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57th Annual MES Meeting: June 24-25, 2011

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The 2011 Annual MES meeting will be held June 24th and 25th at the Pierce Cedar Creek Institute for Environmental Education (photo below, http://www.cedarcreekinstitute.org/) in Hastings, MI. The facility was established in 1998 by The Willard G. Pierce and Jessie M. Pierce Foundation. It is a mix between a nature center and biological field station, with programs that serve the community while also building partnerships with area colleges and universities to serve their faculty and students.

Pierce Cedar Creek Institute encompasses 661 acres and provides visitors with a unique exposure to a rare blend of diverse habitats including wetlands, forests, marshes, streams, lakes, and prairies. Several miles of trails wind through these habitats for people to hike and explore.

There are three housing facilities at Pierce Cedar Creek Institute that can accommodate up to 42 people. Most rooms are double occupancy but some single occupancy rooms will be available on a first come first serve basis. Bedding and linens are provided. Two of the lodging facilities have living room/lounge areas.

One night's lodging, three meals (breakfast, lunch, and dinner), meeting room, AV, and coffee and water service during meeting times costs $75 per person for double occupancy rooms, and $85 per person for single occupancy rooms. It will cost an additional $50 if you choose to stay a second night and this includes an additional breakfast and lunch.

Dr. Daniel Herms, Associate Chair of Ohio State University's Entomology Department, will be our keynote speaker. Dan's research includes plant-insect interactions; ecology and management of insects in forests, urban forests, ornamental landscapes and nurseries; and invasive forest pests including emerald ash borer and gypsy moth. Dan was a Michigan resident and received his PhD at Michigan State University before he joined the faculty at Ohio State University. Dan served as President of MES in 1996-1997 and still remains an active member.

Anyone interested in presenting a paper or poster at the upcoming meeting can contact me for more details. We especially welcome student presentations and participation at the meeting. More details will be provided in the next MES Newsletter.

Pierce Cedar Creek Institute Environmental Education Center

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Current Annual Dues Schedule

Student (through High School)	$12.00
Active	$25.00
Institutional	$45.00
Sustaining	$35.00
Life	$500.00

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Notice: Check out the websites of these two Michigan Butterfly Associations for upcoming meetings and field trips:

Southeast Michigan Butterfly Association
http://www.sembabutterfly.com/

West Michigan Butterfly Association
http://www.glsga.org/wmba.htm

MES Historical Notes

Robert A. Haack, Newsletter Editor

1985 – 25 years ago. In early 1985, Dave Evans was President; Dave Cowen was President-Elect; Gary Dunn was immediate Past-President; Mo Nielsen was Executive Secretary; Gary Simmons, Glenn Belyea, and Fred Stehr were the three Members-at-Large; Dave Gosling was Journal Editor; and Lou Wilson and George Heaton were the Newsletter Editors. The 31st MES Annual Meeting was held at the University of Michigan Biological Station near Pellston on June 14-15. The keynote address was made by Randy Thornhill of the University of New Mexico. He spoke on scorpionflies. Besides Dr. Thornhill, we had 15 speakers from MSU, and 1 from UM. This was the first MES annual meeting that I attended, after coming to Michigan from Florida in 1984. Mo Nielsen led a collecting trip after the meeting in search of bog Lepidoptera. Annual dues were $8 per year for active members, and $15 per year for libraries. Journal page charges were $30/page. There were 399 members in good standing and 140 library subscriptions at the beginning of 1985.

1960 – 50 years ago. In early 1960, Roland Fischer was President, Warren Wagner was President-Elect, Irving Cantrall was immediate Past-President, and Stanley Gangwere was the Executive-Secretary. The 6th annual meeting was held at the University of Michigan. Here are some of the topics discussed. Oscar Taboada spoke on leafhoppers, George Steyskal on Trypetoidea, T.H. Hubbell on *Schistocerca*, Mary Whelan on tree swallows and arthropods, David Cook on water mites, Roland Fischer on abdominal muscles in bees, Sylvan Thomas on *Trypoxylon*, Fred Dittmer on beekeeping, and Ralph Beebe on Microlepidoptera. The MES membership dues were $2 per year in 1960. I have found no records on the number of MES members from 1958 to 1963. But I have documentation that there were 86 members in 1957 and 76 in 1964.

MES Officers Needed. As is the case every year, we need a few people to step forward and nominate themselves or others for two positions: President Elect, and Member at Large. Please consider serving MES. We'll send out election ballots in the next few months.

Notice: 2011 Eagle Hill field seminars on the Maine coast. Several workshops will have an entomological focus such as Applied Aquatic Entomology: The EPT Taxa: Ephemeroptera, Plecoptera, and Trichoptera (June 19 – 25); Scientific Illustration of Butterflies, Moths, and Other Insects (June 26 - July 2); Lepidoptera of the Northeast (July 3-9); Ants of New England (July 10-16); Spiders: Identification, Diversity, Ecology, and Biology (July 31 - Aug 6); and Parasitoid/Predatoid Hymenoptera (Aug 14 – 20). For more information, see <http://www.eaglehill.us/>.

Change in MES Domain Name. There has been a slight change in the MES Domain Name. When payment for the MES Domain Name came due this year, Mark O'Brien, our MES Webmaster, paid for another year, but dropped the www portion of the name. So now we are simply: **http://michentsoc.org**

Martinoptera

Cracking the Eighth Order

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For me, all of this madness began with 4-H. The year was 1968 and our 4-H club was named, "The Beatles." I'm pretty sure my older cousin Jan, the starring member of our club, had everything to do with our name. She held no secrets about her feelings concerning the hierarchy of insect orders, placing Coleoptera squarely at the top. We were the "British Invasion" of the bug world and pretty sure that John, Paul, George and Ringo were as into rearing silk moth larvae and sitting around black lights in the dark as we were.

The "Beatles" worldwide headquarters was located at the home of my Aunt and Uncle in McCords, Michigan, population 18, a far cry from Abbey Road. Every summer I'd move to their house for a week to work tirelessly with their son John, also a Beatles' member, preparing our collections for the crowning event of the year, The Kent County 4-H youth fair held in Lowell Michigan. It was the high point of the entomological year and we gladly bent to the task as only a pair of nine year olds can do.

The grail of the fair was to obtain the purple ribbon, the coveted best of show. It was one of those goals that a nine-year-old could never imagine winning. It was too incredible to contemplate. After a young life time of disappointing white and red ribbons, a blue ribbon was something a boy could aspire to with some degree of cautious enthusiasm. The purple ribbon was just plain beyond our imaginations, so in the late summer of 1968, we set our sights firmly upon the blue ribbon.

During the week leading up to the fair, John and I collected tirelessly and furiously. Most mornings we'd head down the railroad tracks of the Chesapeake and Ohio's mainline with our bug nets and our coffee cans stuffed with paper towels, doused in ammonia. Two explorers, who always looked grubby but smelled curiously like Mr. Clean. Around the first curve was the fabled "Cow Bone Graveyard." This was always a place where one could expect to find clouds of the small orange and black butterflies of late summer, a few darting day-flying sphinx moths, emerald green, impossibly fast, tiger beetles and of course, an exciting assortment of cow bones. The problem was we already had boatloads of these common specimens. That summer, we were enrolled in the "Entomology I Division," which required twenty-five specimens covering eight orders. We were now officially charged with the nearly impossible task of filling our insect order "dance card" for the fair exhibition.

We both had 50 insects of 7 orders: Lepidoptera, Coleoptera, Orthoptera, Hymenoptera, Odonata, Diptera and Homoptera. Cracking the eighth order, however, seemed impossible, even at the "Cow Bone Graveyard." At night we'd read though the "4-H Entomology Members Manual" and dream of the exoticness of orders that seemed forever out of our reach: Thysanura, Anoplura, and Isoptera. We could only imagine the giddiness that might accompany the capture of an actual termite or better yet, a blood-sucking body louse or the strangely named silverfish. As we thumbed through the manual for clues, we hatched a plan that would insure our success at the fair. The answer was as plain as the nose on John's dogs face. Her name was Pepper, a shaggy black and tan affair who half-heartedly followed at our heels through swamp and field. We just needed two fleas, one for each of us and our eighth order would be cracked, our blue ribbons assured. All of our hopes were riding on Pepper providing us with specimens of Siphonaptera. It was brilliant!

It was decided that the next morning we would corral Pepper, grab our two fleas and be off on our bikes to the Kettle Lake store for Coke and candy bars by mid morning. Our cunning plan involved wrapping cellophane tape, backwards around our fingers to aid us in capturing the miniscule jumpers. Pepper, always under foot was unnervingly nowhere to be seen. So instead of looking for bugs, we spent the remainder of the day and most of the evening looking for Pepper. She came home around midnight, covered in burrs and mud, but strangely absent of fleas. We searched every inch of that old dog and not a single flea was to be found. So with taped fingers, now sticking together and covered in dog hair, we admitted defeat on the Pepper Plan.

With fair day fast approaching, we had to move fast into plan B, which was to obtain a bird louse. What 4-H judge wouldn't be moved to hand out blue ribbons to a couple of intrepid field biologists with eight orders… including Mallophaga! Success would now surely be ours. My plan was to head to the barn with our BB guns and pot a couple of English sparrows, grab them as soon as they hit the ground, seal them up in a plastic bag and wait for the lice to depart the departed. From there we would just scoop them up and mount them on little white triangles we had painstakingly cut from a paper plate with a strange looking pair of fingernail scissors. It was a simple, beautiful plan and we had one day to pull it off.

Morning came and off we trotted to the barn with BB guns, sandwich bags, the flea-less Pepper, and high hopes. We hunters were not hunting mere sparrows but rather fabulous blue ribbons. We shot and shot and shot as the birds carelessly flitted from one end of the barn to the other, hiding in every shadow, tantalizingly remaining out of sight behind a beam, flying with precision under the mower and eventually sailing out of the upper window to spend the rest of their day chirping out one liners about the two bug hunters who were notoriously bad shots.

With empty BB guns and empty sandwich bags, we sadly trudged our way though the garden on our way back to the house. Out of time and with no plan C, it looked like we were faced with another 4-H fair of horrid white and red ribbons. Suddenly John stopped with a jerk and screamed, "Holy cow Batman, don't move!" Fully expecting an army of blood sucking body lice or hungry flesh eating termites, I froze; empty BB gun at the ready. John pointed slowly to a patch of wild roses in the fencerow. It was covered with lacewings, just waiting to be plucked up and securely placed in sandwich bags. We literally bagged our eighth order, a neuropteran and marched home to prepare our specimens for the fair!

Victory was ours that summer with blue ribbons all around. Not thinking about the Herculean task that awaited us next year in "Entomology II" with the surely impossible requirement of twelve orders, we proudly swaggered down the dusty August midway with our cotton candy and a fist full of ride tickets to check out the hog barn, our spectacular blue ribbons pinned to our shirts.

56th MES Annual Meeting

The 2010 MES Annual Meeting was held at the 4-H Kettunen Center near Tustin, Michigan on 26 June 2010. Thanks to MES President Ethan Bright for organizing the meeting. Our featured speaker was Dr. May Berenbaum, Illinois University. Abstracts of the talks can be found on the next several pages.

Mitochondrial Gene Order and Orthopteran Phylogeny

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Mitochondrial gene order is highly conserved within arthropods, with a single gene order shared between most crustaceans and arthropods studied to date. However, some variation does occur within insects. Most of this variation involves tRNA genes that are dispersed among the protein coding gene junctions. Five of these junctions represent hot spots for gene rearrangement events in insects, which are most likely created by gene duplications followed by deletion of redundant copies. Such rearrangements can be valuable markers for phylogenetic reconstruction, since they are unlikely to be convergent and character state reversals would be even more unlikely. One such rearrangement that may be phylogenetically useful has occurred within the Orthoptera at the gene junction between cytochrome oxidase II and ATPase 8. The ancestral gene order is the tRNA gene for lysine (K) followed by the tRNA gene for aspartic acid (D), thus the ancestral gene order at this junction is designated KD. In the Orthoptera, the ancestral gene order is found within the Ensifera, which includes long-horned grasshoppers and katydids. The Caelifera, which contains the short-horned grasshoppers, display the gene order DK at this gene junction. This rearrangement could be phylogenetically informative, however very few members of the Caelifera have been examined for this character. In order to determine the distribution of this derived character state, four different species of Caelifera grasshoppers from two genera were investigated. Total DNA was extracted from hind limbs and the relevant gene junction was amplified by PCR using primers to conserved regions flanking the junction. Genes were identified by alignment to published sequences, as well as by secondary structure. All four species were determined to have the derived gene order. Therefore, this derived character may represent a synapomorpy shared by all members of the Caelifera. Future studies will focus on more basal Caelifera, such as pygmy grasshoppers in the family Tetrigidae. Such data will help to confirm the phylogenetic utility of mitochondrial gene order characters.

Evaluation of Trunk Injection and Bark Sprays with Systemic Insecticides for Long-Term Control of Emerald Ash Borer

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Emerald ash borer (EAB) was discovered in Detroit, Michigan in 2002. As of November 2010, it is present in 15 US states and 2 Canadian provinces and is estimated to have killed over 50 million ash trees. EAB adults begin to emerge in May and feed on ash leaves for 10-14 days before becoming sexually mature. Females then lay eggs in bark cracks and crevices. Adults are active throughout the summer and continue to feed and mate during their entire lifespan. Larvae feed in the phloem which eventually girdles and kills the tree. There has been considerable research to develop tools to manage EAB and to protect the ash resource. Systemic insecticides may kill EAB adults as they feed on the leaves of treated trees and larvae tunneling in the phloem. Adult mortality during maturation feeding would also reduce the number of eggs laid on trees. Systemic insecticides are generally applied as single-tree treatments by trunk or soil injection, or as a bark application. As such, they may be useful for treating landscape trees or for limited area-wide control such as in high-value woodlots or at outlier areas.

We conducted a number of studies to evaluate different systemic insecticides and application techniques for control of EAB. Insecticide products were applied by trunk injection, soil injection or bark sprays and included imidacloprid (Imicide; 10%, 3 ml Mauget capsules), emamectin benzoate (4% solution applied with an ArborJet micro-injector, trunk sprays of imidacloprid (Macho 2F with or without the surfactant Pentra-Bark), and trunk spray of dinotefuron (Safari 20%) with or without Pentra-Bark. Efficacy was compared for one or two years after treatment. We evaluated adult mortality by caging adults with foliage from treated trees or untreated control trees at various times throughout the summer. In the fall and winter, we dissected areas of bark to evaluate larval attack density and mortality. We also conducted laboratory studies to determine the mortality of larvae fed artificial diet treated with various doses of the systemic insecticides. Our results showed that several products are effective in killing both larvae and adults. Efficacy varied with the product, method of application, and time since application. Effective systemic insecticide products could be used to protect landscape ash trees.

Bees, Pollinators and Pesticides

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Of the many forms of global change that have generated controversy of late on talk shows and op-ed pages, one that has rarely produced heated discussion or generated sensational headlines is the "pollinator crisis" — the widespread decline in the number and viability of animal species that transport pollen and thereby facilitate reproduction in the vast majority of the planet's flowering plants. Despite its relatively low profile in the public eye, pollinator decline is one form of global change that has real potential for profoundly altering the shape and structure of the terrestrial world. Over 3/4 of all flowering plants, including more than 100 crop plants in the U.S., rely on animal pollinators to survive and reproduce. Over the past decade, evidence pointing to a pollinator crisis has accumulated and the public has begun to take notice. The National Research Council tackled this issue at the request of the U.S. Department of Agriculture and the U.S. Geological Survey and commissioned a committee to assess the status of pollinators in North America. The conclusions reached by the committee and presented in their report provide compelling evidence that America's birds, bats, bees, and butterflies can no longer be taken for granted and that pollination is not a free and limitless ecosystem service. Recent mysterious declines in the U.S. managed honey bee population, beginning in late 2006 and unabated since that time, have, however, attracted the interest and attention of the general public in an unprecedented manner. Yet despite the sharper focus brought to apiculture in particular and pollinator health in general, most people remain remarkably fuzzy on the details of honey bee biology and pollinator ecosystem services.

Physical, Chemical, and Biological Changes Along the Continuum of a Southern Michigan Agricultural Stream: Influence of a Small Terrestrial Preserve

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Many studies have addressed the effects of anthropogenic disturbance on an otherwise natural stream. This study instead explored the changes along the continuum of the Saint Joseph River, an agricultural stream in southern MI. It quantified the physicochemical conditions upstream, within, and downstream of the Lost Nations Game Area, a small forested preserve. It also looked at the changes in two assemblages: benthic macroinvertebrates and adult caddisflies, over the same area. Owing to the agricultural landscape, the habitat upstream of all sites was >60% disturbed.

The percentage of riparian disturbance, however, was markedly lower adjacent to the sites inside the preserve than those outside. Water physicochemical factors did not exhibit clear changes between sites, except for nitrate concentration which was highest upstream of the preserve. Biological diversity of adult caddisflies was significantly higher within the preserve. Biological diversity of benthic invertebrates exhibited similar results except for non-significance between the upstream and preserve sites. Pollution tolerance and percentage of filtering collector metrics were unchanged between sites for both assemblages. The percentage of adult caddisflies in the shredder functional group increased significantly within the preserve, but remained small relative to that of pollution-tolerant filtering collectors. These results suggest that a small terrestrial preserve can promote an increase—in this case a 3x increase—in species diversity even without corresponding changes in water quality or trophic structure. Such an increase, however, may not be as detectable with traditional benthic biomonitoring techniques due to the difficulties of sampling benthic microhabitats representatively and identifying specimens to the species level.

Tent Caterpillars vs. Humans - Who Shall Prevail?

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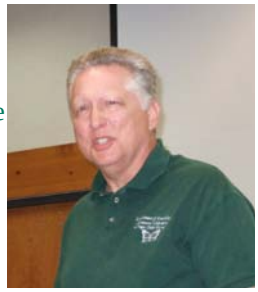
A widespread outbreak of the forest tent caterpillar (FTC), *Malacosoma distria* (Lepidoptera: Lasiocampidae) in the northern lower peninsula of Michigan in 2009 resulted in many inquiries from the public coming into the Grand Traverse County office of Michigan State University Extension. People asked about the tent caterpillar species and their life histories, the possible impact on landscape and forest trees, and control recommendations. Many contacts were quite distressed over the situation, especially newer residents to the region that had not previously experienced a major insect outbreak where they had lived before. I prepared two short reports on the FTC outbreak and practical management options that were used to assist the public and also were published in the local newspaper. Outbreak "highlights" included photos and comments on FTC populations near Cadillac, Gaylord, Empire and Traverse City, MI. The interesting individual reactions of people to pest outbreaks were discussed.



Can Biological Control of Emerald Ash Borer Save Our Ash?

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Emerald ash orer adult feeding on ash foliage. Photo by Deborah Miller,USDA Forest Service.

The emerald ash borer (EAB) (*Agrilus planipennis*), a metallic wood-boring beetle (Buprestidae) native to northeast Asia, was identified as the cause of ash tree (*Fraxinus* spp.) mortality near Detroit, Michigan in 2002. Researchers estimate EAB arrived during the early 1990's in infested solid wood packaging materials or dunnage from China (Bray et al. in press, Siegert et al. 2006). Infestations of EAB are now known in 15 US states and two Canadian provinces due to human transport of ash firewood, timber, nursery stock, and, to a lesser extent, natural dispersal. Although eradication of EAB was attempted for several years, regulatory agencies, land managers, and the public now understand it is here to stay. To conserve North American *Fraxinus* species, researchers are studying management approaches that include a combination of tactics including quarantine, insecticides, biological control, microbial control, silviculture, and plant resistance.

Classical biological control involves the importation and introduction of specialized natural enemies (e.g. insect parasitoids) from the native range of targeted invasive pests such as EAB. We are studying biological control of EAB for suppressing its populations in the US (Bauer et al. 2008). The results of EAB natural enemy surveys in Michigan and Pennsylvania showed < 4% parasitism by several parasitoid species that attack native wood-boring beetles (Bauer et al. 2004, Duan et al. 2009). More recently, researchers have found that several native species of *Atanycolus*, a genus of ectoparasitic braconids of wood-boring beetle larvae, may occur at high prevalence in Michigan ash stands where EAB populations are collapsing (Cappaert and McCullough 2009; unpublished data). In northeast Asia, however, several hymenopteran parasitoids specialize in attacking the larvae or eggs of EAB.

Since 2003, we have been studying three parasitoid species from China for use as EAB biocontrol agents: a larval endoparasitoid *Tetrastichus planipennisi* (Eulophidae), a larval ectoparasitoid *Spathius agrili* (Braconidae), and a parthenogenic egg parasitoid *Oobius agrili* (Encyrtidae) (Liu et al. 2003, Liu et al. 2007, Bauer et al. 2008). After completion of research on the biology and host specificity of these three parasitoid species in 2007, we applied for permits from USDA APHIS and Michigan to release them at selected field sites. Our research results and risk assessments were compiled into an environmental assessment that was posted on the Federal Register for public comment. After review by university, federal, and state researchers, land managers, and the public, APHIS issued a "Finding of No Significant Impact" and granted release permits for the three parasitoid species in Michigan in late July 2007 (Federal Register 2007).

In 2007, release sites in Michigan were selected and approved on state, city, and township lands with high ash densities. The ash trees onsite showed symptoms of building EAB populations (e.g., some canopy decline and woodpecker feeding on mid to upper trunks), but with low larval densities in the lower trunks. The objective of these first parasitoid releases was to assess reproduction and overwintering of these parasitoid species in central Lower Michigan. Reared at the Forest Service NRS laboratory in East Lansing, *O. agrili* females were released July and August 2007, and *T. planipennisi* females and males were released July through September 2007, each at two different sites in Ingham County. Reared at the Otis APHIS CPHST laboratory, *S. agrili* females and males were released in September 2007 at one site each in Gratiot, Oakland, and Saginaw counties, MI. The parasitoids were released as adults on four GPS-marked epicenter trees at each site. In winter 2008, the four release trees at each site were felled and cut into logs for possible parasitoid recovery. For the two larval parasitoids, every other log section was peeled, and immature EAB and parasitoids were reared in the laboratory for parasitoid emergence. The other log section was placed in a cardboard-rearing tube for emergence of adult EAB and parasitoids. For *O. agrili*, release-tree logs were either 1) inspected for EAB eggs, which were then removed and held for parasitoid emergence in Petri dishes, or 2) placed in cardboard tubes for emergence. We successfully recovered *O. agrili* from one of the Ingham Co. sites and *S. agrili* from the Oakland Co. site, confirming field reproduction and overwintering in Michigan.

In 2008, we expanded parasitoid releases to additional field sites in Michigan, Ohio, and Indiana. To facilitate the long-term monitoring of biocontrol impact, we established both a parasitoid-release and control plot at selected sites in Michigan and Ohio. Tree health data is collected annually on 100 tagged ash trees per site, and parasitoid recovery work is done in early spring to determine parasitoid overwintering. In conjunction with EAB biocontrol releases, we also started EAB life table studies at three Michigan field sites where EAB populations are being more intensively monitored (Duan et al. 2010). A permanent record of parasitoid releases, GPS, and tree health data is maintained on an EAB-biocontrol database at the Department of Entomology at Michigan State University.

In 2009, we improved our rearing methods for *T. planipennisi* (Ulyshen et al. 2010) and *S. agrili* (Gould et al. 2011), and APHIS began mass-rearing EAB biocontrol agents at their newly constructed EAB Biocontrol Facility in Brighton, MI after the transfer of rearing methods and parasitoids. Thus, we were able to continue and expand parasitoid releases in Michigan, Ohio, Indiana, Illinois, and Maryland. For recovery of parasitoids, infested ash trees were sampled in the spring to 2010. *Oobius agrili* and *S. agrili* each successfully overwintered at six sites in Michigan and Ohio, while *T. planipennisi* overwintered at five locations. In fall 2009, *T. planipennisi* was recovered from ~10% of EAB at the three life table release sites. We also recovered *T. planipennisi* about 800 m from their initial release epicenters at two of our sites through dissection of infested ash trees. In 2008 and 2009, *O. agrili* was recovered at low prevalence (<1% parasitism) from eggs sampled at the three release sites; none were detected at control sites. The results of larval parasitoid-caging studies showed that both species reproduced and overwintered in Michigan and Maryland.

In 2010, we initiated research on 1) use of girdled trees to accelerate establishment of parasitoids at low EAB densities; 2) improved methods for parasitoid recovery; 3) impact of biocontrol in the aftermath forest to facilitate conservation of residual and lingering ash. We also developed methods and guidelines for the implementation of EAB biocontrol programs by researchers and land managers (emeraldashborer.info 2010). This increased the involvement of universities, states, and cities in the release of EAB biocontrol agents, which were mainly provided by the Brighton EAB Biocontrol Facility.

Classical biological control is a long-term approach to managing EAB. Although most of the mature ash trees are succumbing to EAB at our biocontrol release sites, we remain optimistic because the introduced parasitoid species are reproducing, overwintering, and dispersing. The abundant ash and EAB likely facilitated parasitoid establishment and recovery at these stands. We are hopeful that a complex of native and introduced parasitoids will help suppress EAB populations as the ash seedlings, saplings, stump sprouts, and a few remaining trees continue to grow in the aftermath forest.

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A New Meniscus Midge Species from Michigan (Diptera: Dixidae)

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A new species of meniscus midge is reported from western Michigan. Adults of *Dixella fraxina* Taber appear in spring in tussock sedge understory of black ash swamps. No new species of this genus have been discovered in the United States in the last 40 years. Dark wing coloration suggests a close relationship to *Dixella marginata* (Loew) but characters in both sexes distinguish *Dixella fraxina* from *Dixella marginata* and from its other 18 congeners occurring in the United States. These findings were recently published (Taber 2010).

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Photos by Laurie Reed that were on display at the 2010 MES Annual Meeting

Crab spider

Crane fly

Crane fly

Scorpionfly

Syrphid fly

Baskettail dragonfly

Mosquito

Studies on the Biology of the European Oak Borer, *Agrilus sulcicollis* (Coleoptera: Buprestidae), in the United States

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The European oak borer (EOB), *Agrilus sulcicollis* Lacordaire (Coleoptera: Buprestidae), is a recently discovered nonnative beetle in North America. Previously unidentified and misidentified specimens of this beetle date back to 1995 in Ontario, Canada and 2003 in Michigan, USA (Haack et al. 2009; Jendek and Grebennikov 2009). EOB is native to most of Europe where it attacks primarily *Quercus* spp., but occasionally attacks species of *Castanea*, *Carpinus*, and *Fagus*. As of 2010, in North America, EOB has been reared from *Q. robur* (English oak) and *Q. rubra* (northern red oak).

In 2010, we initiated studies in Michigan at two locations in Ingham and Kalamazoo Counties where *A. sulcicollis* had been detected (Ingham) or was thought to be potentially present (Kalamazoo) to investigate the life history of this beetle in North America. We tested green, purple, yellow, and white sticky cards that were 30-cm tall and 15-cm wide for attracting adult beetles. Sticky traps were suspended from the lower branches of *Q. rubra* and *Q. alba* (white oak) trees. Previous studies have found *Agrilus*, including *A. planipennis*, to be attracted to the colors purple and green (Oliver et al. 2002; Francese et al. 2005; Crook et al. 2009). We also girdled *Q. robur* and *Q. alba* trees at different times of the year to determine what stages of tree health EOB is attracted to. We also cut 1-m-long bolts of *Q. alba*, *Q. rubra*, *Q. robur*, and *Q. velutina* (black oak) and placed them in *Q. robur* and *Q. alba* stands to evaluate the host range and preference of EOB in North America. Preliminary data found the highest number of EOB adults were captured on purple sticky traps followed by white, yellow, and green traps, respectively (unpublished data). Adult EOB were collected from 21 May through 25 June in 2010 in Ingham County; and from 24 May through 4 June in Kalamazoo County. Girdled trees will be cut down during the 2010/2011 winter to determine infestation rates. Trap logs will be collected in late winter 2011 and reared or dissected to determine EOB host preference.

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Wood-boring Emerald Ash Borer Larval Feeding Changes Black Ash Foliar Chemistry

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The exotic wood-boring emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), is a major threat to the North American ash (*Fraxinus* spp.) resource. EAB was first detected in Michigan, USA, and Ontario, Canada, in 2002. Ash trees are killed by larval feeding in the cambial region which disrupts the exchange of photosynthates, nutrients, and water in the inner bark and outer sapwood. In this study, responses of non-volatile foliar phytochemicals of black ash, *F. nigra* Marshall, to EAB larval feeding in the main stem were investigated. Levels of carbohydrates and putative defensive compounds, polyphenols, increased in response to EAB larval feeding, while levels of proteins and most amino acids decreased. The decrease of proteins and amino acids was probably due to a combination of decreased synthesis and increased export of these compounds from foliage to a new nutrients sink, epicormic shoots, which were located below the EAB larval feeding site. The increase in carbohydrates and decrease in proteins reduced nutrient balance in ash foliage. The nutritional quality of foliage in trees that had been fed upon by EAB larvae was further deteriorated by an elevation of defensive compounds, polyphenols. Twenty three amino acids were consistently detected in the foliage of black ash. The three most abundant amino acids were aspartic acid, glutamic acid, and glutamine, and the least abundant were α-aminobutyric acid, β-aminoisobutyric acid, methionine, and sarcosine. Most (16) foliar free amino acids decreased in response to EAB larval feeding. The ecological consequences of these changes on EAB and its potential natural enemies were discussed.

Firewood Confiscated at the Mackinac Bridge: Infestation Level, Species Mix, and Origin

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At the MES Annual Meeting in 2008, we presented findings from our initial survey of firewood that had been collected from the public at Michigan's Mackinac Bridge in April 2008 (Haack et al. 2008). We continued the survey twice more in 2008 (July and September). At the 2010 MES Annual Meeting, we presented summary data for all three 2008 surveys as well as data on the origin of the firewood based on 3 years of interviews with drivers as they dropped off their firewood. Many of these findings were recently published (Haack et al. 2010).

The Michigan Department of Agriculture (MDA) restricted movement of firewood across the Mackinac Bridge starting in 2005. The Mackinac Bridge is 5-miles long and connects Michigan's Lower and Upper Peninsulas. The goal of restricting firewood movement across the bridge was to stop the inadvertent movement of firewood infested with the emerald ash borer (EAB, *Agrilus planipennis* Fairmaire) to Michigan's Upper Peninsula. In early 2005, EAB was not known to occur in the Upper Peninsula.

Overall, for all three surveys, we examined 1,045 pieces of firewood that represented at least 21 tree genera, but mostly *Acer* (maple, 30%), *Quercus* (oak, 18%), *Fraxinus* (ash, 15%), *Ulmus* (elm, 12%), *Betula* (birch, 5%), and *Prunus* (cherry, 5%). We found live bark- and wood-infesting insects from several insect taxa, including Bostrichoidea, Brentidae, Buprestidae, Cerambycidae, Cossidae, Curculionidae [Scolytinae and non-Scolytinae], and Siricidae. Overall, 23% of the pieces had live borers and another 41% had evidence of previous borer infestation. Of the 152 ash firewood pieces, 13% had evidence of past EAB infestation, but no live EAB were found.

We summarized data from 322 complete interviews that MDA inspectors made with drivers as they dropped off firewood at the Mackinac Bridge between March 2006 and October 2009. Overall, about 83% of the 322 vehicles had firewood that originated from Michigan, 16% of the vehicles brought firewood from 17 other US states, and 1% had firewood that originated in 3 Canadian provinces (Haack et al. 2010). The 18 US states, in decreasing order, were MI, IN, OH, WI, IL, MN, NY, PA, IA, SC, TN, KY, LA, NJ, NM, NC, TX, and VA. The three Canadian provinces included two vehicles from Ontario, and one each from Alberta and Newfoundland (see maps). Such data indicates that people will often transport firewood hundreds of miles, and occasionally even more than a thousand miles.

In response to the phytosanitary risk posed by firewood, USDA APHIS (Animal and Plant Health Inspection Service) formed the National Firewood Task Force (NFTF)

in 2009 that consists of members from state and federal agriculture and natural resource agencies. The NFTF released their recommendations in early 2010 (NPB 2010). There are specific recommendations for government agencies, the firewood industry, and the general public in the areas of firewood regulation, voluntary best management practices, and educational outreach. Almost every US state has educational programs now that alert people to the dangers of moving firewood. One national program can be found at <http://www.dontmovefirewood.org/>.

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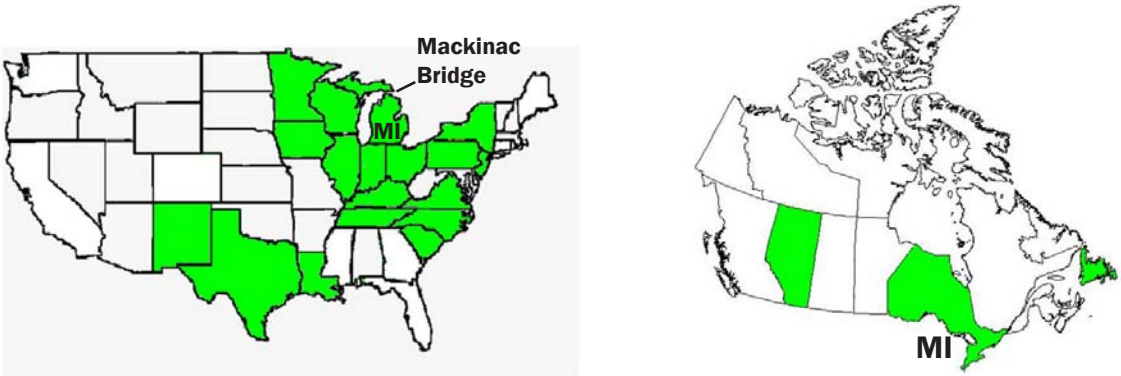

During 2006 - 2009, drivers of private vehicles dropped off firewood at the Mackinac Bridge in Michigan that had originated in 18 US states and 3 Canadian provinces (highlighted in green). See names in text.

Evolutionary relationships within the clearwing tribe Synanthedonini (Lepidoptera: Sesiidae).

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Many North American sesiid moths within the tribe Synanthodonini have been studied extensively due to detrimental economic impacts on forest, deciduous shade and fruit trees as well as many other ornamental and native shrub species. Introduction of non-native clearwing moths (e.g., the red-belted clearwing moth, *Synanthedon myopaeformis* (Borkh.), a European pest of apple trees) reinforce a need for reliable and accurate molecular diagnostic tools that can be utilized by non-taxonomic experts. Short DNA sequences can be used to advance knowledge of sesiid species divergence, leading to enhanced understanding of their unique evolutionary history. The cytochrome oxidase I (cox I) phylogeny produced from the sequences of 19 Synanthedonini species tested suggests a close evolutionary relationship of sesiids that rely on similar host plants to complete their life cycle. *Sannina uroceriformis* Walker is positioned firmly with *Synanthedon* despite its obvious genitalic similarities with *Carmenta*. *Podosesia* spp. is also somewhat surprisingly positioned within the *Synanthedon* rich clade. Our analysis also suggests the current generic placement of *S. rileyana* (Hy. Edwards) may be erroneous. The evolutionary relationship of the two North American viburnum borers (*S. viburni* Engelhardt and *S. fatifera* Hodges) is briefly discussed. Precise placement of *S. rileyana*, *Sannina*, and *Podosesia* awaits further evaluation of additional taxa as well as results from analysis of another preferably nuclear gene. Nevertheless, no polyphyletic relationships exist among economically important species making cox I sequences species specific and useful as identifying genetic markers in the tribe.

56th Annual MES Meeting, June 26, 2010, Kettunen Center, Tustin, Michigan: Business Meeting Minutes

Adrienne O'Brien, Secretary

Minutes for the March 2010 Board meeting were accepted as written.

Secretary Report: Because Adrienne O'Brien has recently stepped in to fill the vacant Secretary position, there was not a formal Secretary report. She will meet with Bob Kriegel, the former Secretary to help her understand the database and procedures.

Treasurer Report: Tina Ciaramitaro has also recently volunteered to fill the vacancy left by Martin Andree. The account balance was approx. $18,000 in the spring but is now at about $11,600. The decline is due to Journal publishing expenses and the fact that there have been no dues notices sent out for 2010. In addition, there is a CD valued at about $7000.

2010 Dues Notices: The last dues notice for members was sent in the Spring of 2009. For 2010, dues notices will be sent in late summer. The 2011 dues notices will be sent in January 2011.

Journal: Therese Poland In theory, the journal is published 4 times per year. However, it has been difficult to catch up. Therese is currently working on Volume 42 (3&4) - fall, winter 2009. She would like to publish Volume 43 (1-4) - spring, summer, fall, winter 2010 in a single issue in December of 2010. This volume will be 100 pages minimum. This will allow the journal to be up-to-date and then future volumes can be printed 2 or 4 times annually. Therese put out a call for more manuscripts for future journal issues.

Newsletter: Bob Haack The Fall Newsletter should be published in December. Abstracts from the talks given at the annual meeting will be included in that issue. In addition, Bob asks for any articles of interest to be sent to him for inclusion in the newsletter.

Entomology Notes: Mark O'Brien recently found one of the Ento' Notes on a website for student use as a pdf, no credit given to the MES. He notified the site to cease and desist and it complied. Several members stated that there needs to be newer, more relevant topics written for Entomology Notes.

Elections: At the end of the business meeting, outgoing president Duke Elsner passed the gavel to incoming 2010 president Ethan Bright. Toby Petrice is the president elect for 2011. Harry King was elected Member-at-Large for a three-year term – 2010-2013. Congratulations!

Meeting Adjourned by Ethan Bright

Adrienne O'Brien preparing the dues notices

Update on Publication Schedule for *The Great Lakes Entomologist:* A Plan to Get the Journal Back on Track

Therese M. Poland, Editor
Ronald J. Priest and Anthony I. Cognato, Associate Editors

Over the past several years we have worked hard to bring the publication of *The Great Lakes Entomologist* back on schedule. We were able to publish three issues in 2003 and again in 2005, allowing us to catch up by a year but still leaving the journal one year behind the publication schedule. Despite the relatively fast turnaround time for manuscripts, we have not been able to publish more than two issues per year during the past five years due to the number of submissions we receive. Considering our current publication rate which has been steady at two issues (one in spring and one in fall) each year for the past five years, the MES Editorial Board made a proposal to the Governing Board and members at the 2010 annual meeting. We proposed to print a single issue for 2010 (Volume 43 Numbers 1-4) and then to return to two issues for 2011 (Volume 44 Numbers 1&2, Volume 44 Numbers 3&4). Although subscribers would only receive one issue for 2010, this plan will allow us to move forward with issues being printed on the correct calendar schedule, alleviating much confusion and concern that is currently expressed by authors, libraries, and subscribers.
This proposal was presented to the membership as a motion at the Annual General Meeting in June 2010. The benefits of timely production and of maintaining a complete consecutive production of volume numbers (as opposed to skipping issues altogether) were discussed. The membership voted to approve this plan. Since then we have published Volume 42 Numbers 3&4 2009 which was printed in October 2010. The combined issue for 2010 is currently in the final stages of proofreading and will be printed in January 2011. We are confident that we will be able to produce the two issues for 2011 during the 2011 calendar year; one in late spring and the other at the end of the year. We look forward to publishing high quality scientific contributions and encourage all members to submit their manuscripts to *The Great Lakes Entomologist.*

Polistes dominula (Christ) (Hymenoptera: Vespidae) Now Established in Michigan's Upper Peninsula

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It is well-documented that the European paper wasp, *Polistes dominula* (Christ), has spread fairly quickly across North America since its initial discovery in Massachusetts in the late 1970s (Buck et al. 2008). This rapid spread has been largely aided by the transportation of foundresses and nests via anthropogenic means.

Polistes dominula has been recorded from southern lower Michigan since 1995 (Judd and Carpenter 1996), and has spread across much of Michigan's Lower Peninsula since then (MFO, personal observations). I have observed *P. dominula* in Ann Arbor and elsewhere in southern Michigan since 1996. In August 1999, I collected a single female from the periphery of a parking lot at Indian Lake State Park in Schoolcraft Co. in Michigan's Upper Peninsula (Specimen data: MICHIGAN: Schoolcraft Co., Indian Lake State Park, Aug. 19, 1999, M.F. O'Brien, coll.). As these wasps and their nests are easily transported in automotive wheel wells, recreational vehicles and other outdoor equipment, I assumed that the single wasp I found was most likely carried there via human-aided transport, and had flown from some nearby vehicle. I did not see any other *P. dominula* at that site, nor anywhere else nearby.

Polistes dominula on autumn clematis. Photo by Mark O'Brien

I was in Marquette for several days in mid-August 2010 and frequently encountered *P. dominula* on *Solidago* (goldenrod) flowers at several sites within the city limits. I collected one male voucher specimen on *Solidago* near the "Lower Harbor" area, which is being developed for new condominiums and retail space (Specimen data: MICHIGAN: Marquette Co., Marquette, August 12, 2010, M.F. O'Brien, coll.). There were some native *Polistes fuscatus* (Fabr.) seen at the *Solidago* as well. The abundance of *P. dominula*, and the presence of males, indicates that there is an established population within the city of Marquette.

As far as I am aware, the above records are the first presented for the Upper Peninsula of Michigan. In a previous survey of Vespidae within the Huron Mountain region of Marquette Co., (O'Brien 1986) *P. fuscatus* was the only polistine wasp known from the area. *Polistes dominula* was reported from Wisconsin in 2004 (Liebert et al. 2006), and a March 12 sighting in Green Bay in 2007 confirms its continued presence there (Fewless 2007).

It is not unexpected that *P. dominula* is now established in Michigan's Upper Peninsula. However, it remains to be seen whether the populations are ephemeral or will continue to expand there.

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MES Governing Board Meeting: November 16, 2010

Members present: Ethan Bright, Bob Haack, Toby Petrice, Mark O'Brien, Tina Ciaramitaro, Therese Poland, Ron Priest, Harry King, Adrienne O'Brien

Reports

The amended minutes from the 2010 annual meeting were accepted

Secretary's Report: Dues notices were sent in August. Response has been good, with many members paying dues in arrears. The current MES membership includes 38 Sustaining, 299 Active, 7 Student, 25 Lifetime and Honorary and 158 Institutional and Subscription memberships

Treasurer's Report: Total expenses as of November 15, 2010: $9179.43, income: $10,627.50. Checking account balance: $14,120.33, CD balance: $7145.47, matures on Dec. 14, 2010. Tina is exploring the idea of transferring the CD balance to an interest-bearing checking account, rather than renewing it because rates are so low and lock-in periods long. The possibility of offering members and authors the option of using PayPal or credit card for submitting payments for memberships and page charges is being investigated.

Journal Editor's Report:: Vol. 42 (2009) #3-4 was published in October. Volume 43 (2010) #1-4 is in the final stages and should be published early in 2011.

Newsletter Editor's Report: will be published in December. Bob is still waiting on 3 synopses of talks from the Annual Meeting. For the Spring issue, he hope to have a map showing locations of all MES memberships in the US and around the world. Research happening in the Great Lakes area from various institutions – APHIS, USFS, and universities will be highlighted.

Old Business

The 2010 Annual Meeting was well attended and went smoothly. May Berenbaum's talk was entertaining and informative. Thanks Ethan!

Constitution and bylaws: there are 2 points in the constitution which are in conflict with the bylaws which need to be changed and titles need to be cleaned up. Constitution is on the MES website

New Business

Adrienne and Tina are working to update the process by which subscription services are billed. Adrienne will explore the possibility of using bulk mail for membership dues notices. Adrienne will also check on the reasoning for offering both Institutional and Subscription membership levels and the possibility of combining them into one level.

Anthony Cognato has joined the GLE editorial staff as the Associate Editor for Nomenclature.

Tina received a letter from the IRS stating the tax exempt status of the MES may be changed because filing requirements have not been met for the past 3 years. She will explore what needs to be done in order to comply.

Therese stated that print copies of back issues of the GLE are currently $6/issue, which barely covers the cost of postage and time and is less than our membership dues. ESA charges $15/issue for members. MES should charge more – non-members $45/vol, members $12/vol. Motion passed

Ron Priest circulated a card for former MES President Tom Wallenmaier, who is ill. In his career with APHIS, he has been the official insect identifier for the Detroit area. Get well soon, Tom!

2011 Annual Meeting will be held at Pierce Cedar Creek Institute in Hastings, Michigan in June. Hastings is equidistant from Kalamazoo, E. Lansing and Grand Rapids. Final date and theme have not yet been determined and Toby requested suggestions for a featured speaker.

The Governing Board discussed the idea of digitizing all back issues of the Great Lakes Entomologist (as well as the Michigan Entomologist, the former title of the journal) so that paper copies will no longer need to be saved, stored and mailed to people requesting individual copies of articles. Volumes 34 (2001) to 42 (2009) are already digitized and each has a searchable index and table of contents. Mark O'Brien presented a proposal to the board to scan Volumes 1-33 at $0.35/page for a total cost of approximately $2700. Back issues would be made available some time after the original publication date as pdf files on the MES website or as a collection on a CD. The motion passed.

2011 Breaking Diapause meeting will be held March 19 at the MSU Entomology Department. The possibility of having the 2012 or 2013 March meeting in Ann Arbor was suggested.

Entomology Notes on the MES website: should be revised and rescanned as pdf's. New notes are needed to reflect current topics – ie bedbugs, planting native species of plants for more insect diversity (O'Brien), collecting aquatic insects (Bright).

There are MES brochures available for distribution. Please request some.

Minutes submitted by Adrienne O'Brien, Secretary

Limnephilus ademus Ross, *Oxyethira ecornuta* Morton and *Polycentropus nascotius* Ross - New State Trichoptera Records for Michigan

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I just received my MES Newsletter which I always enjoy greatly and read cover to cover. I saw the note indicating no new species records had been submitted for 2009. It is apparent I had not thought about such a submission but I made a couple very nice Trichoptera collections last year in the UP.

One in particular, *Limnephilus ademus* Ross 1941, I find most interesting. This critter has been termed the Salt Marsh *Limnephilus* (Flint and Giberson 2005), so its discovery in Michigan was most unexpected. While I only have the one male specimen and I did not borrow material to compare it to, preliminary DNA

work suggests that *Li. ademus* is most closely related to *Li. secludens* Banks. The morphology of this UP specimen rules out the latter species.

It was a very special collecting trip - I was out in the woods at my niece's about 10 miles south of Munising, Michigan for a pig roast. We had kegs, pig, and 50 or so folks for most of the night. A fine time was had by all. I doubt there was water within a half mile or so, very sandy at the house. There were a bunch of little kids racing around raising hell, and dust, so I hung a sheet and a light on the deer wire around my niece's garden about 100 feet from the party, house and all those lights. I gave the kids a couple aspirators which amused them for most of the night. Did you know you can survive sucking sand into an aspirator? I would walk over there every half hour or so to make sure they hadn't choked themselves with an aspirator hose (never thought about sand) and I actually picked up two caddis: an *Oecetis inconspicua* (Walker 1852) and the *Li. ademus*. *Li. ademus* was only known from far eastern Canada, most recently from an estuary!

The few lights I set at ponds in the area that night also picked up some other interesting critters, and I have attached a list of the detailed locality info. Two other caddis (*Oxyethira ecornuta* Morton 1893 and *Polycentropus nascotius* Ross 1941) appear to be new state records for Michigan. The *Ox. ecornuta* is a fairly rare critter reported only from Minnesota and Ontario as far as I know. The *Po. nascotius* is one of those fill-in-the-blank new state records for a widespread species.

I also have a week's worth of light trap collections I made last year in the Hell, MI, area that I have yet to go through. (I also really liked the Hell, MI, article in the last newsletter - they should have gone to the bar to warm up and have a wonderful perch dinner. You can have Heaven in Hell - just have the perch!) I went looking for one of the caddis holy grails - *Leptophylax gracilis* Banks 1900. In the 1950's Cantrall collected *Leptophylax* in the ES George Reserve. I am pretty sure I didn't collect *Leptophylax* but I will try and remember to let you folks know if there is something else in the collections of interest. If you know of a student interested in just general collecting it would be great to duplicate Cantralls' E.S. George collections 50+ years later. I will be more than happy to help out with the caddis if you want.

References

Flint, Oliver S., Jr., Giberson, Donna J. 2005. Salt marsh caddisflies: discovery of the larval and larval habitat of *Limnephilus ademus* in salt marshes in Prince Edward Island, Canada. Pages 121-130 in Tanida, Kazumi, Rossiter, Andrew. (eds.) Proceedings of the 11th International Symposium on Trichoptera. Kanagawa, Tokai University Press.

Alger County collections - DER prepared October 12, 2009

***Cheumatopsyche analis* (Banks) 1903**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Cheumatopsyche* species Wallengren**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 124F [Deposition= DER]

***Hydropsyche morosa* Hagen 1861**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 7M [Deposition= DER]

***Hydropsyche* species Pictet**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 32F [Deposition= DER]

***Hydropsyche* species Pictet**

MI: Alger County, at light, pond on Doe Lake Road (USFS Road 2268) N46.26646, W86.66098, D.E. Ruiter, 05 Sep 2009, 2F [Deposition= DER]

***Agraylea multipunctata* Curtis 1834**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 5F [Deposition= DER]

***Hydroptila armata* Ross 1938**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 2M [Deposition= DER]

***Oxyethira ecornuta* Morton 1893**

NEW STATE RECORD

MI: Alger County, at light, pond on Doe Lake Road (USFS Road 2268) N46.26646, W86.66098, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Oxyethira forcipata* Mosely 1934**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 3M 2F [Deposition= DER]

***Oecetis inconspicua* (Walker) 1852**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 2M [Deposition= DER]

***Oecetis inconspicua* (Walker) 1852**

MI: Alger County, at light, Kouw Residence, Dunklee Road, N46.25889, W86.72137, D.E. Ruiter, 05 Sep 2009, 1F [Deposition= DER]

***Anabolia bimaculata* (Walker) 1852**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Limnephilus ademus* Ross 1941**

NEW STATE RECORD

MI: Alger County, at light, Kouw Residence, Dunklee Road, N46.25889, W86.72137, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Limnephilus infernalis* (Banks) 1914**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Limnephilus infernalis* (Banks) 1914**

MI: Alger County, at light, pond on Doe Lake Road (USFS Road 2268) N46.26646, W86.66098, D.E. Ruiter, 05 Sep 2009, 2M [Deposition= DER]

***Pycnopsyche guttifer* (Walker) 1852**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 6M 2F [Deposition= DER]

***Pycnopsyche guttifer* (Walker) 1852**

MI: Alger County, at light, pond on Doe Lake Road (USFS Road 2268) N46.26646, W86.66098, D.E. Ruiter, 05 Sep 2009, 1M [Deposition= DER]

***Pycnopsyche lepida* (Hagen) 1861**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 4M 1F [Deposition= DER]

***Chimarra* species Stephens**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 2F [Deposition= DER]

***Neureclipsis crepuscularis* (Walker) 1852**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 1M 4F [Deposition= DER]

***Polycentropus nascotius* Ross 1941**

NEW STATE RECORD

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 1M 2F [Deposition= DER]

***Psychomyia flavida* Hagen 1861**

MI: Alger County, at light, Doe Lake at Doe Lake Road (USFS Road 2268) N46.25915, W86.67373, D.E. Ruiter, 05 Sep 2009, 12F [Deposition= DER]

The Value of Entomological Organizations

A.E Brower, undated, early 1940s

(*Editor's note: Here is the text of a paper that was presented to the Detroit Entomological Club in the early 1940s. I printed a few other stories like this one in 2006, 2007 and 2009.*)

In organization there is strength - apparently moral strength as well as the physical strength of combined effort. Compare the activity and accomplishments of collectors about Boston, when the New England Entomological Club was in existence, with the period before and after. Montreal, New York City, Brooklyn, Philadelphia, Pittsburgh, St. Louis, and San Francisco are some of the other cities which have had at times active groups of collectors, either with or without an organization, and can be compared. Furthermore, compare entomological or other scientific activity in these cities with similar cities in the South. It is not my intention to imply that the burning zeal of certain individuals does not carry on in spite of isolation, or that they have not been responsible for most of the accomplishments of amateur entomologists. So many of these individuals have been associated at one time or other with a group of fellow collectors that one cannot escape the conclusion that even the lone wolf may have much to gain from association with an active group of amateurs. Collecting trips to distant places, extensive bait or light collecting are much easier or practical with a group. The stimulating effect of association with others similarly engaged, leads to valuable work and contributions on the part of persons who would otherwise lose all interest.

All of us recognize the fact that large regional general collections, scientific libraries, state collections of insects or state lists and other projects require public, institutional, or group support, if for no other reason than that the life-span of an individual is too short. Then too collections and libraries require much housing space and continual care to preserve them.

The aims of most amateur collectors have been to collect, identify both adults and early stages, preserve a few specimens of each species and form, and discover the food plant. Sometimes a new species or other name is proposed or the early stages may be described in some scientific publication; or the published item may be a list of species, or description of some methods of collecting, or of an unusual catch. These contributions to the basic knowledge of our fauna constitute a large part of the available information regarding insects. This work is invaluable today as in the past. Experience has shown that both the individual collector and the usual organization of collectors can make valuable contributions along these well-known lines. There is so much yet to be done that this work needs encouragement. Its results are the basic data on which broader biological investigations must depend. While we must continue to recognize the importance and stimulate prosecution of the foregoing lines of work, we can profitably combine them with more recent lines of study.

The field of ornithology may offer some very profitable comparisons and suggestions for stimulating lines of work. Birds form a comparatively small, readily observed, important group of living things; consequently bird study is far ahead of insect study. So much of the basic work is done. Now attention is centered on the broader biological or ecological problems. Investigations of birds as living, dynamic, responsive components of the complex life about us now hold the stage. The value of this work is unquestioned and its enthusiastic supporters legion.

Many of the newer lines of insect investigation are particularly adapted to group work or rather require the efforts of more than one worker. Groups like you have a virgin field in group projects. Next to nothing has been done as a group by any organization of amateur entomologists in this country. Numerous fertile lines of investigation are awaiting attention by some group of enthusiastic amateurs. I will attempt to make no more than a few brief suggestions. Many things need to be considered when planning any field project.

One of the lines on which I have worked and know the need of concerted action by more than one worker, the more the better, is the problem of insect movement. Movement can be determined by marking specimens. My marking work was with Catocalas for daytime work and at another time cutworm moths for light trapping. Working alone and for but a short period, I was able to get such important results, that I feel group action is going to yield unusual returns under favorable conditions. Moths and other insects can be fairly easily and positively marked so the individual can be recognized at a latter date. Markings to represent serial numbers can be applied, and any number of the larger insects can be marked so they can be individually recognized at a latter date when retaken. Catocalas can be found in numbers on tree trunks in southern Michigan some years. All which can possibly be found in an area can be caught and marked, then released. Then on following days these can be sought. At the same time all possible individuals should be collected at bait and light in the area and marked. If possible a similar project should be carried on in another favorable area of timber one or more miles away. Following the marking work as many individuals as possible should be collected in the areas where marked and in as many other areas as possible, and in as many ways as possible. In this way the movements of the marked individuals can be traced, their length of life approximated, and many other things learned.

Another project some favorable fall would be to collect thousands of monarch butterflies, mark them, and by means of newspaper publicity and perhaps assistance from professional entomologists trace their southward movement to their winter home.

Turn at random to a genus of insects in a check list or a state list of insects, then by referring to the published literature find out what amazingly little has ever been recorded concerning the habits of most of the species.

For the adult: How long do they live? What do they feed on (when the collector does not put out bait)? How often do they feed? How far are they attracted to bait? Do they find the bait by chance or by smell? (A series of bait line through a good area of timber should yield some interesting information on habits.) How soon after emergence do they mate? Where do they spend the day or night? Where do they go during a cool spell? How far is the daily range of an individual? Do they have a definite home territory? Do their habits change after oviposition begins or after the eggs have been laid? Do they make long migrations? Do the specimens you find in the woods one day fly away and be replaced by other individuals coming in from different directions? The alert collector will discover other more fascinating and practical problems to work on in his territory.

More than one project is desirable, because the very favorable conditions necessary for best results occur at varying intervals of years. Have plans made and when conditions are right concerted action will yield important returns. Regular collecting can be done as usual for all insects found except the particular species or group being experimented with. The usual projects can be carried on. Work on many group projects becomes competitive like a game. Marking and hunting the insects can be made so exciting that Scout groups will participate. The desirability of making some of the projects so interesting that young groups will engage is to be stressed. Too many active entomological clubs have-recruited no young blood and have died with the senility of their organizers.

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Requesting First State Arthropod Reports

ITS TIME AGAIN TO SET THE RECORD STRAIGHT! Have you recovered an arthropod species not before recorded from your state? Perhaps you've recovered one a few years ago which has not yet been reported in print. Publishing new state records significantly adds to our understanding of species ranges as well as their expansion.

Submit your record(s) for our next newsletter (spring 2011). If you're not sure of the identity of your specimens, it's a great reason to attend our next Breaking Diapause, **Saturday, 19 March 2011**. See the announcement on this page. The more information you have regarding your recovery the better. Include as many of the following points that you have: species, common name (if there is one), family; date, location of recovery, method of recovery, identifier, photograph, habitat, and current specimen(s) location. Of course, you will be credited for all your information!

Send your information to Ron Priest at: priest@msu.edu or 243 Nat. Sci. Bldg., M.S.U., East Lansing, MI 48824-1115. If you have questions, then do contact me by Email, phone: 517-353-3891, or U.S. mail. I look forward to hearing from you, learning what's new, and seeing your records in print. Cheers. *Ron Priest*

Authors Needed for MES *Entomology Notes*

In 1972 the first MES *Entomology Note* was published on the topic of antlions and tiger beetles. Since then, another 30 or so have appeared. The topic usually includes details on collecting techniques, rearing methods, and even insect-related games. I'm sure that each of us has entomological knowledge or skills that others would find valuable. So please consider drafting a *Note*. I'll be happy to work with you to prepare the final layout. *Notes* are usually 2 pages in length. Most *Notes* can be downloaded at the MES website.

Robert Haack

Breaking Diapause Saturday, 19 March 2011

Breaking Diapause is the annual MES spring entomology meeting. It is an informal, social gathering for members and those interested in becoming members. Breaking Diapause will be held from **9:30 AM till mid-afternoon** in **Room 244** of the **Natural Science Building** (Nat Sci) at **Michigan State University**. In addition to socializing with a variety of professional and amateurs there will be plenty to do. The insect museum at Nat Sci will be open so bring along your unidentified insects. Folks will be available to show you around the collection if you're unfamiliar and assist you with any unknowns you have. Bring along your entomological duplicates you'd like to trade, sell, or just give away. You might also bring along specimens or images to show, trade, or give away. If you have an entomological display, do bring it along. As usual we'll also have a variety of finger foods. See you then! *Ron Priest*