# The Maine Entomologist

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

*The Official Newsletter of the Maine Entomological Society*

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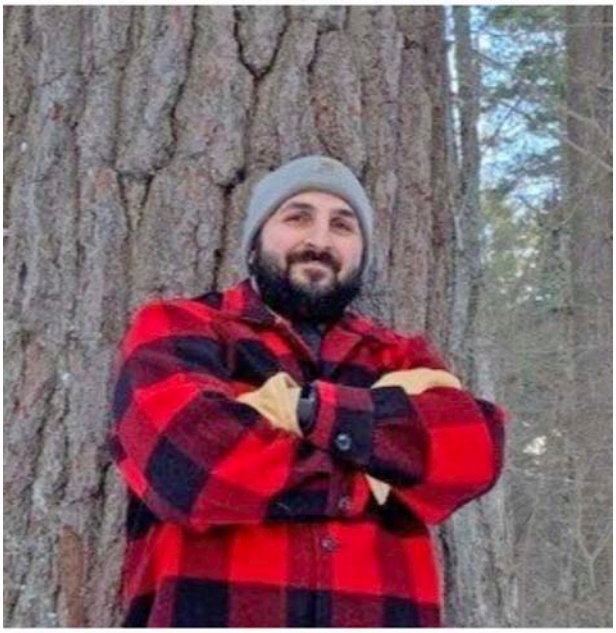
## VICE-PRESIDENT'S CORNER



BY MIKE PARISIO

Hi, M.E.S. members ~

President Hillary Peterson is taking some well-deserved time off after introducing the latest member of the M.E.S. family, Louis Peterson, to the world - congratulations, Hillary! So instead of the typical 'President's Corner' column, she's asked me to step in and write a quick 'Vice President's Corner' for this issue.

On a sadder note, we've lost two long-time M.E.S. members since the last newsletter came out. You'll find remembrances of Edie King and Dave Bourque inside. Both were enthusiastic students of the Maine insect fauna and will be missed.

Here at the Maine Forest Service Insect & Disease lab in Augusta, we're gearing up for another busy field season. I thought maybe the membership might be interested in what life is like for a "professional" entomologist - what do we actually do with our time? Unfortunately, with the growing number of invasive forest pests in Maine, it's much more geared towards monitoring and management these days than the more pleasurable pursuit of studying our native insects.

As I write in April, I've already launched our Early Detection - Rapid Response (EDRR) Survey, a federally sponsored survey that targets exotic bark and ambrosia beetles. This program lasts 12 weeks and involves biweekly sampling of 12 sites strewn from Bethel to Pittsfield, and everywhere in between. In 2021, this program alone resulted in four new State records.

Next in early May comes the launch of the Exotic Wood Borer - Bark Beetle Survey (EWBB), another federally sponsored survey. This consists of 10 sites in northern Maine and 10 in southern Maine, also sampled biweekly but for the entire season through the end of September. Aside from bark beetles, this program also targets buprestids, cerambycids, and other curculionids, and now siricids (horntails, or wood wasps). This program will be more important than ever in 2022, given the first detections of both Southern Pine Beetle (*Dendroctonus frontalis*) and European Wood Wasp (*Sirex noctilio)* in 2021.

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## Are *YOUR* M.E.S. Dues Up-to-Date ?

As of the time this newsletter was being assembled, nearly 40 M.E.S. members' dues were not yet paid for 2022. Please visit the M.E.S. web site (https://www.maineentosociety.org/join) to pay via PayPal, or to download a form to send a check. Dues are $15 per year ($18 if paid electronically, due to charges we incur in accepting PayPal). If you're not sure of your dues status, please contact Treasurer Dana Michaud (djmichaud1@gmail.com or by phone at 207-872-7683).

Those whose dues remain unpaid will not receive the August newsletter.

Shortly afterwards, in May comes the installation of the statewide purple prism trap survey (some 200 traps statewide) in anticipation of the beginning of emerald ash borer flight season. Next up is the coordination of Maine's spruce budworm pheromone trapping program, consisting of some 350 baited traps throughout northern Maine, as we work closely with the University of Maine CFRU (Cooperative Forestry Research Unit) and a large team of industrial landowner cooperators.

I also deal with the numerous forestry-related quarantine issues that arise and the regulations that help protect our forest resources from invasive threats. Here in April, I've already fielded several calls about summer vacation plans and the desire to bring foreign firewood to Maine, and reminded these callers about what consequences this practice has had in beautiful places all over the nation. In addition to the programs mentioned here, there are two other entomologists and a pathologist with a handful of their own programs as well, covering the ever-growing suite of invasive forest pests and pathogens here in Maine.

Though it looks simple on paper, the simultaneous demands of these ongoing projects can become quite a juggling act once field season is in full swing. All the while, there is a constant demand for public assistance and a great deal of time in the field season is spent interacting with and serving the public as well. We field hundreds of phone calls and emails from the public regarding a wide range of topics and provide all manners of assistance, including site visits when needed. There's a small lull for my program work in August, if you can call it that, at which time I typically try to head out west and fight wildfires for a few weeks. Once I get back, the whole process repeats itself in reverse in late summer when we conclude our monitoring season, collect our traps and final samples, and begin to process and compile our annual data.

Although we use our monitoring effort to make general predictions, the trajectories of insect outbreaks remain notoriously hard to predict, especially with the new variable in the modern equation such as climate change and changing precipitation patterns. What I will say for now is to be prepared for another season of extreme browntail moth populations, especially in the Midcoast area. In addition to these now regular annual woes, spongy moth caterpillar defoliation will be dramatic again as well. In case you hadn't heard, spongy moth is now the accepted name for *Lymantria dispar* (formerly gypsy moth) and this species will be referred to as spongy moth from here on out. In case you're not already a subscriber and this aspect of entomology interests you, feel free to sign up for our monthly forest health newsletters on the Maine Forest Service website (https://www.maine.gov/dacf/mfs/).

There's always more to add, but hopefully this snapshot of a typical season in the life of a forest entomologist has hit on the major points and provided some new insight to some of you. I hope you all have a great summer and are able to join other M.E.S. members for at least some of the field days!

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## Remembering Dave "Bugman" Bourque

**Dave Bourque at the 2009 Winter Workshop.**

On February 18, 2022, longtime M.E.S. member David R. Bourque (Bugman) passed away at the age of 71 from his battle with cancer, complicated by Covid.

Dave was born in Waterville in 1950, attending various local schools, finally graduating from Waterville High school in 1969. While attending junior high school, Dave's interest in the insect world became a part of who he was to become, an entomologist at heart, all the while maintaining his love of sports, bridge and philately, about which he was also very knowledgeable.

After high school, Dave attended the University of Maine, at Orono, majoring in entomology, and graduating with a BS degree in 1973. After college Dave worked at various jobs, including a summer part-time job at the Forest entomology lab in Augusta, the U.S. post office, and Maine Central Railroad.

In the mid-1990s, Dave crossed paths again with another entomologist, Dana Michaud, whom he had met in junior high school and collected insects with until college graduation, when they went their own ways.

In the late 1990s, Dave also befriended Dick Dearborn, a state forest entomologist who was working in the Augusta lab. In exchanging information about a few rare beetle finds, Dave, being retired, volunteered to work on the collection there, helping to reorganize and label the beetle collection section. He also offered to process insect survey bycatches that were going to be otherwise thrown away. He joined M.E.S. around 2000, when the society, being in its early years, needed interested entomologists with a sharp eye for unusual insects that showed up. Dave developed an extensive knowledge of insects, through keying, collecting, and processing large volumes of survey bycatches, and building on a rather extensive insect collection with Dana.

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***Remembering Dave Bourque (cont.)***

In the early to mid-2000s, as M.E.S. was evolving into a more involved organization, taking part in annual surveys (bioblitzes) at Acadia National Park, Bugman (Dave) became more active in the society, attending most of the surveys up to and including the last one in 2016, as well as many of the M.E.S. field trips and gatherings. His tenacity at processing insects at these surveys led to more than one "all-nighter," broken only by meals and leg stretchers.

It was also in the early 2000s that Dick Dearborn retired. The bycatch from bark beetle, pine shoot beetle, southern pine beetle, and *Sirex* wood wasp surveys, although large in scope, were about to be dwarfed by specimens from the University of Maine's multi-year surveys from 1997 to 2006. These had been conducted at various sites including Bradley, Moscow, Caratunk, and other sites, and the bycatch had been stored in their Deering Hall building for years. But it was about to be thrown away, due to storage needs and costs.

With the University of Maine's insect collection having been moved to the Maine State Museum annex in 2014, Charlene Donahue then asked David and Dana, if she got the Bradley material also moved to Augusta, would they want to go through it and process this enormous accumulation of vials. Time was on their side, perhaps. Charlene, Dave, and a few others, in 2014 moved the sample vials (totaling over 15,000) to the Augusta lab and museum annex.

Dave, having retired, immersed himself in the Herculean task of processing this enormous number of vials, often-times crammed with unsorted specimens from many orders. Dave, with the help of Dana (who was still working full-time), kept up with all the various survey bycatches, processing the Bradley material, working at the forestry lab collection, and organizing and keying what could be done. He and Dana would then travel to U.N.H. at Durham, with specimens, to consult with Dr. Don Chandler about unknowns among their finds. Don would gladly make time to lend his expertise in identifying the many Pselaphids, Anthicids, Aderids, and other beetle families that needed to be keyed.

As the volume of unidentified Bradley material decreased immensely, and the forestry lab surveys were now being processed elsewhere, Charlene Donahue announced that the USDA Forest Service was doing a three-year survey, from 2014-16, at a 2013 tornado touchdown site in northwest Baxter State Park. Dave, Dana and Charlene felt that bycatch of a survey of this scope should not be discarded once the target groups were removed. Charlene, being on the advisory board for Baxter State Park, presented the idea. The by-catch would be saved.

Dave, in his zeal, with Dana, scoured the 3 years of "tornado damage" bycatch, identifying what they could and paying more visits to U.N.H. to enlist Don Chandler's expertise to ID specimens in families of his particular expertise, as well as a host of odds and ends, that if correctly identified, were to yield new state records. As the processing came to an end, the number of state records outside the original target groups ballooned to 54.

Marc DiGirolomo, one of the USDA Forest Service entomologists doing the survey, published the findings after verifying the identifications, in the March, 2021, issue of the *Coleopterists Bulletin*. Dave was included as a co-author, due to the fact that he was instrumental in helping get the more than 113,000 beetles processed and identified.

Dave continued to collect insects, always searching for the rare and unusual, all the while processing more of the Bradley material. He did so well into 2021, finding a specimen of *Sphyracephala brevicornis*, a stalk-eyed fly (Diopsidae) on his house. As his battle with cancer intensified, his energy level dropped. He continued to process some of the Bradley material, but at a much slower pace.

As the end of his life neared, and Covid complicated the cancer treatment, Dave, with the help of Paula Work, Charlene, Dana, and a moving crew, agreed it was time to move his part of a joint insect collection, to the museum annex. He also donated $10,000 to help purchase cabinets and drawers for it. On February 18, 2022, the insect collection (mostly beetles) was moved from his home by 11:00 in the morning. Dave passed away that afternoon, with his wife Jan, sister Linda, and her family by his side.

I'd like to think that in the vast oceans of time and space, that Bugman will again get to collect insects wherever he lands from his earthly journey. I also hope they have collecting nets and vials, otherwise he'll look for some. What good is an afterlife without insects? Rest in peace, Bugman. This journey will be easier, and I hope they have a lot of new neat bugs.

Save a few for me, I'll bring my own net. - Dana

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**Edie King sorts beetles from moths collected in a light trap at the Lepidoptera Bioblitz at Acadia National Park in 2011.**

## Remembering Edie King

**by Bob Nelson**

The world lost a kind and gentle soul when Edie King, one of the original founders of the M.E.S., passed away this past February 14th. Born in Rhode Island, Edie came of

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age in Sedgwick, Maine, and graduated from George Stevens Academy in 1963. In 1967, she received her B.S. in Bacteriology from the University of Maine, following which she put in a long career with the State of Maine as a microbiologist.

Her interest in insects started with study of unusual insects she encountered in the 1960s in Bermuda, but really blossomed into a passion with her retirement in the 1990s. She was clearly interested in any and all insects. Her extensive collection covers a wide diversity of taxa, and all specimens are meticulously mounted, spread if appropriate, and properly labeled. She was also quite accomplished in insect photography.

Edie was a passionate University of Maine alumna, and with her husband Louie, sponsored three annual scholarships for microbiology students at the University. They were also leaders in the battle to preserve the Edith Patch House on the U. Maine campus; Edith Patch founded the Department of Entomology at the University, became a world-renowned authority on aphids, and was the first woman President of the Entomological Society of America.

Edie and Louie were stalwarts at the M.E.S. Winter Workshops and the numerous Entomological Bioblitzes that M.E.S. co-sponsored at Acadia National Park, and until Covid came along were regular attendees at the M.E.S. Annual Meetings. Edie was also a regular fixture every year at Bug Maine-ia at the Maine State Museum, inspiring youthful insect enthusiasts. She was an ardent gardener who was particularly fond of lilies, an accomplished seamstress, and collector of antique microscopes.

**Edie King and a typical crowd around her table at Bug Maine-ia, in 2018.**

***National Moth Week is July 23-31 this year ..... watch for events!***

**National notices can be found at https://nationalmothweek.org/**

## Two Years of the Maine Forest Tick Survey Show Promising Results

**by Elissa Ballman**

While most people do their best to avoid ticks, nearly 300 Mainers spent the last two years seeking them out to try to help combat Maine's tick problem. Volunteers across nine coastal and southern Maine counties scoured their woodland properties for ticks as part of their work for the Maine Forest Tick Survey.

This community science project, led by researchers at the University of Maine, recruited private forest owners and trained them to actively collect ticks. Volunteers used the same methods scientists use to measure tick populations and pathogen prevalence. The project goals include understanding how land management impacts ticks and helping local landowners understand their own unique risks.

Volunteers for the Maine Forest Tick Survey actively collected ticks using drag cloths. A drag cloth is a very simple piece of equipment consisting of a flannel cloth attached to a short length of rope, and is one of the most efficient ways to sample tick populations. The cloth is pulled very slowly over low-growing vegetation and fallen leaves.

***Drag cloth in use in the Maine tick survey.***

When a tick is 'questing' for a host (waiting at the top of vegetation/fallen leaves for a host to walk by), the tick will grab onto the drag cloth as it passes over. The collector periodically stops, inspects the cloth, and collects any ticks on it into a vial of alcohol for identification and pathogen analysis.

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*Tick Survey (cont.)*

In addition to collecting ticks, volunteers also reported their property land use and management history. Volunteers collected ticks from the areas of their property that had been managed in some way, such as a timber harvest or selective cutting. When we combine the tick information with the management history, we can see how management activities impact a landowner's tick and pathogen population.

Volunteers collected ticks three times each year during July in 2020 and 2021. They tramped through dense underbrush, over fallen logs, and were plagued by mosquitoes and horse flies in their efforts to collect ticks. They collected over 7,217 ticks across the two years including blacklegged ticks (commonly called deer ticks), dog ticks, and rabbit ticks. Blacklegged ticks are the species responsible for most tick-borne pathogens in the state and so are of particular interest to researchers.

We have a better understanding of how land management impacts ticks because of the volunteers' hard work. Two of the biggest impacts on tick populations were timber harvesting and invasive plants. We found that properties which had a timber harvest in the last twenty years had fewer blacklegged ticks compared to properties without a timber harvest in that time period. This was especially true for properties with a timber harvest in the past 15 years compared to properties that have not had a timber harvest in over twenty years. We also saw a strong correlation between invasive plants and blacklegged ticks. Properties that had invasive plants had significantly more ticks compared to properties without invasive plants. This pattern was especially strong for properties with Japanese barberry and invasive bush honeysuckle.

The Maine Forest Tick Survey was a success because the volunteers worked so hard to gather accurate data. It would take a small group of researchers over a decade to capture the same amount of data that the nearly 300 project volunteers collected in two summers. Community science is a powerful way to collect large datasets in short periods of time. To learn more about the Maine Forest Tick Survey, visit: UMaine.edu/ForestTickSurvey.

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## Spiders in flight

**by Dana Wilde**

One breezy, sunny May afternoon I was walking around the park in Unity when I noticed two women peering at the back of a bench near the road. I thought this was kind of weird because usually I'm the one exhibiting odd peering behavior, usually while looking for bridge orbweavers in the genus *Larinioides*, who find the sheltered backs of those benches a perfect place for webs.

It turned out the two women had come upon a gaggle of young wolf spiders running back and forth along the bench.

"We're covered in cobwebs!" one of the women exclaimed.

Sure enough, you could see glints of silk flapping in the breeze, and strands lying on the bench, the new grass, and the walking track and trailing off the women's clothes.

The wolf spiderlings were ballooning—throwing silk onto the wind and using it like a kite to fly off to points unknown.

Since spiders have no wings, many use this technique to fly. They find an open perch, such as a tip of grass or the back of a park bench on a breezy day. Some of them then stand on tiptoe facing the wind, angle their backsides at 45 degrees, and throw threads of silk into the breeze. This is what the wolf spiderlings at the park appeared to be doing. Other species lay down a silk dragline, which they hold onto, and when a stiff enough breeze takes hold, the dragline breaks, a fray of silk balloons into the wind, and off the spider goes. Others loop threads of silk to make what amounts to a little kite, and when the breeze catches it, they take off.

Ballooning spiders fly as high as 200 feet, and aircraft crews have spotted squadrons of flying spiders as high as 14,000 feet. Charles Darwin wrote that his ship the Beagle encountered a huge crowd of ballooning spiders 60 miles out to sea, off South America. It's thought that some species of longjawed orbweavers and crab spiders colonized remote islands by ballooning hundreds of miles across the Pacific Ocean. Because of this aeronautic adventuring, spiders are often the first arthropods to set up shop after natural disasters such as fires, mudslides, and floods.

Spiders can control their flight to some extent by changing body posture, slowing descent by splaying their legs and increasing speed by tucking the legs in. But as far as anyone knows, they have no control over where they end up. The wind decides their fate. It's thought that most don't survive long voyages because they get eaten on the fly by birds such as swallows or swifts, or they come to rest on water where they drown or get snapped up by another predator such as a fish. If they survive a landing in an inhospitable environment, they try another flight.

The most active balloonists in the vicinity of Maine are the sheetweb weavers (family Linyphiidae), notably the tiny dwarf spiders (Erigoninae subfamily). But some species of orbweavers, crab spiders, jumping spiders, longjawed orbweavers, nursery web spiders, and wolf spiders also go ballooning.

**Wolf spiderlings ballooning. -** ***Photo by Dana Wilde***

In the park, the little wolf spiders were eagerly getting a head start on their summer-long lives. Strands of silk were everywhere, floating off the bench in the wind and getting

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all over my clothes. I've never seen it happen, but when the group of balloonists is really large in a field, there's so much silk that it collects together in sheets, and makes what we call gossamer. Keep an eye out on a sunny, breezy day, and you may catch glints of leftover ballooning silk wafting and flapping from the top of a chain link fence or a field of timothy.

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## Smarter Than a Black Fly?

**By Frank Woodard**

**(Previously published in *Mainely Ag*, in Spring, 2021)**

Call me vain, but I like to think I'm smarter than a black fly. While they are a good indicator of a healthy riparian habitat with clean flowing water, I'd rather not get eaten.

I'm definitely smarter than a mosquito, but black flies are much sneakier! Also, according to the Maine Cooperative Extension Service Integrated Pest Management brochures on mosquitoes and black flies, there's very little a person can do to outwit black flies other than avoid them. (Both brochures list http://umaine.edu/home-and-garden-ipm/ for more information.) This is not always easy on a farm when there are chores to be done. While I haven't searched their website, experience has shown that black flies have a fatal weakness "smart" people like me can exploit.

One of my chores is weeding the gardens. The best time to weed is early in the morning before (hopefully) a few sunny dry days.. That's also the time when mosquitoes and black flies are actively looking for breakfast. The one thing a person can do to defend against both mosquitoes and black flies is wearing protective clothing. Protective clothing can defeat mosquitoes all day long, but doesn't last very long against black flies.

Protective clothing starts with a wide brim hat and a mosquito net head covering. I use an aluminum helmet. The brim is important in order to keep the netting away from the skin, for mosquitoes have no problem biting ears through the net. Next is a white shirt made of heavy material. The white delays the time it takes for black flies to find me because the white makes me look like an uninteresting low flying cloud. Next of course are gardening gloves. I'm not a fan of insect repellents, but there's a gap at the cuffs of the dress shirts I wear. A little squirt in the gap keeps mosquitoes from getting me there. Repellents have very little effect on black flies, only the fact my arms are in constant motion keeps them away from the cuffs. Finally the usual bachelor farmer baggy pants over the boots protects my legs. Pants tucked in Rubber boots would work too.

Black flies are devious. After they have figured out I'm not a cloud, some of them seem to be purposely distracting me while the biting females try to find a gap in my armor. The females will crawl into the creases of the fabric trying to find a way in, just like a mouse in a maze.

I like weeding. The weeds piled in the row are a valuable resource dried by the sun and composted by the microorganisms. In protective clothing, though, it gets pretty hot - so after forty-five minutes it's time to stop and deal with the black flies burrowing into my armor.

The first step is losing the dumb mosquitoes. I remove and shake off the net on my way to the open woodshed, followed by a parade of insects. Once inside the woodshed the flying black flies are gone (their fatal weakness!) and I brush myself off, sending the mosquitoes to hide in the firewood. Before the mosquitoes get brave I step out and walk around the corner. To a dumb mosquito, breakfast has mysteriously disappeared. I then head to the mudroom. That's when I take off the shirt and shake out the burrowers. Again, the fatal weakness! Once a flying black fly can't see the sky directly overhead it gets scared. It forgets all about me and heads for the nearest light. In the mudroom they become breakfast for the spiders hanging out at the top corners of the windows.

At other times of day the farm is bright and open. Mosquitoes are waiting in the humidity of the shaded leaves at the edge of the woods. I don't wear the protective outfit and occasionally a gang of black flies will try for lunch. Usually just being active and occasionally combing out my beard is enough. Once in a great while one gets me. I don't mind one or two bites a season, though I worry. If only smart black flies get me, am I selectively breeding for even smarter foes in the future?

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## Maine's Browntail Moth Outbreak: A Great Opportunity for Research

**By Angela Mech**

When I started my new job at the University of Maine in January of 2020, I didn't fully realize what an amazing moment in time it was to be a forest entomologist in Maine – an epic outbreak of browntail moth (BTM), the 30-year outbreak of spruce budworm, and the first detection of southern pine beetle in the state – all at the same time!

**Graduate student Sadia Crosby hangs a pheromone-baited trap to capture browntail moth males. - *Angela Mech photo***

Due to its public health concerns, BTM has taken the front seat in my research program, with the main goal being to find ways to reduce the impacts of the current outbreak, while better preparing for the next one. It will be a busy summer, as students in my lab will be conducting research in the following areas:

1. **Develop a long-term monitoring program.** Monitoring using baited traps is an integral part of early-intervention

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***Browntail Moth Research (cont.)***

strategies aimed at preventing populations from reaching outbreak levels, and can also be used to develop risk assessments. We have tested different lure and trap efficacies, and are now collecting data across the state to develop a BTM population-density predictive model that will help answer the question "how many males in a trap equates to a damaging population level?"

2. **Test mating disruption.** This method is based on the concept that insect sex pheromones can be used to suppress pest populations by releasing high enough concentrations that the males become confused and can no longer find females. This year our research will test if the synthesized pheromone successfully confuses male BTM, determine the rate they are unable to find a virgin female, and estimate the plume distance of the pheromone to help us determine the number of lures and/or loading rate that would need to be used per unit area in larger field trials.
3. **Determine the attractiveness of light.** We have all seen BTM's strong attractiveness to light and can subsequently find more nests on trees closer to lights that were left on during their flight period. We will be testing the attractiveness of commercially available light bulbs that emit different parts of the solar spectrum to determine if something as simple as changing a light bulb could reduce the number of BTM nests near homes.
4. **Test the efficacy of more-targeted biopesticides**. Most products currently being used against BTM are considered broad-spectrum, which means they can negatively affect other insects, including beneficial insects. We are conducting lab and field trials to determine whether more-targeted products, including organic biopesticides that only affect species in the order Lepidoptera, are effective against BTM.

While doing all of this, we are continuously learning more and more about BTM's behavior and ecology.

Overall, I am excited to be a part of a collaborative team of state and federal agencies, university researchers, and pest control companies that have the shared goal of lessoning the impacts of this dangerous pest. Like most of you, I will be crossing my fingers on one hand that our research will find promising results, all the while itching my BTM rash with the other hand…

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## *Happy Birthday to M.E.S. ~ Saturday, June 4th, 2022 - in Augusta!*

Join us in Augusta on Saturday, June 4th, for a celebration of the 25th anniversary of M.E.S.! M.E.S. was founded at what is now the Viles Arboretum in June, 1997, by a group of entomologists and enthusiastic amateur "bug collectors."

The celebration starts at 10:00 a.m. and will be held in the New Education Center at the Arboretum. We'll celebrate M.E.S. accomplishments and history with testimonials, short presentations and a catered lunch from 11:30 - 1:00. ***Those desiring the catered lunch must pre-register with Anna Court*** (by phone at 207-474-8691 or e-mail at **annaagnesleecourt@gmail.com**) so we have an accurate count. There will be many photos of insects, a slide show of past activities, newsletters and insect information pamphlets to take, an M.E.S. webinar to view, and a variety of M.E.S activities to learn about.

If you have photos of past M.E.S. events that you'd like to share in the slideshow, please e-mail them to Mike Parisio (**michael.parisio@maine.gov**) before June 1st. If you have any insect-related items that you no longer want or need, bring them to raffle them off to raise money for MES. This could be decorations, insect toys, jewelry, paintings, books, collecting equipment, etc.

In the afternoon, weather permitting, we'll photograph, collect and identify insects on the grounds. Viles Arboretum has about 6 miles of trails on 224 acres, including open fields, meadows, and forested areas available for exploring and collecting. Bring your own collection materials, although we will have some equipment to loan.

Children and families are welcome! **RSVP to Anna Court, M.E.S. secretary at 207-474-8691 or via e-mail at annaagnesleecourt@gmail.com** if you're planning to attend, whether or not you desire the catered lunch. If you have any questions, call Dana Michaud at 207-872-7683, or email him at djmichaud1@gmail.com.

***Directions:***

**From the north**: Starting where 201 intersects Route 9 at Cony circle on the eastside of the Kennebec, head south on Route 9 (Hospital Street) for 1.1 miles, and turn left at the light onto Piggery Road. Take an immediate right into the public parking lot. The kiosk at the northwest corner has a trail that goes to the Arboretum.

**From the south**: Drive up Route 9, which becomes Hospital Street in Augusta. The Arboretum will be on your right, at 153 Hospital Street; go past it for 0.1 miles. Turn right at the light onto Piggery Road, and hang an immediate right into the park-and-ride lot.

## WHO was there in 1997?

For those who might be wondering who the original founders of the M.E.S. were, there was a list published in the 2nd newsletter of the Society, in the summer of 1997. Those who gathered on that fateful June 7th, 1997, at what is now the Viles Arboretum (then the Maine State Arboretum) in Augusta were Dick Dearborn, Don Ouellette, Monica Russo, Charlene Donahue, Ram Ristich, Kathy Murray, Ruthann Coulombe, Gail Everett, Edie King, Tony Roberts, Don Mairs, Bob Nelson, Richard Folsom, and Mike Mazurkiewicz.

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***Saturday, May 21, Field Day, 10:00 a.m. – 4:00 p.m.***

## Ringed Boghaunter at Waterboro Barrens

Join MES in southern Maine to look for the rare Ringed Boghaunter - *Williamsonia lintneri*. For information on this insect, check out the MES website: https://www.maineentosociety.org/events/mes-webinar-series-ringed-boghaunter, and watch the archived webinar if you missed it. Mark Ward will lead us to a known location that has not been surveyed in about 10 years. There will be

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no collecting of this species, but Mark has a permit and hopefully we can find one to observe.

The location is about a 20-minute woods walk so be prepared with appropriate foot wear, sun protection and fluids. The area will have plenty of other locations to explore from woodland to open bog to the marshes around the slow-flowing Buff Brook.

We will be eating lunch around our vehicles in typical MES style. It is unknown if there are facilities at either of the Barrens parking areas. The closest town, Waterboro, is about 9 miles away and there is a Hannaford another 4 miles up Route 202.

Please contact Peter Darling by text at 207-899-7173 or by email at **petedarlingii@yahoo.com** if you plan on attending.

***Directions*:**

**From the north**, going south on Interstate 95, take Exit 32, Biddeford. At the light, turn right onto Route 111 toward Alfred. In Alfred, turn right onto Kennebunk Road, just before the York Superior Court building. This street meets up with Route 202 a short way up, just past the Baptist Church. Turn right on Route 202 **(*)**, and travel a bit more than a half mile, to where Gore Road splits to the left. Take the left onto Gore and travel about a mile and the road splits again with Gore going to the left. Continue left on Gore. At Ross Corner, the road changes to Newfield Road. Continue straight on Newfield for 1.1 miles and a dirt road splits to the right. Take this right on Tyng's Mill Road and then right in 60 feet onto Round Pond Road. This is also dirt. A short way up on the left is a parking lot for Waterboro Barrens but we are ***not*** meeting there. Continue up Round Pond Road for ¾ of a mile until the road splits - go left. This meets up with Buff Brook Road in less than 500 feet. Turn left on Buff Brook and continue for ¾ miles and we will meet at the lot on the left just before the gate. Estimated time from Exit 109 in Augusta to the lot is 1 hour and 40 minutes.

**From the south**, going north on Interstate 95, take Exit 19. At the light, turn right on Route 109, Sanford Road. In 9 miles, turn right on Route 4 and continue to Alfred where Route 4 merges with Route 202. Continue on 202 through Alfred and follow the directions above beginning at **(*)**.

The GPS coordinates of the meeting place are 43.609654, -70.799755.

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## June 18th Field Day in Burnham

**by Bob Nelson**

The June 18th M.E.S. field day will have us returning to the Albert Sousa Preserve (https://www.sebasticookrlt.org/albert-j-sousa-preserve) in Burnham (Waldo County), where we had a field day last September. Weather permitting, this should be a great potential day for butterflies and other pollinators. Gail Everett spotted lots of ideal caterpillar food plants when we were there last year, and suggested a June return.

We'll meet at the Preserve kiosk at 10:00 a.m. Bring collecting gear and/or cameras, insect repellant, lunch, and drinks. If you plan to get something to eat or drink on the way, you'll go by convenience stores in Clinton or Pittsfield en route; there are none in Burnham itself. There's also a great ice cream place in Pittsfield for post-collecting stress relief. ☺

The Sousa Preserve is part of the Sebasticook Regional Land Trust system, but only came into their system in 2013. There are thus no established trails, no restrooms, no real parking lot, and just a kiosk at the roadside. They DO have a small stand of hybrid American chestnuts trees planted (based on a posting on their kiosk). There's room for 3-4 cars to park on the roadside, but we may also be able to park at a neighbor's - a private residence in what used to be the old elementary schoolhouse - as long as we don't block them in.

The Preserve includes an old Belfast-Moosehead Lake Railroad thoroughfare which is no longer in operation (and which has a bridge over the Sebasticook River), as well as open meadows, wetlands, closed-canopy mixed forest, and frontage on both a small brook (Twentyfivemile Stream) and the Sebasticook River itself. So, there are plenty of varied habitats!

To get here from the south, take Exit 138 from I-95. At the end of the offramp, turn right. Stay on this road until you come to a stop sign and "T" intersection. Turn left and go ~5.7 miles, until you get to a sawmill on the left. Turn right onto the Troy Road, and the kiosk will be about ¼ mile down this road, on your right.

To get here from the north, take the Pittsfield exit from I-95 (Exit 150). Turn left at the end of the offramp and go 1.2 miles into downtown Pittsfield; turn right at the stoplight onto Route 11 (Main Street). Go about 7.3 miles until you get to the mill complex in "downtown" Burnham, and turn left onto the Troy Road. The kiosk is about ¼ mile down the road, on your right.

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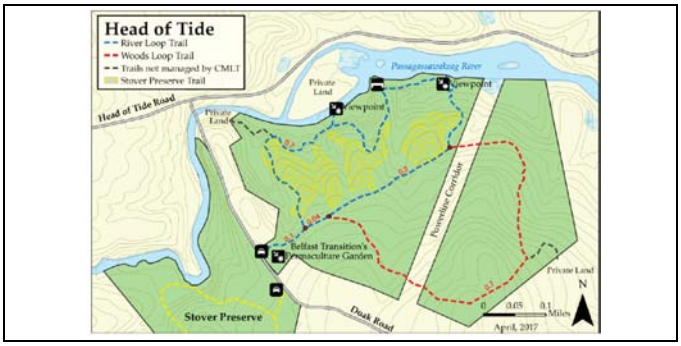


## Field Day at Head of Tide Preserve, Belfast
## July 9th, 10:00 a.m. - 1:00 p.m.

We will gather at Head of Tide Preserve at 10:00 a.m. Habitats include the Passagassawakeag River, where aquatic insects can easily be found clinging to rocks at the water's edge. Trails wind through open fields often teeming with insects in the tall grasses and wildflowers and pine trees of this 92-acre preserve. We have been given permission to collect specimens. We will provide the Coastal Mountains Land Trust (CMLT) with a list of

***(continued on next page)***

the species found. Be aware that disease-carrying ticks are prevalent in this area. You are advised to wear protective clothing (long pants tucked into socks, long sleeves, hat and repellent). Be sure to pack insect repellent, water, and a lunch or snacks. Bring collecting gear and/or a camera if you plan to collect specimens or photos. There are no restroom facilities, so plan accordingly.

For those interested in further exploration, the Stover Preserve directly across Doak Road offers a mile-long trail winding through 53 acres of forested habitat (where volunteers are making progress hand-removing invasive shrubby honeysuckle).

For more information and trail maps of Head of Tide and Stover Preserves see https://www.coastalmountains.org/get-outside.

***Directions:***

The preserves are on either side of Doak Road, near its north end, in Belfast, ME. From downtown Belfast, take Main Street west and immediately turn right onto Waldo Avenue. In 1.5 miles, turn right onto Doak Road. Parking area is on the right.

Note: This event is co-hosted by MES and Coastal Mountains Land Trust and is organized by Kathy Murray (MES member) and Roger Rittmaster (CMLT Board Member and MES member). Questions? Contact Kathy Murray (kdmurray50@gmail.com).

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## Saturday, July 23rd: Field Day at Webber Pond, Vassalboro

The Vassalboro Wildlife Habitat, owned by the Kennebec Land Trust, is one of KLT's largest land holdings, comprised of 330 acres and with another 44 acres in the process of acquisition. The property itself is to the east of Route 201, and is divided by the Webber Pond Road in Vassalboro. This property has 2200 feet of undeveloped shoreline on Webber pond, excellent birding, a silky dogwood wetland, and rare swamp white oaks.

On the Webber Pond side (east), the parking lot can accommodate up to eight cars, if people park carefully. One or two can park across the road at the entranceway to the western property, the "Virginia Rail trail", which has a lookout platform for birdwatchers that overlooks a cattail swamp.

The eastern property has a one-mile loop trail called the "Alewife trail," which crosses an abandoned trolley car rail bed, with multiple loops to Webber pond.

***Directions:***

**If you're coming from the north**, from Winslow, head south on Route 201, past the state police academy on your left. Continue south another 1.4 miles to take a left at the Bog Road, at the Natanis golf course sign. Go 1.7 miles to the school on the right, and turn right onto the Webber Pond road; the golf course is on both sides at 1.9 miles. Watch for golfers and slow down as you're going by / through it. A field on your left, gives rise to a wooded area after 0.7 miles. The parking lot with a visible KLT sign is at the beginning. Directly across the road is the western entranceway, but with a less obvious sign.

**If approaching from the south** on Route 201, the southern approach to Webber pond also has a Natanis golf course sign, plus a public boat landing sign. Take that right, stay on it for one mile. The Hannaford Hill road veers off to the right. Stay on the Webber pond road, the public boat landing is on your right after another 1.4 miles. Once past that, slow down; the parking lot is 0.4 miles ahead, on your right. If you miss the northern approach, on Route 201 heading south, continue another 3.9 miles to intersect the southern approach. At the 3.5 mile mark, the Vassalboro Fire Dept. will be on your left, slow down after.

We'll plan to meet at 10:00 a.m. Bring lunch, collecting gear, appropriate clothing, and tick and insect repellent. If you have questions, you can call Dana Michaud at 207-872-7683, or email me at **djmichaud1@gmail.com**.

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## *Summary:* "Not to Harm a Fly: Our Ethical Obligations to Insects "

**by Jeffrey A. Lockwood, University of Wyoming**
**by Anna Court**

**This article was originally published in the *Between the Species* (a journal for the study of philosophy and animals), v. 4, no. 3, pp. 204-211 (1988); Bob Nelson has a pdf copy for anyone interested.**

This article was referenced by a speaker in one of M.E.S.'s recent webinars. Since I find the subject intriguing, I found the article online and read it with interest. The paper is 35 years old but still relevant, I think, to more recent ideas and discussions about our philosophical, ethical, and even legal responsibilities to the natural world. Below, I summarize Lockwood's thinking and arguments on our ethical obligation to insects. I've paid special attention to getting the arguments in the logical order Lockwood provided.

A note about Jeffrey Lockwood. He started his academic career at University of Wyoming in 1986 as an insect ecologist. His interests, as evidence by this 1988 paper, led him to focus on more philosophical and ethics topics. He is now Professor of Natural Sciences & Humanities at the University of Wyoming, and his teaching includes ethics as well as creative writing. He has won many prizes for his books and essays. Several of his books are available in the Maine Library System.

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The paper is thoroughly referenced. Certainly in the 35 years since the paper was written, much pertinent research has occurred and results published. I don't know this body of work, but I have read recently that the issues discussed in Lockwood's paper are still being discussed vigorously!

**Sentience is usually the basis for studying animal rights**. The sparing of unnecessary pain in sentient beings is considered to be the minimal standard of ethical behavior. Extensive and generally convincing arguments ground animal rights and human obligations in sentience.

**Insects have rarely been acknowledged in these arguments**. This is a major oversight since insects are 75% of all known animal species. At any moment, there are an estimated two hundred million individual insects alive for each human on earth. Lockwood asserted that there can be a rational consideration of mental processes in insects, and therefore a sound basis for their inclusion in our scope of moral considerations.

**Does the life of the being matter to it?** "Self-awareness" is a requirement for sentient beings, and conscious thought is fundamental to beings who have interests or lives that can be made better or worse. The painless death of an organism without the capacity to think of itself as a distinct entity is, at worst, a replaceable loss, Lockwood asserted. Furthermore, the behavior of insects indicates self-awareness, such as colonial insects acting on the communicated needs of the colony. Probably all insects are aware of outside events and behave accordingly. Acknowledging this but denying that insects have self-awareness doesn't make sense.

**Feeling pain is also a criterion for sentience**. Can the survival of an individual be augmented by the experience of pain? Do insects experience pain? There is plenty of empirical evidence that a variety of invertebrates experience pain. Also, from an evolutionary point of view, the awareness of pain is such a critical adaptive mechanism for escape or as a means to learn from past experience, it is unreasonable to think that pain is unique to vertebrates.

**Evidence of consciousness are communication, problem solving, and learning**. **Do insects communicate?** Lockwood noted research that maintained that weaver ants (*Oecophylla longinoda*) communicate when they recruit new ants to join a fight. Honeybees, after first hand inspection of a resource, "communicate" specific information about distance, direction and desirability of food and potential nest sites. These and many more examples of insect communication demonstrate that insects exchange information, discriminate among potential recipients, and use appropriate channels under various circumstances.

**Consciousness enables problem solving**. Solving novel challenges requires thinking. Honeybees learn to avoid alfalfa blossoms because the anthers spring back violently when contacted by the bees. To solve this problem, honeybees learn to avoid alfalfa or visit only when the anthers have already been tripped, or they bite a hole in the back of the flower to reach the nectar.

**Consciousness enables learning**. Bees learn to visit artificial sources of food and come to "solve" problems that would never occur in nature. For example, when researchers move a food source, bees learn this and will search for that food at extrapolated distances based on its previous movement. Such experiments, Lockwood said, indicate that some insects can solve novel problems or at the very least, apply general concepts and abilities to solve problems. Grain beetles, cockroaches, locusts, wasps, ants and flies have been shown to be capable of learning, in experiments conducted under rigorous scientific conditions. There is no doubt that insects can learn. This capacity, Lockwood asserted, supports the existence of mental processes in insects even though learning alone does not constitute sufficient evidence for thought. It's not clear that all entities that learn, also think (e.g., computers). We can't ignore the importance of the genetically predetermined behaviors in insect "learning." Numerous insect behaviors have been described and neurologically mapped as fixed action patterns resulting from releaser stimuli.

**There is convincing theoretical evidence of consciousness in insects.** We can't ignore the importance of the genetically predetermined behaviors in insect "learning." Numerous insect behaviors have been described and neurologically mapped as fixed action patterns resulting from releaser stimuli. But, are all instincts unconscious? For example, are all structures made by insects built by rote? One cited paper suggested that the problem of building and repairing structures in extremely variable circumstances is more likely to result from the application of a general concept, indicating consciousness. Lockwood asserted that Occam's Razor requires us to accept consciousness as the simplest explanation of complex instincts.

**Is consciousness a function of the size and complexity of neural systems?** The content and complexity of conscious thoughts may be proportional to the size and complexity of the central nervous system, but an absolute critical size is not supported by our current understanding of these systems. It's true that neural complexity in insects is miniscule compared to even the smallest mammal, but it is the pattern and organization of neurons and synapses, not gross morphology, that is critical to brain function. While there are clearly differences in behavioral complexity between vertebrates and insects, there is no reason to conclude there are any qualitative differences, Lockwood said.

**A minimum ethic: we should not cause pain to insects when avoiding this has no or only trivial costs to our own welfare.** Why? Because insects are sentient and that is an ethically sound and scientifically viable basis for granting moral status to them. To summarize: empirical evidence supports the assertion that insects feel pain and are conscious of their sensations. Pain matters to them so they have an interest in not being pained and their lives are worsened by pain. As conscious beings, insects have future (even if only immediate) plans for their own lives.

**Ethical principles are not rational if they cannot be actualized**. We can't reasonably expect to abolish the use

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of insects (or other animals) in the development of new technologies and the investigation of biological processes. But, Lockwood asserted, we can conduct this work in a way to minimize and where possible avoid killing and inflicting pain. Where there is no conflict with our own interests other than simple convenience or preference, the moral significance of insects should determine events. In other words, the lives of insects and their interest in not suffering pain override our interests in convenience and expediency. For example, when insects are overproduced in the laboratory we should release excess insects or kill them quickly if there is insufficient food or other resources for them after release.

**Is the practice of insect collecting ethical?** Lockwood stated that insect collecting may be justified when it makes substantial contribution to our understanding of insects or improves our ability to protect our resources. He suggested that insect collectors should use the guidelines of the Joint Committee for the Conservation of British Insects (for an example and to download a PDF file, go to https://butterfly-conservation.org/sites/default/files/a-code-of-conduct-for-collecting-insects.pdf - Bob Nelson has a copy of this also).

**What about insect control?** Lockwood stated that most people would agree that even millions of insects are of less moral significance than a single human life, and he gave references for this assertion. Most ethicists also defend the protection of our food from insect damage, except for the control of insects on crops that are themselves damaging to human welfare (e.g., tobacco). However, he would not condone control of crop insects to merely prevent cosmetic damage. He suggested that the proper philosophical basis for Integrated Pest Management should be *intrinsic* value of insects (having a good in and of itself) and not the instrumental value of insects (being good for something).

**Intrinsic value is a high standard but more reliable.** When I was in graduate school studying resource economics, a 1976 *American Scientist* paper by David W. Ehrenfeld ("The Conservation of Non-Resources;" Bob Nelson has a pdf copy) had a big impact on me. Ehrenfeld argued that "conservation cannot rely solely on ecological or economic justifications and that there is a more reliable criterion of the value of species and communities."

I don't know whether intrinsic value is now accepted as a criterion or whether the ethical practices Lockwood advocated are now routine practice. If readers have information or questions on these issues, please email me at **annaagnesleecourt@gmail.com**.

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## The Hunt for the Elusive Green Bee

**by Frank Woodard**

I walked out by the garden one day in late spring, and in a small patch of an edible pod plant that was producing numerous little white flowers, I saw it! It was a gemstone with wings! An emerald green bee working the flowers, its legs heavy with pollen.

I went to grab my camera in the mudroom - I keep my camera handy for photo collecting. Many insects I only ever see once or twice. It's always nice when I can "catch" one to admire it and sometimes even identify it with my Kaufman "Field Guide to Insects of North America", pictures from publications like "Wild Seed" (wildseedproject.net) or help from the knowledgeable members of the Maine Entomological Society. If I can identify the insect, then I can learn more about it and make sure I provide habitat features they need. I sure wanted to catch that green bee!

At the time, I was using my dream camera. When the Minolta Dimage was new I could only dream of buying it. Many years later I found it at Goodwill. Even though it was slow, beaten up with a chipped lens and a broken battery compartment it took nice digital insect photos! At its highest resolution it was equivalent to 200 speed film. While today my new digital camera can get better photos (if I take enough photos I'll accidentally get a great photo!) I was happy with the Dimage until I wore it out.

I returned to the garden as quickly as I could but the green bee was gone, never to be seen again that year. The following year I was letting the garden rest and the edible pod plant had managed to seed itself into a huge patch. The pods weren't very tasty so I planned to eradicate it before it produced more seeds, but I kept checking the flowers just in case that green bee showed up. Sure enough, I walked out by the garden after lunch one day and there was the green bee sparkling in the sunshine! I went to get my camera, got waylaid for a moment to catch a photogenic Canadian Tiger Swallowtail, but when I returned to the garden the green bee was gone. Before the black flies drove me inside, I did catch a pretty hover fly and a Virginia ctenucha moth, but no green bee.

I kept returning throughout the day. It being the verdant season, on my second trip I caught a couple impressive hummingbird moths, a humble mirid bug and a gorgeous black jacket wasp. On my third try I wandered a bit, checking other flower patches just in case the green bee had changed its mind. While most bees I meet tend to favor a certain flower each day, like the bumblebees I caught on purple clover that day, the green bee was nowhere to be found. Before the day was out, I caught an Inornate Ringlet butterfly, an impressive paper wasp and in sheer frustration,

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***The Hunt for the Green Bee (cont.)***

I caught one of the black flies that followed me into the mudroom.

As the sun was setting behind the treeline, leaving just a little bit of the garden in sunshine, I tried again. There it was! It stayed around long enough for me to catch it in a variety of poses. The photos were detailed enough for me to identify it as a sweat bee. According to a brochure I got from by Jennifer Lund, Maine State Apiarist, at a presentation sponsored by The Friends of Edith Marion Patch, there are 276 species of bees in Maine, representing six families. Those of the family Halictidae are solitary soil-nesters the include the genus *Lasioglossum*, aka "sweat bees", with a few that are metallic green. And that was what I'd captured through my lens.

Sadly, here in Maine, 40 species of bees are now threatened from habitat loss, pesticide use and global warming. Last season I caught a glimpse of a flying green jewel. How sad it would bee, if we could no longer discover a sparkling emerald with wings in a Maine meadow.

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

***Common Bees of Eastern North America***, by Olivia Messinger Carril and Joseph S. Wilson; 2021; Princeton University Press (paperback); 288 pages; ISBN-10-0691175497. (List price $27.95 flexbound, $75 hardbound)

This volume is a welcome addition to Carril and Wilson's previous 2016 book, entitled *The Bees in Your Backyard*.

In their Introduction, pages 9-23, Carril and Wilson explain that although there are 3,500 to 4,000 bee species in 111 genera in North America, this book covers only the area east of the Mississippi, where 65 genera with 770 species are known. This book covers 53 of the most common genera. They go into an overview of what is a bee, bee biology, and finally explain bee anatomy using colored photos well labeled, and explaining terminology that appears in the rest of the book, especially in their "Key to Genera" on pages 229-249. On page 21, the authors explain using the book groupings and range maps. The Quick Reference Guide, pages 24-29, illustrates, using colored photos, many of the genera, tribes, and families covered.

The six families covered in this book, from pages 30-228, breaks down many of the subfamilies, tribes, and genera. If a few species are known in a genus, the authors explain how to separate them, using the colored photos, labelled, explaining the distinguishing physical features.

The "Key to Bee Genera in Eastern North America", pages 229-259, is a dichotomous key, comprised of 106 couplets, that should allow the reader to identify to genus most of the many bees found in the area covered by this book. The user is reminded that in the couplets, it is essential to read them well and completely before deciding which one to choose, especially when either/or are used. Many of the couplets refer to an accompanying nearby photo showing the specific characteristic(s) cited in the choices.

The following Glossary, pages 260-266, lists all the terminology used in the book, and complements the preceding key. When using the key or any other part of the book, the glossary is always available to refer to when in doubt. The References, pages 266-280, lists the many genera alphabetically, allowing the reader seeking more information about a genus, to do so.

For those who would like to explore the local bee fauna and get a better idea of what's here, Carril and Wilson have added another well-written, well-illustrated volume, that covers the eastern genera in greater depth than their previous volume. With a cover price of $27.95, I found the book worth the money. It's a good mid-level book for anyone wanting to learn about bees, the terminology used to describe their anatomy, and with a useful key to identifying them to genus.

Those wishing to learn more about the bees in your backyard, should pick up a copy and start studying this very important, but under-appreciated group of insects.

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## Two Scientific Papers of Note

Two recent scientific papers may well be of interest to M.E.S. members. The first, by **President Hillary Peterson** and three coauthors, was accepted March 1st for the Springer journal *Arthropod-Plant Interactions*, and is entitled "Feeding and oviposition by the brown marmorated stink bug, *Halyomorpha halys* (Stål) induce direct and systemic changes in volatile compound emissions from potted peach and tree of heaven."

The second paper, published in *The Canadian Entomologist*, is "The biota of Canada: checklist of the centipedes of Canada (Myriapoda: Chilopoda)". Given Maine's proximity to the Canadian Maritimes, it is likely that most, if not all, Maine centipede species will be included in the fauna. Unfortunately, this is an annotated checklist only, and does not include a key to identifications.

Bob Nelson has pdf copies of both papers for anyone who would like one.

## COMING M.E.S. EVENTS in 2021-2022

**(*See the MES web site at* https://www.maineentosociety.org/events *for additional information on any event, especially upcoming webinars - which will be posted as soon as information is available.*)**

**May 21st**: Field Day - Maine Boghaunter at Waterboro Barrens (see p. 7)

**June 4th: 25th M.E.S. Birthday Celebration - Viles Arboretum, Augusta (see p. 7)**

**June 18**: Field Day, Sousa Preserve, Burnham (see p. 8)

**July 9**: Field Day, Belfast (see p. 8)

**July 23**: Field Day, Webber Pond (Vassalboro) (see p. 9)

**August 13**: Field Day, site TBS (Pete Darling)

**September 10**: Field Day, Brunswick area (Kathy Claerr)

**October 8**: Annual Meeting, Clinton (Bob Nelson)

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