

The Maine Entomologist

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

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PRESIDENT'S CORNER



by Charlene Donahue

We have had a winter colder than the recent norm and that has gotten people excited about the weather getting rid of invasive insects. One story started after the Polar Vortex descended on the central part of the USA. Laboratory research indicates that emerald ash borer can be killed when temperatures drop to -30°F (Venette and Abrahamson, n.d.). What people must remember is that the EAB larvae are inside a living tree that will provide both protection from the cold and may be warmer than the temperature outside the tree. Forested areas also are usually warmer than open areas where temperatures are often recorded. So most places did not get down to fatal EAB temperatures.

In Maine we have unwanted insects and their kin whose populations may be temporarily set back by cold temperatures and winter weather. Winter moth eggs can withstand temperatures down to -29°F (Dr. J. Elkinton, personal communication), but the adults are much more sensitive to the cold. Last year there were nine days of large winter moth flights. This year there was one. After that first big flight, we had a major snowstorm and then cold weather set in. A check the following week in single-digit temperatures found dead female moths on top of the snow.

Monitoring over the next month through the January thaw showed some winter moth activity, but it was minor. My guess is that the ground had not frozen when the snow fell and the winter moths continued to emerge. The males may have hidden in the leaves below the snow waiting for warmer weather. The females are strongly geo-negative and crawled up through the snow and met their demise. The moths that survived used up their energy reserves before the weather improved and they died. This would be a great graduate

project to find out what is going on underground and under the snow, as I am just guessing.

What does this mean for the winter moth population? It will be down significantly this year but will rebound when winter temperatures are more moderate or the trigger for the moths emergence (perhaps freezing temperatures?) comes earlier in the season. There is a lot we do not know about this insect.

Hemlock woolly adelgids are cold-sensitive, but although the populations are reduced by low winter temps, sometimes by as much as 90%, the populations rebound within the season. Gypsy moth eggs are affected by cold temperatures, as are ticks. All of these and many other insect populations may slow their spread for a season or two, but unless we continue to see this kind of cold winter they will not be held back from expanding in Maine. Sorry to be the bearer of bad news.

Reference:

Robert C. Venette and Mark Abrahamson, n.d.: Cold Hardiness of Emerald Ash Borer, *Agilus planipennis* : A New Perspective; accessible on-line at

http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5191794.pdf

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IMPORTANT DUES REMINDER!

M.E.S. dues are payable on a calendar-year basis. If you haven't already done so, please renew now for 2014; you'll find an insert inside this newsletter that will also allow you to order M.E.S. T-shirts and sweatshirts; Treasurer Dana Michaud's name and mailing address are also at the bottom of the back page for your convenience. Dues are \$10 per year, and may be paid up to two years in advance. If the year on your mailing label is "2013", please contact Dana to renew for 2014 or correct the record.



Carpenter bee at work. (USDA photo)



Bombus affinis (from the USDA Eastern Bumblebee poster - see p. 5)

Low Numbers of Monarchs (*Danaus plexippus*) Recorded in the U.S. and Canada during the 2013 Fall Migration

By Robert E. Gobeil and Rose Marie F. Gobeil

After reading Herb Wilson's (2013) article in the November issue of the *Maine Entomologist* discussing low numbers of Monarchs in Maine last summer (2013), we decided to do some research to see how other regions of the U.S. and Canada fared during the 2013 fall Monarch migration. We quickly found that low numbers of the species were reported by Monarch Watch and tagging organizations all over the U.S. and Canada.

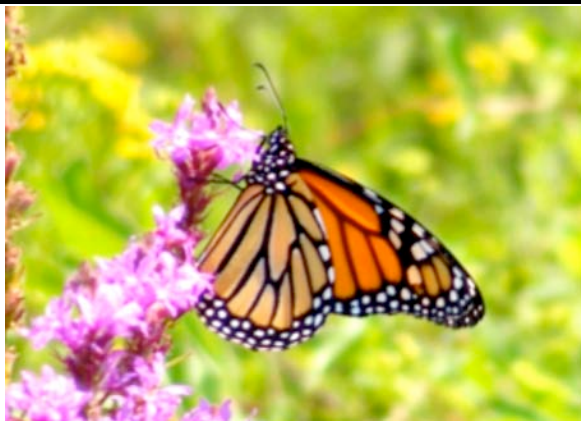


Fig. 1 Monarch (*Danaus plexippus*), Saco, ME (York County), August 22, 2013. Photo by Rose Marie F. Gobeil

On Cape May in New Jersey, which is a major gathering point for migrating Monarchs, the Monarch Monitoring Project reported very low numbers of migrants. They have been counting migrating Monarchs since 1991 and the 2013 fall season appears to be the third lowest since their studies began (Garland 2013). In the mid-western portion of the U.S., Dr. Orley R. Taylor, founder of Monarch Watch Org. at the University of Kansas, has indicated that "the migration in the Midwest this fall has been the lowest we have seen since the start of Monarch Watch in 1992." (Tangley 2013).

In Canada, one of the major staging areas for Monarchs during fall migration is at Point Pelee National Park in southern Ontario. Since Point Pelee extends down into Lake Erie, it acts as a funnel for migrating Monarchs allowing them to cross the lake into the U.S. During the fall of 2013, the Monarch migration was so poor that the staff at the park actually had to cancel the annual Monarch butterfly count due to the lack of butterflies (CBC News 2013). Only a few years ago, on Sept. 12th, 2010, an estimated 15,000 Monarchs were seen at the tip of Point Pelee Nat. Park (Davis 2010).

As mentioned by Herb in his article, Monarch sightings in Maine were very low in 2013. Our own surveying efforts last summer affirm his observations. As volunteers for the Maine Butterfly Survey and with special permission from the MDIFW, we did an extensive survey of butterflies on Swan Island (Steve Powell WMA) located near Richmond, ME. We visited the island at roughly two-week intervals throughout the flying season, and our total count for Monarchs for the season was ZERO. This was surprising since Swan Island has numerous, expansive fields loaded with thousands of milkweed plants.

Even though Swan Island has perfect habitat for Monarchs, the fields were devoid of the species. It appears that the reproductive success of early generations of Monarchs breeding in southern portions of the U.S. was so poor that few Monarchs ever made it north to Maine. Our

total count for Monarchs for the entire 2013 season at all sites we surveyed in Maine was three seen in Saco, ME (Fig. 1).

During the winter of 2012-13, only nine colonies of hibernating Monarchs were found in Mexico, occupying an area approximately 3 acres in size, which was a 59% decrease from the previous winter. This was the lowest level since record-keeping began 20 years ago. Two decades ago, the average wintering area was 22 acres. Dr. Taylor of Monarch Watch estimates that the 2013 migrating population may only occupy 1.25 acres in Mexico. If he is correct, this would continue the downward trend in the size of the wintering population. Early reports from Mexico are not encouraging, with low counts of returning Monarchs. As of November 10th, 2013, only 10 trees were filled with Monarchs at the El Rosario Sanctuary, compared to 60 trees on November 1, 2011 (Monarch Butterfly Journey North 2013).

There are many factors that appear to be causing the decline in Monarch populations. Most recent studies have been focused on threats such as the use of herbicides in agricultural fields that kills milkweeds, the loss of habitat on the wintering grounds in Mexico due to logging, and climatic changes. Pleasants and Oberhauser (2012) did an extensive study of milkweed plants and Monarch populations in agricultural fields in the Midwest. From 1999 to 2010, they estimated that there has been a 58% decline in milkweeds and an 81% decline in monarch populations in the Mid-Western states. This loss of milkweed appears to be due to the use of genetically modified crops (corn and soybeans) which are tolerant to herbicides. There are roughly 125 million acres under production in the Midwest with these modified crops which is impacting the Monarch population. In their study, they concluded that the "...loss of agricultural milkweeds is a major contributor to the decline in the monarch population."

Loss of habitat on the overwintering sites in Mexico is also creating problems for the Monarchs. A recent study by Vidal et al. (2013) of logging activities in the Monarch Butterfly Biosphere Reserve in Mexico found that from 2001 through 2012, over 3,000 acres were deforested (i.e., cleared areas had <10% canopy cover) and another 2285 acres were degraded (i.e., areas for which canopy forest decreased). Since 2007, however, Mexican authorities appear to be controlling illegal logging in the reserve although some small-scale logging (by locals) continues to threaten overwintering populations.

Of the three factors mentioned, climatic changes may be the most disconcerting. More frequent heat waves and droughts, especially in the Midwest, and extreme weather events such as severe rainstorms and freezing temperatures in Mexico while the Monarchs are on the wintering grounds are of special concern. Studies have shown that temperatures above 95°F can be lethal for larvae and that Monarch eggs tend to dry out in hot conditions. Milkweed plants also dry up with intense heat and can freeze under cold conditions (Oberhauser & Solensky 2013). These extreme weather conditions may continue as a consequence of climatic changes and since the overwintering population of the Monarch is concentrated in a very small area in Mexico, it makes the entire population very vulnerable to the effects of climatic changes.

In order to save the Monarch, many organizations are promoting habitat restoration by planting milkweed plants, especially in the western states. This may temporarily help to partially restore populations, but if climatic changes continue to worsen over decades, then the planting of milkweed plants may be futile since the Monarch eggs and larvae may not survive due to increasing temperatures. Also, the overwintering grounds in Mexico may no longer be suitable habitat due to extreme weather conditions. Hopefully this will

(continued on next page)

Monarchs (cont.)

not be the scenario and that planting milkweeds will help the Monarchs, but only time will tell us the “rest of the story”!

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Tangley, L. 2013. Where are migratory Monarchs this fall? National Wildlife Federation. (Online) <http://blog.nwf.org/2013/10/where-are-migratory-monarchs-this-fall/> [Accessed 21 Nov. 2013].

Vidal, O., J. López-García & E. Rendón-Salinas. 2013. Trends in Deforestation and Forest Degradation after a Decade of Monitoring in the Monarch Butterfly Biosphere Reserve in Mexico. *Conservation Biology*: doi:10.1111/cobi.12138 [apparently available on-line only – bn]

Wilson, H. 2013. Where are the Monarchs? *The Maine Entomologist* Vol. 17 (4):2.

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2014 Winter Workshop: Bees Rule!
by Bob Nelson

The 2014 Winter Workshop on bees, with a special focus on native bees, was held on Saturday, January 25th, at the Bolton Hill facility of the Maine Dept. of Conservation in Augusta.



By all accounts, this 9th Winter Workshop was a resounding success. Some 47 people were in attendance, including the presenters, and interest in attending was in fact so great that Charlene Donahue had been forced to turn some people away. The tongue-in-cheek suggestion was made that perhaps the next time, she might want to reserve the Civic Center!

Charlene opened the workshop with a welcome to everyone in attendance, and a special thank-you to Frank Drummond and Allison Dibble and their graduate students from the University of Maine, who had come down to tell us about their work and to help people learn to identify bees. She then turned the meeting over to Frank, who began with discussion of the phylogeny, taxonomy and ecology of Maine's bees.

Frank began by noting that most bees are open-habitat or forest-margin species, and Maine is 92% forested. This makes good bee habitat a precious commodity.

HOW TO ID BEES TO FAMILY

- **CHARACTERS:**
 - Face: sutures (joint lines) below antennae
 - wing structure is the name of the game

THE COMMON FAMILIES

- Plasterer or cellophane bees - Colletidae
- Sand bees - Andrenidae
- Sweat bees - Halictidae
- Leaf cutting and mason bees - Megachilidae
- Bumble bees and honey bees - Bombus

Frank Drummond points out that facial sutures are important for taxonomic identification of many bees, but then admitted that since many bees have hairy faces, these are difficult to see. Then he showed us how to identify bees to family without having to rely on this characteristic – use the wing venation patterns!

There are some 550 known species of bees in New England, and 267 species in Maine (including 7 exotics), though additional species are constantly being added. Of the Maine fauna, about 85% are herbivores, and the other 15% are cleptoparasites or social parasites in the nests of other species. The most diverse bee family in Maine is the Halictidae, or sweat bees.

Bumble bees are much more efficient in pollinating the Maine blueberry crop than are honeybees, leaving an average of 22 pollen grains per visit per flower stigma, compared to only 1.8 pollen grains for honeybees. The bumble bees also do this in 6 seconds or less, while the honeybees typically need 13 seconds per flower.

(continued on next page)

Winter Workshop (cont.)

He also pointed out that young, inexperienced bumble bees will go for the "easy" flowers to access – but wind up competing with honeybees, wasps, and many species of flies for the nectar and pollen present. More mature bumble bees will go for more difficult flowers, which require greater skill to open, but have much greater rewards since the other pollinators will ignore them.



Frank Drummond (center) and Alison Dibble (far right) and their graduate student team of Kalyn Bickerman, Eric Venturini, and Brianne du Clos, join Charlene Donahue and several other Workshop attendees for a group photo. Sarah Bushman (4th from right) recently completed her Ph.D. at U. Maine as part of Team Blueberry Pollination.

Allison Dibble then took over, and discussed the Maine Bee checklist project, which was begun in the early 1990s and is ongoing. Much is still unknown about the bees and their habits, though diversity tends to be greatest in well-drained clearings. Most research on native bees has pertained to low-bush blueberry pollination, so Washington, Hancock, Penobscot and Waldo counties are relatively unknown. However, little is known from elsewhere in the state. Bee faunas of most other coastal areas and high-elevation sites are all but completely unknown.

The 267 known species of Maine bees are found in 7 families and 35 genera; the Halictidae have a total of 72 species, followed by the Andrenidae (56 species), the Megachilidae (48), Anthophoridae (40), Apidae (27), Colletidae (20) and Melittidae (2). About half of all bee species nest underground; 43 species nest in plant stems or small cavities.

Among the Apidae, 17 species are bumble bees (including 5 "cuckoo bees" that are parasitic). Two native bumblebee species are becoming very rare, and *Bombus affinis* (the "Rusty Patch Bumble Bee", see p. 1) was proposed as a federally recognized endangered species in January of 2013.

Brianne du Clos then discussed the landscape ecology of Maine's native bees. A Ph.D. student under Cynthia Loftin and Frank Drummond, she explained how utilization of GIS (Geographic Information System) mapping technology allows integration of many landscape parameters to help understand bee ecology. Layers that could be incorporated into a study would include topography, land ownership, land zoning, wetlands, soil types, vegetation cover, etc. By layering different parameters, it enables you to evaluate which are the more important factors in pollination success.

She pointed out that some Maine bees can forage for nectar and pollen over 10 km from their nest site, though some will only forage up to a few hundred meters from the nest. One thing she said that is clear is that native bee diversity and density is greatest in native open habitats with

an abundance of diverse food sources that are available over the entire summer season.

Her own research is on landscape configuration and how it relates to the abundance of native bees. An hypothesis that she is going to be testing is that the maintained open habitat beneath high-tension power lines provides suitable habitat for bees and particularly for their migration between blueberry fields that otherwise are isolated by forest.

Eric Venturini, another graduate student, is studying how to enhance bee habitat for commercial pollination security. He's found that bumble bee abundance will increase with plantings of "bee pasture" – flowering fields near the blueberry fields, and that different bees will be drawn to different flowers. He found that the bumble bees do not particularly like plains coreopsis (*Coreopsis tinctoria*), for example, though solitary bees do like it. Unfortunately, merely tilling a field over and allowing natural process to revegetate it does not significantly improve bee habitat compared to deliberate planting of flowers.



Eric Venturini points out some key identification points to Allison Kanoti and another Workshop participant.

After lunch, Kalyn Bickerman, also a graduate student, discussed bumble bees in Maine, and showed a really cool "buzz pollination" video. For those who may have watched bumble bees on flowers and heard them buzz, it's actually a deliberate vibration of the flowers, at a very specific frequency, to shake pollen loose!



Alison Dibble talks with a Workshop participant in the rear, while Edie King (right) and another "bee student" evaluate a specimen.

Winter Workshop (cont.)

One of the more depressing things Kalyn had to report was that bumble bee populations worldwide are on a decline, though the reasons are now known. Suggested causes are increased urbanization, loss of habitat, increased spread of pathogens, or pesticides. However, the fungal pathogen *Nosema bombi* may be implicated in the reduced presence of the two species known to be declining in Maine; up to 30% of native bumblebees also may succumb to parasitoid larvae of Conopidae (thick-headed flies).

Kalyn also introduced us to the beginning of bee identification, pointing out that for bumble bees, the color pattern on the gaster ("abdomen") is very important: which segments are black, yellow, or orange?

Frank Drummond took over again, and began helping us to learn how to identify bees. A really cool guide is the "**Very Handy Bee Manual**," by Sam Droege and colleagues, which can be downloaded for free. Just enter the title in your favorite search engine. The latest revision was made available in May, 2012. This volume has just about anything and everything you could want to know about bees.

An awesome web site that can guide you through photographic guides to identifying bees to genus and species is to be found at <http://www.discoverlife.org/mp/20q>. Click on their links to "Bees" and then to "Bee genera" and you're off and running!

Charlene also distributed free posters (see below) of Eastern North American bumblebees to all participants. A pdf file in reduced form, or printable full-scale (20x30 inches – this is a 65-Mb file!!) can be downloaded from <http://www.fs.fed.us/wildflowers/pollinators/animals/bees.shtml>



On a personal note, I found this workshop to be unbelievably rich and diverse, with a wealth of useful and important information. And when Nettie and I sat down the next day to plan out our spring garden seed order, some bee-friendly perennials were definitely added to the list!

Winter Storm Damage May Provide Invitation to Asian Longhorn Beetles
by Allison Kanoti

Although December's storm was damaging to trees, a major storm with significant tree breakage opens up (literally) an opportunity to survey for a far more serious agent of destruction--the Asian longhorned beetle (*Anoplophora glabripennis*).



ALB damage on a wind-snapped maple limb in Worcester, Massachusetts.
Photo by Bob Childs, University of Massachusetts Extension Service

Asian longhorned beetle has not been found in Maine, but if it is here, we want to know as soon as possible. We only have to look two states south to Massachusetts to see the difference early detection of this invasive insect can make. In Worcester, MA, the insect was reported about 20 years after it was introduced, and in Boston, MA, only about two years after arrival.

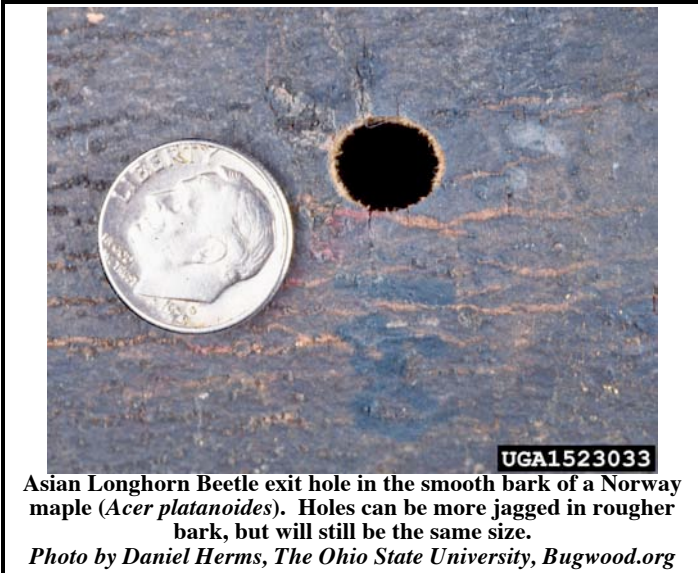


Asian Longhorn Beetle, *Anoplophora glabripennis*.
Note (a) banding on antennae and (b) expanded white areas on (c) the stout body; all three characters help distinguish this from our native longhorn beetles in the genus *Monochamus*.
Photo by Joe Boggs, Bugwood.org.

Asian Longhorn Beetles (cont.)

The 18-year head-start that the Boston ALB response had over Worcester has resulted in 30,000 (and counting) fewer destroyed trees in Boston, and a more than tenfold smaller regulated area. It will likely result in decades fewer person-hours and millions fewer dollars invested in eradicating the population. That's a potentially big deal for landowners, urban homeowners, wildlife, and the forest products, tourism and maple sugar industries, not to mention taxpayers.

Although ALB will infest a wide array of hardwoods, paying attention to the reason for storm damage in maples is an efficient way to look for ALB-related loss of structural integrity. Of course, there are a number of other, less sinister (and more likely) reasons maples will fail, but ALB is on the list of potential causes of weakness. The larvae tunnel within large branches and main stems of infested trees, creating Swiss cheese out of the heartwood material.



Asian Longhorn Beetle exit hole in the smooth bark of a Norway maple (*Acer platanoides*). Holes can be more jagged in rougher bark, but will still be the same size.

Photo by Daniel Herms, The Ohio State University, Bugwood.org

As you take the time to clean up the after-effects of December's ice storm, keep alert for signs of ALB damage. To see images of ALB damage visit www.maine.gov/alb and check the links in the right-hand column; if you think you've found it, please report it at www.maine.gov/alb or by calling (207) 287-2431.

References of interest:

Dodds, K.J.; Hull-Sanders, H.M.; Siegert, N.W.; Bohne, M.J. 2014. Colonization of three maple species by Asian longhorned beetle, *Anoplophora glabripennis*, in two mixed-hardwood forest stands. *Insects*. 5(1):105-119; doi:10.3390/insects5010105
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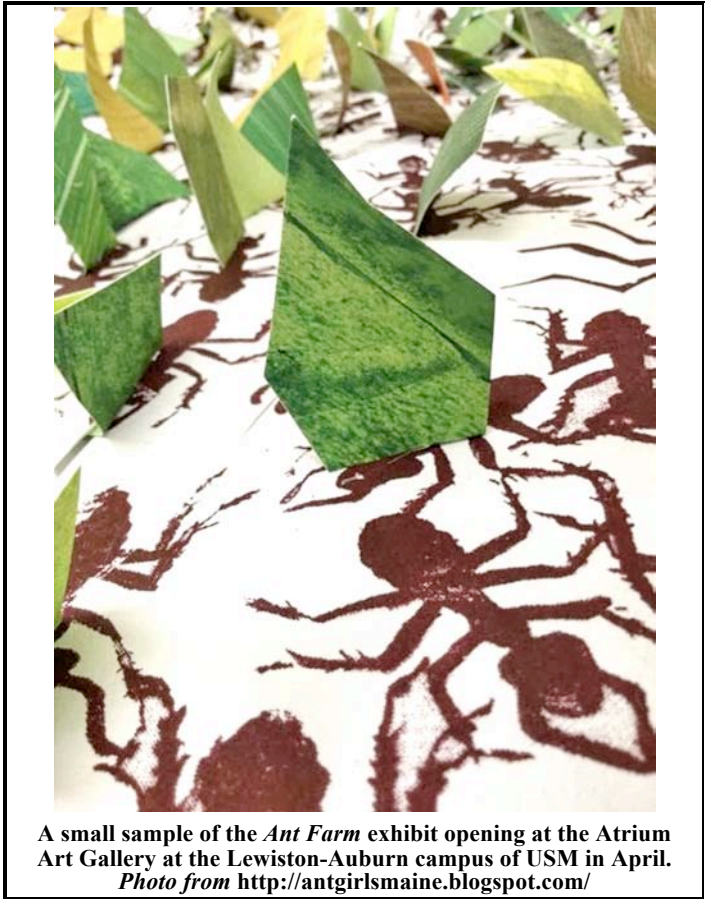
Multi-Media Ant Farm Exhibit Coming to Atrium Art Gallery in Lewiston-Auburn by Robyn Holman

Ant Farm: At the Nexus of Art and Science

Atrium Art Gallery, University of Southern Maine's Lewiston-Auburn Campus. April 11-June 7.

Opening reception: Friday, April 11, 6-8 p.m., free and open to the public.

Ant Farm is a multi-media collaborative exhibit merging art and science and inspired by leafcutter ants. Four artists, Colleen Kinsella, Rebecca Goodale, Dorothy Schwartz, and Vivien Russe, have been working for over a year on a visual representation of leaf-cutter ants, their social structure and life cycle, including nuptial flights, egg laying, food gathering, and fungus cultivating.



A small sample of the *Ant Farm* exhibit opening at the Atrium Art Gallery at the Lewiston-Auburn campus of USM in April. Photo from <http://antgirlsmaine.blogspot.com/>

Ant Farm is supported in part by an Artists in Communities Grant from the Maine Arts Commission. The exhibit will include printmaking, installations, drawing, collage, artists' book installations, and plenty of paper ants. Original music by Elliott Schwartz and Caleb Mulkerin.



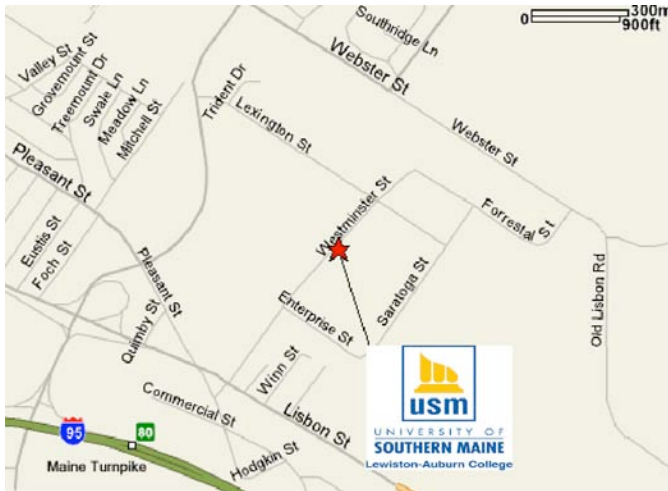
Three of the four Ant Girls at work on part of the exhibit – the ant scroll. Image from <http://antgirlsmaine.blogspot.com/>

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Ant Farm (cont.)

Keep up with the Ant Girls' progress at <http://antgirlsmaine.blogspot.com/>.

The Atrium Art Gallery is located at 51 Westminster Street, Lewiston (see map, below).

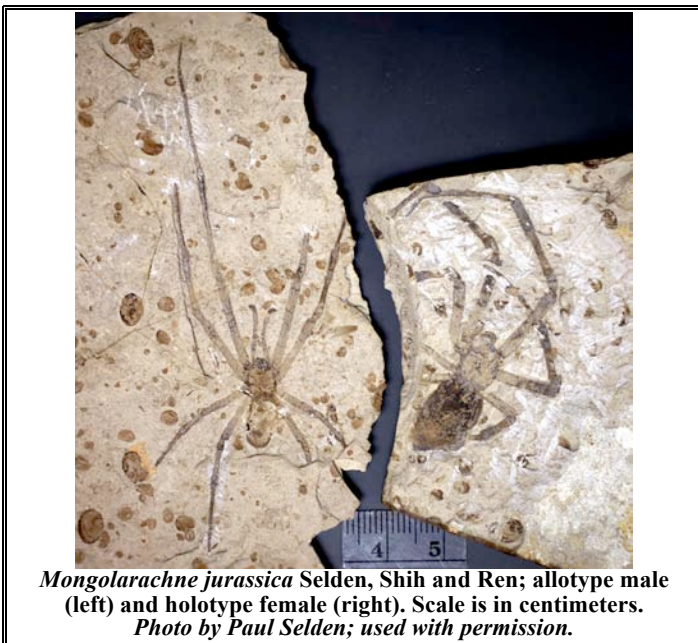


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**Another Jurassic Giant –
and it's not a Dinosaur, but a Spider!**
by Bob Nelson

The Jurassic, in no small part due to a popular film of recent years, is well-known as part of that grand era in Earth history when Dinosaurs roamed and dominated the Earth. BUT, it wasn't just a time of giant vertebrates, but also, it turns out, of giant spiders!

In 2011, Paul Selden, of the University of Kansas, and two Chinese colleagues described a new giant spider based on fossil remains that had been buried by volcanic ash in what is now China (Selden et al., 2011). Based on the large size and characteristics of the specimen, they placed it in the subtropical-tropical orb-weaving family Nephilidae, and gave it the name *Nephila jurassica*.



Mongolarachne jurassica Selden, Shih and Ren; allotype male (left) and holotype female (right). Scale is in centimeters.
Photo by Paul Selden; used with permission.

More recently, however, a male specimen has been discovered, requiring a complete revision of their thinking. It turns out that the characteristics of the male pedipalps are completely inconsistent with even the familial assignment (Selden et al., 2013), and have necessitated the creation of a new Arachnid family to accommodate the species: the Mongolarachnidae; the species has thus been re-named *Mongolarachne jurassica*. It still, however, is giant – with a body length of nearly 2 cm and maximum leg lengths of over 6 cm!

The preservation of this specimen is phenomenal, including all the setae on the legs, which are so clearly preserved it is possible to see the structural arrangement that allows accurate identification. Anyone who would like to see this for themselves can do an image search for "giant Jurassic spider" or just e-mail me (BeetleBob2003@yahoo.com), and I can send you a pdf copy of the paper with the original photos.

References:

Selden, P. A., C. Shih and D. Ren, 2011. A golden orb-weaver spider (Araneae: Nephilidae: Nephila) from the Middle Jurassic of China. *Biology Letters*, v. 7, p. 775-778.
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Literature note: Ants in Maine Blueberry Fields

A relatively recent paper that might be of general interest to the M.E.S. community is one from 2012 by Beth Choate and Frank Drummond, entitled "Ant Diversity and Distribution (Hymenoptera: Formicidae) Throughout Maine Lowbush Blueberry Fields in Hancock and Washington Counties" (*Environmental Entomology*, v. 41, no. 2, p. 222-232).

In a 6-year study, they found a total of 42 species in 15 genera of ants in the blueberry fields of Hancock and Washington Counties. Ant diversity was greatest along the edges of the fields and in adjacent forests, and in the fields that were being grown organically; there was some suggestion that ant diversity was adversely impacted by pesticide use.

This study was the first to document the diversity of ants in lowbush blueberry fields of Maine, and provides a wealth of data.

If anyone would like a copy of this paper, just e-mail me (BeetleBob2003@yahoo.com) and I can send you a pdf copy via e-mail.

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The Blueberry Barrens on Pineo Ridge, Washington County: host to far more diversity than meets the eye!

Maple Syrup Collecting Field Day in Whitefield – March 22nd

Saturday, 22 March, 2014 MAINE MAPLE (& MOTHING) SATURDAY, at 460 Mills Road Whitefield (in Lincoln County).

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

Come visit a backyard sugar operation, enjoy the company and collect a bug or two or maybe more. Dress for the weather and be sure to wear boots, bring snowshoes if conditions permit, lunch and drinks.

If the sap cooker is running there are usually people hanging out, it is a laid back time (until a batch of syrup is ready to come off!) Contact Charlene Donahue if you're planning to attend. 549-7241 or via e-mail at charlene.donahue@maine.gov.

Directions: Take Rte. 17 east out of Augusta. Go 12 miles, turn right onto Rte. 218 (Mills Rd.). The house is 0.8 mi. down the road on the right. It's a cream-colored cape, with a garage with rounded doors.

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from <http://canada.pppst.com/maplesyrup.html>



A 19th-century engraving of Native Americans boiling syrup.

COMING M.E.S. EVENTS in 2014:

- 22 March Maple Syrup Collecting Day, Whitefield (contact person: Charlene Donahue)(see story, above left)
- 24 May Ant Picnic, Lewiston (in conjunction with "Ant Farm" at the Atrium Art Museum, Lewiston; contact persons: Charlene Donahue and Robyn Holman)(see story, p. 6)
- 14 June Ordway Grove, Norway (contact person: Bob Nelson)
- 18-21 July Entomological BioBlitz, Acadia National Park
- 16 August Reclaimed Plains, Old Orchard Beach (contact people: Domenica Vacca and Brandon Woo)
- 10 September Bug Maine-ia, Maine State Museum, Augusta (contact person: Joanna Torow)
- 13 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.)



Maine Entomological Society
c/o R. E. Nelson
Department of Geology
Colby College
5804 Mayflower Hill
Waterville, Maine 04901-8858 U.S.A.

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

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