

# 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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Happy New Year from your new President! I have been fretting over what to write in this, my first missive, after more than a decade of musings from our first, and only other MES president, Dick Dearborn. Finally I decided to introduce myself and perhaps give some insight into how I became an Entomologist and where my interests lie.

My earliest childhood insect memories: chasing fireflies with my sisters, brother and neighbor children as our parents sat in lawn chairs visiting; crouching over in the driveway observing pavement ants and interfering with their activities to see how they would react; lying on my back in a field pulling dried Queen Anne's Lace flowers apart to see if there were spiders inside; my father showing us how the bees from his hives had "flight lines" and if we avoided those areas as we played then the bees would ignore us; floating in a boat on a pond watching damselflies emerge. I remember being interested and accepting of the insects in my world. There were mosquitoes and ticks in my world too, but they were just annoyances - not creatures to be feared as it seems many children today view them.

As a University of Maine undergrad., I was fortunate to land a work-study job working with entomopathic fungi and aphids. (In fact one of the fungi strains that is used today for research is one I isolated from aphids at the Rogers Farm in Old Town.) That job led to full-time employment in the Entomology Department as a research assistant working on spruce budworm control. I earned my Masters Degree in Entomology during this time, taking a class or two a semester. My next job in entomology was with Cooperative Extension, working as the State Survey Coordinator and with small fruit pests. Finally I ended up at the Maine Forest Service as an Entomologist, where I have been since 1992.

For years I dealt primarily with pest control, but more recently I have become involved in taxonomy too. I am still trying to decide what group interests me the most but at the

moment my expertise lies with bark beetles and wood borers. With each blitz I think - oh maybe I like flies best! No, I think spiders, maybe treehoppers.... One of these days I will focus.

Insects are endlessly fascinating and there is so much to learn. There are so many questions still to be answered, so much we do not know about what is in our own backyards. It keeps me excited about the world I live in, keeps me in a job, keeps me connected with all of you. Hope to see you this year at a field trip, the Blitz, Bug Maine-ia or just out "buggin" around!

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**CALENDARS?** If you still need a 2009 calendar and would like one of the snazzy M.E.S. ones, there are still just a few left. Contact Bob Nelson - discounted to \$8 each, and they help benefit the scholarship fund!

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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 2009! Treasurer Dana Michaud's name and mailing address are 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 "2008", please contact Dana to renew for 2009 or correct the record.

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## Minor Orders Workshop January 17, 2009

by Charlene Donahue

The Winter Workshop put on by the Maine Entomological Society and sponsored by the Maine Forest Service covered the Minor Orders of Insects, and was an unqualified success. For those who are wondering, the Minor Orders are orders of insects that have few species in them (or at least few species in Maine-some are large tropical groups). Some of the major orders are beetles, moths & butterflies and flies.



Don Chandler kept everyone both fascinated and busy at the Winter Workshop.

Twenty-four people braved the arctic air to attend the workshop on Saturday January 17th. They came from Kennebunkport, Lincoln, Camden, South Paris, Eastbrook and towns in between. In addition to the Mainers, three participants came up from Massachusetts. There was a nice cross-section of the Maine Entomological Society with eight amateur entomologists, seven professionals, six naturalists – both amateur and professional - and three students (one middle school, one undergraduate, one graduate level).

Dr. Don Chandler, professor and curator from the University of New Hampshire, once again put on an incredible show. He had a PowerPoint presentation filled with photos and facts on each order that will help amateur and professional alike sort out the different groups to the family level. Don discussed habitats, habits, collecting techniques, preservation and key features in a manner that was logical and fascinating. He somehow managed to strike just the right note in presenting to a varied audience and kept everyone enthralled.

Along with the lecture portion of the workshop was the hands-on part. Twelve microscopes were squeezed into the Maine Forest Service Entomology Laboratory with nine scopes around a large table and three more in adjoining offices. Dr. Chandler had put together boxes for each scope with 39 different species representing the groups of insects covered in the workshop. This allowed people to see the features on actual insect specimens while he was covering them in his presentation. People sat and stood to see the presentation and shared microscopes to look at specimens as they were being discussed.

Dr. Chandler provided participants with a handout of simple keys (with pictures!) to the families for some of the orders discussed. He made suggestions on references to use on the different groups and their relative value to the novice or

generalist. All in all there was a huge amount of information crammed into five hours either as an introduction to the minor orders or as a refresher.

Below is a list of the taxa we may encounter in next summer's Blitz at Schoodic Point:

Collembola	springtails	< 50 species
*Diplura	diplurans	1 species, if that
Microcoryphia	bristletails	1 coastal species
Thysanura	silverfish	2 species possible
Ephemeroptera	mayflies	est. 6 species**
Orthoptera	grasshoppers & crickets	< 75 species
*Phasmatodea	walkingsticks	1 species, if that
Dermaptera	earwigs	< 5 species
Plecoptera	stoneflies	est. 6 species**
*Isoptera	termites	1 species, if that
Mantodea	mantids	1 species, if that
Blattodea	cockroaches	< 10 species
Thysanoptera	thrips	< 30 species
Psocoptera	psocids or barklice	< 50 species
Neuroptera	lacewings, fishflies, etc.	< 75 species
Trichoptera	caddisflies	est. < 30 species**
Mecoptera	scorpionflies	< 15 species
Strepsiptera	twistedwing insects	< 5 species

\* Diplura, Phasmatodea and Isoptera are unlikely.

\*\* The EPT taxa (Ephemeroptera, Plecoptera and Trichoptera) are represented in Maine by numerous taxa, but most are either spring-active as adults, or associated with streams larger and/or more permanent than those at Schoodic. Numbers listed here are estimates of the numbers of species that potentially could be found in the Blitz at Schoodic.

\* \* \* \* \*

## Maine Butterfly Survey Update

By Phillip deMaynadier

Sponsored by MDIFW, in partnership with the University of Maine at Farmington (Dr. Ron Butler), Colby College (Dr. Herb Wilson), and Dr. Reginald Webster of New Brunswick, the Maine Butterfly Survey (MBS) is a 5-year, statewide, volunteer survey effort where the data comes primarily from citizen scientists. Having recently completed its second field season, the MBS is designed to fill information gaps on butterfly distribution, abundance, flight seasons, and habitat relationships for one of the state's most popular insect groups.

While invisible and far from our thoughts during these cold months, be assured that Maine's diverse butterfly fauna is alive and well, overwintering in a forest or field near you as eggs, larvae, pupae, or adults (few spp). In the meantime, MBS coordinators are hard at work organizing and verifying volunteer data submitted from 2008, when over 2,400 voucher records (verifiable specimens and/or photos) were collected, more than twice the number of records submitted in the first year of the survey. Reggie Webster is currently reviewing every record for species and locality details before curating the material and entering the information into the state's growing butterfly database. While review of the data is incomplete at this writing, we do know that many novel county records were submitted, and at least one new state record! – the Mulberry Wing Skipper (*Poanes massasoit*). Stay tuned for more highlights of 2008 contributions in the next MES newsletter.

In the meantime, please take a moment to visit the MBS  
(continued on next page)

## Maine Butterfly Survey Update (cont.)

website this winter (<http://mbs.umf.maine.edu/>). Designed by Ron Butler, the site has an updated state checklist, a photo library of Maine species, a volunteer membership directory, survey results from 2007 (and soon 2008), and suggested resources for Maine butterfly study. Thank you to all MES members who have contributed records to the survey. For those of you still considering participation please register with Herb Wilson ([whwilson@colby.edu](mailto:whwilson@colby.edu) or 207-859-5739) for a free MBS workshop this spring (May 9th) at Colby College in Waterville.

Think spring!

\* \* \* \* \*

## Ash Tree Beetle Threatens Wabanaki Way of Life

by  
Sujata Gupta

*In the beginning there was just the sea and the forest—no people and no animals ...*

So begins one of the many renditions of this Native American creation story, retold through countless generations and across the four tribes comprising the Wabanaki Confederacy, present to this day in New England and the Canadian Maritimes. Included in this primeval forest was the ash tree, no ordinary tree in the eyes of the Wabanaki. For out of this tree originated all human life. As the story goes, Koluskap, the mythological creator of life:

*... shot arrows into the trunks of Ash trees. Out of the trees stepped men and women. They were strong and graceful people with light brown skin and shining black hair. Koluskap called them Wabanaki, people of the dawn.<sup>1</sup>*

Ever loyal to their legendary mother, the ash tree, the Wabanaki soon realized that the same tree that had borne them from her trunk harbored other secrets. She had not one face but many, and each facet of herself lent to her children's survival. The strong, pliant wood of the white ash, for instance, enabled the Wabanaki to whittle arrows and bend and shape snowshoe frames (both crucial survival tools in New England's wintry terrain); the brittle, tough wood of the black ash, in contrast, enabled the Wabanaki to cleave its trunk and branches into thin strips for making baskets. It was this latter discovery that earned the tree her nickname: the basket tree.

Today, the basket tree has withstood dark times with the Wabanaki. With the arrival of the Europeans more than 400 years ago, life as the Wabanaki knew it came to an abrupt and violent end. Diseases, guns, and warfare threw a bloody shadow over the landscape. Less than a quarter of the Wabanaki population would make it out alive. Those hardy survivors turned again to their roots—to the stories that had sustained them from time immemorial and to the tree that had given them life so long ago. They turned, in short, to the basket tree.<sup>2</sup>

<sup>1</sup> Adapted from the *Algonquin Legends of New England* by Charles G. Leland, 1884.

<sup>2</sup> Bunny McBride and Harald E. L. Prins, *Asticou's Island Domain: Wabanaki Peoples at Mount Desert Island 1500-2000* (Northeast Region Ethnography Program, National Park Service, Boston, MA 2007), 110.

The Wabanaki began selling their baskets across towns and cities springing up across the New England frontier. Strong enough for hauling potatoes, Maine's new boom crop, and durable enough to carry wet fish scales discarded by the cosmetics industry, these baskets soon became integrated into the colonial marketplace. In turn, the marginalized Wabanaki received a vital source of revenue, thus guaranteeing their survival in an otherwise hostile landscape. That revenue stream continues to this day, but the large, utilitarian baskets of the 18th century represent a bygone era. Today's baskets, known as "fancy baskets," have shrunk in size and increased in ornateness to appeal to tourists. In recent times, people's perception of these baskets has shifted from token appreciation for a "folk" art to true appreciation for an art form.

The symbiotic relationship that has come to characterize the Wabanaki and the ash tree, however, has again come under threat. The tragic irony is how closely that threat mirrors the one faced by the Wabanaki hundreds of years ago—except this time it is not the Wabanaki standing at the brink of extinction but the ash tree. Like the Europeans who traveled across thousands of miles of vast and open ocean to reach the Americas, the emerald ash borer, a beetle that lays eggs in the bark of ash trees, hitched a ride from Asia about a dozen years ago, landing eventually in Detroit, Michigan. There, after wiping out 40 million ash trees in the mitten state, it headed east and has now been found in trees less than a half day's drive from Maine. This beetle, says David Manski, chief of resource management at Acadia National Park, is uncompromising: "The major concern is that if this species gets [here], it will ultimately kill all ash trees."

Fortunately, there is hope. Travelers, it turns out, have become unwitting agents in the emerald ash borer's grisly spread. On its own, the beetle cannot fly very far. Rather, it has been hitching rides, first from Asia to the Americas, and now from state to state via firewood. Acadia National Park staff have thus been urging all campers to leave their firewood at home.

Few understand the threat to the ash trees better than members of the Maine Indian Basketmakers Alliance. Created to mentor young and emerging basketmakers, this organization stands as a testament to the fact that ash tree bark remains the most viable weaving medium for the Wabanaki. But the larger truth is that the very lives of the Wabanaki and the ash tree have also become interwoven. History has told us that when one is weak the other must remain strong. Now, like adult children caring for elderly parents, the Wabanaki are urging everyone to take action now to save their earth mother. And, indeed, the power to save the ash tree and, by extension, the cultural heritage and economic livelihood of the Wabanaki people, rests with each and every one of us.

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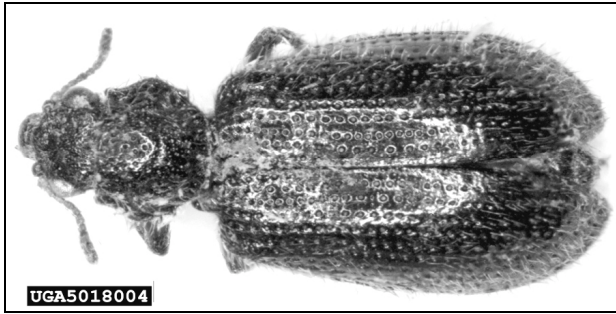
## Get Those Cameras Ready!

Spring will be upon us soon, and with it a chance to snap THE photo of a lifetime of your favorite insects. These will be needed, of course, for YOUR submission for the 2010 M.E.S. calendar! Warmer late winter days can bring out snow fleas, winter scorpionflies, and early stoneflies. March flies will be one of the first "real signs" of spring, in late March or April, as they appear on the outside of the house, particularly where they can bask in the sun. It's not too early to be planning on your photographic expedition as you plan the summer garden!

## Meet the Beetles

(Reprinted, with permission, from the December 12, 2008, issue of FROM THE FIELD, the Maine Dept. of Conservation newsletter)

A predatory beetle that likes to munch on hemlock woolly adelgid (HWA) was successfully released on Wednesday, Dec. 3, at the York Water District. Entomologist Allison Kanoti of the Maine Forest Service, Maine Department of Conservation, and Wayne Searles, MFS entomology technician, released about 500 individuals of *Laricobius nigrinus*, a tiny, black beetle sent from a Virginia Tech lab.



A specimen of *Laricobius nigrinus*.

It is expected that the *Laricobius* will get established and their descendants will help reduce HWA populations. HWA is an invasive insect that destroys hemlocks, a tree species that helps preserve Maine's water quality and one that is important to the woods industry. Biological control is the best hope for long-term control of HWA in Maine's forests.



Allison Kanoti releases *Laricobius* beetles in York.

The *Laricobius* were released at this time of year because it feeds during the winter months. Winters in southern and coastal areas in Maine are suitable for their survival, though a colder-than-average winter could hinder their establishment. The cost of the beetles was paid for by the federal government.

The HWA has been found in a number of locations in southern Maine. Local residents in the Kennebunkport area are

being asked to examine their trees for HWA signs and to report their findings to the Maine Forest Service.

To report HWA, call or email: Allison Kanoti, Maine Forest Service Insect and Disease Lab, 50 Hospital Street, Augusta, ME 04330; (207) 287-3147; Allison.m.kanoti@maine.gov. For more information, go to:

<http://www.state.me.us/doc/mfs/HemlockWoollyAdelgid.htm>

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*\*Although fairy shrimp are neither insects nor strictly terrestrial arthropods, the following article is presented with the expectation that at least some members of the M.E.S. community might find it of interest and value, and might be able and willing to assist in the survey.*

## Fairy Shrimp: Coming Soon to A Wetland near You?

By Mark Ward and Phillip deMaynadier

With spring approaching (one of these days!), we'd like to highlight one of the less widely appreciated joys of spring renewal—the resurrection of fairy shrimp in vernal pools throughout Maine—and to seek your help in tracking the distribution of this poorly understood group.

Fairy shrimp are crustaceans, like crabs and lobsters, but they don't share many other characteristics with our more familiar, marine crustaceans. They are small invertebrates, only 1.5 - 4 cm long (0.6 to 1.5 in), with stalked eyes, and swim conspicuously upside-down by synchronously beating their ten pairs of feathery swimming legs (Figure 1). Fairy shrimp are generally found in fish-free, temporary waters and belong to their own order (Anostraca) with most northeastern species belonging to the genus *Eubranchipus* in the family Chirocephalidae.

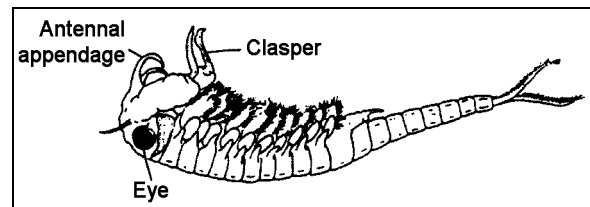


Figure 1. A male *Eubranchipus* fairy shrimp

In Maine, fairy shrimp eggs typically hatch in vernal pools in early spring (April–May), shortly after ice-out. Hatched eggs give rise to free-swimming juveniles that over a period of weeks undergo several molts to become reproductive adults. Males use specialized appendages known as claspers to grasp females and fertilize eggs within brood pouches located at the junction of the female's thorax and abdomen. Fertilized eggs are subsequently released into the water and fall to the pool bottom.

Adult *Eubranchipus* fairy shrimp can not tolerate warm waters (above ~70°F) and are typically not found in northeastern pools beyond May or June. Fairy shrimp eggs however can withstand both warm temperatures and desiccation at the bottom of a dried up vernal pool. Eggs may remain in diapause in the sediments for several years before hatching, perhaps explaining why adults may not appear every year. Fairy shrimp rely on the extended dormancy of their eggs for their survival and appear to use a bet-hedging strategy that allows some eggs to remain in

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### Fairy Shrimp Watch Request (cont.)

the sediment egg bank even while free-swimming adults are producing a new generation. The seemingly magical and unpredictable appearance of adult fairy shrimp gives rise to their name.

Because of their unique life cycle and limited dispersal ability, fairy shrimp are considered permanent residents of a vernal pool in which adults have been observed. Their presence is one of the criteria used to determine whether a vernal pool is “significant” and thus eligible for special habitat protections under the state’s Natural Resources Protection Act. Two species of fairy shrimp have been documented in Maine—the Vernal Fairy Shrimp (*Eubbranchipus vernalis*) and the Intricate Fairy Shrimp (*E. intricatus*). However, the Knob-lipped Fairy Shrimp (*E. bundyi*) is known to occur in Massachusetts, Vermont, and southern Canada and could well occur here as well.

Collection of fairy shrimp is not difficult. Specimens can be dip netted and preserved in either a 5-10% formalin solution or in alcohol (50% isopropyl or 70% ethyl alcohol). It’s preferable that some formalin be used to allow tissue fixation. Specimens stored in alcohol alone will over time become soft and easily damaged. Following tissue fixation in formalin, specimens can be stored indefinitely in 50% isopropyl or 70% ethyl alcohol.

Existing keys require males for species identification. So if you are collecting fairy shrimp, be sure that you collect some males to avoid frustration later! Males can be distinguished by antennal appendages on their heads that are absent in females (Figure 2). Mature females also often have visible brood pouches with eggs at the junction of the thorax and abdomen. The antennal appendages of *E. vernalis* are short and inconspicuous, while those of *E. intricatus* and *E. bundyi* are long, reaching to the end of the claspers, resembling curled elephant’s trunks or the blow ticklers popular at children’s birthday parties. Distinguishing between *E. intricatus* and *E. bundyi* is more challenging and involves examining the labrum on the ventral side of the head by placing the animal on its back. The labrum of *E. bundyi* is larger and includes a distinct tubercle at its anterior end.

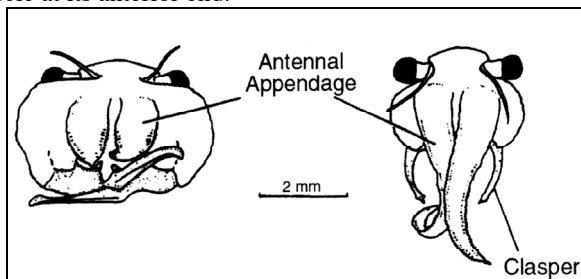


Figure 2. Heads of male *Eubbranchipus vernalis* (left) and *E. intricatus* (right)

Perhaps you remember a locale where you have seen fairy shrimp in the past or you have collected specimens that you haven’t yet identified. If so, then the Maine Dept. of Inland Fisheries and Wildlife would appreciate your assistance as it assembles a database of fairy shrimp occurrences in an effort to better understand the status and distribution of this cryptic group. Reports of pools where shrimp have been observed should include detailed location descriptions (preferably with GPS coordinates), observation dates, and a brief description of the habitat. Collected specimens should include town, date of

collection, location (again coordinates preferred), collector, and identification information (optional). Please send your data and carefully packaged specimens to Mark Ward (28 Poor Farm Road, Bristol, Maine, 04539) or Phillip deMaynadier (MDIFW, 650 State St, Bangor, Maine, 04401). Thank you for your help!

### Acknowledgments

We appreciate contributions to the state’s fairy shrimp database by Robert Baldwin, Rusty Brann, Aram Calhoun, Amy Lemelin, Jennifer Lund, Bridie McGreavy, Gordon Moore, and Damon Oscarson. Funding for Maine state invertebrate surveys and conservation is made possible by contributions to the Nongame and Endangered Wildlife Fund, supported by proceeds from the Loon License Plate and Chickadee Check-off.

### Sources Consulted

- Smith, D. G. 2000. Keys to the Freshwater Macroinvertebrates of Southern New England. 243 pp. Available from Douglas G. Smith, 30 Montague Road, Sunderland, MA 01375 (dgsmith@bio.umass.edu).
- Colburn, E.A. 2004. Vernal Pools: Natural History and Conservation, MacDonald & Woodward Publishing, Co. Blacksburg, VA 426 pp.

### You Can’t Know Them ALL!

There are over a million named species of insects, and over 90,000 spp. of insects so far described, just in North America.

## Acadia N. P. Announces Research Fellowship Program Opportunities

The application period for two Acadia National Park Research Fellowship Programs has opened. To facilitate and encourage scientific research at the park, the following grant opportunities are being offered in 2009:

The L. L. Bean Acadia Research Fellowship: L. L. Bean, Inc., has generously donated \$25,000 to Friends of Acadia to support field research at any location within Acadia National Park in the physical, biological, ecological, social, and cultural sciences. Grants of up to \$5,000 each will be awarded to proposals that address the park’s significant natural and/or cultural resources, the experiences of visitors and local residents who use the park, and the peoples who have lived in the Acadia region.

The Schoodic Research Fellowship: Acadia Partners for Science and Learning has generously donated \$10,000 to support field research at the Schoodic section of Acadia National Park in the physical, biological, ecological, social, and cultural sciences. The intent of this fellowship is to expand the number of funded research projects being conducted on the Schoodic Peninsula and to bring more scientists to the Schoodic Education and Research Center campus. Grants of up to \$5,000 each will be awarded.

Both fellowship programs are open to undergraduate and graduate students, college and university faculty, state and federal agency scientists, private-sector research professionals, and others with appropriate backgrounds and credentials. Please distribute this announcement to others who may be interested.

Grant proposals are due by February 15, 2009.

The grant application instructions and guidelines for these two Research Fellowships at Acadia National Park may be  
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**Acadia N.P. Research Fellowships (cont.)**

found online at:

<http://www.nps.gov/acad/naturescience/sercresearch.htm>

If you have any questions, please do not hesitate to contact me.

David Manski  
Chief, Division of Resource Management  
Acadia National Park  
P.O. Box 177  
Bar Harbor, Maine 04609  
207/288-8720 (voice); 207/288-8709 (fax)  
david\_manski@nps.gov

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**Humboldt Institute at Eagle Hill Announces  
Summer Workshops**

The Humboldt Institute is once again offering a host of summer natural history and scientific illustration workshops at their facilities in Steuben, between Ellsworth and Milbridge. A full schedule can be found at

<http://www.eaglehill.us/programs/nhs/nhs-calendar.shtml>

Particular workshops that might be of interest to M.E.S. members would include:

- May 31-Jun 6: Aquatic Insects and Odonates of Coastal Maine - with Frederick H. SaintOurs, Jr.
- Jun. 21-27: Invertebrate Indicators of Marine Coastal Communities - with Tom Trott and Robert E. Knowlton
- Jul. 12-18: Spiders: Diversity, Ecology, and Biology - with Mathias Foellmer
- Jul. 19-25: Beetles: Sampling, Biology, Identification, and Systematics of Coleoptera - with Donald S. Chandler
- Aug. 9-15: The EPT Taxa: Taxonomy and Biomonitoring: Ephemeroptera, Plecoptera, and Trichoptera - with Steven K. Burian

Information on lodging options, meals, and costs may be found at

<http://www.eaglehill.us/programs/general/application-info.shtml>

There is also an online application form at

<http://www.eaglehill.us/programs/general/application-web.shtml>

Descriptions and syllabi are available. Please let them know if you have any questions. Prior discussions of personal study objectives are welcome.

Humboldt Institute  
P.O. Box 9  
Steuben, ME 04680-0009  
Ph. 207-546-2821, Fax 207-546-3042  
E-mail: office@eaglehill.us

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**Is the following species to be found on the Maine coast?  
Only careful looking will find it if it is!**

**Carabid Beetle Rediscovered in Massachusetts  
After More Than 100 years**

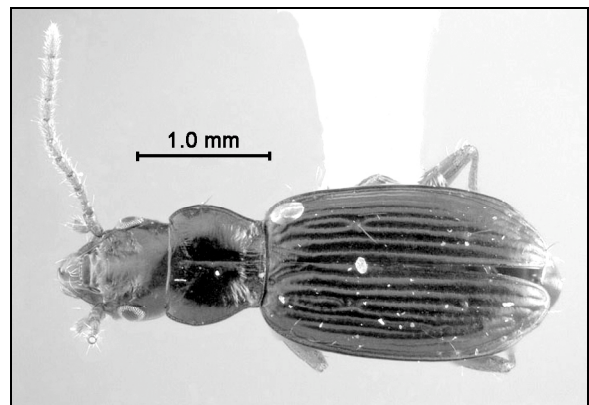
by Jessica Rykken (with comments by Bob Davidson)  
(this piece appeared first in the Vermont Ent. Soc. newsletter)

This story begins in 1897, when R. Hayward published a paper describing a new species of ground beetle, *Bembidion puritanum*, collected in "Massachusetts." A more precise location was not provided on the labels, and the mysterious

beetle proved elusive to New England carabid enthusiasts over subsequent decades, despite their interest in finding it again.

Then, in 1980, after viewing the *B. puritanum* specimens in the collections of the Museum of Comparative Zoology (MCZ) at Harvard University, Erwin and Kavanaugh (1980) realized that *B. puritanum* was actually a junior synonym of the European species *B. nigropiceum* (Marsham), and that the beetle had possibly been introduced from coastal England during the 1800's. These authors concluded: "If *B. nigropiceum* became established and still survives in North America, we suggest it be looked for in natural areas adjacent to harbors that received ships in the 1800's. Unfortunately, such natural areas may now be difficult or impossible to find." [NOTE: Lindroth himself, in his monumental work on the Carabidae of Canada and Alaska, did not recognize that this species was a European introduction, probably because it is rare and local even in Europe and is not known from the Scandinavian countries, and also possibly because it does not occur in Canada and he therefore did not give it too much attention. It remained something of a holy grail for us New England carabidologists throughout my sordid youth in Vermont.--Bob Davidson]

Fast forward 27 years to 2007, to a natural area within a historic harbor in Massachusetts, namely, the Boston Harbor Islands national park area. This is the site for an All Taxa Biodiversity Inventory (ATBI), now in its fourth year of inventorying insects and other invertebrates on the islands. As part of this effort, we have been sampling intensively on several islands a year, and this includes setting pitfall traps, malaise traps, bee bowls, and light traps. Also essential to our effort have been the taxonomists who have generously donated time and expertise to the overwhelming task of putting names to many of our collected specimens. Two such generous individuals, Bob Davidson, from the Carnegie Museum of Natural History, and his mentor Ross Bell, have spent many hours identifying over 120 species of carabid beetles for the project.



***Bembidion nigropiceum* - is it to be found in coastal Maine?**

Last year, in a batch of beetles I brought up to Ross and Bob at UVM, Bob got excited over a few of the tiny *Bembidion* specimens we had collected in a pitfall trap set in beach gravel on one of the islands. He immediately thought they might well be the elusive *B. nigropiceum*, and brought them back to Pittsburgh to compare against some closely related species. This spring, he and Bob Acciavatti made a road trip up to the MCZ, and he was able to compare our specimens with the

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### *Bembidion nigropiceum* (cont.)

originals in the MCZ collection—they were a match. Hot on the trail, we arranged a field trip to Thompson Island where we had collected the beetles the previous year.

It's not often that you lead a carabid specialist to a holy grail. We found LOTS of specimens on the beach where small gravel had been piled into shelves by the tides, and the Bobs aspirated beetles (and gravel) for several satisfying and triumphant hours.

[NOTE: For future efforts, these beetles should be searched for all along the New England mainland coast wherever there are gravel beaches, especially areas down-current from Boston Harbor. The gravel is relatively coarse, but not cobble-sized, varying from pea-size to ping pong ball. The beetles are wingless and probably slow to disperse, but presumably travel well in drift. The habitat (except occasional strays) is a very narrow band (hence probably their rarity in collections) no more than a couple of feet wide, but this band may run the entire length of a gravel beach. This band is right about at the high tide mark where the waves have pushed up a mound or pyramid of damp gravel. Between water line and this mound, and on the drier beach shoreward from this mound, and even on the dry top and sandy bottom of this mound, few (if any) beetles are found. But in between the dry top and sandy bottom, in the damp interstices of the loose gravel, beetles forage and can be quite abundant.--Bob Davidson]



Searching for the elusive *Bembidion nigropiceum* along the high-tide line, on one of the islands in Boston Harbor.

Over the summer, we have continued the search for *B. nigropiceum*. We found one population on a smaller island, Rainsford, and we also recruited some teens who volunteer for the National Park Service to look for beach-dwelling beetles on other islands. They didn't have any luck finding *Bembidion nigropiceum*, but with a more concerted effort both on the islands and perhaps on nearby mainland beaches, we expect to find more populations.

Whether or not these populations descend from the original one described by Hayward in 1897, or they descend from more recent reintroductions remains unknown. [NOTE: That is, it cannot be PROVEN that these populations descend from the same introduction as Hayward's specimens; but given their elusive nature even in their homelands, their winglessness and slow dispersal rate, the narrow habitat zone, and the paucity of collectors, it is likely that they have been here all along, introduced sometime probably well before 1897.--Bob Davidson]

The beetles are flightless, so transportation between the islands in the last hundred years has been opportunistic. One thing does seem clear: the rediscovery of *B. nigropiceum* highlights yet another benefit of conducting local biodiversity surveys—in amongst the cabbage whites and Asian lady beetles, there are exciting discoveries to be made!

For more information about the Boston Harbor Islands ATBI (including a database with images and a summary of research on the distribution of carabid species across the islands), go to:

[http://insectdatabases.oeb.harvard.edu/boston\\_islands/index.htm](http://insectdatabases.oeb.harvard.edu/boston_islands/index.htm)

#### Key Pertinent References

- Erwin, T. L., and D. H. Kavanaugh. 1980. On the identity of *Bembidion puritanum* Hayward (Coleoptera: Carabidae: Bembidiini). The Coleopterists Bulletin 34(2):241-242.
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Jessica Rykken, Department of Entomology, Museum of Comparative Zoology, Harvard University, Cambridge MA 02138, with interpolations by Robert L. Davidson, Section of Invertebrate Zoology, Carnegie Museum of Natural History, 4400 Forbes Avenue, Pittsburgh PA 15213-4080

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### What's In A Diet?

by Dick Dearborn

Animal dung, feces or poop so-called would not be my choice, but some very interesting beetles feed and breed in it! Fascinating? You ought to check it out as we have some very unusual dung beetles in Maine. Back in this newsletter in 1999 (vol. 3, no. 3, p. 4), I wrote a brief piece on beetles in dog feces. Since then I have continued with my observations and have been well rewarded, as I have had an abundance of livestock around. I have found many species, but some of my favorites are: the larger *Copris fricator* (20 mm) and *Geotrupes stercorarius* (25 mm) and smaller (10 mm) species of *Bolboceras*, the males of which have distinct and different horns.

It would be fun to see just how specific the food range of each is. And you can use the results of your experiments to make your garden grow!!

\* \* \* \* \*

### A Natural, Alternative Insect Repellent to DEET

Isolongifolenone, a natural compound found in the Tauroniro tree (*Humiria balsamifera*) of South America, has been found to effectively deter biting of mosquitoes and to repel ticks, both of which are known spreaders of diseases such as malaria, West Nile virus, and Lyme disease.

Derivatives of isolongifolenone have been widely and safely used as fragrances in cosmetics, perfumes, deodorants, and paper products, and new processing methods may make it as cheap to produce as DEET.

The results of this research to be found on p. 100-106 of the January, 2009, issue of the *Journal of Medical Entomology* in an article by Aijun Zhang *et al.*, titled "Isolongifolenone: A Novel Sesquiterpene Repellent of Ticks and Mosquitoes."

### The Real Killer Insects!

Arguably, the most dangerous insects in the world are mosquitoes, which pass on a parasite causing malaria, as well as the diseases dengue fever, yellow fever, West Nile Virus and certain types of encephalitis. Malaria alone kills a million people a year, and other mosquito-spread diseases kill another million, making mosquitos far more deadly than venomous snakes, fish, toads, frogs, scorpions, and spiders combined!

Some mosquito trivia:

- ☛ There are over 3,000 species of mosquitoes worldwide.
- ☛ Mosquito eggs can survive for more than five years before hatching.
- ☛ One female mosquito can lay over 200 eggs at a time.
- ☛ Only female mosquitoes bite and draw blood, seeking protein needed for eggs. Males feed on plant nectar and non-animal sources.
- ☛ Not all mosquitoes will bite people; some prefer birds, or horses, even frogs and turtles.
- ☛ All mosquitoes need water to complete their life cycle.
- ☛ An individual mosquito typically weighs 2.0-2.5 milligrams; that means there are 12,000-14,000 mosquitoes per ounce!
- ☛ Mosquitoes can only fly at 1-1.5 miles per hour.
- ☛ Mosquitoes find hosts by sight, infrared radiation (heat) and chemical signals, particularly carbon dioxide from the skin.
- ☛ Mosquitoes are the primary food for many species of birds and bats. One bat can eat 200 mosquitoes a night, and many birds eat hundreds of mosquitoes daily.

*The red admiral butterfly can distinguish sugar solutions 200 times more dilute than the human tongue can taste.*

### COMING M.E.S. EVENTS in 2009:

(See <http://www.colby.edu/MES/> for more detailed information.)

- |                    |  |
|--------------------|--|
| 23 May, 2009       | M. E. S. Field Day, Wells National Estuarine Research Reserve at Laudholm Farm (York County) |
| 20 June, 2009      | M. E. S. Field Day, Rangeley Lakes area (Franklin County)                                    |
| 18 July, 2009      | M. E. S. Field Day, Augusta  |
| 7-10 August, 2009  | Minor Order BioBlitz, Schoodic Point, Acadia N.P.  |
| 12 September, 2008 | Annual Meeting, Rock Ridge, Clinton  |
| 16 September, 2009 | Bug Maine-ia at Maine State Museum<br>Wednesday, from 9 a.m. to 3 p.m.                       |

**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 2009! *Treasurer Dana Michaud's name and mailing address are at the bottom of this 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 "2008", please contact Dana to renew for 2009 or correct the record.

*The compound eye of a housefly has more than 4,000 lenses.*



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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