

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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May, 2007



President's Corner by Dick Dearborn

Driven by a touch of spring fever this past week, I decided to make a circuit around the farm, accompanied by my rotweiler dog and two orange cats, to see what I could find. To my surprise, I found that our snowy spring had not held things back as far as I thought. A woodland stand of daphne was just past peak bloom, pussy willows were yellow, and cherry and shad bush buds were beginning to break. I spotted my first mosquitoes, small sawflies, and tent caterpillars in their nests. All this and more as I looked around. Spring has indeed come, and with it another field season, with all of its opportunities. So, welcome back.

Of course, for most of you the fascination with nature has never stopped but simply changed form. I'm reminded of messages I received this spring from one of our newer and enthusiastic young members, Brandon Woo, who began collecting and documenting new Maine distribution records in the field for this season more than a month ago. And learning of efforts during the often leaner winter months by Charlene Donahue, Dana Michaud and Dave Bourke in processing a volume of unidentified beetle material at the Entomology Lab in Augusta, which resulted in a number of new state records which were confirmed by Dr. Donald Chandler at UNH. There are so many new discoveries to make and things to share that one never needs to be bored!

Looking ahead, I see a very busy season for MES, including targeted events on both spiders and butterflies in July, as well as four general field events beginning in May and concluding with our Annual meeting and Bug Maine-ia in September. And many sister groups are also looking for our support as well. This issue of *The Maine Entomologist* is packed with great articles and notes. So take a moment to sit down with your planner or MES calendar, read this issue for events of interest and circle those items which appeal to you. Many of these items evolved from membership discussions and deserve your support. As the season progresses, also keep us in mind for future events and relay these to a board member. Support MES by attending our events, keeping your dues paid up, writing items for this newsletter and buying our calendar. Our membership stands at 147 and only through your support can we continue to remain vital and strong.

Stay tuned. See you in the field.

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The Nature and Value of Insect Voucher Specimens by Dick Dearborn

Vouchers provide stability and validity to published records but yet their significance is often overlooked. When discussions on the subject of vouchers do arise the result is unfortunately more often heat than light. The need to resolve this dilemma becomes even more critical as faunistic surveys become more common and the number of taxonomists declines. To get a dialog started I offer the following points to consider.

The nature of a voucher. In the biological sciences, a voucher is a specimen(s) or more rarely a photograph providing documentation, substantiation, evidence or proof in an archival context in support of a published species record. In entomology a voucher is nearly always a specimen(s) which is stored in a designated collection where it can be retrieved for future reference. Here is the point of contention for many. Why not a researcher's word for it or why not a photograph? The identification of insects is a complex process often involving characters found on a variety of aspects, dorsal as well as ventral, external as well as internal, etc. and often only visible microscopically. A photograph or the memory of a collector would be of little use here should the record be contested or a need arise to go back to the record in the future. For example; in one group of carabid beetles that I know of in particular, recent studies have shown that what was thought to be one species is actually six or more species! In such a case it would be necessary to go back to voucher specimens to get a correct identity for published records. With vouchers, previously published records could, however, be corrected. And this can mean notable differences in habits and habitats of (*cont. on p. 4*)

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Are YOUR dues paid for 2007? If not, this will definitely be your LAST issue of the newsletter until they are! See the back page for relevant information and the Treasurer's mailing address.

MAINE'S SPIDER FAUNA

by Daniel T. Jennings, Charlene Donahue,
and Jonathan Mays

Number of taxa—Maine has a rich, diverse spider fauna; rich in number of families, genera, and species; diverse in population densities, associated habitats, and geographic distributions. Relatively little was known about this rich, diverse fauna until recently; earlier faunal surveys in the state concentrated chiefly on insects and other invertebrates (e.g., Procter 1946). Although a few non-resident spider taxonomists and ecologists visited and collected spiders in Maine, their forays were infrequent and mostly in the late 1800s to early 1900s.

Early collectors of Maine spiders included James H. Emerton, Elizabeth B. Bryant, and Irving H. Blake. Species distribution records indicate that Emerton collected spiders from several regions of the state; Bryant concentrated on the fauna in the Portland area including Long Island; Blake included a few spiders among the organisms he inventoried during ecological studies of Mt. Katahdin and the University Forest at Orono. Locality records of the spiders collected by these early workers were published in the araneological and ecological literature.

During the 1920s to mid 1940s, William Procter and his associates included spiders among the invertebrates inventoried in the Mount Desert Region of Hancock County, Maine. Procter's cumulative list published in 1946 represents the first, most comprehensive faunal inventory of spiders in the state; albeit, earlier species records can be found in the literature. For years, his list of 15 families, 94 genera, and 179 species remained the only extensive inventory of spiders for any particular area or region of the state.

Despite the paucity of early efforts, some indication of Maine's spider-faunal richness has been gained within the past 30 years. Such advances are due largely to the cooperative and collaborative efforts of graduate students, professors, co-workers, colleagues, family, and friends. To date, **37 families, 222 genera, and 600 species** have been collected or recorded from the state. In addition, 52 morphospecies remain to be identified, and possibly include new species.

By comparison and on a regional basis, Kaston (1981) listed spiders of 30 families, 218 genera, and 478 species for Connecticut; Paquin and Dupérré (2003) listed spiders of 30 families, 222 genera, and 617 species for Québec; Pickavance and Dondale (2005) listed spiders of 22 families, 155 genera, and 363 species for Newfoundland.

Common families—Spider families can be grouped into two basic guilds based chiefly on their foraging strategy, i.e., web spinners and hunters. Although some members of web-spinning families (e.g., Linyphiidae, Agelenidae, and Hahniidae) may forage off of the web, other members of these families are sedentary (Uetz *et al.* 1999).

Common web-spinner families in Maine include: the AGELENIDAE (funnel-web spiders), AMAUROBIIDAE (hackled-band weavers), ARANEIDAE (orb-web spiders), DICTYNIDAE (mesh weavers), HAHNIIDAE (hahniids), LINYPHIIDAE (sheet-web weavers), PHOLCIDAE (cellar spiders), TETRAGNATHIDAE (long-jawed orb weavers), and THERIDIIDAE (comb-footed spiders). Common hunter families in Maine include: the CLUBIONIDAE (sac spiders), GNAPHOSIDAE (ground spiders), LYCOSIDAE (wolf spiders), PHILODROMIDAE (long-legged crab spiders), PISAURIDAE

(nursery-web spiders), THOMISIDAE (crab spiders), and SALTICIDAE (jumping spiders).

Six of Maine's spider families are represented solely by immigrants, i.e., species accidentally introduced, or invasive, or deliberately imported (e.g., tarantulas). These families include: CTENIDAE, DYSDERIDAE, HETEROPODIDAE, SELENOPIIDAE, SICARIIDAE, and THERAPHOSIDAE. At least five additional families are known to have species elsewhere in New England or in southeastern Canada, and possibly occur in Maine; the ANTRODIAETIDAE, ATYPIDAE, HYPOCHILIDAE, OONOPIDAE, and PRODIDOMIDAE.

Interestingly, one of Maine's 37 spider families (MYSMENIDAE) is represented solely by a male of an undetermined genus and species. This seemingly rare species was sent to Dr. Herbert W. Levi of the Museum of Comparative Zoology (MCZ), Harvard University. He concluded that the genus and species are unknown. The specimen now resides in the arachnid collections at MCZ.

Habitats sampled—Spiders are found in virtually all terrestrial habitats from seashores to mountain summits (Turnbull 1973); hence, the likelihood of finding spiders in Maine is somewhat limitless. Because Maine has a rich diversity of habitats, and habitat diversity contributes to spider-faunal richness, efforts have been made to visit and sample spiders in as many habitats as time and resources permitted. The diversity of sampled habitats include: managed and unmanaged forests; conifer plantations; mature deciduous-, coniferous-, and mixed-tree forests; foliage and bark of individual tree species (e.g., *Abies balsamea*, *Picea glauca*, *Pinus banksiana*); vegetation of old fields, gardens, and roadsides; sand and cobble beaches, coastal and inland ledges; coastal backshores; maritime slope bogs; roadside cliffs and ledges; vernal pools; low-bush blueberry and potato fields; cranberry and *Sphagnum* bogs; shores of lakes, rivers, and streams; freshwater, saltwater, and brackish marshes; gravel and mixed gravel-sand pits; abandoned mines; mountain summits; and man-made structures.

Despite this broad range of habitats examined for spiders, numerous habitats remain to be visited and inventoried. For example, other than selective species of conifers, few of Maine's deciduous-tree species have been examined for spiders, and especially spiders associated with upper crown levels. Likewise, old growth forests, Atlantic white-cedar lowlands, high altitude-shrub forests, sub-alpine meadows, talus slopes, caves, fens, cattail swamps, and many other habitats remain to be inventoried for spiders. Of particular interest are the critical areas identified earlier by Maine's Critical Areas Program, now part of Maine's Natural Areas Program.

Diverse methods of sampling and strata sampled have included: pitfall trapping in ground litter and duff; sifted and unsifted litter processed by Berlese funnel; extraction of litter-duff spiders by expellant; brushing tree boles and wrapping trunks with burlap bands; excising samples of tree bark; searching surfaces of rocks, logs, stumps, and ground debris; sweeping and beating limbs and foliage of herbs, shrubs, and small trees; and clipping lower and mid-crown branches of mature conifers.

Faunal inventories—Spiders have been collected in all 16 counties of Maine; however, the degree of coverage has varied widely depending on location and available resources. The inventories have been spotty at best, thus yielding a patchwork of

data and information about spider species distributions. Particular studies have addressed the spiders associated with spruce-fir forests in central and northern Maine, pitch pine-scrub oak forests in southern Maine, and low-bush blueberry fields in “downeast” Maine. Counties poorly represented by collected specimens include: Androscoggin, Franklin, Lincoln, Oxford, Sagadahoc, and Somerset. Few of Maine’s offshore islands, cranberry bogs, and mountain summits have been examined for spiders.

No attempt has been made to collect spiders in all of Maine’s minor civil divisions; however, to date Milbridge is by far the most intensively and extensively collected area within the state, yielding some 302 species (Jennings & Graham *in press*).

Checklist status—A preliminary checklist of Maine spiders was compiled by the senior author in December of 1999. This early checklist included some 586 species of spiders, some of which were morphospecies. The database program Biota© was then purchased and data entries begun for each collected specimen. These entries included: collection locality (state, county, town or township, GPS coordinates); date of collection; collection method (e.g., sweeping vegetation, beating tree foliage); associated habitat; and collector’s name. Some 24,350 specimen records were entered before outside assistance was received.

In the fall of 2006, representatives of the Maine Forest Service and the Maine Department of Inland Fisheries & Wildlife mutually offered to provide data entry assistance. Copies of the existing data file were shared with both state agencies which subsequently provided financial and logistical assistance to continue data entries for a considerable backlog (~25,000-50,000) of collected specimens. Mary Tomlinson was hired as a data entry technician and has been working diligently entering specimens into the database. The ultimate goal is a published checklist of Maine spiders that includes data-collection summaries for each species. Maine’s estimated spider faunal richness most likely exceeds 700 species!

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- Uetz, George W., Juraj Halaj, and Alan B. Cady. 1999. Guild structure of spiders in major crops. The Journal of Arachnology 27: 270-280.

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For a whole bunch of links to web sites on various aspects of spider biology, go to <http://tinyurl.com/yugcru>. (This is not the actual web link, but a shortcut that will take you there!)

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Tick, tick, tick ... Ticks in Maine – 2007

(Hard ticks – Family Ixodidae)

Chuck Lubelczyk forwarded on this guide to the hard ticks (family Ixodidae) in the state of Maine, from a flyer produced by the Maine Medical Center Research Institute, Vector-borne Disease Laboratory. I know last summer was the first time I've gone into the woods anywhere north of Waterville and come back with ticks - ranges are expanding!

So, forewarned is fore-armed! - BN

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Ixodes scapularis (previously *Ixodes dammini*), the “deer tick”, also called the “black-legged tick”, is the principal vector of the Lyme disease spirochete in the northeastern United States. At some sites in Maine, particularly in southern coastal areas, over half of the adult ticks contain spirochetes, although infection rates vary considerably, even in adjacent areas. Infection rates of questing nymphs are typically somewhat lower. Immature stages feed on small mammals such as mice, while adult ticks prefer deer, but all stages may feed on humans and domestic animals. Although rare in Maine, the agents of two other infectious diseases, human granulocytic anaplasmosis and babesiosis, may also be found in this species of tick. Although male deer ticks can be infected, they do not engorge with blood and are therefore not thought to be vectors of Lyme disease.

Ixodes cookei, the “woodchuck tick” is widely distributed in Maine and is the second most common species of Ixodes found. It has not been associated with Lyme disease transmission. *Ixodes cookei* usually feeds on wild animals, such as woodchucks and raccoons, but will also feed readily on humans and domestic animals. This tick is known to be a vector of Powassan virus. Rare cases of encephalitis have occurred in Maine in people infected with Powassan virus.

Ixodes marxi, the “squirrel tick”, has not been associated with Lyme disease. It is commonly found on squirrels but will occasionally bite humans.

Ixodes muris is occasionally found in Maine. Usually it is found only on voles and mice, but it may bite humans, cats, dogs, and birds. A recent report indicates that I. muris is a weak vector of Lyme disease. We have associated its bite with a reaction in dogs, cats and other domestic animals characterized by pain, swelling, fever, lethargy and loss of appetite. If this reaction is observed we are very interested in receiving the tick alive and with relevant information.

Ixodes angustus is usually found only on voles and mice and is common in many parts of Maine, but it is very rarely found on humans or domestic animals

Dermacentor variabilis, the “American dog tick”, is not a vector of Lyme disease. This tick is particularly abundant in southwestern Maine but its range has been expanding in recent years. Immature stages feed on voles and other small rodents, but adults are often found on humans, dogs, and other domestic animals. The adults, found from May through July and rarely later in the season, are larger than Ixodes ticks and can be distinguished by characteristic white markings. This tick is the vector of Rocky Mountain spotted fever in the eastern United States. There have not been cases of Rocky Mountain spotted fever reported from Maine.

Dermacentor albipictus, the “winter tick” or “moose tick”, is found on moose and deer and occasionally on horses, cows, dogs

and humans, particularly in central and northern Maine. Large numbers of the tiny larvae may be encountered in the fall, particularly in habitat where moose are found. This tick has not been associated with Lyme disease.

Haemaphysalis leporispalustris, the "rabbit tick", is usually found only on rabbits and birds. Although it has rarely been reported to be infected with the Lyme disease bacteria, it has not been associated with Lyme disease in humans.

Amblyomma americanum, the "Lone Star tick", is most often found on people traveling from states to the south where it is very common, but is becoming more frequently acquired in Maine. It has been shown to carry a different spirochete, which in humans may produce a rash and some symptoms similar to Lyme disease.

Rhipicephalus sanguineus, the "brown dog tick" or "kennel tick", is distributed worldwide, but only rarely found in Maine. Dogs are the principal host. It has not been associated with Lyme disease transmission, but is the vector of canine ehrlichiosis (*Ehrlichia canis*).

Other species of *Ixodes*, including *I. brunneus*, (found on migratory birds), *I. dentatus*, (found on rabbits and hares), *I. uriae*, (found on marine birds) and *Ixodes gregsoni* (found on mink, weasel and marten) have occurred in Maine. Neither the "bird tick" *Haemaphysalis chordeilis*, nor *Ixodes banksi* (found on beaver and muskrat) have yet been found in Maine but may occur here. There is no record of soft ticks, family Argasidae, in Maine.

Elsewhere in the country, ticks may carry other diseases such as Rocky Mountain spotted fever, tularemia, and Q-fever. As yet, these have not been reported or are rare in Maine.

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Value of Voucher Specimens (cont. from p. 1)

the species. For faunistic studies this could be critical.

Placement of voucher specimens. Although private collections can serve for storage, a more permanent collection would be best for unique specimens. For Maine such permanent collections could include but not be limited to: the Entomology Lab in Augusta, the Proctor collection in Bar Harbor (for Acadia N.P. species) or with The MDDS (for odonates), etc.

Labelling voucher specimens. Voucher specimens **must** be accompanied by adequate data. [See *The Maine Entomologist* vol. 6, no. 1, pp. 1, 4 & 5 for details.] Copies are available upon request.

There are many other issues to be discussed on this subject such as how many specimens constitute a valid voucher and in regional surveys, how many specimen records are needed over any given geographical area so as to give valid distributional data (e.g., 1 record or more per township, etc.). Also of concern is the impact of specimen removal from any given ecosystem. Most entomology texts will give at least some discussion to these issues. For those just partaking of this discourse for the first time I suggest that you read the brief account in the recent big book on insects by S. A. Marshall (*Insects: Their Natural History and Diversity: With a Photographic Guide to Insects of Eastern North America*), Chapt. 14, pp. 608 – 614 esp. pp. 613 & 614.

Your comments will be appreciated.

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June 24-30, 2007, has been designated **National Pollinator Week** by the U. S. Department of Agriculture, by way of U.S. Senate Resolution 580. In a declaration signed last January 24th, Governor Baldacci declared the same week Pollinator Week in Maine.

2008 Calendars - already?

Get those cameras out and snap the GREAT photos you'll want to submit for next year's calendar! (And see Chuck Peters' Tech Tips for good photography starting on p. 8!)

Calendar photos must be of entomology-related subjects and either taken at Maine events or include arthropod species which either occur in Maine or could be found here. We are especially interested in seeing new taxa represented, and final selections will be based in part on a good balance of subject matter.

Please submit only unpublished photographs. All images should be digital and submitted on a CD (JPG format preferred). The photos should be "landscape" orientation and of sufficient resolution that they will retain clarity when enlarged to 8x10 inches. Photos should be accompanied by species identification (as close as possible) with date, location and host, if applicable, and should be received by July 15th, 2007. Accepted photos will be used only once, in the M.E.S. calendar.

Please submit photos to: Richard Dearborn, 115 Spring Hill Road, Mt. Vernon, ME 04352-3406; call (207) 293-2288 with any questions.

The Acadian Entomological Society (A.E.S.) will hold its annual general meeting on June 10th-June 12th, 2007, at St. Mary's University, Halifax, Nova Scotia. The meeting theme will be 'Take A Closer Look'. More information is available via the M.E.S. web site. If you have questions, contact Dr. Suzanne Blatt at suzanne.blatt@acadiau.ca.

ARACHNACADIA NEEDS YOUR HELP!



Please join us July 20–23 for the fifth annual **Schoodic BioBlitz**. This event, held at Acadia National Park's Schoodic Education and Research Center, seeks amateur and professional entomologists to participate in an intense weekend effort to collect, identify, and catalog the biodiversity of the Schoodic Section of Acadia National Park. This year's blitz will focus on spiders and is sure to be a fun and interesting weekend, and at the same time will generate important natural resource information for Acadia National Park. For more information and registration instructions, please see the MES website (<http://www.colby.edu/MES/>) or the Schoodic Education and Research Center website:

(<http://www.nps.gov/acad/naturescience/spiderblitz.htm>).

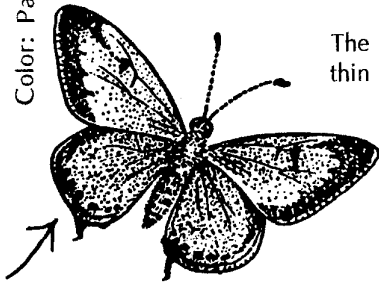
Registration deadline is June 22nd.

Order: Lepidoptera (Butterflies & Moths)

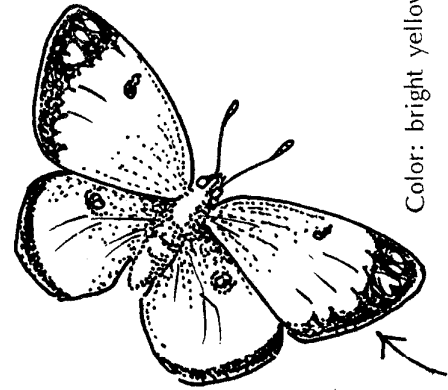
(lep-ih-DOP-ter-ah)

Eastern Tailed Blue Butterfly

Color: Pale blue.



The antennae of most butterflies are thin and thread-like.

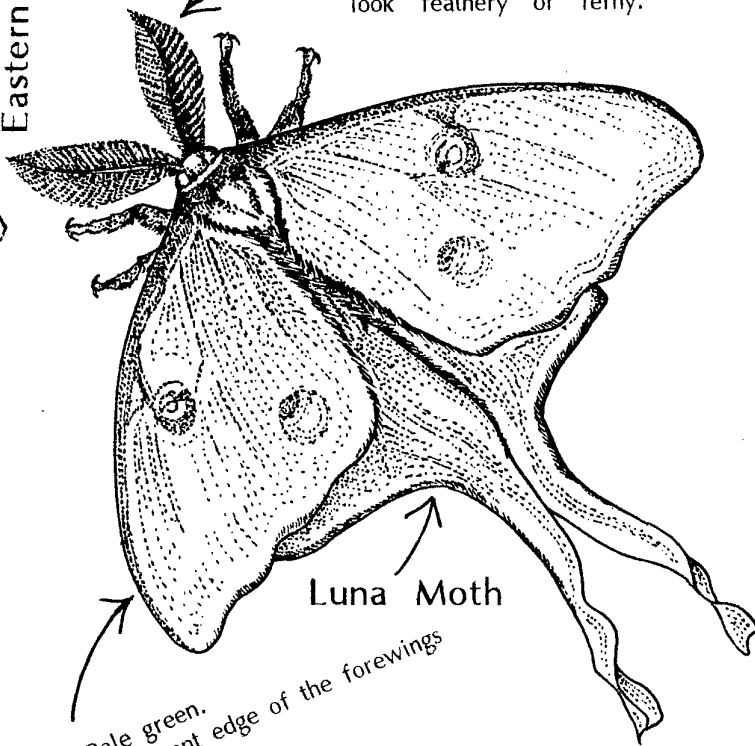


Color: bright yellow.

Common Sulphur Butterfly

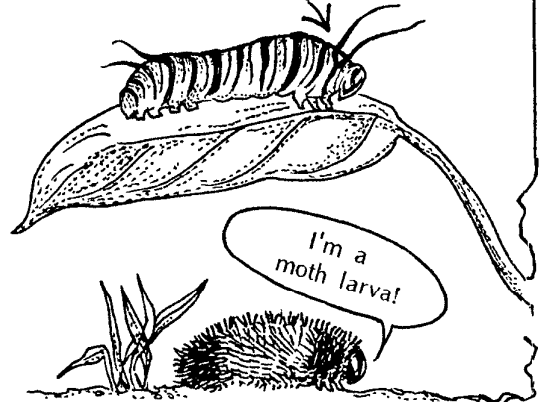
The antennae of most moths look "feathery" or "ferry."

Butterfly larvae (caterpillars) are usually smooth.



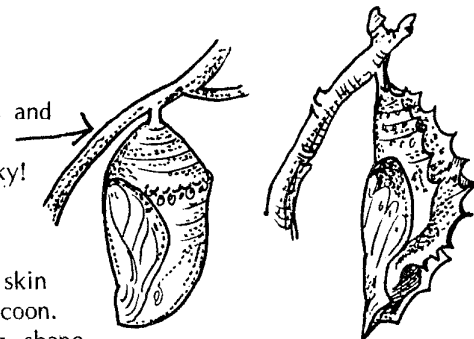
Luna Moth

Color: Pale green. The front edge of the forewings is purple.



The larvae (caterpillars) of some moths are very fuzzy.

The larva of a butterfly sheds its skin and develops into a pupa (a chrysalis). The chrysalis can be smooth, or spiky!

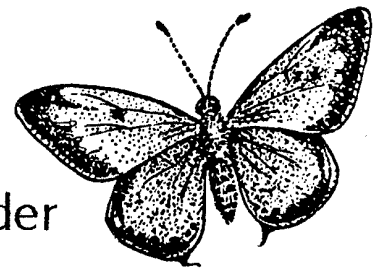


A moth larva (caterpillar) sheds its skin and develops into a pupa inside a cocoon. The cocoon can be a neat fuzzy egg-shape or wrapped up in a leaf, like a small brown package. The larvae uses silk to make the cocoon, or to hold it together tightly. (Silk is very strong!)



M. Russo, 2006

Order: Lepidoptera (Butterflies & Moths)



Word-Finder

Look for these words:

- Butterfly (there's 2)
- Moth (there's 3)
- Caterpillar
- Luna
- Cocoon (2)
- Chrysalis
- Larva (3)
- Antennae
- Pupa

A B U T T E R F L Y L
 O C O C O N N A C A
 L A R V A L A R V A R
 C A T E R P I L L A R
 M O T H L A R V A A R
 A N T E N N A E N E A
 C R C H R Y S A L I S
 L U N A L A M O T H Y
 M O T H R A A P U P A
 C O C O C O C O N O
 U B B U T T E R F L Y

Word Scramble:

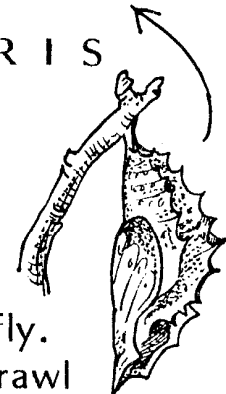
The caterpillar (larva) of a butterfly sheds its skin, and develops into a



A moth larva sheds its skin, and develops into a pupa, inside a silk

S A L Y C H R I S

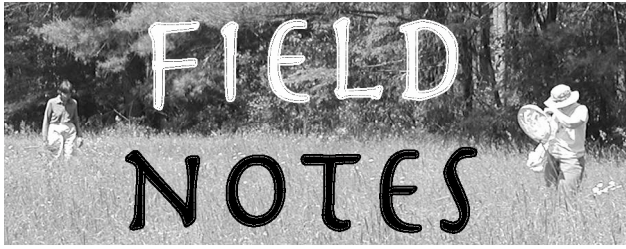
c o o n c



Lepidoptera Facts:

Not all Butterflies and Moths can fly.
 The females of some species just crawl around on the ground, even though they have wings!
 There are about 170,000 species (types) of Lepidoptera world-wide.
 Most are moths.

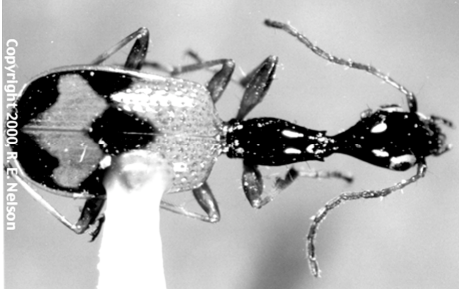
M. Russo, 2006



Colliuris pensylvanica in coastal Maine

Colliuris pensylvanica is a small ground beetle measuring about 6-7 mm long, with an extended thorax that looks like a long neck. It is mostly black with some red and black splotches on the elytra. There are only seven records of this species in Maine. The first one I saw was at school. I had to let it go. It was September 2006. It was on the paved path behind my school in Dedham. I also saw one at home. This one I labeled:

Colliuris pensylvanica
 Collected July 2006
 meadow, Dedham, ME
 Collected by Brandon Woo
 Collected by hand



I also found a third one at school under a rock. This one was found on March 28, 2007. Now we have ten records of *Colliuris pensylvanica* in Maine!

- Brandon Woo

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An *Oxybelus* Wasp in Southern Maine

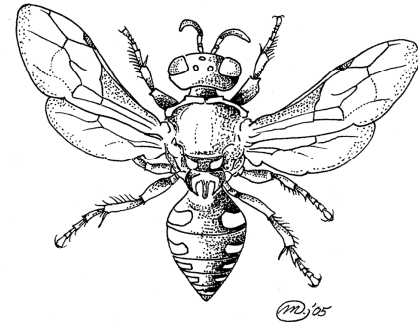
If the saying "Mad dogs and Englishmen go out in the noon-day sun" is valid, it would have to include people who collect and study wasps and bees. Indeed, in the 1986 *Hymenopterist's Handbook* printed in Middlesex, England, the authors describe a hymenopterist as one who can stare for a long time at a blank wall or garden path, on a hot summer's day.

And a wasp hunter doesn't always walk the garden path. On July 28, 1996, I was collecting at the Arundel town landfill, which was then an open dump out in the brilliant sun, abuzz with wasps and flies. I netted a wasp only because its flight pattern was odd. It was going around and around in circles, like a fly perhaps, only it didn't look like a fly. It turned out to be an *Oxybelus* wasp, which is a fossorial species, nesting in the ground, and providing its nurseries with flies.

Oxybelus wasps are supposedly famous for carrying their prey home on their sting, impaled. I write supposedly, because some references report that they transport prey by their hind legs, and then impale them after they have landed at the nest site.

There is not a lot of literature to read about these wasps. In *Wasp Farm*, by Howard Evans, published in 1963, about three pages are devoted to *Oxybelus quadrinotatum*. This must be a synonym for *O. uniglumis*, which I believe my specimen to be,

and is described in Krombein et al.'s *Catalog of Hymenoptera in America North of Mexico* (1979) as having a range including most of North America south to Mexico, and from Europe to Mongolia.



Oxybelus uniglumis is small, only about a quarter-inch long. A sculpted process jutting from the rear of the thorax looks like a radar dish with prongs, so it is easy to know if you have one, at first glance with a loupe. I have never caught a second specimen. I have not read any other description of its circling flight pattern, which occurs close to the ground. If you know where there are a lot of small flies, you might look for this little wasp.

- Monica Russo

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Book Review by Karen Hopkins

Spiders of the North Woods (North Woods Naturalist Series) by Larry Weber; Kollath-Stensaas Publishing, 2003; ISBN-10: 0-9673793-4-2; ISBN-13: 978-0-9673793-4-0; 205 pages.

We are greeted by the shining eyes of a Familiar Jumper. The little black hairs behind the eyes look like eyelashes, and the position of the jaws give the appearance of a joyful smile. We couldn't turn down that furry little face on the front cover, now, could we?

The first 25 pages cover spider anatomy, web types and the web-making process, life cycle, courtship and mating, hunting, wintering, and natural predators. An additional eight pages are dedicated to *Spider Observation*, including optics, web-watching, nighttime spider-hunting, and collecting methods.

The pages are richly illustrated with full-color photographs, and line drawings are added for more definitive detail.

A notable feature for the new spider taxonomist is the description of the legs, including the various hairs (receptors), with clearly written definitions and functions. Weber also details the unique variations of eye arrangements and their use in identification. Their significance is perhaps summed up in Weber's introduction:

*Just as we look at human faces for recognition
 so too can we look at the face of a spider.*

The field guide is arranged by families, each introduced by a two-page introduction with the subheadings: *Description* (of the family characteristics), *Similar Spiders*, *Habitat*, *Web*, *Hunting Technique*, *Observations*, *Egg Sac & Eggs*, and *Diversity* (number of species in North America and the genera listed in the book).

Most helpful, I find, are the line drawings depicting the representative shape and stance characteristic of the particular spider family, its web, carapace, and most useful, its face, neatly showing the taxonomic necessities of the jaw shape and eye

formations. A silhouette of the spider is also included, in actual size. Remember, these were just the family introduction pages!

Each featured species is usually allotted two pages, with full-color photographs. Listed below the primary photo are the description, hunting techniques, web specifics, egg sac and eggs information, and life cycle. The common and Latin names are located directly above the main photo, and the habitat is directly below. Notable characteristics are indicated by arrows, and are referenced in the following text. On the facing page (for most of the featured species) more photographs show color variations, sexual dimorphism, webs, hunting techniques, and other unusual traits or habits.

A unique feature of this field guide is the size bars. While this detail is common in insect books, Weber has made note of the fact that many people include the legs when they describe a spider's size. Therefore, the black size bars on the main photo represent the natural resting length of the adult spider as measured from the distal point of the front legs to that of the hind legs. The space from the left end of the bar to a vertical white line within the bar indicates the actual body length.

The only disadvantage of this book that I found was the area of focus (the North Woods): the northern regions of Minnesota, Michigan, and Wisconsin, into Ontario. However, Weber noted that this would also encompass parts of Quebec and New England, and my experience with other insect field guides from that region would uphold that this guide would also be applicable to our area.

In summary, this is a great book for preparing for this summer's Schoodic Blitz! It is soft-cover and light-weight, and measures a comfortable 8.5" high x 4.5" wide. For this entomophile, Spiders of the North Woods has the power of persuasion for the adventures of spider hunting!

* * * * *

Tech Tips: Bug Mug Shots

By Chuck Peters

No, this is not a promotion for the "Bug Mug Shot" feature usually found in the *Maine Entomologist*, but rather how to go about making your own bug photographs with a digital camera. I know that there are still many film users out there and that there are certainly some advantages of using film over digital formats, but because of the popularity and ease of use of "point-and-shoot" type digital cameras, this article will cover some of the important aspects of their use in photographing insects.

Digital cameras have in many ways revolutionized the way we take, store, and display our photographs. No longer limited by a roll of film with of only 24 or 36 shots, it is now possible to take as many photos as necessary to get a "keeper", while the rest can be simply deleted. And the results are instant...no more trips to the photo lab and the long wait for the pictures to be processed to see how they look. Once the pictures are downloaded to a computer there are also a host of "post-processing" steps that the avid photographer can employ to get the most out of each photo, in essence like having your own personal darkroom.

One of the most exciting aspects of digital photography with small, consumer-oriented "point and shoot" cameras is that many of them are excellent for close-up photography of insects. In fact, many of the images found in the annual MES Calendars were taken with these types of cameras. They are usually small and light and thus more likely to be carried along in the field.

Another advantage they have over larger 35mm format cameras (either digital or film) is that their small image sensors are very close to the back of the lens, necessitating lenses with a very wide focal length. These wide focal length lenses usually produce great depth of field (DOF); a measure of how much of the image is in focus in a vertical plane. This is a real advantage in a bug photo where identification of the specimen may hinge on a well-focused image.

If you have recently shopped for a digital camera, you probably know that there is a dizzying variety of models available. How well they perform at close-up work can differ widely from camera to camera. While the specifications often list the closest distance the camera will focus, this does not necessarily tell you how large a subject will appear on the finished photograph. The best way to find out how well a particular camera performs at close-up photography is to give it a try.

Before you go outside with your own camera, getting acquainted with some of your camera's settings will ensure the best results. Make sure your camera is set to take the highest quality (resolution) photos that it can. Resolution is measured in mega pixels (MP); if your camera is rated at 4MP go to the menu and check that the image quality and size are set to that maximum level. This will reduce the number of pictures that your memory card can hold and will display a very large image on your computer screen when viewed at 100%, but will produce a very sharp image when you reduce the size on the computer screen or make a print.

And keep in mind that photos submitted for the MES calendar have to be sharp when printed at 8" x 10", so the higher the resolution the better. Another thing to check is if your camera has a "macro" mode, usually found as a small button or a selection dial setting, and indicated by an icon that looks like a little flower. This mode usually allows your camera to focus as closely as possible while also optimizing other settings for close-up photography.

Now, go outside on a sunny day (not necessarily best for photography, but we'll get to that later), find a bug on a flower or other suitable setting, slowly move your camera as close as possible without scaring the bug, and depress the shutter button halfway while checking to see that it will focus (most cameras will "beep, or an indicator light in the viewfinder will illuminate). Often, you will find that your camera will focus most closely when the lens is not zoomed in, but at its widest setting. Snap as many pictures as you can to ensure you get a few good shots!

You may find that letting your camera make all of the decisions regarding exposure and focus ("Auto" mode) yields acceptable results. If your camera allows manual control of these variables and/or you want to challenge yourself to learn more about photography, you may be able to optimize your photos by using some of the following information.

Aperture is the size of the opening in the lens that allows light onto the sensor, much like the iris in your eye. Measured in f-stops, a low number means a wide opening (a lot of light enters) and a large number signifies a smaller opening. There is an inverse relationship between f-stop and depth of field. A large f-stop number (or a smaller opening) yields the greatest DOF. To achieve as much DOF as possible, it is necessary then to limit the amount of light by selecting as small an aperture (large f stop

number) as possible. If your camera has “aperture priority” mode, usually labeled as “A”, you can manually select the aperture you want while the camera adjusts all other parameters accordingly.

Shutter Speed is the amount of time that light strikes the sensor, measured in fractions of a second. Fast shutter speeds can freeze motion and lessen camera shake, both of which can result in blurry pictures. But note that if you choose a fast shutter speed, the camera will try to compensate by selecting a larger aperture, often resulting in low DOF...one of the great trade-offs of photography. Adequate light (either natural or artificial) is necessary to allow both small apertures and fast shutter speeds. Shutter priority mode, often labeled “S” allows you to select the shutter speed, while the camera handles aperture and all other parameters.

ISO: Remember Kodachrome 64? The number “64” refers to the ISO or light sensitivity of the film, or in this case, the sensitivity of the digital sensor. Higher numbers are “faster” or more sensitive than lower numbers. Digital cameras are able to adjust ISO to allow them to operate in low light levels. But the trade-off here is that higher ISO numbers result in grainier, less sharp images. Usually in good light you can let the camera decide by using “auto ISO”, but you may also want to manually select an ISO of 100 or 200.

Light is the most important aspect of photography. It is actually light that you are capturing. Bright sunlight has a tendency to make photos look “flat” or lack definition due to the absence of defining shadows. Often cloudy days with diffused light, or early morning/late afternoon gives the best lighting, but you may have to compromise DOF due to larger apertures and slower shutter speed, or higher ISO resulting in more graininess.

Artificial light from a flash can be a great advantage in digital insect photography because it has the ability to stop action while providing enough light to allow for smaller apertures. The greatest problem will be that the close working distance to the subject may hinder your flash from adequately covering the subject. But try it, you may be pleasantly surprised! You can also redirect the flash toward your subject by holding a file card at an angle in front of the flash or even attaching a white sticky note to the flash and bending it downward to redirect the flash onto the subject. I would recommend “aperture priority” mode if your camera supports it, select at least f16, and let the camera do the rest; many cameras will use a shutter speed of 1/60 with a flash, but since it’s the flash that stops the action, the resulting image should be sharp.

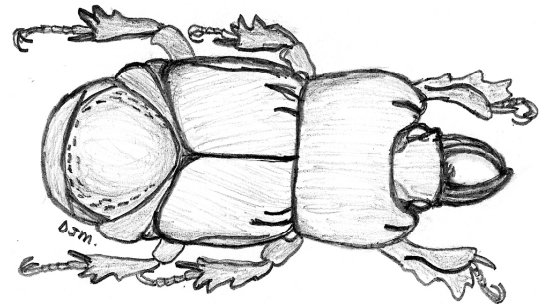
Focus: Good, sharp, focus of the subject is critical. Because DOF decreases as magnification increases (yet another trade-off), if limited depth of field causes some of the subject to be out of focus, try at the very least to make sure that the eyes of the bug are in good focus. This will bring more “life” to the resulting photo. Achieving good focus often means that you need to get the digital sensor of your camera (think the back of the camera) parallel with the part of the subject you want in focus.

Now that the weather is beginning to warm there should be plenty of insects on the prowl. Get your digital camera out and give it a try. Remember to take as many pictures as possible, try shooting at different angles and different lighting conditions, and don’t be afraid to delete the duds. And most importantly, the MES Calendar Committee needs your contributions...you just might get a free calendar if one of yours is selected!

Book Review by Dana Michaud

Coleoptera: Histeridae, by Yves Bousquet and Serge LaPlante, published by the National Research Council of Canada, on March 17, 2006, is part 24 of the Insects and Arachnids of Canada series. [The soft cover book can be purchased for about \$42.00 Canadian (plus shipping and handling) from National Research Council of Canada, Ottawa, Ontario K1A 0R6 Canada.]

This 485-page monograph treats 146 species of Histerids (135 known to occur in Canada and 11 that should), drawing its data base from about 15,000 specimens (4,000 from the U.S. alone) from an array of public and private collections. Most of the 146 species mentioned occur in the U.S. also, making this a nice companion to the Histerid section of the 1996 Arnett and Downie’s Beetles of Northeast North America (2-vol. set).



The seven-page Table of Contents breaks down the family into subfamilies (6), genera (34) and finally to species, citing relevant keys. The brief Introduction to the book preparation is followed by nine pages (with relevant drawings) explaining some taxonomy and characteristics needed to be examined when keying the Histerids. The 10-page Glossary (pages 465-75) explains most of the terminology used in the book. A four-page Systematics explains the family as a group via sections on description, biology, phylogeny, and finally the history of the classification of Histeridae.

The Keys to Subfamily, Genera, and Species are done in English, followed by a French translation. The species text, as is most of the entire book, is in English, and includes a description, distribution (many with range maps) and a brief biology (very little is actually known about the biology of these beetles). The various keys refer to the many well-done line drawings and electron micrographs used to illustrate both species and characteristics needed to key to species.

The impressive 11 pages of References (448-59) is followed by an Appendix listing all the species known, with records of the provinces in which they are found. The following helpful Glossary precedes the final section of the book, the alphabetically arranged Taxonomic Index (pages 476-485).

This long-overdue book on an often overlooked, yet very important group of predacious beetles, is a great addition to any Coleopterists library, especially those looking to study or I.D. Histerids to species.

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SOUTH CAROLINA is apparently the only state with an official state spider. The Carolina Wolf Spider, *Hogna carolinensis*, was designated the official State Spider by act of the state legislature on July 21, 2000.

"Downeast" Field Weekend - June 23rd

Saturday, June 23rd, Richard Hildreth will lead a field trip to the Gouldsboro Bay Division of the Maine Coastal Islands National Wildlife Refuge. The meeting place for the trip will be on Chicken Mill Pond Road beside Chicken Mill Pond, in Gouldsboro; instructions for finding the site, a map, etc., are available on request. There is room to park. The trip will begin at 0900 and continue all day (or as long as the participants desire). Bring a lunch and footwear suitable for wet going.

For those who wish to stay over on Saturday night, there will be a gathering at the Hildreth cabin in Steuben for some food & drink, and a night of collecting at mercury vapor lights and along a moth bait trail. Information regarding places to stay in the area and directions for finding the cabin will be mailed upon request. Show up to eat at 1800. After everyone has eaten, he'll get the lights on so we can all begin sampling the insects that appear, and begin patrolling the bait trail.

We can have food and drink regardless of the weather, but productive night collecting depends on the weather. Especially bad is cold fog drifting in from the sea. On good weather nights in June, it is usually very busy at the lights - a good time for big silk moths, a good variety of sphinx moths, many beetles and caddis flies. Nocturnal mammals can also be seen, especially the Northern Flying Squirrel.

We urge you to let us know your plans to attend this session as soon as possible so that we can plan and send you more detailed information and a map. For further information, contact Dick Dearborn, 15 Spring Hill Road, Mt. Vernon, ME 04352 - phone (207) 293-2288, or by e-mail at modear@prexar.com.

Coming M.E.S.-Sponsored Events for 2007:

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

Saturday, May 19th - Bowdoin (Sagadahoc County). Combined Workshop and Field Day at the Delta Institute of Natural History; contact Tom Vining (info@vfthomas.com) by phone at (207) 266-5748 for more information.

Saturday, June 9th - Deering Pond, Sanford (York County). For additional information, contact Chuck Lubelczyk (at 207-662-7142) or Gail Everett everett.gail@gmail.com or 207-745-2840.

Saturday, June 23rd - Steuben (Washington County). MES Field Day. Richard Hildreth will coordinate this - see short article at left.

Saturday, July 14th - 2nd Maine Butterfly Survey (MBS) workshop; location not yet set, but advance registration will be necessary. Contact Phillip deMaynadier (phillip.demaynadier@maine.gov) for more information.

Saturday, August 18th - Rock Ridge, Clinton (Kennebec County). Field collecting day. Contact Bob Nelson for more information, by phone at 207-859-5804 or by e-mail at beetlebob2003@yahoo.com.

Saturday, September 15th - Annual Meeting, to be held once again at Chuck Peters' home in New Gloucester.

Wednesday, September 19th - Bug Maine-ia at the Maine State Museum. Contact Marion Smith at the Maine State Museum, at (207) 287-2301, for more information.



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

If the date on your address label is 2006, our records indicate you haven't yet paid dues for 2007. Please contact Dana Michaud, Treasurer, at the address below to pay up or correct inaccurate information!

The Maine Entomologist is published quarterly by the Maine Entomological Society. Dues are \$10 per year or \$18 for two years. 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. Dues are paid through the year printed on your mailing label. 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.