



# NEWSLETTER

of the  
MICHIGAN ENTOMOLOGICAL SOCIETY

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## ***Karner Blue Butterfly Reintroduced to Ohio: The Michigan Connection***

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In late June 1998, Mitch Magdich, curator of education at the Toledo Zoo, gently placed a pair of small, blue butterflies on a wild lupine plant at The Nature Conservancy-owned Kitty Todd Preserve in Lucas County, Ohio and smiled. In a quiet way, he had just returned a lost species—the Karner blue butterfly—to its rightful place in the wilds of Ohio.

Gone from Ohio since 1988, the Karner blue butterfly is a state and federal endangered species.



*Only about the size of a postage stamp, Karner blue butterflies are a state and federal endangered species of wildlife that was gone from Ohio for about a decade—1988 to 1998. A native of the Oak Openings region of northwest Ohio, it was reintroduced a year ago and releases of adults will continue for the next four summers. The goal of the project is establishment of a self-sustaining population of these butterflies.*

Once common to the Oak Openings region of northwest Ohio, its numbers slowly dwindled because of habitat loss due to land alteration and, surprisingly, the lack of natural disturbance such as wildfire. Occasional fires help maintain Karner blue habitat by controlling forest succession and encouraging the growth of prairie plants.

But Magdich and his staff had a lot of help in reaching that historical moment last summer. In 1993, the Ohio Karner Blue Butterfly Recovery Team was formed to develop a plan to return the Karner blue to Ohio. The team was made up of representatives from the Ohio Department of Natural Resources divisions of Wildlife, Natural Areas and Preserves, and Forestry, as well as the Toledo Zoological Gardens, The Nature Conservancy, Ohio Lepidopterists, Metropolitan Park District of the Toledo Area, and U.S. Fish and Wildlife Service. As a result of the team's efforts over a five-year period, research and habitat preparation work were undertaken and completed in Ohio, and in Michigan a population of Karner blue butterflies was identified to serve as brood stock for the Ohio reintroduction.

Once everything was in place, biologists traveled in May and June 1998 to Allegan State Game Area in Allegan County, Michigan, and with the help

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of the Michigan Department of Natural Resources collected 26 adult female Karner blues. The butterflies were then transported to the Toledo Zoo to lay their eggs. The eggs hatched into larvae which in turn matured to pupae before the adult butterflies emerged and were released to the wild

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***"Karner blues are a  
barometer of the health  
of Ohio's oak openings..."***

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in June 1998. Overall, 162 second generation adults were released in 1998.

Only about the size of a quarter, Karner blue butterflies were first described in the scientific literature in the mid-1800s near Karner, New York. Historically, they occurred along a narrow geographic region from eastern Minnesota, across portions of Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, Massachusetts, New

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## Officers of M.E.S.

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York, and New Hampshire, as well as Ontario. This butterfly has declined throughout its range, and is now thought to be extirpated from Ontario, Massachusetts, Pennsylvania, and Illinois. Until its reintroduction in 1998, the Karner blue was considered extirpated in Ohio as of 1988.

In appearance, the upper surfaces of the male's wings are light blue with a black edge and white outer margin, and the female is similar but more brown or grayish in color, with a row of dark spots with orange crescents along the wing margins. The undersides of the wings of both sexes are similar, being slate gray with several marginal rows of orange and black spots.

The Karner blue butterfly has two broods per year. They first hatch in April after overwintering as eggs. The caterpillars feed only on wild lupine plants and in mid-May develop into a chrysalis, emerging as adult butterflies in late May or early June. The adults feed on nectar from various prairie

*Biologists collected 26 adult female Karner blue butterflies from state lands in Michigan and then transported them to the Toledo Zoo to lay eggs. The eggs hatched into larvae (pictured) which in turn matured to pupae before the adult butterflies emerged and were released to the wild.*

plants during May and June and lay their eggs on wild lupine plants. These eggs mature into adult butterflies in late July or August, who in turn lay eggs that hatch the following April.

Karner blues are typically associated with oak-savanna habitat: dry areas dominated by drought-resistant prairie plants and widely-spaced oak trees. In Ohio, "oak openings" are found only in northwestern Ohio in the counties of Lucas, Fulton and Henry. These areas are very unique with their low, sandy ridges that often support plants totally unheard of anywhere else in Ohio—such as prickly pear cactus!

The goal of the Karner blue butterfly reintroduction project in Ohio is to establish a self-sustaining population of this species in the Oak Openings region of the state. To accomplish this, releases of adult butterflies raised at the Toledo Zoo will continue on the Kitty Todd Preserve, and other suitable locations in Lucas County, over the next four years. In 1999, 15 female adult Karner blues were transported from Michigan to Ohio, resulting in a release of 110 male and 112 female progeny adults in 1999.

During field surveys in May 1999 first generation adults were observed at the Kitty Todd Preserve in the areas where Karner blues were released in 1998.

Why is this important? Why should we worry or even care about a small butterfly the size of a postage stamp? Mitch Magdich



*Mitch Magdich (left) of the Toledo Zoo and Bill Roshak of the Ohio Division of Wildlife release adult Karner blue butterflies on the Kitty Todd Preserve in Lucas County. Notice the surrounding oak-savanna habitat, a dry area dominated by drought-resistant prairie plants and widely-spaced oak trees.*

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# Notices:

## Butterfly Gardens and Educational Games.

Contact Kathy Wildman by phone (614-965-2133) or by mail (PO Box 1069, Sunbury, Ohio 43074) to obtain a current list of items for sale, including butterfly garden designs, plants to attract butterflies, and several games.

**Wanted:** Michigan Orthoptera Records. Contact: Roger Bland, Department of Biology, Central Michigan University, Mt. Pleasant, MI 48859. Telephone: 517-774-3455; FAX 517-774-3462

**Annual Meeting Ideas Questionnaire:** A number of our life activities are routine ("traditional" gives it a better ring!). So too with some aspects of our annual meeting. Attendance at this years meeting (47) was approximately 10% of our membership. Though it was a respectable turnout a number of members, "traditionally", do not attend. There may be a commitment conflict, lacking of appeal, or other reasons. The enclosed Questionnaire solicits your ideas (attendee or not) to direct future meeting plans. Please take a few minutes to respond. The Board will be using these ideas over the next several years to encourage greater participation. Thank

you in advance for your support, ideas, and comments. Send to: Ron Priest, 243 Natural Science Bldg. Department of Entomology, Michigan State University, E. Lansing, MI 48823. Phone: 517-355-1803, FAX 517-353-4354

**For Sale:** *Light traps*, 12volt DC or 110 volt AC with 15 watt or 20 watt black lights. The traps are portable and easy to use. Rain drains and beetle screens protect specimens from damage. For a free brochure and price list contact: Leroy Koehn, 6085 Wedgewood Village Circle. Lake Worth, FL 33463. Phone: 561-966-1655, Cellular Phone: 305-582-3183, Email: Leptraps@aol.com

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summed it up best when he said, "Karner blues are a barometer of the health of Ohio's oak openings as well as similar regions in the U.S." And healthy habitats are not only critical for wildlife, but for humans as well.

The money provided by the Ohio Division of Wildlife for this Karner blue reintroduction effort came from "Do Something Wild!" tax checkoff donations and sales of wildlife conservation license plates.

Adapted from *Wild Ohio Magazine*, Ohio Department of Natural Resources, Division of Wildlife, 10(2): 6-7, 1999.

*Karner blue caterpillars feed only on wild lupine plants. The adult butterflies nectar on various prairie plants, but return to lay their eggs on wild lupine (pictured)*



## "EXPLORATION DAYS 1999" & 4-H ENTOMOLOGY

Ron Priest, Department of Entomology, Michigan State University, East Lansing, MI 48824

As 4-H members know, "Exploration Days" is a 3-day bonanza of activities at M.S.U. in late June for all members around the state. My idea as a first time entomology leader was to provide aspects of entomology that members likely wouldn't find in their own clubs. Bill Westrate and I did just that for this year's group of students and adults. It was great fun for members and for us but we learned that those attending wanted something we hadn't emphasized!

A meeting room provided by the Department of Entomology served as "base camp." Over the 3 days we visited the BugHouse, viewed exotic prepared species, and handled some live ones; packed a lunch and explored habitats at Rose Lake Research Station after an introduction from biologist Tom Cooley. We also had visits to our "camp" by some unique folks. Mike Higgins, a student under Dr. Rich Merritt, showed us how insects can be used in forensics; Dr.

Eileen VanTassell brought live adults and larvae of the cottonwood leaf beetle to show how they take up chemicals from leaves and use them to repel potential predators; Mo Nielsen showed his new butterfly book and recounted his beginning with bugs as a boy; Bill ended the program by leading a discussion on photography just before we went to the Butterfly House to try our cameras. We all had a great time even on our field trip in that hot and humid weather.

During the 3 days there were some comments that surprised me, such as, "I've taught 4-H entomology for 3 years and haven't pinned an insect;" "Are we going to catch big bugs," "I'd like to know how to identify plants insects are feeding on," and "How do you make a collection." Written evaluations included comments along the same lines. What seems apparent is that members are interested in diversity but first they want to know, "What's this bug?," "How do I identify it," and "How can I make a collection?"

Local 4-H clubs really do need entomology resource volunteers. That's something many of us can do. You don't need a university staff, microscopes, or exotic species to get started, only your interest, knowledge, and a general book on insect identification. You'll wow them and they'll wow you. Contact your county MSU Extension office. Do let me know what you're doing!

# 1999 Michigan Entomological Society Annual Meeting

The 45th Annual Meeting of the Michigan Entomological Society was held on June 3-5 at the Ralph A. MacMullan (RAM) Conference Center in Roscommon, MI. The Annual Meeting had a more structured format this year, with ten invited speakers presenting talks which centered around the symposium theme, "Insect and Ecosystem Diversity in the Great Lakes Region." In addition to the formal program, several submitted posters and displays were presented and there was ample opportunity for casual discussion and insect collecting. The meeting location and format were a great success thanks to the organization by Ron Priest. We would also like to thank George Heaton and Toby Petrice for taking photographs at the MES meeting.

## ***Ecoregional Classification: A Tool for Understanding Species Distributions***

Dennis Albert, Michigan Natural Features Inventory,  
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Ecoregional classification has been used to divide Michigan into a number of areas with relatively homogeneous climate, bedrock, glacial landform, and soils. Ecoregional classification is based on a hierarchal system involving multiple factors. Large regions are defined based



primarily on climate. Within each region, districts are composed of areas with similar bedrock. Site units are based on the soils within the districts. Physiographic characteristics define smaller more detailed units. Geographic Information Systems (GIS) are now widely used to map ecoregions. Ecoregional classifications allows the determination of the original vegetation. Several insect species have habitat restrictions and their distributions are de-

termined by the distribution of their host plants. For many plant communities and organisms, ecoregional classification has been utilized to focus inventory and management opportunities.

## ***Insect Conservation at the Michigan Chapter of the Nature Conservancy***

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Chapter of the Nature Conservancy, 2840 East Grand  
River Ave., Suite 5, East Lansing, MI 48823, (517) 332-  
1741, E-mail: cclampitt@tnc.org

The mission of the Nature Conservancy is to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Scientists with the Conservancy's Michigan Chapter recognize that insects are a critical component of the natural world and include them in their day-to-day efforts. Conservation planning, whether for broad ecoregions or small sites, specifically considers the conservation needs of rare insects. For example, in the Conservancy's plan for the Great Lakes Ecoregion, 29 globally rare insect species, 12 other invertebrates (primarily freshwater mollusks), and 16 vertebrates were used to select priority sites for conservation management. On a finer scale, the Conservancy has translated site conservation plans into preserves through the acquisition of key tracts of land. Fourteen of our 39 Michigan preserves are currently known to support rare insects.



Many preserves require management to keep them free of invasive plants or to mimic the natural processes such as fire that are needed to maintain rare native communities. Both common and rare insect species are explicitly considered in our management efforts. For example, even our smallest prairie preserves are divided into multiple units that are burned in rotation on a multi-year cycle to ensure that unburned areas are always available for fire-sensitive species. We also have an active monitoring program to document the effects of our management and other phenomena on key insect populations. Finally, we support an active research program, both in-house and in collaboration with academic and avocational entomologists.

## Michigan Butterflies and Skippers: A Field Guide

Mogens Nielson, Department of Entomology, Michigan State University, East Lansing, MI 48824. E-mail: nielsen4@pilot.msu.edu

Now that my book "Michigan Butterflies and Skippers-A Field Guide and Reference" is published, one would believe we know all there is know of this interesting group of insects. Not true! While 'butterflies' appear to be "IN" in today's culture, with butterfly gardens and greenhouses, and various cultural



logos, we still have many gaps in the distribution and life histories of Michigan species. As more vacant land is converted to non-lepidopteral habitat with expanding communities and agriculture, Michigan is very fortunate to have over 7.5 million acres of public land within state and national forests, and game areas. Most of these public lands are open to all forms of recreational nature study, including avocational collecting of insects. Michigan's southwestern counties and the western portion of the Upper Peninsula offer possibilities of new discoveries. Much of our current knowledge of the state's fauna has come from the efforts of avocational lepidopterists; we need to encourage continued reasonable collection of the state's "butterfly" fauna as the scientific way to document and verify species!

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## Distributional Patterns of Butterflies and Moths in Ohio

Eric H. Metzler, The Ohio Lepidopterists, 1241 Kildale Sq. N. Columbus, OH 43229-1306. E-mail: spruance@infinet.com

The Ohio Survey of Lepidoptera has over 35,000 Ohio specimen records. Statewide coverage is excellent. Some species, i.e., *Pieris rapiae*, are in every county, whereas one third (44 species) of Ohio's butterflies, e.g., *Hesperia sassacus*, and *Poanes viator*, are limited to twelve regions. Ohio's geology, phytogeographic regions, and other data are helpful to explain other distributional patterns. The regional distribution of *Euphyes dukesi* indicates use of the Mississippi River and the Wabash River for recolonization after the last glaciation.

*Atrytonopsis hianna*,  
*Hesperia metea*, *Grammia figurata*, *Synedoida grandirena* and other species are absent in the center of the state. These

disjunct distributions are hard to explain. Additional distributional patterns are becoming apparent as more moth data are added to the analysis.



## Two Pitfall Trap Designs for Capturing Ground Dwelling Arthropods (POSTER)

Toby Petrice<sup>1</sup> Robert Haack<sup>1</sup> Robert Acciavatti<sup>2</sup>

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<sup>2</sup>USDA Forest Service, State and Private Forestry, Morgantown, WV

Pitfall traps are useful tools for monitoring ground dwelling arthropods. The barrier pitfall and the above ground pitfall are two examples of such traps. The barrier trap is a more conventional design that works best where the soil is several inches deep and can be easily dug. This trap design greatly increases the area sampled and thus the trap catch. The barrier can be any length. We use a 1-m section of garden edging that is inserted into the soil leaving 4-5-cm above the soil surface to serve as a barrier. Arthropods are channeled to either end of the barrier where they fall into the collection cups. We use a 3-cup design. The outermost cup is a 32-oz plastic cup that is buried with its rim level with the soil surface. A second 32-oz cup, with its rim removed, is placed within the outer cup. The killing/preserving agent is placed in this second cup, allowing the outer cup to remain in place when removing samples, thus preventing soil disturbance around the trap. A 16-oz cup, with its rim removed is placed inside the second 32-oz cup. A triangular hole is cut in the bottom of the 16-oz cup to allow insects to fall through. The 16-oz cup prevents debris from falling directly in to the killing/preserving agent and may also allow small vertebrates to escape. Also, the 16-oz cup helps reduce evaporation of the killing/preserving agent by reducing the opening size of the 32-oz cup. To protect samples from rain, falling leaves, and other debris, a plastic plate is placed over the top of each 3-cup trap. The plate is positioned so that its edge rests on the end of the garden edging and the plate is held in place with 2 spikes pushed through the edge of the plate and into the ground.

Another type of trap can be used where digging is not practical such as rocky sites or riparian areas. This trap consists of a storage container with a lid; we use containers that measure 13.5 x 8 x 4 in. Slots are cut on two sides of the container (10 x 1 in) along the top edge. We then take a plastic planting-tray lid (11 x 22 in) and cut it in half. The tray lid halves are then turned upside down and inserted into the slots we made in the container to form two ramps. The end of each ramp is cut and folded in such a manner that it fits neatly in the slot and will not pull out. The ramps should be roughened with sandpaper so arthropods can easily walk up them. When possible, the center of the trap should be placed in a depression to decrease the angle of the ramps. A killing/preserving agent is placed in the bottom of the storage container. Also, leaves, rocks, and other debris can be placed around the trap to make it more natural in appearance.

## **Michigan Odonata Survey: Cooperation Yields Results! Examples from 1958 and 1999**

Mark F. O'Brien, Insect  
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The Michigan Odonata Society (MOS) is a volunteer group composed of professionals, amateurs, talented naturalists, and absolute beginners. It publishes a quarterly newsletter, has a detailed web site, and a small budget based on donations, sales of materials and starting in 1998, a modest grant from the US Forest Service. The MOS is based at the Univ. of Michigan Museum of Zoology and coordinated by Mark O'Brien.

The mission of the MOS is to catalog and distribute definitive information on the Odonata fauna of Michigan. In doing so, we want to: 1) Promote the study and appreciation of Odonata; 2) Identify and assist to secure critical habitats where species of limited distribution or threatened status are found; 3) Provide a clearinghouse of odonatological information for the Great Lakes, especially Michigan; 4) Cooperate with agencies and groups which share common goals; 5) Expand our knowledge of poorly known species; 6) Survey the state of Michigan as thoroughly as is both possible and practical to document the current status of all species of Odonata; 7) Provide an internet-based source of information (WWW and e-mail list) as well as printed resource; and 8) Produce a definitive atlas of the Odonata of Michigan.

The MOS has been successful thus far due to rapid communication - via internet mail groups and a quarterly Newsletter publication of results and information about our fauna as well as techniques and resources for Odonata enthusiasts. The survey has also been successful due to involvement of talented amateurs and paraprofessionals, birders, naturalists, natural heritage surveyor. In addition, internet resources via the WWW - provides easy access to information and timely updates and the specimen-based database allows sharing of data.

The MOS has learned several valuable lessons: 1) Literature records are not always reliable; 2) Recollections from historically important sites should be made if possible; 3) Vouchers are important for verification and for future studies; 4) Collections of larvae and exuviae are important; 5) Document the habitats of larvae/adults as much as possible; 6) Sample areas repeatedly; 7) Involve volunteers and be prepared to do a lot of training; 8) Have as many resources available as possible for members; 9) Make it fun!; and 10) Recognize contributions to the survey.

Because of the MOS, we now have more complete records of Odonata in Michigan. For instance, according to 1958 records (Kormondy 1958) there were 150 species, 22 species with only 1 record, 25 species with 2-5 county records, 4 species based solely on literature record, and a few records based on larvae. Currently, MOS records for 1999 list 159 species, 10 species with only 1 county

recorded, 21 species known from 2-5 counties, 2 species yet to be verified from literature, and many larval records (over 2000).

For instance, for one genus of Gomphidae, *Stylurus* there are 6 species. *Stylurus* larvae are from larger streams and rivers. Adults are notoriously hard to collect because they fly in the middle of rivers. Kormondy had a total of 9 counties recorded for the 6 *Stylurus* species, 2 cited only as "Michigan" from the literature. The MOS now has 35 counties recorded for the 6 *Stylurus* species with many records per county for some species. Most *Stylurus* species are based on larval records. In another genus of Gomphidae, *Stylogomphus albistylus* was first recorded by Leonard in 1940. It is a stream species residing in riffle habitats with rocky/gravelly bottoms. The second published record was from the Huron Mts. in 1996. It is now known from at least 9 counties scattered from the Upper Peninsula to the Southern Lower Peninsula with over 25 discrete records so far. Larvae and exuviae are the best way to sample for this small species. We also get a better idea of populations from exuviae samples.

## **New York, Chicago, and the Asian Longhorned Beetle: A Tale of Two Cities (POSTER)**

Therese M. Poland, Robert A. Haack, and Toby R. Petrice  
USDA Forest Service, North Central Research Station,  
1407 S. Harrison Road, Michigan State University, East  
Lansing MI 48823. E-mail: tpoland/nc\_el@fs.fed.us

The Asian longhorned beetle (ALB) is one of the latest of over 2000 exotic insects that have been introduced into the US. Adult ALBs feed on twigs and foliage and then oviposit on branches and trunks of suitable host trees. Eggs hatch in one to two weeks and the larvae first feed in the cambium and then tunnel through the sapwood and sometimes the heartwood. Pupation occurs inside the larval galleries. New adults emerge through 6-18mm holes that they chew through the bark. Larval feeding may cause severe damage and death of entire trees. Although ALB has been intercepted in 14 states, it is only known to be established in New York and Illinois. It was detected in New York in Brooklyn and Amityville in 1996 and in Queens in 1999. Over 3000 trees have been cut in New York so far and over \$5 million has been spent or obligated for tree removal and replanting. ALB was discovered in Illinois in 1998 in three areas of Chicago: Ravenswood, Summit and Addison. ALB was discovered in a fourth area approximately 2 miles from Ravenswood in 1999. Over 790 infested trees have been cut so far and over \$2 million has been spent or obligated for the eradication program. In both cities, mostly maples have been infested; however, ALBs also attack horsechestnut, birch, ash, Rose-of-Sharon, poplars, willow, and elm. Because of the potential for damage and the increasing threat of exotic insects becoming established in the US with increasing world trade, a new USDA rule has been passed requiring all wood crating and pallets from China to be heat treated, fumigated, or treated with preservatives. Scientists from several universities including Cornell, SUNY Syracuse, Pennsylvania State University, University of Illinois, University of Massachusetts, and the Beijing Forestry University and from government agencies, including the USDA Forest Service, USDA ARS, USDA APHIS, and the Chinese Academy of Forestry are conducting research to better understand and manage the ALB. Areas of research include pheromones, host attractants, host preference, pesticides, detection tools, and wood treatments.

## Michigan Lepidoptera Survey

Robert Kriegel, Department of Entomology, Michigan State University, East Lansing, MI 48824. E-mail: [kriegelr@pilot.msu.edu](mailto:kriegelr@pilot.msu.edu)



The mission of the Michigan Lepidoptera Survey (MLS), a project of the Michigan Entomological Society, is to improve our knowledge of Michigan's diverse moth and butterfly fauna. Since its inception in 1995, MLS has developed a comprehensive database of existing records for state-listed moths and butterflies, participated in a MDNR biennial review of listed insect species, and worked with Michigan Natural Features Inventory and state game area personnel to restore the habitat of a Michigan endangered underwing moth. To date, survey activities have focused on Michigan's 54 state-listed endangered, threatened, and special concern Lepidoptera species.

Accomplishing our mission will require pooling our intellectual resources, population monitoring, rigorous documentation, and dissemination of knowledge. Population monitoring involves inventorying historical records, reassessing the status of populations at historical localities, regular monitoring of known populations to detect changes in their status, discovering new populations, and investigating the biology and habitat requirements of target species. Rigorous documentation involves encouraging best practices for labeling, field notes, photographic documentation, field monitoring techniques, etc.; diligently tracking down fuzzy data with primary sources; permanently capturing oral traditions in writing or audio tapes; and publishing our findings.

Vouchers play a critical role in the documentation process. Vouchers provide an independently verifiable record of the subjects of our studies; independent verifiability is a critical tenant of scientific investigations. At present, MLS recognizes specimens or clearly identifiable photographs as vouchers.

Vouchers are particularly important in arthropod studies where there are a tremendous number of species present and identification can require substantial expert knowledge.

The presentation included an interactive demonstration of the difficulties of species identification. Attendees were shown a high quality image of a threatened elfin butterfly found in Michigan's oak savannas (*Incisalia irus*).

Then the audience was presented with images of four similar elfin species found in this same habitat and asked to indicate which of these matched the previous image. In this ideal setting about 20% of the audience selected a species other than *I. irus*. Additional problems associated with visual sightings in more complex field settings were discussed to provide attendees with a better understanding of why visual sightings are not accepted as vouchers by MLS.

Currently, MLS participants are conducting a field survey of bog-obligate butterflies in Michigan's Upper Peninsula. Mo Nielsen and Bob

Kriegel received a small grant from the MDNR Natural Heritage program to study the distribution and phenology of *Boloria freija* and *B. frigga* (Lepidoptera: Nymphalidae).

Nine lepidopterists participated in field survey efforts. Simple degree day models were used to predict the flight period and estimate the timing of field sampling. Soil type was used to identify and prioritize potential field sites.

County level maps of potential sampling sites were created from county soil survey maps. For several high priority localities, more detailed composite satellite maps were created using high resolution remote imagery from Microsoft's TerraServer website (<http://terraserver.microsoft.com>). This work has resulted in the discovery of new populations of both bolorian species and new information about these species' habitat requirements.

As for future directions, the MLS steering committee is exploring the possibility of conducting field surveys of Lepidoptera inhabiting Michigan's coastal dune communities. Important future challenges for the survey include working with government agencies to improve our ability to conduct mission critical research on listed species, maintaining consensus for collaborative work in an avocational group with very diverse interests, securing funding for a loosely affiliated band of avocational researchers, and continuing to seek an appropriate balance between collecting and conservation.

## Trapping Bark Beetles: Are All Traps Equal? (POSTER)

Robert Haack, Therese Poland, and Toby Petrice.  
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Several traps are available for catching bark beetles. Traps are built to resemble tree trunks and are typically cylindrical or rectangular in shape and black in color. Lures, with either pheromones or host volatiles, are used to bait the traps. Insects fly into the traps and cannot escape. Probably the most commonly used bark beetle trap in North America is the Lindgren funnel trap, which is sold by PheroTech of Delta, BC, Canada (<http://www.pherotech.com>). Funnel traps are available with various numbers of funnels (4, 8, 12, and 16) and collapse together for easy storage and transportation. Another common bark beetle trap comes from Germany and is called the Theysohn slot impact trap. The US distributor of the Theysohn trap is El-Tech Technologies of Larchmont, NY. The Theysohn trap is shaped like a car radiator, with a number of 2-cm-wide slots cut into each side. The Theysohn trap does not fold up for storage. Another bark beetle trap, the "Intercept Panel Trap," has just been released by IPM Technologies, Inc. of Portland, OR ([http://www.ipmtech.com/home\\_old.html](http://www.ipmtech.com/home_old.html)). The Intercept Trap has a cylindrical appearance and does fold together for easy storage. We have not yet completed a comparison test with the Intercept Trap. However, in 1995, we compared the 12-unit Lindgren funnel trap with the Theysohn trap. In that study, the Lindgren trap captured significantly more pine shoot beetles (*Tomicus piniperda*) than did the Theysohn trap, but both traps collected similar numbers of *Ips* bark beetles. Perhaps differences in beetle catch is related to the speed at which the beetles are flying when they impact the traps.

## Michigan Natural Features Inventory - What Becomes of a Mature Heritage Program?

Judith Soule, Michigan Natural Features Inventory, Mason Building, P.O.Box 30444, Lansing, MI 48909. E-mail: SOULEJ@state.mi.us

The Michigan Natural Features Inventory (MNFI) is part of a Natural Heritage network of agencies that spans the Western Hemisphere from Canada to Latin America. In the US, all 50 States have a Natural Features Inventory program. MNFI is a public-private partnership, formed between The Nature Conservancy and the State of Michigan. The Nature Conservancy supports this program in order to obtain data on distribution and abundance of species and natural communities as well as to learn more about ecosystem processes. Over the years, MNFI has built more than 40 large databases. Each database has up to 2000 information fields, which cover topics such as taxonomy, range, land-ownership, and threats.

MNFI was first formed in 1979, but the first staff members were not hired until 1980. MNFI had only a staff of four in 1980: a zoologist, a botanist, an ecologist, and an information manager. During the 1980s and 1990s, MNFI steadily grew in size and currently has a staff of 25, including 5 zoologists, 2 botanists, 4 ecologists, 3 aquatic zoologists, 6 information/GIS managers, 1 conservation planner, and 4 administrators.



MNFI often responds to specific information needs. We gather, track, analyze, and disseminate information on endangered, threatened, and special concern species; rare or exemplary natural communities; and other unique natural features of Michigan. MNFI gathers information from historical records, other records, and its own surveys. MNFI conducts surveys on Michigan's national forests, military bases, state parks, state forests, and state game areas. MNFI also conducts surveys within specific counties or on specific habitats such as Great Lakes coastal communities.

In the area of analysis and synthesis, MNFI has developed various ecological assessment tools such as ecoregion maps and a vegetation map of Michigan for the year 1800. MNFI has also been involved in land use change assessments in various parts of Michigan. Various reports are available from MNFI, such as the Saginaw Bay Watershed Biodiversity Assessment, Alvares of Michigan, Bedrock Shorelines, and Dunes Ecosystems.

MNFI tracks data on over 600 species of rare plants and animals, including many invertebrates. MNFI also provides environmental reviews for various permits and proposed projects within Michigan. Typically, there are 300 such requests to MNFI per month, and we try to provide a turn-around time of less than 4 weeks. MNFI is also involved on the

Recovery Teams for several listed species, such as Hine's emerald dragonfly, Karner blue butterfly, and Mitchell's satyr butterfly. We are trying to make available some of our data on-line at: [Http://dnr.mi.us/wildlife/heritage](http://dnr.mi.us/wildlife/heritage).

The five main goals of MNFI are: (1) to provide complete, accurate, and current data, (2) to increase the availability of information and to provide greater interpretation of the data, (3) to increase the level of biodiversity conservation on public lands, (4) to increase the level of conservation on private lands, and (5) to see that future land-use planning accounts for conservation in their planning.

## Trichoptera of the Laurentian Great Lakes

Brian Armitage, Director, Ohio Biological Survey, 1315 Kinnear Road, Columbus, OH 43212-1192. Email: [armitage.7@osu.edu](mailto:armitage.7@osu.edu)

Caddisflies (Insecta: Trichoptera) in the Laurentian Great Lakes continue to surprise me, even after 15 years of study. New species records pose interesting biogeographical questions. For example, one species of *Limnephilus* new to Michigan has only been collected in Great Slave Lake, Northwest Territories, in Alaska, and in Siberia. This is evidently a glacial relict which

inhabits portions of Lake Huron that remain cold year around. Our knowledge of the habitat affinities for the various species remains a poorly completed matrix. I have yet to be able to predict where I will collect each of the three species of *Molanna* or the two species of *Mystacides*. Undoubtedly they exhibit some degree of specificity for host plants and/or substrates. Finally, the trend toward higher level identifications for water quality analyses presents serious



problems which are confounded by latitudinal influences and sampling efficiencies in the Laurentian Great Lakes. We have found that species-level identifications using adult caddisflies presents a different picture than that cast by using only immature stages. Certainly the species diversity is different between the two life stages due to our inability to identify the immature stage to the species level for most taxa. However, we have found that up to 50% of the caddisfly genera are not sampled as immatures, and in groups other than caddisflies, families are also missed. Solutions are at hand for dealing with much of our ignorance. They await our interest, energy, and determination.

## **Developing a Monitoring Plan for a Federally-Endangered Butterfly, the Mitchell's satyr (*Neonympha mitchellii mitchellii*) (POSTER)**

Christopher Clampitt, Michigan Chapter - The Nature Conservancy, 2840 East Grand River Ave, Suite 5, East Lansing, MI 48823. E-mail: cclampitt@tnc.org

Mitchell's satyr (*Neonympha mitchellii mitchellii*) is a federally endangered butterfly that inhabits fens, sedge meadows, and tamarack swamps or savannas. It currently occurs in fewer than 20 sites in southern Michigan and northwestern Indiana. In the spring of 1997, we obtained a permit from the US Fish and Wildlife Service to initiate a multi-year study of the utility of Pollard walks as a monitoring tool. The goals of this study were to: 1) identify suitable weather conditions for monitoring this species; 2) assess habitat use relative to environmental conditions; and 3) develop an efficient monitoring protocol. At two key sites a permanent transect was set up crossing a core population area and including the range of potential habitats available at the site. Each transect was walked 3 times a day, 2 or 3 times a week from slightly before to slightly after the 3-week adult flight period. Data were recorded on weather; the number, condition, and behavior of all *N. m. mitchellii* seen; and the presence of other species of butterflies (possible competitors) and odonates (predators). No more than 6 satyrs were seen on any individual visit, and no more than 11 were seen in any single day. Satyrs were observed in only small portions of each transect, generally in open carr or savanna with a dense understory of *Carex stricta* (the presumed host plant) and a variety of forbs. More satyrs were seen during the cooler part of the day and during the first half of the flight period.

## **Succession of the Ant Community of Jack Pine Forests in the Presence of *Formica exsectoides*, a Dominant Species (POSTER)**

Heather Rowe, Heather Govenor, and Cathy Bristow

Department of Entomology, Michigan State University, East Lansing, MI 48824 E-mail: roweheat@pilot.msu.edu and cbristow@pilot.msu.edu

We sampled the abundance and diversity of ants coexisting with the dominant species, *Formica exsectoides* Forel, in jack pine habitats of differing ages in Michigan. Five stands from each of three stand age classes were sampled using pitfall traps. Young stands, defined as less than 16 years from last disturbance (clear cut or fire), mature stands (35 to 45 years), and old stands (66 to 77 years) were surveyed. All stands contained large populations of the Allegheny mound ant, *Formica exsectoides*. We identified 7 additional morphospecies including: *Aphaenogaster* spp., *Formica fusca*, *Dolichoderus plagiatus*, *Tapinoma sessile*, *Lasius* spp., *Monomorium minimum* and *Camponotus herculeanus*.

*Formica exsectoides* foragers were the most abundant ant in all age classes of jack pine, ranging from 6 to 26 times more abundant than the sum of all other ant species. The greatest diversity of other ants was found in the youngest stands. Abundance of *F. exsectoides* was not significantly correlated with abundance or diversity of the other ant species.

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## **Endangered Species Program: Goals and Challenges**

Raymond Rustem, Director, Michigan Natural Heritage Program, Michigan Department of Natural Resources, Lansing, MI E-mail: rustemr@state.mi.us

In 1974, Michigan passed an endangered species law to protect Michigan's endangered resources. In the succeeding 25 years, we have had varying degrees of success. Species such as the bald eagle, wolf, and peregrine falcon, which were instrumental to passing the endangered species law, have recovered to the point of being delisted. In Michigan, there are now over 310 nesting pairs of eagles, over 800 pairs of Kirtland's warblers (including 14 pairs in Michigan's Upper Peninsula), and over 175 wolves in more than 30 packs. Yet many of our less glamorous species, like so many of the insects, have received little attention. It appears that we have lost one population of the Hungerford's crawling water beetle in Michigan. The new approaches of ecosystem management (e.g., Habitat Conservation Plans = HCPs) may bring the needed attention to the smallest of our endangered species.



# Annual Meeting Photos



President - Ron Priest



Meeting location - RAM Conference Center  
Roscommon, MI



Kathy Wildman, Hearts and Flowers Nursery,  
selling entomological collectibles at coffee break



Path and bridge from RAM Conference Center  
to Higgins Lake



Bob Haack demonstrating various bark beetle traps



Fred Stehr using a banana for insect bait, or just  
having a snack?



Brian Armitage and Randy Cooper



Mo Nielsen, Eric Metzler, Bob Kriegel, Chris Clappitt  
and others relaxing with snacks and beverages at the  
evening social.



Light trapping



Collecting insects along Higgins Lakeshore



Leah Bauer and Ron Priest passing the gavel



RAM Conference Center

# MES Annual Meeting Minutes

The MES annual meeting was held at the Michigan Department of Natural Resources RAM Conference Center at Higgins Lake on Friday, 4 June 1999. The business meeting followed a day of interesting invited presentations on the topic of "Insect & Ecosystem Diversity in the Great Lakes Region". Forty-seven people attended the 1999 annual meeting. However, it appeared that practically no graduate students were in attendance this year. Leah Bauer began the business meeting by thanking Ron Priest for all of his hard work in organizing such a unique and successful annual meeting.

**Election results.** Bob Haack presented results of the election of officers; approximately 100 members voted in the election. The new President-Elect is George Balogh. The new Governing Board Member-at-Large is Owen Perkins. Mogens Nielsen and Bob Kriegel were re-elected as Treasurer and Secretary, respectively.

**Journal Editor's report.** Ron Priest acknowledged Mark O'Brien's 10½ years of service to MES as Journal Editor. Since Mark has found a replacement, he will be stepping down as journal editor, but will continue to assist with layout and desktop publishing. Mark introduced the audience to the new journal editor, Randall Cooper. Authors submitting manuscripts should send them to Randy at 16672 152<sup>nd</sup> Avenue, Spring Lake, MI 49456; or by e-mail at [renzie@aol.com](mailto:renzie@aol.com).

During O'Brien's tenure as editor the journal has seen a number of changes, probably the most important of these was becoming a fully peer-reviewed journal. Mark also implemented electronic submission of manuscripts, an improvement that has helped keep down publishing costs.

At the time of the meeting, volume 32(1) of the Great Lakes Entomologist was nearly completed. Work was underway on 13 manuscripts for the following issue.

**Newsletter Editor's report.** Bob Haack, the Editor of the MES Newsletter, recognized George Heaton's contributions to MES. George served as Associate Newsletter Editor for more than 20 years, and has regularly taken photographs of annual meeting speakers and activities for the newsletter. Bob also introduced Therese Poland as the new Associate Newsletter Editor. Therese has taken on desktop publishing responsibilities for the newsletter. Bob indicated that the next issue of the newsletter would hopefully be published in July or August.

Mogens Nielsen asked about the possibility of including, when appropriate, color photographs in the newsletter, perhaps once per year. Bob and Therese will investigate what it would cost to do this.

**Treasurer's report.** Mogens Nielsen delivered the Treasurer's report. As of 2 June 1999, the Society's holdings were distributed as follows: checking account (\$8,774), certificates of deposit (\$6,496 @ 6.75% interest), checks on hand (\$15), petty cash (\$13), and accounts receivable (\$1,365). Total cash assets are \$15,298; this compares to \$12,370 at this time last year. Expected revenues for the remainder of 1999 are \$8,000 distributed among dues (\$2,500), subscriptions/subsidies (\$5,000), and miscellaneous (\$500). Expected expenses for the rest of this year includes 2 journal issues (\$6,000), 2 newsletters (\$2,000), miscellaneous printing costs (\$500), and postage (\$500). Total expected outstanding expenses for 1999 are \$9,000. The prognosis for the Society's expenses for the next 6-12 months is good.

Mo also reminds everyone that he has MES decals available at 75 cents each.

**Secretary's report.** Bob Kriegel read the minutes from the Fall 1998 governing board meeting. These minutes were published in the Spring '99 MES Newsletter. Bob asked the journal and newsletter editors to inform him by e-mail about a week before MES publications go to the printer so he can get the latest address changes to the Aldingers publishing firm in time for each mailing. Members can submit change of address requests to Bob at the following address: Dept. of Entomology, Room 243 Natural Science Bldg., Michigan State University, 48824; or by e-mail at [kriegelr@pilot.msu.edu](mailto:kriegelr@pilot.msu.edu).

**New business.** Ron Priest moved that a committee be established on a trial basis to assist each new President-Elect in setting up future annual meetings. The motion passed. Any past MES presidents who would like to help should contact Ron.

Ron Priest stated that the Society's by-laws and constitution contain some inconsistencies that should be clarified. Ron made a motion for a temporary committee to be formed to review the Society's constitution and by-laws and make recommendations to the governing board at the Fall '99 governing board meeting. The motion passed. Ron Priest, Mogens Nielsen, Bob Kriegel, and Mark O'Brien volunteered to serve on the committee. The committee is looking for an additional volunteer from the membership at large. Any recommendations accepted by the governing board will be brought before the entire membership for a vote, perhaps during next year's elections or at the next annual meeting.

Respectfully submitted, Robert D. Kriegel, Secretary

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## ***Hot off the Press: "Michigan Butterflies and Skippers"***

Mogens C. Nielsen's long awaited field guide to Michigan butterflies and skippers has finally arrived. As the author explains in the acknowledgements, his work on this book dates back to the late 1960s and is an extension of work by earlier Michigan lepidopterists such as Wilbur McAlpine, Sherman Moore, and George Rawson. With attention to detail and quality throughout, the creation of this guidebook was clearly a labor of love.

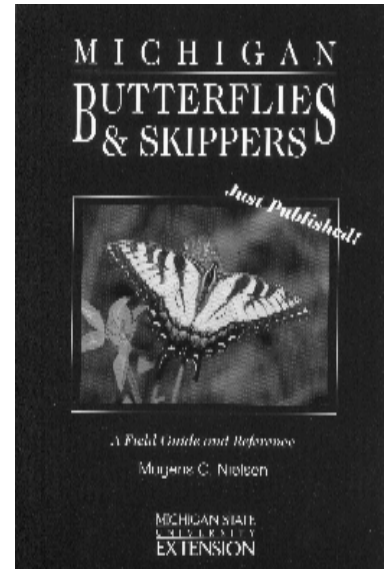
At 248 pages, this field guide covers all 159 species of butterflies and skippers that have been recorded from Michigan. The book contains over 600 photographs, illustrating both set specimens and live butterflies in natural settings. All photographs are in color and of exceptional and consistent quality. Over 140 of these are photographs of living butterflies by the prize-winning nature photographer, Larry West. Photographs of set specimens are used to illustrate both the dorsal and ventral surfaces of each species. Morphological differences between males and females, unusual variants, and immature stages are liberally figured.

Following introductory sections on Michigan's physiography and climate, habitats, butterfly gardening and conservation, and a convenient species checklist, the bulk of the guide consists of species descriptions organized by family. Color-coded tabs and checklist numbers make it easy to find a specific species.

Each species description contains sections describing adult appearance and food sources, early stages and host plants, habitats, distribution, flight

period, and other remarks. There are also county level distribution maps for each species. Detailed information on larval hosts, adult nectar sources, and tips for distinguishing between similar species abound.

Occasional naturalists and butterfly watchers will find the book instructive and easy to use. Serious avocational lepidopterists will be delighted by the wealth of detailed information gathered during over 50 years of fieldwork. This field guide by Mo Nielsen, the dean of Michigan lepidopterology, is destined to become a classic. Priced at \$19.95 the softbound book is an exceptional value. Serious students of Lepidoptera will want two copies, one for their reference library and a second for their field bag.



"Michigan Butterflies and Skippers" is published by MSU Extension as Extension Bulletin E-2675. The guidebook can be ordered by mail from the MSU Bulletin Office, 10-B Agriculture Hall, Michigan State University, East Lansing, MI 48824-1039. To order by phone using VISA or MasterCard, call (517) 355-0240 during normal business hours (Monday – Friday, 8-12AM and 1-5 PM Eastern U.S. time).

Submitted by  
Robert Kriegel

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## **MICHIGAN ENTOMOLOGICAL SOCIETY**



DEPARTMENT OF ENTOMOLOGY  
MICHIGAN STATE UNIVERSITY  
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**ADDRESS CORRECTION REQUESTED**

