

The Maine Entomologist

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

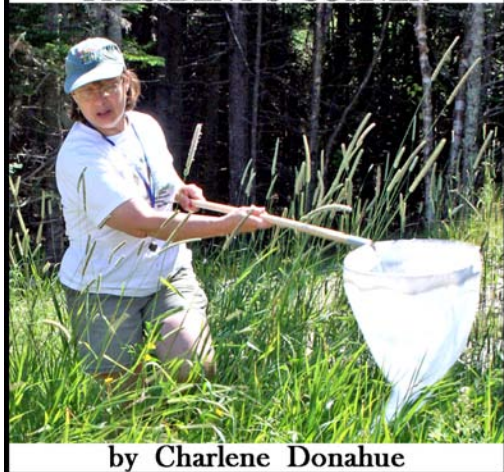
The Official Newsletter of the Maine Entomological Society

Vol. 22, No. 1

February, 2018



PRESIDENT'S CORNER



by Charlene Donahue

One thing I will miss about working is getting the interesting calls about odd insects, but hopefully some those will still come to me through MES. It is fun and sometimes challenging to track down an obscure insect or sign of an insect, or to try to figure out why or how an insect ended up coming into focus for a person.

Learning about how other animals interact with insects or insect traps can be just as interesting. Bears are creatures who do not like people leaving things in a their territory. Back in the 1990s, I was working in Carrying Place Township in western Maine. One July morning Kathy Murray's work-study students staked out drop cloths ahead of an experimental neem treatment for yellow headed spruce sawflies (*Pikonema alaskensis*). I went into the plantation late in the afternoon to do pre-spray counts of the larvae and found most of the cloths torn up, thrown around and the stakes chewed up!! I reset them, singing loudly as I did it and hoped they would be there the following day after the spray. I never saw the bear.

The Maine Forest Service has been running spruce budworm pheromone traps since the eighties, and for the past four years have cooperated with landowners to set out well over a thousand traps. Traps are about 2-quart container size, and hang on a tree branch at least six feet above the ground. (Yeah, the bears sometimes throw these around too.) The traps are out from mid-June to September, then picked up and the contents sent to the MFS lab so the budworm can be counted (and any bumble bees included in the Maine Bumble Bee Atlas Project).

This year, for the first time in the ten years that I have been involved in the trapping, three of the traps came in loaded with fir seeds - as in a cup or two worth of seed in the

traps. The seeds had been removed from the cones and the seed wings were gone, so it took a minute to figure out what species they were - except they smelled overpoweringly like fir.



Presumably red squirrels had cached the seeds in the traps, and they were going to be sorry to have lost the fruits of their labors. I would like to know how they managed to get so many tiny seeds into the traps hanging on a small branch and why this year was the first time it had happened - and in more than one location. Certainly the heavy cone year contributed to their caching the seeds but I would like to see them putting them in the traps.

One more animal story. My dog does not like my honey bees, as she has been stung when my son and I work with the hives. She has learned that if one of us gets out a bee veil then she should sit quietly on the other side of the yard and not try to get us to play 'fetch' with her. I am impressed that she associates the veil with bee disturbance and keeps her distance.

What interesting stories do you have about insects? Feel free to send in an account and we will publish it.

Table of contents will be found on p. 2

LATE DUES REMINDER!

M.E.S. dues are payable on a calendar-year basis. If you haven't already done so, please renew now for 2018 to guarantee uninterrupted receipt of the Newsletter; you'll find an insert inside this newsletter. Treasurer Dana Michaud's name and mailing address are also at the bottom of the back page for your convenience. Dues are \$15 per year, and may be paid up to two years in advance. If the year on your mailing label is "2017", please contact Dana to renew for 2018 or correct the record.

Table of contents

- ☛ Leek Moths Appear in Maine (below)
- ☛ Tracking Mosquito-borne diseases in Maine (p. 3)
- ☛ Bees of Maine Monograph Published (p. 4)
- ☛ Dave Angelini Granted Tenure at Colby (p. 5)
- ☛ Two new forest pest papers published (p. 5)
- ☛ Eagle Hill Summer Entomology Courses (p. 5)
- ☛ New parasitoid on winter moth discovered (p. 5)
- ☛ Winter Workshop again draws full house (p. 6)
- ☛ NE Natural History Conference Scheduled (p. 7)
- ☛ Hillary Morin-Peterson featured in magazine (p. 8)
- ☛ Maple syruping and spring field day (p. 8)
- ☛ Bizarre aphids switch from mosses to sumacs! (p. 8)
- ☛ Spiders shelter in lepidopteran fern structures (p. 8)
- ☛ Charlene Donahue Retirement Party Reminder (p. 9)
- ☛ January "work day" helpful at MFS labs (p. 9)
- ☛ Papers on early Hymenoptera & insect diversity (p. 9)
- ☛ Insect drawers, cabinets, for sale (p. 10)
- ☛ Flooding cranberry bogs better than spraying (p. 10)
- ☛ Coming Events calendar (p. 10)

* * * * *

Leek Moth: A New Pest of *Allium* First Found in Maine by Dave Fuller

Leek moth (*Acrolepiopsis assectella* Zeller; Lepidoptera: Acrolepiidae or Glyphipterigidae, Acrolepiinae - Fig. 1), a very destructive pest of all varieties of *Allium*, including garlic, shallots, chives and onions, was first found in Maine in the larval stage by the author on garlic plants at the Forest Hills Consolidated Schools garden in Jackman on May 28, 2017. Cocoons were also found, from which moths were reared and submitted to a USDA-APHIS specialist in Maryland who made the confirmation of leek moth.



Figure 1: Adult leek moths; scale in mm. Photo by Dave Fuller.

A detection trapping program was then initiated in early June in multiple locations in Maine by Cooperative Extension in collaboration with Karen Coluzzi of the Maine Department of Agriculture, Conservation and Forestry, Division of Animal and Plant Health. The object of the trapping was to determine where in Maine leek moths are found and to study

its life cycle. Such information would be used to alert growers of the presence of leek moth and how to manage the pest. To date, Jackman is the only location in Maine where trapped moths have been found. Trapping will resume in the spring of 2018.

A native of Europe, leek moth first was seen in the United States in 2009 in New York and is now established in Vermont, New Hampshire and nearby in the Province of Quebec. Leek moth is so named for its affinity for leeks, but is attracted to all members of the onion family.

Damage to garlic and other allium leaves is done by leek moth caterpillars (larvae) and can be extensive, leading to diminished crops or possible crop failure. Damage on garlic in Maine has been seen mainly on the scape as it emerged, causing collapse of the structure. With onions, the larvae tunnel into the hollow leaves and feed on the inside surface, causing a windowpane appearance (see Fig. 2). Mature larvae then exit the leaf and enter the pupal stage by spinning a loose "cargo net" cocoon (see Fig. 3).



Figure 2: Leek moth larvae inside onion scape.
Photo by Dave Fuller.

(continued on next page)

Leek Moths in Maine (cont.)

Leek moths have three generations in Maine, with damage to plants compounding as the season goes on and moth populations build. Each generation completes its life cycle in 30-50 days, depending on the environment. Moths, larvae and cocoons are all very small, measuring about 3/8 of an inch long. Female moths lay from 100-200 eggs per generation over a two-week period, starting in spring. Leek moths overwinter as adults or pupae in crop residues.

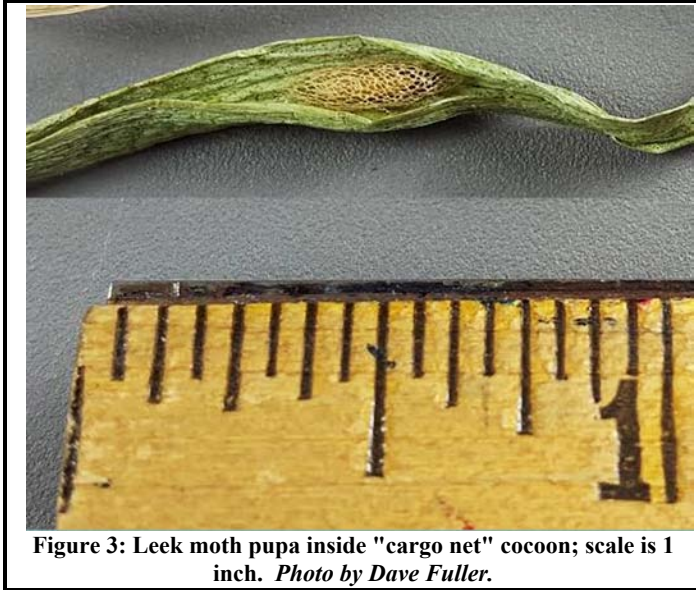


Figure 3: Leek moth pupa inside "cargo net" cocoon; scale is 1 inch. Photo by Dave Fuller.

Control of leek moth is best accomplished by covering allium crops with a row cover. Since the moths only fly at night, weeding and scape removal on garlic can be done during the day and covers replaced. Wire hoops would need to be used with onions as their tops would be damaged otherwise by wind-flapped row cover. There are no pesticides currently registered for leek moth in Maine.

For more information on leek moth, Cornell has developed an excellent resource:

http://web.entomology.cornell.edu/shelton/leek-moth/docs/Leek_Moth_Final.pdf

This can be downloaded directly from Cornell, or you could contact Bob Nelson for a digital copy.

* * * * *

Tracking a mosquito-borne disease in Maine
by Chuck Lubelczyk

While many people in Maine are used to the idea of mosquitoes as a common, if unwanted guest, at summer activities, their presence has meant, in recent years, an upswing in the activity of arthropod-borne viruses ('arboviruses'), in northern New England states, including Maine.

While some mosquito-borne diseases, like canine heartworm (transmitted by *Anopheles* mosquitoes [cf. Fig. 1]), have been known for many decades in the northeastern U.S., other diseases, like West Nile virus (WNV) and eastern equine encephalitis (EEE), have more recently been recognized as public health (and veterinary) health concerns. This comes on the heel of human cases in New Hampshire,

Maine and Vermont in the last decade, including human fatalities.



Fig. 1. The common house mosquito *Culex pipiens*, which is a vector of both EEE and WNV. Photo courtesy of U.S. Geological Survey.

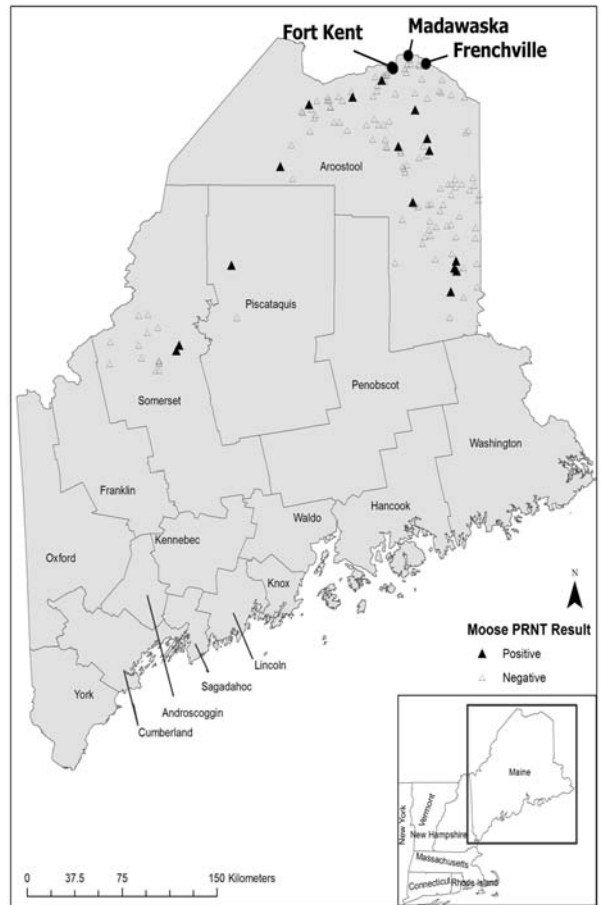


Figure 2. EEE-positive harvested moose, collected in 2010 from Maine hunter registration stations. See Lubelczyk C., et al. (2014). Detection of eastern equine encephalitis virus antibodies in moose (*Alces americana*), Maine, 2010. *Vector-Borne and Zoonotic Diseases*, 14(1), 77-81.

(continued on next page)

Mosquito-borne diseases in Maine (cont.)

Following an epizootic of EEE in 2009, surveys to detect virus activity began to include wildlife species as sentinels for disease. In particular, deer (and later moose) were surveyed because many of the mammal-biting mosquitoes that spread the diseases in livestock and humans also feed on deer. An easy way to survey many of these animals is to use harvest registration stations during the hunting season. This method provides a widespread geographic snapshot over a short period of time, and also targets an at-risk population for mosquito-borne diseases –hunters. Harvested deer and moose brought into registration stations have been sampled from 2009-2017, by volunteers and public health staff in coordination between Maine Medical Center, the Maine Centers for Disease Control, and the Maine Dept of Inland Fisheries and Wildlife. Blood collected from harvested animals is sent to the federal CDC in Fort Collins, Colorado, where it is tested for EEE, WNV, and other arboviruses. Because each animal is geocoded by locating it on a Delorme Atlas, geographic information on virus positivity can be looked at over time.

These surveys have yielded successful results, documenting EEEV activity across a wide region of Maine (and later all of northern New England), showing that the virus is being transmitted, *even in areas with no record of human or veterinary cases*. From a public health perspective, this means that people across the state should be aware of mosquito-borne diseases, not just residents in areas where positive cases are reported. In addition to human public health, EEEV is also responsible for livestock deaths, meaning that owners of horses across all counties of Maine should strongly consider vaccinating their animals against EEEV and WNV.

* * * * *

known of the distribution of 278 species of Maine bees from 37 genera and six families, while the Natural History concludes with a thought-provoking section on the impacts and potential future impacts of climate change on bees in Maine. The last documented specimen of the Rusty-Patched Bumble Bee, *Bombus affinis*, now officially listed federally as an endangered species, was by Frank Drummond in 2009. The 68-page volume also begins with a short poem, "Requiem for the Rusty-Patched Gals," by Frank Drummond.

Bob Nelson (BeetleBob2003@gmail.com) has a pdf copy of the volume for anyone who'd like one.

* * * * *

Surprise Predator Comes to Maine
by Colleen Teerling

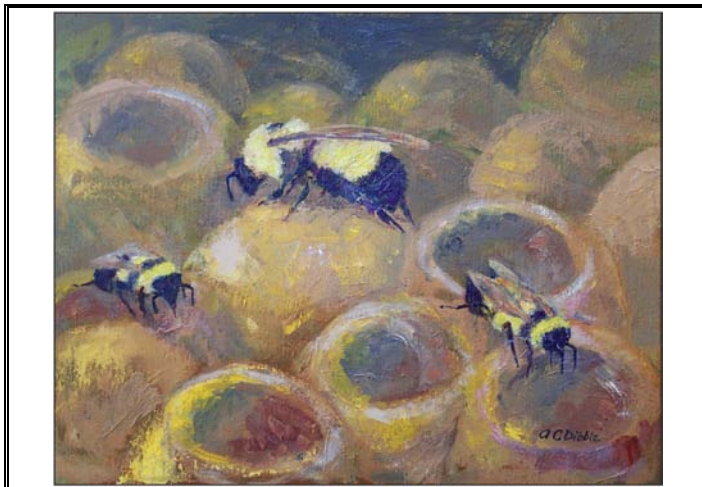
Elongate hemlock scale, *Fiorina externa*, (EHS) is a scale insect which attacks primarily hemlock and balsam fir in Maine (see

http://www.maine.gov/dacf/mfs/forest_health/insects/elongate_hemlock_scale.htm).

It feeds on the needles, and weakens and kills trees, especially when hemlock woolly adelgid is also present. EHS has been found (and treated) on individual planted trees in many areas of Maine. However, only in southern Kittery is it known to be established in the forest.

But there is a glimmer of hope. Although we do not have a biological control program for EHS in Maine, biocontrol agents have moved into Kittery of their own accord. In November, 2017, while we were monitoring for hemlock woolly adelgid predators, we noticed several very tiny (1-mm-long) beetles in trees infested by both adelgids and scale.

It turns out these beetles were little generalist scale predators called *Cybocephalus nipponicus* (Cybocephalidae, formerly in the Nitidulidae). They had been released in Massachusetts in the 1980s for control of San Jose scale on ornamentals, and have apparently moved north.



Queen Rusty-patched Bumble Bee, *Bombus affinis*, in her underground nest. Oil painting on panel, by Alison Dibble.

WOW – Everything About Maine Bees

Alison Dibble, Frank Drummond, and colleagues have recently published *Bees of Maine: A State Species checklist*, and *Natural History of Native Bees Associated with Lowbush Blueberry* as Monograph 15, of Volume 24 of the journal *Northeastern Naturalist* (2017).

The checklist includes a thorough discussion of what is *The Maine Entomologist*



***Cybocephalus nipponicus* male, on tip of hemlock needle.**

Photo by Mark Mayer

(continued on next page)



Cybocephalus nipponicus female. Photo by Mark Mayer

Anecdotal evidence from Pennsylvania and New Jersey suggests that ‘Cybo’, as it is affectionately known, may be able to reduce EHS numbers enough to improve tree survival. We are hopeful that their numbers will continue to grow in southern Maine.

* * * * *

**M.E.S. Member Dave Angelini
Granted Tenure at Colby**

M.E.S. member Dave Angelini learned in January that the Colby College Board of Trustees had awarded him tenure as a permanent member of the faculty, with promotion to Associate Professor effective 1 September. You may remember Dave from his article on the impact of neonicotinoids on bumblebees, from last May's newsletter.

Dave has been on the faculty at Colby since 2012, and studies the evolutionary histories that have led to animal diversity. His research and courses explore genetics and development in insect models.

Congratulations, Dave!

* * * * *

**Two New Papers Published
on Maine Forest Pests**

Charlene Donahue, DACF - Maine Forest Service, cooperated with researchers at the University of Maine on a winter moth study and the results were published in: O'Donnell, K. and E. Groden, 2017: Variation in Captures of

Adult Winter Moths (*Operophtera brumata*) in Coastal Maine Over Two Years. *Northeastern Naturalist Winter Ecology: Insights from Biology and History*; v. 24 (Special Issue 7), pages B72–B80.

This is available to *Northeastern Naturalist* subscribers at:

<https://www.eaglehill.us/NENAonline/articles/NENA-sp-7/15-O'Donnell.shtml>

In the same issue is this paper, on pp. B19-B31: Pupation Site Selection and Enemy Avoidance in the Introduced Pine Sawfly (*Diprion similis*), by Nathaniel T. Wheelwright, Liam U. Taylor, Benjamin M. West, Erin R. Voss, Sabine Y. Berzins, Andrew R. Villeneuve, Hannah R. LeBlanc, Victor B. Leos, Samuel J. Mayne, Sarah A. McCarthy, Shan J. Nagar, and Jenna S. Watling.

* * * * *

2018 Entomology Summer Courses at Eagle Hill

The 2018 Summer seminar, course, and workshop schedule has been set at the Eagle Hill Institute in Steuben. A full schedule of week-long programs is set to run from May 27th to September 1st; fall weekend workshops are scheduled from September 7th through November 11th.

Programs that are of particular entomological appeal, or might otherwise be of special interest to members, would include the following:

June 10-16: Chironomids: Classification, Morphology, Identification and Lifecycles, with Armin Namayandeh.

June 17-23: Scientific Illustration with Pen and Ink and Color Pencil, with Dolores Santoliquido.

July 1-7: Dragonflies and Damselflies: Field Techniques and Identification, with Bryan Pfeiffer and Michael Blust.

July 8-14: Native Bees: Biology, Ecology, Identification and Conservation, with Sara Bushmann and Kalyn Bickerman-Martens.

July 8-14: Spiders: Identification, Biology and Ecology, with Kefyn Catley.

July 22-28: Microlepidoptera: Collection, Preparation, Dissection, Identification and Natural History, with Jason Dombroskie.

July 29 – August 4: Tracks and Sign of Insects and Other Invertebrates, with Charley Eiseman.

August 5-11: Aquatic Entomology, with Steven Burian.

The complete program, including links to information on costs, accommodations, etc., can be found at the Eagle Hill web site (<http://www.eaglehill.us/programs/nhs/nhs-calendar.shtml>).

* * * * *

**New Winter Moth Parasitoid Found
by Charlene Donahue**

A new winter moth parasitoid was found in Maine this year. When collecting winter moth larvae in June in both 2016 and 2017, Entomologist Charlene Donahue observed large numbers of ichneumon wasps flying just above the duff layer under winter moth-infested trees. The wasps were present in three locations; Cape Elizabeth, Harpswell and Vinalhaven.

(continued on next page)



Cratichneumon culex adult Photo: Saxifraga-Ab H Baas

Samples of the wasps were collected and sent to the University of Massachusetts where they used DNA to determine the species of wasp. It turned out to be *Cratichneumon culex* (Müller) a known winter moth cocoon parasitoid from Europe.

At this point we do not know how this wasp got to Maine or how much of an effect it will have on the winter moth population. The Maine Forest Service and University of Massachusetts will be studying this new wasp in the future. It has not been reported from other winter moth infestation in North America.

* * * * *

Winter Workshop Draws Crowd by Bob Nelson and Charlene Donahue

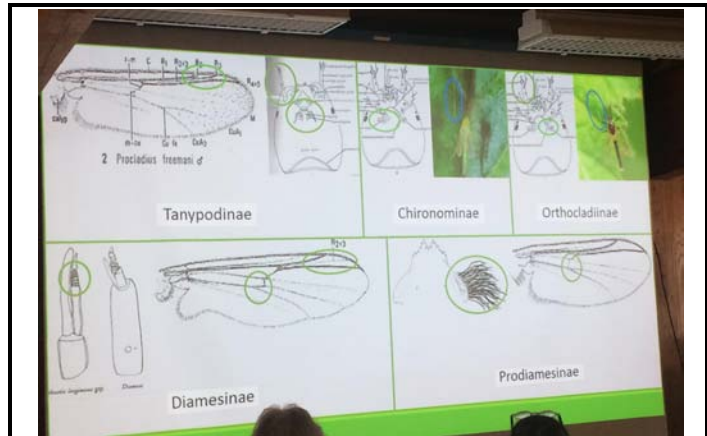


Chase Gagne admitted he didn't know *everything* about Chironomids, but he knows far more than most of the rest of us and was very happy to share that knowledge at the Winter Workshop. Bob Nelson photo

Some 30 people filled the Maine Forest Service Bolton Hill facility on Saturday, January 27th, to get a great introduction to non-biting midges of the family Chironomidae as well as mosquitoes.

Chase Gagne, M.E.S. member, M.E.S.O. member, and a graduate student at the University of Maine, is doing his M.S. thesis research on the insects of small pools atop bedrock outcrops along the Penobscot River. He has become fascinated by the incredible diversity of Chironomids currently found in Maine – nearly 190 species in 165 genera.

Chase discussed the diversity of Chironomids and their ecological significance, as well as how to distinguish the five subfamilies known thus far from Maine. Most larvae are aquatic, though their habitat and substrate preferences vary widely among species; most also feed on plant material, though some are known to be predatory. Some larvae not only have hemoglobin, but a variety that is even more oxygen-aggressive than our own. His final slide was a marvelous synthesis of key features to look for to distinguish both larvae and adults of the five subfamilies found in Maine.



Chase Gagne's summary slide on differentiating subfamilies of Chironomidae. Adults are distinguished based on wing venation, though the first tarsal segments in Chironominae are much longer than the tibiae, whereas they're subequal in the Orthocladinae. Larvae can be distinguished based on details of head capsule structures. Pete Darling photo.

Allison Gardner of the University of Maine had the flu and was unable to attend, so it fell to long-time M.E.S. member Chuck Lubelczyk to carry the full load of discussing mosquitoes and mosquito-borne diseases here in Maine. One of the key items he and Chase pointed out was that to easily distinguish adult mosquitoes from Chironomids, look at the mouthparts. The adult mosquitoes have the familiar elongate piercing and sucking mouthparts, whereas Chironomids have essentially nonfunctional and very short chewing mouthparts. Most adult mosquitoes are typically larger than adult Chironomids as well; the latter are typically 8 mm or less in length.

Chase also pointed out how the large clouds, or leks, of chironomids are comprised of males, and often will form over an irregularity in the topography, such as a cluster of cattails at the margin of a pond. They are seeking females, who when they fly into the lek, find a suitable mate and then depart for mating and egg-laying.

(continued on next page)



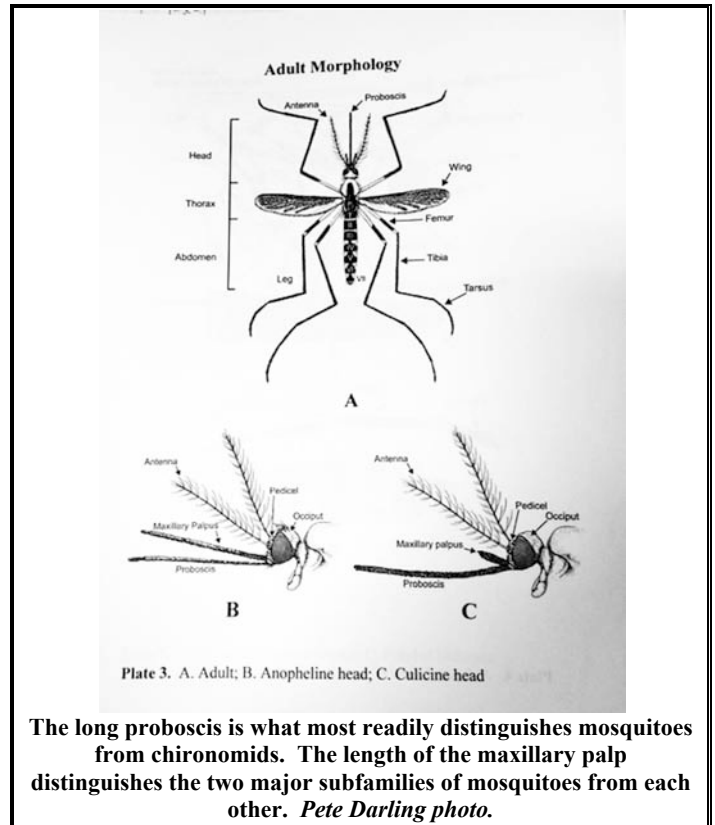
Chuck Lubelczyk responds to a question in his presentation on mosquito diversity in Maine, how to distinguish the various taxa, and the ones that are most significant in spreading diseases such as West Nile Virus and Eastern Equine Encephalitis.

Bob Nelson photo.

In the afternoon, Chuck took us through the mosquito key as a group and then set us loose to work through various specimens on our own. One specimen we all took a look at was *Uranotaenia sapphirina*. It has sapphire blue scales on its wings and parts of its body, the scales fall off easily but a few were still visible and they are striking.



There were plenty of pinned mosquitoes available for study at the workshop. *Pete Darling photo.*



The long proboscis is what most readily distinguishes mosquitoes from chironomids. The length of the maxillary palp distinguishes the two major subfamilies of mosquitoes from each other. *Pete Darling photo.*

Chase set up compound microscopes with slides of chironomids for us to check out. These insects are more difficult to identify, and the preparation is beyond most amateur abilities. The exposure to the process was valuable to gaining a greater understanding of the complexities of researching the intricacies of aquatic ecosystems. Not for the fainthearted!

* * * * *

Northeast Natural History Conference Scheduled in Vermont in April

https://www.eaglehill.us/NENHC_2018/NENHC2018.shtml

Students, professors, researchers, conservationists, and naturalists will convene in Burlington, Vermont, April 13-15, for the 2018 Northeast Natural History Conference. With presentations, workshops, field trips, and exhibits, the conference is a premier annual event in field biology and natural history across the northeastern United States and adjacent Canada.

They are currently soliciting presenters; current proposed sessions are:

- Moths (Lepidoptera) as Environmental Indicators
- Butterfly Conservation and Ecology in the Northeast
- Impacts of Invasive Species on Native Biodiversity
- Pollinator Ecology
- Landscape Ecology of Stream Macroinvertebrates
- Odonate Natural History

The conference, to be held at the Hotel Burlington and Conference Center (formerly the Sheraton Burlington Hotel), is always a great opportunity for biologists and naturalists to share results, progress, and new ideas about their work.

(continued on next page)

Northeast Natural History Conference (cont.)

Students are especially welcome. General conference registration will open soon.

Student volunteer opportunities are available - earn registration fees and attend for free!

Hopefully you, a student, or others you know will have an interest in participating.

They are also still seeking session moderators, presenters, and workshop and field trip leaders. Topics span a range of terrestrial, marine, or freshwater work in field biology and natural history.

- Call for moderators and sessions:
https://www.eaglehill.us/NENHC_2018/callforsessions.shtml
- Call for presentations (abstracts):
https://www.eaglehill.us/NENHC_2018/callforabstracts.shtml
- Call for field trips and workshops:
https://www.eaglehill.us/NENHC_2018/callforworkshops.shtml

* * * * *

**Hillary Morin Peterson Featured in
*Portland Monthly***

M.E.S. member Hillary Morin Peterson was featured in the December issue of *Portland Monthly*. You may recall the story about her and the new species of parasitoid wasp she had found and described, which was in the November issue of the newsletter.

Check it out at

<http://www.portlandmonthly.com/issues/winterguide2018/?page=14>

* * * * *

**Maine Maple Field Day
Saturday, 24 March, 2018**

Join us from 10:00 a.m. – 4:00 p.m. at 460 Mills Road, Whitefield (in Lincoln County).

Maple syrup buckets often contain a fascinating assemblage of insects, plus there are insects on tree boles, in the woodpile and tucked in other nooks and crannies this time of year. There is a seep open all winter down near the river and wetlands across the road.

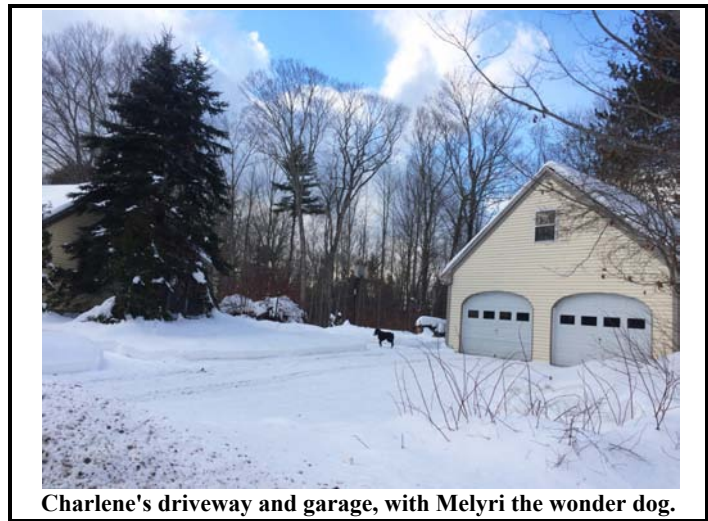
Come visit a backyard sugar operation, enjoy the company and collect a bug or two or maybe more.

Dress for the weather and be sure to wear boots; bring snowshoes if conditions permit, as well as your lunch and drinks. If the sap cooker is running, there are usually people hanging out, and it's a laid-back time (until a batch of syrup is ready to come off!).

DO PLEASE contact Charlene Donahue if you're planning to attend: call 485-0960 or by e-mail at donahuecp15@gmail.com.

There will be a meeting of the Executive Committee at 9:00 a.m. to discuss how we are doing on action items from the 2017 MES annual meeting; this meeting is open to all.

Directions: Take Route 17 east out of Augusta. Go 12 miles, and then turn right onto Route 218 (Mills Road); Charlene's house is 0.8 mile down the road, on the right. It's a cream-colored cape, with a garage with rounded doors (see photo at the top of the next column).



Charlene's driveway and garage, with Melyri the wonder dog.

* * * * *

Curiouser and Curiouser!

Lewis B. Carroll's comment certainly must apply to the aphid species *Melaphis rhois* (Fitch, 1866) and a newly recognized sibling species, *Melaphis asafitchi* Footitt and Maw, as described in a new paper in the *Canadian Entomologist**. Along with the third species *M. minuta* Baker, these are the only North American species in the aphid subtribe Melaphidina – the other species in which are restricted to SE Asia.

Both *M. asafitchi* and *M. rhois* are to be found in Maine, and have one of the most unusual life histories imaginable. Like many aphid species, they both have five parthenogenetic generations and one sexual generation. However, these species have nine functionally and morphologically distinct body forms, and alternate hosts between mosses (at least four genera are known to be hosts) and sumacs (both *Rhus glabra* and *R. typhina*).

Interestingly, the Maine specimen of *M. rhois* was reared from a sumac gall in 1935 by none other than Edith Patch; the specimen is at the CNC in Ottawa.

Bob Nelson (BeetleBob2003@gmail.com) has a pdf copy of the paper if anyone would like one.

* R.G. Footitt, and H.E.L. Maw, 2018: Cryptic species in the aphid genus *Melaphis* Walsh (Hemiptera: Aphididae: Eriosomatinae). *Canadian Entomologist*, v. 150, no. 1, pp. 35-65 (published online 19 December, 2017).

* * * * *

Spiders Use Caterpillar Shelters in Maine Ferns

Dan Jennings and his colleagues Jerry Longcore and James Bird have published a fascinating study* of the utilization by spiders of abandoned lepidopteran feeding shelters in ferns here in Maine. In their three-year study, they found some 39 species of spiders, from 13 families and 33 genera, occupying these shelters and refuges.

Though web-spinning spiders were more diverse, active hunter species were more numerous in their study. Spider utilization rates of shelters was comparable (~35%) in each year of the study, despite differences in sample sizes and variability among ferns studied.

(continued on next page)

Spiders shelter in caterpillar structures (cont.)

Bob Nelson (BeetleBob2003@gmail.com) has a pdf copy of the paper if anyone would like one.

* Daniel T. Jennings, Jerry R. Longcore and James E. Bird, 2017: Spiders (Araneae) inhabit lepidopteran-feeding shelters on ferns in Maine, USA. *Journal of the Acadian Entomological Society*, v. 13, p. 5-14.

* * * * *

Don't Forget - It's Party Time!

As announced in the November issue, M.E.S. President Charlene Donahue is retiring after more than 20 years with the Maine Forest Service. Join us all as we celebrate this happy occasion from 11:00 a.m. to 1:00 p.m. on **Monday, February 26th**, at the Maine Forest Service lab at 50 Hospital Street (= State Route 9) in Augusta. This is 2/10s of a mile south of the State Route 17 turnoff from Route 9, on the east side of the Kennebec River.

Contact Patti Roberts (207-287-2431, or via e-mail at patti.roberts@maine.gov) for more information.

* * * * *

M.E.S. Members Gather to Learn & Work

On January 6th, MES members gathered at the Maine Forest Service Entomology Lab for a work day. Five people learned how to pin, point and label insects. Seven worked on identifying, sorting, and upgrading the MFS collection. Two more helped with making points and working up some of the unprocessed specimens.

The day was filled with learning and laughter, sharing experiences and spending time together doing something we all enjoy. Working on this public collection is invaluable to the State and all its residents as well as the entomology community at large. If we have extensive, well-curated collections, it helps us understand our natural history and the world around us.

Two useful publications for beginners would include (1) *Museum Specimen Preparation Guidelines (incl. Vouchers)*, by J. Heraty, D. Yanega, S. Triapitsyn, accessible at https://entmuseum.ucr.edu/specimen_preparation/ , and (2) *How to Make an Awesome Insect Collection: A Beginner's Guide to Finding, Collecting, Mounting, Identifying, and Displaying Insects*, by Timothy J. Gibb and Christian Y. Oseto, accessible at <https://extension.entm.purdue.edu/401Book/default.php?page=home>. The first is entirely on-line, the second a book that can be ordered at the site.

* * * * *

Diversity and Stability

Two recent papers on insect diversity don't relate directly to Maine, but are interesting reads nonetheless. The first is a synthesis paper* on the early Eocene (48-56 million years in age) fossil Hymenoptera from numerous sites in the Okanagan Highlands of British Columbia and Washington state. The authors report at least 25 modern families of Hymenoptera, including the first records for Trigonalidae, Pompilidae, Sphecidae *sensu stricto*, Peradiinidae, Monomachidae, and possibly Halictidae.

A second** is in the latest issue of the *Annual Review of Entomology*, reports on newer analysis of probable insect diversity in the world. Previous estimates of perhaps 100 million species have now been scaled back, and that instead there are approximately 1.5 million, 5.5 million, and 7 million species of beetles, insects, and terrestrial arthropods, respectively.

Bob Nelson (BeetleBob2003@gmail.com) has a pdf copy of only the first of these papers, but will share it with anyone interested.

* S. B. Archibald, Alexandr P. Rasnitsyn, Denis J. Brothers, Rolf W. Mathewes, 2018: Modernisation of the Hymenoptera: ants, bees, wasps, and sawflies of the early Eocene Okanagan Highlands of western North America. *Canadian Entomologist*. (in press, published on-line on 8 January, 2018)

** Nigel E. Stork, 2018: *How Many Species of Insects and Other Terrestrial Arthropods Are There on Earth?* *Annual Review of Entomology*, v. 63, p. 31-45.

* * * * *

Insect Drawers and Cabinets for Sale

Long-time M.E.S. members will remember Chuck Peters, who for a number of years was Vice President and hosted the annual meeting at his home in New Gloucester. He also has written several articles for the newsletter over the years on the fine art of insect photography.

Chuck's interests in entomology have shifted away from active collecting, and he's interested in selling his cabinets and drawers.



Cornell drawers (6): Custom built of fine hardwood. 2 each of cherry, red oak, and mahogany. Corners are mitered and splined, hardboard bottom set in slots for strength with glass tops. Pulls and 2 card holders. \$300 for all 6.

Dimensions in inches: 18.625" wide x 16.125" long x 3.125" high.

For information, contact Chuck Peters directly at chuckp@securespeed.net or via phone at 207-615-6365. *(more photos on next page)*



Collection Cabinet and 6 drawers: Cabinet built to accommodate antique drawers. Custom built of cabinets-grade oak-veneer plywood, dimensions in inches: 25.25" wide x 24.5" long x 27.75" high



Four antique drawers and two hardwood drawers with glass tops built to same dimensions: 21.5" wide x 19.75" long x 3" high. Four drawers are lined with foam for pinning and all will accommodate unit trays; asking \$500 for cabinet and 6 drawers. Contact info. for Chuck Peters on previous page.

* * * * *

Flooding Better than Spraying in Cranberry Bogs

A forthcoming paper* reported the results of studies on control of cranberry pests in Wisconsin. Periodic spring flooding of the fields was as effective at eliminating pests as commercial spraying, but had a much less deleterious impact on predatory arthropods. The study has potential implications for cranberry growing in Maine as well.

Bob Nelson (BeetleBob2003@gmail.com) has a pdf copy of the paper if anyone would like one.

* J. van Zoeren, C. Guédot, S.A. Steffan, 2018: Conserving carnivorous arthropods: an example from early-season cranberry (Ericaceae) flooding. *Canadian Entomologist*, in press (published on-line January 18, 2018)



A spruce budworm trap similar to those found with caches of fir seeds. See Charlene's President's Report (p. 1) for the story.

COMING M.E.S. EVENTS in 2018

(details of most events will be in future newsletters)

- 24 March** Maple Syrup collecting day in Whitefield
 - ?? April** Joint Service Day with MESO – Orono
 - 12 May** field day at Sunhaze Meadows – Benton
 - ?? June** field day at Moosehorn NWR, Washington Co.
 - 7 or 14 July** field day in T3R7 WELS (Charlene's camp by the new Katahdin Woods and Waters Nat'l Monument)
 - 4 August** insect tracks, signs and identification – Long Cove Headwaters
 - 25 August** field day at Kathy Claerr's, Bowdoin
 - 8 September** field day in Rangeley area, Saddleback
 - 12 September** Bug Maine-ia at Maine State Museum
 - 6 October** M.E.S. Annual Meeting in Clinton
 - ?? November** Speaker from Maine Bumble Bee Atlas project
- (See <http://www.colby.edu/MES/> for more detailed information; new information on any event will be posted as soon as 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.*