The Maine Entomologist

A FORUM FOR STUDENTS, PROFESSIONALS & AMATEURS IN THE PINE TREE STATE

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From the President

The spring start has been rather slow with cold nights and, until recently, lack of rain but insects are beginning to leave winter quarters and flowers are showing up. As temperatures rise and vegetation greens up, things will change quickly so gather that collecting gear and be ready for those fleeting but rare and often exciting spring "bug events".

In my travels as President of the MES, I often encounter people who seem surprised to learn that there are those in Maine who actually enjoy insects and who have banded together to form a group such as ours. While most of us find insects and other terrestrial arthropods such as spiders our favorites, we all have a broad range of interests in nature and enjoy sharing our outdoor experiences with others. Our field events provide an opportunity to learn while sharing different perspectives. Some in our group are collectors of one type or another, others prefer to sketch, photograph, or simply observe the wonders around them. A few are actually armchair naturalists who simply enjoy our newsletters. This diversity in approach is what adds the spice to our meetings and our mix of newsletter articles. I find this interesting and exciting and hope that you do, too. It is my dream to further diversify this mix and encourage all members to assist me by attending one or more of our field events. Having an artist, observer, photographer, or tape recorder along would help capture the variety of experiences you will have and the interesting people you will meet for posterity. Perhaps you have an interest in birds, mushrooms, or plants. Sharing your knowledge in these related fields would be helpful too as we all learn something new.

We have a great season planned with lots of exciting things to do, see, and learn from. There should be something for everyone from our regular field events to the very special joint meeting with the Acadian Entomological Society in Bar Harbor, June 22 to 24th and the recently evolving joint field event with the Vermont Entomological Society in the northern White Mountains of NH on July 26 and 27th. And don't forget those photos for our 2004 Calendar contest. Check our schedule of events, mark your calendars, and join us. Hope to see you soon!

- Dick Dearborn

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Blow Flies

" 'E got me maggot! " exclaimed the boy to his fishing partner as he reeled in his line with an empty hook. This mixture of excitement and disappointment was unusual. A teenage boy, even in England, is supposed to be cool and not show any emotion, especially with an old geezer from the colonies casually looking over his shoulder, but catching a fish was obviously on his mind. The scene was near Bridge 11 on the Llangollen canal southwest of Chester, England in the late afternoon of September 24, 2002. The boys were fishing for roach, perch, eels, or bream. Most of the fishermen used maggots (the larvae of the blow flies), and most of these were plain but some were colored with a bright food coloring. I couldn't see the purpose of coloration. I estimated the visibility of the water in the canal, even if no boats churned up the silt, to be less than a half-inch.

Fast forward to November 7. A heavy wet snowstorm has knocked out our electricity, so with much grumbling I decide to clean out the garage. As I move garage stuff like blocks of wood, statues, buckets, etc. to new positions on the cement floor, I notice an assortment of white legless worms under a lot of the stuff that I had moved.

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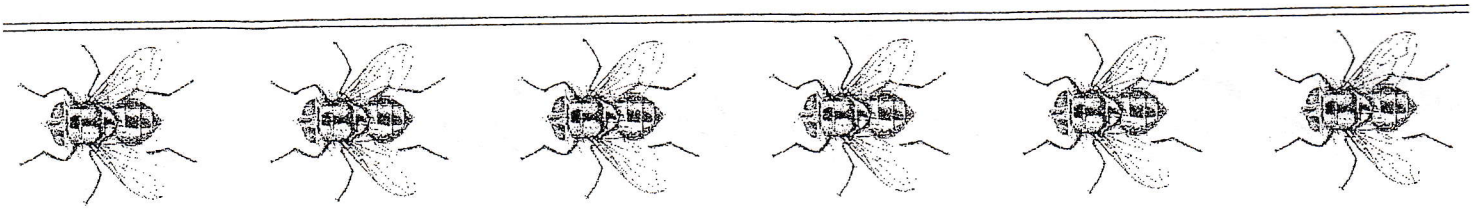

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Maggots? What are they doing in here? Where could they have come from? I collected about a quarter of a cup of them in a Cool Whip bucket and sent a few to Dick Dearborn, survey entomologist for the State of Maine. He wrote me that he thought the samples were blue or green bottle (blow) flies (*Cynomya cadaverina* and *Phaenicia sericata* respectively). He couldn't identify them positively, but I could raise them and probably find out. On November 20, I brought a few into my basement (temp 60 to 70^0 F) and gave the rest to my uncle for ice fishing. By November 26, they had all changed to brown pupae about 1 cm long. By December 13 they had mostly all emerged as adult flies and this precipitated a confusing project to identify them (I'm a little more used to frogs. There are only nine types in Maine.). The flies had brilliant bluish-green bodies and I assumed that they were blue bottle flies. In another wrong turn I assumed wing patterns were significant indicators and, with reservations, settled on the blue bottle fly *Calliphora vicuna*. It wasn't until March when I sent some adult specimens to Dick and he identified them as green bottle flies *Phaenicia sericata*. Knowing the type of fly these were gave me a chance to look up their life cycle and make a best guess as to how and why they came into my garage. I think that sometime in the autumn a critter like a red squirrel (we have quite a few around our place) met his demise in our flower garden outside the garage. Adult green bottle flies smelled the carcass from as far as a mile away and laid their eggs on it. The eggs hatch in a day or so into maggots, and the maggots start to eat voraciously.

In a short time the odor from the dead animal disappears. The maggots molt several times in 2 to 10 days then leave to pupate. Some of the legless maggots managed to crawl at least 50 feet to gather under the various objects in my garage before I happened on them. It didn't appear that they could negotiate any vertical surface as they were all on the floor. The flies could have over wintered as pupae or larvae, but the adults can't tolerate the cold. If the victim was a red squirrel, that sized carcass could supply food for about 4000 maggots.

Most of these flies are considered pests and indicators of poor hygiene and spread various diseases. Some are parasites on humans and other animals and birds, but some have other uses besides cleaning up roadkills and providing fishbait. (My uncle usually buys them from JD Bait at about $10 per thousand). One blue bottle fly, *Calliphora vomitoria*, is reputed to be a good pollinator for greenhouses and tents. The adults feed on nectar and have many advantages over bees. This fly has been used to successfully pollinate, among other things, vegetable crops including peppers and tomatoes.

The maggots of some of the green blow flies like the ones I found have been used with excellent results for cleaning out wounds and sores that have not responded to other treatments, especially in diabetics. The procedure, although very successful in many cases, has not generally made it to main stream medicine because the thought of living maggots cleaning up a wound and their excreta promoting healing is just too revolting. Maggot therapy has been around for hundreds of years and does emerge now and then , but don't expect to see the procedure on any TV program like 'ER'. Green blow flies are also used as forensic indicators, and they have probably appeared on 'Crime Scene Investigators.'

Finally, are these things edible? Is there any such thing as 'Maggot mousse'? I did find one recipe:

'Place maggots in an old sock and rinse in cool water a couple of times. Remove larvae and boil for five minutes and add a bullion cube. When cube is dissolved, you are ready for your stew.'

I'm not sure if this is Sock stew or Maggot stew, but it probably wouldn't make any difference. Bon appetit!

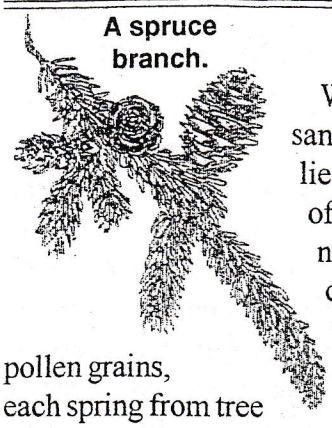
-Frederick Gralenski

Don't Forget Those Beetle Nights!

I am still looking for help in characterizing weather and lunar conditions associated with those few notable nights of extreme beetle activity in June and July when beetles coming to light greatly outnumber moths at light in both abundance and diversity. For more information see May 2002 issue of *The Maine Entomologist* (Vol. 6 No.2) or contact me at (207) 293-2288 or *modear@prexar.com*. Thanks.

- Dick Dearborn

Pollen, Spruce Forests, and Climate Change


A spruce branch.

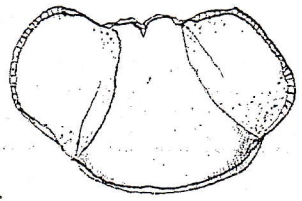
Who would think that ten thousand years of forest history would lie neatly recorded in one meter of sediment at the bottom of a vernal pool, or under a sphagnum-carpeted forest swale? Who would imagine that wayward pollen grains, after their airborne journeys each spring from tree tops to the forest floor would endure thousands of years of freezing and thawing within pool sediments, retaining their shape and texture sufficiently to be identified to genus or species? And who would expect that the sediment at the bottom of the pool would remain undisturbed for millennia, leaving the pollen grains, along with partially decomposed needles and insect parts, in the neat, chronological order in which they came to rest? Such realities allow paleoecologists to reconstruct thousands of years of forest history using cores of sediment from forest hollows, and explore questions such as: *How has the range and abundance of spruce changed in Maine during the last 10,000 years?*

Maine has not always had the widespread spruce forests that it has today. Pollen preserved in sediment in lakes around the state show that the first forests after deglaciation 10,000 years ago were dominated by spruce. But by 9000 years ago, the spruce gave way to forests dominated by pine, hemlock, oak, and beech. Spruce did not return regionally in significant amount until just 1000 to 500 years ago, only a few centuries before the first European settlers arrived along the coast of Maine!

Interestingly, local pollen records from forest hollows at Roque Island and Schoodic, indicate that, unlike the rest of Maine, spruce forests did persist along Maine's eastern coast for the entire 10,000 years since deglaciation. These may have been refugia stands, probably influenced in part by the cold waters of the Gulf of Maine and the frequently foggy conditions there.

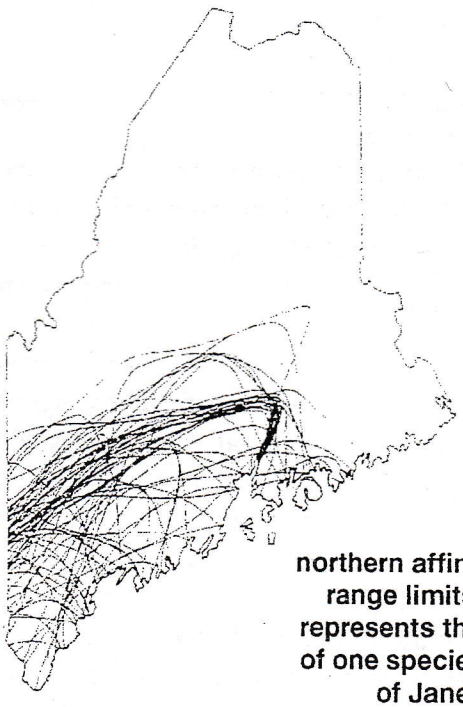
What caused spruce to come and go in most of Maine, and then to come back? Spruce competes well in cool, moist conditions, and meets its southern limit in Maine (and along high-elevation ridges of Appalachia). Climate reconstructions using ancient gas bubbles trapped in ice cores from Greenland suggest that northern New England regional climate has been as much as 1.0 - 1.5 °C warmer than it is today. Apparently this was enough of a warming to give a competitive disadvantage to the spruce and fir forests during much of the last 10,000 years.

Many biological taxa reach their northern or southern limits in Maine, making it a large and marked transition zone between northern hardwood and Canadian boreal forest ecosystems. The map below, developed by Janet McMahon of the University of Maine, shows the range limits for more than 60 woody species in Maine, and outlines the interesting shape of this transition zone. Range limits for many associated herbaceous plants, insects, and other fauna also undoubtedly fall in this zone. Such a strong transition zone, where so many taxa meet their range limits, is where small changes in climate are likely to first show ecological effects!


A spruce pollen grain.

This should be encouragement for those who are monitoring insects and other taxa in Maine, and a reminder of the importance of being observant and recording observations. Although there are many other factors that contribute to the movements of range limits for species in our modern world (think about Winnebago bumpers, boat propellers, and the horticulture market), no introduced species would survive if climate conditions did not support its life cycle and competitive strengths. It may be especially revealing to track the local timing of insect phenologies, or metamorphic events. Are we seeing any clues in the insect world in Maine (or in regions of Maine!) that may be effects of a changing climate?

-Molly Schauffler


A map of the state of Maine showing a vegetation transition zone defined by the range limits of 67 woody species. Fifty-four species reach northern range limits in this zone, while an additional 13 species of northern affinity reach southern range limits here. Each line represents the geographic limit of one species. Image courtesy of Janet McMahon.

Biological Control of Purple Loosestrife (*Lythrum salicaria*)

Purple loosestrife (*Lythrum salicaria*) is a non-native plant that was introduced into North America before the 1830s. It has spread into all lower 48 states, with the exception of Florida, and is found in all Canadian provinces. The plant is an aggressive, perennial colonizer that creates dense mats and produces millions of tiny seeds. Purple loosestrife can take over entire wetlands, greatly reducing native vegetation and degrading wildlife habitat. One of the most challenging aspects of purple loosestrife control is controlling its spread. Purple loosestrife colonizes areas by seed dispersal into wetlands via water transport, wildlife, humans and boat traffic. Its ability to produce prolific seeds capable of travelling long distances, and produce plants not only along roadsides, but also in remote areas.

Small populations of purple loosestrife (less than 20 plants) can be pulled by hand. Hand removal is difficult, requires many follow-up visits, and is minimally successful. If removing loosestrife plants by hand, be positive of your plant identification skills (there are a few native look-alikes), and prevent the spread of seeds. Remove plants before they set seed or carefully place bags over flower heads and clip off. Dispose of the plants and seed heads in black, plastic trash bags that are tied tightly shut.

Larger stands of purple loosestrife can be treated with chemicals. Use only herbicides that are approved for aquatic environments and follow all state and federal regulations. These chemicals are often non-selective, meaning they will kill all plants, including native plants, with which they come in contact. Herbicides require repeat treatments, are costly, and often leave areas vulnerable to new infestations.

Purple Loosestrife

Several effective biological control agents have been identified for control of purple loosestrife. These agents are insects that, in their native habitat, prey exclusively on purple loosestrife. Once these potential agents were identified, they were subjected to extensive laboratory and field studies before they were released in the United States. After almost seven years of research, the United States Department of Agriculture approved several species for field release. The species most commonly used are 2 beetle species (*Galerucella calmariensis* and *Galerucella pusilla*) and one weevil (*Hylobius transversovittatus*). Carefully designed biological control programs hold great promise for limiting damage from exotic species. Biological control programs offer *long term control over a large area* by using the plant's natural enemies. Since their approval for release in 1992, these agents have been used for controlling purple loosestrife in over 20 states and in several Canadian provinces. These beetles have the added benefit that they are able to access areas where other control methods are not feasible. Beetles will attack plants in mucky wetlands and on floating mats.

These insects have been subjected to extensive food preference and Ano choice@ starvation tests. Prior to release, they were tested on fifty plants which were either closely related to loosestrife, occurred in the same habitats as loosestrife, or were important agricultural or ornamental crops. In all cases, beetles preferred to feed upon purple loosestrife. In starvation experiments, beetles did feed minimally on some other plants, but were unable to complete their full life cycle on any plant but *Lythrum alatum*. Recently, additional tests were initiated to test another forty non-target plants. In no choice tests, *Galerucella calmariensis* beetles were found to feed temporarily on a few non-target plants, but were considered to be host specific to purple loosestrife. There have been no documented cases, in the United States or in Europe, where *Galerucella* beetles have run out of purple loosestrife and established a viable population on other plants.

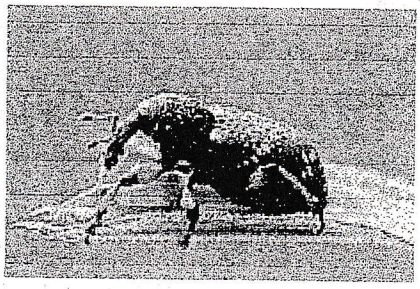
Successful programs continue introducing beetles to an area until a significant population of insects is observed to consistently overwinter and emerge in spring. This is likely to take several years. With continued care of the insects, purple loosestrife growth and density at many sites decreases significantly after five years. The Rachel Carson National Wildlife Refuge has been releasing *Galerucella* beetles since 1996. At one release site the plants have practically been eliminated. At our other site the plants have decreased in height and density. Plant response appears to vary with site.

Most experts agree that complete eradication of purple

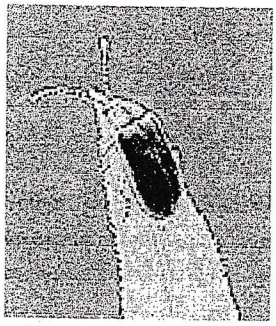
loosestrife is not feasible. However, reductions of up to 90 percent are possible and have been documented. In areas where purple loosestrife has been reduced significantly, beetle populations will decrease and consequently loosestrife will slowly increase. When loosestrife populations increase, so will beetle populations. Long term control is established in this manner.

If you decide to pursue biological control of purple loosestrife, ensure you have the correct state and federal permits. Check the USDA website *http://www.aphis.usda.gov/ppq/permits/FAQ.html* for additional information or phone their hotline at 1-877-770-5990. Generally permits for *Galerucella* beetles are approved within five weeks. For more information on biological control of purple loosestrife, or a list of references, contact Kate O'Brien, (207) 646-9226 or *Kate_O'Brien@fws.gov*.

-Kate O'Brien



A *Hylobius* weevil, a predator of purple loosetrife. Photo courtesy of Cornell University, Ithaca, N.Y.



A *Galerucella* beetle perched on a leaf. Several beetles in this genus are used to control purple loosestrife. Photo courtesy of Cornell University, Ithaca, N.Y.

Six Legs Afield-What to Watch for This Summer

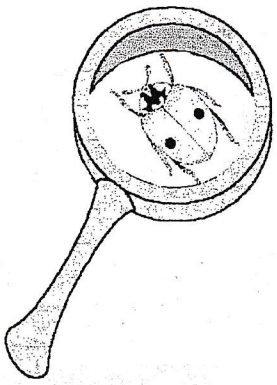
Most of the early migrants and natives that emerge early will have done so by early June. Now is the time to get ready for the summer regulars.

JUNE - The regal migrants, the Monarchs, return from the south just as the milkweed pushes higher. Meanwhile the Canadian Tiger Swallowtail and White Admiral butterflies appear at wet spots along wooded roads often in great numbers where birch and aspen stands predominate. By mid-June those warm, dark, humid nights are often right for Beetle Nights when beetles greatly outnumber the moths at lights in both abundance and diversity. Beetle collectors be ready as there are usually only two or three of these a year between June 10 and July 10!

JULY - Butterfly diversity reaches its pinnacle during July as various species of hairstreaks, fritillaries, and skippers crowd milkweed flowers in meadows and woodland glades. The diversity of damselflies and dragonflies on the wing is at its highest in late June and July with Clubtails (Gomphidae) dominating the faster waters and Skimmers (Libellulidae) adding color to the slower vegetated waters. Japanese beetles always seem to emerge around the Fourth of July in Maine, so celebrate the Fourth with these beetles as they make their season's debut. Watch for the browntail and gypsy moths, too.

AUGUST - Many species of Orthoptera reach maturity in August and provide a show as they flit through hay fields and in waste areas. This is the time to look for a variety of grasshoppers, and late in the month don't be surprised to see Preying Mantids in a variety of color phases, often flying in numbers. Walking Sticks - we have one species – also appear late in the month near oak stands. And those "Hot Weather Bug, Harvest-Fly, Dog-Day Cicada" males sing high in the trees far out of reach of all but the hardy or lucky observer. True Katydids do not occur in Maine. August is also a great month to look for the fascinating fossorial (ground-nesting digger) wasps as they provision their nests. Most prefer the drier sandy areas of southern Maine. Some *Aphilanthops* provision their nests with ants while other genera with tabanids and others with beetles, caterpillars or a variety of orthopterans. Some such as the Great Golden and Black Digger wasps are large, colorful, and impressive. Others such as the sand wasp (*Bembix americana spinolae*) and our large velvet ant (*Dasymutilla vesta*) are just plain fascinating. During the dog days of August, wood nymph butterflies can often be found coursing through old fields, and green and gray commas can be observed at wet spots along forest roads. August is also the month when the rare Clayton's Copper butterfly takes wing among the yellow flowers of shrubby cinquefoil in cedar fens. The elusive American Rubyspot damselfly is just beginning its flight season along streams and rivers.

-Dick Dearborn



Research Review: Recent Articles in the Press

Östrand, F. and Anderbrant, O. 2003. From where are insects recruited? A new model to interpret catches of attractive traps. *Agricultural and Forest Entomology* 5 (2): 163-171. Two new concepts describing the origin of insects caught in an attractive trap are presented. European pine sawflies *Neodiprion sertifer* Geoffroy were marked and released in the four cardinal directions around a centrally placed pheromone trap. Investigators found that the effective sampling area reveals nothing about the origin of the insects caught. This study will help in designing more reliable monitoring programs.

Finn, J.A. & Gittings, T. 2003. A review of competition in north temperate dung beetle communities. *Ecological Entomology* 28 (1): 1-13. Studies of north temperate dung beetle communities frequently invoke competition as an influential ecological process. This review article discusses resource limitation and the evidence for interspecific competition, competition for space, and priorities for future research including resource utilization and competition and density-dependent relationships. A functional group classification of dung beetles and other dung fauna is described.

2003 MES Field Trips

June 14 - Waterford (Oxford County)
For this trip, we will be collecting in the western Maine foothills, on Gail Everett's property along the Crooked River. Habitats include riparian, old fields (mostly dry), mixed forest, and even a bog. Gail's nine acres have something for everyone. Contact Gail by e-mail at *capriolee@yahoo.com* or at (207) 878-8183.

June 22-24 – Bar Harbor (Hancock County)
Joint meeting with the AES (Acadian Entomological Society) at the College of the Atlantic. The program will begin with two parallel collecting trips to the Donnell Pond/Schoodic Mountain area and a portion of Acadia National Park on Mt. Desert Island on Sunday, June 22nd, from 10:00 a.m. to 3:00 p.m., hosted by the MES.

July 12 - New Gloucester (Cumberland County)
Field meeting and collecting opportunities at Chuck Peters' home. 20 acres of land provides a diversity of collecting habitats including forests, fields, river banks, wetlands, and a beaver pond. For more information contact Chuck Peters by phone at (207) 926-4806 or e-mail at *chuckp@prexar.com.

July 26-27 - Northern New Hampshire in the White Mountain National Forest. This two-day trip will take place on the Zealand Trail beginning 3.6 miles south of the Zealand Campground on the Ammonoosuc River (2.3 miles east of Twin Mountain on Hwy. 302). There is a well-maintained forest service road that stops at the Hoxie Brook parking area (there is a day-use fee in effect here for the forest). See the MES website at *www.colby.edu/MES* for more details or contact Dick Dearborn at (207) 293-2288 or Donald Chandler at (603) 862-1735 or *dsc1@cisunix.unh.edu*. If you have an AMC White Mountain Guide handy, more details on the landscape are given there.

August 16 – Wells (York County)
Insect Identification Workshop at the Wells National Estuarine Research Reserve from 9 am to 2 pm. In the morning learn how to identify which family or order an insect belongs to then head out to collect specimens from the varied habitats of the Wells Reserve. After lunch (bring a bag lunch) work with microscopes and a variety of keys to identify your finds under the guidance of MES board members and local entomologists. SPACE IS LIMITED, so please register in advance by contacting Laura Lubelczyk at (207) 646-155 x110 or *naturbuf@gwi.net.

October 13 - Mt. Vernon (Kennebec County)
Our Annual Meeting and chicken barbecue will again be held at the Dearborns' in Mt. Vernon from 10:00 a.m. to 4:00 p.m., with time for collecting, sharing items of interest, questions for the experts, eating, election of officers and discussions of business, as well as more eating. Chicken, coffee, tea and water will be provided. Bring a dish to share!

Bug Zappers: Love 'em or Leave 'em?

We have all heard them. The loud "pzzzt" on a warm summer evening in urban backyards as another unsuspecting insect, attracted to the ultraviolet light of the bug zapper, encounters the electrified grid that ends its life in a little puff of smoke. While the homeowner may feel satisfaction in ridding the yard of another pesky bug, many of the insects killed by bug zappers are not the biting insects for which they were intended. Frick and Tallamy (1996) found that in a typical backyard, the proportion of biting insects killed was only 0.22%. Most disturbingly, 13% were insect predators and parasites, and the remainder consisted mostly of flying aquatic species such as caddis flies and midges. Not only do bug zappers indiscriminately kill insects, how they kill them is equally disturbing. Urban and Broce (1998) from Kansas State University showed that when insects come in contact with the high voltage grids, the intense heat causes the insects to actually explode, thereby showering the area with both bacteria and viruses that were in the gut or on the surface of the insect. Some of the bacteria were found to travel as far as two meters from the point of electrocution. While the heat was able to burst the insect, it was found to be not sufficient to kill the bacteria or viruses. Consider that the next time you're at a backyard barbecue with a bug zapper in operation!

But to the resourceful entomologist, a bug zapper can be modified to make a great collecting tool. Since they employ an ultraviolet light source (black light), by simply disconnecting and removing the electric grid they can be used to merely attract insects for either observation or collection. Set against a white sheet on a warm, dark night, a wide range of insects can be attracted. While this method does require the collector/observer to visit the light often (many insects may visit for only a short time), it also prevents the needless killing of insects that a conventional light trap would cause. Considering the high cost of ultraviolet lights from biological supply companies, a recycled bug zapper makes sense on many levels.

So, enlighten your neighbor to the harm that their bug zapper may be causing to both the insect population and their own picnic. But be sure that rather than taking it to the dump, they donate it to science!

-Chuck Peters

References:
Broce, A.B. and J.E. Urban. 1998. Potential microbial health hazards associated with the operation of bug zappers. *Abstracts of the Ann. Meeting of the Am. Soc. for Microbiol.* Session Q: 252.

Frick, T.B. and D.W. Tallamy. 1996. Density and diversity of nontarget insects killed by suburban electric insect traps. *Ent. News.* 107: 77-82.

Have you no shame?

A predominant belief in biology since Charles Darwin's time was that males of the species were more promiscuous than their female companions. Recent evidence is showing, however, that the girls that have more fun might have healthier offspring to boot! Strategies for passing on genes in females have evolved to favor the practice of polyandry (or numerous sexual partners) in many species, from birds to (yes, you guessed it) bees.

Although many studies on mating practices were conducted on fruit flies by Britisih researcher Angus Bateman in the 1940's, his finding that males 'roamed' more than females is now being questioned, especially since advances in genetic fingerprinting have allowed researchers to track the parentage of offspring. Females of some species, it seems, may take numerous partners because of some surprising benefits. Female green-veined white butterflies, for example, receive a generous nutritional supplement from virgin males' sperm packets. Females that have copulated with several virgins produce more and larger eggs than those that have partnered with non-virgins.

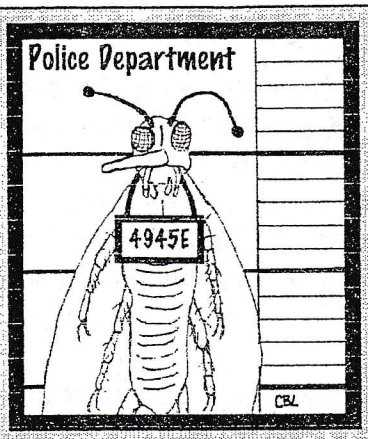
Further evidence for polyandrous females lies in the male bumblebee. While males will expire after a tryst, they leave behind a piece of their equipment in the female that is used to block other potential suitors (the first chastity belt?). However, ingenious Nature has allowed the males to develop a hairy structure on their genitalia to dislodge the 'belt' of its predecessor. Even ticks, it seems, are not immune from similar behavior. A recent article in the *Journal of Medical Entomology* by Anthony Kiszewski and Andrew Spielman found that males mating with a previously inseminated female remained attached for approximately 8 minutes versus attachment with non-insemniated females, which lasted about 140 minutes. The mechanism that causes this, whether chemical or behavioral, is not yet known. Such a factor might favor the male tick that mates earlier.

Scientists such as Marlene Zuk, author of Sexual Selections: What We Can and Can't Learn About Sex from Animals and a University of California professor, warns not to take the animals' behavior to heart. We may, she says, "run the risk of making decisions about our morals on very shaky ground... we miss what is interesting and vital about the animals' own behavior."

-Chuck Lubelczyk

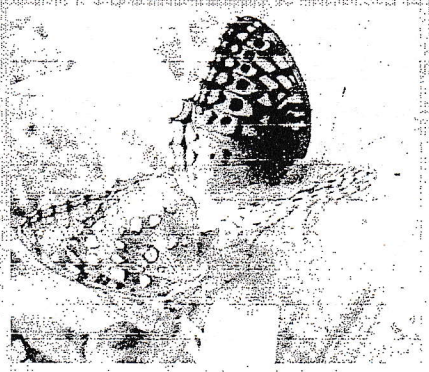
References:
The San Francisco Chronicle. Feb. 17, 2003.

Kiszewski, A. and A. Spielman. 2002. Preprandial inhibition of re-mating in *Ixodes* ticks (Acari:Ixodidae). *Journal of Medical Entomology.* 39(6) 847-853.



The Bug Mug Shot: Great Spangled Fritillary

Order: Lepidoptera (butterflies and moths).
Family: Nymphalidae. The brush-footed butterflies are the largest family of butterflies, with over 200 species in North America, 30 of these found in Maine. The family name comes from the brushlike appearance of the first pair of legs, which cannot be used for walking because of their reduced size.
Species: *Speyeria cybele*, the most common fritillary in the Eastern United States.
Description: The wingspan of the adult is 2.5 to 3.5 inches. The upper side is a brownish orange with black scales on the forewing veins. The underside has silvery spots with a wide pale band near the edge of the hind wing. All of the fritillaries are similar in appearance, but this species is nearly identical to the Aphrodite Fritillary. Females tend to be larger and darker in coloration than males. Caterpillars are black with rows of branched black spines that are a reddish-orange at the base.
Primary Habitat: Moist meadows, fields, valleys, and open woodlands.
Food: Caterpillars feed exclusively on wild violets (genus *Viola*). Adults sip nectar from a wide variety of flowers including black-eyed susans, thistles, and milkweed.
Life History: In early summer, males patrol open areas in search of females to breed with. The female does not lay her eggs until several months later. Eggs are laid singly on or near violets. When the tiny caterpillars emerge in the fall, they crawl into the leaf litter without feeding where they overwinter and emerge in spring to feed on young violet leaves.
Notes: Even if violet plants have already died back and blown away, the female will still lay her eggs nearby a violet plant. It is believed this is because she can locate the roots by smell. The name fritillary is believed to be derived from the Latin word for "dice box", referring to the orange and black dice-like pattern on its wings.



Mating Great Spangled Fritillaries (*Speyeria cybele*). The male is on the left and the female is on the right. Photo courtesy of TomPeterson.

Scarabs in the Royal Palace of Belgium

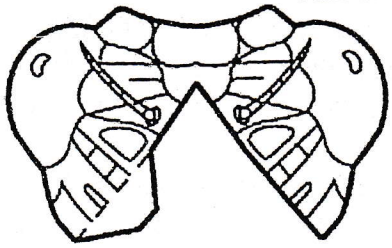
You might have missed an article in the Tuesday, February 4th Arts section of the *New York Times*. Titled "Bits of Bugs Glow, to Delight of Queen," it was a report from Brussels. The King and Queen of Belgium had hired Jan Fabre, an artist and stage designer, to decorate the Hall of Mirrors in the Royal Palace. He sure did. Fabre glued a layer of glittering iridescent elytra from Asian jewel beetles onto the chandelier and ceiling of the magnificent hall. It was a mosaic of glossy blue and green. Fabre was quoted as saying that it was appropriate to use scarabs because of their symbolism of life and death. The article never uses the word "elytra" but uses "carapace" and "wing covers" instead. The actual species of beetle used is never revealed but Fabre says he collected the carapaces from researchers "in the field." Beetles were also collected from restaurants in Malaysia, Indonesia, and Thailand, where they are served as menu items.

In my copy of D.S. Hill's *Insects of Hong Kong*, there are likely species from the scarab subfamilies Cetonidae and Rutelinae, both of which contain brilliant green beetles. But the jewel beetles are mentioned under the family of Buprestids. In a list published by CSIRO, "Scientific and common names of the insects and allied forms occuring in Australia," the jewel beetles are Buprestids also, not scarabs. One hopes that the elytra used in the Royal Palace were at least those of an abundant species.

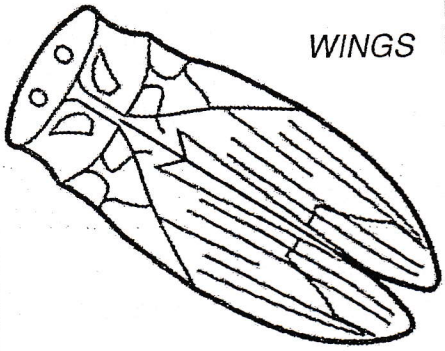
-Monica Russo

Make A Dragonfly Larva

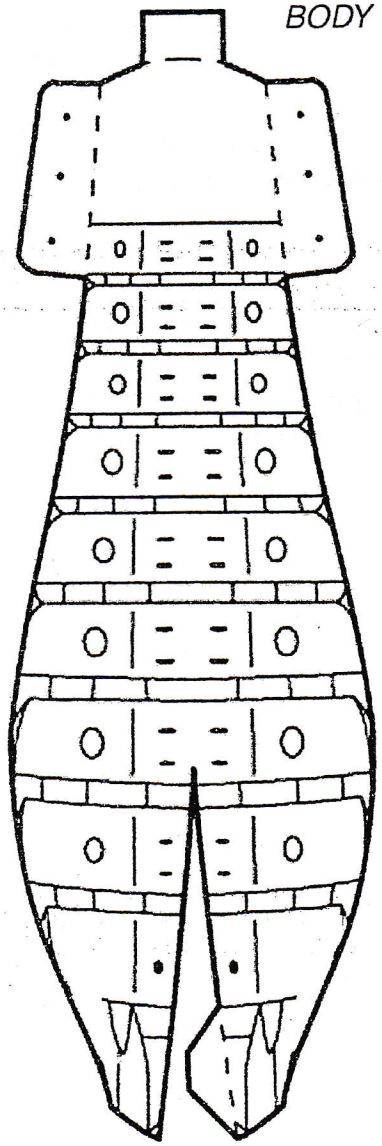
HEAD



WINGS

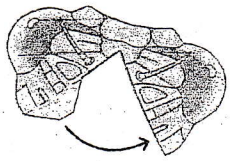


BODY



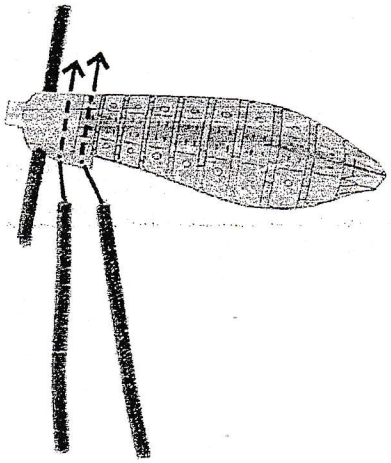
Materials: Crayons, markers, or colored pencils for coloring; scissors; glue; 3 brown pipe cleaners (each 4 inches long)

Step 1: Color all three of the dragonfly larva cutouts to the left. Then, carefully cut out each piece along the solid outside lines.



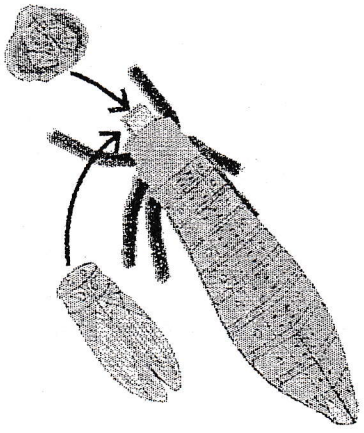
Step 2: Glue the flap of the head to the underside of itself.

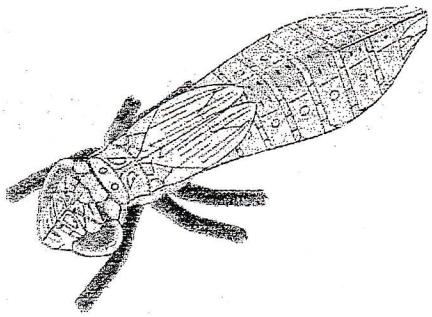
Step 3: Poke holes through the 6 dots on the side tabs of the body, then bend the tabs down. Glue the flap of the tail to the underside of itself.



Step 4: Put a pipe cleaner through each set of holes on the body.

Step 5: Glue the head onto the tab at the front of the body. Then, glue the wings on top of the body, just behind the head. Bend the pipe cleaners as shown, so the larva can stand.





This activity was adapted and reprinted with permission from The **Rodale Institute's® Kidsregen.org**. Written by Kerry Callahan. Activity and photographs by Yasushi Fujimoto.

Ongoing Maine Surveys

There are several entomological surveys currently underway across the state of Maine. While each of these surveys is conducted in a slightly different manner and for somewhat different purposes, the results are species inventories. The following presents the status of survey results as of February. It should be noted that final tabulations for the year are not complete in all cases.

·**BEES** (several families of Hymenoptera) - This survey is based on the identification of native (and in some cases non-native) pollinators. There are currently 295 species listed for Maine. The majority of these species come from the genus *Andrena*. Contact: Dr. Constance Stubbs, UMO. (207) 581-2754.

·**DRAGONFLIES AND DAMSELFLIES** (Order Odonata) - The current list for Maine stands at 163 species. Seven new species were found since the start of the Maine Dragonfly and Damselfly Survey (MDDS) in 1999 with two more added in 2002. Contact: Dr. Phillip De Maynadier, ME Dept. of Inland Fisheries and Wildlife at (207) 941-4239 or Paul Brunelle at (902) 423-1845.

·**GROUND BEETLES** (Coleoptera: Carabidae) - There are currently 400 species listed from Maine. Contact: Richard Dearborn at (207) 293-2288.

·**MOSQUITOES** (Diptera: Culicidae) - There are 41 species of mosquitoes listed from Maine. This figure represents an increase of five species since the last list was published in 1975. Contact: Richard Dearborn at (207) 293-2288.

·**BUTTERFLIES AND SKIPPERS** (Lepidoptera: Papilionoidea and Hesperioidea) - Currently there are 111 species recorded from Maine. This includes both residents and strays. It is believed that five species have been extirpated. Contact: Dr. Phillip De Maynadier. ME Dept. of Inland Fisheries and Wildlife at (207) 941- 4239 or Dr. Reginald Webster at (506) 459–3166.

·**SPIDERS** (Arachnida: Araneae) - Maine has a rich, diverse spider fauna. Currently there are 614 species listed for the state including native, invasive, and undescribed species. Contact: Dr. Daniel T. Jennings, USDA, Forest Service (ret.) at (207) 924-3445.

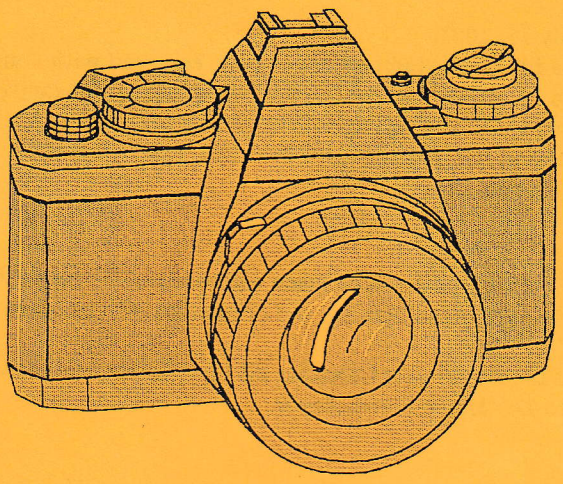
The Maine Entomologist **is published quarterly by the Maine Entomological Society. Dues are $10 per year or $15 for two years. Checks should be made out to M.E.S. and sent to Mrs. Edie King, Treasurer, at 7 Salem Street, Waterville, ME 04901. Dues are paid through the year printed on the mailing label.**

Maine Entomological Society
c/o Newsletter Editors
Chuck & Laura Lubelczyk
21 Harding St.
Sanford, ME 04073

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

The Maine Entomological Society
is sponsoring an

Insect Photography Contest



12 winning photos will be selected for publication in the **2004 Insect Calendar** produced by the Maine Entomological Society (MES). In addition to having their photos published, all winners will receive a copy of the calendar and a one-year subscription to *The Maine Entomologist*. This contest is open to all photographers, but the insect photographed must be a species known to occur in Maine. Images may be submitted as 35 mm slides or prints. **Entries must be received by July 15, 2003.**

For details and an entry form, please contact Laura Lubelczyk at 207-324-2849 or visit the MES website at www.colby.edu/MES

MAINE ENTOMOLOGICAL SOCIETY INSECT PHOTOGRAPHY CONTEST 2003

IMAGE GUIDELINES:

*Images may be submitted in the form of 35 mm color slides, black and white prints, or color prints. Digital images may be submitted as 8x10 inch prints only. Digitally enhanced or re-mastered images will not be accepted.
*The focus will be on species portraits, but any photo related to entomology will be considered (e.g. a child collecting insects, a beehive, etc.). Insects do not have to be photographed in their natural habitat.
*Insects must be species that are known to occur in Maine, but the photo does not have to be from a Maine location.
*The calendar will have a horizontal, landscape format. Your photo may be enlarged or cropped to fit this format.
*Images may not have been previously published.

SUBMISSION GUIDELINES:

*Entries must be received no later than July 15, 2003.
*Entries will not be returned unless a self-addressed, stamped envelope is enclosed with your entry. We strongly suggest that you send a duplicate, as MES and its officers are not responsible for the safety, delivery, and necessary handling of the photos. Winners will be contacted for original slides or negatives prior to publication.
*Label each photo with the subject, the location the photograph was taken, and the photographer's name.
*Each person may submit no more than four entries.

JUDGING PROCESS:

*A judging panel will review all eligible entries. Decisions will be made and winners will be notified by August 15, 2003.
*Entries will be judged on subject matter, composition and lighting, and originality. All decisions of the judging panel are final.
*In addition to having their work published in the 2004 Insect Calendar, all 12 winners will receive a copy of the 2004 Insect Calendar, and a one year subscription to *The Maine Entomologist*.

USE OF SUBMITTED PHOTOS:

*Images chosen for publication in the Insect Calendar will be used with one-time reproduction rights only. The photographer will be contacted individually for written permission for any other use of the photo. Submitting a photo does not in any way prevent the photographer from using this photo for other purposes in the future. The photographer retains all rights to their work.
*Photos not chosen for the calendar may be eligible for future use in MES posters, cards, or brochures. In this case, individual photographers will be contacted for permission to use their work.

Please mail your photos and this form to:
Laura Lubelczyk, MES Newsletter Editor, 21 Harding Street, Sanford, ME 04073

Name _____

Mailing Address _____

_____

Primary Phone _____ Alternate Phone _____

E-mail Address _____

Please tell us how you heard about this contest. [ ] MES newsletter [ ] Photography Club [ ] Posted Flyer
[ ] MES member [ ] Internet [ ] Other _____

I have read and agree to all of the Insect Photography Contest guidelines. I do hereby certify that the enclosed photograph is an unpublished image and I give the Maine Entomological Society one-time permission to publish my work in the 2004 Insect Calendar if I am selected as a winner.

Signature: _____ Date: _____