

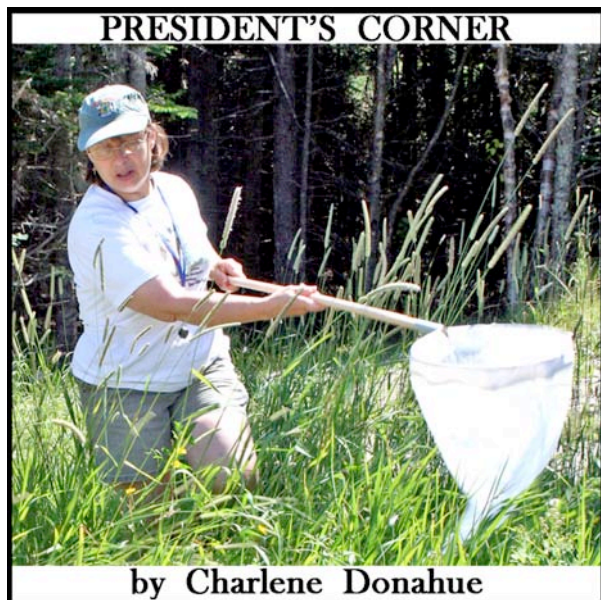
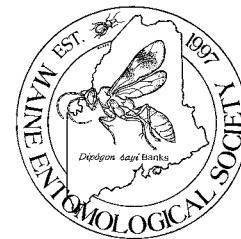
The Maine Entomologist

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

"What's In A Name?"

What is in a name? Why do we use scientific names? Here's two examples on why words matter.

An article is being written about pollinators by non-entomologists, and their audience is broad, with a general interest in the environment. The article is about moths as pollinators. Some of these moths are species that fly in late fall, overwinter as adults and fly again in the spring. Examples of these are in the genera *Eupsilia*, *Lithophane* and *Pyreferra*, to name three. A common term for these moths as a group is 'Winter Moths.' I strongly recommended that Winter Moths NOT be used. People in the areas of the Northeast inundated by *Operophtera brumata*, commonly known as Winter Moth, would definitely be confused by the article and not look kindly on promoting moths as pollinators. (For those who do not know, *O. brumata* is an invasive moth from Europe that defoliates hardwood trees and has spread from Massachusetts into coastal Maine.) Sallows would be a more appropriate common name.

And here's a second example. A person e-mailed me saying that they had 'Pine Sawflies' on their trees and had been told to apply horticultural oil to the trees in early spring to smother the eggs. That could be an effective treatment if the sawflies were the European Pine Sawfly, *Neodiprion setifer*, but it was more likely that they were the Introduced Pine Sawfly, *Diprion similis*, and that is what it was.

Luckily the tree owner had photos and had been given the scientific name of *D. similis*; she just had not shared that information with anyone who was providing control recommendations. This non-native sawfly, and most of the native sawflies, overwinters as a pupa in a tough, leathery cocoon that is often not even on the tree. In this case, an application of oil in the spring would do nothing to control

the problem. The control strategies differ depending on when and where the different life stages of an insect are at any particular time.

There are lots of insects out there and it does matter sometimes which one you are talking about.

There are lots of interesting entomological happening going on this year; hope to see you at one of them!

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Beetle Checklist of New Brunswick Published

Long-time M.E.S. member Reggie Webster of New Brunswick has just published a major synthesis of the beetles occurring in our neighbor to the north and east, New Brunswick*. A total of 3062 species in 92 families are now known to occur in the province, of which 366, or 12% of the total fauna, are adventive (i.e., unintentionally introduced from elsewhere).

The number of species now known from New Brunswick is more than double the number first recorded in Yves Bousquet's 1991 "Checklist of the Beetles of Canada and Alaska." And though many new species have been added to the known New Brunswick fauna in several syntheses published by Reggie, Chris Majka, Jan Klimaszewski, Robert Anderson and their coauthors, this current paper still documents some 303 species and one subspecies not previously known in the province. Included in this number are 32 species that are new to science, as well as four new North American records, 21 new Canadian records, 270 new provincial records, and 45 adventive species previously unknown from New Brunswick.

* Webster, R. P., 2016: Checklist of the Coleoptera of New Brunswick, Canada; in: R. P. Webster, P. Bouchard and J. Klimaszewski (Eds.), *The Coleoptera of New Brunswick and Canada: providing baseline biodiversity and natural history data*. *ZooKeys*, v. 573, p. 387-512. [doi: 10.3897/zookeys.573.8022]

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Erratum!

In the February issue, *Dendroctonus ponderosae*, which has been responsible for widespread pine devastation in the West, was mis-identified as the Western Pine Beetle. That was in error. The correct common name for *D. ponderosae* is the Mountain Pine Beetle.

Notes on the Status of Wintering Monarchs (*Danaus plexippus*) in Mexico (2015-2016): the good news and the bad news

By Robert E. Gobeil and Rose Marie F. Gobeil

Let's start with the good news. On February 26th, 2016, the World Wildlife Fund and Mexican government announced that nine colonies of Monarchs occupied a total area of 4.01 hectares (one hectare equals 2.47 acres, for a total of 9.90 acres) on the wintering grounds in Mexico during the 2015-2016 season (Monarch Watch 2016) (Fig. 1). This triples last year's figures of 2.79 acres and is a five-year high for the species. The total acreage occupied by Monarchs is, however, still very low compared to the 44.93 acres recorded during the winter of 1996-1997. According to Journey North, this year's population is estimated at 200 million. The long term average is about 300 million Monarchs with a peak of about 1 billion in the mid-1990s (Howard 2016).



Fig. 2 Monarch (*Danaus plexippus*), Saco, ME (York County), September 17, 2015.

Photo by Rose Marie F. Gobeil

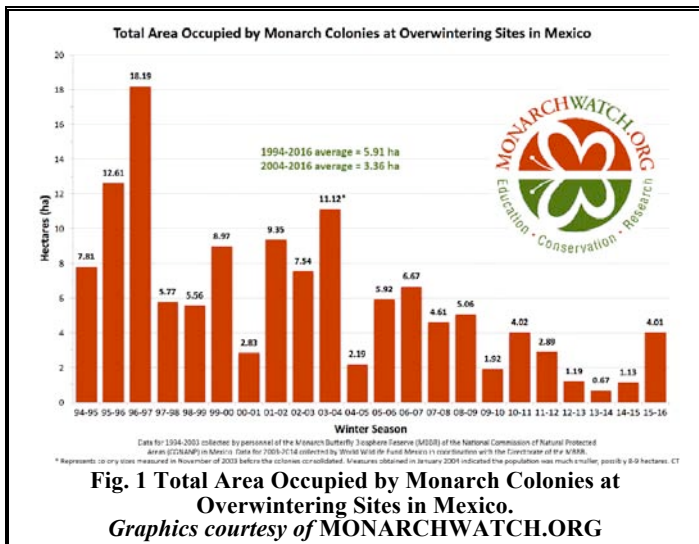


Fig. 1 Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico. Graphics courtesy of MONARCHWATCH.ORG

Now for the bad news. Two weeks after announcing a significant increase in the number of Monarchs, a severe storm with snow, high winds and freezing temperatures hit the wintering grounds in Mexico (Daileykos.com News 2016). Preliminary estimates indicate a mortality of about 1.5 million Monarchs (Maecle 2016). Fortunately, many of the Monarchs had already left the wintering grounds for their northward migration. This storm not only killed some of the Monarchs, but high winds blew down thousands of trees. This reduction in the number of trees opened up gaps in the canopy of the forests at the colony sites. In the future, the Monarchs will be even more exposed to stormy conditions.

As we discussed in a previous article (Gobeil and Gobeil 2014), we continue to believe that climatic changes may pose the greatest threat to Monarch populations. Since the Monarch population is concentrated in a very restricted area during the winter season, the Monarch is highly vulnerable to any severe climatic changes. Extreme storms with snow, high winds and freezing temperatures are becoming more frequent on the overwintering grounds. Devastating storms also occurred in 2002 and 2004 (Monarch Watch 2016). The 2002 storm killed an estimated 500 million Monarchs, more than twice the current population (Brower et. al. 2002). Batalden (2011) described in detail the potential impact of climatic changes on Monarch populations. Other major threats to Monarchs include the extensive use of herbicides in agricultural fields in the Midwest that kills milkweed plants, and illegal logging on the wintering grounds.

Even though the wintering population of Monarchs in Mexico increased in 2015-16, the number of confirmed Monarch sightings in Maine last summer did not reflect that pattern. The results of the Maine Butterfly Survey (MBS) show only 19 confirmed sightings of Monarchs in Maine during the 2015 season (deMaynadier et al. 2016). When compared to MBS records for the past few years (62 sightings in 2014, 27 sightings in 2013, and 146 sightings in 2012), this was a below-average season for Monarch sightings in Maine (deMaynadier et al. 2016). Even though we did extensive surveying in 2015, we only counted a total of 17 individual Monarchs (Fig. 2). In Downeast coastal Maine, Richard Hildreth (2016) also recorded a sparse Monarch flight in 2015 with only two sightings in Stueben during September. Since the Maine Butterfly Survey officially ended in the fall of 2015, future comprehensive monitoring of Monarch populations in Maine will now be more difficult.

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Wintering Monarchs (cont.)

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Maeckle, M. 2016. At least 1.5 million Monarch butterflies perish in deadly ice storm in Michoacan. (Online)
<http://texasbutterflyranch.com/2016/03/13/at-least-1-5-million-monarch-butterflies-perish-in-deadly-ice-storm-in-michoacan/> [Accessed 23 March 2016].
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<http://monarchwatch.org/blog/2016/02/26/monarch-population-status-26/> and
<http://monarchwatch.org/blog/2015/08/06/monarch-population-status-25/> [Accessed 14 March 2016].

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More on Monarchs

Kathy Claerr forwarded on a link to a recent interesting on-line article on Monarchs and their current status as well as the threats facing their long-term survival. The story also includes a link to the Monarch Larval Monitoring Project at the University of Minnesota (<http://www.mlmp.org/>).

The full URL to the story is rather lengthy, but you can get there via this shortcut: <http://tinyurl.com/jqu6re3>.

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Nanophyes marmoratus in Maine by Dana Michaud

Winter is the best time to sort through a backlog of insect specimens and identify them when possible, to families, tribes, etc. Accumulations from various "by-catches" of various surveys, in conjunction with one's own collecting, can make processing years of backlog materials very time-consuming.

One group that Dave Bourque and I decided to tackle and try to get caught-up on were the Curculionidae and related families ("weevils" in the broad sense). Over the past three years, our amassed specimens in this group numbered in the hundreds. Grouping them to families and subfamilies, etc., we slowly identified many of these over a series of days.

While grouping them, 17 specimens of what appeared to be two color variations of the same species were set aside. Running through the Arnett key to species dead-ended. What are they? Something new?

While visiting Dr. Don Chandler at UNH Durham, to work on the Curculionids, we brought the 17 specimens with us. We left two behind for him to examine when he had time, as we had failed to ID them ourselves, and the "mystery beetle" needed a name.

A few days later a message on the phone from Don informed me that the beetle in question was *Nanophyes marmoratus*, in the Brentidae, near the Apioninae. The geniculate (elbowed) antennae were atypical for this group, but the attachment of the femurs to the coxae in an end-to-end arrangement is diagnostic. We were looking in the wrong family!

Nanophyes was intentionally introduced into the U.S. and Canada to attack its native host – *Lythrum salicaria*, better-known as purple loosestrife.

Having found 17 specimens of *Nanophyes* from five locations, I decided to contact Ann Gibbs, a state horticulturalist for the Department of Agriculture, about the presence of *Nanophyes* in Maine. She informed me that the Chrysomelid beetles (leaf-eating beetles) *Galerucella pusilla* and *G. calmariensis* (now both in the genus *Neogalerucella*) were in fact introduced into Maine for purple loosestrife control. Permits were also issued for the release of *Hylobius transversovittatus* (a 10-14 mm root-boring weevil) for three specific years (1997, 2002 and 2005) at three different areas:

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Kittery, Lewiston-Hampden-Brunswick, and towns near the Rachel Carson National Wildlife Refuge in Wells. She wasn't sure if this nocturnal weevil was released, but she did know the permits had been approved by the USDA. As for *Nanophyes marmoratus*, the flower/bud weevil, she knew of its release elsewhere in the U.S. but not in Maine.



Nanophyes marmoratus specimens from Germany (above) and Russia (below). The color differences will only show in the on-line version of the newsletter, but they are striking. Most specimens recovered thus far in Maine look more like the German specimen, with variations on that color scheme.



<https://www.zin.ru/animalia/coleoptera/eng/nanmarkm.htm>

Continued on the next page

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Nanophyes marmoratus in Maine (cont.)

Charlene Donahue, on learning from Ann about our finding *Nanophyes*, sent me a couple of 2002 Cornell publications by B. Blousey, outlining the biology of *Lythrum salicaria* and the history of the program that led to the introduction of four beetle species into North America the purple loosestrife's unabated invasion and takeover of many marshlands, to the detriment of native flora and fauna.

Lythrum salicaria found its way to North America via many routes, both accidental and deliberate. The plant itself can live many years, producing up to 2.7 million seeds a year, which stay viable for many years. In its native Europe and Asia, it has natural enemies that keep it in check. It is now found in almost every U.S. state, as well as the bordering Canadian provinces.

Purple loosestrife not only crowds out native marsh plants, but also renders the habitat unfit for many marsh birds relying on wetland habitats, such as bitterns, black terns and marsh wrens. Purple loosestrife has literally taken over all marshes where it becomes established, causing local extirpation of birds but also threatening other aquatic denizens like bog turtles.

The decision to implement biological control was made, and in 1986, research to find biological control agents was launched in Europe, in seven countries and 140 sites. Over 100 species of insects were found to feed on *Lythrum salicaria*. Of those, only nine were considered as potential candidates for introduction in the U.S. Of these nine, six were very host-specific and were tested. Of those, two were eliminated from consideration. One, a gall midge, did attack other native North American species of the genus *Lythrum*. The other, *Nanophyes brevis*, is also host-specific to purple loosestrife, but wasn't introduced due to common parasitism by nematodes. While the parasites in Europe control the natural enemies of *Lythrum salicaria*, introducing parasite-free populations of beetles into North America was a requisite, otherwise failure would be guaranteed.

Of the four beetles chosen, the two leaf-eating beetles (*Galerucella*) feed on the leaves as both larvae and adults. The root weevil (*Hylobius*) feeds on foliage as an adult, but the larvae bore into and feed on the roots.

The flower and bud weevil, *Nanophyes marmoratus*, feeds on flowers and flower buds. This small weevil is only 1.4-2.2 mm long, and is glossy black with brown elytral markings (see illustrations). It's univoltine (producing one brood per season) and overwinters as an adult in the leaf litter. In May, the adults feed on young leaves and make their way up to the developing flower spikes to mate and lay eggs until August, all the while consuming new floral receptacles and ovaries.

The larvae, on hatching, consume the petals, stamens and ovaries of the flowers, pupating in the bud base, which causes it to be aborted. After one month of development, the adult beetles emerge and continue feeding until it is time to overwinter.

All our specimens, save one, were collected in the fall:

- 14 Aug., 2013 in Winslow (our oldest specimen)
- 19 Aug., 2013 in Solon (2 specimens)
- 30 Sept., 2013 in Waterville
- 30 Sept., 2013 in Winslow
- 2 Nov., 2013 in Winslow
- 2 Aug., 2014 in Winslow
- 10 Aug., 2014 in Winslow
- 27 Aug., 2014 in Norridgewock
- 8 Sept., 2014 in Waterville
- 3 May, 2015 in Vassalboro (our only spring record)
- 10 Aug., 2015 in Winslow (3 specimens)
- 16 Sept., 2015 in Vassalboro

+ 2 specimens at the University of New Hampshire, for which we didn't get the data before leaving them.

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Since the program was initiated, *Nanophyes* was released in 1994 in New York, New Jersey, Colorado, Minnesota and at least three other states. It, along with the three other species of host-specific beetles, have been released (and continue to be released) in areas where purple loosestrife has gained a foothold.

With the presence of *Nanophyes marmoratus*, along with the root weevil and the two *Galerucella* species, the sites where they have been released have shown major damage to near-complete destruction of *Lythrum salicaria*, with some sites showing purple loosestrife biomass reduction that exceeds 95%! Not only are the plants dying or being defoliated, but flowers are nearly nonexistent. Native plant species like cattails are returning.

Much more needs to be studied concerning what species will replace loosestrife, and also how the four beetles will compete against each other at such sites.

The presence of *Nanophyes* in Maine, along with the two *Galerucella* species already here, can only help to control the spread of *Lythrum*. How this little weevil got here remains a mystery. What it's going to do while here is not a mystery. Judging by the initial results elsewhere in the U.S. and Canada, *Lythrum salicaria* has met its match, and it comes in the form of four host-specific beetles.

This provides strong evidence that biological control, when properly executed, can be highly effective, and should be considered long before an invasive alien plant has spread to nearly every state in the country.

For additional information on purple loosestrife and its biological control, see

<http://purpleloosestrife.org/index.php?page=biological-control>
and

<http://www.dnr.state.mn.us/invasives/aquaticplants/purpleloosestrife/biocontrol.html>

So, what's next – kudzu?

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Registration Opens for 2016 BioBlitz at Acadia National Park

Registration is now open for the 14th annual BioBlitz at Acadia National Park, July 23 and 24, 2016. The event is open to professional entomologists, amateur naturalists, and any other interested persons. Registration for the BioBlitz will close on July 8, 2016. You can register through a link provided at

<http://www.schoodicinstitute.org/event/2016-acadia-national-park-bioblitz/>.

The 2016 event will be based at the Schoodic Education and Research Center (SERC), and hosted by the Schoodic Institute and Acadia National Park. Partner organizations include the Maine Entomological Society and the Maine Forest Service.

This year's target group is Lepidoptera (Butterflies and Moths). In addition to physical field collecting, the Schoodic Institute will conduct an iNaturalist bioblitz focused on Lepidoptera. This activity allows for use of smart phones, iPads, and digital cameras to photograph target species and contribute photos to a biodiversity database devoted to Acadia National Park.

The event starts with registration from 9:00 – 9:45 a.m. on Saturday, July 23, and continues through lunch on Sunday, July 24. There will be an official orientation and Bioblitz strategy session at 10:00 a.m. in Moore Auditorium on Saturday. The collection period will commence Saturday at Noon and continue for 24 hours. It will be focused on the Schoodic Peninsula of Acadia National Park. Lab work will be spent sorting, pinning, and identifying collected as well as photographed specimens.

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Acadia BioBlitz (cont.)

The following will be the cost structure you will see and can select from on the official registration site.

Blitz registration fee: \$20.00

Blitz meal package \$81.95 (Saturday Lunch through Sunday Lunch)

Optional meals available at additional cost:

Friday dinner \$24.30

Sat. Breakfast \$12.96

Sun. Dinner \$24.30

Mon. Breakfast \$12.96

Lodging Options on the SERC Campus:

Shared Bunkhouse Room, 2 per room = \$34.88 per person per night

Private Bunkhouse Room = \$54.50 per person per night

Shared-Bedroom / Shared-Bath Apartment = \$59.95 per person per night

Private-Bedroom Shared-Bath Apartment = \$81.75 per person per night

No Lodging Needed

→ **Please note that no pets are allowed at the BioBlitz.**

The following information is not on the registration page. Please follow specific directions

SPECIAL OPPORTUNITY: There is limited access to 3 sites on Mount Desert Island on Friday (and Saturday) night to set up light traps to collect moths. This is limited to 12 people total. The park is providing free housing for these select folks.

If you have experience with conducting light trap collections and would like to be on this team, please e-mail Seth Benz at sbenz@schoodicinstitute.org.

If you have a portable light trap set up that can be used, please let us know.

Scholarship opportunity: We have a limited amount of scholarship money available for this year's Bioblitz. Typically, a scholarship cannot exceed 30% of your total bioblitz costs. If you need financial help to offset the cost of participating in the 2016 Bioblitz **please e-mail sbenz@schoodicinstitute.org BEFORE YOU REGISTER** on the official Bioblitz website.

Camping options are available at the new Schoodic Woods campground, approximately 3 miles from SERC. For fees and information on this, go to:

<https://www.nps.gov/acad/planyourvisit/camping.htm>

Directions to get here maybe found at:

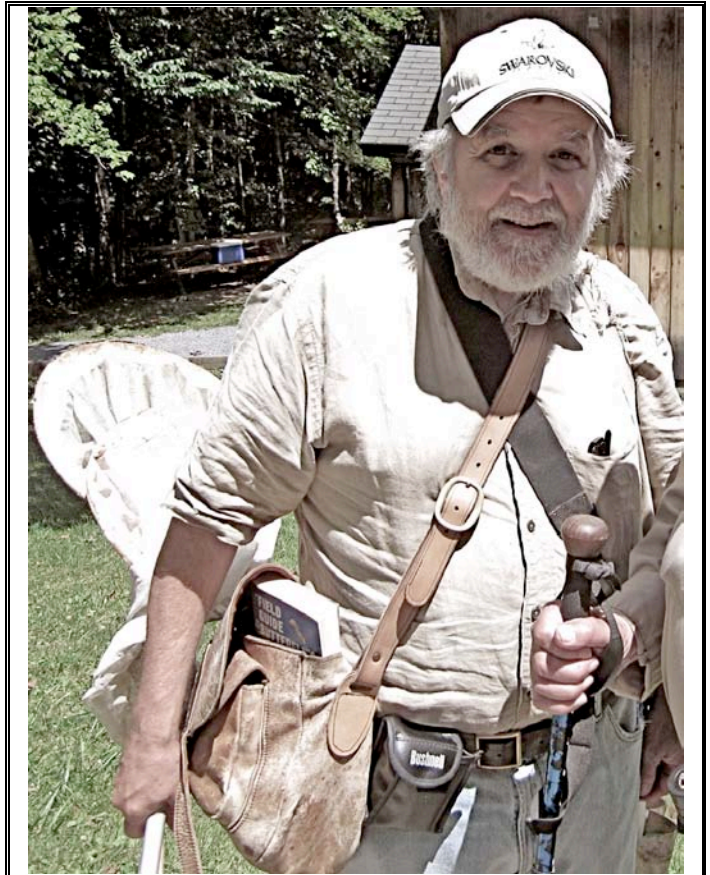
<http://www.schoodicinstitute.org/about/map-directions/>

The lead taxonomist for the event will be Michael Sabourin, an internationally known lepidopterist and field naturalist. Michael is a Research Associate of the McGuire Center in Florida and has studied, in the past, at the Universities of Minnesota and Vermont. He currently resides in Marshfield, Vermont, where he has served as the Vermont Entomological Society president for several years.

Michael's primary research focus is on the faunistics and taxonomy of the moth family Tortricidae. He co-authored the Faunal Checklist of Moths and Butterflies of Vermont and has published over a half-dozen papers on the taxonomy of tortricid moths. Current projects are a Handbook of Midwestern Tortricinae and curating the Carnegie Museum collection of tortricids. He is an avid collector of Lepidoptera, particularly daytime-active microlepidoptera.

For more information please contact the Schoodic Institute, Monday - Friday 9:00 a.m. - 4:00 p.m. at: (207) 288-1310. Additional information or any changes from this announcement will also be posted on the M.E.S. web site as soon as they are received.

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Michael Sabourin will be the lead taxonomist for the 2016 Entomological BioBlitz at the Schoodic Peninsula portion of Acadia National Park.

Myriapods of Acadia: BioBlitz 2015

The final report on Joseph DeSisto's evaluation of the myriapod and chilopod fauna of Acadia has been submitted to the Acadia National Park staff – ***Centipedes (Chilopoda) and Millipedes (Diplopoda) of Acadia National Park: A First Survey.***

Joseph's survey took place during the 2015 annual BioBlitz, which was coordinated by the Schoodic Institute, and 160 myriapod specimens were collected by 55 citizen scientists on 18 July, 2015. Eight millipede and eight centipede species were collected, with the introduced species *Lithobius forficatus*, *Lithobius crassipes*, *Cylindroiulus caeruleocinctus*, and *Ophiulus pilosus* being the most abundant. When combined, introduced species had a much higher relative abundance than native species.

E-mail Bob Nelson if you'd like a copy of the full report.

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"Creating Living Landscapes" in Blue Hill – June 30th

The Blue Hill Heritage Trust, Downeast Audubon, Great Pond Mountain Conservation Trust, Island Heritage Trust, and Wild Seed Project are offering a special evening in early summer. Doug Tallamy, renowned entomologist and wildlife ecologist from the University of Delaware, will speak about "Creating Living Landscapes" on June 30th at 7:00 p.m. in Emlen Hall of The Bay School, on South Street in Blue Hill.

Tallamy's vision of "bringing nature home" addresses the important ecological roles of the plants in our landscapes, emphasizing the ecological, educational, physical, and

Continued on the next page

Living Landscapes in Blue Hill (cont.)

emotional benefits of designing landscapes with these roles in mind, and exploring the consequences of failing to do so. Managing landscapes in this crowded world carries both moral and ecological responsibilities that we can no longer ignore.

Tallamy's recent papers include "Public Preferences for Ecosystem Services on Suburban Landscapes: A Case Study from the Mid-Atlantic," "An Evaluation of Butterfly Gardens for Restoring Habitat for the Monarch Butterfly (Lepidoptera: Danaidae)" and "Conservation in a changing world: bridging the gap between where we are and where we need to be."

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**A Swarm in Orono
by Kathy Claerr**

On Saturday, May 7th, a sunny-bright, warm Saturday, eager insectophiles crowded the grounds of the Orono Public Library.

Insect Adventures, a presentation of the Friends of Dr. Edith Marion Patch, attracted about 50 youngsters and their families, though some library patrons were drawn into the activities as well. Edie and Louie King displayed their beautifully pinned and boxed insect collection, along with excellent time-lapse photographs of an emerging Monarch butterfly, and pupation of a ladybird beetle larva. Other enticing indoor activities, such as Move Like a Bug, were offered by the Patch Society, too.



Young and old gathered 'round to collect and study insects on the grounds of the Orono Public Library at Insect Adventures on Saturday, May 7th. Charlene Donahue photo.

But the gorgeous weather seemed to prompt most families to spend a lot of time outdoors. MES offered T-shirts

for sale (snatched up by children and adults alike), generating income for the MES scholarship fund.

Perhaps the most popular activity of the day was MES-led net collecting on the Library grounds. Looking down the hill from the Library walkway onto the back lawn, one observed big and small children, nets in hand, darting helter-skelter after flying things, so much like a swarm of midges.

The kids, along with the help of Charlene Donahue, Peter Darling, and two UMaine students, Alex Bajcz and Chase Gagne (a new M.E.S. member!), quickly amassed a temporary collection of live bees, wasps, flies, beetles and ants. Several parents were into bagging insect quarries, too. One very excited boy ran up to the MES booth shouting, "My dad caught ANOTHER HUGE bumblebee!" Dad, smiling broadly, was obviously quite proud of this notoriety.

Another proud collector was a very quiet mother, with her four children, each of whom ran in a different direction *a la* electrons orbiting an atomic nucleus. I can't imagine when she had the opportunity to discover it, but the mother showed us not only the ant she had coaxed into a paper cup, but also the big, orange cracker crumb the ant thought she was hefting back to her nest.

Kathy Claerr, at the membership table, noticed the stream of intelligent questions from one parent, and signed him up as one of two new members joining that day. Afterwards, the MES crew lunched at the original Pat's Pizza. Then we headed to the Edith Patch house in Old Town, where we walked some of the trails, enjoying spring flowers and poking around for insects. To Kathy's delight, Peter uncovered a busy nest of yellow *Lasius* ants.

Partnering with the Patch Society at this outreach event proved to be a fun way to increase MES's visibility, especially in the "northern" reaches of our state. MES's contribution-- collecting in the field and showing the results of our field work-- is a perfect complement to the Patch Society's event. Watch for MES to participate again in May, 2017.... Observing the energetic delight of the swarm is not to be missed!

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Book Review:

The Bees in Your Back Yard: A Guide to North America's Bees

by Joseph S. Wilson and Olivia Messinger Carril

Reviewed by Dana Michaud

This 288-page, 8"x10" soft-covered guide to the bees of North America, is both loaded with colored photos (900+) of the various families, tribes, genera and many species of bees in the U.S. and Canada, but also information in the form of keys, biology, ranges, flight periods, numbers and the sizes of various groups.

The long introduction (Chapter 1, pages 7-48) is broken into subsections, as are most chapters, ending in a quick visual (p. 39-43) identifier followed by a key to families (p. 44-48).

Chapter 2, "Promoting Bees in Your Neighborhood" (p. 50-60), explores the various geographic regions, and the plants to plant in each region to provide food, as well as various ways one can create habitats and nesting areas for various bee groups.

Chapters 3-9 cover the various families and where applicable, breaks down into subsections to cover tribes and genera with explanations (key-like) on how to separate them. The biology and ranges are also included for the various groups. Although many of the 4000+ species are heavily southern and western, most groups do occur east of the Rockies and well into the Northeast.

Continued on the next page

Bees in Your Back Yard (cont.)

In Chapter 8, the Apidae (p. 189-253), the visual identification tips explain how to get to the various tribes and major genera in the following subsections, numbered 8.1 to 8.12. In Section 8.2, 22 species of the genus *Ceratina*, commonly known as the small carpenter bees, are covered. These common, smaller bees, some down to 1/10" long, have the distinction among bees of being heavily parthenogenic. Some species collected in the U.S. are almost entirely female.

In Section 8.5, the odd-looking tribe Eucerini, which also occur in Maine, is covered. The males have very long antennae, making them look more like Sphecid wasps than bees. The common name of this group is, properly enough, the long-horned bees.

In Section 8.12, the Euglossa, or orchid bees, are covered. These striking, 1-inch long green metallic bees stray into the Southwest, but are only established in Florida. This group is unusual in that the males have oddly modified metatibias which hold scent compounds or resins from the various flowers (orchids) that have been visited. These are thought to be used in species identification. Orchid bees have the unusual habit of feeding their larvae as they grow, rather than storing (mass-provisioning) the food in their nests.

The final chapter, Chapter 9 (p. 254-277), titled "Pollen Thieves," deals with cleptoparasitism, in which the female of a species sneaks into the nest of a host bee, lays her egg in the food resources cached for the host's larvae, and vacates. Her egg(s), upon hatching, kills the host's young, and eats the pollen mass. This behavior occurs in three families covered earlier, but lumped together as "cuckoo bees" and through the identification tips (p. 256-277), they can be identified down to genus. This group consists mostly of members of the Apidae, but also includes some Megachilidae and Halictidae.

This \$30 book is in my opinion well-worth the money, for both the beginner wishing to learn more about bees in one's own backyard, and also for the budding Hymenopterists wanting to key bees down to families, subfamilies, genus or even (for many) the species level.

This well-written and well-illustrated volume reveals the wonderful array of bees found in North America and also their importance as pollinators, both generalists and specialists.

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So-called "bee hotels" are becoming a popular decorative way to provide suitable nesting habitat for domestic solitary bees. Some lucky M.E.S. member who attends the fall Annual Meeting will go home with one of these for their own use. Additional details will be forthcoming in the August newsletter!

Invasive Mosquito Project Launched

The Invasive Mosquito Project (IMP) has recently been launched, which is an extension of the North American Mosquito Project (NAMP). This project will help the general public understand the role of mosquito control and encourage community involvement.

This project targets container mosquito species surveillance and will generate dynamic maps of mosquito distributions, while educating the public about mosquito-borne illnesses like Zika and chikungunya. To accomplish national mosquito surveillance at a school district level, the IMP partners local middle and high school classes with local professionals (mosquito districts, public health agencies, and local experts) and together they collect mosquito eggs within the community.

This project is not limited to schools. Scouts, 4-H, FFA, and other groups can also participate. If you are interested in contributing, additional information and all the resources are freely available at WWW.CITIZENSCIENCE.US. All the gathered data with the participants of the projects will be shared, just as they have done with the NAMP project.

The North American Mosquito Project was a huge success in 2011 and 2012, with over 1,100 mosquito collections nationwide. The *Aedes vexans* and *Culex tarsalis* mosquitoes from those projects were used for presentations on population genetics and phylogenetics throughout the continental United States, as well as at the Entomological Society and American Mosquito Control Association annual meetings.

Please help make the Invasive Mosquito Project a success and help us reach our goal of 20% participation by all high schools in the US. An article describing the program in greater depth is Cohnstaedt, L., et al., 2016: Determining Mosquito Distribution from Egg Data: The Role of the Citizen Scientist *The American Biology Teacher*, vol. 78, no. 4, p. 317-322 (April, 2016). (E-mail Bob Nelson for a copy.)

For additional information, contact Lee Cohnstaedt (Lee.Cohnstaedt@ars.usda.gov) or Elin Maki (elin.maki@ars.usda.gov).

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2016 Summer Season Set at Eagle Hill

The 2016 Summer seminar, course, and workshop schedule has been set at the Eagle Hill Institute in Steuben. A full schedule of programs is set to run from May 22nd to September 10th.

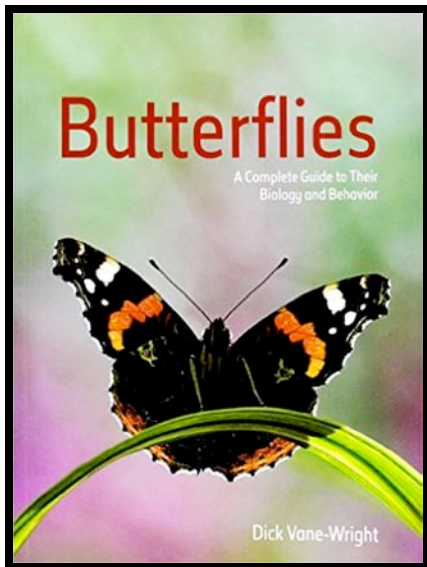
Programs that are of particular entomological appeal would include the following:

- June 19-25:** Moths and Butterflies: Identification, Specimen Preparation, and Taxonomy, with Bryan Pfeiffer and Hugh McGuinness.
- June 26-July 2:** Dragonflies and Damselflies: Field Techniques and Identification, with Bryan Pfeiffer.
- July 10-16:** Native Bees as Pollinators: Diversity, Ecology, Conservation, and Habitat Enhancement, with Alison Dibble, Frank Drummond, and Sara Bushmann.
- July 17-23:** Beetles: Diversity, Identification, and Natural History in Maine and Around the World, with Gary Hevel and Warren Steiner.
- August 7-13:** EPT Taxa: Taxonomy and Stream Biomonitoring, with Steven Burian.

The complete summer program, with information regarding fees and lodging, can be found at the Eagle Hill web site:

<http://www.eaglehill.us/programs/nhs/nhs-calendar.shtml>
There's also a link to this on the M.E.S. web site.

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Book Review:

Butterflies: A Complete Guide to Their Biology and Behavior

by Dick Vane-Wright

(Cornell University Press, 2015; 7-5/8" x 10" x 3/8" thick, 128 pp.)

Reviewed by Richard Hildreth

Dick Vane-Wright is one of the great butterfly experts of the world. He has been at the London Natural History Museum for over 40 years, where he is the head of the Department of Entomology. He is one of the authors of the

Continued on the next page

Butterfly Book Review (cont.)

well-known book, *Milkweed Butterflies: Their Cladistics and Biology*, which tries to sort out the taxonomy of this complex group.

Dick Vane-Wright is a very clear and entertaining writer. For those with experience with butterflies, this book will serve as a refresher to bring you up-to-date with butterfly biology and behavior. This is also a great book for beginners to read, to get them started.

Do read this beautiful book before you grab your field guide, net, close-focus binoculars, etc., and head out for the 2016 field season!

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"GREAT BIOBLITZ" in Connecticut – June 2nd-3rd, 2016

The 2016 Connecticut State Bioblitz (one of the biggest in the country, and involving all plant and animal taxa) will take place on June 3rd and 4th, with headquarters at the Two Rivers Magnet School in East Hartford, Connecticut. The Blitz is being sponsored by a number of agencies and will be led by Dave Wagner. According to Wikipedia, the 2001 CT State Bioblitz at Tarrywile Park in Danbury holds the one-day record with 2519 species.

The 2015 Blitz, for which Don Chandler (UNH) was lead Coleopterist, was dominated by the numbers of beetle species collected. Since there is no on-site follow-up identification work done, the Blitz tends to be a pretty quick affair.

It is expected that more than 100 scientists and citizen-scientists will begin the species survey on Friday at Great River Park, and will canvass habitats found within a four-mile

radius of the Two Rivers Magnet School. Surveyors will be sampling the Connecticut and Hockanum rivers, floodplains, forests, freshwater ponds, open fields, as well as more human-dominated and developed areas, and are hoping to catalogue more than 1,500 species. Insects undoubtedly will be the vast majority of that diversity.

If you're interested in attending this event, more information can be found at their web site:

<http://web.uconn.edu/mnh/bioblitz/>

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The Migratory Lepidoptera and Other Studies of Richard Hildreth

Over the years, Richard Hildreth's book reviews and helpful notes have helped to document some of the lesser-known aspects of the Maine Lepidopteran fauna, in particular informing us of the migratory nature of a number of our butterflies and moths. It's not just the Monarchs out there that are coming and going on an annual cycle!

His piece in the last issue of the newsletter had multiple references which were cut due to space limitations. Here should be a complete catalogue of his more recent contributions to our understanding of our Lepidopteran fauna.

- Hildreth, Richard W., 2008: 2007 – The Year of the Red Admiral. *The Maine Entomologist*, v. 12, no. 2, p. 8-10 (May, 2008)
- Hildreth, Richard W., 2011: Three Species of Conspicuous Day-flying Migratory Moths in Downeast Coastal Maine. *The Maine Entomologist*, v. 15, no. 4, p. 2-4 (November, 2011)
- Hildreth, Richard W., 2011: The Ailanthus Webworm Moth, *Atteva aurea* (Fitch) in Downeast Coastal Maine. *The Maine Entomologist*, v. 15, no. 4, p. 5-7 (November, 2011)
- Hildreth, Richard W., 2011: Observations of Migrant Insects in Downeast Coastal Maine During the 2010 Field Season. *The Maine Entomologist*, v. 15, no. 4, p. 8-10 (November, 2011)
- Hildreth, Richard W., 2013: Tech Tip: Banana Bait Feeder. *The Maine Entomologist*, v. 17, no. 1, p. 2.
- Hildreth, Richard W., 2013: Butterfly Migration in Downeast Coastal Maine (Hancock and Washington Counties) During the 2012 Field Season. *The Maine Entomologist*, v. 17, no. 1, p. 3-7.
- Hildreth, Richard W., 2016: Sightings of Migrant Insects in Downeast Coastal Maine During September, 2015 (with some additional ecological notes). *The Maine Entomologist*, v. 20, no. 1, p. 5-9.

COMING M.E.S. EVENTS in 2016
(see the February newsletter for details on most trips!)

11 June	Field day in Woolwich (contact person: Kathy Claerr - kclaerr1@comcast.net)
22-24 July	Entomological Bio-Blitz (Lepidoptera) at Acadia National Park (see p. 4)
6 August	Field Day at Big Wilson Stream, Sangerville (contact person: Diane Boretos – callwild2@hotmail.com)
13 September:	Bug Maine-ia, Maine State Museum (contact person: Joanna Torow (Joanna.Torow@Maine.gov))
17 September	Field Day in Bowdoinham (contact person: Kathy Claerr - kclaerr1@comcast.net)
1 October	M.E.S. Annual Meeting, Clinton (contact person: Bob Nelson: - new e-mail address at - BeetleBob2003@gmail.com)

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

The Maine Entomologist is the quarterly newsletter of the Maine Entomological Society. Dues are \$10 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.