

# The Maine Entomologist

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

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A longjawed orbweaver beside a frozen water drop on a sumac branch in Troy, Maine, in late December. Photo by Dana Wilde

## Spiders in Winter

by Dana Wilde

One late-December afternoon I was looking at the ice-crusted branches of the staghorn sumac in my backyard, when what to my wondering eyes should appear but a longjawed orbweaver (family Tetragnathidae) clambering along a twig in between the frozen clots.

Do spiders survive Maine's harsh winters?

About 85 percent of the world's spiders overwinter in soil and leaf litter (Foelix 2011). The rest tend to die as adults in the fall, depending on each species' life cycle and, to some extent, the climate they live in. Spiders' life cycles are characterized by five basic patterns (Catley 1992):

1. Species that mature after two or more years and overwinter in various stages of their development, including as adults (eurychronous species, in which adult spiders may be present at any time of year, such as some wolf spiders).
2. Species that reproduce in spring or summer and overwinter in immature, or subadult, stages (stenochronous species, in which adults tend to be present only in certain seasons, such as cobweb weavers and jumping spiders).
3. Species that lay eggs in autumn and overwinter as spiderlings in the egg case (stenochronous species, such as orbweavers).
4. Species that reproduce during winter (stenochronous species such as some sheetweb weavers, which are also characterized as winter-mature).
5. Species that reproduce in both spring and autumn and overwinter as adults (diplochronous species, which have two reproductive cycles per year).

Many orbweaving spiders' life cycles involve mating in summer and laying eggs in fall, with the adults dying after

one season. Among the others, many overwinter in subadult or juvenile stages, and in some cases as adults.

Overwintering spiders are characterized as winter-active and winter-inactive (Aitchison 1984). Winter-inactive spiders find shelter and enter a sort of hibernation state in which they draw in their legs and go stiff, with their metabolisms greatly reduced, until warmer spring weather reactivates them. Winter-active spiders, on the other hand, continue to move around and feed at temperatures below freezing (32 degrees Fahrenheit). Studies in western Canada (Aitchison 1984) found that the most abundant winter-active species were predominantly wolf spiders (Lycosidae), followed by sheetweb weavers (primarily Erigoninae, or dwarf sheetweavers), and some species of crab spiders (Thomisidae). Other spiders known to be winter-active under litter and snow are sac spiders (Clubionidae) and long-jawed orbweavers (Tetragnathidae), like the one I saw in my icy sumac.

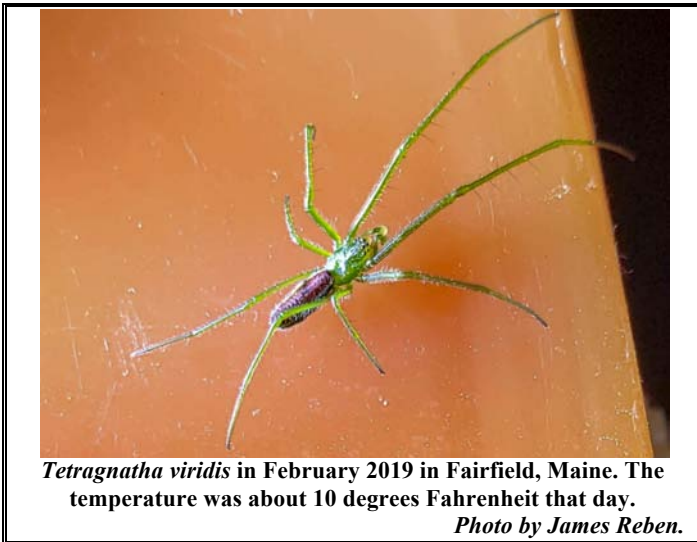
Leaf litter provides excellent insulation, and so by and large spiders are protected from temperature fluctuations (Foelix 2011), and this should have particular value for survival in Maine. And some of the best insulation for overwintering spiders is the snow pack itself. About 8 inches of snow can maintain a fairly constant temperature of roughly 27 F underneath, even when the air temperature is as low as minus 30 F. Snow can keep a spider's leaf-litter shelter at

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*Spiders (cont.)*



around 32 F, and researchers have found that air temperatures as low as minus 40 F hardly affect spiders under snow (Foelix 2011).

Another way spiders withstand the cold is through a physiological adaptation called supercooling (Catley 1992, Foelix 2011). The mechanism is not well understood, but the hemolymph (or circulating fluid analogous to mammalian blood) in some spiders contains glycerol, which in association with certain proteins acts like an antifreeze. Supercooling among spiders has been observed effective at 18 F and down to 10 F; some species of garden spider have resisted freezing to death even when exposed to cold as low as minus 4 F, and the eggs of some cobweb weavers have remained viable down to minus 40 F. Spiders in colder climates tend to have lower supercooling points than those in warmer areas; some species of thin-legged wolf spiders (*Pardosa*) in Canada are hardier in deep cold than members of the same species in Great Britain (Kiss 2002).

It's thought that for some winter-active spiders, starvation could be a survival mechanism. As the temperature dips toward the supercooling point, some spiders may cease eating because the hemolymph of some prey may not contain cryoprotectants and thus the meal can freeze in the spider's gut. So it's in the interest of the spider not to ingest freezable food in deep cold.

Some spiders ensure their species' survival by laying eggs in late summer or fall and bundling them into a silk cocoon to overwinter and then hatch in spring. Some spider eggs can remain viable in temperatures as low as minus 11 F. Cross spiders (*Araneus diadematus*) mate during late summer, and the female then spins a cocoon and lays her eggs in it. Within a few days of laying the eggs, she dies, and the spiderlings hatch out in the spring. Black-and-yellow garden spiders (*Argiope aurantia*) and barn spiders (*Araneus cavaticus*) follow a similar routine, though I watched a mother barn spider guard her egg sac for weeks before she finally died in early December.

As an overall pattern, spiders seem to favor overwintering as subadults, rather than as adults or as eggs. Spiders are so well-adapted in general to the cold that some

spiders' life cycles can be longer in colder climates – in some cases extending to up to four years beyond characteristic one- or two-year cycles (Foelix 2011).

Winter mortality rates are surprisingly low for spiders. Adaptability is the name of their game. And nature's.

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M.E.S. member Dana Wilde writes "The Backyard Naturalist" columns for the Central Maine newspapers. This story appeared in a different form in one of those columns. His forthcoming book, "A Backyard Book of Spiders in Maine" should appear later this year from North Country Press in Unity.

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**Harvest-Home and Belated Thanks-Giving**

**by M. Tony Roberts**

2019 has been a watershed year for the Roberts, Tony and Amy, for it saw the moment when the long-deferred disposition of our collection of moths, and chiefly the understudied and comparatively primitive microlepidoptera, came to fruition through a push from The Maine State Museum's new Natural and Archeological History Division in Augusta and The McGuire Center for the study of Lepidoptera and Lepidopteran Diversity in Gainesville, FL (a division of the Florida UNHM) to reach agreement on sharing our >25,000 mounted specimens and other material cooperatively between them.

In acknowledging my thanks for bringing this wished-for accord into being, thanks must be given first of all to the vision and drive of Dr. Paula Work, Maine's first Curator of the Division noted above, as well as to Dr. Andrei Sourakov, Collections Manager of the McGuire Center, which is rapidly growing into one of the largest repositories of Lepidoptera in the World and actively expanding from its tropical base to take in representative boreal and holarctic faunas as well.

None of these cooperative efforts, however, could have been realized without the active and tangible input of the

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*Harvest Home (cont.)*

MES; and in putting into practice what would have remained otherwise merely a good intention, it is without any question our General, *prima inter pares*, Charlene Donahue, who stepped into the breach and proved herself indispensable in mobilizing both the forces and the logistics to bring the whole labor-intensive task to fruition.

What was involved here was no less than a total inventorying of the specimens from this 20-year effort, and the identification therefrom of species already represented by a total of above 12 specimens—up to 3 surplus specimens of which are to remain in Augusta as scientifically-determined samples of a given taxon's presence in Maine between 1987 and 2007, when a decimation of all local insects (first noted in 2003) made further collecting efforts infeasible.

In this final "sort," Charlene was ably assisted by her *aide de camp*, Dana Michaud, who also requires a shout out for his delicate touch with fragile, and sometimes truly minute, specimens, double-mounted on tiny stainless steel pins, an effort requiring the rock-steady hand that deserted me more than a decade ago!

No less instrumental, however, were the legions who answered General Donahue's call to arms; and for their indispensable help I am deeply grateful to: Nina Beckworth, Anna Court, Peter Darling, Trish and Wesley Hutchins, Wheeler Lowell, Liz Mazurkiewicz (daughter of late charter MES member and much-missed entomological friend, Michael!), Cathie Murray, Kathy Claerr, Jill Osgood, Mike Parisio, Hillary Peterson, and Jon Wallace.

And now, at last, I cannot fail to shout out to Professor Bob Nelson (editor of this, our Newsletter), not only for his coleopterist's skilled, hands-on work in processing the collection with all others above, but for his teacher's enthusiasm, his drive, his universal know-how and can-do attitude, and not least his decade-long determination to see this collection permanently preserved—but most of all for long being a very dear and ever-informing, ever-encouraging friend.

Finally, I owe the greatest debt possible to the late Dick Dearborn, insect expert *extraordinaire*, whose vast fund of knowledge was matched only by his personal modesty, for encouraging me to resume my long-lapsed early passion for moths, and who remained my close collegial and personal friend for many years until his retirement from the Maine Forest Service. Furthermore, Dick was instrumental in making this effort possible even after his passing by calling forth memorial funds pledged in his honor by the entomological community to help bring to fruition this pioneering commitment from the State of Maine to establish a permanent record of its long-neglected Flora, Fauna, and Human heritage.



**Work on Tony's Collection Continues**

The work on Tony Roberts' Lepidoptera collection goes on. Although we catalogued the species and numbers of specimens, there is more to be done. The McGuire Center is more than willing to leave the specimens in Maine as MES works to catalog all the locations and dates of the Maine specimens. This cataloging will become part of the baseline data for insects in the State of Maine and also can be shared with the McGuire Center so that they do not have to do it. As Dr. Sourakov of the Center said recently, "These specimens may sit her for decades before someone works with them." So he is very happy to have the information about these precious specimens shared with the larger entomological community.

People are welcome to help with this job any Monday or Thursday, or when the notice goes out of a special MES museum work day. Contact Charlene Donahue via e-mail at [donahuecp15@gmail.com](mailto:donahuecp15@gmail.com) or by phone at 485-0960 if you would like to help.



**Ross and Joyce Bell at "BellFest" in Burlington, Vermont, in June, 2010. They're holding a copy of Yves Bousquet's new guide to the Carabidae of the Northeast. Ross's own book on the Carabids of Vermont and New Hampshire was formatted to look just like this, to make a matched pair of volumes.**

*- Photo by Joshua E. Brown, University of Vermont*

**Remembering Ross Bell**

**by Trish Hanson**

Ross Bell's death on November 9, 2019, had a profound effect on many of us. I, for one, found myself reflecting on Ross's keen influence on my life and career. I recalled his unique teaching style, dry humor, and indefatigable ability to share in the excitement of discovery, even if my observations were of insects that he'd seen many times before. I always looked forward to and enjoyed our interactions, leaving each time with a new idea or story to reflect upon. He was a favorite member of my doctoral committee, reminding me why I had pursued entomology in the first place, freeing my mind of the academic "obligations" and hoop-jumping involved in earning a PhD, and focusing my attention and fascination on the almost unbelievable lives and behaviors of insects and other invertebrates.

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### **Remembering Ross Bell (cont.)**

John Spence, another former student who is now Professor Emeritus at the University of Alberta, remarked that for him Ross's death was similar to losing a parent, as Ross and Joyce were "my core support and guidance as I navigated the 'difficult' years of transitioning from a rambunctious and mischievous adolescent to (I think) a rational adult with a useful mission in life." Ross aptly rekindled John's childhood interest in natural history and his association with Ross and Joyce "led me to understand that it could be a career path and prompted me to take that turn in the road."

Shortly after Ross's death, Jessica Rykken, also one of his students, wrote, "Even though it's been quite a few years since I last saw Ross and Joyce, I really feel this loss. I wouldn't be working as an entomologist in Alaska today (in many ways, a dream job), if it weren't for Ross. And I think there are lots of us out there, who aspired to become half as passionate about weird and wonderful organisms that nobody else much notices or cares about."

Ross's history and academic achievements are well documented in the Pensoft ZooKeys publication that was written after our BellFest celebration. I encourage you to check out the proceedings of the symposium (see links below) to learn more about the life and accomplishments of these remarkable people.

I think readers might especially appreciate the first three papers. Robert Davidson's *Preface* begins, "What can you say about a man who could reel off the catalogue of Popes from Peter to present, could recite the list of English monarchs from 1066 to Elizabeth II (and many pre-Norman ones as well) and was well versed in the world's most obscure religions, and could even make jokes in pidgin?"

You can read the second paper, *'Bellography': Life and Contributions of Ross and Joyce Bell, two New England Naturalists* by John Spence, George Ball, Robert Davidson and Jessica Rykken, to learn about his early family life, schooling, how Joyce (an excellent illustrator and microscopist) came into his life and what "Team Bell" accomplished and published.

In the third paper, *Ross and Joyce Bell as Mentors at the University of Vermont*, David S. Barrington, who studies "prudish ferns", comments that it was Ross's "obsession with the animals that most deeply affects his students, and it is the adoption of this passion in their own work that has led to their success and thus his as a mentor. Ross modeled some key behaviors, imitated by his students, that allowed success in this most obscure discipline of ours."

I am so grateful that I had a chance to talk with Ross the day before he passed. He was lucid and thoughtful and very much himself. I was able to convey to him how important he was in my life and in my career choice, and we even had a few smiles over past events. Like so many others, I fell under the spell of this singular naturalist, remarkable taxonomist, and beloved friend.

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Proceedings of a symposium honoring the careers of Ross and Joyce Bell and their contributions to scientific work.

Burlington, Vermont, 12–15 June 2010:  
<https://zookeys.pensoft.net/issue/360/>  
Preface: <https://zookeys.pensoft.net/article/2979/>  
'Bellography': Life and Contributions of Ross and Joyce Bell, two  
New England Naturalists:  
<https://zookeys.pensoft.net/article/2978/>  
Ross and Joyce Bell as Mentors at the University of Vermont:  
<https://zookeys.pensoft.net/article/2977/>

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### ***A Tale of Two Winter Caterpillars***

**by Fred Gralenski**

Here in the Quoddy region this time of year is usually not very conducive to studying the lives of caterpillars in their natural environment, but we do have a couple of kinds of caterpillars that might sneak out if there is a warm spell. The most famous of these types of caterpillars is the Woolly Bear, the larva of the Isabella Tiger moth.

Almost everyone recognizes this fuzzy black caterpillar with a reddish-orange band about his middle. This caterpillar is often seen on woody trails in the fall and similarly in the spring, and sometimes during warm spells in midwinter. The Woolly Bear, for some reason, has a following as a weather predictor. Supposedly, if the orange band is less than a third of the length of the caterpillar, a worse than normal winter is in store; conversely, if the orange band is bigger, a milder winter is predicted.

A different but still very unscientific analysis requires closer attention to the caterpillar, and it goes like this: There are thirteen segments to the caterpillar, and there are thirteen weeks of winter. The orange covered segments represent the mild weeks of winter and the black covered segments represent the tougher weeks of winter. Also, if the Woolly Bear is seen travelling south, that will influence the winter to be longer and colder, but if the caterpillar is travelling north the winter will be shorter and milder. For the other predictors, NOAA predicts an average (?) winter. The Farmer's Almanac predicts a winter colder than normal and with above average precipitation.

Whether you are into predictions or not, be careful in handling fuzzy caterpillars. Some people, especially children, can be allergic to the toxins in the fuzz, and develop an annoying rash.

I saw my first wildlife of the New Year when I went out to check the precipitation gauge around 7:00 a.m. Now I'm not used to seeing a caterpillar on January first, even if it was only 29 degrees out, but there it was, on the ice on my driveway. Now Woolly Bears have enough sense to dress up for the cold weather, but this guy was stark naked. I thought it was dead, but it moved ever so slightly, so I brought it in and with the help of Facebook (Downeast Naturalists) I think I got it identified securely as the larva of a Large Yellow Underwing cutworm moth (*Noctua pronuba*).

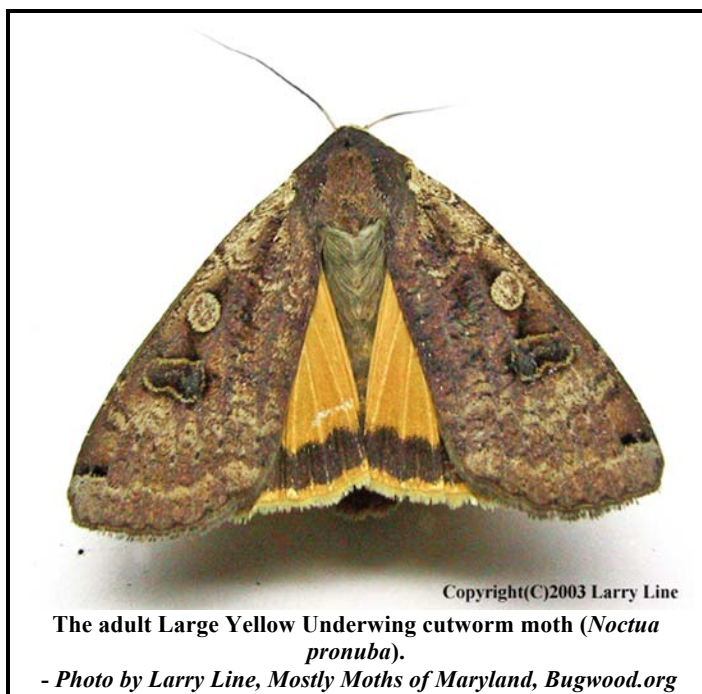
Now I don't remember seeing any of these moths around in my traps last summer. This is an invasive species and was accidentally introduced from Europe into Nova Scotia, and was first noted there in 1979. The moth is a strong flier and adept hitchhiker and has already set up shop all the way to the west coast, and it is still being carefully studied.

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Caterpillar of the Large Yellow Underwing cutworm moth (*Noctua pronuba*) from Pembroke. - Fred Gralenski photo

It doesn't seem to have any redeeming characteristics, and much study is being directed at the best method of its control, though in Maine natural parasitoids seem to be keeping it in check. Significant damage to winter wheat and alfalfa hay, however, was first noted by Michigan farmers in 2007. The following winter the lawns of homeowners in the area were plagued with millions of caterpillars munching on the grass under the snow. A weird side effect was that many dogs ate the caterpillars, which resulted in the dogs vomiting blood and suffering other intestinal disorders. Whether or not any of the dogs were fatally affected was not reported.



Copyright(C)2003 Larry Line

The adult Large Yellow Underwing cutworm moth (*Noctua pronuba*).

- Photo by Larry Line, Mostly Moths of Maryland, Bugwood.org

Severe outbreaks like this seem to be unusual, and the harmful effects on any birds or other animals that might prey on the moths or their larvae have not been fully investigated. Still, many questions remain. One thing is pretty certain. I am going to try to raise my caterpillar and watch it grow, hopefully to an adult, but the rest of its existence will be in a jar.

- Long-time M.E.S. member Fred Gralenski lives and writes in Pembroke in Downeast Maine. This piece first appeared in *Quoddy Tides*, a local paper published in Eastport.

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### Notes on the Status of the Fiery Skipper (*Hylephila phyleus*) in Maine

By Robert E. Gobeil and Rose Marie F. Gobeil

On 27 September 2019, while photographing butterflies at the reclaimed municipal landfill located on Foss Road in Saco (York Co.), we noticed an unusual skipper that we had never previously seen. We were able to take several photos of the same skipper as shown in Fig. 1. The skipper was feeding on asters in a grassy area around the pond at the landfill. This is a site that we extensively surveyed during the summer of 2013 (Gobeil and Gobeil 2014). After closer examination of the photos, we determined that the skipper appeared to be a Fiery Skipper (*Hylephila phyleus*). The photos were forwarded to Matt Arey and Reggie Webster and both confirmed that it was a Fiery Skipper.

We then contacted Ron Butler, who maintains the Maine Butterfly Survey (MBS) database, to see how many records he had for this species in Maine. He indicated (pers. comm.) that the database contained three records and stated that he obtained the first record for Maine on 9 August, 2012, in Northeast Carry Twp. (Piscataquis County). This is a township on the northeast shore of Moosehead Lake. The skipper was seen on a Rugosa rose. The other two Maine records are as follows: 15 September, 2012, in Old Orchard Beach (York County) by Stella Walsh, and 1 August, 2013, on Cliff Island in Portland (Cumberland County) by Donald H. Thompson.

We then did an online search and located another Maine record of a Fiery Skipper in Wells on 9 August, 2017, photographed by Molly Jacobson (BugGuide.net 2019). We contacted Molly Jacobson (pers. comm.) and she indicated that the skipper was nectaring on Goldenrod in a field on Post Road in Wells.

There may be other Maine records that we missed in our online searches but at the present time, there appear to be at least five records of the Fiery Skipper in Maine.

In nearby New Hampshire, there are at least 11 records of the species. All of these were recorded and photographed by Steve Mirick (pers. comm.) in coastal towns in Rockingham County and most are listed and confirmed on e-Butterfly (2019). The earliest records (4) were recorded in the fall of 2012, followed by one seen in 2013, and then four sightings in 2017. His latest sightings were in Odiorne Point State Park in Rye, New Hampshire, on 29 September, 2019 (1), and 13 October, 2019 (1). All 11 records were in the fall months (September and October).

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**Fig. 1. Fiery Skipper (*Hylephila phyleus*), in Saco, Maine (York County), on 27 September, 2019. Photos by Rose Marie F. Gobeil.**



In Massachusetts, the first record of a Fiery Skipper was on 2 October, 1940, and then none were observed again until 1991 (Stichter 2014). Since 1991, the species has been reported almost every year in Massachusetts and the Fiery Skipper is now considered a regular migrant in that state. There was a major influx in the fall of 2012, when the species was recorded in large numbers in Massachusetts (279 individuals) with a few records farther north in Vermont, New Hampshire, and Maine. In Maine and New Hampshire, the first state records of the species were in 2012.

The northward invasion was so great in 2012 that a Fiery Skipper was even recorded at Lily Lake in Saint John, New Brunswick, Canada, by Jeff Clements on 26 August, 2012. This was the first record for New Brunswick (e-Butterfly 2019). The winter of 2011-2012 was warmer and milder than usual, which may account for the surge in Fiery Skippers.

Stichter (2014) believed that the number of Fiery Skippers in Massachusetts will continue to increase due to global warming. The species is also a generalist and easily adapts to new environments, has many broods (up to five) and uses various types of common grasses as host plants. At this time, the Fiery Skipper is listed as a rare stray (RS) in Maine (deMaynadier et al. 2019). Based on the increasing

number of records farther south and with global warming, the Fiery Skipper will probably become a more regular fall migrant in Maine.

**Acknowledgements:**

We wish to thank Matt Arey and Reggie Webster for confirming the identity of the skipper. We also want to thank Ron Butler for providing us with a list of Fiery Skipper records in the MBS database. Molly Jacobson and Steve Mirick also kindly supplied us with information on their sightings in Maine and New Hampshire.

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**The Buzz on the Hymenoptera  
Winter Workshop**

**By Tom Schmeelk**

This year's winter workshop was held on January 25th in a brand-new location at the Deering building on the State Eastside Campus. The building, which is the new home of the Maine Forest Service entomologists, was a perfect fit for our annual workshop and unless things change, we are looking forward to having our workshop here for the foreseeable future.



***István Miko was an engaging and knowledgeable instructor at the Wasp Workshop in the new Maine Forest Service facilities in Augusta. - Photo by Hillary Peterson***

We met in the large conference room on the first floor which was spacious and well-equipped, outlet and technology-wise. The building also was equipped with a

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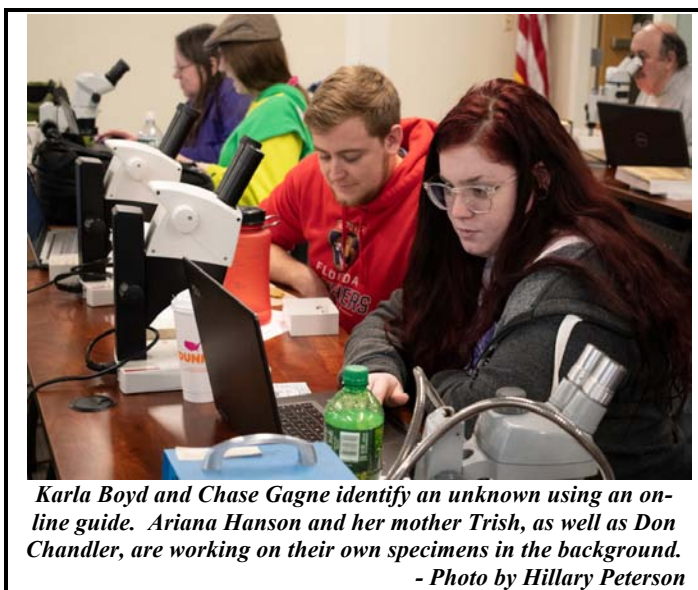


### *Writing Workshop (cont.)*

microwave, refrigerator and vending machines for participants to use. The workshop itself was well attended with over 30 entomologists, both amateur and professional, peering into dissecting 'scopes to identify various families of bees, ants and wasps. Many of the participants were returning MES members, some of whom were not able to make it to last year's workshop.

Tom Schmeelk welcomed participants on behalf of the Maine Forest Service, which cosponsors the workshops. This year's workshop focused Hymenoptera, a sometimes difficult order to identify and work with (both alive and pinned!).

Homemade baked goods, tea and coffee were offered in the back of the room and gladly consumed by hungry participants. Thank you to all who attended and help make this a fun and successful workshop.



*Karla Boyd and Chase Gagne identify an unknown using an on-line guide. Ariana Hanson and her mother Trish, as well as Don Chandler, are working on their own specimens in the background.  
- Photo by Hillary Peterson*

We were very fortunate to have Dr. Istvan Miko from the University of New Hampshire lead this year's workshop as we delved into all things hymenopteran, including the parasitoid wasps in which he specializes. Istvan, in addition to teaching at UNH, is also the manager of the UNH Insect and Arachnid Collections. Istvan's humor and knowledge were very much appreciated and made for a fun and interesting workshop.

During the presentation, handouts he provided showed drawings used for identifying key morphological features of hymenopterans in order to identify specimens to family. He also used slides to illustrate key points. After the morning lecture, the afternoon was spent working in groups of two, using microscopes as well as on-line and hardcopy keys to identify specimens to family.

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### **Maine Maple Field Day: Saturday, 14 March, 2020**

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](mailto:donahuecp15@gmail.com).

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.

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### **A Writing Workshop for Naturalists - Jump-Start your Newsletter Story**

**March 28, 10:30 a.m. - 2:30 p.m. in Whitefield**

Two writing experts will help us share our entomological or natural history experiences with others. Think about what you might like to write up for a newsletter: an interesting field observation? A new technique? Short biography of an underappreciated entomologist? A photo quiz? Poem? Perhaps there's a topic about which you're clueless but curious – here's an opportunity to learn and pass on what you find.

In this half-day workshop we begin by reading and discussing some sample pieces, moving beyond our initial reactions of "I like it" (or "I don't") to uncover the authors' choices about how to frame their subject, reach their intended audience, and structure their writing.

Using this awareness of the many choices an author makes, we ask participants to work on a piece of their own writing. Participants should come with a project in *any* stage of development (an idea, an outline, notes, or a draft).

We'll do at least one round of "workshopping" everyone's efforts, at whatever stage they're at. This means we'll share our projects in a small group and give constructive feedback to each other.

Each participant should end the day with a draft naturalist's project for a newsletter and a network of fellow readers and writers willing to offer support and feedback as they move that project to completion.

We will take a mid-workshop break for lunch.

#### **Please bring:**

1. A project or idea you'd like to work on
2. A laptop or wifi-capable device if you have one, even if you plan to write using pencil and paper
3. Bag lunch

#### **Workshop leaders:**

**Pat Hager**, USM Lecturer in Honors Writing and Coordinator of the USM-LAC Writing Center

**Seri Lowell**, former Science Writing Specialist at Bates College and Editorial Associate at the **Journal of Mammalogy**.

*(cont. on next page)*

*Writing Workshop (cont.)*

**PRE-REGISTER BY SUNDAY MARCH 22:** Call Kathy Claerr at 207-666-3551, or email [kclaerr1@comcast.net](mailto:kclaerr1@comcast.net) (*preferred*). If an insufficient number of prospective participants registers, the event will be canceled, and participants notified by email (or telephone).

**Location:** Charlene Donahue's home, 460 Mills Road, Whitefield, Maine. Ph: 207 485-0960

**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.

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**Beyond the Field Trip: EntomoSymposium 2021**

There are a lot of Mainers, natives and transplants alike, working in entomologically related areas. Think of agriculture, home pest management, supporting beneficials in your backyard. Others indulge themselves in insects and spiders as a hobby. Wouldn't it be great to meet fellow members and enthusiasts, and share our perspectives, professional or otherwise?

I have proposed, and the MES Executive Committee has agreed to support, a symposium in April of 2021 focusing on entomologically related activities in Maine and the region. The aim is to bring together persons interested in terrestrial arthropods, especially insects, to exchange insights, information, and updates, as well as foster a better general understanding of their activities, and provide a forum for networking.

I intend this symposium to be open to MES members, as well as non-members working in the ento/arthro areas, and the general public in Maine, and perhaps the contiguous states and provinces. I envision a day of short seminars, dissemination of a participant list, displays by businesses, and plenty of room to meet and chat. I'd even like to have a themed art display.

There are a lot of different tasks and types of tasks associated with the planning. For example, someone who knows the art world could take on preparations for a display. Someone with talent could design a logo for the event.

Perhaps you have a project you'd like to talk about. Where would you like to participate? Drop me a line about what you might like to contribute.

- **Kathy Claerr** - *e-mail* at [kclaerr1@comcast.net](mailto:kclaerr1@comcast.net)

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**Belated Congratulations!**

We only just became aware that long-time M.E.S. member Andrei Alyokhin, as well as Frank Drummond from the University of Maine, both received prestigious awards last March from the Eastern Branch of the Entomological Society of America.

Andrei was recognized with the Distinguished Award in Extension, while Frank Drummond was presented the Distinguished Award for Teaching. These awards are given to entomologists who demonstrate high levels of accomplishments in outreach and teaching respectively.

Congratulations to both on recognition for jobs well-done!

**IPM Workshop at Longfellow's Greenhouses, Manchester: Thursday, April 2nd**

Beneficial insects abound! And its not just about beautiful bees and pollinators. Come learn about lesser-known natural enemies and the important role they play in keeping pests out of our gardens and landscapes. Longfellow's Greenhouses staff will share their secrets and demonstrate how they use beneficial insects and Integrated Pest Management to prevent and manage pests.

The workshop will start at noon, with a brown-bag lunch presentation by Dr. Kathy Murray, IPM Entomologist, Maine Department of Agriculture, Conservation and Forestry (munch and learn format! Bring your own lunch!). Following the presentation, Dave LeBlanc, Longfellow's Greenhouses grower and biocontrol manager, will showcase the IPM/biocontrol methods they use to produce their gorgeous, healthy plants.

For more information or to sign up for this workshop, contact Cathie Murray (at [cathie.murray@gmail.com](mailto:cathie.murray@gmail.com)) or Kathy Murray (at [kathy.murray@maine.gov](mailto:kathy.murray@maine.gov)) (yes, there are two of us with nearly identical names!)

**Directions:** From I-95, take Exit 109 (northbound) or Exit 109B (southbound) to get on U. S. Route 202 westbound. After all the car dealerships, the highway will climb a hill, then drop down the other side. Puddledock Road is the first right turn beyond the first stoplight. (If you get to a second stoplight, you've gone too far.) Longfellow's is about 1/3 mile down this, on the right.

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**View of Mt. Washington from Sturtevant Farm**

**May Field Day in Fayette**

May 30th we'll be gathering at the Meadow Brook and Sturtevant Farm Conservation area of the Kennebec Land Trust, atop Surry Hill in Fayette in the far NW corner of Kennebec County.

The 327-acre Meadow Brook and Sturtevant Farm Conservation Areas permanently protect two active farms, wetlands, a cedar seepage forest, a homestead built in 1784, and a beautiful view of the western mountains.

Dana Michaud (872-7683) is coordinating the event; more information will be in the May newsletter.

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## June Field Day in "The County!"

June 12th-13th-14th

Join us for a weekend of relaxation and bugging at *Skylandia Farm* in Grand Isle, SE of Madawaska on the New Brunswick border! Check them out at their web site - <https://www.skylandiafarm.com/>.



*Mixed hardwood and conifer forests, as well as open fields, wetlands (including beaver ponds) and other habitats await exploration at Skylandia Farm on our June field event.*

The organic farm has some 320 acres of woodlands, fields, and wetlands available for exploration and investigation. We've booked two nights at the farm, which has indoor sleeping accommodations for eight people (more if anyone wants to sleep on the floor), as well as potentially unlimited outdoor camping space. Note that this area was also where Emerald Ash Borer (EAB) was first found in Maine. The St. John River is not far distant from the farm.

The plan is for people to arrive on Friday, stay overnight that evening, then be free to explore, investigate and collect through Saturday, and stay again Saturday night and return home on Sunday.

Linens are provided, but of course we'll need to bring our own food. If you'd like to join us, contact Bob Nelson (BeetleBob2003@gmail.com) to get on the list; we'll maintain a waiting list beyond the first eight to sign up for indoor accommodations. Cost for indoor lodging is estimated at ~\$30 per person for the entire weekend, depending on participation.



*One of the beaver ponds at Skylandia Farm.*

# THE LAST BUTTERFLIES

A SCIENTIST'S QUEST  
TO SAVE A RARE AND  
VANISHING CREATURE

NICK  
HADDAD



### ***Book Review:* by Dana Michaud**

*The Last Butterflies*, by Nick Haddad. Princeton University Press, 2019; 264 pp. (Hardbound, 5.5" x 8.5" x ~1" thick, with 16 color plates and 7 black-and-white illustrations; list price \$24.95)

*The Last Butterflies* is the story of one man's two-decade effort to save some of the U.S.'s rarest butterflies.

Although he was an ornithologist studying biodiversity conservation to help species in an area overcome by habitat disruption or loss, Haddad was approached to devise conservation plans for two of North Carolina's rarest local butterflies: the St. Francis' Satyr and the Crystal Skipper. However, his book deals with broader issues than those limited to the Southeast.

In Part I, consisting of six chapters, Haddad deals in each chapter with a rare species or subspecies that required human intervention to be saved from impending extinction. From habitat fragmentation, invasive plants, over-collecting, mosquito spraying, and hurricane damage, each species' known numbers ranged from a few hundred down to less than a dozen individuals. With the help of like-minded individuals dedicated to finding out why each species was losing ground, Haddad had to devise recovery plans that would provide safe habitat zones with the proper host plants, so each species could recover and survive.

In Chapter Two, Haddad covers the Bay Checkerspot, a one-common butterfly that like many, has suffered many local extirpations over time due to habitat fragmentation, drought, etc. The last few colonies came under protection in the nick of time. The need for monitoring and intervention (reintroduction) may be the only hope for this species.

### *The Last Butterflies (cont.)*

Chapter three explores the rediscovery of a species once thought to be extinct, Fender's Blue. Chapters four to seven discuss the Crystal Skipper, the Miami Blue, and St. Francis' Satyr, finishing with the beautiful but critically endangered Schaus' Swallowtail, a butterfly that still teeters on the edge of oblivion with a population that's fallen to less than a dozen known individuals. Its survival as a species remains uncertain. In an area impacted by climate change and seeing stronger hurricanes, and with limited range, the Schaus' Swallowtail has been declared extinct twice, but a small number somehow continue to survive nonetheless.

In Chapter eight, the beginning of Part II, Haddad explores and discusses the fate of the British Large Blue (*Maculinea arion euthyphron*) in Great Britain. Haddad explains just how complex the life cycle of some common creatures can be. Here, this once-common butterfly has slowly lost ground due to habitat loss over the course of more than a century. Its biological requirements were never totally understood before its extinction was declared in 1979. The last piece of the puzzle discovered too late, the British Large Blue joined the list of extinct species and subspecies lost forever. However, once the needs of the species were discovered by studying the Swedish subspecies (*M. arion arion*), this latter has been successfully introduced into the British fauna.

In Chapter nine, "Monarchs: The Perils for Abundant Butterflies", he discusses this North American beauty whose numbers peaked at about one billion, but which hover today in the tens of millions. Tied to a very small acreage of forest in the Mexican mountains, its winter habitat there is so precarious that the butterfly itself is endangered as a migratory species: destroy the overwintering habitat, and the Monarch may perish. This is why Haddad devoted an entire chapter to this iconic species. Its population losses are huge - up to 97%.

We now know that the once-common American locust, *Melanoplus spretus*, which numbered in the billions, became extinct due to habitat loss, and the last few specimens ever found were collected in Canada. Agriculture may have destroyed its last breeding ground, although no one mourned its loss.

In Chapter ten, the last in the book entitled "The Last Butterfly?", Haddad forewarns us that many of our butterflies, birds, and plants are on the very edge of extinction. Without human intervention, many will be lost. However, there is still time. Human curiosity, knowledge, perseverance and will, all combined, may save most of the butterflies mentioned in this book from extinction. Commitment from men and women like Haddad to prevent these losses is the only hope we have to save "the last butterfly."

This well-written, interesting book, is a bargain at \$25.00. Although I had read about the Monarch and Large Blue, the remaining butterflies, their biology, and all the efforts to discover "why are they rare?" has revealed an army of dedicated humans who care about that question and a concerted effort to preventing their extinction. Today, most have recovered, but they still require monitoring and sometimes intervention from time to time.

Today, the rarest is Schaus' Swallowtail. Should it become extinct, it wasn't because people didn't care. It's because its required habitat was allowed to shrink to a point of no return. One can only hope it's not too late.

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### **Entomology Summer Workshops at Eagle Hill**

A couple dates still remain open in their schedule of summer programs at Eagle Hill Institute in Steuben, but these workshops currently show on their web page. Information on the programs, and the costs, can be found by clicking the link to "Calendar of Summer Programs at Eagle Hill" on the M.E.S. web page.

**June 7-13:** Tardigrades: Ecology, Identification and Biology, with Emma Perry.

**June 28-July 4:** Native Bees: Biology, Ecology, Identification and Conservation, with Sara Mushmann and Kalyn Bickerman-Martens.

**July 5-11:** Tracks and Signs of Insects and Other Invertebrates, with Charley Eiseman.

**July 26-August 1:** Moths and Butterflies: Identification, Specimen Preparation, and Taxonomy, with Paul Dennehy.

**August 9-15:** Spider Ecology, Identification, Biology, and Photography, with Kefyn Catley.

**August 23-29:** Trichoptera of Eastern North America: Morphology, Molecular Systematics, Ecology, and New Research Directions, with John Morse and Paul Frandsen.

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### **New Articles of Interest**

MES members may remember the request for information from Marc DiGiorolomo in the August, 2018, issue of *The Maine Entomologist* for any records of *Rhinusa asellus* (the European Mullein Weevil) that people may have encountered here in Maine. The species is indeed to be found in Maine, and is now one of five species in this Palearctic genus known to be adventive in North America; Maine specimens were recovered from common mullein in the town of Alfred (York County). A new paper (DiGiorolomo and others, 2019) documents the distribution of the genus in the Northeast, and includes a well-illustrated key to species. Any finding of the species beyond York County would be worth noting.

Many will also remember when, in 2013, an EF1 tornado was reported to have ripped across part of Baxter State Park in the northern part of the state. Another new paper (Dodds and others, 2019) reported on the response of bark beetles and wood-borers to the damage done to the forest by the storm. Contrary to expectations, there was no upswing in the populations of primary bark beetles, though diversity and abundance of taxa associated with dead and dying trees did increase overall. The conclusion of the study was that salvage logging after a major disruptive event might not be necessary to prevent population explosions of bark beetles that could subsequently attack and kill otherwise healthy trees.

*(cont. on next page)*

*New Articles (cont.)*

Bob Nelson has digital copies of both papers; send him an e-mail (BeetleBob2003@gmail.com) if you'd like either.

References:

DiGirolomo, M. F., E. R. Hoebeke, and R. Caldara, 2019: *Rhinusa asellus* (Gravenhorst) Coleoptera: Curculionidae), A Eurasian Weevil New to North America, With a Summary of Other Adventive *Rhinusa* in North America and a Key To Species. *Proceedings of the Entomological Society of Washington*, vol. 121, no. 4, pp. 580-593.

Dodds, K. J., M. F. DiGirolomo, and S. Fraver, 2019: Response of Bark Beetles and Woodborers to Tornado Damage and Subsequent Salvage Logging in Northern Coniferous Forests of Maine, USA. *Forest Ecology and Management*, v. 450, article 117489 (available on-line at <https://doi.org/10.1016/j.foreco.2019.117489>)

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**February 21st: Silky Seminar at the University of Maine, Orono**

An interesting seminar presentation has been scheduled for later this month at the University of Maine, on Friday, February 21 at 3:10 p.m. in 102 Murray Hall, at the University of Maine, Orono.

The seminar title is "Structural and mechanical properties of silk layers forming the cocoon of *Antherina suraka* (Saturniidae)", and will be presented by Dr. Mami Randrianandrasana.

*Antherina suraka* is commonly known as the Madagascar Bullseye Moth. The species is reported to be quite common in butterfly houses and in the amateur moth scene. Caterpillars are said to be relatively easy to raise, unpicky about food plants, and the adult moths are stunningly beautiful.

Dr. Randrianandrasana received her Ph.D. at the University of Illinois and is an independent researcher working in Montreal.

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**Computerized Insect IDs? Only the Dutch Would Try It!**

**(This was supposed to run in the August issue, but at the last minute got cut for something that *had* to be there, though it remained on the Table of Contents on page 1.)**

The Netherlands embarked on a phenomenal and ambitious project this past summer, according to a recent on-line posting on the science-technology news site **phys.org**. Researchers throughout the country have set up camera-traps which have fixed digital cameras aimed at white screens, which then automatically identify the insects based on a digital database of several million insect photos.

The goal is to document the diversity and abundance of the Dutch insect fauna in a non-destructive and efficient manner, without the necessity to undergo the standard catch, pin, label, identify procedures of standard traditional inventories. The project went "live" on May 15th.

The complete story can be read at <https://phys.org/news/2019-05-automatic-insect-identification-grasp-biodiversity.html>

\* \* \* \* \*

**In justification for Collecting Large Series by Bob Nelson**

Those who've been on just about any M.E.S. field day around the state will recognize that I seem to be happiest when halfway up to my knees in the waters of a marsh or bog of some sort. Some have even seen me on my hands and knees grubbing around in the leaf litter of a forest floor, or under a willow or alder thicket.

As Don Chandler once observed in his introductory remarks at an Entomological BioBlitz at Acadia, "You can always spot the beetle collectors: they're the ones that are filthy and bedraggled, who look like they were rolling around in the muddy fields rather than collecting." I plead guilty!

With rare exceptions, I generally tend to collect everything I encounter in my "target group" of insects - the ground beetles, or Carabids. Other things, I'll collect as whimsy hits me - such as other neat beetles that I think Dana Michaud and Dave Bourque might appreciate, or ants or other weird things for the Maine State Museum collections. I figure that few people really like to be out in the muck and mire, so these will probably be species that may not be that well-represented in the collections.

But in the Carabids, this sometimes means that I'll collect as many as twenty or thirty specimens that all look the same in the field. For things big enough that I can confidently identify them to species without a hand lens, much less a microscope, I'll collect a couple and leave the rest. But most are too small to do that - and in the genus *Agonum* in particular, even though the specimens may average a centimeter long each, those in two subgenera can be very difficult to tell apart even with a good microscope - and there can be multiple species present in a given wetland, depending on local variations in vegetation and other conditions (e.g., cattails vs. sedges, *Sphagnum* or other moss, water depth, organic vs. mineral substrates, etc.).

I do sometimes feel a little guilty about this - because I am, in all honesty, killing living things just so I can possess the body. Why should I take so many, when I will only keep two or three, at most, of any given species from any specific locality for my own collection? I'll try to explain why, here.

I've been trying to spend time this winter digging into my backlog of collected specimens, pinning, labeling and identifying everything I have, and getting that information into an Excel spreadsheet that will be useful in the ongoing database synthesis of Maine biodiversity. And as I've been doing this, I've found multiple examples that have reinforced my belief that collecting large series is indeed justifiable.

The most striking example I found as I was identifying a large series of *Harpalus* that I collected in Old Orchard Beach on an M.E.S. field day that Brandon Woo sponsored back in 2014. The primary site was a broad, dry, sandy field with low vegetation. I collected small series of two different tiger beetles, but let others go except for one that didn't look familiar (and which did turn out to be a third species). But of the smaller, black beetles, I collected everything.

Case in point: the genus *Harpalus* in Maine area includes some twenty or so species, and almost all of them like dry habitats. Many are quite similar in size and general  
*(cont. on next page)*



### Collecting large series (cont.)

appearance. Compare the three species in the photo below - they can sometimes be found together; there are those who have argued that *H. pensylvanicus*, a native North American species, is being replaced ecologically by the adventive European *H. rufipes*. I've also known Maine people who actually called in professional exterminators after finding their cellars swarmed by tens of thousands of this latter species in the fall, as they've sought refuge from Maine's winter cold.



Three species of *Harpalus* common in Maine. *H. pensylvanicus*, on the left, is native. *H. rufipes*, in the middle, is a European adventive species common in many backyard faunas. *H. erraticus* is on the right. All can range in length from 10-15 mm.

In my collecting at OOB, I didn't recognize for certain the species of *Harpalus* that I encountered and first looked at with my hand lens, so I collected everything that I encountered. As I've now identified these, I discovered that I had one specimen of *H. pensylvanicus*, two of *H. erythropus*, and 18 of a species I'd never seen before, *H. erraticus*! And to make issues even more complex, this last species is sexually dimorphic - the elytra of females are distinctly different from those of males. It was quite the surprise that there were no *H. rufipes* to be found in the mix. All these species are about the same size, and black with reddish legs, and quite fast runners. But if I'd only collected three or four specimens, I may well have missed the less-common species at the site.

Why this is important is that one of the areas about which many people are concerned is the aerial distribution of insect species, as perhaps the most-sensitive indicator of changing environmental conditions due to the overall warming of global temperatures. We need to know what's present, where and when, if we're going to be able to say with any certainty what's changed from what it was like, say, 30 years ago, or be able to look back from the future at what's present now.

Chuck Lubelczyk documented the spread of deer ticks in Maine in the August, 2008 issue of *The Maine Entomologist*. In 1991, it had been recorded from only York and Cumberland Counties in the southernmost part of the state. By 2006, it was known from at least one occurrence in each county of the state. And now it's fairly widespread. Without active collecting and reporting, this rapid spread could not have been documented.

So what happens to those 18 specimens if *Harpalus erraticus* that I collected? A pair will remain in my collection. The rest, properly labeled with locality and identity information, will go into the Maine State Museum collection in Augusta. It would be unconscionable, to me, to just throw them away.

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### FREE on-line Introductory Course

Check out the new MOOC (Massive Online Course) offered FREE by the University of Alberta: **Bugs 101: Insect-Human Interactions**. It is offered for free through a web site at <https://www.coursera.org/learn/bugs-101>? and is a good introduction to the field of entomology.

### DUES REMINDER!

M.E.S. dues are payable on a calendar-year basis. If you haven't already done so, please renew now for 2020 to guarantee uninterrupted receipt of the Newsletter; you'll find an insert inside (or as a separate e-mail attachment). 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 you get this via snail mail and the year on your mailing label is "2019" or earlier, please contact Dana to renew for 2020 or correct the record.

### COMING M.E.S. EVENTS in 2020

(See the May newsletter for more information on field days)

- March 14 Maple Syruping & Insect Day, Whitefield (Lincoln County) (see p. 7)
- March 28 Writing Workshop, Whitefield (Lincoln County) (see p. 7)
- April 2 Integrated Pest Management (IPM) Workshop, Manchester (Kennebec County) (see p. 8)
- May 30 Field Day - Fayette (NW Kennebec County) (see p. 8)
- June Field Day - Grande Isle (Aroostook County) in the St. John River Valley (see p. 9)
- July 11 Field Day on Appledore Island (York County)
- August 1 Field Day with Bangor Land Trust, Walden Parke Preserve (Penobscot County)
- September 12 Field Day, China (Kennebec County; collecting live specimens for Bug Maine-ia at the Maine State Museum)
- September 15 Bug Maine-ia, Maine State Museum, Augusta (Kennebec County)
- September 26 Annual Meeting, Clinton (Kennebec County)
- October Field Day (open as to where and when)
- April, 2021 Symposium - *Working Title*: Bridges: The spectrum of entomologically related interests in Maine and the region. **Coordinator: Kathy Claerr.**

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(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.*