Wisconsin Entomological Society Newsletter

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Neato Mosquito!

by Jessica Miller

"Yes, I am sure I want to inventory mosquitoes!" I said for the third time, when asked by my coordinator, Loren Ayers, about my species of choice for our initial 2008/2009 W-DNR* Partnership Program project. What started as a simple idea-- to inventory all plant and animal species one at a time at Mosquito Hill Nature Center-- turned into the greatest challenge I have known thus far...and this is no exaggeration. Although, how could I *not* start with mosquitoes? I mean, they are our namesakes. I was thirsty for mosquito knowledge, and female mosquitoes were thirsty for my life-blood. Coincidence? I think not.

Citizen science, or Citizen-Based Monitoring (CBM), is a term used to describe ongoing scientific research performed by volunteers, many of whom have no scientific background or training. The use of volunteers in CBM projects greatly increases the amount of data collected for scientists and helps to promote environmental awareness and engagement in the volunteer, which leads to a greater sense of ownership within a community.

In theory, I should have had the volunteers lined up down the block to trap and identify mosquitoes on our property, based on the "feel good" effect CBM has on its citizen scientists. In reality, however, it took a bit more than high fives and words of praise to complete this monumental undertaking. Could it be that my subject matter was scaring potential hard-working nature enthusiasts away? Just whom could I dupe into tackling this project with gusto? The answer was clear: students!

All right, maybe the word "gusto" is stretching it a bit, since most of my summer day camp students groaned and complained when I eagerly told them about the data we were going to gather.

Before we could collect mosquitoes, we needed a lesson in Mosquito Trap 101. Light traps are nothing more than a thermos canister attached to a small fan, light, and net. Filling the canister with dry ice (CO2) and engaging the fan releases the carbon dioxide that female mosquitoes are attracted to. As the insect draws near the light, the fan sucks her into the attached net.

Gravid traps rely on the same fan/net system, but instead of using carbon dioxide as the bait, a man-made slurry resembling stagnant water is stored in an open reservoir. As the female mosquito attempts to lay eggs on the surface of the foul-smelling liquid, the fan sucks her up into the net.

With our new-found information, I added dry ice to the light traps while the kids oohed and ahhed at its "smoky" presence (a good sign), then poured the slurry into the gravid traps, while the kids gagged on the stench (a minor hindrance). Armed with our combat gear, five light traps and three gravid traps, we ventured out to the lowland forest and hillside to get our

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In This Issue...

The Wisconsin Entomological Society Newsletter is published three times a year, at irregular intervals. The newsletter is provided to encourage and facilitate the exchange of information by the membership, and to keep the members informed of the activities of the organization. Members are strongly encouraged to contribute items for inclusion in the newsletter. Please send all news items, notes, new or interesting insect records, season summaries, and research requests to the editor by Jan. 15, May 15, or Sept. 1st:

J. Mingari, P.O. Box 105, New Holstein, WI 53061, email: turkeyfeather@tds.net (Put WES in subject line)
NOTE: Please report any address changes to Les Ferge, 7119 Hubbard Ave., Middleton, WI 53562, email: lesferge@gmail.com.

NEATO MOSQUITO, *from page 1*

fill of biting insects.

When we went back to collect the traps 24 hours later, we heard a loud, high-pitched buzzing sound being emitted from the area in which our traps were located... then realized that the noise was coming from our traps. Despite torrential downpours and gale-force winds the night before, thousands of live mosquitoes were still flying around inside the traps. Let's see: 1,000 mosquitoes per light trap times five traps equals... 5,000 mosquitoes (the gravid traps, thankfully, did not fare as well). I know that the goal was to collect an abundance of mosquitoes, but I wasn't expecting this many!

The next challenge was to get the traps back to the nature center without incident. Did I mention that I was working with fourth- and fifth-grade students during the height of mosquito season? Did I mention that most of my students were wearing shorts and t-shirts? Did I mention that in order to successfully transport the insects back to the center, the mosquito-filled nets needed to be taken off the traps, potentially exposing our captured subjects to freedom? Are you thinking that this is a recipe for disaster? You would be correct.

Panic ensued shortly after I gave the thumbs-up to collect the nets. Kids began dismantling traps while I took pictures but, without warning, we were swarmed by ravenous mosquitoes. It all happened so fast but, as I recall, the students screamed in terror and began swatting and slapping mosquitoes, thus dropping the nets, releasing our booty. I scrambled to pick up what was left and ran back to the building with the kids.

As we all walked back into the nature center, I saw the look of anguish on the students' faces and knew that what we had just experienced would be the last straw for them unless I went about this research project in a different way. Counting and identifying thousands of mosquitoes was pointless because their heart just wasn't into what we were doing, and that task would be too overwhelming. So I started over again, this time with the basics.

"Hey, did you know that there are almost 60 species of mosquitoes in Wisconsin and over 3,000 species worldwide?" Looking at the abundant welts from their bites, I guessed that they had figured that factoid out on their own.

"Did you know that only female mosquitoes bite, in order to acquire the necessary blood meal to develop eggs?" Hmmm... a few glances in my direction.

"Do you guys want to see a mosquito larva breathe through its butt?" Now that was the golden ticket! A wave of excitement filled the room, and so began an afternoon of viewing mosquito larvae under the dissecting microscopes.

By day's end, my students were telling their parents about the siphon tube connected to the larva's abdomen that is used for breathing. The larvae swim to the water's surface, turn their rear ends upwards, and take in oxygen.

Over the course of the next few days, we watched mosquito pupae do somersaults in the water (and we affectionately referred to them as "tumblers") as they tried to escape our probing fingers. We learned that some mosquitoes have pointy butts while others have rounded ones (I tried to incorporate the word *abdomen* to no avail; the students were happier to say *butt*). We used magnifiers to see white banding on the legs of some mosquitoes and silver triangles on the bodies of others. We found male mosquitoes with impressive feathery antennae and small red spots on their thorax, which turned out to be parasitic mites. Each day, students would eagerly tell their parents about our new discoveries, and each day their parents would look at me as if I were some mad scientist converting their kids into insect fanatics, which secretly I was.

On the last day of camp, we embarked on The Big Hike, exploring the nature center property with lunches in tow for three solid hours before returning to the building. I instructed each student to wear pants and bring a lightweight, long-sleeved shirt for mosquito protection, with which they happily obliged. Not long into our walk, one of the kids slapped a mosquito on his arm and exclaimed, "*Anopheles punctipennis*!" As I whirled around with gaping jaw, another student said, "How do you know?" He replied, "Look at the big spots on the wings. Besides, before I killed it, she had her butt in the air feeding on my arm." Sure enough. Looking at her under my magnifier, I could see the two light-colored spots on her wings, a distinguishing characteristic for this species of mosquito.

Now, this is nothing I taught in class, mind you. This is something I mentioned nonchalantly one day as we were outside looking for monarch larvae. The scenario was similar: me slapping a mosquito and pointing out its features and calling her by name. I also cited that the *Anopheles* species hold their bodies at a 45- to 90-degree angle as they are feeding... keeping their "butts in the air." In all honesty, I never thought that would go any further. This just proves that kids, despite having selective hearing, do pay attention to us when we least ex-

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Mosquito Species Collected on MHNC, Outagamie County, Town of Liberty:

Anopheles punctipennis
Anopheles quadrimaculatus
Anopheles walkeri

Aedes cinereus
Aedes vexans

Culex pipiens
Culex restuans

Coquillettidia perturbans

Ochlerotatus canadensis
Ochlerotatus dorsalis
Ochlerotatus fitchii
Ochlerotatus flavescens
Ochlerotatus grossbecki
Ochlerotatus spencerii
Ochlerotatus stimulans
Ochlerotatus triseriatus
Ochlerotatus trivittatus

Uranotaenia sapphirina

Unconfirmed Species:

Culiseta morsitans
Ochlerotatus abserratus
Wyeomyia smithii

NEATO MOSQUITO, *from page 2*

pect it!

We had one year to complete our mosquito inventory, per the Partnership Program requirements. I managed to recruit a few dedicated volunteers, including a high school student and two graduate students, as well as fellow insect enthusiast Todd Ward and his wife, Cindy; and research scientists Patrick Stockwell and Dr. Jennifer Meece from the Marshfield Clinic Research Foundation, to assist with mosquito identification.

Despite the long, arduous hours it took to count and categorize all 10 weeks of mosquito data (almost 20,000 insects), we determined that Mosquito Hill Nature Center is home to 18 confirmed and three unconfirmed species of mosquitoes. As a naturalist, I know the importance of this abundant insect in the food web. In certain wetter years we are home to a surplus of mosquitoes, which lend themselves nicely to swallows, bats, frogs, and dragonflies...and of course, give us our unforgettable nature center name. I also know that as a naturalist, if you can convince kids that something like a mosquito is cool, you can do anything you set your mind to. Next year's project... wasps?

*Wisconsin Department of Natural Resources

Jessica Miller is a naturalist at Mosquito Hill Nature Center, New London, WI. © Jessica Miller.

Jessica Miller's program was "Learning by Doing: Starting a Biological Monitoring Program on the Mosquito Hill Nature Center," in partnership with Marshfield Clinic Research Foundation and the WDNR . For more information, visit the Citizen-Based Monitoring Network of Wisconsin Partnership Program website, http://wiatri.net/cbm/index.cfm, or contact Loren Ayers, Wisconsin Department of Natural Resources, P.O. Box 7921 - ER/6, Madison, Wisconsin 53707-7921. Loren.Ayers@wisconsin.gov. Phone: (608) 261-6449.

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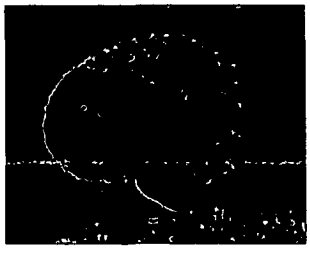
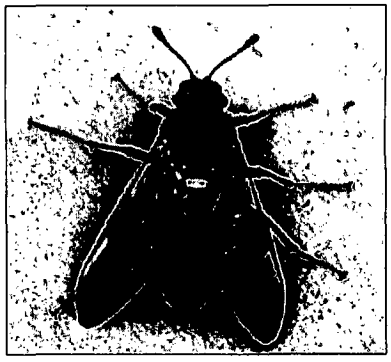
Spring Mystery Insect: *Cimbex americana*



Gene Drecktrah, Jordan Marché, Ron Huber, and John Stiefel identified the spring mystery insect as the larva of the elm sawfly, *Cimbex americana*— a member of the Hymenoptera (Cimbicidae). Gene noted that "the larvae typically feed on elm and willow, but will occasionally feed on basswood." Jordan reported that the *Kaufman Field Guide to Insects of North America* listed "[h]ost trees include maple, alder, birch, basswood, poplar, and willow" (p. 322). John added that "This species has one generation per year and overwinters as a full-grown larva in a cocoon on the ground. It pupates in the spring, and the adults appear in early summer, flying May through June. This is the largest sawfly in the U.S., easily recognized by its club-shaped antennae. The fly is a dark blue insect (18 to 25 mm in length). The female has four yellow spots on each side of the abdomen. I have included a photo of the adult from Janice's database."



We finally got our own website!

WES has moved
from http://www.entomology.wisc.edu/wes/ to

http://wisentsoc.org/

The site is under construction, but visit often since more and more of the new stuff will appear monthly. Member contributions, such as images and links to other websites, etc., are welcome.

PART II: 2009 Wisconsin Lepidoptera Season Summary

Compiled by Les Ferge

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MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
	Gracillariidae					
854	Phyllocnistis vitifoliella	DANE	Swamp Lover's Preserve	26-Jul-09		KEJ
	STATE RECORD; reared ex. Serpentine leaf mines on Vitis riparia found 18 July 2009					
854.9	Phyllocnistis (white sp. group)	CRAWFORD	Hogback Prairie	7-Nov-09		KEJ
854.9	Phyllocnistis (white sp. group)	OUTAGAMIE	Maine SWA	25-Feb-09		KEJ
854.9	Phyllocnistis (white sp. group)	SAUK	Loddes Mill Bluff	31-Jan-09		KEJ
	Elachistidae					
859	Agonopterix curvilineella	CRAWFORD	Hogback Prairie	7-Nov-09		KEJ
859	Agonopterix curvilineella	POLK	Balsam Branch SWA	11-Feb-09		KEJ
859	Agonopterix curvilineella	RICHLAND	Hub City	7-Feb-09		KEJ
862	Agonopterix clemensella	CRAWFORD	Hogback Prairie	7-Nov-09		KEJ
862	Agonopterix clemensella	GREEN	Abraham's Woods SNA	9-Apr-09		KEJ
862	Agonopterix clemensella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
864	Agonopterix atrodorsella	OUTAGAMIE	Maine SWA	25-Feb-09		KEJ
864	Agonopterix atrodorsella	TAYLOR	Kidrick Uplands	7-May-09		KEJ
866	Agonopterix eupatoriiella	GREEN	Hay Hollow	3-Mar-09		KEJ
866	Agonopterix eupatoriiella	OUTAGAMIE	Maine SWA	25-Feb-09		KEJ
866	Agonopterix eupatoriiella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
867	Agonopterix pulvipennella	CRAWFORD	Hogback Prairie	7-Nov-09		KEJ
867	Agonopterix pulvipennella	DANE	UW Arboretum	17-Mar-09		KEJ
867	Agonopterix pulvipennella	ONEIDA	Finnerud Forest	4-May-09		KEJ
867	Agonopterix pulvipennella	OUTAGAMIE	Maine SWA	25-Feb-09		KEJ
867	Agonopterix pulvipennella	TAYLOR	Kidrick Uplands	7-May-09		KEJ
868	Agonopterix nigrinotella	CRAWFORD	Hogback Prairie	7-Nov-09		KEJ
868	Agonopterix nigrinotella	GREEN	Abraham's Woods SNA	9-Apr-09		KEJ
868	Agonopterix nigrinotella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
869	Agonopterix walsinghamella	ONEIDA	Finnerud Forest	4-May-09		KEJ
889	Agonopterix argillacea	JEFFERSON	Faville Prairie	14-Apr-09		KEJ
889	Agonopterix argillacea	TAYLOR	Kidrick Uplands	7-May-09		KEJ
914	Semioscopis inornata	Burnett	Namekagon Barrens	17-May-09		KEJ
914	Semioscopis inornata	ONEIDA	Finnerud Forest	4-May-09		KEJ
914	Semioscopis inornata	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
915	Semioscopis megamicrella	RICHLAND	Hub City Bog	15-Apr-09		KEJ
915	Semioscopis megamicrella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
916	Semioscopis aurorella	GREEN	Abraham's Woods SNA	9-Apr-09		KEJ
916	Semioscopis aurorella	ONEIDA	Finnerud Forest	4-May-09		KEJ
916	Semioscopis aurorella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
921	Depressaria cinereocostella	Sauk	Loddes Mill Bluff	23-Apr-09		KEJ
951	Machimia tentoriferella	LINCOLN	Bradley	26-Sep-09		KEJ
	Oecophoridae					
1042	Decantha boreasella	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
1046	Epicallima argenticinctella	Dane	Pasque Flower Hill	27-Jul-09		KEJ
	Coleophoridae					
1388	Coleophora trifolii	Dane	Pasque Flower Hill	9-Jul-09		KEJ
	Cosmopterigidae					
1472	Cosmopterix pulchrimella	DANE	UW Arboretum	28-Jul-09		KEJ
1631	Perimede ricina (probably)	GREEN	Abraham's Woods SNA	19-Jul-09		KEJ

Please see **SEASON SUMMARY**, *page 5*

SEASON SUMMARY, *from page 4*

MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
	Xyloryctidae					
1668	Scythris immaculatella	GREEN	Oliver Prairie	19-Jul-09		KEJ
	STATE RECORD; det. Jean-Francois Landry via email image; examination pending					
	Gelechiidae					
1685	Metzneria lappella	Dane	Pasque Flower Hill	9-Jul-09	27-Jul-09	KEJ
1685	Metzneria lappella	GREEN	Abraham's Woods SNA	8-Aug-09		KEJ
1771	Evippe prunifoliella (?)	DANE	UW Arboretum	28-Jul-09		KEJ
1808	*Coleotechnites eryngiella*	DANE	Pasque Flower Hill	9-Jul-09		KEJ
1851	Arogalea cristifasciella	DANE	Pasque Flower Hill	24-Apr-09		KEJ
1851	Arogalea cristifasciella	ONEIDA	Finnerud Forest	4-Jun-09		KEJ
1851	Arogalea cristifasciella	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
1857	Telphusa latifasciella	Dane	Pasque Flower Hill	9-Jul-09		KEJ
1858	Telphusa longifasciella	Dane	Pasque Flower Hill	24-Apr-09		KEJ
1986	Gnorimoschema gallaesolidaginis	COLUMBIA	Lodi Marsh SWA	24-Sep-09		KEJ
2093	Chionodes mediofuscella	ONEIDA	Finnerud Forest	4-Jun-09		KEJ
2267	Helcystogramma fernaldella	ONEIDA	Finnerud Forest	4-Jun-09		KEJ
2267	Helcystogramma fernaldella	RICHLAND	Hub City Bog	20-May-09		KEJ
2281	Dichomeris ligulella	Green	Abraham's Woods SNA	19-Jul-09		KEJ
2287	Dichomeris ventrella	VERNON	Kooyumjian-Lost Creek CF	15-Apr-09		KEJ
2291.4	Dichomeris furia	DANE	Swamp Lover's Preserve	18-Jul-09		KEJ
	STATE RECORD; NW-most record?					
2295	Dichomeris flavocostella	Dane	Pasque Flower Hill	9-Jul-09		KEJ
	Carposinidae					
2319	Bondia crescentella	ONEIDA	Finnerud Forest	4-May-09		KEJ
	STATE RECORD family					
	Glyphipterigidae					
2341	Glyphipterix haworthana	ASHLAND	Black Creek Bog	18-May-09		KEJ
2341	Glyphipterix haworthana	CLARK	Abbott Ranch Road Peatland	7-May-09		KEJ
2341	Glyphipterix haworthana	JACKSON	Martin Marsh	7-May-09		KEJ
	southern range extension					
2341	Glyphipterix haworthana	TAYLOR	Kidrick Swamp/Krimslinger Bog	8-May-09		KEJ
	Plutellidae					
2366	Plutella xylostella	LINCOLN	Bradley	26-Sep-09		KEJ
	Ypsolophidae					
2375	Ypsolopha dentella	GREEN	Abraham's Woods SNA	19-Jul-09		KEJ
	Yponomeutidae					
2401	Atteva pustulella	Richland	Hub City Bog	20-May-09		KEJ
2423.1	Yponomeuta cagnagella	Dane	Madison	28-Jul-09		KEJ
2467	Argyresthia oreasella	GREEN	Abraham's Woods SNA	19-Jul-09		KEJ
	Acrolepiidae					
2490.9	Acrolepiopsis incertella/heppneri	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ
	STATE RECORD family					
	Choreutidae					
2642	Tebenna silphiella	GREEN	Oliver Prairie	19-Jul-09		KEJ
	Tortricidae					
2926	Phaneta verna	Dane	Pasque Flower Hill	24-Apr-09		KEJ
3186	Epiblema scudderiana	RICHLAND	Hub City Bog	20-May-09		KEJ
3251	Pseudexentera spoliana	IOWA	Arena Pine Barrens	15-Apr-09		KEJ
3254	Pseudexentera maracana (?)	SHEBOYGAN	Kohler	24-Apr-09		KEJ
3254.1	Pseudexentera vaccinii	JACKSON	Martin Marsh	7-May-09		KEJ
3255	Pseudexentera kalmiana	Langlade	Kempster Bog	23-May-09		KEJ
3255	Pseudexentera kalmiana	Oneida	Big Finnerud Bog	4-May-09		KEJ
3255	Pseudexentera kalmiana	TAYLOR	Krimslinger Bog	8-May-09		KEJ
3258	Pseudexentera virginiana	TAYLOR	Kidrick Uplands	7-May-09		KEJ
3291.1	Epinotia sotipena	Green	Abraham's Woods SNA	9-Apr-09		KEJ
3291.1	Epinotia sotipena	SAUK	Loddes Mill Bluff	23-Apr-09		KEJ

Please see **SEASON SUMMARY**, *page 6*

SEASON SUMMARY, *from page 5*

MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
3351	Epinotia lindana	Columbia	Lodi Marsh SWA	24-Sep-09		KEJ
3384	Ancylis mediofasciana	JACKSON	Martin Marsh	7-May-09		KEJ
3509	Acleris ptychogrammos	Dane	UW Arboretum	17-Mar-09		KEJ
3509	Acleris ptychogrammos	RICHLAND	Hub City Bog	15-Apr-09		KEJ
3517	Acleris subnivana	Dane	New Observatory Woods	21-Mar-09		KEJ
3517	Acleris subnivana	Green	Abraham's Woods SNA	9-Apr-09	19-Jul-09	KEJ
3517	Acleris subnivana	Sauk	Loddes Mill Bluff	23-Apr-09		KEJ
3520	Acleris fuscana	Sauk	Loddes Mill Bluff	23-Apr-09		KEJ
3526	Acleris negundana	RICHLAND	Hub City	15-Apr-09		KEJ
3527	Acleris schalleriana	Dane	UW Arboretum & New Obs. Woods	16-Mar-09	21-Mar-09	KEJ
3529	Acleris oxycoccana	ASHLAND	Black Creek Bog	18-May-09		KEJ
3529	Acleris oxycoccana	CLARK	Abbott Ranch Road Peatland	7-May-09		KEJ
3529	Acleris oxycoccana	JACKSON	Martin Marsh	7-May-09		KEJ
3529	Acleris oxycoccana	TAYLOR	Krimslinger Bog	8-May-09		KEJ
3539	Acleris chalybeana	Green	Abraham's Woods SNA	9-Apr-09		KEJ
3542	Acleris flavivittana	Iowa	Arena Pine Barrens	15-Apr-09		KEJ
3543	Acleris maculidorsana	TAYLOR	Kidrick Swamp	8-May-09		KEJ
3553	Acleris bowmanana	DANE	Swamp Lover's Preserve	4-Mar-09		KEJ
3553	Acleris bowmanana	LINCOLN	Landwehr Creek & Bradley	11-May-09	27-Sep-09	KEJ
3553	Acleris bowmanana	MARATHON	Knowlton	4-Oct-09		KEJ
3556	Acleris nigrolinea	Burnett	Namekagon Barrens	17-May-09		KEJ
3556	Acleris nigrolinea	Dane	UW Arboretum	17-Mar-09		KEJ
3556	Acleris nigrolinea	LINCOLN	Bradley	26-Sep-09		KEJ
3556	Acleris nigrolinea	Sauk	Loddes Mill Bluff	23-Apr-09		KEJ
3556	Acleris nigrolinea	TAYLOR	Kidrick Swamp & Uplands	7-May-09		KEJ
3558	Acleris busckana (possibly)	RICHLAND	Hub City Bog	15-Apr-09		KEJ
3623	Argyrotaenia quercifoliana	Dane	Pasque Flower Hill	9-Jul-09		KEJ
3630	Diedra cockerellana	Dane	Swamp Lover's Preserve	18-Sep-09		JWG
3693	Xenotemna pallorana	Dane	Lodi Marsh SWA	24-Sep-09		KEJ
3695	Sparganothis sulfureana	Oneida	Finnerud Forest	1-Sep-09		KEJ
3720	Cenopis reticulatana	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
3754	Aethes angulatana	Dane	Pasque Flower Hill	9-Jul-09		KEJ
	Limacodidae					
4654	Tortricidia flexuosa	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
4667	Apoda y-inversum	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
4671	Prolimacodes badia	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
	Crambidae					
4755	Synclita obliteralis	Richland	Hub City Bog	20-May-09		KEJ
4755	Synclita obliteralis	Sauk	Loddes Mill Bluff	23-Aug-09		KEJ
4948	Ostrinia marginalis	Burnett	Namekagon Bog	17-May-09		KEJ
4948	Ostrinia marginalis	VILAS	Scat Lake Bog	23-May-09		KEJ
4986.1	Sitochroa palealis	Dane	Pasque Flower Hill	9-Jul-09		KEJ
4986.1	Sitochroa palealis	ROCK	Avon Bottoms	19-Jul-09		KEJ
5017	Loxostege cereralis	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
5156	Nomophila nearctica	WAUSHARA	Coloma	4-Oct-09		KEJ
5226	Palpita magniferalis	TAYLOR	Kidrick Swamp	7-May-09		KEJ
5277	Herpetogramma thestealis	Oneida	Finnerud Forest	1-Sep-09		KEJ
5277	Herpetogramma thestealis	SAUK	Loddes Mill Bluff	23-Aug-09		KEJ
5341	Crambus alienellus	ONEIDA	Big Finnerud Bog	5-Jun-09		KEJ
5361	Crambus albellus	LINCOLN	Bradley	26-Sep-09		KEJ
5379	Neodactria luteolellus	Dane	Pasque Flower Hill	9-Jul-09		KEJ
	Pyralidae					
5524	Hypsopygia costalis	Dane	Lodi Marsh SWA	24-Sep-09		KEJ
5999	Eulogia ochrifrontella	Dane	Pasque Flower Hill	27-Jul-09		KEJ

Please see **SEASON SUMMARY**, *page 7*

SEASON SUMMARY, *from page 6*

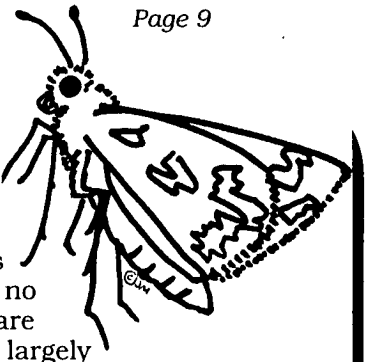
MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
	Drepanidae					
6240	Euthyatira pudens	RICHLAND	Hub City Bog	20-May-09		KEJ
	Geometridae					
6258	Alsophila pometaria	JEFFERSON	Jefferson	7-Nov-09		KEJ
6283	Speranza sulphurea	MARINETTE	Nadjack Lake Bog	17-Aug-09		KEJ
6286	Speranza brunneata	WASHBURN	Little Frog Creek Bog	18-Jun-09		KEJ
6321	Epelis truncataria	CHIPPEWA	Long Lake Bog	2-Jun-09		KEJ
6321	Epelis truncataria	CLARK	Abbott Ranch Road Peatland	7-May-09		KEJ
6321	Epelis truncataria	TAYLOR	Kidrick Swamp & Krimslinger Bog	8-May-09		KEJ
6321	Epelis truncataria	Vilas	Haymeadow Creek Barrens	23-May-09		KEJ
6330	Macaria notata	RICHLAND	Hub City Bog	20-May-09		KEJ
6342.1	Macaria masquerata	RICHLAND	Hub City Bog	20-May-09		KEJ
6343	Macaria sexmaculata	RICHLAND	Hub City Bog	20-May-09		KEJ
6358	Digrammia ordinata	Dane	Pasque Flower Hill	9-Jul-09		KEJ
6431	Hesperumia sulphuraria	TAYLOR	Hannibal Rd. 2 mi. S of CTH N & D	27-Jul-09		SCB
6436	Ematurga amitaria	Bayfield	Moquah Barrens	25-May-09		KEJ
6637	Eufidonia convergaria	TAYLOR	Kidrick Swamp	7-May-09		KEJ
6639	Eufidonia discospilata	CHIPPEWA	Long Lake Bog	2-Jun-09		KEJ
6639	Eufidonia discospilata	JUNEAU	Kingston Bog	20-May-09		KEJ
6639	Eufidonia discospilata	Sawyer	Big Draper & Partridge Crop L. bogs	18-May-09		KEJ
6639	Eufidonia discospilata	Washburn	Frog Creek Bog & W of Minong	17-May-09	2-Jun-09	KEJ
6639	Eufidonia discospilata	WOOD	Cranberry Road Bog	20-May-09		KEJ
6658	Phigalia titea	TAYLOR	Kidrick Uplands	7-May-09		KEJ
6663	Paleacrita merricata	IOWA	Arena Pine Barrens	15-Apr-09		KEJ
6663	Paleacrita merricata	RICHLAND	Hub City Bog	15-Apr-09		KEJ
6665	Erannis tiliaria	Grant	Muscoda	7-Nov-09		KEJ
6898	Cingilia catenaria	Lincoln	Bradley Bog	26-Sep-09		KEJ
7084	Hethemia pistasciaria	CHIPPEWA	Long Lake Bog	2-Jun-09		KEJ
7084	Hethemia pistasciaria	IRON	Turtle-Flambeau Peatland	5-Jun-09		KEJ
7084	Hethemia pistasciaria	MANITOWOC	Vanderbloomen Bog	7-Jul-09		KEJ
	record from Alice Burkel					
7085	Mesothea incertata	Ashland	Black Creek Bog	18-May-09		KEJ
7085	Mesothea incertata	CLARK	Abbott Ranch Road Peatland	7-May-09		KEJ
7085	Mesothea incertata	TAYLOR	Krimslinger Bog	8-May-09		KEJ
7085	Mesothea incertata	Vilas	Haymeadow Creek Barrens	23-May-09		KEJ
7136	Cyclophora packardi	LAFAYETTE	New Diggings	14-May-09		LAF
7428	Venusia comptaria	TAYLOR	Kidrick Swamp	7-May-09		KEJ
7433	Epirrita autumnata henshawi	LINCOLN	Bradley Bog	26-Sep-09		KEJ
7433	Epirrita autumnata henshawi	VILAS	Conover	4-Oct-09		KEJ
7625	Chloroclystis rectangulata	MILWAUKEE	Fox Point (Borth residence)	27-Jun-09		GJB
	STATE RECORD, collected at UV light by Hugo Kons Jr. and Bob Borth, det. G. J. Balogh					
7637	Cladara limitaria	RICHLAND	Hub City Bog	23-Apr-09		KEJ
7637	Cladara limitaria	TAYLOR	Kidrick Swamp	7-May-09		KEJ
7639	Cladara atroliturata	TAYLOR	Kidrick Uplands	7-May-09		KEJ
	Saturniidae					
7767	Hyalophora cecropia	Brown	Pine Grove	7-Jul-09		KEJ
	record from Ed Burkel					
	Sphingidae					
7796	Litneria eremitus	PRICE	Intersection of County N & County I	28-Jul-09		SCB
7807	Sphinx canadensis	Price	Intersection of County N & County I	28-Jul-09		SCB
7811	Sphinx luscitiosa	PORTAGE	Buena Vista Prairie Chicken Area	28-May-09		RDB
	reared from larva found on aspen 23 July 2008					
7892	Hyles euphorbiae	EAU CLAIRE	Eau Claire	3-Jun-09		IM
	STATE RECORD, several at lights					
7892	Hyles euphorbiae	TREMPEALEAU	Trempealeau NWR	9-Jul-09		MR
	larva found on Euphorbia esula 9 July 2009					

Please see **SEASON SUMMARY**, *page 8*

SEASON SUMMARY, *from page 7*

MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
	Notodontidae					
8022	Hyparax aurora	TAYLOR	Hannibal Rd. 2 mi. S of CTH N & D	27-Jul-09		SCB
	Arctiidae					
8098	Clemensia albata	LINCOLN	Bradley	26-Sep-09		KEJ
8120	Holomelina lamae	Douglas	Gordon Bog	30-Jul-09		KEJ
8158	Phragmatobia assimilans	TAYLOR	Medford	25-May-09		JFR
8162	Platarctia parthenos	Ashland	Black Creek Bog	18-Jun-09		KEJ
8199	Grammia arge	TAYLOR	Hannibal Rd. 2 mi. S of CTH N & D	27-Jul-09		SCB
	Noctuidae					
8455	Lomanaltes eductalis	RICHLAND	Hub City Bog	20-May-09		KEJ
8555	Scoliopteryx libatrix	GREEN	Stewart Tunnel on Badger State Tr.	24-Jan-09		JDM
	four fresh adults found hibernating in old railroad tunnel by Dave Zimmerman					
8694	Zale aeruginosa	Oneida	Finnerud Forest	4-Jun-09		KEJ
8703	Zale duplicata	RICHLAND	Hub City Bog	20-May-09		KEJ
8771	Catocala piatrix	Dane	Lodi Marsh SWA	24-Sep-09		KEJ
8778	Catocala habilis	WALWORTH	Rustic Rd #11, 1 mile N.of Hwy 50	11-Sep-09		SCB
8784	Catocala obscura	WALWORTH	Rustic Rd #11, 1 mile N.of Hwy 50	11-Sep-09		SCB
8788	Catocala retecta	WALWORTH	Rustic Rd #11, 1 mile N.of Hwy 50	11-Sep-09		SCB
8792	Catocala vidua	WALWORTH	Rustic Rd #11, 1 mile N.of Hwy 50	11-Sep-09		SCB
8797	Catocala subnata	WALWORTH	Rustic Rd #11, 1 mile N.of Hwy 50	11-Sep-09		SCB
8876	Catocala micronympha	JACKSON	Hunters Haven Road	16-Jul-09		SCB
8877	Catocala connubialis	Jackson	Hunters Haven Road	16-Jul-09		SCB
8905	Eosphoropteryx thyatyroides	TAYLOR	Medford	11-Aug-09		JFR
9061	Cerma cora	LAFAYETTE	Hardscrabble Prairie SNA	14-May-09		LAF
9280	Simyra insularis	Richland	Hub City Bog	20-May-09		KEJ
9429	Lemmeria digitalis	LINCOLN	Bradley Bog	26-Sep-09		KEJ
9443	Chortodes defecta	DOOR	Sturgeon Bay	30-Jul-09		LAF
9480	Papaipema pterisii	LINCOLN	Bradley	26-Sep-09		KEJ
9483	Papaipema inquaesita	LINCOLN	Bradley Bog	26-Sep-09		KEJ
9498	Papaipema silphii	Dane	Swamp Lover's Preserve	18-Sep-09		JWG
9502	*Papaipema nelita*	*Columbia*	*Lodi Marsh SWA*	*24-Sep-09*		KEJ
9506	Papaipema sciata	Dane	Swamp Lover's Preserve	18-Sep-09		JWG
9874	Xylena curvimacula	LINCOLN	Landwehr Creek & Bradley	11-May-09	26-Sep-09	KEJ
9874	Xylena curvimacula	TAYLOR	Kidrick Swamp	7-May-09		KEJ
9885	Lithophane semiusta	LAFAYETTE	Hardscrabble Prairie SNA	15-Apr-09		LAF
9885	Lithophane semiusta	TAYLOR	Kidrick Swamp & Uplands	7-May-09		KEJ
9886	Lithophane patefacta	TAYLOR	Kidrick Uplands	7-May-09		KEJ
9887	Lithophane bethunei	Richland	Hub City	15-Apr-09		KEJ
9888.1	Lithophane franclemonti	Dane	Swamp Lover's Preserve	12-Apr-09		KEJ
9910	Lithophane antennata	JEFFERSON	Faville Prairie	14-Apr-09		KEJ
9910	Lithophane antennata	TAYLOR	Kidrick Swamp	7-May-09		KEJ
9922	Lithophane pexata	TAYLOR	Kidrick Swamp	7-May-09		KEJ
9932	Pyreferra pettiti	GREEN	Abraham's Woods SNA	9-Apr-09		KEJ
9933.1	Eupsilia sidus	Dane	Pasque Flower Hill	21-Mar-09	24-Apr-09	KEJ
9935	Eupsilia tristigmata	LINCOLN	Bradley Bog	26-Sep-09		KEJ
9947	Epiglaea apiata	Lincoln	several sites in Bradley area	1-Sep-09	26-Sep-09	KEJ
9952	Eucirroedia pampina	LINCOLN	Bradley	26-Sep-09		KEJ
9965	Xanthia tatago	Lincoln	Bradley Bog	26-Sep-09		KEJ
9967	Hillia iris	Columbia	Lodi Marsh SWA	24-Sep-09		KEJ
9980	Xylotype arcadia	LINCOLN	Bradley Bog	26-Sep-09		KEJ
10007	Feralia major	BAYFIELD	Barrens-FR 419 & Hwy 2	18-May-09		SCB
10008	Feralia comstocki	RICHLAND	Hub City Bog	20-May-09		KEJ
10008	Feralia comstocki	TAYLOR	Kidrick Swamp	7-May-09		KEJ
10020	Psaphida thaxterianus	Dane	New Observatory Woods	21-Mar-09		KEJ
10021	Copivaleria grotei	Sheboygan	Kohler	24-Apr-09		KEJ
10021	Copivaleria grotei	TAYLOR	Kidrick Uplands	7-May-09		KEJ

Please see **SEASON SUMMARY**, *page 9*



Bad, Good, and Inspiring News

By Ann Swengel

Thanks to the many observations of lepidopterists shared in books and season summaries, Scott and I accumulated enough observations on Wisconsin's bog butterflies to fill out a talk on that compared to prairie butterflies for the 6th International Symposium on Conserving Lepidoptera in Reading, England in late March.

We learned a lot of depressing but amazingly universal trends that must be faced head on if we want to improve future outcomes. Besides the habitat destruction and degradation we can all see around us, changing agricultural practices are also negatively affecting butterflies. It's easy to see how agricultural intensification is unfavorable. But so is abandonment of farming altogether, when less intensive or "traditional" farming practices compatible with Lepidoptera become economically unfeasible in marginally productive land. Getting preserve management right (as Leps define it, not humans) is critical but difficult, due to the complexity both of the science and of its implementation.

Meanwhile, species' ranges are already changing due to hotter and/or drier climate patterns. More mobile, generalist species are adjusting their ranges as would be expected, sometimes dramatically. But more localized specialists are contracting because parts of their current range are no longer suitable, but they are unable to disperse across largely unsuitable landscapes into potential range elsewhere.

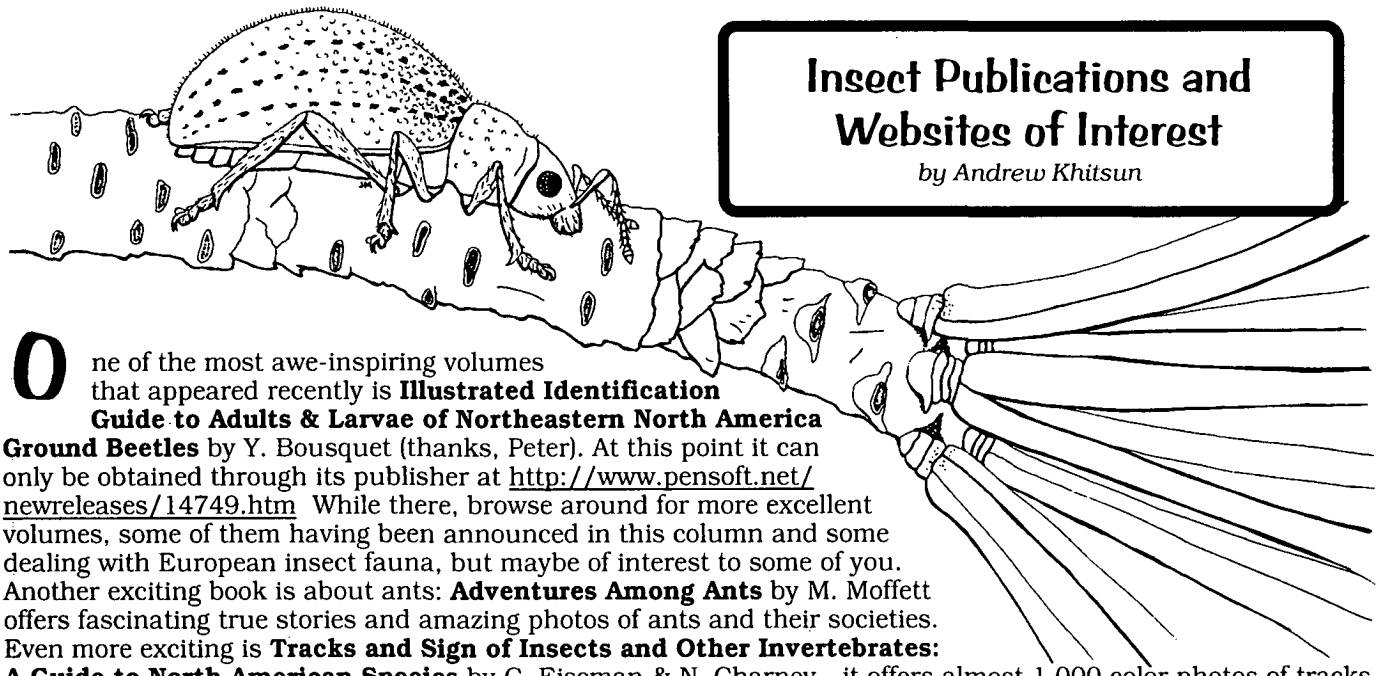
At the forefront of butterfly conservation, the British reported some good news, too. The Large Blue has been successfully reintroduced at more and more sites, and their Silver-Spotted Skipper (a subspecies of our Common Branded Skipper *Hesperia comma*) has been recovered and expanded through natural dispersal into rehabilitated sites. The European Union is integrating biodiversity conservation into governmental policy via funding for monitoring and via biodiversity goals in agricultural policy.

Let me close with inspiration from Sir David Attenborough: He noted that love of butterflies (and moths) brought us to the conference. This places responsibility on us for their well-being, which sends us out into the field (whether backyard or wildland) to discover and monitor, and back into the human arena, to share and advocate.

SEASON SUMMARY, *from page 8*

MONA #	Family/Species	County	Locality	First Date	2nd Date	Collr.
10177	Calophasia lunula	BROWN	Green Bay	22-Jul-09		KEJ
10177	Calophasia lunula	LAFAYETTE	New Diggings	14-May-09		LAF
10302	Trichordestra rugosa	Ashland	Clam Lake Bog	18-Jun-09		KEJ
10332	Coranarta luteola	Ashland	Black Creek Bog	18-May-09		KEJ
10332	Coranarta luteola	Jackson	Martin Marsh	20-May-09		KEJ
10332	Coranarta luteola	Langlade	Kempster & Summit Lake bogs	23-May-09		KEJ
10332	Coranarta luteola	LINCOLN	peatlands SW of Tomahawk	11-May-09		KEJ
10332	Coranarta luteola	Wood	Cranberry Road Bog	20-May-09		KEJ
	abundant; flying erratically during evening hours					
10434	Faronta rubripennis	Dane	Swamp Lover's Preserve	18-Jul-09		KEJ
10461	Leucania ursula	COLUMBIA	Lodi Marsh SWA	24-Sep-09		KEJ
10487	Orthosia rubescens	IOWA	Arena Pine Barrens	15-Apr-09		KEJ
10487	Orthosia rubescens	TAYLOR	Kidrick Swamp	7-May-09		KEJ
10491	Orthosia alurina	Sheboygan	Kohler	24-Apr-09		KEJ
10878	Striacosta albicosta	DOOR	Sturgeon Bay	30-Jul-09		LAF
10970	Xestia youngii	Oneida	Big Finnerud Bog	1-Sep-09		KEJ
10996	Cerastis salicarum	RICHLAND	Hub City Bog	15-Apr-09		KEJ
10997	Cerastis fishii	TAYLOR	Kidrick Swamp	7-May-09		KEJ
11051	Ufeus satyricus	Dane	Swamp Lover's Preserve	25-Oct-09		JWG
11072	Heliothis phloxiphaga	BAYFIELD	Moquah Barrens	25-May-09		KEJ
11081	Heliothis borealis	LANGLADE	Kempster Bog	23-May-09		KEJ
11095	Schinia indiana	Burnett	Crex Mdws, Fish L., Danbury WA	24-May-09	31-May-09	SAS
11164	Schinia florida	TAYLOR	Medford	5-Jul-09		JFR
11174	Schinia lucens	Burnett	Crex Meadows WA	23-Jul-09		SAS

End of **SEASON SUMMARY**.



Insect Publications and Websites of Interest

by Andrew Khitsun

One of the most awe-inspiring volumes that appeared recently is **Illustrated Identification Guide to Adults & Larvae of Northeastern North America Ground Beetles** by Y. Bousquet (thanks, Peter). At this point it can only be obtained through its publisher at http://www.pensoft.net/newreleases/14749.htm While there, browse around for more excellent volumes, some of them having been announced in this column and some dealing with European insect fauna, but maybe of interest to some of you. Another exciting book is about ants: **Adventures Among Ants** by M. Moffett offers fascinating true stories and amazing photos of ants and their societies. Even more exciting is **Tracks and Sign of Insects and Other Invertebrates: A Guide to North American Species** by C. Eiseman & N. Charney - it offers almost 1,000 color photos of tracks, egg cases, nests, feeding signs, galls, webs, burrows, and signs of predation.

Several new books appeared covering dragonflies and damselflies, the most serious of which is **Dragonflies: Behavior & Ecology of Odonata** by P. Corbet. Others include **A Field Guide to the Dragonflies and Damselflies of Massachusetts** by B. Nikula, **Damselflies of the Northeast** by E. Lam, and **Common Dragonflies of Northern Door County** by P. Burton (this Wisconsin book can only be ordered from http://www.doorcountybooks.com/ , along with other books about Door County). Two out-of-print volumes can be purchased inexpensively (around $20 each) from the Connecticut Department of Environmental Protection at http:// www.ctdepstore.com/main.sc: **Spiders of Connecticut** by B. Kaston, considered one of the best books in its field, and **Ground Beetles of Connecticut** by W. Krinsky & M. Oliver.

If you head to http://www.zin.ru/Animalia/Coleoptera/eng/atlas~.htm, you can find quality images of Russian beetles (now all the families are illustrated, not only Carabidae mentioned in previous issues). Even better, go up one level to http://www.zin.ru/Animalia/Coleoptera/eng/ and you'll find a wealth of information on beetles and coleopterists of that vast region.

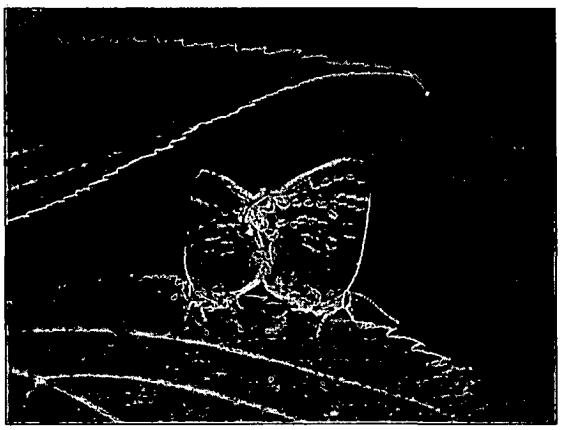
Many technical bulletins and other literature on insects can be found in the Natural Agricultural Library at http://www.nal.usda.gov/ and Forest Service's Treesearch at http://treesearch.fs.fed.us/. **Catalogue of Noctuids of the World** from the collection of the British Museum by G. Hampson is available online at http://bcrc.bio.umass.edu/kunkel/Moths/hampson/.

If you had a link to the Moths of North Dakota website from the past, it seems to have disappeared. New, revamped and different-looking site is at https://www.ndsu.edu/pubweb/~gefauske/ndmoths/home.htm

If you ever tried to identify local lichens but didn't know where to look, **Lichens of Wisconsin** by J. Thomson can give you an idea of what could be encountered in our state (it doesn't have pictures, but can still be useful homing onto local species). It could be obtained from University of Wisconsin at http://www.botany.wisc.edu/herbarium/info/orderlichens.asp

Other local news: Our member Mike Reese now has an i-Pod and i-phone application called Wisconsin Butterflies. You can download the app from the Apple or follow the link on Mike's site at http://wisconsinbutterflies.org/butterfly/iphone.

Photo Salon Correction



The results of the Fall 2009 Photo Salon were

1st place: *Karl Legler, Jutta Arctic*

2nd place: *Andrew Khitsun, Megarhyssa*

3rd place: *Dorothy Legler, Mating Hickory Hairstreaks* (photo above).

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Sustaining ~ $15 per year Patron ~ $25 per year

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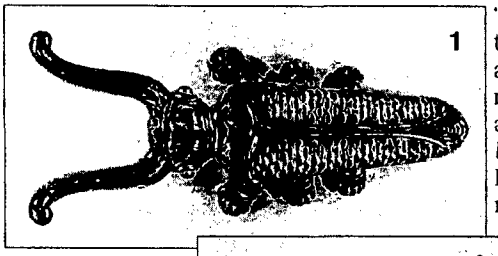
Bootjacks, Matchboxes, and McKinley 'Gold Bugs': Late 19-Century 'Beetlemania'?

by Jordan D. Marché II

A few years ago, while attending antiques shows and visiting dealers' shops in eastern Pennsylvania, I came across three items whose theme or design is clearly rooted in the discipline of entomology and which reflect some now-vanished aspect of late 19th-century popular culture.

The largest and most common of the three items is a cast iron bootjack (Fig. 1) having the general form of a cerambycid (long-horned beetle), about 10.75 inches long. It is the creature's long antennae into which one inserted the heel of one's boot and then pulled back and up to remove it (while applying pressure on the beetle's back from one's other foot). A very similar design (Fig. 320) was recorded in the *Index of American Design*, a Depression-era project sponsored by the W.P.A. Federal Art Project. As noted by author Christensen (1950, p. 163), the bootjack is actually "a fantastic combination of insect and quadruped, with the body of an insect and the feet of a turtle" (in order to give the figure more strength). Perhaps the idea of 'crushing' an insect underneath one's foot further led to greater popularity of this design, which was copied by a number of manufacturers. I suspect that the usage of bootjacks likely peaked during the time when horses were still the principal means of human transport, for which riding generally required high-heeled boots. But with the advent of the automobile in the early 20th century, a lessened demand for such boots (and bootjacks) resulted.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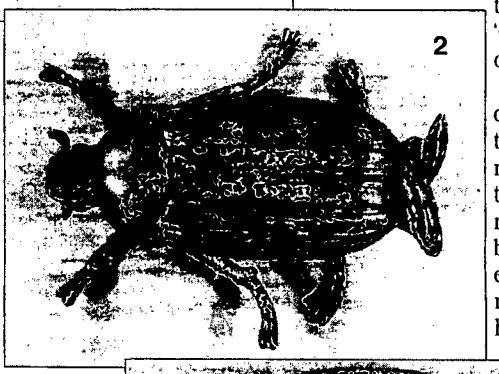
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With the perfection of natural gas stoves and the technology to deliver that fuel, stove manufacturers came up with some clever marketing gimmicks, such as ornamental matchboxes, that were often given away for free when a stove was purchased. What might have prompted the design of this 4.5-inch long scarab (or June) beetle matchbox can only be guessed. Nonetheless, it is quite anatomically accurate and consists of three parts (Fig. 2). The upper body portion (hinged at the base of the head) contains the head, antennae, thorax, elytra, and portions of the flight wings exposed beyond the abdomen. It has been given a gold-colored finish with red highlights on the top of the head, eyes, scutellum, and antennae. The lower body consists of the thorax and abdomen, painted silver, including a dorsal extension of the pygidium that is transversely grooved and served as the strike plate for the matches. Finally, the three pairs of legs were formed from a single piece of cast metal, with accurate femora, tibiae, and tarsi, that is attached to the lower body by means of a central screw. The only other entomological design for a matchbox that I have seen was in the shape of a fly, which opened in a similar fashion.

The third and final item (Fig. 3), whose longest dimension is 2.5 inches, once carried national political significance. On the brass elliptical base, there was stamped or molded a very good likeness (even down to the swimming hairs on each of its legs!) of the hydrophilid beetle, *Hydrophilus triangularis* Say, which included dorsal striae on the elytra and the maxillary and labial palps. The item was likely meant to be worn as a lapel pin, as there is a hinged pin and hook on the back side. Why was such an item created? Following the financial panic of 1893, Republican and Democratic political factions became embroiled in a vigorous debate over how to secure the financial stability of the U.S. While the Democratic Party urged that the country move away from an exclusive 'gold standard' and begin to mint silver money, the conservative Republican Party, and its candidate for president in the 1896 election, William McKinley, staunchly clung to the 'gold standard' and adopted the semi-mythical 'gold bug' as a symbol of their commitment to this ideology (Jones, 1964). But evidently, their advisors did not consult a professional entomologist because, if they had, they might have adopted a design of the *scarab* beetle, *Cotalpa lanigera* Linnaeus, the so-called "Goldsmith Beetle" or "gold bug" of Edgar Allan Poe's eponymous 1843 short story. Seldom seen or mentioned today, the McKinley 'Gold Bug' is yet another part of a lost Americana.

Each of these items demonstrates a broad (if sometimes flawed) cultural awareness of beetles, and the desire to craft rather accurate likenesses of them in iron or brass. Why such coleopteran emblems (apart from the last-named) were chosen may not have a simple explanation. But perhaps it was something like the popularity of the dragonfly motif of today. So, for whatever reason(s), beetles seem to have enjoyed a heyday as icons within American popular culture during the latter half of the 19th century. I would welcome any further examples and insights into this cultural occurrence, which took place well before the introduction of the pop-music group, the Beatles, in the 1960s. (EMAIL: jordanmarche@hotmail.com)

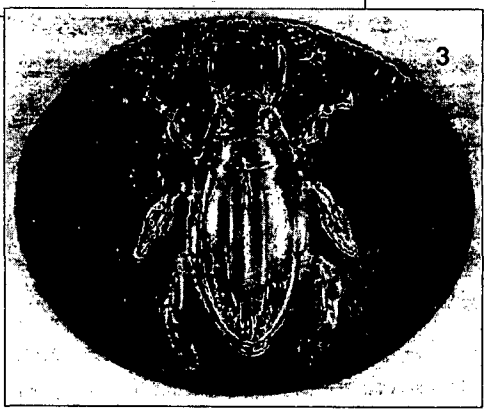
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Fig. 1. Beetle Bootjack. Photo by J. Marché.
Fig. 2. Scarab Matchbox. Photo by J. Marché.
Fig. 3. McKinley 'Gold Bug'. Photo by J. Marché.

References

Christensen, Erwin O. 1950. *The Index of American Design.* New York: Macmillan Co. and Washington, D.C.: National Gallery of Art.

Jones, Stanley L. 1964. *The Presidential Election of 1896.* Madison: University of Wisconsin Press.

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New DNR Report Addresses Fire Effects on Prairie Insects

by Dreux Watermolen

Many people are concerned that the use of fire for managing small, isolated prairie remnants may be adversely affecting prairie-specialist insects. Concern that small remnants may be inadequate for conserving prairie insect diversity also exists. Wisconsin DNR research scientist Rich Henderson investigated these concerns by analyzing leafhopper communities. (While not butterflies, this group of insects has a high percentage of prairie-restricted or prairie-dependent species, and hopper species typically overwinter aboveground in the litter and duff, and are thus considered by entomologists to be highly vulnerable to fire.)

The dataset analyzed by Henderson, drawn from eight Wisconsin remnant prairies, revealed no striking, widespread effects of fire history, remnant size, or isolation on leafhopper density, richness, or diversity. Remnants less than 1.5 ha in size, however, had markedly fewer specialists than those larger than 1.5 ha. Of nine prairie-specialists investigated, one species appeared sensitive to remnant size and another to time-since-last-fire. One species tended to be more prevalent on larger sites, and one hopper was more prevalent on areas that had gone the longest without fire. Average fire-return-interval seemed to have no effect on any of the specialist species studied. Sampling effort and year had far greater and more consistent influence than fire history, remnant size, or isolation.

The small sample size of the study and the lack of very large and long unburned remnants in the sample preclude definitive conclusions being drawn from the results. Further research into the subject is very much needed. However, the results of this study do point to a strong likelihood that fire and remnant size may have rather limited and specific effects when it comes to prairie leafhoppers in general.

You can view or download the complete research report, *"Influence of Patch Size, Isolation, and Fire History on Hopper (Homoptera: Auchenorrhyncha) Communities of Eight Wisconsin Prairie Remnants,"* online at http://dnr.wi.gov/org/es/science/publications/rr.htm.