# The Maine Entomologist

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

*The Official Newsletter of the Maine Entomological Society*

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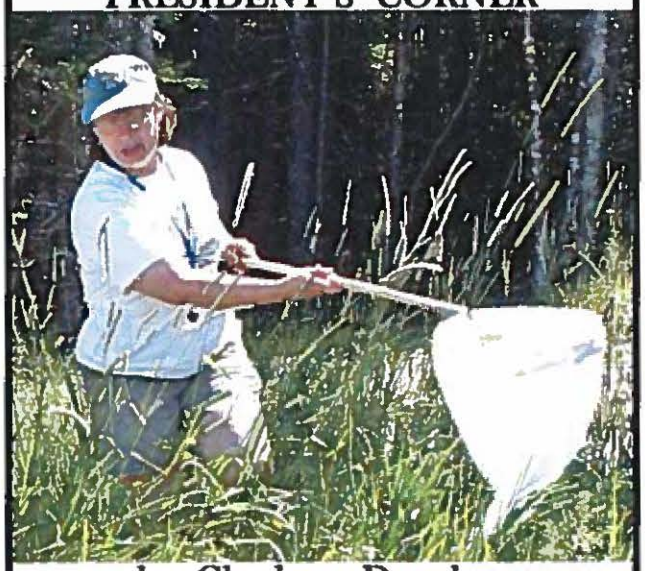
## PRESIDENT'S CORNER



**by Charlene Donahue**

People are asking "What is happening with the Bioblitz at Acadia?"

The Maine Entomological Society has partnered with Acadia National Park (ANP) and other entities (Maine Forest Service (MFS), University of New Hampshire, University of Maine, College of the Atlantic) to run insect bioblitzes at ANP for thirteen years. Back in 2003 when Dave Manski, ANP and Dick Dearborn, MFS, both now retired, first cooked up the idea of the blitzes, there was a huge amount of time and effort that went in to figuring how to run a blitz in a very busy and expensive area with no funding.

The first years were run on a shoestring with MES bankrolling some of the costs, ANP covering housing and participants paying for food and a small registration fee to help defray costs. The MFS and UMaine provided all of the laboratory and collecting supplies and equipment. As the Schoodic Education and Research Center came into being, the costs began to rise as they upgraded the facilities. The Park began to subsidize the rising room and board costs and purchased supplies and equipment.

Then the Park began to cut back on its monetary support as cost rose, and those expenses were passed on to participants. The price to attend the blitz and provide expertise before very long more than tripled, to the point where MES members began to question if their time and experience were valued by the Park and if it was worth the cost in money and hours – even if it IS fun. A meeting was convened between the Park and involved partners to review the blitzes and consider a path forward. The Park felt there was not enough value to be gained by continuing blitzes in their current form – although as you can see from the report in this issue on the 2016 blitz that significant numbers of new finds continued to be made. The park also did not have the resources to subsidize the blitz, nor were they interested in pursuing grants for support. The partners felt that participants were not willing to pay hundreds of dollars to share their expertise.

So the blitzes at Acadia National Park have come to an end. We parted on amicable terms and the Park is still interested in having Entomological projects happen at ANP. Various ideas were considered, but nothing is in the works at this time. Logistics is the biggest problem; there is no place to stay near MDI for a reasonable cost, traffic is heavy and it's far enough away for most of us that travelling back and forth is not an option. A couple projects that were discussed were working on the insect portion of the collection or processing by-catch from a research project if one comes up – these are things that could be done in the off-season.

Plan on heading to the new Katahdin Woods and Waters Monument August 19th though, and help find what lives there. Prices are more reasonable and it is a beautiful part of Maine.

**Table of contents**

- **Insect Happening in Orono (p. 2)**
- **Bumblebee Training Workshop (May 6th) (p. 2)**
- **Do Neonicotinoids Affect Bumblebees? (p. 3)**
- **2016 Acadia Lep Bioblitz Results – WOW! (p. 5)**
- **The beautiful *Pisaurina mira* in Maine (p. 7)**
- **Rice Worms in Maine (p. 7)**
- **River Point Collecting Day – May 20th (p. 8)**
- **Moth night in Camden – June 24th (p. 9)**
- **Orchid Weevils (p. 9)**
- **Mayfield Plantation Field Day June 10th (p. 10)**
- **Sunkhaze Meadows Field Day July 15th (p. 10)**
- **Welcome the New MESO! (p. 11)**
- **Membership Survey Results (p. 11)**
- **Insect Photography Workshop July 29 (p. 11)**
- **Maine Maple and Moth Day A Sweet Treat! (P. 11)**
- **Entomologists March for Science (p. 12)**
- **Get your M.E.S. baseball caps! (P. 12)**
- **100 Years of Canadian Entomology (p. 12)**

## A Happening in Orono
**Saturday, May 6th**

MES will team with the Friends of Edith Patch again this year to present **"Insect Adventures"** at the Orono Public Library on Saturday, May 6, 2017, from 10:00 a.m. - noon.

Come witness unbridled entomological enthusiasm. No kidding! Last year, both kids and parents alike had a blast chasing down insects. We really need more MES folks there to chat with adults about collecting and MES. Or, you can just come and hang out with the kids and collect bugs!

**This budding young entomologist at the 2016 Insect Adventure event apparently wasn't sure what to do next with the specimen he'd caught – as Cassie Gibbs looks on with amusement.**

After the Library event, we can go for lunch at Pat's Pizza if you like. Afterwards we'll head to *Braeside*, Patch's historic home for a sight-seeing/collecting trip.

For more information, call or email Kathy Claerr @ 666-3551 or kclaerr1@comcast.net.

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## Upcoming 2017 Training Workshops for the *Maine Bumble Bee Atlas*

The Maine Department of Inland Fisheries & Wildlife (MDIFW) is seeking volunteers to assist in the ***Maine Bumble Bee Atlas*** (MBBA), a five-year (2015-2019) statewide survey designed to document the diversity, distribution and abundance of Maine's native bumble bee species. Coordinated in partnership with the University of Maine at Orono and Farmington, MBBA is modeled after MDIFW's highly successful *Maine Butterfly Survey* and *Maine Damselfly and Dragonfly Survey*, which marshaled the efforts of volunteer citizen scientists from across Maine to increase our knowledge on the status of the state's insect fauna. Participants do not need to have prior experience in surveying for bees – just an interest and willingness to learn and contribute data to the project.

To recruit volunteers for the survey, MDIFW is sponsoring two training workshops during each year of the project. Attendees will be trained in a standardized survey and data collection protocol, and project staff will give presentations on bumble bee life history, ecology, and conservation. The 2017 workshops are scheduled for **Saturday, May 6th** at the **University of Maine in Orono** and **Saturday, June 10th** at the **Houlton High School**. The workshops are free, you only need to attend one, and lunch is provided.

***Bombus affinis*, the rusty-patched bumble bee, recently added to the national Endangered Species list.**
***Photo by Johanna James-Heinz*, from**
**http://xerces.org/rusty-patched-bumble-bee/**

Workshop space is limited, open to adults only, and **pre-registration is required. Before you register, please read the "Frequently Asked Questions"** below for an explanation of what volunteering for MBBA entails. If it still sounds like fun, go to

**http://mainebumblebeeatlas.umf.maine.edu/announcements/**

to find links to the pre-registration form, and then return it to the MBBA Project Coordinator at **beth.swartz@maine.gov**. A confirmation email will be sent once your form has been processed.

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**Participating in the Maine Bumble Bee Atlas Compilation**

Before registering for a training workshop, we'd like you to know what volunteering for MBBA entails. Participants should be committed to contributing data to the project. You will be expected to choose one or more sites to survey throughout the field season.

A survey site can be any location in Maine that provides habitat for bumble bees, such as your backyard, a town park, or old field. For each site visit, you will fill out a form that

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records data about location, habitat, and the bumble bees you observe.

To document your observations, you must provide vouchers – either collected specimens or close-up photographs. MBBA provides the equipment you need to collect and preserve your bumble bee specimens. Carefully recording and managing your data is very important.

**Frequently Asked Questions:**

**Do I have to participate all 5 years of the project?** No. We'd love it if you did, but it's not required.

**How much time is involved in participating?** You may spend as much time surveying as you wish and on your own schedule. A minimum estimate would be ~1 hour every couple weeks from spring to fall; plus a couple hours more to complete data forms and process vouchers.

**Do I need to be able to identify bumble bees species?** No. MBBA has a bumble bee expert on staff who confirms all species identifications.

**Will I have to kill bees?** MBBA requires vouchers to positively identify your observations. The preferred voucher is a collected specimen, where a bee is captured and humanely euthanized, typically by freezing. We also accept close-up photos, although they are not always reliable.

**Do I need to be an expert photographer or have expensive camera equipment to submit photo vouchers?** No. Any camera that takes close-up photos in focus is acceptable. MBBA provides tips for photographing bees and equipment to help you get good photos.

**Do bumble bees sting?** Yes. Females can sting repeatedly. Males cannot sting. However, bumble bees are relatively docile and rarely sting except when mishandled or in defense of their nest. MBBA provides training on how to capture and handle bumble bees safely.

**May children participate in the project?** Typically we do not register children for training workshops. However, we do encourage families to participate together.

**How is data submitted?** Data forms and photos can be submitted via email, DropBox, postal service, or hand delivery. Specimens need to be hand delivered to one of our statewide drop-off locations.

**Do I need to be in good physical shape to participate?** No. As long as you are able to get outside and collect or photograph bees at your own pace, you can contribute.

**Where can I get more information?** Visit our website (**http://mainebumblebeeatlas.umf.maine.edu/**) or Facebook page (**https://www.facebook.com/MaineBumblebeeAtlas**).

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## Do neonicotinoids affect bumble bee immunity? The answer may be complicated

**David R. Angelini, Colby College**

Bumblebees are important pollinators in natural and agricultural settings, but these charismatic insects are experiencing population declines in Maine and around the world (Cameron et al. 2011; Grixti et al. 2009). The American bumble bee *Bombus pensylvanicus* once ranged across most of North America east of the Rocky Mountains. Today it is largely gone from the Northeast, persisting in the Gulf Coast and Southwest. One iconic New England bumble bee, *B. terricola*, the yellow-banded bumble bee, has declined by as much as 31% over its historical range and is especially rare in more populated and lower elevation areas. The rusty-patch bumblebee *B. affinis* garnered public attention this year as it was the first bumble bee added to the US endangered species list (Fish and Wildlife Service 2017).

Locally, initiatives such as the Maine Bumble Bee Atlas (http://mainebumblebeeatlas.umf.maine.edu/) and the Xerces Society's Bumble Bee Watch (http://bumblebeewatch.org/) are attempting to document species abundance in our area to better understand the extent of distribution changes. Hopefully, by better understanding the problem and by identifying the causes, we can pursue the most effective conservation solutions.

So why are pollinator populations in decline? Several factors have been raised as potential explanations (Goulson et al. 2015). Habitat loss is a major influence on some bumble bee species, as human activity alters the landscape in ways that may favor some species over others (Goulson et al. 2008). Off-target effects of pesticides, in agricultural and home use have also been offered as an explanation. Neonicotinoids are often highlighted among pesticides. These compounds were developed as safer alternatives to organophosphate or carbamate insecticides, which can also affect vertebrates.

However, neonicotinoids accumulate in plant tissues and pollen, creating the possibility for chronic low-level exposure of non-pest insects to these neurotoxic compounds. Several studies have shown negative effects on foraging behavior and colony growth for bumble bees and honeybees under low neonicotinoid exposures (Henry et al. 2012; Whitehorn et al. 2012). Another potential cause of bumble bee declines is the introduction of disease (Graystock et al. 2013), a topic about which we have very little historical information.

One particular concern has been that the combined effects of neonicotinoids and disease may be synergistic, leading to greater damage to population numbers than with either factor alone (Alaux et al. 2010; Goulson et al. 2015). Experiments directly examining interactions of neonicotinoid exposure and pathogens on bee health have produced slightly conflicting results, with some studies supporting greater disease susceptibility after neonicotinoid exposure (Alaux et al. 2010) and others being more equivocal (Brandt et al. 2016). If neonicotinoids increase the susceptibility of bumble bees to disease, how exactly might this happen, at the physiological level? Recently, my lab group at Colby College tested one hypothesis (Simmons & Angelini 2017).

Insect immunity involves the production of small proteins called antimicrobial peptides (AMPs), that bind to potential pathogens and prevent them from infecting or replicating in the host insect. We reasoned that a simple, direct mechanism by which neonicotinoid exposure might put bumble bees at a greater risk of disease would be to decrease the production of these AMPs.

To test this hypothesis, Will Simmons and I raised several colonies of commercially available *Bombus impatiens*, the common eastern bumblebee. We kept the

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colonies in screen houses in order to control foraging without the stress of enclosing bees in laboratory colonies. We divided replicate colonies into several treatments, varying their exposure to a neonicotinoid that has been used commonly in home gardens and in agriculture, imidacloprid (Environmental Protection Agency 2016). Exposures were all sub-lethal and administered continuously over a 30 day period in both artificial pollen and nectar that were provided to the foragers. The concentrations were chosen to span a range that has been shown to appear in the pollen of some imidacloprid-treated crops, such as canola (Bonmatin et al. 2003) and squash (Dively & Kamel 2012).

***Bombus impatiens* in Waterville (Photo by Dave Angelini)**

We also included a vehicle control treatment where bees received only pollen and nectar containing no neonicotinoid. We collected foragers from each colony roughly every week for 4 weeks, in order to span the time for egg-to-forager development of the brood. From these bees we extracted messenger RNAs, which are an intermediate in the process of expressing a protein from the information in a gene. A method called quantitative polymerase chain reaction (qPCR) was used to measure how much each of four AMPs was expressed. Another gene, unrelated to immunity, served as a reference to normalize overall gene expression in different samples.

Our expectation was that if neonicotinoids decreased immune function in bumblebees by affecting AMPs, as we guessed initially, then we should expect to see a decrease in AMP expression with increasing concentrations of imidacloprid and over time in the treated groups, as the pesticide took effect. What we found was quite different and surprising.

For three of the four AMPs we examined, their expression increased significantly with imidacloprid exposure and with time (Simmons & Angelini 2017). This effect was precisely the opposite of our prediction. Our conclusion was that neonicotinoid exposure affected the expression of antimicrobial peptides in the bumble bee, but by causing them to produce more of the pathogen-fighting proteins than bees without the pesticide exposure. In other regards, the bees appeared similar across the treatment groups, with no differences in colony growth. However, while we didn't rigorously examine behavior, foragers in our highest exposure treatment did seem to behave differently, spending more time on the sides of the enclosure and less time going to and from colonies and food courses.

Clearly, the answer to whether neonicotinoids affect bumble bee immunity is more complicated than we our simple hypothesis. The results of our study lead to many more questions: How does neonicotinoid exposure affect rates of infection? To date, no study has directly examined the disease susceptibility of bumble bees following neonicotinoid exposure, although similar experiments in honeybees have found mixed evidence of a synergistic effect (Alaux et al. 2010; Brandt et al. 2016). Are AMPs representative of other genes involved in insect immunity? One possibility is that while AMP expression might rise, other genes might change in their expression in ways that compromise the bee's immunity. We are currently exploring this possibility in collaboration with researchers at the University of Massachusetts.

What does our study mean for bumble bees in the wild? While species such as *B. terricola* and *B. affinis* have declined, the species in our study, *B. impatiens*, has remained stable or perhaps even expanded its range (Cameron et al. 2011). These species differences could be ecological in nature, but it is possible that neonicotinoids have fundamentally different effects on the species we see in decline.

More work will be necessary, especially with diverse bumble bees and other pollinators, in order to fully understand the degree to which neonicotinoids might affect insect immunity and other aspects of physiology. New methods, such as more efficient high-throughput RNA sequencing (Moll et al. 2014) and quantitative chemical analysis (Chen et al. 2014) may make broader surveys of exposure and gene expression possible for wild pollinators.

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## 2016 Acadia Lepidoptera BioBlitz Summary

**by Michael Sabourin**

The 14th annual BioBlitz at Acadia National Park was held on July 22-24th, 2016. An estimated 70 individuals contributed their time, observations, specimens, equipment, etc., to help collect and identify Lepidoptera, the focus of this year's blitz. Michael Sabourin was the lead taxonomist, with ample assistance from Steve Johnson (PA) and JoAnn Russo (VT) as well as familiar Maine Entomological Society (MES) participants, park staff, Earthwatch volunteers, and the public. The Bioblitz also received press and TV coverage.

Lepidoptera were collected both by physically capturing them and by using a camera and the iNaturalist website. Carrie Seltzer was present from National Geographic to demonstrate how to use iNaturalist. This was the first year the Bioblitz incorporated iNaturalist records. The iNaturalist Project is 2016 National Parks Bioblitz, Acadia Lepidoptera Bioblitz.

This was also the first year the Bioblitz included sampling for Lepidoptera on Mt. Desert Island as well as a new site surveyed, Schoodic Woods, in Acadia National Park.

The Bioblitz, as in the past, was based at Acadia NP'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. The field and laboratory time of all participants totaled over 555 hours of effort.

Collecting was done both on Friday night with five light setup sites on Mt. Desert Island and a few on the SERC campus, and Saturday with day and night collecting at sites throughout the Schoodic Peninsula at Acadia National Park.

The Bioblitz tallied *ca.* 400 species*; 48 species were noted only from sites on Mt. Desert Island and 21 species records were unique to iNaturalist sightings.

Some 171 species were new records for the Bioblitz; 59 species were records not previously reported for the Mt. Desert Island area (Mittelhauser *et al.*, 2014), and 13 species were not reported for Maine in the Brower lists (Brower, 1974, 1983, 1984).

**One of many new species for the BioBlitz was *Anisota virginiensis* (Saturniidae), the Pink-Striped Oakworm Moth. *Photo by Michael Sabourin.***

Species recorded here **new for Maine** since the Brower lists: **Gelechiidae:** *Dichomeris picrocarpa*; **Tortricidae:** *Dichrorampha acuminatana, Cnephasia stephensiana, Aethes sexdentata, Phalonidia memoranda*; **Limacodidae:** *Isa textula*; **Crambidae:** *Desmia maculalis*; **Pyralidae:** *Moodna pallidostrinella*; **Geometridae:** *Pasiphila rectangulata*; **Erebidae:** *Zancolgnatha dentata, Renia adspergillus*; **Noctuidae:** *Agrotis stigmosa, Xestia praevia.*

Species recorded here that are new for the Mt. Desert

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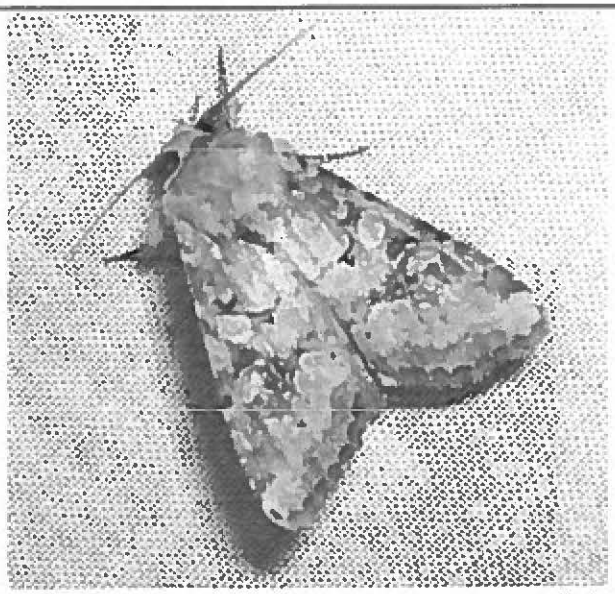
Island region since the Proctor list: **Tineidae:** *Xylesthia pruniramiella*; **Agonoxenidae:** *Blastodacna curvilineella*; **Gelechiidae:** *Xenolechia ontariensis*; **Yponomeutidae:** *Atteva aurea, Zelleria haimbachi*; **Tortricidae:** *Apotomis tertiana, Olethreutes quadrificus, Rhyacionia bouliana, Catastega timidella, Pandemis lamprosana, Platynota exasperatana, Aethes spartinana, "Cochylis" oenotherana*; **Limacodidae:** *Euclea delphinii*; **Crambidae:** *Donacaula unipunctella*; **Pyralidae:** *Pococera robustella, Pococera maritimalis, Paralipsa fulminalis, Meroptera abditiva, Dioryctria reniculelloides, Homoeosoma deceptorium*; **Drepanidae:** *Euthyatira pudens*; **Geometridae:** *Speranza exauspicata, Hydrelia condensata, Calledapteryx dryopterata*; **Notodontidae:** *Datana contracta, Ellida caniplaga*; **Erebidae:** *Haploa clymene, Dasychira vagans, Dasychira plagiata, Idia concisa, Zanclognatha jacchusalis, Redectis vitrea, Panapoda carneicosta*; **Noctuidae:** *Cerma cerintha, Acronicta funeralis, Acronicta laetifica, Acronicta increta, Apamea finitima, Neoligia exhausta, Neoligia subjuncta, Capsula subflava, Morrisonia mucens, Anicla forbesi, Cerastis fishii.*

Species recorded for the first time on the Bioblitz (since Brian Scholtens, in Chandler *et al.*, 2012): **Amphisbatidae:** *?Psilocorsis cryptolechia, Psilocorsis reflexella*; **Coloephoridae:** *Blastobasis glandulella*; **Gelechiidae:** *Gelechia lynceella*; **Glyphipterygidae:** *Diploschizia impigritella*; **Yponomeutidae:** *Argyresthia goedartella, Swammerdamia caesiella*; **Tortricidae:** *"Endopiza" spiraeifoliana, Apotomis funerea, Orthotaenia undulana, Olethreutes melanomesa, Olethreutes concinnana, Olethreutes fasciatana, Metendothenia seperatana, Notocelia rosaecolana, Zeiraphera canadensis, Epinotia nisella, Ecdytolopha insiticiana, Acleris albicomana, Choristoneura fumiferana, Archips packardiana, Clepsis virescana, Sparganothis lycopodiana, Cenopis reticulana. Cenopis pettitana, Phtheochroa baracana, Aethes biscana*; **Hesperiidae:** *Polites peckius*; **Papilionidae:** *Papilio ?glaucus*; **Lycaenidae:** *Everes comyntas*; **Limacodidae:** *Tortricidia pallida*; **Crambidae:** *Neocataclysta magnificalis, Elophila gyralis, Parapoynx maculalis, Nascia acutella, Herpetogramma pertextalis*; **Pyralidae:** *Paralipsa fulminalis, Acrobasis indigenella*; **Pterophoridae:** *Dejongia lobidactylus, Hellinsia elliotti*; **Geometridae:** *Protitame virginalis, Speranza pustularia, Speranza brunneata, Macaria notata, Macaria minorata, Macaria signaria, Eufidonia notataria, Hypagyrtis unipunctaria, Cabera variolaria, Euchlaena serrata, Euchlaena obtusaria, Metarranthis obfirmaria, Cepphis armataria, Eulithis serrataria, Mesoleuca ruficillata, Hydrelia inornata, Eupithecia russeliata, Eupithecia perfuscana*; **Epiplemidae:** *Calledapteryx dryopterata*; **Saturniidae:** *Anisota virginiensis*; **Sphingidae:** *Dolba hyloeus, Sphinx canadensis, Lapara bombycoides, Smerinthus cerisyi, Pachysphinx modesta*; **Notodontidae:** *Datana ministra, Datana drexelii, Peridea angulosa, Notodonta torva, Macrurocampa marthesia*; **Erebidae:** *Eilema bicolor, Virbia laeta, Virbia ferruginosa, Hyphantria cunea, Grammia virgo, Cisseps fulvicollis, Lymantria dispar, Euproctis chrysorrhoea, Idia lubricalis, Phalaenophana pyramusalis, Chytolita morbidalis, Hypenodes caducus, Hypena palparia, Hypena deceptalis, Metalectra discalis, Calyptra canadensis, Euparthenos nubilis , Caenurgina erechta, Catocala antinympha, Catocala ilia, Catocala unijuga, Catocala sordida*; **Noctuidae:** *Diachrysia aereoides, Diachrysia balluca, Autographa mappa, Syngrapha altera, Syngrapha epigaea, Syngrapha rectangula, Hyperstrotia pervertens, Acronicta vulpina, Acronicta afflicta, Chytonix palliatricula, Cosmia calami, Mythimna oxygala, Leucania phragmitidicola, Leucania commoides, Homorthodes furfurata, Nephelodes minians, Orthodes majuscula, Feltia geniculata, Euxoa redimicula, Xestia dolosa, Xestia smithii,* and *Anaplectoides pressus*.



***Trochordestra legitima*, the Striped Garden Caterpillar Moth, was one of the more photogenic species documented in the Blitz. *Photo by Michael Sabourin.***

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* Send an e-mail to Bob Nelson – **BeetleBob2003@gmail.com** – if you'd like a *complete* species list of what was collected and that Michael identified. This is five pages long, in two columns – very impressive!

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## *Pisaurina mira* in Maine

**by Dana Wilde**

In the summer of 2015, my informal spider-watching activities led me to an email exchange with Dr. Jerome Rovner of the American Arachnological Society (who has often generously helped me with spider identification and information). My question was about the mating procedures of the nursery web spider, *Pisaurina mira*. In the course of our exchanges, Dr. Rovner noted that the AAS list of North American Spiders does not indicate *P. mira* is present in Maine, nor does Charles Dondale and James Redner's *Insects and Arachnids of Canada* (1990), Part 17, covering Araneae: Lycosidae, Pisauridae and Oxyopidae.

**A beautiful male specimen of *Pisaurina mira* from Troy (Waldo County). *Photo by Dana Wilde.***

I checked in Daniel Jennings and Frank Graham Jr.'s *Spiders of Milbridge, Maine*, which is the nearest publicly available document we have to an authoritative, comprehensive listing of spiders in Maine, although its coverage is limited to the findings from the survey Jennings and Graham conducted in Milbridge from 1991 to 2005. They indicated *P. mira* was identified in Cherryfield. The Maine Forest Service report "An Annotated Checklist of the Spiders (Arachnida: Araneae) of Mount Katahdin, Baxter State Park" (2012), prepared by Jennings, Dondale and Redner, stated that *P. mira* is "likely found" on Mount Katahdin.

We see *P. mira* individuals fairly often at our house in Troy, in Waldo County. So Dr. Rovner urged me to send my photos to Dr. Richard Bradley of The Ohio State University, who helps compile the AAS Spiders of North America list. Bradley agreed with Rovner that the evidence indicates *P. mira* is indeed present here. They both said the markings on the individuals in the photos I sent appear to indicate ours is a different morph from those found in other parts of North America. "I've never seen this beautiful morph," Dr. Rovner said in an email.

MES President Charlene Donahue told me that *P. mira* does appear on the Maine Forest Service's list of spiders for several Maine counties, but not for Waldo County. The MFS list is not publicly available.

While arachnologist-identified specimens deposited in research collections are required for official authentication, Dr. Bradley told me, our *P. mira* morph will be added to the AAS list. As of February 2017, the listing had not yet been updated, due to the huge backlog of changes waiting to be made. But Dr. Bradley said he expected the update to occur soon.

*M.E.S. member Dana Wilde writes the Backyard Naturalist column for the centralmaine.com newspapers, which frequently depicts spider and insect observations. You can e-mail him at naturalist1@dwildepress.net.*

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## Rice Worms in Maine - no joke!

**by Charlene Donahue**

Back in DECEMBER, I received a call from Greg Ponte of West Gardiner who said he had been vacuuming hundreds of caterpillars off his house for the past four nights and wanted to know what they were. I had no idea so he brought some in. Greg is a retired merchant marine so he has time to observe what happens around his property on a peninsula in Cobbossee Stream. These caterpillars only come out well after dark, often when it is below freezing and he can only find them crawling up his house or on the decking in front of the house.

**One of the mysterious rice worm caterpillars.**
***Maine Forest Service photo***

I shopped photos of the larvae around and the best that the experts could come up with was fall armyworm (*Spodoptera frugiperda*). But the larvae did not really fit the description and their behavior and overwintering was wrong. So I contacted the USDA Animal Plant Health Inspection Service (APHIS) again – remember my piece from February? And I sent some larvae off to a Lepidoptera expert in Ohio. He too was baffled and he also shopped the photos around.

***(cont. on next page)***

The concern was an invasive – what else could it be? So I sent some specimens off for DNA testing. The results finally came back in early April. They were rice worms (*Apamea apamiformis*), a native pest of wild rice.

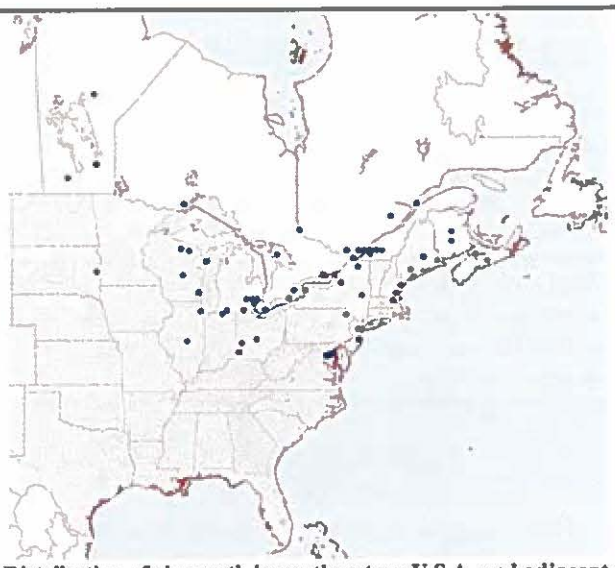
**The rice worm moth as an adult. The species has been seen active in Maine in June through September, according to the Moth Photographers Group web page (http://mothphotographersgroup.msstate.edu/species.php?hodges=9343).**
***Photo by Janice Stiefel, Moth Photographers Group***

Well, Greg's property, remember - a peninsula - is surrounded by wild rice. He has lived there 20 years and never gotten any rice because the insects always get to it first. But this is the first time the caterpillars have tried to get into his house. He said nothing has changed on his property and it is a few hundred feet through pretty dense woods to the shore. The caterpillars continued coming out after dark when it was cold as 20°F and still are hanging around.

A little information about the rice worms: they are native to northeastern North America and a serious problem in the wild rice.

From: "Wild Rice: Domestication of a Native North American Genus" (Oelke, 1993): "Its life cycle is coordinated closely with the growth and development of wild rice. Adult moths begin to emerge at about the same time as flowering begins in wild rice during late June or early July. Nectar from milkweed flowers serves as the primary food source for adult moths through August. Eggs are deposited in wild rice flowers over a period of 4 to 6 weeks. Larvae hatch and develop through several instars or stages, and feed as they grow.

"Yield potential is reduced by the initial feeding activity on the glumes of the spikelet and subsequent feeding on kernels. Rice worms bore into stems of wild rice or migrate to plants that border the production area as their growth and development nears completion. Rice worms overwinter inside the stems in the seventh instar. After a final molt and some additional feeding in the spring, the larvae usually pupate in early June, and develop into the adult moth."



**Distribution of rice moth in northeastern U.S.A. and adjacent Canada. Map from the Moth Photographers Group web page (http://mothphotographersgroup.msstate.edu/species.php?hodges=9343)**

The rice worms must reach shore to pupate in the soil (Mackay and Rockburne, 1958) and is a little unclear when this happens. It could be in either fall or spring depending on when conditions are dry enough for them to get to dry land. The dry summer and fall in 2016 may have allowed more larvae then usual to make it shore and search for a place to over winter.

The Maine Forest Service collection has adult specimens from Gardiner and Augusta (Kennebec County) and Lincoln (Penobscot County); Brower earlier reported them from Kittery (York County), Orono (Penobscot County) and Princeton (Washington County), as well.

***References:***

Mackay, M. and E. W. Rockburne, 1958. Notes on Life-History and Larval Description of *Apamea apamiformis* (Guenee), a Pest of Wild Rice (Lepidoptera:Noctuidae). Canadian Entomologist, v. 90, p. 579-582.

Oelke, E.A. 1993, Wild rice: Domestication of a native North American genus; p. 235-243 *in*: J. Janick and J.E. Simon (eds.), New Crops. Wiley, New York. https://hort.purdue.edu/newcrop/proceedings1993/V2-235.html

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## River Point Collecting Day
## 20 May, 2017: 10:00 a.m.

On May 20, 2017, 10:00 a.m., there will be a field day for collecting insects at the River Point Conservation Area in Falmouth (Cumberland County).

The River Point Conservation Area, owned by the Town of Falmouth, is 41 acres located on the Presumpscot River as well as branches of the Piscataqua River. The property consists of wooded areas, fields, and ponds.

River Point Conservation Area is also the site for River Point Bird Observatory, where the Biodiversity Research Institute, in collaboration with the Town of Falmouth, has established a migratory bird banding station, tree swallow

***(cont. on next page)***

nest box monitoring, as well as disease monitoring with Maine Medical Center's Vector-borne Disease Lab, and education and outreach activities.

Participation in this field day will enhance and contribute to the growing list of species being documented at River Point Conservation Area.

The site is at 63 Gray Road, Falmouth, Maine, near Exit 53 from I-95, and is adjacent to the Hannaford Supermarket in the Falmouth Crossing Shopping Center.

Melissa Duron is coordinating this event. Please direct questions to her by e-mail at **(melissaduron75@gmail.com)** or by phone at **207-409-0940**.

**Directions:** From I-95, take Exit 53. After departing the interchange, be in the right-hand lane and go straight ahead at the stoplight. Park in the right-hand side of the Hannaford parking lot, and cross the wooden bridge to the River Point Conservation Area. Please bring a bag lunch and something to drink. Be aware that there are both deer ticks and poison ivy in the area.

**Google Earth street-view image of the wooden bridge to the River Point Conservation Area.**

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## Second Annual MES Moth Night in Camden Saturday, June 24, 2017 – Sunset @ 8:24 p.m.

Roger Rittmaster has a powerful mercury vapor light and a huge sheet for attracting moths. He also has a two black lights, remnants of his '60s lifestyle. He would like people to come and help identify what is coming to his light. Because darkness won't occur until late, and moth abundance is greatest after 10:30 p.m., folks are welcome to stay overnight. There's a large finished room above the garage with a carpet and plenty of floor space and lots of room for tents outside. We will have a pancake breakfast the next morning. Roger has a dissecting and compound microscope, in case either of those are needed.

Remember to bring a headlamp or flashlight, camera and/or collecting gear and a jacket. If you are planning to attend let Roger know at either **roger.rittmaster@gmail.com** or by phone at **207-470-0445**. This event is weather-dependent. If it is raining or too windy, we'll need to cancel or postpone it.

**Directions:** Address - 42 William Glen Drive, Camden, Maine 04843. A GPS will generally take people through back roads to our house, which is fine. The simplest directions from the south and west is to go to downtown Camden and as you are exiting the downtown area northbound on Route 1, turn left onto Route 52 (Mountain Street). Go 1.7 miles and take a left onto Molyneaux Road. Go 0.4 miles and take a left onto William Glen Drive. Our house is 0.2 miles down on the left with "42" on the mailbox.

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## Orchid Weevils of Canada

A new article has recently appeared* that documents the three native, and two introduced, species of orchid weevils known from Canada (Coleoptera: Curculionidae, genera *Orchidophilus* and *Stethobaris*). The *Orchidophilus* is occasionally encountered in greenhouse plants, but two native species of *Stethobaris* (*S. ovata* and *S. incompta*) are found in eastern Canada and to our south – though with no records from Maine recorded in the paper.

***Stethobaris ovata*, the only orchid weevil currently known from Maine. Photo by Tom Murray; used with permission**

A quick check with Charlene Donahue showed that there are actually five specimens in the M.F.S. collections of *S. ovata*: two from Oakfield (Aroostook County) collected in 1962, and three from Moxie Gore (Somerset County) collected in 2012. These shiny black weevils are 2.5-3.5 mm in length and feed on our native orchids; *S. ovata* is one of the few species known to feed on lady's slipper orchids, whereas the host(s) for *S. incompta* in this area are apparently unknown.

Send an e-mail to Bob Nelson if you'd like a pdf copy of this paper, which includes photographs of the three native species of *Stethobaris*, one of which is only known from west of the Rockies. *–B.N.*

* Prena, Jans, 2017. Orchid weevils (Coleoptera: Curculionidae) in Canada. *Canadian Entomologist*, v. 149, p. 38–47.

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## Mayfield Plantation Field Day June 10th

Join us on Saturday, June 10th, for a collecting day in beautiful, forested Mayfield Plantation – home to one of the biggest and newest wind farms in the state! There are wide-open areas and rocky ledges, as well as regenerating upland beech-oak-maple-conifer forest, and down at the bottom of the ridge, a large wetland which should provide completely different habitats.

**Open ground and a rocky blasted face behind one of the wind towers where we'll start collecting. Brushier open habitat is accessible atop the bluff and to the left.**

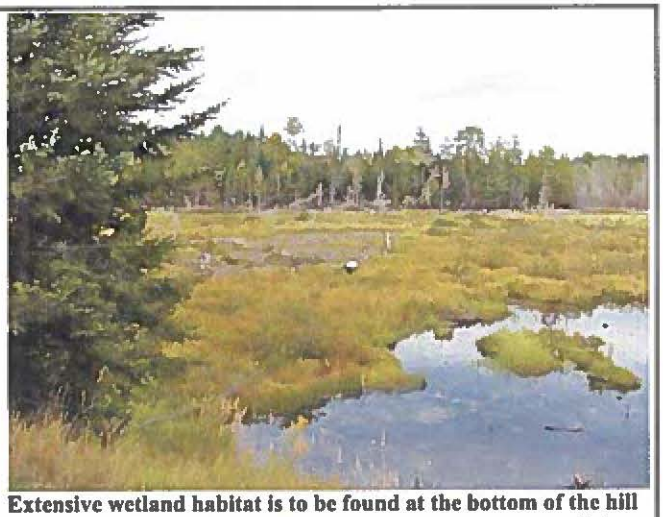
The towers for the wind farm went up last year, and the roads and working areas opened up a lot of open area. Last August, vegetation was only just starting to become established in the cleared areas, but we'll see what may have been planted as ground cover – presumably at least some of it being legumes like clover that will help attract pollinators. Rocky areas are of course also widespread. Most of the forest is dense but consists of relatively small trees, regenerating from being logged a couple decades ago.

At the bottom of the hill, where Route 16 meets Route 151 at Mayfield Corner, we'll head south just under two miles to stop at a large wetland area.

We'll meet at 10:00 a.m. at **Jimmy's Grocery in Bingham** – a large IGA located on the south side of town on the east side of U.S. Route 201 (on the right if you're coming from the south). It has a large parking area and can't be missed as you come into town from the south. Bring hiking boots, collecting gear, lunch, drinks, insect repellant, rain gear if it looks threatening, and wetland footwear if you plan to head into the marsh in the afternoon. Forgotten items can probably be purchased at Jimmy's.

From there, we'll caravan to our first collecting locale, off Route 16 up on the ridge crest to the east of town. (Anyone coming from the north or east via Route 16, take the first major clear gravel road on your left after you pass Mayfield Corner at Route 151, and we'll meet you up there at the first wind tower!)

The plan is to spend the morning in the uplands and have lunch there, and then proceed down to the wetland area after lunch. At the end of the afternoon, we can retrace our steps back to Bingham, and stop by Thompson's Restaurant for a refreshing meal at the finest eatery in the area!



**Extensive wetland habitat is to be found at the bottom of the hill and back on Route 151 towards Athens. Parking here will be along the road, but the shoulders are wide and traffic is minimal.** ***Photo by Nettie Nelson***

Bob Nelson is coordinating the trip. Please let him know (BeetleBob2003@gmail.com or by phone at 207-426-9629) if you're planning to join us – so we don't inadvertently leave Jimmy's without you if you're running late!

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## MES Field Day: July 15th at Sunkhaze Meadows NWR

Since there's no BioBlitz at Acadia this year (see the President's Report on p. 1), we've scheduled a July 15th field day at the Sunkhaze Meadows National Wildlife Refuge in Milford (Penobscot County).

The Sunkhaze Meadows Unit consists of 11,485 acres, and protects the second-largest peatland in Maine. Sunkhaze Stream bisects this unit and, with its six tributaries, creates a diversity of wetland communities. The bogs and stream wetlands, along with the adjacent upland, provide important habitat for many wildlife species.

If you want to carpool from Augusta, let Pete Darling know and be at the Civic Center Park & Ride lot at 8:00 a.m., and we'll leave no later than 8:05 a.m. To drive yourself, go north on Interstate 95 to Exit 193. Go east on Stillwater Avenue (US Route 2), heading to Milford until it crosses the Penobscot River. Take the second right after crossing the river on to County Road. Drive east on County Road across the railroad tracks, and we'll meet in the parking lot of the school on the left at 10:00 a.m.

Sunkhaze has something for everyone: an assortment of old log landings, forest paths, power lines and Sunkhaze Stream, which bisects the Refuge.

Bring sunscreen, bug spray, lunch, water and your favorite collecting and photography equipment. The closest facilities are back in Milford and Orono, which are about 20 to 40 minutes away depending on how far you venture into the Refuge. So don't wait until the last minute if you need anything.

For further information call or text Peter Darling at 207-899-7173.

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## SHOUT OUT a Healthy WELCOME to the new M.E.S.O.!!!

Students at the University of Maine have formed a club called Maine Entomology Student Organization (MESO). A number of them are already members of MES and we are making them an affiliate association. As noted in the articles about the MES March field day and the March for Science, they are joining us at events.

Check out the MESO Facebook page **https://www.facebook.com/Maine-Entomology-Student-Organization-MESO-1651234135172129/** for their activities and interests.

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## Membership Survey Results

**by Kathy Claerr**

Thanks to the many who have sent in your surveys.

For me, as relatively new to MES, the responses have been illuminating. So far I have logged 19 members willing to volunteer in some outreach aspect (such as present talks or coordinate field trips), 11 experts in seven orders of insects or arachnids, six members knowledgeable in the ecological/IPM realm, seven who are artistically inclined (some sent samples!), four students, and five skilled in natural history, and 14 who offer to help collection curation.

If you haven't sent your response in, please do! Don't worry about using the form—just send the information to Kathy Claerr (phone: **207-666-3551** or e-mail: **kclaerr1@comcast.net**) in a manner convenient for you.

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## Insect Photography Workshop Saturday, July 29, 2017

**led by Roger Rittmaster**

Roger, author of *Butterflies Up Close – A Guide to Butterfly Photography*, will be leading this workshop in Augusta.

We will start at 9:00 a.m. at the offices of the Maine Forest Service lab (50 Hospital Street, Augusta), where Roger will give a 45-minute slide show on the basics of insect photography. He'll then help participants set up their cameras before the group heads over to Viles Arboretum to practice photographing whatever we find. Bring your camera (SLR, point-and-shoot or iPhone) and a flash if you have one. The ideal set-up is an SLR camera with a telephoto macro lens and flash, but good photographs can be obtained with almost any camera and a bit (or a lot) of patience.

Bring a brown-bag lunch, and we'll finish with lunch around noon.

Please sign up for the workshop by contacting Charlene Donahue at donahuecp15@gmail.com or by phone at 207-485-0960.

**Directions to MFS Lab:** From Interstate 95, take Exit 113 and head east towards the coast. Continue east until you cross the Kennebec River bridge, then turn right at the light. Continue south until you get to Cony Circle. You'll want to be in the left lane, so you can go around the circle and then exit up the hill – following the sign to Route 17. Going up this hill, be in the right lane. At the top of the hill and stoplight, where Route 17 turns left, go straight ahead. The MFS lab is a mint-green building on the right slightly over 0.2 miles south, just past the Maine State Police headquarters building. Parking is behind the building; the driveway is a sharp drop to the right.

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## Maine Maple and Moths Field Day Sweet!

The March Maple & Moths field day in Whitefield was a sugary blast! Nineteen people and one dog came and made maple syrup, inspected a bee hive that did not survive the winter, found snow fleas (Collembola) in the woods, looked through aquatic samples from the Sheepscot River and watched stoneflies pop out of the water. It was too cold and too much snow to be able to do much real collecting, and Jorge XX and his wife were disappointed with no moths, as that is really their thing down in Sunset.

**Those joining us for Maine Maple and Moths Day included – in the back: Chase Gagne, Karla Boyd, Robyn Holman, Kathy Claerr, Andy Galimberti, Brian Mason, Joshua Villazana, Nettie Nelson, Sarah Haggerty and her son, Jack Hale, plus Dana Michaud, Sarah Ehrlich and Jorge Castañeda; in the front: Anna Court, Ann Mallet, Charlene Donahue and Melyri. Staying warm inside the house were Bob Nelson and Dave Bourque.** ***Photo by Mark Ostroff***

Four University of Maine students came down from Orono, all members of the newly formed Maine Entomology Student Organization (MESO). It was a blast having them there share insect talk. We also fed them donuts, coffee cake, snack bars, followed by maple syrup sundaes then maple 'sugar on snow' then they cleaned the maple syrup pan with their fingers (finger licking good!!) then scooped up honey drips from the bee hive. Hope the sugar high got them back to Orono.

See more photos and videos on the MESO Facebook page **https://www.facebook.com/Maine-Entomology-Student-Organization-MESO-1651234135172129/**

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## Entomologists March for Science on Earth Day

Entomologists made a strong showing supporting science at the March for Science for Earth Day on April 22nd. In Orono there were at least a dozen including Charlene Donahue, Jorge Castañeda and Jonas Insinga (MES members) plus Dr. Frank Drummond, who are not in any of the photos. Orono Entomologists got the march going and sang The Ants Going Marching... Colleen Teerling marched in Portland, and Carol Muth, her husband Wally and Domenica Vacca were in Boston. It is very important that we speak up and talk about making science-based decisions.

**From left to right: Three new MES members plus a friend - Chase Gagne, Josh Villazana, Andy Galimberti, and Brendan (whose last name we can't remember! ⊗ ) show off their signs before the beginning of the March for Science on the U. Maine campus in Orono.**

**Entomologists led the way at the March for Science on the University of Maine campus on April 22nd. From left to right, Allison Kanoti (MES), Dr. Ellie Groden, Will Arman (undergraduate enthusiast), Dr. Allie Gardner, and Chase Gagne.**

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**Get your M.E.S. baseball cap! Adjustable high-quality heavy fabric baseball cap with the M.E.S. embroidered logo. Just $15. Contact Dana Michaud (207-872-7683) to get yours. (*Pete Darling photo; Jane Hewes models the cap*)**

## Canadian Entomology Special Issue

A special issue of *The Canadian Entomologist* appeared last August, featuring "A Century of Canadian Forest Entomology." Given how many forest insects of eastern Canada are also known in Maine, this is of potential significance to many M.E.S. members. The issue was volume 148, issue S1, and appeared in August, 2016.

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## COMING M.E.S. EVENTS in 2017

**(details of most events will be in future newsletters)**

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|---|---|
| **6 May** | "Insect Day" at Orono Public Library (see p. 2) |
| **20 May** | Field Day at River Point Conservation Area, Falmouth (**changed from what's in the *Minutes*;** see p. 8) |
| **10 June** | Field Day in Mayfield Plantation (see p. 10) |
| **23-24 June** | Moth Night in Camden (see p. 9) |
| **15 July** | Sunkhaze Meadows NWR field day (see p. 10) |
| **29 July** | Insect Photography workshop, Augusta (see p. 11) |
| **19 August** | Field Day in Katahdin Woods National Monument, southern portion T3 R7 WELS. Camping is available in the area or it is not far to Millinocket or Patten, more information to come. Diane Boretos is coordinating this. Watch the web page and August newsletter. |
| **12 September** | Bug Maine-ia at the Maine State Museum |
| **16 September** | Field Day – Kittery/Berwick area, coordinated with Mount Agamenticus Nature center |
| **30 September** | M.E.S. Annual Meeting in Clinton |

**(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 $15 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.***