The Maine Entomologist

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

The Official Newsletter of the Maine Entomological Society

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PRESIDENT'S CORNER

by Charlene Donahue

A group of flies that I find particularly interesting is Tachinids. These are parasitoids of other insects, with many of them feeding on caterpillars. Tachinids are a large and diverse family with over 1,300 species known from North America. The larvae of Tachinids are internal parasitoids. Some species are generalists, feeding on many insect species, and others are more specialized - preferring a particular family or even species.

This summer people have been noticing some of the large Tachinids that attack large caterpillars. One of these is *Belvosia borealis*, a beautiful black fly with iridescent gold on its abdomen. This species is particularly fond of sphinx moth caterpillars and the adults can be found on flowers. Allison Kanoti took this photo in her backyard – a good reason to keep mowing to a minimum! And Colleen Teerling brought a specimen in from her backyard that is now part of the Maine Forest Service insect collection.

***Belvosia borealis*, photographed by Allison Kanoti**

A *Tachina* sp. resting on my shoe at camp.

I had a *Tachina* sp. rest on my shoe when I was at my camp in T4 R7 WELS, and then saw another one in my raspberry patch in Whitefield. I don't recall seeing these flies with such regularity in other years. The hosts for this genus vary from the larvae of moths to leaf beetle, sawfly or bee larvae. A fourth entomologist, Kathy Murray, brought in a *Hystricia abrupta* that feeds on Arctiid larvae.

Now for this one, we have a hypothesis as to why people are finding this species in more numbers than usual this year. The hickory tussock moths, *Lophocampa caryae,* and pale tussock moths, *Halysidota tessellaris*, are Arctiid moths and both species have been fairly prevalent for the past three years. The presence of more of their parasitoids indicates that the tussock moth populations will probably decrease dramatically this year.

One last anecdote about Tachinid flies: my son was crewing on a schooner out of Rockland Harbor a few summers ago. He sent me a photo from his phone of a large hairy orange fly they had found on the deck. He announced that his mother could tell them what it was. He was right, I could, and it too was a *H. abrupta.* What would boys do without their mothers?

Inside:

Remembering Bill Urquhart

Bill Urquhart surrounded by eager youthful admirers at Bug Maine-ia in 2012

It is with great sadness that I am writing to let you know that Bill Urquhart passed away on Wednesday, July 24th. He was an integral part of the Maine Forest Service Entomology Lab and a good friend. Bill honed his skills at insect identification, making our lab the envy of many working on similar projects. He was pleased to share his knowledge with others and was always looking for ways to further his own understanding of insects.

Bill was a wonderful ambassador for the MFS, always polite, helpful and going the extra mile for people. He was our 'man Friday', making so many activities here at the Lab run smoothly, willing to assist on any project and doing so with unsurpassed attention to detail. Bill's keen intellect and sense of humor will be missed around the Lab. We will also miss him sharing his fantastic smoked cheeses and meats of which he and Kathy were justly proud.

Most of all we will miss him as our friend.

- Charlene Donahue

Bug Maine-ia at the Maine State Museum Wednesday September 11, 2013 9:00 a.m. - 3:00 p.m. Free admission for Human and Insect Visitors!

by Joanna Torow

Bug Maine-ia is one of the Maine State Museum's most successful events and a personal favorite of the museum's education division. We can't wait to see the museum galleries transformed with tables ready for presenters, directional signs, large inflatable insects, and our famous ant trail ready to guide the students throughout the museum. It is wonderful to watch crowds of students looking through microscopes, tearing apart galls, pushing their faces up against an aquarium full of water insects, or delicately holding a moth with tweezers as they examined the life of insects from every possible angle.

With schools already calling and making reservations, the museum education staff is in full event-planning mode – rushing around e-mailing new presenters, making pleading phone calls, whipping up draft schedules and designing flyers to be sent out to teachers, homeschoolers, and the general public. And we are hopeful you all will take the time to check out this amazing event!

We are very thankful to all of the Maine entomologists who fill the museum with amazing displays and hands-on activities featuring insects of all sizes, shapes, and colors. A big thank you to all of our presenters and volunteers who help make this day a success! We are always looking for new presenters, so if you have a great idea for a display, activity, or just want to help, we would love to hear from you. Please contact Joanna Torow at 287-6608 or by e-mail at **joanna.torow@maine.gov**. Join the fun! Help us make Bug Maine-ia 2013 sensational by volunteering!

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June 1st field day at Schoodic

The leadoff field day of the *summer* 2013 M.E.S. collecting season was held on Saturday, June 1st, in Winter Harbor, in the Schoodic Peninsula portion of Acadia National Park (ANP).

A group of dedicated M.E.S. members met in the Frazer Point parking lot, with David Manski and several other Park staff. After David reminded us as to the focus of the study and of appropriate Park etiquette when dealing with curious members of the public, we fanned out to focus our attentions on taxa that could be present now but may have escaped detection in the annual Blitzes, which have been held later in the season.

Though most were not a big surprise, a significant number of new additions to the Park fauna were discovered, including numerous beetles (mainly ground beetles that overwinter as adults) and two new dragonflies (*Anax junius* and *Gomphus exilis*) spotted by Richard Hildreth. Richard also reported a number of migratory butterflies of multiple species passing through.

The blue butterfly *Celastrina lucia* (3 specimens collected by Charlene Donahue and Peter Darling) may or may not represent a new Park record, given some current confusion in the taxonomy of the genus. Karen Hopkins and Peter Darling noted a number of butterflies and moths as well, though all were previously known from the Park fauna. The specimens of *Celastrina* will be sent to M.E.S. member Reggie Webster in New Brunswick for positive identification.

Charlene Donahue picked up a number of interesting things that were taken back to Augusta for identification, and David Manski collected a series of different bees from flowering trees and shrubs to be sent off for identification.

The initial list of what was collected (or seen, for most Odonata and Lepidoptera) follows; this will undoubtedly get longer with the materials David and Charlene collected, which have not yet been identified.

Coleoptera:

Carabidae: *Agonum fidele* *Agonum gratiosum*
Agonum trigeminum *Amara aenea*
Amara familiaris *Bembidion properans*
Anisodactylus sanctaecrucis
Cicindela hirticollis *Cicindela limbalis*
Cicindela tranquebarica *Harpalus solitaris*

Chrysomelidae: *Plateumaris nitida*

Scarabaeidae: *Phyllophaga* sp.

Lepidoptera:

Geometridae: *Metarrhanthis duaria*
Hesperiidae: *Poanes hobomok*
Lycaenidae: *Celastrina lucia* *Lycaena phlaeas*
Nymphalidae: *Vanessa cardui* *V. virginiensis*
Pieridae: *Pieris rapae* *Colias philodice*
Papilionidae: *Papilio canadensis*

Odonata:

Aeshnidae: *Anax junius*
Gomphidae: *Gomphus exilis*
Libellulidae: *Libellula semifasciata*

Specimens of all collected and identified species have been deposited with Acadia National Park authorities for inclusion in the ANP collections.

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July BioBlitz at Acadia

The 11th annual Entomological BioBlitz at Acadia National Park on July 12-15, 2013, targeted the Coleoptera – the beetles. As in the past, the event was based at the park's Schoodic Education and Research Center. Lead taxonomist for the event was the indefatigueable Dr. Don Chandler from the University of New Hampshire.

Some 75 people turned up to sweep, beat, tread, intercept in flight, pan trap, check flowers, and do everything else possible to document the greatest diversity possible from one of the two largest orders of insects. Five teams, each accompanied by a uniformed Park Ranger, spread out on Saturday to collect from pre-identified priority areas around Duck Brook, Canon Brook, the Great Meadow, the Western Mountain and Bass Harbor portions of the park on Mount Desert Island.

Saturday evening, a veritable army worked at sorting, pinning and pointing, and labeling specimens in the lab, under Charlene Donahue's eagle eye - with an elite team of hardy souls working well after midnight, eventually finishing up the job at about 4:00 a.m.

On Sunday morning, we were treated after breakfast to a special "open house" of the completely refurbished Rockefeller Building, where we gathered later in the day for the group photo. Meeting rooms and apartment suites, each with its own National Park decorative theme, will be available to facilitate scientific research and study in the Park. It was even jokingly suggested that the next Blitz should include a raffle that would permit the winning individual to stay in one of the apartment suites!

Following the Rockefeller Building visit, many people dispersed to collect at additional sites on Schoodic Peninsula and the lab work continued.

Participants in the 2013 Entomological BioBlitz at Acadia National Park gathered for a group photo in front of the newly refurbished Rockefeller Building on the SERC campus at Schoodic Point.

- Photo by David Manski

It was estimated that some 200 species had been identified by noon on Sunday, though not only were there specimens remaining to be identified, but the large array of various aerial traps that Steve Bonstedt and colleagues had set around Mount Desert Island had not yet been returned to the lab. The ground beetles (Carabidae) may have been the best-represented group, with 43 different species identified.

There also were at least two new M.E.S. members by the end of the blitz, active participants who sought out Dana Michaud and paid dues for the coming year.

A publication with the results of all previous BioBlitzes is available for download as a pdf file (click on the link at the M.E.S. web site to download a copy in pdf format); David Manski (David_Manski@nps.gov) may still have a few printed, bound copies available, **but** he will be departing for his Fulbright Fellowship in India in November.

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June 22nd field day in Embden

The second field day of the 2013 M.E.S. summer collecting season was held on Saturday, June 22nd, in Embden. Despite threatening weather forecasts, we met at 10:00 a.m. at the entrance to the LeHay family farm access road off the Kennebec River Road.

Despite a couple light sprinkles in the morning that encouraged us to have lunch on the covered porch of our host's home, the afternoon was dry and collecting was good across a wide diversity of orders. Most folks also got to see a flock of 6-8 wild turkeys in one of the two worked-out sand pits on the property. A non-entomological visual delight was multiple clusters of pink orchids growing in damp areas of the older of the two pits.

After the collecting was done later in the afternoon, most of us dropped by Thompson's Restaurant in Bingham for a light Maine country repast before heading home.

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Tenodera angustipennis: A Story of an Introduced Mantid

by Brandon Woo

On March 8, 2013, a fellow MES member, Karen Hopkins, informed me about a praying mantid ootheca she had found on some flowers in a store. She had brought it home, and the tiny nymph mantids had emerged; trouble was, there was still snow on the ground, and without food, the mantids would surely starve. I suggested checking a pet store for crickets or mealworms, but I was worried that those would be too big. We were both delighted when we realized that some pet stores also sold apterous fruit flies (*Drosophila melanogaster*), which were just the right size!

At an MES field day on March 23, Karen shared seven young mantids with me, each less than a centimeter long. I was excited to try my hand at raising such tiny mantids, since it was still quite cold and not many insects were active outside yet. I discovered that a pet store near my house sold a different species of fruit fly, *D. hydei*; the mantids, of course, ate these with the same gusto as the first species. It was enjoyable to observe these tiny creatures interacting with each other as snow and howling winds pounded the windows outside.

Over time, the mantids grew. The process of molting became harder with each instar as the mantids struggled to fully pull their long delicate legs out of their shed exoskeletons. I began to lose them, one by one, to bad molts. I wasn't terribly worried; after all, the odds were with me, since I had more than one mantid. Karen and I continued to correspond, updating each other with the progress of our charges. The fruit flies became too small after a few molts, requiring a graduation to midges and mosquitoes. As spring arrived and more insects started appearing outside, house flies and crane flies became the preferred food. Their housing containers became ever larger as I replaced small containers with big terrariums designed for lizards and snakes. By June, they had gone through five

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or six molts, but the losses had been high. All of the mantids that Karen had been keeping had died, and only three of mine were still alive. I felt confident, though, that they could make it to adulthood.

***Tenodera angustipennis*, gravid female.**
- Photo by Yasunori Koide, from
http://commons.wikimedia.org/

Around this time, I noticed that my mantids had a bright orange spot between their raptorial forelegs. This confused me at first, since I had assumed that they were European mantids (*Mantis religiosa*), the only species normally found in Maine. That species has black and white ringed spots on its forelegs, so my mantids couldn't be this species. After doing a little research, I determined that there were two possibilities: the Chinese mantid (*Tenodera sinensis*) or the Narrow-winged mantid (*T. angustipennis*), both introduced from Asia. The diagnostic characteristic of *T. angustipennis* was an orange spot between the forelegs; a match at last! As far as I know, this species hasn't been seen in the wild in Maine. It is, however, established in the southern United States, from New Jersey to South Carolina.

July brought the three surviving mantids to their imaginal (final) molts. They were almost six centimeters each, with wing buds that seemed to be bursting. Sadly, fortune was not with them as two of the mantids molted into adults, but suffered horrible deformities of the legs and wings. Needless to say, they did not survive long. All my hopes went to the last mantid, who completed her imaginal molt on July 23. I spent over two hours observing the molt, and it was nearly perfect. Her back two legs, damaged in a previous molt, had started to regrow, but there simply wasn't enough time for her to grow back an entire tibia and tarsus. Despite this, her wings extended fully and the rest of her body slid out of the exoskeleton without incident.

Thus the story concludes - out of hundreds of mantids, only one survived to adulthood. Almost eight centimeters long, she is a marvel of evolution. I for one am glad I was able to witness her metamorphosis firsthand. The Narrow-winged mantis is a lovely insect, and it may not be long before they become part of the Maine fauna, as temperatures continue to rise.

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August 3rd Field Day in Norway (Maine!)

The Ordway Grove is a 7-acre old-growth white pine-red oak stand in the town of Norway, deeded to the Twin Town Nature Club in August of 1931 and maintained since then as a park and nature preserve. A 1/2-mile walking loop trail through the Grove will take us through some magnificent, giant pines and other ancient trees, before we come to the shore of Pennesseewassee Lake. The site has not been logged in at least 300 years, if ever, and has some of the largest trees, if not ***the*** largest trees, in the state of Maine.

We'll meet at the entrance to the right-of-way (we'll have to walk through private land to get to the site) on Pleasant Street on the western end of Norway at 10:00 a.m. The TTNC's John Crumpton and/or Pixie Williams will meet us at the site; those of you who went to the Jugtown Plains trip last year would have met Pixie already. Bring your lunch and your collecting gear, and we'll have a grand time!

Google Earth image of the Ordway Grove in western Norway, on the eastern end of Pennesseewassee Lake, with local streets labeled.

To get to the site, one needs to get onto Route 117 through Norway - and there are many different routes to this end. If coming into town from the east (e.g., from Lewiston), Pleasant Street is a right-turn at the end of the business district, 1/2 block past the Universalist Unitarian Church (which will be on your right also). If you're coming from the west, it'll be the second left turn past the end of Pennesseewassee Lake (the first will be Packard Avenue).

The entrance area, which has room for parking for two vehicles, is 2-1/2 blocks up Pleasant Street, on your left. Roadside parking is OK, but given the narrowness of the road, it would probably be best for those coming to all park on the west (i.e., Ordway Grove) side of the road, so we don't overly constrict the roadway. If you drive up Pleasant Street until you reach Hayden Avenue, you've gone too far - turn around and come back!

M.E.S. signs will be out from the intersection of Pleasant Street with State Route 117 through the heart of town, as well as at the entrance to the Grove from Pleasant Street. You can also check the site out as well at the Maine Trail Finder web site at

http://www.mainetrailfinder.com/trail/ordway-grove-trail/

Contact person: Bob Nelson (426-9629; or by e-mail at BeetleBob2003@yahoo.com).

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In Search of *Okanagana*: Hunting a Spring Cicada

by Brandon Woo

Most everyone in Maine is familiar with the dog-day cicada (*Tibicen canicularis*), a species usually heard from late July to September. Its high-pitched, piercing whine is a common summer sound. Less familiar is the song of *Okanagana rimosa*, a smaller cicada which is also found across Maine. Only about 2 centimeters long, it is black with bright orange markings. The song is a loud buzz that drones on continuously until the cicada is disturbed. For years I had been searching for this species, with no luck.

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Hunting a spring cicada (cont.)

The key to my finally finding a specimen was an odd behavioral fact: it sings in June and early July, well before the dog-day cicada.

***Okanagana rimosa* at Old Orchard Beach**
Photo by Brandon Woo

On July 8, 2012, I was taking a walk at the Kennebunk Plains with my dad, stopping along the way to pick off numerous interesting small beetles and treehoppers. Coming up to a small stand of young pitch pine trees, I heard an unfamiliar sound. It was so loud, it had to be a cicada. I walked towards it, and realized that it was hidden within the branches of the pitch pines. My dad and I devised a plan to bring the singer down; he slowly pulled the tree down while I combed every branch searching for the elusive creature. It took us a while, but I finally spotted my prize: a male *Okanagana*! It certainly was not happy at being grabbed; it immediately started emitting a loud staccato buzz while whirring its wings. I stuffed him into a container, and took him as a specimen.

June 29, 2013, brought me to the Reclaim Plains, an area in Old Orchard Beach that has the same habitat as the Kennebunk Plains. Since observing the cicada from the last year, I had dubbed the species the spring cicada, because of its early period of activity. I knew that since the habitat was the same at these two preserves, I had a good chance of finding another population. Sure enough, as I walked out into the open sun, I heard numerous *Okanagana* buzzing away from young black cherry trees. So numerous were they, in fact, that I was able to track one to its tree and locate it within minutes. Unfortunately, they were also very quick and agile, and once it burst into flight, it was gone. I tracked down another, and then another, both times losing them just as they came into view. Finally I came upon one singing a mere 2 or 3 feet from the ground. I came up from behind and grabbed him, tossing him into a container for some photographs.

About a week later, I returned to the Reclaim Plains with another plan: record *Okanagana*'s song. I was lucky this time, and the first cicada I encountered posed on a branch for me, buzzing away. I was able to capture several minutes of his song before he tensed up and flew off with a shriek. By the time you read this, the season for these interesting animals will be over, but I urge readers to listen for this species next June, since both the creatures and their songs are a wonder to behold.

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Those interested in learning more about all the cicadas of Maine should go back through the Archives (accessible on our web site) to check out Dick Dearborn's article from the August, 2008 issue.

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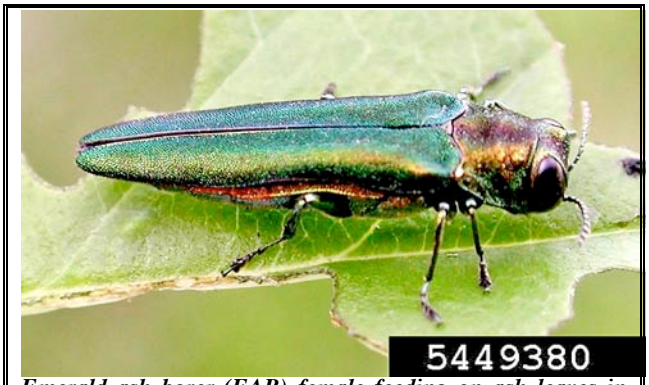
Emerald Ash Borer .... Ever closer!

by Bob Nelson

In the August, 2007, issue of *The Maine Entomologist*, Charlene Donahue noted that the "Emerald ash borer is currently found in Michigan, Illinois, Indiana, Ohio, Pennsylvania, Maryland and Ontario."



Emerald ash borer (EAB) female feeding on ash leaves in Michigan. Defoliation by the species is trivial compared to its lethal impacts of boring into healthy trees and causing their death.
Photo by Debbie Miller, USDA Forest Service, Bugwood.org

In the six years since she wrote this piece, the species has crept closer and closer to Maine. In March of this year, the species was found in Concord, New Hampshire – less than 30 miles from the Maine border. If you've been wondering why there are all those purple traps hanging high in trees around the state's highways and byways, this is why!

The Emerald ash borer, *Agrilus planipennis* Fairmaire, is a beetle in the family Buprestidae, the metallic wood-boring beetles. It is 9-14 mm long as an adult, and 3-3.5 mm wide, giving a length:width ratio of 3-4x. Though we have other native species of *Agrilus* in Maine, they tend to be much more slender, with a length:width ratio more in the range of 4-6x. Since most native *Agrilus* species are twig borers, this would make sense; *A. planipennis* attacks the main bole (trunk) of the trees.

Also to help differentiate this from native species, the EAB is bicolored, with a head and pronotum that tend to be bronzy to purplish, with emerald green elytra, whereas our native species in this color range tend to be unicolorous, ranging from emerald green to teal or even more bluish in appearance.

EAB is native to eastern Asia – Siberia, China, Mongolia, Korea, Taiwan and Japan - and is believed to have come to North America in the wood of shipping containers or pallets. According to the Emerald Ash Borer information web site (**http://www.emeraldashborer.info/**), the species is now found pretty much throughout our region of the continent – from Kansas in the southwest north to Ontario and Quebec, and south to Tennessee and North Carolina; the species was first found in North Carolina just this past June. In this broad region, only Delaware, New Jersey, Rhode Island, Vermont, Maine and New Brunswick have no records of the beetle - yet. According to the Global Invasive Species Database, it's also expanding its range westward towards Europe, and is now causing considerable problems with street trees in the Moscow area in Russia.

Thought the adults are fairly strong fliers, it is believed that the beetle is transported mainly in firewood, which is why it is illegal to bring cut firewood into the State of

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Emerald ash borer (cont.)

Maine, and even firewood being brought into Baxter State Park is confiscated at the gate. As Charlene pointed out in her article six years ago, a natural spread rate would be measured at most in miles per year, not tens or hundreds of miles per year. The species apparently needs two years to complete its life cycle in North America.

Much more information on the Emerald Ash Borer can be gathered at the Global Invasive Species Database web page at

http://www.issg.org/database/species/ecology.asp?si=722 .

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Book Review:

***Arthur the Arthropod*, by Bonnie Ogle,** with illustrations by Marvin Tabacon (24 pp., soft cover, published by Xlibris Co., 2012, ISBN 978-1-4771-1424-7; $15.99 list price; available from Amazon.com, barnesandnoble.com and Xlibris.com)

Reviewed by Monica Russo

This is a clever, well-paced story for young children. The artwork suggests an age group of maybe 5-7. However, the text may have to be read by parents.

The story, which is clear and straightforward, seems more appropriate for a 7- or 8-year-old. Arthur is a young Florida centipede, drawn with an anthropomorphic "face," sometimes even with a baseball cap. He has 7 pairs of legs, and yearns to know when he will have more. During a wandering, independent tour of his neighborhood, he meets numerous other arthropods. But he constantly worries, will he EVER have as many legs as his parents?

I had to research several tomes to find out that yes, centipedes do in fact gain more legs as they molt. (How many MES members know that?) The only concern I had was the repeated phrase of "arthropod family" and "his big family, the Arthropods." The author does, however, repeat that Arthropods are a Phylum. Perhaps it would have been better to mention that centipedes belong to the Class Chilopoda, but maybe that would make it more confusing for a child. But then, the storyline is great, and does a 6- or 7-year-old really care yet about those technical details?

If you do get this book, do some botanical research first. Arthur's environment is the Florida landscape, and it may not make any sense when you read that "boots" are falling from the trees! The author is describing the curved, dried base of fronds that fall from the Florida cabbage palms or Palmetto palms (*Sabal palmetto*). "Boots" is the local term for these.

The book is self-published, using Xlibris. There are several publisher/printers that will produce your book if you have a great idea for a kids' story, novel, or personal memoir. Xlibris, Trafford, iUniverse, and Author House are just a few among these. Just be prepared to pay them anywhere from several hundred to several thousand dollars for their services.

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COMING M.E.S. EVENTS in 2013:

3 August	M.E.S. Field Day, Norway
11 September	Bug Maine-ia, Maine State Museum, Augusta
14 September	M.E.S. Annual Meeting, Clinton

(See http://www.colby.edu/MES/ for more detailed information; new information on any event will be posted as it is received.)

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Please visit our website at http://www.colby.edu/MES/

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