but more thought needs to go into how to pull the different methods of collection together for the long-term record. Although photos are valuable for large and easily identified species, they do not always work on small species, more obscure (or rare) ones, groups that have closely related species or when people unfamiliar with the characteristics that need to be viewed for identification are taking the photos. Photos also do not leave a physical specimen to go back to in the future for genetic work or reworking identifications as the understanding of the taxonomy changes over time (as if THAT would ever happen!).

This is definitely something to work on, going into the future.



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Luna moth (*Actias luna*) is always a treat to find, and was one of the special species encountered at this year's entomological BioBlitz at Acadia National Park (see p. 4).
Photo by Becca MacDonald, Sault College, Bugwood.org

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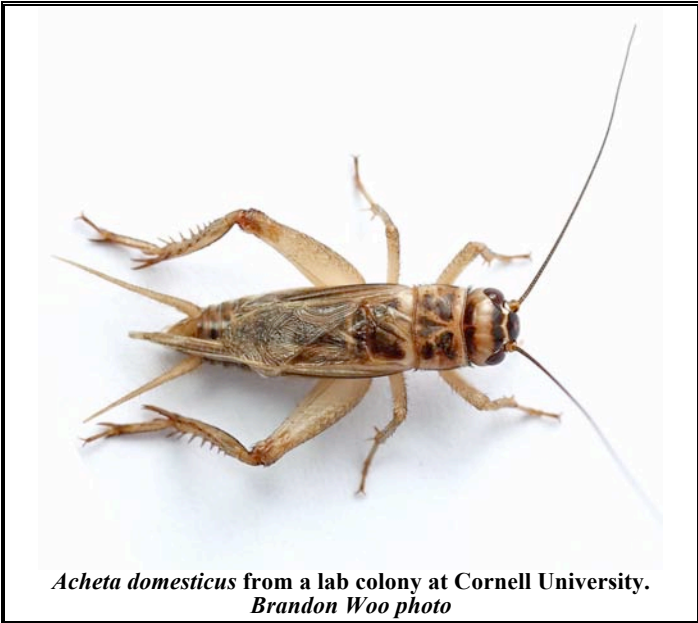
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T-Shirt and Sweatshirt Prices to Increase Slightly

Due to increases in our costs, particularly for shipping, the charges for some M.E.S. T-shirts and sweatshirts have had to be raised. The new price schedule will be on the web site and on the downloadable order form. Sorry 'bout that!

The Field Crickets (Orthoptera: Gryllidae: Gryllinae) of Maine: An overview with identification notes
 by Brandon Woo

Most of us are familiar with field crickets. They are the large black crickets that we typically associate with the word “cricket”; they enter our garages in late summer and fall, and they fill the fields with their resounding chirping. These animals comprise a subfamily (Gryllinae) of the cricket family, and they are extremely diverse, with about 20 species in 7 genera in North America alone. Many of these species are in the southeast and western U.S., where there is much confusion between lots of very closely related species. In Maine, however, we only have to worry about 4 species, in 2 genera.



Acheta domesticus from a lab colony at Cornell University.
 Brandon Woo photo

The most easy-to-find field cricket in Maine can be found year-round – all you have to do is visit a pet store! The House Cricket, *Acheta domesticus* (Linnaeus), the species sold as food for reptile and amphibian pets, is a species thought to have been originally native to the Middle East, but is now cosmopolitan due to the pet trade. It often escapes and forms wild populations, but they don’t seem to do this too often in Maine, probably because of the cold climate. They can be distinguished from native field crickets by the colors of the head, which is marked with alternating tan and dark brown transverse bars. (Note that some pet stores may sell a related species, *Gryllodes sigillatus*, due to the fact that two viruses have recently decimated house cricket populations; however, *Acheta* remains the more often-sold species).

The other field crickets in Maine all belong to the genus *Gryllus*. This is the largest and most confusing genus of field crickets in the U.S; many species are morphologically almost identical, and identification must rely on song, habitat, time of adult activity, and DNA. Nevertheless, the two most common species in Maine are usually fairly easy to distinguish. They are the Spring Field Cricket, *Gryllus veletis* (Alexander and Bigelow), and the Fall Field Cricket, *Gryllus pennsylvanicus* Burmeister. Both of these species are large, jet black crickets with an almost identical calling song: a loud chirp. However, *G. veletis* overwinters as late instar nymphs and calls from May to early July, whereas *G. pennsylvanicus* overwinters as eggs and calls from late July to whenever frost kills them off in late fall. Thus, knowing the date of collection is vitally important for identification of these crickets.

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Gryllus veletis from Kennebunk Plains.



Probable hybrid male *Gryllus pennsylvanicus/firmus* from Parson's Beach in Kennebunk.

Brandon Woo photos.

Aside from their seasonality, they may seem identical, but I and other sources have noted that the Spring Field Cricket tends to be more localized. The males often dig burrows, are aggressive towards other males, and are extremely difficult to capture. Fall Field Crickets, on the other hand, are found in almost any patch of grass, and are typically much easier to catch, occurring simply in tussocks of grass, among leaves, and under rocks and boards.

Unfortunately, this easy identification-by-collection-date scenario is less useful in coastal southern Maine. Here you could run into the Sand Field Cricket, *Gryllus firmus* Scudder. This animal emerges at the same time of year as the Fall Field Cricket, but typically has very light, sandy colored tegmina (front wings), longer ovipositors, and lives in sandy areas. The Sand Field Cricket has been documented as far north as Massachusetts, but apparently nobody has looked for them farther up the coast. I have come across populations on beaches in Kennebunk that exhibit very light-colored

(continued on next page)

(Maine Field Crickets, cont.)

tegmina. These might be pure *firmus*, or perhaps hybrids of *firmus* and *pennsylvanicus*, since the two species have been known to hybridize. Either way, it makes identifying field crickets here a bit more difficult (At least the Spring Field Cricket is still a pretty easy bet!). More work is needed to determine the real status of these crickets, and whether they are really separate species or not.

Sources :

BugGuide.net: <http://bugguide.net/node/view/15740>

Singing Insects of North America:

<http://entnemdept.ufl.edu/walker/buzz/>
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Nothing Blitz Memories
by Dana Michaud

Arriving at Schoodic early Friday afternoon, the hot, humid weather predicted a good "nothing" night if rain didn't materialize, as potential showers had been predicted. Parking in the main parking lot by the water tower, Dave Bourque and I crossed paths with Abe Miller-Rushing and Seth Benz, who were headed to the nearby lab to get things set up.

The arrival of Peter Darling, Kathy Claerr and Charlene Donahue at the lab was opportune, as we had to use our collective experience to get the lab set up quickly. Up went tables with chairs, microscopes with lights, lot tags with pencils, a book table, and a spread of collecting equipment, including nets and killing jars.

As Charlene set 6:00 for departure time for Mount Desert Island, we loaded our gear into the truck. Charlene, Peter, Dave and I were in one vehicle, and Shaun Aylward followed us in his own, as we knew where we were going (though less so on the way back!). Our arrival at Sieur de Monts Springs parking lot, and the subsequent arrival of Park Ranger Steve Marion and a few more "moth-ers," including Carol Muth and Hilary Morin, with black lights and mercury vapor lams and sheets, meant making quick decisions on where to place equipment before heading to the other two sites, Duck Brook and park headquarters, which also needed to be set up as dark was setting in.

Carol and Hilary stayed behind to watch the two black lights and one mercury vapor lamp. One of Shaun's bait traps was also set up in the garden. Off we headed to Duck Brook, where a black light trap was set up near the water pumping station and a mercury vapor lamp was set up across the opposite end of the bridge. Then we left to set up the two remaining blacklights at the park headquarters, with one of Shaun's bait traps, leaving Shaun himself at Duck Brook.

Once done at park headquarters, where five of us were staying that night, we returned to Sieur de Monts to relieve Carol and Hilary, as they both had to leave. Peter went back to Duck Brook to help Shaun collect, and the lights at Sieur de Monts were alive with insects. Moths and caddisflies dominated, with wasps, flies and beetles rounding off the remainder. We continued to collect, filling killing jars with noctuids, tiger moths, underwings, and occasional sphinx moths, as well as many smaller moths. As the night progressed, Steve returned and joined in the "nothing."

Once collecting ceased at Sieur de Monts, down came all the equipment and off we went to Duck Brook to dismantle those setups. As all who stayed to collect were also staying overnight on the island, we headed to Park Headquarters to take down the two remaining blacklights, and then hit the sack.

Saturday morning came early, with a breakfast of coffee, Danishes, bananas, pop-tarts and conversation. One of the things that had baffled us at Sieur de Monts was three young

birds and an adult in the woods, conversing in an unusual "language." The young three were "talking" to one another by uttering short squeaks ... revealing where they were to the few nearby onlookers. Then the adult broke its silence with a usual barred owl adult call, and the mystery of their identity was solved.

We loaded up and left, with Shaun following in his own vehicle. After a few wrong turns and fortunately not losing Shaun in the process, we arrived at the lab, unloaded everything, registered for the Saturday Blitz, and returned to the lab to both process our catch from the night before and discuss plans with all involved, as Kathy Claerr had stayed behind with Abe and Seth to help get things organized.

Our invaluable programmer and lot assigner Anne had arrived and began her work, to get lot numbers entered and processing moving forward. With her years of experience, she's both highly effective and efficient in this role, being familiar with and dedicated to the long hours of work needed to keep the Blitz going, while keeping up with collectors, and clearing up questions and irregularities.

The various lots that had already been collected were being processed by many dedicated pinners. Anything too small to pin with 00 pins was placed in a glassine envelope with a lot number. Rather than collect in the afternoon (a short excursion to two locations yielded very little), I opted to process and pin specimens, as collectors were numerous.

Many individuals and groups came in to help pin. A team from Earthwatch and another environmental group of about 15 people helped process what others were catching. The labelled moths and butterflies began to accumulate, filling many boxes.

Michael Sabourin and fellow moth-er JoAnne Russo were identifying specimens at a healthy pace. As night progressed, much was done as far as processing was concerned. Shaun had mounted many sphinx moths, as well as underwings and a beautifully blue-green midget female luna moth – the smallest I have ever seen. The remaining night light accumulations from Saturday would show up on Sunday morning.

Peter Darling and I went up to the ranger station to examine a blacklight that had been set up there, and collected for a while. A pretty Rose Hooktip, *Oreta rosea*, flew in, and although it is a common species I collected it, along with a number of other Noctuids. I knew no specimen of that species had been brought in yet – although a few would subsequently turn up in some of the other light traps.

By 2:00 in the morning, everyone had to get some sleep, and I decided a bunkbed sounded just fine. Morning at 6:00 came early, and after a shower to wake up and some fresh coffee, I headed back to the lab. I knew much more processing and identification work was coming.

As Sunday noon, arrived, collecting ceased, but processing continued. Steve Johnson, another knowledgeable moth-er, brought in his catch and settled in to help identify material. With processing ongoing all afternoon, the many boxes of unknowns slowly began shifting to the boxes of identified specimens. With all the butterflies named, the moth identifications became the #1 priority, as whatever was named was staying behind.

A mid-afternoon discussion with Abe, Seth, Charlene and Kathy took place, to review and critique this year's Blitz. Meanwhile, fellow M.E.S. members Peter and Shaun said their goodbyes, as did the others who weren't staying overnight on Sunday. For me, after the meeting it was back to the lab to continue processing.

Kathy, Charlene, Dave and I decided to go eat at the Wrinkled Pickle for supper. While dining (the food was very

(continued on next page)

(Blitz memories, cont.)

good!), the mothing event was being aired on the TV in the bar and restaurant, much to our surprise. [See the **Web Links** story on p. 10 for a link to this segment.]

We then returned to the Schoodic lab to continue work and identifications, handing all our identifications to Mike so he could review them. We organized all the identified materials into boxes, and the unidentified materials filled four sorting boxes, which Mike would take with him in the morning. As midnight rolled around, the bunk bed called – it had been a long day.

Monday morning, we packed things into the car and returned to the lab to help Charlene and Kathy load up the truck and say our goodbyes. A good time was had by all, and we reconfirmed that one can never know too much about insects, as they are as varied as the people who study and enjoy them.

When Melissa Devon had brought in two very small (4-5 mm long) moths, each in a plastic container, to be identified, I realized then how little I truly knew about the small moths. They turned out to be a bronze alder moth, *Argyresthia goedartella*, and the smaller but equally beautiful yellow nutsedge moth, *Diploschizia impigritella*. **The Peterson Field Guide to Moths of Northeastern North America**, by Beadle and Leckie, had opened my eyes to many I've never seen. Now, however, I'll be looking for them!

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Lep BioBlitz Yields Over 250 species
by Michael Sabourin

The 14th annual BioBlitz at Acadia National Park was held on July 22-24th.

The 24 hour blitz, as in the past, was based at the park's Schoodic Education and Research Center (SERC); many thanks to the SERC Institute for helping make this annual event a reality. Partner organizations included the Maine Entomological Society, Maine Forest Service, University of New Hampshire and University of Maine. An estimated 60-plus individuals contributed their time, observations, specimens, equipment, etc., to help collect and identify Lepidoptera, the focus of this year's blitz. The field and laboratory time of all participants totaled over 555 hours of effort.

Michael Sabourin was the lead taxonomist, with ample assistance from Steve Johnson (PA), JoAnne Russo (VT), as well as familiar MES participants, park staff, Earthwatch students, and others. In addition, the event had press and TV coverage. Carrie Seltzer of National Geographic was present to provide a demonstration on how to use iNaturalist ([see http://www.inaturalist.org/](http://www.inaturalist.org/)). This was the second year that the bioblitz incorporated iNaturalists as part of the event.

The iNaturalist project is 2016 National Parks Bioblitz, Acadia Lepidoptera Bioblitz. This was also the first year in which a recent addition to the park, Schoodic Woods on the Schoodic Peninsula, was surveyed. As of July 31st, the species list stood at 256 species so far identified, with additional unidentified material, iNaturalists observations, and other sight records still to be added.

A wide array of Lepidoptera was collected, including a number of micro-moths; some particular highlights were specimens of *Satyroides eurydice* (the Eyed Brown butterfly), *Harrisimemna trisigna* (Harris's three-spot moth), *Acronicta noctivaga* (the Night-Wandering Dagger Moth), *Sympistis dentata* (the Toothed Aphaereta Moth), *Schinia florida* (the Primrose Moth), *Catocala ilia* (the Underwing Moth), *Calyptra canadensis* (the Canadian Owlet Moth), *Cochylis oenotherana* (the Primrose Cochylid Moth), *Catastega timidella* (the Oak Trumpet Skeletonizer), *Gelechia lynceella*, *Dichomeris picrocarpa* (the Black-edged Carbatina Moth), *Zale horrida* (the Horrid Zale Moth), *Sphinx kalmiae* (the Laurel Sphinx Moth), and *Actias luna* (the Luna Moth).



Charlene Donahue demonstrated proper net technique for the new Blitz participants. (Michael Sabourin photo)



The Eyed Brown butterfly (*Satyroides eurydice*) was one of the highlights of the Blitz records from this year.

Photo by David Cappaert, Bugwood.org

Data entry: To compare the results of this year's BioBlitz at Acadia with previous Lepidopteran Blitzes ~

June 2004 - 157 spp. (Schoodic Peninsula only)
July 2011 - 337 spp. (Schoodic Peninsula only)
only 34 spp. in common from both 2004 & 2011!

July 2016 - 256 spp. from Mount Desert Island & Schoodic, plus additional material not yet identified.

'Bugs: Then and Now' at Maine Wildlife Park

On July 15th, M.E.S. member Jon Wallace set up a 'bug show' with live arthropods, fossil arthropods from the dawn of time to the Ice Age, as well as some insectivorous plants, at the Maine Wildlife Park in Gray, which is an arm of the Department of Inland Fisheries and Wildlife (IF&W). He also had a nice assortment of photographs showing Maine relatives for the live animals he had on display.

Jon reports that over 100 people came by to check out his specimens and displays, and he gave out copies of the M.E.S. brochure to a number of interested people.

For more information on coming presentations in this program, visit the IF&W website at

<http://www.maine.gov/ifw/education/wildlifepark/events.htm> .

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What the Future May Hold for Northeastern Spingidae: My experiences at a NatureServe

Moth Workshop

by Brandon Woo

On January 22, 2016, I attended a NatureServe workshop at Yale University in Connecticut, titled *The Population Status of Northeastern Hawk Moths*. The purposes of this workshop were to "review a preliminary compilation of long term observations of 27 species of hawk moths that occur in New England and nearby New York and New Jersey to determine patterns in changes of abundance, identify additional data sources for records of target species, and assess the feasibility of publishing the results". The coordinators of the workshop had originally contacted MES president Charlene Donahue while searching for Maine participants. Charlene was unable to make it that day, but recommended me as a Maine representative since only one other person from Maine, Phillip DeMaynadier, was going to be there. I thought I might be a bit out of my league, being that the workshop participants were mostly professionals who had been studying Lepidoptera for much of their lives, and I was simply an undergrad whose interests lie more with the Orthoptera.

My worries proved to be unfounded. The meeting was very informal and all of the participants were extremely friendly, welcoming, and of course passionate about insects. It was fascinating to meet experts whose names I recognized from books I had read, including Drs. David Wagner, Dale Schweitzer, and Larry Gall, and hear them explain about and discuss the sphingid moth subjects of the workshop.

After introductions, the workshop mainly took the form of a discussion of each species being considered. After initial collection of data from several museum and university insect collections and some private collections, NatureServe had created maps and graphs tracking the apparent abundance of these species over time based on those specimen records. With each species, there was discussion as to whether these trends were likely to be real or not. A few were quite obvious. Everyone agreed, for example, that Azalea Sphinx populations were increasing and that the graph's upward trend was likely real. However, this was the exception; for most of the species, there was a whole host of other factors at play.

Collector bias played a large role in several of the diurnal species; some of the graphs for those showed an apparent downward trend. The problem here is that since these species fly during the day and do not come to lights or bait, it is harder to get an easy sampling of their numbers. The Hummingbird Clearwing in particular was an interesting case. Although the graph showed a downward trend, everyone agreed that this is an extremely common animal. Here, we have a diurnal animal, which presents one problem, but also

the fact that it is so common means that collectors often pass it up in favor of more uncommon species, making it less well represented in collections.

Latin Name	Common Name(s)
<i>Manduca sexta</i>	Carolina Sphinx/Tomato Hornworm
<i>Manduca quinquemaculatus</i>	Five-spotted Hawk Moth/Tobacco Hornworm
<i>Manduca jasminearum</i>	Ash Sphinx
<i>Dolba hyloeus</i>	Pawpaw Sphinx
<i>Paratrea plebeja</i>	Plebeian Sphinx/Trumpet Vine Sphinx
<i>Lintneria eremitus</i>	Hermit Sphinx
<i>Sphinx chersis</i>	Great Ash Sphinx
<i>Sphinx canadensis</i>	Canadian Sphinx
<i>Sphinx kalmiae</i>	Fawn Sphinx/Laurel Sphinx
<i>Sphinx gordius</i>	Apple Sphinx
<i>Sphinx poecila</i>	Northern Apple Sphinx
<i>Sphinx luscitiosa</i>	Clemens' Sphinx
<i>Sphinx drupiferarum</i>	Wild Cherry Sphinx
<i>Hemaris thysbe</i>	Hummingbird Clearwing
<i>Hemaris gracilis</i>	Graceful Clearwing
<i>Hemaris diffinis</i>	Snowberry Clearwing
<i>Eumorpha pandorus</i>	Pandorus Sphinx
<i>Eumorpha achemon</i>	Achemon Sphinx
<i>Sphecodina abbottii</i>	Abbott's Sphinx
<i>Deidamia inscriptum</i>	Lettered Sphinx
<i>Amphion floridensis</i>	Nessus Sphinx
<i>Proserpinus flavofasciata</i>	Yellow-banded Day Sphinx
<i>Darapsa versicolor</i>	Hydrangea Sphinx
<i>Darapsa myron</i>	Virginia Creeper Sphinx
<i>Darapsa choerilus</i>	Azalea Sphinx
<i>Hyles gallii</i>	Galium Sphinx
<i>Hyles lineata</i>	White-lined Sphinx

Table 1: List of 27 Spingid Species Studied



Darapsa myron, the Virginia Creeper Sphinx.

Photo by Brandon Woo

(continued on next page)



Hemaris diffinis, the Snowberry Clearwing.
Photo by Brandon Woo

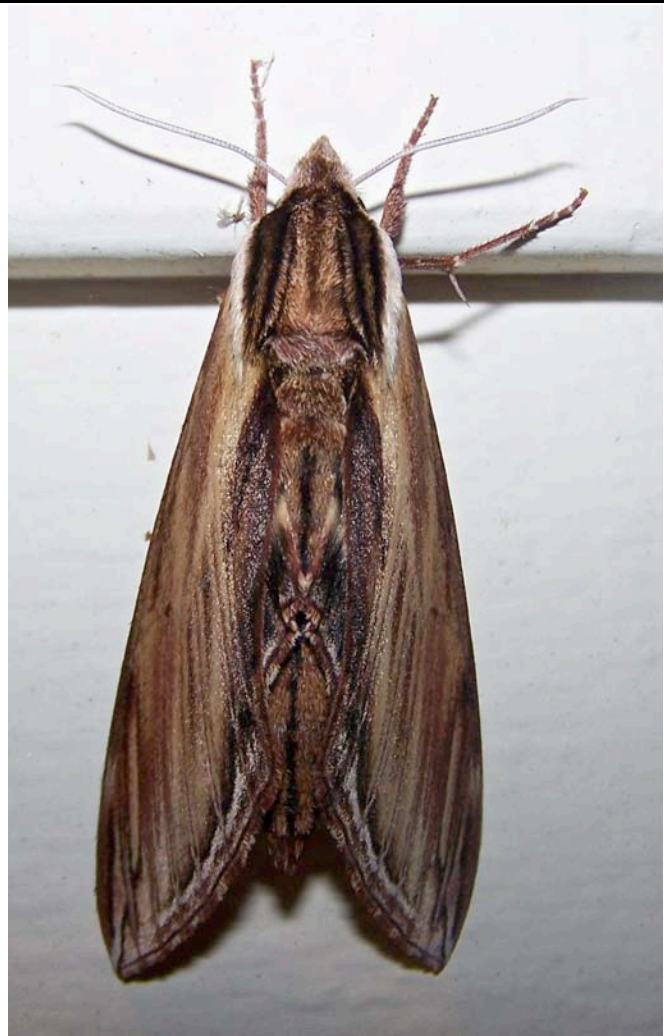
Other factors had more to do with the biology of the moths. Some species are tied to specific habitats and hostplants, and can be quite locally common in those places but absent elsewhere. The Plebeian Sphinx is a specialist on a vine called Trumpet Creeper, which naturally ranges only about as far north as New Jersey. Thus, the moth used to be just an occasional stray in our area. However, this has changed recently as Trumpet Creeper has started to gain use as a horticultural plant, and the sphinx has followed it up into Connecticut, becoming more and more common there. On the opposite end of the spectrum we have the Five-spotted Hawk Moth which likes tobacco, a plant that was once cultivated across much of Connecticut but is pretty much absent there now. Here we have a real decline due to changed agricultural practices. Another example is the Yellow-banded Day Sphinx, a northern species that feeds on Fireweed. This plant can only grow in recently burned areas, and kills itself off after about 3 years by using all the nutrients in the soil. Thus, it requires periodic fires to sweep through an area and provide new habitat. Fire suppression practices may be harming the moth by eliminating its hostplant.

Yet another factor to be considered was whether the moth was migratory or not. The White-lined Sphinx appeared to be decreasing in the northeast due to loss of past agricultural open areas where it lived; however, this is an extremely migratory animal, possibly the world's most common sphingid, and thus there isn't too much of a worry about the populations of this species as a whole.

Amongst the confusion, several main ideas emerged. A key point was that the mere presence or absence of a certain species (e.g. I'm still getting it in my light traps!) is not as helpful as long-term data on year to year and decade to decade trends. However, it was agreed that sphingid populations as a whole appear to be decreasing. We discussed myriad possible causes of this decline, including invasive parasitoids and predators, habitat change and fragmentation, succession, climate change, light pollution, and changing agricultural practices.

Many northeastern sphingids are also specialists on Ash trees (*Fraxinus spp.*), and the arrival of Emerald Ash Borer may have a serious impact on those species. We then discussed some alternate ways to look at the data. Clearly a different approach is needed with the diurnal moth species, and it would also be interesting to compare data from the islands of Martha's Vineyard and Nantucket, where populations of both sphingids and saturniids appear to be stable, to mainland Cape Cod. Looking at the differences

between species with feeding adults and species with non-feeding adults was another area of study thought to be rich with possibility. Finally, we discussed how to move forward. Follow up to procure more data for the project is a must, and it would be good to focus on gaps in our present data. The eventual hope is to publish in the *Journal of Insect Conservation*, and then to get the declining sphingid species added to wildlife action plans or listed as species of greatest concern. A possible selling point for people who may not see the value in moth conservation is that a decline in large moth populations would likely cause declines in bat or perhaps bird populations as well.



Sphinx kalmiae, the Fawn or Laurel Sphinx.
(This species was also documented at this year's Blitz at Acadia.)
Photo by Brandon Woo

I came away from the workshop with an overload of fascinating new (to me) information on a group of insects which I enjoy seeing but whose biology I never really thought too deeply about, and a new appreciation of the range of factors which determine whether a moth species is declining or increasing. "Rarity" is very relative, and various biases can throw off data by huge margins. It really takes the combination of the data, the knowledge of moth population biology, and personal experience to be able to make any sorts of conclusions in these cases.

Anyone with more interest in this project or the status of sphingid moths in the northeast should feel free to contact me or Charlene Donahue.

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Pollinator Studies: Bumblebees Are Not Expanding Their Ranges Northwards – BUT the pollinator news isn't all bad!
by Bob Nelson

A recent study⁽¹⁾ looking at the response of North American and European bumblebees to climate warming turned up some disturbing news: despite range contractions at the southern margin by as much as 300 km, northern ranges are not apparently expanding at all. This is producing a "compressed" range for many species, making them potentially more vulnerable to warming climates.

The study was conducted utilizing a database of nearly 425,000 records of 67 species of bumblebees, spanning the last 110 years.

However, another more recent study⁽²⁾ had a surprising conclusion: non-bees may not be getting all the credit they deserve as pollinators. This study synthesized the results of 39 field studies on five continents, looking at the contribution of non-bees (flies, beetles, moths, butterflies, ants and other insects) to pollination of agricultural crops. They found that non-bees were less efficient than bees in pollination efforts per visit, but made more flower visits than did the bees, thus perhaps being responsible for an equal level of pollination. In fact, in the subset of studies that actually looked at fruit set, they found that non-bee visits increased the effective fruit setting of various crops, independent of the number of bee visits to the plants.

The ultimate conclusion was that non-bees may be far more important as pollinators than previously recognized, and that non-bee pollinators may give us some level of insurance against any decline in bees caused by climate change or other factors.

If you'd like copies of either of these papers, please e-mail Bob Nelson (BeetleBob2003@gmail.com).

References:

- (1) Kerr, J. T., and 13 others, 2015: Climate change impacts on bumblebees converge across continents. *Science*, v. 349, issue 6244, p. 177-180
- (2) Rader, Romina, and 51 others, 2016: Non-bee insects are important contributors to global crop pollination. *Proceedings of the National Academy of Sciences*, v. 113, no. 1, p. 146-151.

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Notes on *Pseudopomala brachyptera* (Scudder), an uncommon toothpick grasshopper in Maine
by Brandon Woo

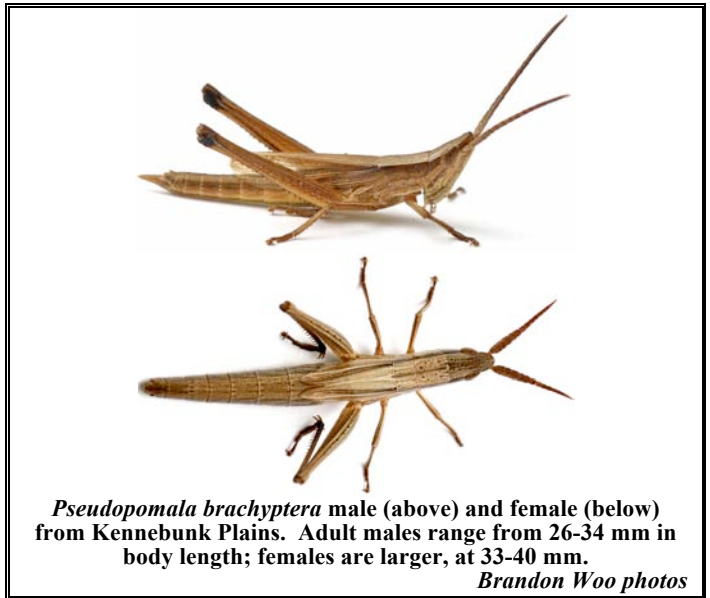
On July 9, 2013, I was buggin' at the Kennebunk Plains, a unique coastal sandplain grassland habitat in southern Maine, when I heard an unfamiliar insect call. This surprised me because I thought I knew the majority of the calls of singing Orthoptera in Maine. What's more, there are only about 5 species of Orthoptera that generally call in early July here, and this certainly wasn't one of them.

I immediately set to tracking down the singer. When I finally found him after about 20 minutes of crawling through the grass, I was shocked. My mystery singer was a beautifully elongated grasshopper, colored light brown just like the dried bunchgrass all around. I was familiar with so-called "toothpick grasshoppers" and figured that this had to be one of those, but I had no clue that any species ranged this far north.

I hurried home and checked the books. Marshall's *Insects: Their Natural History and Diversity* provided me with an answer: *Pseudopomala brachyptera*, the Short-winged Toothpick Grasshopper. I photographed the animal and posted it on BugGuide, where David Ferguson quickly confirmed my tentative identification of the species, also known as the Bunchgrass Grasshopper. Further research led

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me to discover that this is an uncommon species associated with native bunchgrasses, the likes of which abound at the Kennebunk Plains. A description of its call, "...a series of ten to twenty individual leg strokes which produce sibilant *sh-sh-sh* sounds of increasing intensity..." perfectly matched what I had initially heard, although I was unable to find any actual recordings.



Pseudopomala brachyptera male (above) and female (below) from Kennebunk Plains. Adult males range from 26-34 mm in body length; females are larger, at 33-40 mm.

Brandon Woo photos

I have since encountered the species only twice, both times also at the Plains. In 2014, I managed to locate both males and females. Both sexes have distinctive ensiform (swordlike) antennae, much different than the typical filiform (threadlike) antennae on most common grasshoppers in Maine. The adults like to sidle around the grass stalks when disturbed, although they are not quite thin enough to not be noticed by an observant entomologist! This June, I collected a small nymph who at first looked very similar to other grasshopper nymphs, but closer inspection revealed the ensiform antennae, still very tiny.

My experience with this species reinforces my belief that we should pay attention to the insect singers. *Pseudopomala* typically sits low enough in the grass that they are tough to catch with a sweep net, and their camouflage is so great that I never would have known they were there if I wasn't listening for different songs. Moral of the story: listen and you will find!

References:

- Marshall, S. A. (2006). *Insects: Their Natural History And Diversity: With a Photographic Guide to Insects of Eastern North America*. Buffalo, NY: Firefly Books Ltd.; 720 pp.
 - Otte, D. (1981). *The North American Grasshoppers, volume 1, Acrididae: Gomphocerinae and Acridinae*. Cambridge, MA: Harvard University Press; 275 pp.
- Pseudopomala brachyptera* at <http://idtools.org/id/grasshoppers/factsheet.php?name=13213>

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Insect Data On-Line
by Gail Everett

In my winters in Salt Lake City, I have been lucky enough to obtain my dream job, doing data entry in the Entomology Department of the Natural History Museum of Utah. NHMU's insect collection is over 250,000 strong, with 30,000 specimens entered in the database so far. The program we use is called SCAN, and the great thing about it is that it's available on-line to anyone for research or just curiosity.

(continued on next page)

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(Insect data on-line, cont.)

Here's how you can use it! First, go to the home page, <http://symbiota4.acis.ufl.edu/scan/portal/>. The fastest way to get into the data is to click on Search/Collections. On this page, click on the Next button to the right of the page. If you want to look at only Maine specimens, fill out the Locality Criteria with Country as United States and State/Province as Maine, then click Search. You will wait for a few seconds and then see a list of every record in every collection that has a location of Maine, United States. Note that if the country was entered as USA, U.S.A., U.S., United States of America, etc., you would have to enter those forms separately; SCAN is very good, but not quite as wizard-like as Windows.

At the top of each record is the scientific name. If you click on this, you'll go to a list of all specimens with that name. On the other hand, if you click on Full Record Details at the bottom of each record, you'll see the complete data entry for that particular specimen.

Some of the entries on the list of search results may have a photo beside them. With these, you can click on the photo and go to the full specimen record, including any further photos included. NMHU is currently beginning to photograph its database, but the number of photos is still small.

On the Search Results page you'll notice three tabs: Species List, Occurrence Records, and Maps. The page opens to Occurrence Records, which shows the text for each specimen. If you click on the Maps tab, you'll arrive at a page that lets you "Display coordinates in Google map." Clicking on this link shows you a map of all the specimens on the list, with the ability to keep clicking on each instance until you arrive at each individual specimen record. Note that these are only the records that have been georeferenced (meaning the coordinates were entered on a map) and the number of items shown may not be the complete number of items in the database.

There are many other ways you can investigate the collections. Perhaps the most fun is to browse through the Image Library, which is under the Images tab on the SCAN home page. Keep in mind that this will only be entries with images, which are a very small percentage of the entire database.

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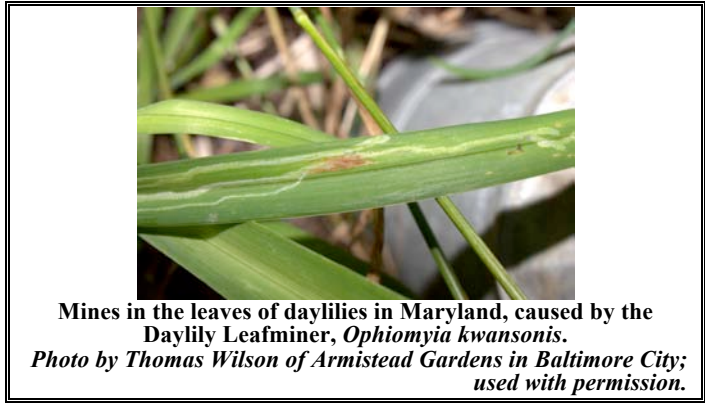
WHAT is Mining My Daylily Leaves?
by Bob Nelson

If you've seen mysterious leaf-mining activity in your daylilies (like the examples shown in the photo below), you may be hosting the Daylily Leafminer, *Ophiomyia kwansonis* Sasakawa (1961), an Asian fly species only recently recognized in the United States, according to an article published in 2014⁽¹⁾.

The mines in lilies were first recognized in outdoor gardens in Maryland, and at a daylily show in Texas, in 2008. The species has now been detected in 29 states in the U.S., including Massachusetts and New Hampshire, and may well be here. The 2014 article cited a BugGuide photo (corrected as <http://bugguide.net/node/view/84826> – the actual citation in the article was in error) from Kennebunk taken in 2006 that appears to be of this species, but a definitive ID could not be made without viewing the underside of the head (despite the label on this specimen at BugGuide). Unfortunately, no specimens were collected in 2006 that would confirm the identity.

If you'd like a pdf copy of this paper, which includes color photos, please e-mail Bob Nelson (BeetleBob2003@gmail.com). Should you have photos of your own that you're quite certain are of the mines of this species, both Karen Coluzzi (Karen.L.Coluzzi@maine.gov)

and the senior author of the paper (gaye.williams@maryland.gov) would very much like to see them!



Mines in the leaves of daylilies in Maryland, caused by the Daylily Leafminer, *Ophiomyia kwansonis*.
Photo by Thomas Wilson of Armistead Gardens in Baltimore City; used with permission.

Thanks to Frank Guarneri for bringing this to my attention, and to Gaye Williams for sharing her knowledge of the species.

Reference:

- (1) Williams, G. L., and G. J. Steck, 2014: *Ophiomyia kwansonis* Sasakawa (Diptera: Agromyzidae), the Daylily Leafminer, an Asian Species Recently Identified in the Continental United States. *Proceedings of the Entomological Society of Washington*, v. 116, no. 4, pp. 421-428.

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New SEPTEMBER Field Day in Bowdoin

On September 17, at 10:00 a.m., join us for a field day in Bowdoin, in Sagadahoc County. Our bucolic setting offers a variety of habitats, from field to forest, upland to wetland, gardens and stream. Beetle Bob reports there are few carabid records for Sagadahoc County, and NONE for Bowdoin. Let's remedy this egregious oversight!

Come hunt the countryside knowing that full comfort and accommodations await at my house. We'll have lunch (bring your own; beverages provided) on the deck or lawn. Expect all types of blood-seeking arthropods. The coordinator is Kathy Claerr; we'll watch for you to arrive if you let me know you're coming. Either call me at 666-3551 or send an e-mail to kclaerr1@comcast.net.

Directions from Route 201: (north of Topsham, about 8 miles) Turn left onto Route 125 South towards Bowdoin Center and Lisbon Falls. Proceed about 0.4 miles to a right turn onto Lewis Hill Road. Measure 1 mile. My house is 214 Lewis Hill Road, on the left side.

Directions from I-295: From I-295, take Exit 37 for State Routes 125 & 138. Southbound, turn right at the end of the offramp; northbound, turn left and go under the highway. Just west of the interchange, turn right on the Pond Road (Route 125) to Bowdoin Center, just past the Park and Ride lot. Follow this to where it will come to a stop at U.S. Route 201. Turn right, then make a left onto Route 125. Proceed about 0.4 miles to a right turn onto Lewis Hill Road. Measure 1 mile. My house is 214 Lewis Hill Road, on the left side.

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Armyworms
by Charlene Donaue

I received an email from a former UMaine Entomology graduate student who is now the UMass Extension Entomology Specialist. She had gotten a request from an agriculture professor, who had gotten it from a former student who is now a fisheries specialist in California.

He wrote in part: "I was recently reading a 1920 publication entitled *A Down-East Yankee from the District of Maine* by Windsor Daggett, which has a section on Thomas

(continued on next page)
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(Army worms, cont.)

Shaw of Standish, Maine. Thomas Shaw was a well-known poet following the Revolutionary War. He was also the brother of a direct ancestor of mine as I am originally from Standish, Maine. Included in this article about Thomas Shaw was a poem he wrote, called *An Army of Worms*.

Apparently about 1766, a vast army of insects laid waste to croplands in southern Maine. His description of the insects leaving the corn fields and pastures bare makes me think of locusts, although I never heard of a locust infestation in Maine in modern times. However he refers to the insects as worms.

My question is: What insect is likely being referred to in this poem about southern Maine in 1766?

Here is the poem:

A DOWN-EAST YANKEE
An Army of Worms

A great army of worms, I see,
Come from east and westward flee,
That eat the fruits from off the land
That in the way of them did stand.
That corn and grass before them fell
And everything they loved well,
That all behind them became
Like to a stubble burnt by flame.
Our pastures did become quite bare,
Our cattle, they were hungry there—
Our crops cut off before our eyes
That I did see with sad surprise.
God's army then was all so bold
To do as their commander told,
And did God's work all faithfully
Until at once they all did die.
Or were all taken to their place
From whence they came on their fierce race,
And whence they went we cannot tell,
Except those that in ditches fell.
For we dug ditches for their grave
That some provision we might save,
Where thousands died, and was no more
To eat our food as here to fore.
The time of worms never forgit
And always do remember it,
All you that hereafter be,
Remember, I did that sight see.

Somewhere about 1766 as nigh as I can reckon, who saw them."

The "army of worms" was most certainly armyworms (*Pseudaletia unipuncta* (Haworth)) that attack hay fields and lawns to this day. I checked in the Maine Forest Service Insect & Disease peat log (that electronically goes back to 1994) and found a handful of records every six years. I checked with Clay Kirby at the Extension Pest Management Office and he said he gets calls most years from somewhere in the State "Think hot spots", he said.

I find it interesting how: 1) someone can ask a question and it gets passed along through the Entomology community until it lands on someone's desk with an answer; 2) how a pest problem has records going back 250 years – or more; and 3) that a poem was written about it.

For more information on armyworms in Maine go to <https://extension.umaine.edu/ipm/ipddl/publications/5040e/>

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What does a Butterfly Weigh?
(And: What Does it Mean?)

by **Monica Russo**

In an old copy of *Analog: Science Fiction/Science Fact* from October, 1966, I found a half-page advertisement for Statham Instruments, Inc., in Los Angeles. The ad was entitled: "How Much Does a Butterfly Weigh After Breakfast?"

The text revealed that using a Statham precision weighing scale (called Statham's Universal Transducing Cell), the butterfly specimen weighed ".009 gram more than before his meal of nectar." The accompanying photo looks like an eastern tiger swallowtail, but the black-and-white reproduction in the magazine is not very good.

Has anyone since been weighing insects before and after they eat? What can we do with that kind of information? It's yet another aspect of entomological investigations that could be a surprising addition to ecological studies!

* * * * *

Agenda for Annual Meeting on October 1st

Bob and Nettie Nelson (BeetleBob2003@yahoo.com or 426-9629) invite all M.E.S. members and potential members to their home at Rock Ridge, for the annual M.E.S. business meeting, **on Saturday, October 1st. Please** do let us know if you're planning to attend to help with our planning! Signs will be posted at the ends of the Clinton off-ramps from I-95 to guide you to the meeting. Please contact Bob if you need directions from another route.

The grounds are open for collecting, as usual – and sometimes yield surprising new discoveries. Our perennial sunflowers should be in full bloom at this time, and are usually a haven for late-season Lepidoptera, Hymenoptera, Diptera and other nectar and pollen feeders.

We'll have oven-roasted chicken and vegan chili available, and invite everyone to bring something else to add to the pot-luck luncheon that precedes the business meeting.

A special event this year will be a **drawing**. Some lucky attending M.E.S. member will take home a *free* Bee Hotel!



Come as early as 10:00 a.m. for collecting. Lunch will begin around noon, and the business meeting will start at 1:30. Dana Michaud will be in attendance, so this'll also be a good opportunity to renew your membership for 2017.

Minutes of the 2015 Meeting were published in the November, 2015, issue of the newsletter, on p. 2-3.

AGENDA

- Minutes of the 2015 annual meeting**
- Treasurer's report**
- Election of MES officers**
- Scholarship fund**
- Activities for 2017**
- 2017 Bioblitz**
- Outreach & Facebook**

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Bug Maine-ia at the Maine State Museum

Tuesday, September 13, 2016

9:00 a.m. - 3:00 p.m.

Free Admission All Day for Human and Insect Visitors!

It is that time of year, Bug Maine-ia at the Maine State Museum is just around the corner and the staff at the Maine State Museum's education division is in full planning mode.

You may have heard of this insect extravaganza, which is the museum's largest annual event of the year, but if you have never experienced it, you really should plan on coming this year. This year we are expecting over 1,000 people and the museum will be buzzing with energy! Hundreds of school children, both public and homeschooled, come with great eagerness to learn all about insects, and on September 13th all the students will be entomologists in training!

Contributing to the heightened enthusiasm for insects on this day, are the many Maine entomologists who each year fill the museum with fascinating insect displays and hands-on opportunities, allowing the public up-close and personal interaction with the bugs. Certainly we could not achieve such a successful event without the dedication and enthusiasm of all the entomologists and educators who participate. We extend a big thank-you to all those dedicated presenters who join us year after year.



Marj and Dick Dearborn, and Dana Michaud, are mainstays among the presenters at Bug Maine-ia every year, and always draw a crowd.

Joanna Torow photo

We are always on the hunt for new presenters and volunteers, so if you or someone you know has a great idea for an insect display or activity, or if you would like to come and help out with an existing activity, please contact Joanna Torow at the Museum at 287-6608 or e-mail her at Joanna.torow@maine.gov. We'd love to have you!

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Tech Tip: Odonate Perches

by Richard Hildreth

I have noticed that some insects like to perch on elevated sites in open areas. In my front field in Holliston, Massachusetts, Odonates (especially skimmers) were often seen perched on tall plants such as thistles. I put out some plastic garden stakes as perches, and this experiment was a great success. On most clear, warm days, there is a dragonfly perched on every pole.

The poles I use are green plastic garden stakes which are available at any garden shop. These poles are ~3/8" in diameter (cylinder-shaped, with little bumps). They come in several lengths; I use the 5-foot ones. The end is pointed, and with a hammer you can easily drive them a short ways into the ground. In Holliston, I have a big array of these poles all over my front field.

Odonates I've seen using these perches include: the Four-Spotted Skimmer (*Libellula quadrimaculata*), the Painted Skimmer (*Libellula semifasciata*), the Twelve-Spotted Skimmer (*Libellula pulchella*), the Widow Skimmer (*Libellula luctuosa*), the Spangled Skimmer (*Libellula cyanea*), the Slaty Skimmer (*Libellula incesta*), and the Blkue Dasher (*Pachydiplax longipennis*). Occasional users include various spiketails, darners and emeralds.

Butterflies seen using these perches include the Silver-spotted Skipper (*Epargyreus clarus*) and Juvenal's Duskywing (*Erynnis juvenalis*).

I have also seen Eastern Phoebes sometimes using them; this species hunts from elevated perches.

Try putting out some of these perches yourself in an open area, and see what comes!

Web Links of Possible Interest

Charlene Donahue has come across a number of Internet web links that members may find of interest, which can be accessed through the [tinyurl](http://tinyurl.com) compact URLs shown.

The first is a nice piece by John Krinjak of WABI-TV Channel 5 News out of Bangor, on this year's Blitz: <http://tinyurl.com/gsj59v7>. This was broadcast in the 6:00 news on Sunday, July 24th.

Two articles by Bangor Daily News columnist and reporter Aislinn Sarnacki reveal some of her own fascination with moths: <http://tinyurl.com/z64zteq> and <http://tinyurl.com/h9nvz89>.

A somewhat more ominous piece, unfortunately, reports on the results of a recent study showing a loss not just of diversity, but of total insect populations, in many parts of the world: <http://tinyurl.com/jl4mlcg>.

An informational presentation at the Bowdoinham Town Hall on Browntail Moth on the Maine Coast can be found at <http://tinyurl.com/hcw5jyt>. *Note:* this link wouldn't work for me in my office, but it could be because I don't have a recently updated web browser.

And though it's not in Maine, a fascinating video of a swimming mantid, that lept into a stream to do so in Alabama, is something to see: <http://tinyurl.com/gsyn6nz>.

- B.N.

COMING M.E.S. EVENTS in 2016

(see the February newsletter for details on most trips!)

- 13 September: Bug Maine-ia, Maine State Museum (contact person: Joanna Torow (Joanna.Torow@Maine.gov))
- 17 September Field Day in Bowdoinham (contact person: Kathy Claerr)
- 1 October M.E.S. Annual Meeting, Clinton (contact person: Bob Nelson: - new e-mail address at - BeetleBob2003@gmail.com)

(See <http://www.colby.edu/MES/> for more detailed information; new information on any event will be posted as it is received.)

The Maine Entomologist is the quarterly newsletter of the Maine Entomological Society. Dues are \$10 per year. Checks should be made payable to the M.E.S. and sent to Mr. Dana Michaud, M.E.S. Treasurer, at 3 Halde Street, Waterville, ME 04901-6317. Our records show your dues are paid through the year printed on your mailing label; please contact Dana if you believe this is in error. Individual articles reflect the opinions of the authors and mention of any specific commercial products or businesses should not be construed as formal endorsement by the M.E.S. of any such product or business.