



Newsletter of the Michigan Entomological Society

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58th Annual MES Meeting: June 22-23, 2012

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The 2012 MES annual conference will take place on 22-23 June at the G.H. Gordon Biological Station and Rockwell Lake Lodge (<http://www.therockwelllodelodge.com>), located in Lake County approximately 25 miles southeast of Cadillac. This is the largest private college biological station in Michigan, combining an active research station with a functioning resort and conference center.

The property features a 50-acre lake with good fishing. There are kayaks, canoes, and other boats available for attendees to use free of charge. The property also contains a small creek, upland forest, meadows, and various types of wetland habitats. There are also several miles of interpretive hiking trails. Insect collecting is encouraged.

Elegant rooms for 1-2 people at the Lodge are available at \$79.00 per night (which includes breakfast). Beds in the cabins are available for \$15.00 per night. Meals can also be purchased in any combination from the Lodge. All lodging options include free Wi-Fi. Registration details were mailed to all members and can be found on the MES website.

Our keynote speaker is Dr. Ralph W. Holzenthal, Professor of Entomology at the University of Minnesota. Ralph will speak about insect diversity and how the 'digital revolution' can help overcome the concerns of describing new species.

There still may be room for additional talks, so please contact Dave Houghton if you wish to speak. We hope to see you at this year's meeting. We encourage submission of oral and poster presentations on any topic related to entomology. Students are especially welcome and there will be cash awards for the top student presentations.

For more information, contact: David C. Houghton by phone at (517) 607-2394 or by Email at <david.houghton@hillsdale.edu >.



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Current Annual Dues Schedule

Student (through university).....	\$12.00
Active	\$25.00
Institutional	\$45.00
Sustaining	\$35.00
Life	\$500.00

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2012 MES ELECTIONS

The following MES members ran for two open positions on the MES Governing Board in 2012. We thank them for their willingness to serve the Society. Ballots are still coming in and the results will be announced at the 2012 MES Annual Meeting. **Martin Andree** and **Ranger Steve Mueller** ran for **President-Elect**, and **Julie Craves** and **Dave Cuthrell** ran for **Member-at-Large**. Please consider running for office in the future.

Martinoptera

Bug Mecca

Martin J. Andree

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Every passion has its own particular Mecca. Monet aficionados might take a stroll down the charming streets of Giverny, Harley-Davidson bikers might visit the Harley-Davidson Motorcycle Museum in Milwaukee, and fans of the Romanov Dynasty might venture to the site of their untimely demise in Yekaterinburg, Russia. Although I'm not sure of what or where they are, I'm certain that every devotee from quilting to spelunking all have their once in a lifetime place to visit before croaking.

But what about us, the entomologists? Do we have a collective Mecca? Do we have a place we need to visit before extirpating? Is it brazen and well known to all, or is it secretive like the vine-shrouded elephant graveyard? We certainly have deep traditions and hallowed ground. We have many historic men and women, made of heroic timber, full of passion and daring. The great forefathers of our craft who somehow managed to further our knowledge without the Internet, DNA sequencing, shelves of fascicles, Gore-Tex, DEET and the MES (this last one is almost impossible to comprehend).

Yet with all of this, I had difficulty putting a stake in the ground, erecting a signpost or putting a pin in the map. I was embarrassed about our lacking. Especially when I considered that even comedians have a personal Mecca. They visit the grave of Rodney Dangerfield in Los Angeles, where the inscription under his name reads, "There goes the neighborhood." I felt slighted. Where are our heroes anyway? Does our Mecca lie with the dead?

I considered the great Linnaeus. We use his system every-day. To infidels, who are unfortunate enough to be sitting next to us at McDonalds while we discuss the evening's haul of specimens, it must appear that we speak not English, but Linnaeuses. He seemed like the preferred universal candidate: he has perfect bug feng shui, his house is preserved, he is buried and he has a fancy tombstone. What could be better for the wife and kids than a little jaunt to Sweden? You could yammer on incessantly about his childhood while visiting Råshult, the town of his birth, clap your hands gleefully as you traipse the flower-filled meadows of his youth, and tell yarns about his life, as you roam the rooms of his preserved house at Hammerby, whilst thinking hungrily about unburdening your picnic hamper in Carl's backyard. All of this mirth would end on a morose note, as you tearfully stood at the base of his tombstone, set somberly in the floor of the Uppsala Cathedral.

Here is where old Carl falls from grace. He isn't ours alone. His fingerprints are all over everything from Old World monkeys to club mosses. He won't do, he isn't exclusive enough and besides, his gravestone, unlike Rodney's, isn't as funny. Instead of having it engraved, "Caroli a Linne", he might better have left a smile on the face of all who followed, and instead inscribed, *Carl linnaeus* (L. 1778), Plate IX, Fig. 9.

There are many others to consider, from J. Henri Fabre to J. L. LeConte to W.J. Holland. All great, but not so all encompassing as we would like. Perhaps the dead are not for us? Perhaps we should look towards geography? Several places come immediately to mind. There is the great gathering place of the Monarchs in Michoacán, Mexico. That magical place where the yearly migration ends and the butterflies hang heavy on the firs and the air is filled with glinting wings. The perfect Mecca for Lepidopterists.

Another excellent candidate is "Grasshopper Glacier," in Carbon County, Montana. Here one can purportedly pluck, perfectly preserved, now extinct, Rocky Mountain Locust (*Melanoplus spretus*) right out of the ice. What better Mecca for Orthopteran lovers?

Once again, it seems that our geographic leanings are fraught with specifics. No one place seems to cover all of the entomological bases. If neither the dead nor geographic areas of interest hold the answer to our collective Mecca where does it lie?

What about the great collections? Here might we finally find something for everyone, from those with a hot desire to view Firebrats to those thirsting for more knowledge about mosquitoes? From Cornell to Florida State, collections of great magnitude and impressive credentials abound. The next step up is Harvard's Museum of Comparative Anatomy, assuring days of mind-boggling sensory bug overload. Lastly there is the über-impressive, gigantic National Collection at the Smithsonian. With 35 million specimens housed in 132,354 drawers, this is the granddaddy of them all. Certainly any of these would fit the bill, with enough breadth of bugs to slake any thirst. Any of these fine institutions could fill the dance card of the prefect bug Mecca faster than a bug zapper on the porch on a warm night in July, right?

I think we can do better. Although museums take the brass ring for sheer numbers of insects, they still only have insects. Billions of bugs do not make a Mecca. We need more, and it must be unique. We need the experience of place, we need to feel at home and to be part of a larger community of believers and we need to spend money.

After deep reflection, I've finally settled on the prefect bug Mecca:

Bio-Quip. No entomologist's life is complete without a trip to their store in Rancho Dominguez, California. They have it all, from pins to drawers, to traps and forceps, from books to spreading boards, from nets to vials, they meet our every capricious desire. This is our store, there is no other like it in America. When you walk in and look around in dreamy admiration of their wares, you find yourself saying, "This is it! This is where I always wanted to be. I want to work here. I want to live here. I'm understood, and finally, like the "swallow-tails" of Capistrano, I feel I am home!"

Ken Fall, the owner, gave me a personal tour of their production facility, unselfishly showing me the machinery that aids in the crafting of the perfectly fitted Cornell drawer. Lavishing me with free advice on building my own drawers and even providing me a gratis small plastic baggie of corner hardware. What a place! I couldn't decide for a moment if I was in nirvana or in Mecca. I could feel the love of insects at every turn of the showroom. From the scratch and dent room to the book section. The displays of collecting equipment and cabinets left me speechless. Here I was, surrounded by brothers and sisters of the same ilk. All of them had the same blissful smile of peace on their lips; there was no place any of us would rather be. My wife, having ditched me for the beach five minutes after we walked through the door, had no idea of what she was missing.

I have happily forgotten the carnage on my Visa card, but I left laden with treasured gifts from my visit: a signed edition of "Dragonflies of North America," three new net bags, a handmade pin holder, a light trap, an aspirator, cases of specimen envelopes, a scarab beetle tie, an arm load of Schmitt boxes and a t-shirt emblazoned on the front with the complete history of the gypsy moth (you won't find that hip shirt at Abercrombie and Fitch) What bliss!

I made my pilgrimage in 2004. Even though my wife only stayed for five minutes, she still has fond memories of my journey, especially the part where I was chanting in a loud and delirious voice, "This is it! This is where I always wanted to be. I want to work here. I want to live here. I'm understood, and finally, like the "swallowtails" of Capistrano, I feel I am home!" Have a pleasant journey fellow pilgrims!

Little Bug

Little bug in my hand
trying to get away,
let me get a look at you
I won't make you stay.

I just want to find out
what kind of bug you are,
would it be so terrible
to be put in a jar?

You drop to the bottom,
you crawl to the top,
I can't see you good
if you will not stop.

I lift off the cover
to get a better look,
but a flick of your wings
and that's all it took .

by Ken Tennesen
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Three New Enviro-Weather Stations Are Online

Beth Bishop

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Michigan State University added three new enviro-weather stations to its state-wide network bringing the total number of stations to 67. The new stations are located in Mecosta, Kalkaska and Gaylord, MI. The new stations were supported with funding from the Michigan Potato Industry Commission. These stations provide historical and current weather information as well as degree-day tools. See <<http://www.enviroweather.msu.edu>>.

Personal Experiences with Tabanids

Paul Cooney

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On a hot July afternoon when I was having dinner with relatives in Ohio, I suddenly leapt from my chair and rushed outside. A hulking fly had landed on the outside of the kitchen window, and I was determined to catch it. “A horse fly? Those things are common out here in the country, what’s the big deal?” said one relative after I excitedly told them I wanted to catch the infernal creature. Though I grabbed my fly net and a plastic jar, the fly was gone in the approximately seven seconds it took me to get ready to nab the beastie. Later that evening, not long before twilight, I went to the woods adjacent the soybean field where my relatives live, and there I heard and saw large flies buzzing past me. When I saw a large, black-colored fly alight on a gray-barked tree trunk, I was able to net it. Oh, the thrill of it! I have been collecting tabanids for the past few summers, and this was the biggest specimen I had gotten to date! Back home in Michigan, there were several places I was able to catch these blood-suckers as well. The hot, humid weather we had been experiencing seemed to make conditions perfect for tabanids. Any park with marshes or ponds, and especially where horses were present, was a good tabanid collecting area. Sleepy Hollow State Park in Clinton County, MI, which has a horse camp area, was a particularly good location. On a day when no one was utilizing the camp, I was able to walk around the hitching posts and nab several horse flies. Some seemingly oblivious flies allowed me to slowly place my net over them and coax them into it or place a jar over them. Others were more vigilant and proved too swift for these maneuvers.

Some might ask, why collect deer flies and horse flies? Well, obviously one is likely to already have an interest in entomology to do such a thing. But to anyone who has seen the various eye patterns tabanids possess, the shiny copper, green, even purple sheen of the eye clusters in all sorts of patterns, and the smoky patterns on the wings of the deer flies, one can see

that these flies have a unique place among the Diptera. Anyone who spends time in the woods during humid summer weather has likely experienced being “buzzed” by these flies. They do not always land and bite, but can be pesky because of their habit of hovering close to you. When they do bite, however, it will get your attention. This is because of the structure of the mouthparts. These are designed to slice rather than poke, as is the case with mosquitoes. An anticoagulant is present in the saliva to keep the blood flowing from the site of the bite. Though the mouthparts appear simple in structure, they are complex in design. The mandibles are scissor-like structures that slice flesh while the maxillae probe the incision. The hypopharynx is connected to the pumping stomach and is used to ingest blood from the wound while a labrum encloses these mouthparts. The large compound eyes search for visual cues that are then picked up by the antennae, which contain chemoreceptors (i.e., they can detect odors). The females need a blood meal so they can produce eggs, which are laid in clusters on vegetation usually near or in water. Males feed on nectar and other plant liquids and often go unobserved. Tabanids can sometimes be collected in large numbers using a malaise trap or a modified Manitoba fly trap. The use of CO₂ as an attractant has been shown to be helpful in collecting tabanids. Or, like I do, you can simply buy or make a cheap fly net and swing this about your head and body when you hear them buzz you. I keep a small ice chest in my car to transport plastic vials of flies home to then freeze before mounting specimens.

I have identified several tabanid species from Maybury State Park (MSP) in Wayne County, MI, and from Island Lake State Recreation Area (ILSRA) in Livingston County, MI. For example, I have collected *Chrysops carbonaria* (MSP), *Chrysops callidus* (MSP), *Chrysops vittatus* (ILSRA and MSP), *Chrysops wiedemanni* (ILSRA), and *Hybomitra lasiophthalma* (MSP).

I would like to acknowledge the advice of Dr. Fred Schreiber, California State University-Fresno, and Jim Kalisch, University of Nebraska-Lincoln for help in preparing this article.

Spring 2012 Governing Board Meeting Minutes - at Breaking Diapause, 17 March 2012

Present: Toby Petrice, Therese Poland, Bob Haack, Ron Priest, Anthony Cognato, Mark O’Brien, Harry King, Ted Herig, Adrienne O’Brien

The 2012 Breaking Diapause gathering was very well attended – we had at least 35 people sign in with several out-of-state visitors. It was a gorgeous day in E. Lansing and the MSU students were definitely “wearing the green!” Thanks to the folks who set up the refreshments and displays – we all felt welcome.

Reports:

Secretary: Adrienne O’Brien – So far, 105 members have renewed or joined. The ballot for the upcoming governing board election will be included in the Spring newsletter or mailed in early May.

Treasurer: Tina Ciaramitaro – via email: In financial news, our checking account balance is still hovering around \$22,000. Membership dues are rolling in and our main expenses have been the printing of the latest GLE (\$3800) and a final check to Marjorie O’Brien for the final installment of GLE scans (\$1075). The tax exempt application fee was \$850. I was notified by the IRS that our application for tax exemption has been received and is being processed. We should expect to receive another status update from them around the end of May. I have recently deposited over \$3700 in dues, subscription payments, and GLE page charges, and am expecting around \$2700 more from these sources in the coming weeks.

Newsletter: Bob Haack – Bob will be traveling to China and hopes to have the newsletter ready to mail out by late spring. Bob is always looking for short articles for the newsletter.

Journal: Therese Poland – the Spring/Summer issue of the Great Lakes Entomologist is nearly complete – revisions are being returned. In addition, a special themed issue for Fall/Winter is nearly filled. Keep those articles coming!

Webmaster: Mark O'Brien – all volumes, through #32, have been scanned and are on the MES website. The remaining issues will be added soon. In addition, all of the newsletter issues will be scanned and added to the website.

New Business:

1) At the Fall 2011 Governing Board Meeting, we voted to expand the limit for student memberships (\$12) to all students, through grad school. However, the MES Constitution states that students may not hold office or vote. Since the change was made to encourage more student participation, a motion was made to put to a vote of the general membership on whether or not the constitution should be amended to allow student members to vote and hold office.

2) In 2011, MES received a donation of \$75 from member Alice Phillips with this note: "I want to send \$75.00 so that a student could attend the annual meeting. I wish to do this in honor of my friend Trudy Beal with whom I used to attend the meetings. Unfortunately neither of us can travel any more, but we have many fond memories of past meetings." The Board decided to match this generous donation, for a total of \$150. Interested students are encouraged to apply by writing a paragraph on why they wish to attend the meeting and some information on their interests and field of study. Mark and Adrienne O'Brien and Ron Priest will collect the entries and decide who the recipient will be before the June 22nd meeting.

Submitted by Adrienne O'Brien, MES Secretary, April 15, 2012

New Address System at MSU

Michigan State University is changing its addressing system to include locatable street addresses instead of building names and numbers to improve 911 information, emergency response and enhance GPS capabilities. This change is affecting all buildings on MSU's East Lansing campus. When sending mail to the Department of Entomology, please include "288 Farm Lane" in the address, e.g.

Department of Entomology
Natural Science Building
288 Farm Lane, Room 243
East Lansing, MI, 48824

Michigan Butterflies & Skippers Publication "Under New Management"

Erwin "Duke" Elsner

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"Michigan Butterflies & Skippers" by Mo Nielsen is a valuable resource of information for anyone interested in Michigan's lepidopteran species. It has also been very successful as a "generator" of surveying activity and reporting of data by butterfly enthusiasts across the state. Mo quite intentionally avoided presenting species distribution maps that provided any sort of speculation about the occurrence of species based simply on their likelihood of presence based on known records in nearby counties. This spurred many folks like me to examine our personal collections and explore more sites within the state — certainly in the good name of science, but also to claim coveted county records we could brag about in our circle of colleagues. Since its publication in 1999, over 880 additional county records for 130 species of Michigan's butterflies and skippers have been provided to Mo. We've all been hoping that a new edition will someday be published with more counties colored in on the little maps, so we can show it off and declare which new green patches on the maps are "ours!"

I am quite honored to announce that Mo has turned over the reins of this project to me. Mo has given me his extensive files of information that led up to the preparation of the book, and the new distribution records obtained since that time. I have begun the process of reviewing the information, and preserving it in an electronic format for protection and future use. Bob Kriegel has volunteered to help with the next step of the process, creating a modern data base format in which we can enter the historic data and future information.

There is currently very little chance for a revised edition of the bulletin to be produced by MSU. They have a large inventory of the original edition, and they have made it clear that no revision will be considered until the stocks are depleted.

I will be investigating other routes to making the new data accessible, possibly through reports posted at a web site.

If you wish to submit butterfly and skipper distribution data for inclusion in the database and future reports, please contact me at the address or email given above. You can rest assured that Mo will remain involved in this work - his expertise and guidance will be very important!

I've also accepted an invitation from Ranger Steve Meuller to join him as a volunteer state coordinator for the Butterflies and Moths of North America (BAMONA) web site. BAMONA invites public submissions of species records or requests for help with identification to the site. Volunteers examine the uploaded photos, and respond with a verification of the record or a species determination (if possible). If their submission represents a new county record for the species, it will be added to the species/county maps on the BAMONA web site. Ranger Steve has been handling all of the Michigan submissions to this site for several years; he will continue to be active in this role.

2012 Joint Meeting of the Dragonfly Society of America Northeast Region and Great Lakes Odonata Meeting Sault Ste. Marie, Ontario 6-8 July 2012

Organizers: Colin Jones, Bryan Pfeiffer, and Bob DuBois

Meeting information is posted at: <http://www.wingsenvironmental.com/nedsa2012/>.

2012 Summer Field Courses

The Eagle Hill Institute on the coast of Maine will have several field courses in 2012, including several related to invertebrate zoology: Land Snails and Slugs, Marine Benthic Macroinvertebrates, Decapods, and Aquatic Entomology. For further details, see www.eaglehill.us.

Collecting Gray Petaltails (Odonata) With Mr. Williamson

Mark F. O'Brien

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I was recently writing some text about the Gray Petaltail (*Tachopteryx thoreyi*) in Michigan for the Michigan Odonata Atlas that Julie Craves and I are authoring. We don't have many Michigan records-- they are known from only three southwest counties and Michigan is at the northern limit of its range in the Midwest. Another reason is that they inhabit wooded mucky hillsides with perennial seeps or fens with meandering mucky-bottomed streams -- which are pretty much restricted to the southernmost part of Michigan. They also fly fairly early in the season, from the end of May into late June. In Michigan, it is considered a Threatened Species, and is therefore protected within the state.

The Gray Petaltail is a member of what is considered an archaic family of dragonflies, the Petaluridae. One thing that makes them different from other Odonata is that the larvae are semi-terrestrial and breathe air, venturing around at night to capture terrestrial prey. Dunkle (1981) probably wrote as good a paper as can be done on the species, as he monitored a population in northern Florida, reared specimens, and watched marked individuals through their flight period. An earlier paper by E.B. Williamson (1901) contained the first observations on oviposition and a description of the nymph. I then wondered if we had the specimens that he observed in southwest Pennsylvania in the University of Michigan Museum of Zoology (UMMZ) collection -- and we did. The oldest specimen was collected in 1899-- only 113 years ago!

What really caught my eye though, was the specimen from Indiana that was that state's first record, collected in 1911 by C.C. Deam. Charlie Deam was a good friend of Williamson and is most famous as a botanist in Indiana (Kriebel 1987). Although the paper triangle is mottled and stained, the specimen is still in great condition (Figures 1, 2). A second specimen col-

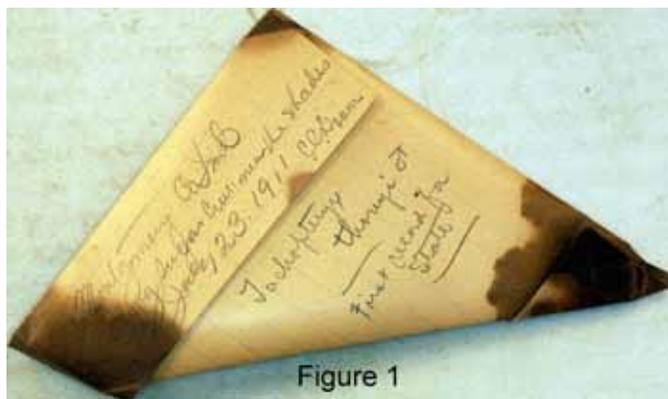


Figure 1

The original paper triangle that contains Indiana's first record of *Tachopteryx thoreyi*.

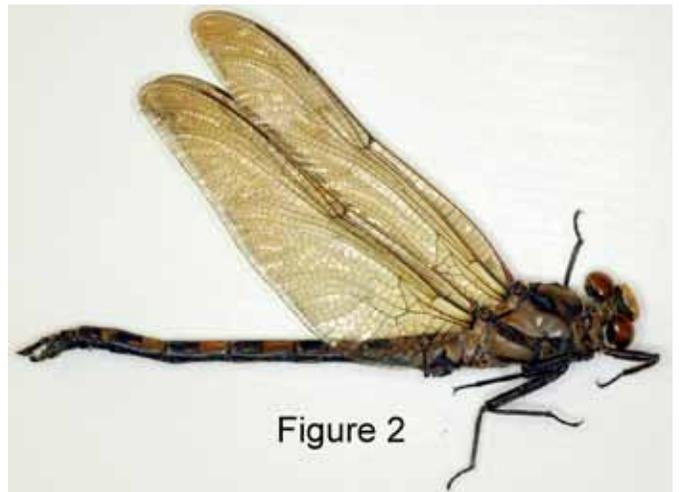


Figure 2

The adult male *T. thoreyi* that's in the paper triangle.

lected by Deam in Perry Co., Indiana on 4 June 1918, has a most interesting comment: "It alighted in front of me and I killed it with the machete I was carrying." Those botanists did not mess around back then!

Williamson's collection is housed at the UMMZ and therefore we have a good number of *T. thoreyi* from Indiana, Pennsylvania, Missouri, and elsewhere (but only one for Michigan, collected by T.H. Hubbell in 1918). Farther on in the drawer, are specimens collected later in Indiana by Williamson. What makes them so interesting is that each specimen is accompanied with a small entry like that in a field notebook, but written on the paper triangle in pencil or fountain pen. Figure 3 is one example. The text reads:

"Tach[opteryx] thoreyi ♀
Mud Creek in Peabody Woods, Cass Co., Ind.
6/23/1929
La C., Eli C., & EBW

"Only one seen -- flew in and alighted 5 feet high in large tree near creek in pasture. At pool at base of tree took *Ischnura posita*, *Chromagrion conditum* and *Amphiagrion saucium*. (over) Taken at 4 pm, day partly cloudy, rather warm, and windy. Hunted about but could find no others."

Another triangle has the following written on it: "Tach. thorey ♂/ Monument City, Huntington Co., Ind. Bog/ July 10, [19]29/ On tree as usual, and as usual, had to touch abdomen with net to cause it raise abdomen above the bark. All day I saw only one other-- as Eli Captain approached the bog ahead of me a ♀ flew out and alighted on his arm (good thing EBW wasn't a botanist!-MFO). He called to me and I hastened toward him. Whereupon the (over) dragonfly left Eli and flew and alighted on my shoulder. As Eli approached with the net it flew away though the woods. I thought its abdomen was wet and a little muddy and I think it had been ovipositing. The season is over for *Tachopteryx*. This is the 11th specimen we have taken at bog."

Other paper triangles from Indiana have information regarding prey taken by the adults, and other tidbits of behavior. These are invaluable not just for their status as vouchers, but the additional information is something rarely seen with a specimen. Seeing

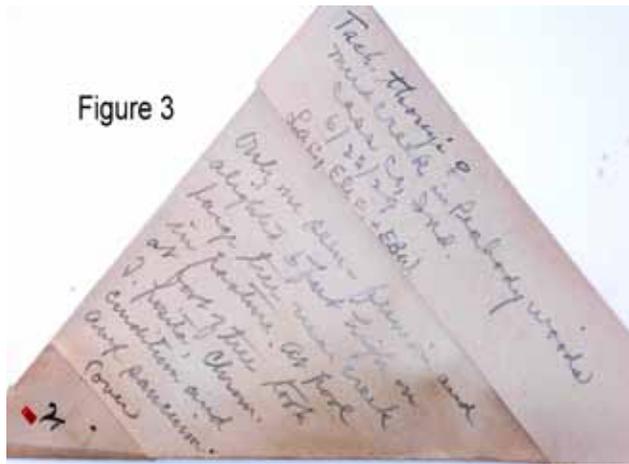


Figure 3

A paper triangle from E.B. Williamson, with its own field notes as described in the text.

these specimens made me feel as though I was on that trip with E.B. Williamson, watching for Gray Petaltails in the Indiana fen. Many of the sites he visited, such as Vanemon Swamp, no longer exist. This collection of *Tachopteryx* also underscores why prop-

The Michigan Odonata Atlas

Mark O'Brien¹ and Julie Craves²

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We are collaborating to produce the Michigan Odonata Atlas, which will be a book that provides species accounts for all the dragonfly and damselfly species found in Michigan -- the first compilation of the state's Odonata since Edward Kormondy's undertaking in 1958. For those of you that have been following the activities of the Michigan Odonata Survey (MOS), this announcement should bring a smile and a sigh of relief. The Atlas will provide distribution maps, habitat information, conservation status, and historical background -- all specific to Michigan. The Atlas will serve as a guide to monitoring changes in abundance and distribution of these insects, which are excellent biological indicators of the health of our ecosystems.

It's been 15 years since I (MO'B) initiated the MOS, and it is time to assemble 28,000 Odonata records into a coherent and comprehensive Atlas which will be of use to a variety of audiences. Although we do have a large amount of data, we are still gradually "filling in the holes" in some of the less-collected areas of Michigan. As we put the Atlas together, we'll be identifying some obvious gaps in our knowledge, and make specific requests for help in collecting target species or in particular regions during the 2012 field season. Stay tuned to our web site for more details!

erly maintaining specimens and their associated materials is so very important. There may be additional information associated with a specimen -- whether it's in a field notebook, computer file, or written on an envelope. These examples of fieldwork by an astute and tireless odonatologist are paying dividends nearly a century after they were collected. We are stewards of the flora and fauna that people like Williamson worked so hard to acquire, and their value is inestimable. I used Acme Mapper (<http://mapper.acme.com>) to search for the Cass Co. site, and it took me to a place that is a possible match. I wonder if Gray Petaltails still fly there?

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With Dennis Paulson's new "Dragonflies and Damselflies of the East," there is really no reason for us to write a pretty color guide that would be a mere subset of Dennis' book. We have maintained for quite some time that an *atlas* of Michigan Odonata would be a far more useful resource for anyone working in ecology, riparian land use, natural history, and conservation. The rich data set that we have will be used to the fullest extent possible to present a complete and authoritative narrative on the Odonata in Michigan.

We are still accepting voucher specimens for the MOS catalog, and people who would like to participate in the Atlas can contact us via email.

You can also visit <http://mos-atlas.blogspot.com/> to see how we are progressing.

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Photo of *Argia fumipennis*, by M.F. O'Brien

Update on Michigan Mosquitoes and Mosquito Control

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Mosquitoes have a significant impact on our lives both as nuisance pests and as vectors of disease to humans and domestic animals. As with other insects, mosquitoes can be transported by human activity or take advantage of changing weather patterns to invade new territory. In spite of their importance and the ease with which they can be sampled (just sit out in your back yard on a summer evening), we do not have detailed records of mosquito distribution in Michigan. This may be due in part to the fact that we have over 60 different species to contend with. Thanks to the efforts of a few hardy souls in our state colleges and universities and the surveillance program of the organized mosquito control districts, though, we have recognized a few changes over the 30 years since the last published list of Michigan's mosquitoes (Casani and Newson 1980).

Perhaps our greatest concern has been the invasion by *Aedes japonicus*. *Ae. japonicus* is a container-inhabiting mosquito previously found in Japan, Korea, Taiwan and parts of Russia and China. It was first reported in the United States in New York and New Jersey during 1998 and has subsequently spread to at least 22 states and Canada. It has also been introduced into several countries of central Europe. The first collection of *Ae. japonicus* in Michigan was reported by Mike Kaufman of Michigan State University (MSU), Department of Entomology (from one of those back yard samples) in Eaton County



Aedes triseriatus feeding

in 2003. This species will oviposit and develop in an amazing variety of containers from a tiny piece of wrinkled plastic to tires and tree-holes, so it is easily transported and a very effective colonizer. Reports from the mid-Michigan mosquito control programs demonstrated just four specimens taken in Midland and Saginaw Counties during 2004 but over 400 collections from throughout Midland, Bay, Saginaw and Tuscola Counties during 2006.

It has now been found in Allegan County and beyond and as far north as Kalkaska and Crawford Counties. Numbers of *Ae. japonicus* in Michigan to date are too small to be a serious nuisance or disease threat but they will attack during the day so they may be more noticeable than some other species. Laboratory studies have demonstrated fairly efficient transmission of West Nile virus so they could theoretically become bridge vectors in Michigan.

The Asian tiger mosquito, *Aedes albopictus*, is another container-inhabitant that is spreading across the globe thanks to scrap tire trade and other human activity. It has been implicated in recent epidemics of dengue fever, chikungunya and other viral diseases. Since its discovery in Houston, Texas, in August 1985, it has spread to at least 26 states in the continental U.S. Limited focal infestations in Indiana, Minnesota, and Ohio, apparently have been eliminated through persistent control efforts by state and local agencies, perhaps coupled with severe winter temperatures. Thankfully, this species has not yet made its way to Michigan but, we need to remain on alert. Areas as close to us as Chicago, Illinois and southern Indiana and Ohio continue to be infested and if we have more winters (or should we say non-winters) like this last one or if *Ae. albopictus* becomes more acclimated to northern temperatures, this species may continue to move our way.

Psorophora columbiae, the dark rice-field mosquito, is another recent inhabitant of Michigan. *Ps. columbiae* is a native floodwater species distributed throughout much of the southeastern U.S. into Mexico and Central America. It can be a serious nuisance pest in rice-growing and pasture areas (it has been reported to kill livestock) and is a potential vector of Venezuelan equine encephalitis virus. This species was first collected in Michigan in Saginaw County during 2007. There may



Culex reflection

be an established population in Saginaw County as this species has been collected each year since 2007 but it has not yet been seen elsewhere in the State. *Psorophora ciliata* and *Psorophora ferox* are also distributed throughout the southeastern U.S. but they have historically ranged a bit further north than *Ps. columbiae* and have been seen in Michigan for some time. *Ps. ciliata*, the shaggy-legged gallinipper, is the largest blood-feeding mosquito in North America. When a 3/8" mosquito with dark, erect scales (shaggy legs) lands on you it is a memorable experience and will generate calls to news organizations or mosquito control offices. We have received slightly more than usual such reports over the last few years although they are too few and too sporadic to suggest a definite trend.

Thanks to human endeavor, one mosquito species seems to have been extirpated from at least a part of Michigan. *Aedes sollicitans* is a salt marsh mosquito distributed primarily along the U.S. Atlantic



Aedes canadensis larva



Two-headed mosquito

and Gulf coasts with scattered populations inland. One such population was found in mid-Michigan around areas of brine and gas extraction operations. When our mosquito control program started operation in the 1980's we could find *Aedes sollicitans* at will in certain areas of Midland County. Soil remediation in these areas over the last decade has significantly reduced the available habitat for this species, however, and none have been collected for several years.

Looking to the distant future, we do not have sufficiently extensive surveys to detect slow, subtle changes in the distribution of Michigan's mosquito populations but groups at the Centers for Disease Control and Prevention, University of Notre Dame and others are conducting surveys and producing models to investigate the possibility of such changes across the United States in the event of increasing global temperatures. While the idea of warmer temperatures usually causes us to think of new species invading Michigan from the south, it is interesting to note that the models quite reasonably also predict a shift in the southern limit of some species' distribution. Michigan is on the southern edge of the range of a number of sub-arctic/boreal mosquito species. In time, *Aedes decticus*, *Aedes euedes* (formerly *Aedes barri*), *Aedes impiger*, *Anopheles earlei*, *Culiseta minnesotae* and others could perhaps be pushed up to Michigan's Upper Peninsula or even completely out of Michigan.

Mosquitoes can, of course, move disease agents around the world as well as themselves. West Nile virus (WNV), seen primarily in Africa, Europe and parts of Asia, first appeared in North America in 1999. From the initial outbreak in New York the virus spread across the United States in the matter of just a few years. WNV-infected mosquitoes and birds were seen in Michigan during 2001. The virus made its way to Michigan's human

population in 2002 with 644 cases and 51 deaths reported. WNV is now established in Michigan with an annual incidence of approximately 10 - 50 cases. Some have suggested that immunity from low-level infections among humans has contributed to the reduction in human WNV cases after the initial epidemic but humans (and horses) are dead-end hosts; they seldom develop virus levels sufficient to infect mosquitoes. The virus matters to us, but we do not matter to the virus. Immunity among the enzootic avian hosts is probably much more responsible for the limited level of virus activity seen in recent years.

The residents of some areas in Michigan have sent out a call to business or local units of government for protection from these mosquitoes and mosquito-borne disease. A joint mosquito abatement commission was established in Bay and Saginaw Counties in 1980, splitting into two separate programs in 1984. County-wide programs followed in Midland (1984) and Tuscola (1997). Following the emergence of WNV, many pest control companies started or increased offering mosquito control services and a number of communities started treatment of catch-basins, an important larval habitat for the *Culex* vectors of WNV in urban areas. The greatest expansion of mosquito control services lately has been at the township level. Advanced Pest Management now provides contract mosquito control services to over 20 Michigan communities.

In addition to the direct activities of municipalities and private industry, mosquito control in Michigan is supported by many State agencies. Michigan State University, Michigan Department of Agriculture and Rural Development (MDARD) and Michigan Department of Community Health (MDCH) have conducted and coordinated programs of surveillance for mosquito-borne viruses. Ned Walker, Mike Kaufman, Rich Merritt, Mark Wilson and others at MSU and the University of Michigan have conducted basic and applied research on mosquitoes, malaria and more. MDARD and MDCH have cooperated in the development of an emergency arbovirus response plan for Michigan.

Culicidology is a captivating passion because there are so many mosquitoes to study with extremely diverse life histo-

ries. Whenever I am asked a question about mosquitoes the correct answer is "it depends upon the species". Different mosquito species will overwinter as eggs, larvae or adults. Only *Anopheles* species will transmit human malaria. Many mosquitoes (females only), will feed on humans and other mammals, but *Culiseta melanura*, *Orthopodomyia signifera* and others feed almost exclusively on birds while *Culex territans* prefers cold-blooded animals. The most troublesome species are those such as *Ae. vexans* and *Coquillettidia perturbans* which will feed on a variety of mammals and birds. *Toxorhynchites* species are parasitic as larvae and do not feed as adults. These mosquitoes have been used for laboratory study of pathogen development in the mosquito host (no risk of your experiment biting you) and for biocontrol of pest mosquitoes but, unfortunately, they are not likely to be found in Michigan. Of those mosquitoes that will feed on humans, only about 10 species are abundant enough to be significant nuisance pests across Michigan. In some years, the majority of all mosquito bites received may be attributed to the summer floodwater mosquito *Ae. vexans*. Further information on the biology and control of Michigan's mosquitoes, a field guide to common and distinctive species, news updates from the mosquito control districts and more can be found at the Michigan Mosquito Control Association's webpage: www.mimosq.org.

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Aedes japonicus

New County Records for Cerambycid Beetles Captured in Attractant-Baited Traps in Southern Michigan

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Wood-boring beetles in the family Cerambycidae (Coleoptera) play important roles in many forest ecosystems. However, increasing numbers of invasive cerambycid species are transported to new countries by global commerce and threaten forest health in the U.S. and worldwide. Our goal was to identify effective detection tools for a broad array of cerambycid species by testing some known cerambycid attractants and a pheromone in different trap designs placed across a range of habitats in southern Michigan in 2010. The study is described in detail in Graham et al. (2012). We compared numbers and species richness of cerambycid beetles captured with cross-vane panel traps and 12-unit Lindgren multiple-funnel traps, placed either at ground level (1.5 m above groundline) or canopy level (~3-10 m above groundline), at eight sites classified as either residential, industrial, deciduous forest, or conifer forest located in Ingham, Kalamazoo, and Oakland Counties, Michigan (see map). Traps were baited with commercial lures containing the host volatiles α -pinene and ethanol (Contech Enterprises, Inc.), or the known cerambycid pheromone 3-hydroxyhexan-2-one (Hanks et al. 2007; Millar et al. 2009). Panel traps were modified to capture beetles alive by replacing the supplied collection basin with a plastic funnel that directed beetles into a plastic jar (see Graham et al. 2010). Funnel traps were fitted with dry collection cups with a screen on the bottom to drain precipitation. We chose to capture the beetles alive so that we could return any species captured in large numbers to the site. All traps were treated with Fluon[®] PTFE (AGC Chemicals Americas, Inc., Exton, PA), which renders the traps more slippery, thereby increasing beetle capture and retention (Graham et al. 2010). Fluon was applied to the panel traps with a



Neoclytus m. mucronatus (F.), Photo by Robert F. Mitchell, currently at the University of Arizona.



Trapping occurred in the three Michigan counties highlighted in green (left to right): Kalamazoo, Ingham, and Oakland

paint roller and applied to funnel traps by dipping them into a bucket of Fluon until the surface was thoroughly coated. Captured cerambycids were collected weekly, identified to species and tallied. County records of cerambycid species were confirmed with Gosling (1973) and Gosling and Gosling (1976). The insect collections at Albert J. Cook Arthropod Research Collection at Michigan State University (East Lansing, Michigan), the University of Michigan's Museum of Zoology Insect Collection (Ann Arbor, Michigan) and the Illinois Natural History Survey Collection (Champaign, IL) were used to confirm county records of any species not found in the Gosling publications.

We captured 3723 cerambycid beetles representing 72 cerambycid species from 10 June to 15 July 2010. Overall, the cross-vane panel traps captured approximately 1.5 times more beetles than funnel traps. Twenty-one species were captured exclusively in traps at one height, either in the canopy or at ground level. More species were captured in hardwood sites (59 species) where a greater diversity of host material was available than in conifer (34 species), residential (41 species), or industrial (49) sites. New county records were identified for 25 species (Table 1). The most numerous species captured was *Neoclytus m. mucronatus* (F.) (see photo), accounting for 45% of the total number of beetles, yet it was a new county record for all three counties where trapping occurred. This demonstrates the importance of pheromones for surveys of native fauna; i.e., species are found in abundance when the proper attractant is used, but completely missed without it. *N. m. mucronatus* showed a preference for traps located in the canopy which may have also contributed to it not being collected in these counties before. Cross-vane panel traps baited with attractive compounds and installed at multiple heights above groundline should maximize the number of cerambycid species captured.

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Field site showing placement of traps near ground level and in the lower tree canopy.

Table 1. New county records of Cerambycidae captured in cross-vane panel traps or Lindgren multiple funnel traps in Oakland, Ingham, or Kalamazoo Counties, Michigan between 10 June and 16 July 2010. All traps were baited with α -pinene, ethanol and racemic 3-hydroxyhexan-2-one released at 150, 800, and 4.4 mg/day, respectively.

Subfamily	Tribe	Species	New Michigan county records
Cerambycinae	Clytini	<i>Clytoleptus albofasciatus</i> (Castelnae & Gory)	Oakland, Ingham
Cerambycinae	Clytini	<i>Neoclytus j. jouteli</i> Davis	Ingham
Cerambycinae	Clytini	<i>Neoclytus m. mucronatus</i> (F.)	Oakland, Ingham, Kalamazoo
Cerambycinae	Clytini	<i>Neoclytus scutellaris</i> (Olivier)	Ingham, Kalamazoo
Cerambycinae	Clytini	<i>Xylotrechus convergens</i> LeConte	Oakland
Cerambycinae	Elaphidiini	<i>Anelaphus pumilus</i> (Newman)	Oakland, Kalamazoo
Cerambycinae	Elaphidiini	<i>Parelaphidion aspersum</i> (Haldeman)	Oakland, Kalamazoo
Cerambycinae	Elaphidiini	<i>Parelaphidion incertum</i> (Newman)	Oakland, Kalamazoo
Lamiinae	Acanthocinini	<i>Acanthocinus obsoletus</i> (Olivier)	Ingham, Kalamazoo
Lamiinae	Acanthocinini	<i>Acanthocinus pusillus</i> Kirby	Oakland, Kalamazoo
Lamiinae	Acanthocinini	<i>Graphisurus despectus</i> (LeConte)	Oakland, Ingham
Lamiinae	Acanthocinini	<i>Graphisurus fasciatus</i> (DeGeer)	Oakland
Lamiinae	Acanthocinini	<i>Lepturges angulatus</i> (LeConte)	Oakland, Kalamazoo
Lamiinae	Acanthoderini	<i>Aegomorphus modestus</i> (Gyllenhal)	Oakland
Lamiinae	Agapanthiini	<i>Hippopsis lemniscata</i> (F.)	Kalamazoo
Lamiinae	Desmiphorini	<i>Eupogonius tomentosa</i> (Haldeman)	Oakland
Lamiinae	Dorcaschematini	<i>Dorcaschema cinereum</i> (Olivier)	Kalamazoo
Lamiinae	Monochamini	<i>Goes pulverulentus</i> (Haldeman)	Oakland
Lamiinae	Monochamini	<i>Monochamus carolinensis</i> (Olivier)	Oakland
Lamiinae	Phytoeciini	<i>Oberea praelonga</i> Casey	Kalamazoo
Lamiinae	Pogonocherini	<i>Pogonocherus mixtus</i> Haldeman	Oakland
Lepturinae	Lepturini	<i>Acmeops proteus</i> (Kirby)	Oakland
Lepturinae	Lepturini	<i>Bellamira scalaris</i> (Say)	Oakland, Kalamazoo
Lepturinae	Lepturini	<i>Brachyleptura champlaini</i> Casey	Oakland, Kalamazoo
Spondylidinae	Asemiini	<i>Arhopalus rusticus</i> (L.)	Oakland, Ingham

Hemlock Woolly Adelgid Detected in Southwest Michigan

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In March 2012, the Michigan Department of Agriculture and Rural Development (MDARD) was contacted by an alert landscaper working in New Buffalo/Berrien County, Michigan with a concern that he had found hemlock woolly adelgid (HWA) at a property there. MDARD quickly followed up on the report, collected samples and sent them to Jim Zablotny, USDA APHIS, in Romulus, MI, for confirmation. On March 21st MDARD received positive confirmation from USDA. Within a few days, staff from MDARD's Pesticide and Plant Pest Management Division (PPPMD) began work on a delimiting survey. All hemlocks within ½ mile of the positive site in New Buffalo were to be inspected. During the course of the delimiting survey, additional infested hemlock trees were discovered on a property almost ½ mile from the original detection site. The boundaries of the survey were adjusted to include the area within ½ mile of the second detection. No more infested trees were found during the balance of the

survey work which was completed in the first week of April.

During the second week of April, once proper notice had been provided to the two property owners with infested hemlocks, PPPMD arranged for a local company to remove and properly destroy the infested hemlocks. A total of 49 trees, 41 from one property and 8 from the other, were cut and burned. In addition, PPPMD will be treating approximately 350 hemlock trees on 36 parcels that surround the two properties that had the infested trees on them. PPPMD is currently in the process of notifying the impacted property owners of their intent to treat their hemlocks this spring and again in the fall. The systemic insecticides Dinotefuran (spring) and Imidacloprid (fall) will be soil injected. Survey and treatment work will continue in subsequent years as resources allow.

In addition to the survey, tree destruction, and treatment work, there has been a significant effort to communicate with the local population about the problem. A press release was issued by MDARD on April 4. MDARD added HWA content to its web site; a map of the 'area of interest' was posted there along with basic HWA



Infested hemlock trees in New Buffalo, MI



Closeup of hemlock foliage infested with HWA

information and information on how to contact MDARD with reports of suspect HWA locations. People who live, work and play in the area of interest are being urged not to move any hemlock materials from the property from which they originate. A map showing the area of concern and more information

on HWA can be found at www.michigan.gov/exoticpests

The origin of the New Buffalo infestation is not known at this time. Trace-forward and trace-back work is being conducted. There are no known established populations of HWA anywhere else in Michigan.

Michigan has had HWA confirmed in other locations previously: 2006 - Harbor Springs/Emmet Co. (31 trees), 2010 - Petoskey/Emmet Co. (2 trees), Holland and Grand Haven/Ottawa Co. (1+3 trees), and Clinton and Shelby townships/Macomb Co. (3+1 trees). All positive trees were destroyed; apparently uninfested hemlocks in close proximity to the infested trees were treated, and all the areas are surveyed on a regular basis with treatments still occurring on some of the sites.

Michigan has had an external quarantine in place for HWA since May of 2002. The quarantine restricts the movement of hemlock into the state, and includes a complete ban on the movement of hemlock from infested areas of the country.

MDARD's Hemlock Woolly Adelgid Quarantine can be found at http://www.michigan.gov/documents/MDA_Hemlock_Woolly_Adelgid_Quarantine_97324_7.pdf

Increasing the Capacity to Restore Savanna Ecosystems Through Partnerships

Heather Keough

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Email: hkeough@fs.fed.us.

The Huron-Manistee National Forest includes a unique natural community called a savanna, which includes oak openings, oaks barrens, oak-pine barrens, and pine barrens. Savannas have declined over the past century due to reforestation, fire control efforts, and the process of natural succession. Many plants and animals depend on these habitat types and have decreased in numbers, including the Federally Endangered Karner blue butterfly (KBB). To recover the KBB on the Huron-Manistee, the Forest plans to restore and maintain 20,300 acres of savannas over the next 50 years. The restoration of savanna habitat on a landscape scale benefits numerous plant and animal species including wild turkey, golden-winged warbler, Hill's thistle, ruffed grouse, eastern box turtle, prairie smoke, American woodcock, monarch butterfly, and white-tailed deer.

Managing and monitoring 1000's of acres of savannas is a daunting task that the Forest Service cannot do alone. The Forest has been able to dramatically increase savanna restoration efforts in the last several years by working with partners and volunteers and leveraging agency resources. For example, in 2010, the Forest conducted treatments on over 587 acres including hand cutting, prescribed

burning, mechanical removal of vegetation, seeding/planting, and habitat protection. These treatments reduce tree and shrub density, protect savanna remnants, and promote growth of native grasses and wildflowers, including wild lupine – the sole food for the KBB caterpillar.

The Forest has amplified the capability of its restoration efforts in several ways. First, the Forest is using an adaptive management approach conducting small scale demonstration projects to test the effectiveness of different treatment strategies to ensure the most efficient and cost effective treatments are implemented at the landscape scale. Second, the Forest is leveraging personnel and integrating program goals. Forest personnel from all resource areas, timber, fire, recreation, trails, etc., are working together to conduct KBB surveys and implement treatments. Acres treated during restoration efforts contribute accomplishments to the timber, fire, wildlife, and botany programs. Third, the Forest is developing stewardship projects that allow receipts from timber sales to be retained on the Forest, increasing funding available for savanna management. Fourth, the Forest is obtaining external support such as grants, partnerships, and volunteers. Recently, the Forest received approximately \$500,000 of Great Lakes Restoration Initiative (GLRI) and \$200,000 of American Recovery and Reinvestment Act (ARRA) funds. GLRI funds will be used by the Forest and its partners to conduct restoration treatments on over 1,100 acres by fall 2013. Partnerships have been initiated with many groups such as the National Wild Turkey Federation, Ruffed Grouse Society, Wildlife Management Institute, Michigan Wildlife Conservancy, Michigan DNR, The Nature Conservancy, U.S. Fish and Wildlife Service, and Consumer's Energy. Volunteers have been essential in helping the Forest increase its KBB monitoring activities, with over 869 acres surveyed in 2011.



The experience many volunteers have had while participating is multi-faceted. Many have never seen a savanna before and are surprised to find that cactus occurs in Michigan. Not only do the volunteers learn what savannas are and why they need to be conserved, but many become so enthusiastic about savanna restoration that they offer to help with restoration treatments. For example, since 2009, volunteers have planted native wildflowers to improve savanna habitat. The volunteer program and partner participation has cultivated public support for savanna management, which has been essential given the controversy surrounding the conversion of forest to savanna on a landscape scale. Recruiting volunteers and collaborating with partners has increased opportunities for ecosystem management and enhance outdoor experiences. By working together, we increase our ability to do work on the ground. No longer bound by budgets and artificial boundaries, we are making ecosystem management on a landscape scale possible.

You can help preserve rare savanna species by volunteering to assist with surveys or seeding/planting activities, especially from June through August. There are opportunities for individuals of all skill levels to participate. Interested parties can volunteer during weekdays, for a few days, or a week or more. Limited housing and reimbursement for mileage may be available. For more information about volunteering, please contact Heather Keough, District Wildlife Biologist, at (231) 745-4631 x 3111 or hkeough@fs.fed.us.



2012 FIRST STATE REPORTS

Ronald J. Priest

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Eight newly reported species of Lepidoptera in six families were submitted this year, and all were from Michigan. Ted Herig reported one new noctuid, and Jim Vargo submitted seven new species in six families. Jim is an enthusiastic collector and is recognized as one of our most knowledgeable lepidopterists. Both of these collectors demonstrate that there are many new species yet to be discovered in the Great Lakes area. When citing these new state records, use the species name + order and family as the title and the name of the submitter as the author.



Coleophora versurella Zeller (Lepidoptera: Coleophoridae)

Submitted by James T. Vargo

Location: Michigan, Chippewa County

Date: late August 2011

Collector: James T. Vargo

Identifier: James T. Vargo

Photo (above) by James T. Vargo



Coleotechnites floriae (Freeman) (Lepidoptera: Gelechiidae)

Submitted by James T. Vargo

Location: Michigan, Chippewa County

Date: late August 2011

Collector: James T. Vargo

Identifier: James T. Vargo

Photo (above) by James T. Vargo



Gnorimoschema triocellella (Chambers) (Lepidoptera: Gelechiidae)

Submitted by James T. Vargo

Location: Michigan, Mackinaw County, Big Knob Camp-
ground, N 46.040 W 85.592

Date: 24 August 2011, 2 males

Collector: James T. Vargo

Identifier: James T. Vargo

Photo (above) by James T. Vargo



***Stigmella populetorum* (Frey and Boll)**
(Lepidoptera: Nepticulidae)

Submitted by James T. Vargo

Location: Michigan, Luce County, 421 bog, N 46.356
W 85.788

Date: 23 August 2011

Collector: James T. Vargo, 1 male

Identifier: James T. Vargo

Photo (above) by James T. Vargo



***Hypenodes franclemonti* Ferguson**
(Lepidoptera: Noctuidae)

Submitted by James T. Vargo

Location: Michigan, Luce County, 421 bog, N 46.356
W 85.788

Date: 23 August 2011

Collector: James T. Vargo, 1 male

Identifier: James T. Vargo

Photo (above) by James T. Vargo



***Lithophane oriunda* Grote**
(Lepidoptera: Noctuidae)

Submitted by Ted A. Herig, Jr.

Location: Michigan, Mecosta County

Date: 06 April 2005

Host/Habitat: UV light

Collector: Ted A. Herig, Jr.

Identifier: Ted A. Herig, Jr.

Photo (bottom of 1st column) by Ted A. Herig, Jr.



***Monopis pavlovskii* Zaguljaev**
(Lepidoptera: Tineidae)

Submitted by James T. Vargo

Location: Michigan, Berrien County, Grand Mere State
Park

Date: 12 September 2005

Collector: James T. Vargo, 1 male

Identifier: James T. Vargo

Photo (above) by James T. Vargo



***Epinotia nigralbanooidana* McDunnough**
(Lepidoptera: Tortricidae)

Submitted by James T. Vargo

Location: Michigan, Leelanau County

Date: June 2011

Collector: James Vargo

Identifier: Michael Sabourin and Donald J. Wright

Submitted by: James T. Vargo

Photo (above) by James T. Vargo



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Edward G. Voss: 1929 – 2012

Robert A. Haack
Newsletter Editor

Long-time MES member Edward G. Voss died 13 February 2012 in Ann Arbor at the age of 82. Ed was a renowned botanist and is best known for his three volume compilation of Michigan's seed plants entitled "Michigan Flora." Ed and Anton Reznicek updated this tome with the 2012 publication "Field Manual of Michigan Flora." In addition to Michigan plants, Ed was also very interested in Michigan Lepidoptera, and published several papers on the Lepidoptera of Cheboygan and Emmet Counties, Michigan. For example, here are titles of some of Ed's papers on Michigan Lepidoptera.

- Voss EG. 1954. The butterflies of Emmet and Cheboygan counties, Michigan, with other notes on northern Michigan butterflies. *American Midland Naturalist* 51: 87-104.
- Voss EG and WH Wagner Jr. 1956. Notes on *Pieris virginiensis* and *Erora laeta* – two butterflies hitherto unreported from Michiga. *Lepidopterists' News* 10: 18- 24.
- Voss EG. 1969. Moths of the Douglas Lake region (Emmet and Cheboygan counties), Michigan: I. Sphingidae-Ctenuchidae (Lepidoptera). *Michigan Entomologist* 2: 48-54.

- Voss EG. 1981. Moths of the Douglas Lake region (Emmet and Cheboygan counties), Michigan. II. Noctuidae (Lepidoptera). *Great Lakes Entomologist* 14: 87-101.
- Voss EG. 1983. Moths of the Douglas Lake region (Emmet and Cheboygan counties), Michigan. III. Thyatiridae, Drepanidae, Lasiocampidae, Notodontidae, Lymantridae (Lepidoptera). *Great Lakes Entomologist* 16: 131-37.
- Voss EG. 1983. A pyralid moth (Lepidoptera) as pollinator of blunt-leaf orchid. *Great Lakes Entomologist* 16: 57-60.
- Voss EG. 1991. Moths of the Douglas Lake Region (Emmet and Cheboygan counties), Michigan. Part 4. Geometridae (Lepidoptera). *Great Lakes Entomologist* 24: 187-201.
- Voss EG. 1996. Moths of the Douglas Lake region (Emmet and Cheboygan counties), Michigan: V. Crambidae and Pyralidae (Lepidoptera) *Great Lakes Entomologist* 29: 141-160.
- Voss EG. 2002. Moths of the Douglas Lake Region (Emmet and Cheboygan Counties), Michigan: VI. Miscellaneous small families (Lepidoptera). *Great Lakes Entomologist* 35: 53-61.

Several obituaries were written and posted online for Ed Voss. The information below was obtained primarily from the following sources: <<http://www.legacy.com/obituaries/toledoblade/obituary.aspx?n=edward-g-voss&pid=156341022>>, <http://ur.umich.edu/1112/Feb20_12/obituaries>, <[http://michigannature.wordpress.com/2012/02/29/in-memory-](http://michigannature.wordpress.com/2012/02/29/in-memory-of-edward-g-voss/)

[of-edward-g-voss/](http://jimmccormac.blogspot.com/2012/02/edward-g-voss-1929-2012.html)>, and <<http://jimmccormac.blogspot.com/2012/02/edward-g-voss-1929-2012.html>>.

Ed Voss was born 22 February 1929 in Delaware, Ohio, to Katherine and David O. Voss, and raised in Toledo, Ohio. Ed was very interested in the natural world as a child, collecting 1000s of plants, animals, butterflies, and moths, especially at the family cottage near Mackinaw City, MI. He was valedictorian of his 1946 high school class, and was named among 300 American high school seniors with the most outstanding promise and ability in science. Ed completed his B.S. degree at Denison University in Biology in 1950, and his M.S. in 1951 (Biology) and Ph.D. (Botany) in 1954 from the University of Michigan. Ed joined UM as a research associate at the Herbarium in 1956, and later was appointed assistant professor in 1960, associate professor in 1963, and professor of botany in 1969. Ed served as the curator of the herbarium UM until retiring in 1996. Ed was a dedicated teacher, who taught the Field Botany course for decades at the UM Biological Station on Douglas Lake in northern Lower Michigan. In addition, Ed served as Secretary of the Editorial Committee of the International Code of Botanical Nomenclature from 1969 to 1981 and Chair from 1981 to 1987. Ed was a great field biologist, teacher, researcher, and conservationist.