The Maine Entomologist

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

The Official Newsletter of the Maine Entomological Society

Vol. 23, No. 1 February, 2019

PRESIDENT'S CORNER

by Charlene Donahue

When Marj called me in December, I was saddened to hear of Dick Dearborn's passing. I had known Dick for decades as a friend and colleague. He was the one who first hired me at the Maine Forest Service on a summer contract to work on the insect collection. I had young children and did not want a full-time job, so that suited me perfectly. After a few years, an Entomologist position opened up and I got the job. Dick and I had offices next to one another in the back lab until he retired. We collaborated on many projects, leaning on each other's strengths in research, survey and outreach.

I was the first woman entomologist ever hired by the MFS and clients were not always ready to accept me as the expert. When I was out in the field with Dick and a client would turn to him, he would say, "This is her project" and step away. I really appreciated that support and show of confidence in my abilities.

For years, Dick took on the responsibility of having summer interns. This is not an easy thing to do when you have a short growing season in which to get all your work done. It take time to teach, mentor, and supervise young people. But he did a great job setting up projects that they could take responsibility for and gain some real life experience in forest entomology. A number of those interns went on to careers in entomology after a summer with Dick.

Of course MES was a place where the two of us worked together from its inception. Dick got Dave Struble, State Entomologist, on board with the importance of MES, and the Maine Forest Service helped sponsor many events such as the Acadia National Park Bio-blitzes, Bug Maine-ia, and the MES winter workshops. Dick was the one who convinced me I should run for MES president, and here I am.

Dick, you made a difference in this world, and you will be missed.

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"Insects are (Mostly) Our Friends" *and* How to Identify Insects Using the Web

On Tuesday, April 16, from 10 a.m. to noon, MES member and Maine Master Naturalist Roger Rittmaster will be leading a workshop on web-based insect identification, for an insect course being given in the Senior College at the University of Maine in Augusta. He will discuss websites such as BugGuide, LepSnap, iNaturalist and GoBotany (for plants).

His talk is part of the "Insects are (Mostly) our friends" series, an 8-week course offered by Maine Master Naturalists Judy Feinstein, Gaby Howard, Cathie Murray, Kit Pfeiffer and Karen Simpson. Information on the course, and how to sign up, can be found at **https://www.umasc.org/product/insects_are_mostly_our_friends/**

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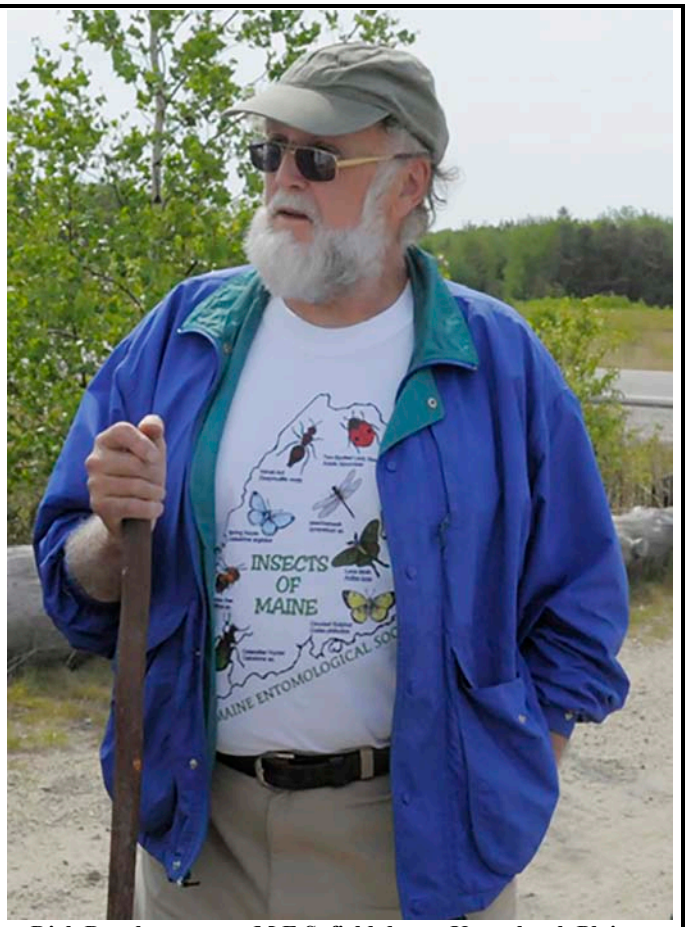
Don't forget to renew your M.E.S. membership for 2019 if you haven't already done so !!

In Memoriam: Richard G. Dearborn

Richard G. "Dick" Dearborn, past-president and one of the founders of the Maine Entomological Society, passed away peacefully at home on Thursday, December 27th, 2018, at the age of 79.

Growing up in Bangor, Maine, Dick had a life-long love of insects. After graduating from Bangor High School he went on to study at the University of Maine where he received both a B.S and M.S. in entomology. He continued his studies at Cornell University in Ithaca, New York, before starting work for the Maine Forest Service (MFS) as a survey entomologist. Dick spent the next 37 years with the MFS before retiring in 2003.



Dick Dearborn on an M.E.S. field day at Kennebunk Plains in May, 2010. ***Photo by Kevin Byron***

During his tenure at the MFS, Dick promoted the importance of entomology in the State of Maine. He firmly believed that information should be shared as widely as possible. He convinced the Maine Forest Service to publish a newsletter providing timely information about forest pests based on MFS projects and surveys. These newsletters were published for decades and continue today, providing Mainers with up to date information and projections of forest pest problems. Dick encouraged other forms of publication as well including a series of forest entomology technical reports that he oversaw. Dick curated the MFS insect collection in Augusta, Maine and used it as a basis for preliminary lists of Coleoptera, Diptera and Hymenoptera found in Maine. He also co-authored a paper on Tabanids (deer, horse and moose flies), a series of reports on mosquitoes and was the lead author on the lengthy authoritative paper on Carabids (ground beetles) in Maine; this latter was recognized as the outstanding paper of the year by the Coleopterist Society in 2014.

Pointing out that organisms don't recognize political boundaries, Dick gently but persistently fostered regional collaborative approaches to problem-solving with colleagues both in-state and across the continent. These included entomologists at the University of Maine, the U.S. Forest Service, USDA-APHIS-PPQ, their Canadian counterparts and many at other institutions. Dick was a member, and served for a time as Chair, of the Northeast Forest Insect Working Group, before it merged with the Northeastern Pest Council. He was a member of that latter group until his retirement. He also belonged to a number of other professional societies. This was a man who enjoyed the outdoors and at one time or another, hiked all the trails in Baxter State Park, where for years he served on the park's scientific advisory board. He also served as an Adjunct Curator with the Maine State Museum.

Dick was concerned that there was no one in the State tracking insects of medical importance and took responsibility for medical entomology oversight. He initiated the ongoing Maine tick survey in the 1980s and ran it for close to twenty years. This data has been used to document the spread of ticks across the State. When West Nile Virus reared its ugly head in the Northeast in 1999, he initiated a study to identify and document the state mosquito fauna, which had previously been undocumented - though everyone *knew* Maine had mosquitoes. He was proponent for the multi-agency Maine Vector-borne Disease Working Group that now oversees the medical entomology issues.

Dearborn's entomology influence went well beyond his work at the Maine Forest Service. One of his most important legacies was the formation of the Maine Entomological Society. In 1997, Dick convened a group of interested entomologists, both professional and amateur, to create a "Maine Bug Club." This group became the Maine Entomological Society, where he served ably as President from its early formative years through 2008. The Society continues to fulfill Dick's vision of promoting the importance of insects through field trips, workshops, outreach events, school programs, assisting in research projects and curating the Maine State Museum insect collection.

In his dual roles at the Maine Forest Service and Maine Entomological Society, Dick was instrumental in beginning two wildly popular programs. He helped initiate Bug Maine-ia at the Maine State Museum, where for years he was known as the "woolly-bear man" by kids and adults alike. Bug Maine-ia, now in its 16th year, brings an average of some 2000 visitors to the Museum each September; it in turn was the inspiration for the museum's Maine Earth-Science Day. Dick was also one of the principle driving forces that led to some 13 years of entomological bio-blitzes at Acadia National Park. These blitzes were designed to increase the Park's knowledge of park fauna and to promote interest in and understanding of insects by visitors.

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Dick Dearborn (cont.)

The blitzes resulted in hundreds of new species being added to the known fauna of Acadia, including numerous new Maine state records. Public sessions, news coverage, a couple of documentaries and a study of citizen science in action all attest to the success of this project.

Above all else, Dick was a teacher and mentor. He made a difference to many by conducting workshops on forest entomology at the Eagle Hill Institute in Steuben, having summer interns at the MFS and guiding numerous formal and informal students in multiple contexts through problems both simple and complex.

Beyond these many professional and entomological accomplishments, however, Dick was first and foremost dedicated to his family. He fulfilled his dream of owning a backyard farm, where he and the family raised animals and crops, and harvested firewood. He and his wife Marj officiated at Maranacook track meets, continuing even after their children graduated. Dick enjoyed the arts and history; he wrote poetry, painted, volunteered at Fort Western and square-danced. Dick was a dedicated member of the First Church of Christ Scientist, volunteering at the Augusta Reading Room for years.

He is survived by his wonderful wife of 56 years, Marjorie Dearborn of Mount Vernon, as well as three sons: Jeffery Allen Dearborn and his wife Tina, of Walls, Mississippi; Thomas Lamb Dearborn and his wife Jill, of Ponte Vedra, Florida; and John Jacob Dearborn and his wife Diana, of Mount Vernon. He is also survived by four daughters: Ruthann Gavett and her husband Richard, of Mount Vernon; Linda Louise Sevier and her husband Terry, of Erieville, New York; Nora Sue Bush and her husband Robert, of New London, Connecticut; and Laurel Orlene MacFarland and her husband Michael, of Mount Vernon.

He also leaves behind three sisters: Barbara Henry of Philadelphia, Pennsylvania; Cynthia Yachanin of Augusta, Maine; and Valerie House and her husband Wade, of Yuma, Arizona, as well as 12 grandchildren, three great-grandchildren, and several nieces, nephews, and cousins. Dick was a member of the First Church of Christ Scientist, and owned and operated a small farm in Mount Vernon for many years.

Those wishing to make memorial contributions may send them to:

Maine State Museum, Insect Collection
83 State House Station
Augusta, Maine 04333-0083

or

Crystal Lake Camps, a summer camp for children
1676 Crystal Lake Road
Hughesville, PA 17737
(visit their website at **www.crystallakecamps.org**)

A celebration of Dick's life will be held at the Dunn's Corner Baptist Church in Mount Vernon on Saturday, April 6th, 2019, at 3:00 p.m.

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Winter Workshop on Insect Identification Draws New Members

By Anna Court

About 30 people took part in the MES 2019 Winter Workshop at the Maine Forest Service Bolton Hill facility on Saturday, January 12th. Many of the 30 participants are brand-new or recent new members of MES. Two teens, Ariana Hansen and Wes Hutchins, attended and are recent MES members. Ariana is 15, is home-schooled and attends field days with her mother, Victoria, when they can. Wes is a junior in high school in the Belfast area. When he told his mother, Trish, of his interest in entomology, they found the MES on-line, joined and have taken part in several Winter Workshops and work days at the State Museum.

Dana Michaud consults with Wes Hutchins and his mother Trish, on some of the beetles Wes has collected in his Maine Forest Service-sponsored forest plot study. - *David Manski photo*

Renee DesRobert from Biddeford also attended the workshop, and recently became a life member. She said that she fell in love with insects through taking part in the York County Cooperative Extension insect project. Karen Zimmerman from Mount Desert Island also attended as a new member. She and several other participants are Maine Master Naturalists. Thomas Schmeelk, Charlene Donahue's replacement as a Maine Forest Service Entomologist, also became a new member. He helped gather equipment and set up for the workshop.

Tom Schmeelk welcomed participants on behalf of the Maine Forest Service, which cosponsors the workshops. Charlene Donahue announced the death of MES founder, Dick Dearborn, late last year and asked for a moment of silence to remember and honor him.

Dr. Don Chandler from the University of New Hampshire led the workshop. Long-term MES members are familiar with Chandler and his excellent teaching capabilities. Over the years he has conducted seven winter workshops for MES and was lead taxonomist for seven Bioblitzes at Acadia National Park.

His purpose this time, he said, was to help participants quickly identity insects to family using key characteristics

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that are diagnostic to at least suborder. By using these shortcuts, Chandler said, one can avoid the very long and complicated keys that identify insects to genus and species levels, especially among very diverse orders such as Coleoptera and Hymenoptera.

Don Chandler's hands-on approach to teaching really came to the fore in the afternoon "lab" portion of his short course, as M.E.S. members utilized his keys to identify specimens.
- David Manski photo

Chandler introduced Istvan Miko, manager of the UNH Insect and Arachnid Collections. Miko contributed to the discussions at the workshop from his knowledge of insect behavior and physiology. Chandler first took a quick survey of participants' interests. As a result, he selected three orders on which to focus: Hymenoptera (bees, wasps and ants), Hemiptera (true bugs) and Coleoptera (beetles). Handouts he provided showed drawings and photographs for identifying specimens to suborder, super-family and family. He also used slides to illustrate key points.

Charlene Donahue and Dana Michaud had provided boxes of insect specimens from the Maine State Museum collection for participants to identify. After the morning lecture, the afternoon was spent using microscopes and keys to put into practice some of the identification keys Chandler discussed. Participants also heard from Roger Rittmaster who gave a presentation on using the website iNaturalist to identify Lepidoptera. Users can submit photographs to the site and get identification of moths and butterflies.

Side tables in the large room were used to show important identification books as well as the moths and butterflies mounted in glass from the MSM collection. Home made baked goods, and tea and coffee, were offered in the back of the room and gladly consumed by hungry participants!

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Insects Seen on Ice While Skating on December 14th, 2018

by Charlene Donahue

The ice was great for skating during the early winter and I bought a new pair of skates that I just HAD to try out the day I got them. I headed to the Heath in Whitefield, where I had been an earlier skating day.

This water scorpion, *Ranatra americanus*, was certainly out of its proper element on the ice. *- Charlene Donahue photo*

The 14th turned warm in the afternoon (into the 30s, as opposed to the earlier day when it did not get out of the teens). I was gob-smacked to see insects and spiders everywhere on the ice. I called my sister to tell her about what I was seeing and took photos with my phone as I skated from insect to insect and narrated what I was seeing to her. She was impressed I could skate, photograph and make a phone call all at the same time; modern technology is amazing. The insects were every few feet all across the ice that is acres in size.

Some of the specimens I photographed were: a water scorpion, *Ranatra americanus* (see above); Sciomyzidae flies whose larvae feed on mollusks; soldier beetle larvae of *Chauliognathus pensylvanicus*, that overwinters as a larva; ground beetles, *Agonum* spp., of which many species live near water; Chrysomelid beetles, including *Syneta* sp., that are associated with alders; rove beetles in the subfamily Paederinae; long-jawed spiders, family Tetragnathidae, some species of which hang their webs over water; and fishing spiders of the genus *Dolomedes*.

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This adult male spider had also likely come out to hunt in the warmth of the previous day. Note the enlarged pedipalps.
- *Charlene Donahue photo*

There were multiple specimens of the insects and spiders listed above and more besides. Photographing objects on the ice is not easy. Knowing I was not getting great shots I collected some of the more interesting finds. I had a collecting container in the car parked across the road but I WAS on skates. So I carefully liberated the frozen insects from the ice and placed them on my hat where they stuck in the wool. Unfortunately my skate caught in a crack and I fell. Hard. After making sure I was only bruised, I checked for my specimens. They were gone. It was getting late and I was sore so I left with just the photos and a memory of an interesting afternoon on the ice.

Thank-you to Dana Michaud, who helped me identify what I saw.

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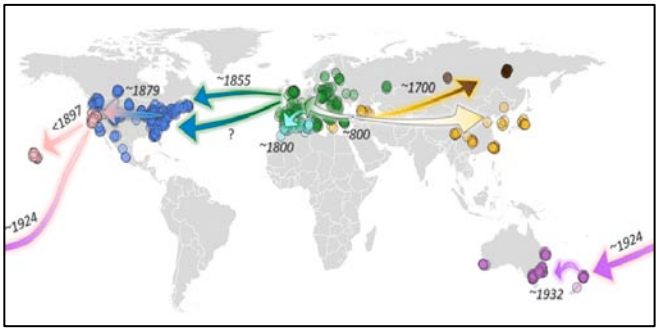
Pieris Project Update

A number of folks from Maine, presumably mostly if not all M.E.S. members, submitted specimens for the *Pieris* Project, which began in 2014 to document the history of the Cabbage White butterfly as it has spread throughout the world. Maine sites represented in this first study were from Cape Elizabeth, Falmouth, Portland, Clinton, Orono and Cooper.

The first results of that study are now out, what the researchers are describing as a kind of "23 and Me" for the butterfly. The first discovery is that there are apparently seven genetically distinct populations of this butterfly to be found across its global range.

The spread of this butterfly is truly a fascinating story. Beginning in Europe, it has spread to Africa, Asia, and the Americas - and they've been able to document likely introduction routes. Surprisingly, the New Zealand population appears to have been introduced from the West Coast of the U.S. in the 19th century, rather than from Asian populations, or from the British Isles. The species in turn had been introduced into the western U.S. from the east, shortly after the completion of the transcontinental railroad.



The tentative map of the spread of *Pieris rapae* from a European ancestral stock. Six Maine localities are included in the eastern North American data set.
(*Figure from the Pieris Project web site*.)

The first major technical journal review article has been submitted for review, but a preliminary and very readable version of the study has been posted on-line and can be seen at

http://www.pierisproject.org/ResultsInvasionHistory.html

The study is still ongoing, and they're happy to receive specimens from any new locations around the globe. A link to the main project site can be found on the M.E.S. web page.

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Fungus and Bark Beetles - *SO MANY FAMILIES!*

As Charlene Donahue was putting together the list of beetle families needed for labels on the cabinets at the Maine State Museum, it struck her how many families there were for fungus and bark beetles - even after the traditional Scolytidae ("bark beetles") have been reclassified as a subfamily of the weevils (Curculionidae):

Anthribidae: fungus weevils
Ciidae: minute tree-fungus beetles
Corylophidae: minute fungus beetles
Cryptophagidae: silken fungus beetles
Endomychidae: handsome fungus beetles
Erotylidae: pleasing fungus beetles
Leiodidae: round fungus beetles
Mycetophagidae: hairy fungus beetles

Boridae: conifer bark beetles
Cerylonidae: minute bark beetles
Colydiidae: cylindrical bark beetles
Cucujidae: flat bark beetles
Laemophloeidae: lined flat bark beetles
Passandridae: parasitic flat bark beetles
Pythidae: dead-log bark beetles
Rhysodidae: wrinkled bark beetles
Salpingidae: narrow-waisted bark beetles
Silvanidae: silvanid flat bark beetles
Trogossitidae: bark-gnawing beetles.

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Purple Plow Pollinator Challenge

Do you have a class or group of students who would like to help improve pollinator populations?

The Purple Plow Pollinator Challenge is now going on across the country, and offers a hands-on way to explore what people/students can do to sustain or improve pollinator well-being. It is geared to students in grades 5-12 and runs through May 1st. And best of all - there are prizes!

There are facilitator and student guides, lesson packets and a judging rubric all downloadable free at the bottom of the website. Visit the website to read more - or show kids the video to get them inspired!

To check out the Purple Plow Pollinator Challenge, go to their web site at:

https://www.purpleplow.org/about

Click on ***Take Challenge***.

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Maine Department of Agriculture, Conservation and Forestry
28 State House Station
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An Emerging Disease from Maine's State Bird (and how deer tie in)

by Chuck Lubelczyk

The unofficial state bird of the Pine Tree State is commonly referred to as the mosquito. While we have over 45 species of mosquito reported from Maine, only a handful have been previously recognized as of either public health or veterinary consequence. Most are of the nuisance variety, with the most attention paid to their ability to ruin outdoor activities from late-May through August.

However, more attention was paid when West Nile virus (WNV) arrived in North America in 1999, sweeping westward to become established over most of the continent. While West Nile thrived, another disease, Eastern equine encephalitis virus (EEEV), was slowly ramping up as well.

In both of these examples, mosquitoes acquire the viruses from reservoir competent birds, such as thrushes and sparrows. The bird-feeding (ornithophilic) mosquitoes are of the genera *Culex* (WNV) and *Culiseta* (EEEV), respectively. They, in turn, infect naïve or uninfected birds, which, in turn are bitten by mosquitoes that are not as picky. These generalist mosquitoes are called bridge vectors (because they bridge the species gap between birds and mammals) (Fig. 1). EEEV, in particular, has had a recent spurt of activity in Maine, beginning in 2009, when an outbreak among livestock across several counties alerted health officials to the widespread distribution of the virus (Fig 2). EEEV in particular, can be severe to both humans and livestock, but luckily, there is an inexpensive vaccine for the virus which can be given to horses.

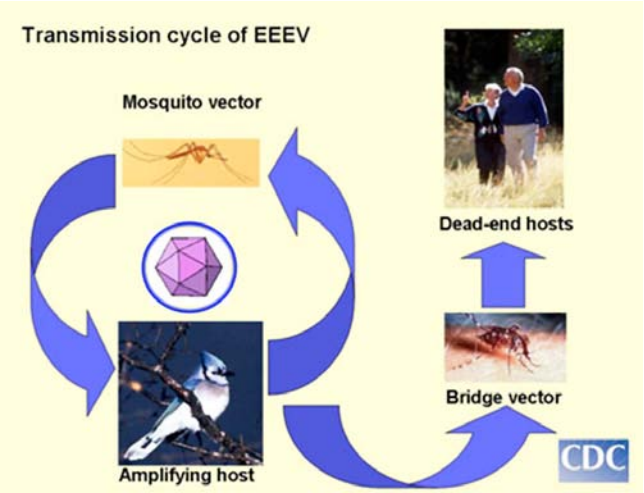

Fig. 1. Seasonal cycle of the eastern equine encephalitis virus (EEEV) in nature. *Image courtesy of US CDC*.

Enter the white-tailed deer! It roams abundantly across most of Maine, and to a mosquito, looks and (probably) tastes like livestock. Could deer be examined to check for the presence of the virus and tell health official where EEEV is active? The answer, it turns out, is YES! And it's very reliable, too!

Initial surveys showed that, where previous disease had been detected in livestock, the resident deer (and moose) showed exposure to the virus through antibodies (~10%).

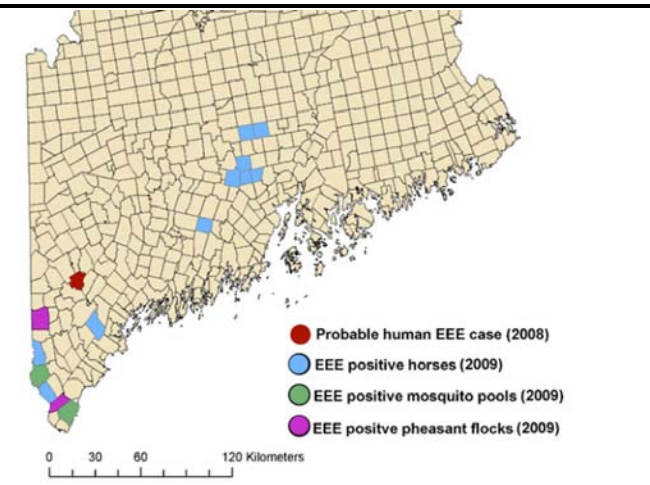

Fig. 2. Maine towns with EEEV activity in the 2009 outbreak.

When this was expanded to look at other areas of the state by sampling hunted deer and moose, positive animals were found, even in regions without a history of veterinary or human cases, indicating that EEEV is present statewide (Fig. 3). More interesting, was that certain areas seem to be reliably supporting the virus across years, indicating very stable areas where EEEV can be found. This is probably due to a combination of the correct species of mosquitoes, the correct habitat present (forested wetlands) and the correct reservoir birds present to amplify the virus in nature.

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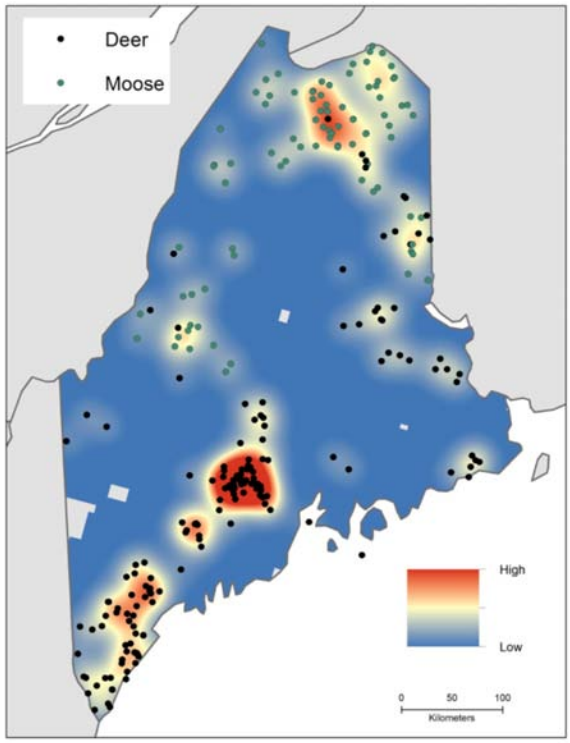

Fig. 3. Statewide distribution of EEEV-positive deer and moose, 2009-2015, with clusters of disease shown in red.

This type of disease surveillance has also been employed in recent years, in Vermont and New Hampshire, where EEEV has also arisen as a public health issue in the last decade. The hope is that by putting all the pieces together – positive animals, habitat, and date on mosquito populations, a tool such as a GIS model can be created to aid with predicting where outreach and education can be targeted, but also where to increase surveys to detect the virus early, before it becomes another veterinary or human outbreak.

A table of all known Maine mosquitoes with basic information can be found at
https://www.maine.gov/dacf/mfs/forest_health/insects/mosquitoes_table.htm

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Kennebec Land Trust Lyceum Lectures to Feature Insects

The 2019 Lyceum Lecture Series of the Kennebec Land Trust is sponsored by the M.E.S., and will feature three lectures on **"Maine Insects: Ecology and Conservation"** on three successive Thursday evenings this coming March.

Lecture topics, and speakers, will be: **Maine Aquatic Insects: Ecology, Habitats, & Conservation**, on Thursday, March 14, 7:00 – 8:30 p.m., featuring Hamish Grieg, University of Maine, Assistant Professor of Stream Ecology; **Terrestrial Insects: Conservation, Ecology, & Threats**, on Thursday, March 21, 7:00 – 8:30 p.m., featuring M.E.S. President Charlene Donahue; and **Interactions Among Plants & Insects- The Complex Web They Weave**, on Thursday, March 28, 7:00 – 8:30 p.m., featuring M.E.S. member and Maine Master Naturalist Roger Rittmaster.

The lectures will be presented at the Ladd Recreation Center on Gott Road in Wayne (44 deg., 20.60'N, 70 deg., 03.92'W). To get there from I-95, take the Route 202 West exit in Augusta. Go west into Winthrop, and take the Route 133/41 turnoff on the west side of town. About 1.5 miles to the north, this will fork - take the Route 133 branch to the left.

About 4.5 miles down this road, the speed limit will drop to 30 mph, and there'll be a sign indicating the road bends slightly to the right with a secondary road coming in on the left. This secondary road is the Old Winthrop Road - turn left. About ¼ mile up, turn right onto Gott Road; Ladd Recreation Center is a good stone's throw up on your left, with ample parking.

The Kennebec Land Trust is also sponsoring a May 9th Field Day along Goff Brook in the Reynolds Forest of Sidney, featuring aquatic insects, as well as the M.E.S. field day on June 1st at Hutchinson Pond in Manchester. (More on this latter in the May newsletter.)

For more information, visit the KLT web site at
https://www.tklt.org/lyceum/.

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Our Creative Side (or, What to do on a cold February Saturday)

by Kathy Claerr

Jim Nutting hosted seven other MES members at his Maine Art Glass Studio and Insect Museum on Saturday, February 9th.

After a lively breakfast at a Lisbon diner, we toured the Museum. Amid lovely stained- and fused-glass creations stand Jim's butterfly dioramas. Tropical butterflies of every hue, some of mammoth proportions, some wildly iridescent, are posed on natural materials, and then encased in glass boxes that are detailed with color-coordinated stained glass touches. Completely arresting. Black and white Goliath beetles and iridescent wood borers also make appearances.

Jon Wallace, his wife Joy Auclair, Liz Mazurkiewicz and Kathy Claerr explore their artistic sides in Jim Nutting's studio.

Downstairs in the Studio, Jim had ready for us colorful glass forms that we assembled into butterfly ornaments. Our creative juices led us to apply colored glass chips to the wing and body forms to suggest native species—Monarch, Black Swallowtail, Sulfur-- or fanciful inventions.

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Glass Insect Extravaganza (cont.)

Jim will fire our assemblages in his kiln to fuse the forms and chips together into the final product: glistening, colorful glass art that can be hung. None of us can wait to see the results of our labors.

Thanks to Jim for a delightful diversion on a cold, insectless day!

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March 23rd Field Day in Whitefield

(plus update on Browntail Moth Parasitoids Research)

Join us from 10:00 a.m. - 4:00 p.m. at 460 Mills Road, Whitefield (in Lincoln County), to visit a backyard sugar operation, enjoy the company and collect a bug or two or maybe more. Also scheduled is an update on Karla Boyd's research on parasitoids as a means of control for the browntail moth.

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. One beehive has made it through the winter so far, and if it's warm enough we'll take a peek to see if they need to be fed.

Dress for the weather and be sure to wear boots; bring snowshoes if conditions permit, as well as your lunch and drinks. Bring dip nets and pans for aquatics, as well as vials, etc. for terrestrial collecting. 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!).

There will be a meeting of the Executive Committee at 9:00 a.m. to discuss how we are doing on action items from the 2018 MES annual meeting; this meeting is open to all.

Directions on how to get here are on the M.E.S. web site.

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

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May Field Day at Paupers' Field, Cape Elizabeth

Join us on Saturday, May 4th, at Paupers' Field on Spurwink Road in Cape Elizabeth. Using GPS, an address of 476 Spurwink Ave., Cape Elizabeth, should get you there. The entrance to the parking lot is at approximately 43 degrees, 35.08'N, 70 degrees 14.68'W, and is marked by a big sign for Gull Crest Field, for the playing fields farther in. If you're coming south on Spurwink Avenue, it'll be the first left right after Dennison Road, which goes to the transfer station.

There is a parking area on the right just as you turn in, where we'll meet at 10:00 a.m. We'll be crossing the road and bugging in the big fields across the street. There are several types of habitat: salt marsh in the distance, a small cattail marsh, oak woods, a willow/alder section, some fruit trees and acres of grasses, red sorrel and nesting Bobolinks.

For those wishing to trek through the woods and in the low areas, it can be wet after rains but most areas are fine for lighter shoes. Tick collecting is good and greatly appreciated. There is a good 'house of pizza' near by, an Amato's for the Italian lovers and Asian and Mexican restaurants within a 5-minute drive if you forget lunch. There should be "porta-potties" at the athletic fields.

For more information, text or call Pete Darling at 207-899-7173, or email him at **petedarlingii@yahoo.com**.

Google Earth view of the Paupers Field locality in Cape Elizabeth. (North is up in the figure.) Below, the sign at the entrance to the parking area. -*Pete Darling photo*

The open fields across from the parking lot at Paupers' Field. Pete Darling assures all that the snow will be gone by May! *- Pete Darling photo.*

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Basic Insect Collecting: Getting Started

By Bob Nelson

In the November issue, I tried to present why basic, fundamental collecting – especially by amateurs – is so important to the long-term health of the science of entomology. As was pointed out years ago in the introductory remarks of one of the M.E.S.-sponsored Insect BioBlitzes at Acadia, the specimens are forever - whether or not they can be identified right now. You can never go back and collect last year.

This collecting is now becoming critically important as we try to document the movement of insect populations, and even the presence of particular species in an area where they were historically common. A new paper has just been published in the professional journal *Biological Conservation* that predicts that given current trends, we may see extinction of as much as 40% of the world's insect species within the next few decades. (See the note that follows this article for more detail.)

Sometimes - and I've had this happen over a dozen times - specimens can't be identified at the present because what you've collected represents a species previously unknown to science. Remember Hillary Morin's new species of wasp found here in Maine? If not, see the November, 2017, newsletter (p. 3) - and you'll appreciate my point!

Anyone planning to undertake collecting will know what they're planning to collect. For butterflies and larger moths, photos can be a quite adequate means of "collecting" for many people - and Roger Rittmaster will be teaching a short session on how to identify these using on-line guides. (See elsewhere in this newsletter.)

But for other taxa, assuming you want to keep and preserve specimens, you'll likely need a collecting container, a killing agent, pins (for most things), a proper pinning board (usually plastic foam sheeting), and a container for proper specimen storage. Other equipment - nets, aspirators, etc. - will be dictated by the groups you're collecting.

Killing containers are usually glass, because common killing agents will attack many plastics. Anything from small vials to large jars will suffice - depending on whether one is looking for ants, leaf-eating beetles or butterflies. If you're worried about dropping them on a hard surface, it's best to wrap the base in a shock-absorbing material such as duct tape.

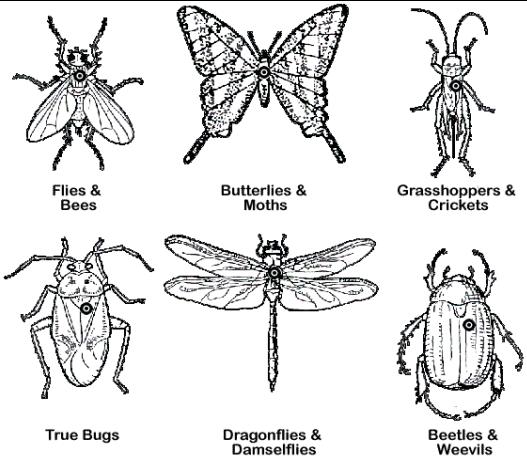
Killing agents vary, but for something available locally, non-acetone fingernail polish remover is sometimes used (ethyl acetate is the active ingredient). Pure ethyl acetate is available on-line; you don't need reagent grade, but "entomological" or "utility" grade is just fine, and much cheaper. However, this is also not a healthy chemical to inhale or get on your skin.

Ethyl acetate is both effective and preserves the specimens in a soft state, with flexible joints, so one can go on a day-long collecting trip and then not pin specimens out for even days afterwards (if the collecting jars are air-tight). However, this also will definitely attack many plastics, including styrofoam. You can also collect specimens in containers and put them in a cooler until you get home and then freeze them. This only works in the summer though!

Another option is to collect specimens in alcohol. Isopropyl alcohol will make specimens very stiff and brittle, but denatured ethanol can be purchased on-line. In a pinch, I've on rare occasion even dropped into a liquor store to purchase a small bottle of vodka, which is often 40% ethanol (80 proof).

You can catch the specimen by hand and drop it into your killing jar, or for some, just scoop them in the jar by snapping the jar and lid together around the specimen, which presumably is resting on some surface - a wall or plant (especially if you've set your goals to have a complete collection of all the stinging wasps found in Maine!). You can then move on to additional specimens, or remove the dead specimen from the killing jar, put it into a smaller vial, and move on to another target specimen. Butterfly collectors will often pinch the abdomen to kill a specimen, then enclose it with folded wings in a folded paper triangle.

Pinning follows fairly standard protocols to maintain specimen integrity. (Note that insect pins are *much* finer and sharper than dressmaker's pins.) The goal is to push the pin directly through the thorax of the specimen - where it's strongest because this is where muscles are concentrated and the external chitin is often thickest. The diagram below shows proper pinning positions for common groups.



Larger insect specimens get pinned in the mid-thorax, which is the strongest part of the insect. For beetles, bugs, crickets and grasshoppers, the pin is usually sited slightly to the right of center. The top of the specimen should be ~½" below the head of the pin.

from:
https://projects.ncsu.edu/cals/course/ent425/course/syllabus/pinning/diagram.html

Small specimens - those the size of ladybird beetles or smaller - are commonly pointed. The pin is pushed through the broad base of an elongate triangular piece of stiff paper (file card stock, punched out with a specialized paper punch or cut manually), which is then usually bent and glued to the specimen, using anything from Elmer's glue to plastic model cement. The key is not to use any more glue than is necessary to hold the specimen.

Some Europeans advocate gluing the specimen to the top of a rectangular piece of card stock [see (d), below], but many American workers discourage this practice, since important taxonomic characters on the underside of specimens would be hidden by this.

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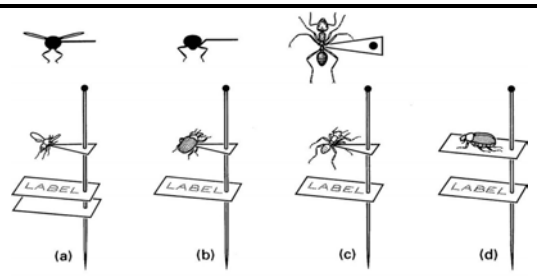

Ways of "pointing" smaller specimens; the European method of putting the entire specimen on a tab of card stock is indicated on the right. Points should be ~½ inch below head of pin.
from: https://iubzoologists.blogspot.com/2018/06/handlingof-collected-material-of.html

Lastly, it's critical to have accurate locality data on your specimen. A specimen without this is interesting and can be used for teaching purposes, but loses much scientific value.

Labels should include the state, county, and township where the specimen was collected, as well as the date the specimen was collected and the collector's name.

Here's what one of my own specimen labels typically looks like (in reality, it's much smaller):

Maine: Kennebec Co.
Waterville: Kennebec R.
44°31'54"N, 69°38'53"W
19-V-2018
R. E. Nelson, coll.

I print these in 4-point Helvetica font on my computer, on card stock. (I buy it in standard 8½ x 11-inch sheets in packages of 300, but one could also use 5x8" index cards.) I always try to put latitude and longitude on labels for precision. The effort should be made to ensure labels are as small as possible; I try to limit mine to 1/2" x 5/8" or so, though if one is hand-writing them this may not be possible.

Note that the date should also be unambiguous - i.e., "9/5/20" doesn't work. In most of the world, 9/5 would be read as May 9th; and future scientists will need to be sure whether your specimen was collected in 1920 or 2020. Roman numerals are internationally recognized for months. Some people also add a second label with ecological information.

It's also important to have storage containers that are as airtight as possible, for storing your collection (unless you're going to collect things that will be stored permanently in alcohol). Insect storage boxes are rarely completely airtight, and larvae and adult beetles of the family Dermestidae ("Carpet beetles") fill an ecological role of recycling dry animal protein.

The most insidious genus is *Anthrenus*, adults of which are ~3 mm (1/8 inch) long, and uncontrolled larvae in particular can turn a beautiful collection into a bunch of disarticulated bits of chitin and a bunch of fine dust.

I realize this may seem superficial, and leave some folks wondering about detailed specifics. The USDA has prepared a much more complete guide - a 68-page book. This can be downloaded (as a pdf file) from the M.E.S. web site; just click on the link for "Collecting and Preserving Insects and Mites". One can also go to the Purdue University web site linked right next to this on the MES web page, for an awesome beginner's guide.

For supplies, use your favorite search engine to search for "Insect collecting supplies." OR, for the easy shortcut, ask an active collector from the M.E.S. for suggestions! We'll all be happy to help out.

If you'd like to experience first-hand the joys of working with a collection, join in the fun at the MSM Annex to help organize the collections there. Charlene Donahue and Dana Michaud are there almost every Monday and Thursday from 10-5. Just contact them (Charlene by phone at 485-0960 or via e-mail at **donahuecp15@gmail.com**; Dana Michaud by phone at 872-7683) to ensure they'll be there.

But for those who've been fascinated but hesitant to collect themselves, just get out and collect! You can then study your specimens at any time - especially in the winter when it's too miserable even to be out playing in the snow!

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Is There A Dire Decline in World Insect Populations Coming?

By Bob Nelson

A recent paper in the journal *Biological Conservation* presented the results of a meta-analysis of some 73 studies of insect population declines worldwide*. The results are based mainly on studies in the U.K., Europe, and North America, but studies in South America, Africa, and Australia are comparable, making the implications of serious concern.

Already, aquatic Odonata, Ephemeroptera, Plecoptera and Trichoptera have declined seriously in species richness. Terrestrial groups currently most affected are Lepidoptera, Hymenoptera, and the dung beetles (Scarabaeidae) in the Coleoptera. If current trends continue, perhaps as much as 40% of global insect diversity could be lost in just the next several decades.

Main drivers to species extinction have been identified as (1) habitat destruction, particularly from urbanization and conversion of diverse natural systems to monoculture agriculture; (2) pollution, principally from pesticides and chemical fertilizers; (3) biological factors, such as exotic pathogens and introduced competitors; and (4) climate change.

The authors propose serious rethinking of how humans relate to natural environments if we are to reverse this trend.

If anyone would like a pdf copy of this report, e-mail me (BeetleBob2003@gmail.com) and I can return a copy via e-mail.

Reference:

Sánchez-Bayo, F., and K. A. G. Wyckhuys, 2019: Worldwide decline of the entomofauna: A review of its drivers. *Biological Conservation*, v. 232, p. 8-27.

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New Entomology Program Added at Eagle Hill

In the November issue, we had a tentative listing of the entomology programs schedules for this summer at the Eagle Hill Institute at Steuben on the coast. A new week-long summer course on dragonflies has now been added to the program. The *entomology*-related program now consists of the following courses of study (the new addition is in blue below):

June 9-15: Chironomids: Classification, Morphology, Identification and Lifecycles, with Armin Namayandeh.

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Entomology Programs at Eagle Hill (cont.)

June 23-29: Insect and Spider Biology "Through the Lens", with Kefyn Catley. (*see description below*)

July 14-20: Trichoptera of the Northeast, with John Morse and Paul Frandsen.

July 21-27: Dragonflies and Damselflies: Field Techniques, Identification, and Natural History, with Michael Blust.

July 28 – August 3: Leaf- and Stem-Mining Insects, with Charley Eiseman.

August 4-10: Microlepidoptera: Collection, Preparation, Dissection, Identification, and Natural History, with Jason Dombroskie and Kyhl Austin.

August 11-17: EPT Taxa: Ephemeroptera, Plecoptera, and Trichoptera, with Steven Burian.

A link to the Eagle Hill summer calendar for all their programs, as well as a separate link for the entomology-related ones, will be found on the M.E.S. web page and can be checked periodically for any further updates.

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Interested in Vineyard Entomology?

A recent issue of the ***Canadian Entomologist*** has an article* on the history of vineyard entomology in Canada.

Though the first North American wines were made by Vikings in Newfoundland and Labrador over 1000 years ago, the "renaissance" of viticulture and winemaking that started in the 1970s has given the history of insects associated with plants of the Vitaceae - both grapes and our native bittersweet and Virginia creeper - increasing significance.

A 19th-century engraving of grape sorting and preparation near Montreal, Canada. (*from the Vincent, et al., paper*)

Four of the five Canadian provinces that currently produce commercial wines are our neighbors: Ontario, Quebec, New Brunswick and Nova Scotia. Maine itself has its own specialty wineries popping up across the landscape.

The Grapevine Beetle, *Pelidnota punctata*. - *Image from* http://bioweb.uwlax.edu/bio210/s2013/bruesewi_mari/index.htm

Though strictly anecdotal, both Bob Nelson and Dana Michaud have noticed that it's been years since either of them have seen the Grapevine Beetle *Pelidnota punctata*, a ¾-inch-long scarab that as a larva feeds on rotting wood, particularly of oak and hickory; the adults feed on the foliage of grape vines, both wild and cultivated. In the 1980s, this species was regularly found at summertime lights in central Maine.

Anyone who'd like a pdf copy of this article can e-mail Bob Nelson (BeetleBob2003@gmail.com) and ask for it.

Reference:

* Vincent, C., T. Lowery and J-P. Parent, 2018: The entomology of vineyards in Canada. ***Canadian Entomologist***, v. 150, pp. 697-715.

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First Insect Collection Work Day at Maine State Museum Annex Produces Results

by Charlene Donahue

Thirteen members of the Maine Entomological Society convened at the Maine State Museum (MSM) Annex to work on the insect collection on Saturday, December 8th.

During the past year donations and additions have been made that needed to be moved into unit pinning trays and/or sorted by species and integrated into the collection. This is very labor-intensive, time-consuming work. The taxa worked on most during the day were Ede's Orthoptera collection, The Nature Conservancy's pine barrens ants and the University of Maine's ants.

Karla Boyd and Chase Gagne used their taxonomy expertise on parasitic wasps and aquatic insects respectively, to put names on some of the specimens in the collection. Jen Lund re-labeled some of her samples from her thesis work and refilled sample containers with alcohol. It was impressive to see every flat surface in the room covered with drawers of specimens, microscopes and computers, with people diligently working away. Karla and Chase even made use of ladders as computer stands. (And yes, that is a polar bear in the corner…)

The first M.E.S. work day at the Maine State Museum Annex brought a large team of eager M.E.S. members to help out. - *Charlene Donahue photo*

Who was there? Karla Boyd and Chase Gagne, graduate students at the University of Maine; Selene Fromberg came along with her husband Eric Fromberg who works at Maine CDC; high school student Wesley Hutchins brought his dad Jake Hutchins; Wheeler Lowell came, who volunteers at the museum insect collection; Jen Lund, the State Apiarist, was there; Karen Johnson and Karen Zimmerman, Maine Master Naturalists, also joined us; Jon Wallace, a retired science teacher, also came; and Charlene Donahue and Dana Michaud are adjunct curators at the MSM. This is also a nice cross-

(cont. on next page)

section of who is *in* the MES – and who are interested in learning more about insects.

Thank-you to all who took part! All told, this was 54 hours of donated but enjoyable labor (it would have been more but it took over an hour to get our pizzas!).

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Second Work Day at Maine State Museum Brings Together Team for Fun & Accomplishment

by Charlene Donahue

The second MSM work day on January 26th was another enjoyable and productive day.

Anna Court and Mark Ward sort Halictid bees, while Roger Rittmaster, Kathy Claerr and Peter Darling work on butterflies in the background. And yes, that *is* a stuffed polar bear!
- Charlene Donahue photo

Anna Court and Mark Ward worked through the Halictid bees, organizing and labeling unit pinning trays. They came close to finishing work on the family.

Kathy Claerr and Peter Darling moved all the glass-mounted Lepidoptera to cabinet drawers, sorting them by family as they went. Roger Rittmaster assisted by updating the species names on those specimens; these are all over 100 years old, and many names have changed. Roger also took photos of un-named specimens, uploaded them to the app LepSnap, and was able to get identifications on many more.

Dana Michaud sorted and identified Hemiptera specimens and I continued sorting thousands of bees. There is still more to do on all these projects. However, another 30 hours of work was accomplished that day!

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Merryspring Entomology Talks in Camden

Two upcoming lectures by M.E.S. members at the Merryspring Nature Center in Camden might be of particular interest to other M.E.S. members, and could be a great break as winter tries desperately to hold onto us.

On **March 19th**, Clay Kirby will be discussing the ***Spiders of Maine***. On **March 26th**, Kathy Murray will give some helpful suggestions on ***Attracting Beneficial Insects*** to our yards and gardens.

Both lectures are scheduled at noon; there is a $5 charge for those who are not members of the Nature Center.

Merryspring Nature Center is located at 30 Conway Road in Camden. To get there, turn onto Conway Road at the Subway shop on Route 1, and follow the signs to the Center. A complete program of their Winter Lecture Series can be found at http://www.merryspring.org/events/list/.

Remembering Tony Sohns

by Charlene Donahue

The entomology community has lost another of its finest members when Tony Sohns passed away unexpectedly on February 6th at age 41.

Tony was a fixture in the Bangor area, putting on insect programs at the Bangor Children's Museum and schools in the area, and helping his family run the Art and Rock Shops in Bangor, Ellsworth and Bar Harbor that carried many insect items. He was also one of the people who helped get Bug Maine-ia started at the Maine State Museum. He was an all-around great guy and his enthusiasm for insects was infectious.

A complete obituary may be found at **http://obituaries.bangordailynews.com/obituary/anthony-sohns-1977-2019-1072630898**

CORRECTION

The beetles depicted in the photos of Dana Wilde's article, "Humans in Monsters' Bodies" in the November issue, were, unfortunately, mis-identified. These were photos of the longhorn beetle *Strangalepta abbreviata* (family Cerambycidae). Both Reggie Webster and Frank Guarnieri quickly caught it.

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COMING M.E.S. EVENTS in 2018-19

March 23 - Field Day in Whitefield (see p. 8)
May 4 - Field Day in Cape Elizabeth (see p. 8)
June 1 - Field Day - Kennebec Land Trust Preserve
June 29 - Field Day in Norway
July 20 - Joint M.E.S., Vermont E.S., and Cambridge E.S. field day on Appledore Island, Isles of Shoals
August 3 - Field Day at Bangor Land Trust Preserve
August 17-18 - Field Day in Katahdin Woods & Waters
September 7 - Collecting for Bug Maine-ia in China
September 10 - Bug Maine-ia at Maine State Museum
October 5 - Annual Meeting, Clinton
October 19 - Field Day in Bowdoin
(See http://www.colby.edu/MES/ for more detailed information; new information on any event will be posted as soon as received.)

Don't forget to renew your M.E.S. membership for 2019 if you haven't already done so !!

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.***