

NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 55, Number 3

Fall 2013



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Inside:

**20th century range
expansions in MA**

**Digital Collecting:
Colombia 2012 -- part 3**

**Probable rediscovery
of *Ethmia monachella***

**Tropical Swallowtail
Moth, *Lyssa zampa*
in Vietnam fed on by
lymph-thirsty parasites**

**Blue *Manduca sexta*
caterpillars**

***Dryocampa rubicunda*
x *Anisota senatoria***

**Membership Updates,
Marketplace,
Book Review,
Metamorphosis,
Announcements ...**

... and more!



NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 55, Number 3
Fall 2013

The Lepidopterists' Society is a non-profit educational and scientific organization. The object of the Society, which was formed in May 1947 and formally constituted in December 1950, is "to promote internationally the science of lepidopterology in all its branches; to further the scientifically sound and progressive study of Lepidoptera, to issue periodicals and other publications on Lepidoptera; to facilitate the exchange of specimens and ideas by both the professional worker and the amateur in the field; to compile and distribute information to other organizations and individuals for purposes of education and conservation and appreciation of Lepidoptera; and to secure cooperation in all measures" directed towards these aims. (Article II, Constitution of The Lepidopterists' Society.)

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Contents

Digital Collecting: Colombia 2012 – Part 3

- Kim Garwood.* 91
The correct publication date of the *Report upon the collections of Diurnal Lepidoptera Made in Portions of Colorado, Utah, New Mexico, and Arizona* by Theodore L. Mead

- John Calhoun.* 96

Announcements: 100

Societas Europaea Lepidopterologica invites members from the US, Pay Pal, International Conference on African Lepidoptera, Society of Kentucky Lepidopterists, Call for Season Summary Records, Entry Change in Season Summary, Book Reviews now only published in News

Twentieth century range expansions in Massachusetts

- Sharon Stichter.* 102

Thr Tropical Swallowtail Moth, *Lyssa zampa* (Uraniidae) – another victim of lymph-thirsty parasites in Vietnam

- Andrei Sourakov.* 106

Metamorphosis. 108

Membership Updates

- Julian Donahue.* 109

Makeover of the Tobacco Hornworm

- Gary Noel Ross.* 110

Book Review. 115

A Strange Pair

- Steven Johnson and Nathan Boob.* 116

And speaking of strange pairs . . .

- Ken Childs (photo).* 117

Wildland fire potentially catastrophic for three iconic butterflies of the Spring Mountains, Nevada

- Bruce M Boyd.* 117

The Marketplace. 118

From the Editor's Desk. 119

Lepidopterists' Society business of note. 120

Probable rediscovery of *Ethmia monachella* Busck (Gelechioidea) from a photograph on BugGuide.net

- Christopher C. Grinter and Matthew S. Van Den Broeke.* 124

Photos from the 2013 meeting of the Lepidopterists' Society, Gainesville. 125

A selection of Neotropical skippers and butterflies – 2

- George O. Krizek.* 128

Membership Information, Dues Rates, Journal of the Lepidopterists' Society, Change of Address, Our Mailing List, Missed or Defective

- Issues, Submission Guidelines and Deadlines for the News. 130

Executive Council/Season Summary Zone Coordinators. 131

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Front Cover:

Male adult hybrid of a cross between female *Anisota senatoria* from Laurelton, Union Co., PA and male *Dryocampa rubicunda* from Warrenton, Ocean Co., NJ. (photo by Nathan Boob, see article, pg. 116)

Digital Collecting:**Colombia 2012 -- part 3**

Kim Garwood

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Back in Medellin for our third part of the trip, new friends flew in and joined the group. We drove to Las Tangaras, one of the ProAves reserves, for a couple of nights, revisiting the same reserve we spent some time at a few weeks earlier. With an early departure from Medellin, 5 am to beat the traffic, we got to the reserve in 3 hours and went straight up the mountain, so we were in the field photographing by 9 am. The mornings are the best time, as it tends to cloud up by the afternoon.

We had heavy rain driving down, and as such stopped for breakfast at an open restaurant on the Cauca River. The river was running strong, very muddy and fast, much more chocolate brown than two weeks previously. They had obviously had plenty of rain. We found a number of different species, including some new ones compared to earlier, and there were also several earlier common species that were conspicuously absent. No *Fountainia* leafwings, but a fresh *Perichares deceptus* and a cooperative *Potamanaxes melicertes*.

Hesperiidae: *Perichares deceptus*Hesperiidae: *Potamanaxes melicertes*

The next day is beautiful and sunny, and we spent the morning up the mountain, after a more civilized breakfast at 7 am. We saw more satyrs this time, and with id help from Tomasz Pyrcz, we got *Eretris lecromi*, *E.calisto* and a *Mygona irmina* who was willing to pose open.

Nymphalidae (Satyrinae): *Eretris lecromi*Nymphalidae (Satyrinae): *Eretris calisto*

The next morning it rained, so we saw very little. We headed back to Medellin for the night, ate at Crepes y Waffles of course, then drove to the Chestnut-capped Piha reserve. This is another ProAves reserve, called Arrierito Antioqueno Bird Reserve, about 4 hours north of Medellin near the town of Anori in the department of Antioquia at about 1800 meters. It gets a very interesting mix of birds, as some species from the Choco wrap around the north end of the central Andes and mix in with Cauca Valley species.

It can be very productive to work the dirt roads here in the several patches of preserved forest, and there are some

Hesperiidae: *Potamanaxes latrea tusca*Nymphalidae (Satyrinae): *Mygona irmina*

good trails through the forest, dark and wet. We put out lots of spitwads to lure the skippers, and in the forest we found lots of goodies. Some of the skippers include *Potamanaxes hirta paphos* and *Potamanaxes latrea tusca*, helpfully id'ed by Bernard Hermier. This was a good trip for *Potamanaxes*, as we had at least 4 or 5 different species.

Hesperiidae: *Aroma henricus*Hesperiidae: *Potamanaxes hirta paphos*Hesperiidae: *Carystoides*, sp. nov. (photo by Ken Kertell)

After a few days we drove back to Medellin for our afternoon flight to Bogota, where we spent the night at Casona del Patio, a simple hotel in a quiet residential part of town. I like this little hotel, old creaky wooden floors, pleasant rooms (some with 3 beds or more), and some nice restaurants within a few blocks. It's very nice not having to load up in taxis to go to dinner after a long day in the field.

My favorite restaurant here is the Wok, a fabulous Asian mix of tasty dishes. Not what you would expect to find in Bogota, but Bogota is really a foodie place. If you make it to the Wok, be sure to order the delicious flourless chocolate torte with mora or blackberry sauce, truly heaven. It's not cheap, as one meal here cost about the same as 2 days worth of meals at our next location, but it was certainly worth it.

The next morning we drove 4-5 hours east to Santa Maria past the small town of Guateque. We stayed at the hotel La Esmeralda for two nights, at around 800 meters. No a/c or hot showers, but as it was warm this was ok. This is a large place originally built for the road workers, so it's not fancy. It's broken up into blocks of rooms, so our group got our own block, with a shared living room, nice for evening talks.

We met up with a local who took us onto private watershed land owned by the hydroelectric utility. We worked up the river and under the bridge, finding lots of good stuff coming to pee and spitwads, at about 1100 meters. There were lots of puddle parties, lots of wet road where the water washed downhill, and butterflies were flying everywhere. This was one of the best photography days of the trip. We were low enough to get most of the lowlands species and high enough to get some cloud forest species, so it was a great mix.

One of the favorites was the gaudy *Prepona praeneste*. I've only seen this species a few times before, always flying high and fast in the canopy. This one must have just hatched or didn't feel well, as it was coming to the ground and drinking. One of my friends had seen it earlier and he grabbed it and photographed it in the hand. I was intensely jealous when he showed me his photos later that morning. But I was lucky, as a few hours later after lunch when I was walking up the road where there was lots of water I spotted it sitting and drinking, spread wide open, on the road. I snuck up slowly and carefully, heart pounding, to take the photos, ending up practically on top of it. Then, by using a small twig, I was able to encourage it to lift its wings and got several shots of the ventral. It didn't want to fly, very weird behavior for such a canopy species. We knew it was the same individual due to the fingerprint on the wing.

We went back to Bogota for the night (more blackberry chocolate torte!), then did a day trip to Chicaque Parque Natural. A friend had been sending me photos from this location, so I wanted to check it out. It is basically a very long staircase from the top of the rim down into a valley. Starting at 2,600 meters, we didn't walk down very far, as the climb back up would have been brutal.



Nymphalidae: *Prepona praeneste*

There is a lovely overlook just 75 or 100 meters down, and we found many species hilltopping on the flowering shrubs all around the paved overlook. So we spent most of our time right there, getting several hairstreaks. One was maybe *Erora opisena* female, though these are very difficult to tell from a photo. A couple others were maybe *Parrhasius selika* and *Penaincisalia loxurina*, a beautiful bright dark orange triangle on pink flowers (photos, p 94).

After another night back in Medellin, we flew to Mitu for a week. This is in the eastern lowlands, with white sand forest and some tierra firma, plus some varzia or seasonally flooded areas. White sand forest is low in nutrients, so it is low in biodiversity, but there are some special species there.

Our first night, at the hotel Mitasava (nicest place in town), unfortunately was the last night of a week long party the town threw. This meant loud, amplified music from 2 different bands and drunken revelers all night long, so we were rather hammered the next day. Plus, the afternoon before, we hired a guy to take us out to an area for butterflies, after our scheduled driver was nowhere to be found. This guy was supposed to come back and get us at 6:30pm, sunset, but of course he was also drunk and

Lycaenidae: *Erora opisena* (?)Lycaenidae: *Parhassius selika* (?)Lycaenidae: *Penaincisalia loxurina*

showed up an hour late. We had started walking the couple of miles back to town, in the dark along the muddy road. When the driver finally showed up, he went to turn around, ran off the road and became stuck in the mud. We figured we were safer to walk. Not an auspicious start to the week.

The next morning Pablo managed to scrounge up 2 more guys with pickups, providing just enough room for our group, so we stood up in the back and hung on for dear life. Pablo's regular driver, who had a nice air conditioned 4x4, left to go work full time for the oil company, so we were scrambling for drivers. Most of the good habitat is at least an hour out of town.

But as our week progressed, we found better drivers, and we saw some good butterflies. Most days we drove to a different indigenous village, asked permission from the chief, and walked into local trails. This was in the lowlands, so that means hot and sweaty and buggy. On one trail we had to cross a stream about 30' wide where there used to be a bridge, mostly made of logs. However, the logs collapsed and now you have to wade more than knee deep. The logs are still there, just underwater. So balance was a good thing to have here, wading barefoot along slippery logs underwater. Ah, the challenges of butterflying in the lowlands.

The best habitat turned out to be the furthest away, of course, which meant more like an hour and a half in the back of the trucks each way. There were lots of Riodinidae in the lowlands, and we saw lots of them. Some of the more exciting are *Helicopis gnidus*, *Thisbe irenea*, *Nymphidium caricae erubescens*, different from the other subspecies I've seen, and *Baeotis euprepes*.

Riodinidae: *Helicopis gnidus*Riodinidae: *Baeotis euprepes*

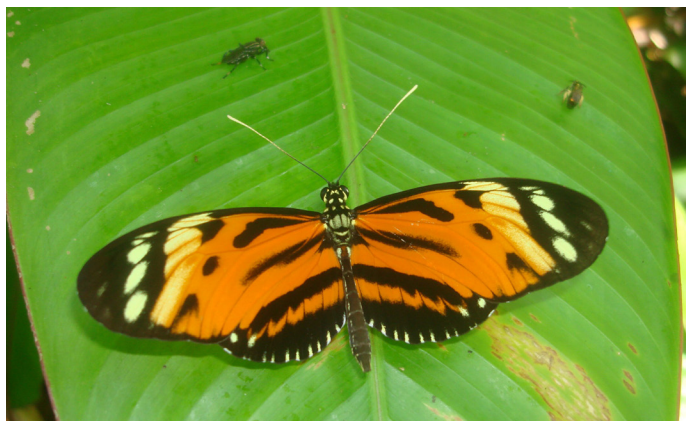


Riodinidae: *Thisbe irenea* (See Digital Collecting, pg. 87, Vol 54: 3, Fall 2012 News for upperside picture)



Riodinidae: *Nymphidium caricae erubescens*

Other species we found there were a beautiful and friendly *Heliconius hecale ennius* which put on a nice show. (Thanks to Andy Brower for the id.) And one of my favorites was *Pyrrhopygopsis socrates*; this was the first time I'd seen this species without white on the ventral hindwing. Ken Kertell got some great shots of it, especially an up close shot of the face. These are always confusing, as they look like firetips or *Pyrrhopygini*, but these have straight antennae. They are actually grass skippers or *Hesperiinae*.



Nymphalidae (Heliconiinae): *Heliconius hecale ennius*



Hesperiidae:
Pyrrhopygopsis socrates
(Photos by Ken Kertell)



Pieridae: *Melete lycimnia eurymnia* and *Aprissa statira*

There were also lots of Pieridae, many mudpuddling. Here's a nice comparison of *Melete lycimnia eurymnia* on the left and *Aprissa statira* on the right.

All in all, I probably won't go back to Mitu, as I'm more interested in the Andes and cloudforest. But a Colombian collector lived there for a year on a job, and he collected over 350 species on his days off. It was difficult to work there, but we did find some good things. However, most of us were glad to get on the plane and head back to cool Bogota.

Our Colombian adventure came to an end, and we flew out at midnight back to the US. Colombia is fabulous, and I can't wait to go back.

(All photos by Kim Garwood unless otherwise specified.)

The correct publication date of the *Report upon the collections of Diurnal Lepidoptera Made in Portions of Colorado, Utah, New Mexico, and Arizona* by Theodore L. Mead

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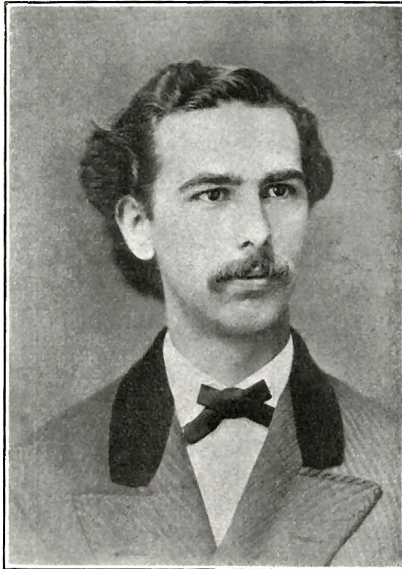


Figure 1. Theodore L. Mead in 1874, the year he started working on his *Report* (RC).

In 1871, Theodore L. Mead (1852-1936) (Fig. 1) traveled to Colorado to collect butterflies, mostly for the prominent lepidopterist William H. Edwards (1822-1909). Mead later summarized his observations in a treatise entitled *Report upon the Collections of Diurnal Lepidoptera Made in Portions of Colorado, Utah, New Mexico, and Arizona, During the Years 1871, 1872, 1873, and 1874, with Notes upon all Species Known to Inhabit Colorado*. Based on the title page and

Mead accepted Edwards' offer and arrived in Denver, Colorado, on 31 May 1871. He spent four months exploring Colorado with his older brother, Samuel H. Mead, Jr. (1848-1875), before continuing westward to California and beyond (F. Brown 1934, G. Brown 1996, Calhoun 2010, 2013a). Mead was only loosely affiliated with the Wheeler Survey and did not travel with other party members. Supervised by Lieutenant George M. Wheeler (1842-1905) of the U.S. Army Corps of Engineers, the Wheeler Survey was composed of separate expeditions that explored United States territories west of the 100th meridian. Mead collected thousands of butterflies in Colorado and shipped them back to Edwards in West Virginia. From these specimens, Edwards described nearly two dozen new taxa, including *Colias meadii*, *Argynnis meadii* (= *Speyeria callippe meadii*), and *Cercyonis meadii*. Most of this material is now preserved in the Carnegie Museum of Natural History (Pittsburgh, Pennsylvania), where the bulk of the Edwards and Mead collections are deposited (Calhoun 2013b).

Three years after returning from his trip, Mead was asked by Henry C. Yarrow (1840-1929) to write the section on diurnal Lepidoptera for the zoology report of the Wheeler Survey. In addition to superintending the publication of the zoology report, Yarrow was a military surgeon and naturalist who personally participated in the survey, serving as Zoologist to the Expedition in 1872 and 1874. In a letter to Mead dated 28 January 1874, Yarrow wrote, "Mr Edwards of West Va. has been kind enough to name the Butterflies collected by our expeditions but in regard to a report upon the same he suggests you as the only person in the U.S. competent for the task."¹ Although Mead was not an official participant of the survey, his continued involvement in the project was supported by Edwards, whom Wheeler and Yarrow greatly respected.

Mead assumed the responsibility of drafting the report on diurnal Lepidoptera while he was a student at Cornell University in Ithaca, New York. He combined the results of his own collecting with those of other surveys conducted from 1871 to 1874 in portions of southern Utah, New Mexico, and Arizona. Information from the other expeditions was furnished by Yarrow. Edwards contributed a list of all the butterfly species that were collected during the various surveys. Because the bulk of Mead's *Report* was based on his own observations, Edwards fondly described it as "Mead's Butterflies of Colorado."²

dated introductory material in the *Report*, its year of publication is currently recognized as 1875. New evidence, however, indicates that it was actually published in late 1876.

During the late nineteenth century, W. H. Edwards believed that the Rocky Mountains were inhabited by numerous unknown species of butterflies. He desired to send a competent and trustworthy lepidopterist into the region with the expectation that they would send back the entire catch as it was collected, thus affording Edwards the exclusive rights to describe any new species. In return, he would cover some of the expenses and allow the collector to retain many of the specimens. In early 1871, Edwards encouraged T. L. Mead, who was only 19 years old, to visit Colorado in affiliation with the Wheeler Survey. Mead was a talented young naturalist who met Edwards two years earlier. Despite their great age difference, they developed a close friendship and Edwards served as Mead's lepidopterist mentor. Mead also became fast friends with Edwards' son, William (Will) S. Edwards (1856-1915). In 1882, Mead married Edwards' eldest daughter, Edith K. A. Edwards (1852-1927).

The zoology volume of the Wheeler Survey, in which Mead's *Report* would be published, was greatly delayed. Although the annual report of the survey for the fiscal year ending 30 June 1874 (Wheeler 1874) stated that the manuscript had "gone forward to the Government printer," no progress was made during the following year (Wheeler 1875). A letter of transmittal by Wheeler and an introductory letter by Yarrow, both dated February 1875, were written for inclusion in the volume. The title page also was dated 1875. Despite these references to 1875, this date is inconsistent with published and unpublished details about the volume's production.

The surviving correspondence of Mead and Edwards offers valuable insight into the creation of the *Report*. On 24 February 1874, Yarrow informed Mead that he wanted his report within two months "or sooner if possible."¹ Mead submitted the first draft in late April 1874. About this time, Edwards urged Yarrow to incorporate several color illustrations into Mead's *Report*.³ Yarrow ultimately agreed to include six plates, three of which reproduced figures from the first volume of Edwards' book, *The Butterflies of North America* (Edwards 1868-[1873]). Although Edwards personally supervised their production, the plates for the *Report* were not hand colored like those for Edwards' book. Instead, they were color-printed chromolithographs of lesser quality (Calhoun 2013b) (Figs. 2, 3).

During the summer of 1874, Edwards had an opportunity

to visit Yarrow in Washington, D.C., where he examined Mead's manuscript. On 14 August he reassured Mead, "I had no idea you were giving in to it so extensively, but am very glad you have and should say the Report will be very interesting and highly valuable . . . it will be the history of the Butterflies of Colorado."¹ Yarrow inserted the names of genera into the manuscript and suggested that Mead include a synopsis of names to head each entry. The manuscript was returned to Mead in March 1875 to make additional corrections.¹

Mead received a proof of his *Report* on 11 November 1875.¹ Edwards remarked on 23 February 1876 that he would soon receive a copy of the published *Report*,² but this proved too optimistic. Presumably based on information from Yarrow, Mead notified his father on 11 April 1876 that the *Report* would not be published for another "6 mos. to a year."⁴ In the annual report of the Wheeler Survey for the fiscal year ending 30 June 1876 (Wheeler 1876), it was stated that the zoology volume was printed, but was "not ready for distribution."

Finally, on 16 October 1876, Edwards stated that during a recent trip to Washington, D.C., he had obtained from Wheeler an advance copy of Mead's *Report*.² Edwards noted that it was "bound up" with the other insect reports and additional copies could be requested from Wheeler. These reports, comprising chapters 7-16 of the zoology volume, were issued as a separate volume of ten



Figures 2 & 3. Illustrations of *Speyeria nokomis* (Edwards). (2) Plate XXXV from Mead ([1876]). (3) Plate *Argynnis* IV from Edwards (1868-[1873]); the model for Mead's plate.

chapters, which Edwards described as “a distinct form for circulation.” Mead’s *Report* was chapter 8 (Fig. 4). Though generally referred to as the “entomological reports,” the last two chapters treated terrestrial mollusks and fresh water leeches. Like the complete zoology volume of 16 chapters, the separate entomological volume was dated 1875 (Fig. 5).

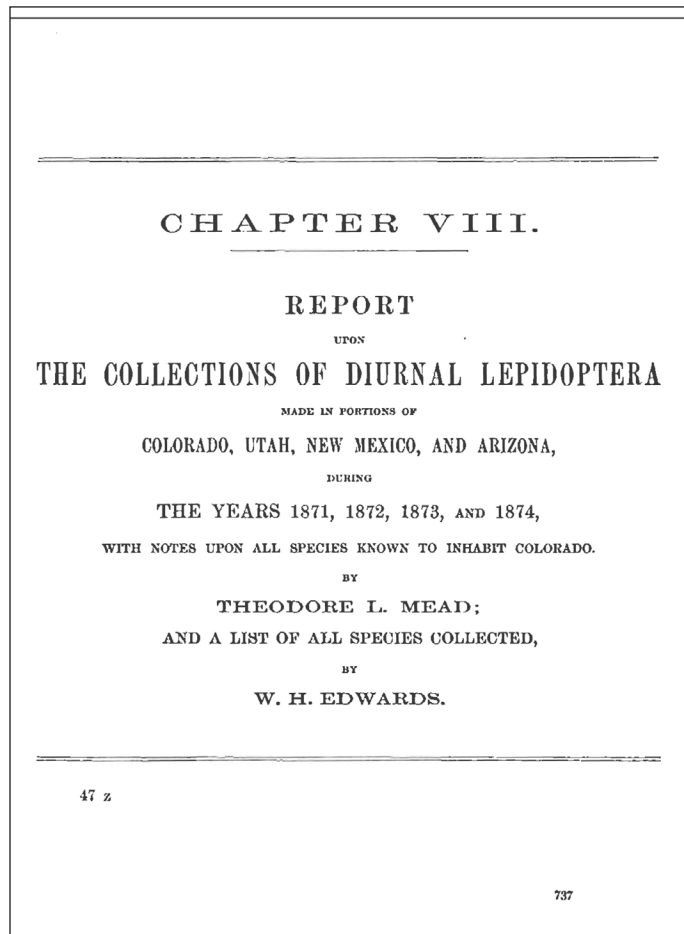


Figure 4. Chapter 8 title page of Mead’s *Report*

It is clear that the entomological volume of the Wheeler Survey was published during late 1876, most likely in October. It probably was issued simultaneously with the complete zoology volume. This timeline is supported by Verrill (1877), who stated that the zoology volume “appears not to have been actually published until the latter part of the summer or early in the autumn of 1876.” Packard (1878) also noted that the zoology volume was distributed after 1875. This evidence reveals that the separate entomological volume and the complete zoology volume of the Wheeler Survey, both of which contained Mead’s *Report*, should be attributed to 1876. The only taxon directly affected by this date change is *Melitaea eurytion* (= *Euphydryas anicia eurytion*), which Mead described in his *Report*. Mead also proposed three other names in his *Report*, but they are considered *nomina nuda* (Pelham 2008).

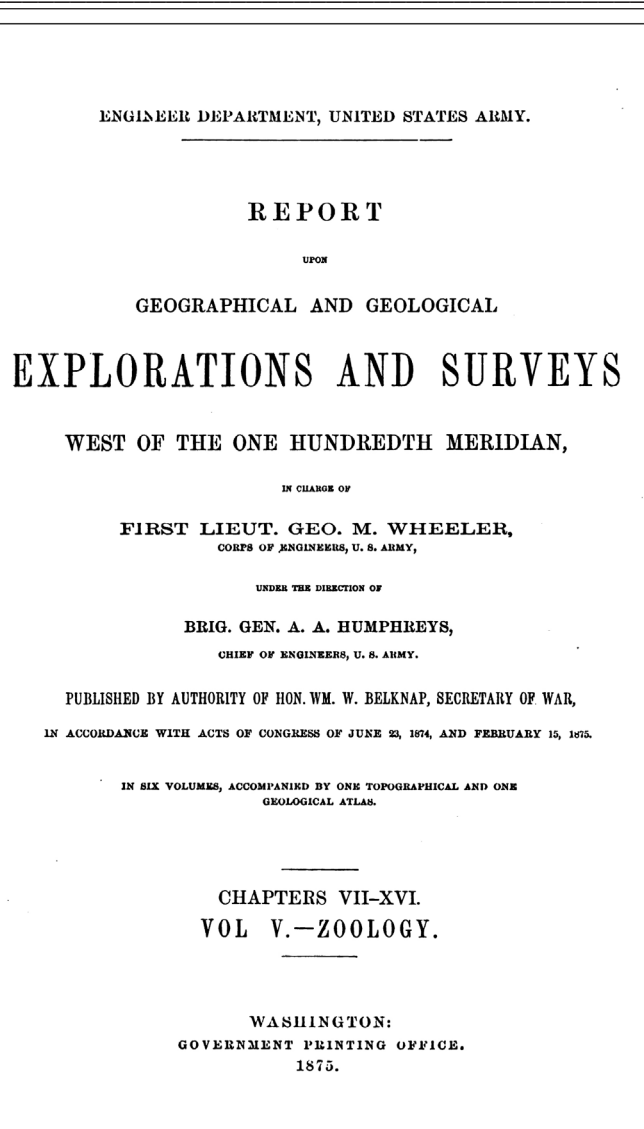


Figure 5. Title page from separately-issued insect (invertebrate) volume of Wheeler Survey.

The relevant publications should be cited as follows:

MEAD, T. L. [1876]. Chapter VIII. Report upon the collections of diurnal Lepidoptera made in portions of Colorado, Utah, New Mexico, and Arizona, during the years 1871, 1872, 1873, and 1874, with notes upon all species known to inhabit Colorado. And a list of all species collected, by W. H. Edwards. Pp. 737-791, pls. 35-40. In Wheeler, G. M. & A. A. Humphreys (eds.), Report upon geographical and geological explorations and surveys west of the one hundredth meridian. Chapters VII-XVI. Vol. 5. Zoology. Govt. Printing Office, Eng. Dept., U.S. Army, Washington, D.C.

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portions of Colorado, Utah, New Mexico, and Arizona, during the years 1871, 1872, 1873, and 1874, with notes upon all species known to inhabit Colorado. And a list of all species collected, by W. H. Edwards. Pp. 737-791, pls. 35-40. In Wheeler, G. M. & A. A. Humphreys (eds.), Report upon geographical and geological explorations and surveys west of the one hundredth meridian. Vol. 5. Zoology. Govt. Printing Office, Eng. Dept., U.S. Army, Washington, D.C.

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Acknowledgments

Wenxian Zhang and Darla Moore (Olin Library, Rollins College, Winter Park, Florida) kindly granted access to the manuscripts of T. L. Mead. Jacqueline Y. Miller and Andrew D. Warren (McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Gainesville, Florida) hosted my visits to examine manuscripts in their care.

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- _____. 1875. Annual report upon the geographical surveys west of the one hundredth meridian, in California, Nevada, Utah, Colorado, Wyoming, New Mexico, Arizona, and Montana. Appendix LL of the annual report of the Chief of Engineers for 1875. Govt. Pr. Office. 196 pp.
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1. Theodore L. Mead manuscripts, Olin Library, Rollins College, Winter Park, Florida.
2. Henry Edwards manuscripts, Research Library, American Museum of Natural History, New York, New York.
3. William H. Edwards manuscripts, Charles C. Wise, Jr. Library, West Virginia State Archives, Charleston, West Virginia.
4. Theodore L. Mead manuscripts, archives of the McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Gainesville, Florida.



Puddling *Papilio canadensis*, along a dirt road about 5 miles north of Big Moose Lake in the Adirondacks, New York, May 27, 2012. (photo by Ernest Williams)

www.lepsoc.org

Announcements:

Societas Europaea Lepidopterologica (SEL) invites members from the US

Perhaps you remember the good times collecting and socializing with our European Lepidoptera leaning friends at the Denver and Gainesville meetings. Perhaps you want to stay in touch with European Lepidopterists. Perhaps you want to subscribe to *NOTA Lepidopterologica*, the journal of SEL. If any of these are true and you don't want to pay the heavy transaction fees to have your US dollars converted to EUROS, then Eric Metzler is here to help.

Eric H. Metzler is the SEL Treasurer's representative for the US. The dues, about \$50.00 US per year (depending on exchange rate) include the journal, *NOTA Lepidopterologica*, the quarterly journal devoted to the study of Lepidoptera and the Newsletter (about once per year). The journal is published in English. The Newsletter is multi-lingual.

The way it works is simple: Eric collects dues money from each US member (US dollars only), and he also collects a small fee to cover the costs of forwarding the electronic wire transfer to Europe. By sending all the money at once the transaction fee is spread out over several people – we each save. Eric does this once per year, shortly after the first of the year, for the group of US members, thereby keeping the transfer costs lower and establishing some regularity of annual dues payments.

If you are interested in becoming a member of SEL and receiving the Journal and Newsletter, please contact Eric at metzler@msu.edu or Eric H. Metzler, P.O. Box 45, Alamogordo NM 88311-0045. Please make sure Eric has your mailing address and your email address. Do not send any money until Eric asks for money.

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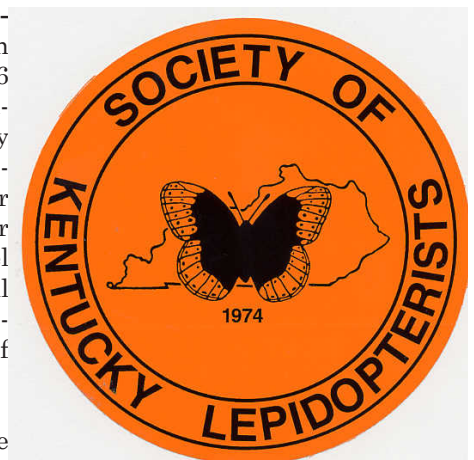
For those not familiar with PayPal, it is a convenient way to send money to anyone who has a PayPal account—even if the sender doesn't have an account, but does have a credit card. And it is available in many countries outside the U.S. The process is simple: sign on to www.PayPal.com, and navigate to "Send Money." To send money to The Lepidopterists' Society to purchase Society publications, t-shirts, and back issues, or to pay late fees, or to donate money or make any other kind of payment to the Society, use this recipient e-mail address: kerichers@wuesd.org; follow the instructions to complete the transaction, and be sure to enter information in the box provided to explain why the money is being sent to the Society. It's as simple as that—and be sure to let us know if you have any difficulties with the process.

Society of Kentucky Lepidopterists

The Society of Kentucky Lepidopterists is open to anyone with an interest in the Lepidoptera of the Great State of Kentucky. We are a very active organization. We have two or three field meetings every year. The schedule for the remaining 2013 meetings is as follows.

The Annual Meeting will be held in November 15 & 16 at the Insect Museum of University of Kentucky, Lexington, KY. Our featured speaker will be Dr. Michael Pogue who will speak on the Heliothinae moths of North America.

Annual dues are \$15.00



To join the Society of Kentucky Lepidopterists, send dues to: Les Ferge, 7119 Hubbard Ave., Middleton, WI 53562.

More Announcements:

Call for Season Summary Records

It is once again the time of year to start preparing your submissions for the annual Season Summary report. The annual report is sent as a hardcopy to members each year, and each year's data is also incorporated into the on-line database. Take the time to access the Season Summary database through The Lepidopterists' Society home page (<http://alpha.furman.edu/~snyder/snyder/lep/>) and do a few searches. The value of the on-line database increases as your data gets added each year. Please take the time to consider your field season and report range extensions, seasonal flight shifts, and life history observations to the appropriate Zone Coordinator. Zone Coordinators, their contact information, and the scope of their zone appears on the inside back cover of every issue of the "News".

There are a number of factors that make it necessary for the Zone Coordinators to meet a reporting deadline each year. As a result, you should have your data to the Zone Coordinator(s) no later than December 15, 2013. In most of our Nearctic zones, you have long since put away your cameras, nets, bait traps, and/or lighting equipment by that time anyway.

All records are important. Reporting the same species from the same location provides a history for future researchers to use. Report migratory species, especially the direction of flight and an estimated number of individuals. Again, all of these records may be used in the future.

Season Summary Spread Sheet and Spread Sheet Instructions

The Season Summary Spread Sheet and Spread Sheet Instructions are available on the Lepidopterists Society Web Site, http://www.lepsoc.org/season_summary.php. The Zone Coordinators use the Season Summary Spread Sheet to compile their zone reports. Please follow the instructions carefully and provide as much detail as possible. Send your completed Season Summary Spread Sheet to the Zone Coordinator for each state, province or territory where you collected or photographed the species in your report.

Important reminder to contributors using MAC computers to submit Season Summary records

PC operating systems save dates based upon a 1900 format, whereas MAC operating systems save dates based upon a 1904 *default* format. The Lepidopterists' Society master database is maintained in PC format. As a result, if you submit your season summary records on an Excel spreadsheet generated on a MAC to a Zone Coordinator who operates a PC system, without first disabling the default date setting, the dates will be off by 4 years and 1 day. If you submit your season summary records on

an EXCEL spreadsheet generated on a MAC to a Zone Coordinator who operates a MAC system, without first disabling the default date setting, the dates will appear proper to the Zone Coordinator but the dates will be off by 4 years and 1 day when they are incorporated into the master data base. In some cases, MAC system dates sent to a Zone Coordinator operating a MAC system are off 8 years and 2 days (we haven't figured that one out). The following are instructions so that this problem will never rear its ugly head again.

Instructions

When a MAC user sits down to enter the very first record of the season, he/she must create a new Excel file. **Before typing in any data**, go to "Tools", then "Options" or "Preferences" depending upon your version of Excel, "Calculations", and **uncheck** the 1904 box. Once the data is entered, save this file, and close. If supplemental data is entered directly into this file by keypunching it in, there will not be any problems. However, do NOT paste in MAC data from another file into your file without first ensuring that the 1904 box was *unchecked* in their file PRIOR to entering any of data. Unfortunately, once data has been entered in a file, it does NOT do any good to retroactively *uncheck* the date box!!!

By following these few steps, it is a simple matter to accommodate MAC records. However, you, as the original contributor, must ensure that those steps are taken. Improperly dated records will be rejected and your important records will not get into the database. Leroy C. Koehn, Season Summary Editor, 3000 Fairway Court, Georgetown, KY 40324-9454, Leptraps@aol.com.

Entry Change in Season Summary

Jim Brock indicates that the Arizona entry for *Alypiodes geronimo* on page 11 of the 2012 Season Summary should be changed so that the date of sighting is 30 Aug 2012 (not 18 and 25 Sep 2012) and that the oviposition information should be deleted. So the modified entry should read: "*Alypiodes geronimo* Pima: 0.5 mi S Sabino Cyn, Santa Catalina Mts. 30 Aug 12 JPB".

Beginning September 2013, Book Reviews will only be published in the News of the Lepidopterists' Society

Please send book reviews or new book releases to the editor of the News:

James K. Adams, School of Sciences and Math, Dalton State College, 650 College Drive, Dalton, GA 30720.
(706)272-4427; jadams@daltonstate.edu

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Twentieth century range expansions in Massachusetts

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Introduction

The history of butterflies in the northeastern United States is comparatively well-documented, thanks to museum collections and the work of well-known early lepidopterists. The regional records have been used to examine long-term changes in the flight time of several *Lycaenids* (Polgar *et al.* 2013), but can also shed light on other aspects of butterfly phenology such as range and abundance. Early Massachusetts specimens in the Harvard Museum of Comparative Zoology, Yale Peabody Museum, and Boston University collections, and the published works of Thaddeus W. Harris, Samuel Scudder, and others were reviewed to see whether there were species which had markedly changed their distributions since the late 19th century, and to deduce the approximate timing and trajectory of range changes.

The earliest collection of New England butterflies is that of Thaddeus W. Harris (Harris, 1822-1850; Calhoun 2007, 2009). This, and the general and types collections at the Harvard Museum of Comparative Zoology (MCZ), are primary sources for the history of Massachusetts butterflies. The bulk of the early Massachusetts specimens in the MCZ were collected by Frank H. Sprague and his brother A. C. Sprague; these amount to some 450 specimens, dating from 1878 to 1897, in the main from Wollaston (just south of Boston) and other locations in eastern Massachusetts, but also from the Connecticut River valley in the western part of the state.

There are also many historic Massachusetts specimens at the Yale Peabody Museum, and a small but important collection of early specimens at Boston University. These are supplemented by the classic published work of Harris, *A Report on the Insects of Massachusetts Injurious to Vegetation* (1841; 1842; 1862), and the monumental three-volume work of Samuel Scudder *The Butterflies of the Eastern United States and Canada, with Special Reference to New England* (1899). In his reports of butterfly distributions, flight times and life history details, Scudder references and builds upon the work of many other individuals, both amateurs and scientists, creating a synthesis of contemporary knowledge.

Results

There are four butterfly species which these sources indicate probably expanded their ranges within Massachusetts in the twentieth century. They are all *Hesperiidae*: *Thorybes*

bathyllus (J. E. Smith, 1797) Southern Cloudywing; *Pompeius verna* (W. H. Edwards, 1862) Little Glassywing; *Anatrytone logan* (W. H. Edwards, 1863) Delaware Skipper; and *Poanes viator* (W. H. Edwards, 1865) [*Poanes viator zizaniae* Shapiro, 1971] Broad-winged Skipper. In the late nineteenth-century, these four were found only in the lower Connecticut River valley in western Massachusetts, and not in the eastern part of the state, despite the presence of many collectors in the east. Today, however, they all have nearly state-wide ranges.

There are many other butterfly species which were not present in Massachusetts in the 19th century, but which arrived later, and whose range expansions are more well known, and others whose 19th century status is difficult to ascertain due to taxonomic difficulties, for example, *Poanes zabulon* (Boisduval & LeConte [1837]) Zabulon Skipper (Stichter 2013b). There are still others which were found statewide but were rare in the 19th century, and have probably increased their abundance in the state since then, for example the Hesperids *Atrytonopsis hianna* (Scudder, 1868) Dusted Skipper and *Erynnis horatius* (Scudder & Burgess, 1870) Horace's Duskywing.

Southern Cloudywing

Thorybes bathyllus was well known to early entomologists; its life stages were first drawn by John Abbot sometime between 1783 and 1792. In New England, Harris and then Scudder worked to describe the local species. Harris wrote "In Massachusetts we have what I suppose to be only a local variety of the *Bathyllus* skipper, differing from Southern specimens in the inferior size of the white spots on the fore wings, the less prominent hind angle of the hind wings, and the darker color of the fringes" (1862: 312, Fig. 135). Ten years later Scudder established Harris' local variety as a separate species, *Thorybes pylades* (Scudder, 1870) Northern Cloudywing (Scudder, 1872).

Harris had nine local specimens of *Thorybes* in his 1822-1850 collection; one, for example, was collected June 1, 1833, in Cambridge, Massachusetts, at what is now Mt. Auburn Cemetery (*Index Lepidopterum*). All these specimens have been examined and appear to be, as Scudder said, actually *T. pylades* and not *T. bathyllus*. Two other Harris specimens which are actually *T. bathyllus* are marked "from Mr. Abbot, Georgia." There appear to be no extant pre-1930 Massachusetts specimens of *T. bathyllus* in the general MCZ butterfly collection, the Boston University collection, or the Yale Peabody Museum.

In his 1899 account of the range of *Thorybes bathyllus*, Scudder reported for New England that the species had “only been taken in the Connecticut valley;” he mentions specimens from Springfield, Sunderland, South Hadley, Mt. Tom, and Granby, Massachusetts, and New Britain, Connecticut (1889:1435). No 19th century specimens were known from the northern New England states. In Massachusetts, prolific collector F. H. Sprague had not found Southern Cloudywing in the Boston area in 1878, only Northern Cloudywing (Sprague 1879). W.T.M. Forbes collected around mid-state Worcester 1900-1909, and he did not report it (Forbes 1909). Naturalist Maynard (1886) reported it only in western Massachusetts. Northern Cloudywing, in contrast, was “found everywhere in New England in abundance” (Scudder 1889: 1441).

The Connecticut River flows southward through western Massachusetts and is a corridor through which many southern species have moved northward into the state. So it is not surprising that the earliest known Southern Cloudywings should have been found in this part of the state. What is surprising is that the species was apparently absent from eastern and central Massachusetts (Map 1).

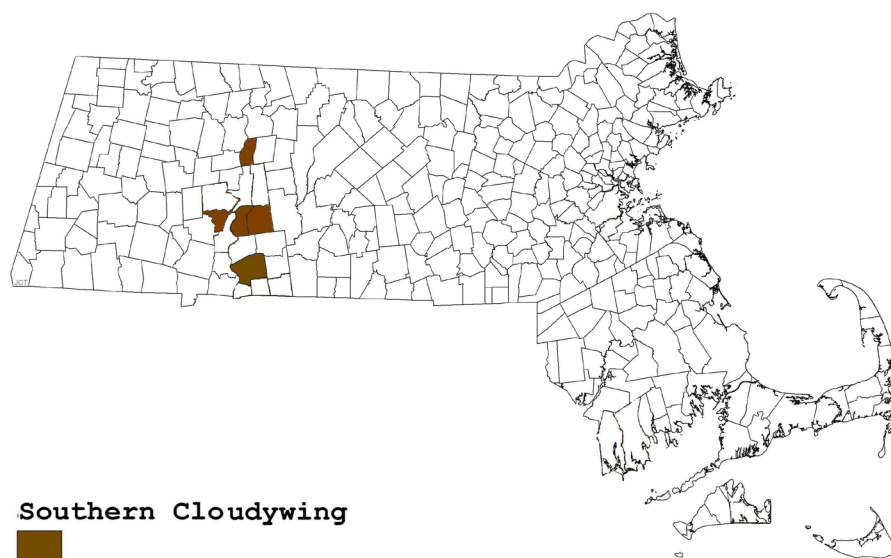
The first records of Southern Cloudywing in eastern Massachusetts come from the offshore islands in the 1930's. The earliest specimen is by F. M. Jones, Martha's Vineyard, June 25, 1930, preserved at Boston University. In their classic reference work on the lepidoptera of Martha's Vineyard and Nantucket, F. M. Jones and Charles Kimball cite only one other early specimen for the Vineyard (no year), and one specimen found by Kimball on Nantucket June 30, 1940 (Jones and Kimball 1943). But the species was not common on the islands.

Connecticut records of Southern Cloudywing (aside from

the single instance cited by Scudder) begin in 1939 and 1941, with three specimens from around Greenwich, in the south, taken by the Sterritts (Yale Peabody Museum). There are more Connecticut specimens from the 1950's, 1960's and 1970's, from locations further north, but the first mainland eastern Massachusetts record does not come until 1966. Farquhar (1934) cites only one Massachusetts specimen beyond Scudder's list, from Amherst in the west.

It seems probable that the Southern Cloudywing first arrived in mainland eastern Massachusetts sometime between the 1930's and the 1960's. The species likely simply expanded its range northeastward from Connecticut into the warm coastal plain areas of southeastern Massachusetts. It is less likely to have moved eastward from western Massachusetts, as suggested by S. Goldstein in the Massachusetts Butterfly Atlas (Massachusetts Audubon Society, 1986-90), since it would have to cross the higher-elevation Worcester Plateau, a less hospitable ecological region.

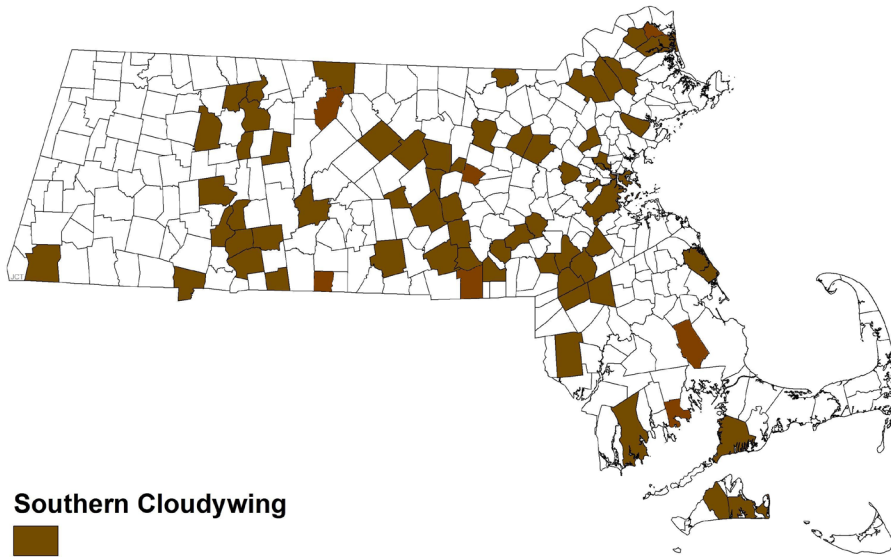
Whatever the route, by 1960 W.T. M. Forbes remarked that Southern Cloudywing was “much commoner in Massachusetts in recent years than in the early 1900s” (Forbes 1960). The earliest documented occurrence in mainland eastern Massachusetts appears to be William D. Winter's July 13, 1966 male specimen from Westwood (Norfolk Co.) (Harvard MCZ, determined by J. M. Burns). Winter also found Southern Cloudywing in Medfield (Norfolk Co.), Chelmsford (Middlesex Co.) and Sherborn (Middlesex Co.) in the mid-1970's. The 1986-90 Audubon Society Atlas similarly found the species well distributed throughout the east, including Essex County to the north, but absent from the west. However, broader-scale maps began to show all of Massachusetts as within the range of Southern Cloudywing (Opler and Krizek 1984).



Map 1. Massachusetts Records of Southern Cloudywing as of 1899 (Scudder)

Today, records from the Massachusetts Butterfly Club and the Lepidopterists' Society *Season Summary* show that Southern Cloudywing is well distributed throughout most of the state, except that it still has not been found in the mountains of central and northern Berkshire County in the west (Map 2). This is a remarkable expansion of range in the 120 years since Scudder wrote.

The range expansion has been accompanied by an increase in abundance. List-length analysis of citizen observer data found a 55.1% increase for Southern Cloudywing over the years 1992-2010, *versus* a 74.6% decline for Northern Cloudywing (Breed *et al.* 2012).



Southern Cloudywing

Map 2. Massachusetts Records of Southern Cloudywing, 1992-2012



Southern Cloudywing at Great Blue Hill, Milton, MA, July 7, 2002 (photo by Frank Model)

Little Glassywing

As with the previous species, the only Massachusetts specimens of *Pompeius verna* known to Scudder were from the lower Connecticut River valley: Mt Tom, South Hadley, Amherst Notch, and Springfield. For New England as a whole, this species was “exceedingly rare” and “confined to the southern portions” (1899: 1745). It was not known from eastern Massachusetts. Sprague did not find it in eastern Massachusetts or “the valley” in 1878 (Sprague 1879), and Forbes does not report it from around mid-state Worcester 1900-1909 (Forbes 1909).

In his comprehensive mid-twentieth century review of New England lepidoptera, Farquhar (1934) still found Little Glassywing “exceedingly rare,” but is able to cite one specimen from eastern Massachusetts (Stoneham, C. V. Blackburn, no date). On Nantucket and Martha’s Vineyard, Jones and Kimball (1943) did not find it, saying its putative presence was “not verifiable.” There are no

mid-century specimens from these well-collected islands.

The earliest extant eastern Massachusetts specimens are from the southeast: six collected in Weymouth (Norfolk Co.) in 1936 by C. L. and P. S. Remington, and one each from Canton and Fall River that year (Yale Peabody Museum). By the 1940’s, W. P. Rogers had collected quite a few from around coastal Bristol County-Fall River, Freetown and New Bedford (Yale Peabody Museum). Like several other species, Little Glassywing may have arrived in eastern Massachusetts by diffusing northeastward along the coast from Connecticut. By the 1960’s and 1970’s, it is well-reported throughout the state in the Lepidopterists’

Society *Season Summaries*, and it is finally documented for Berkshire County by L. Gall on July 6, 1974 (Yale Peabody Museum).

Today Little Glassywing is found nearly everywhere throughout the state, reported from 127 out of 351 towns between 1992 and 2012 (Stichter 2013a, Map 97; Opler and Krizek 1984). The only areas where it is still not found are the islands of Martha’s Vineyard and Nantucket. One recent study found this species to be modestly but significantly increasing in abundance in the state 1992-2010 (Breed *et al.* 2012). A similar increase appears to have taken place somewhat earlier in New Jersey, where a review of historical sources indicated that Little Glassywing had been increasing between 1890 and 1910, and by the 1990’s was “more common than a century ago” (Gochfeld and Burger 1997: 243).

Delaware Skipper

Scudder found *Anatrytone logan* uncommon or even rare in New England in the nineteenth century, with “few localities” and “scanty numbers.” As with the preceding species, he knew of specimens only from the Connecticut River valley: Springfield, Holyoke, Mount Tom (Dimmock’s 1880’s specimen is still preserved at Boston University), Granby, Belchertown, Amherst, and Montague (1889: 1616). There was a specimen from New Britain, Connecticut, and one from Rhode Island. There were no specimens from around Boston or on Cape Cod, despite the presence of many collectors. F. H. Sprague did not find it around Boston in 1878, though he had an impressive list of 67 species (Sprague 1879). Maynard (1886) says “This is a rare species in New England, occurring only in western Massachusetts.”

But by the early 1930’s Farquhar (1934) is able to cite several eastern Massachusetts towns where

Delaware Skipper had been collected, though he gives no dates: Weston, Stoneham ("not rare"), Newtonville, and Marblehead. He also reports it from a few more towns in western Massachusetts: Ware, Phillipston, and Sunderland. However, it was not found on Nantucket or Martha's Vineyard in the 1930's and 1940's (Jones and Kimball 1943). Therefore, sometime between 1889 and the 1930's Delaware Skipper would appear to have arrived in mainland eastern Massachusetts.

Today Delaware Skipper is well-distributed across the entire state, reported from 120 out of 351 towns 1992-2012 (Stichter 2013a, Map 99; see also Opler and Krizek 1984). On the islands of Martha's Vineyard and Nantucket, Delaware Skipper continues to be either absent or rare (Pelikan 2002).

In New York Shapiro in the 1970's characterized Delaware Skipper as a coastal plain and Hudson River valley species, rare in central New York, but "perhaps moving northward" (Shapiro 1974). In New Jersey this species went from "rare" at the turn of the century to "widespread and occasionally common" in the 1990's (Gochfeld and Burger 1997: 245). In Massachusetts, this species has likewise gone from rare to widespread and reasonably common.

Broad-winged Skipper

Scudder knew very little about *Poanes viator* except that it had been reported from Massachusetts. "I have specimens, of the origin of which I know nothing, marked from Massachusetts, and Mr. Edwards long ago wrote me that Mr. Akhurst had two specimens taken by Chase at Holyoke, Mass" (1889:1606). Holyoke is in the lower Connecticut River valley. Scudder mentions no specimens from any other New England states, not even New York or Connecticut, although it probably occurred in those states, and there appear to be no early specimens in the Harvard MCZ.

We may take it that Broad-winged Skipper was uncommon to rare in Massachusetts in the nineteenth century. While it may have been present in native stands of wild rice prior to European settlement (Shapiro 1970, 1977), it probably declined during the ditching and draining of the agricultural era. By the 1930's, Farquhar (1934), in his comprehensive review of all known regional specimens from a long list of collectors, still terms Broad-winged Skipper "very rare in New England," and can list no new specimens beyond Scudder's. By 1970 there seems to be at least one new specimen, since Shapiro includes southeastern Massachusetts, as well as "the valley" in the west, in his distribution map (Shapiro 1970).

Broad-winged Skipper's recent increase in New England appears to have begun in the 1980s. In Connecticut, the earliest specimens are those taken by S. Hessel and O. Taylor in 1962 and 1963 in Hamden; but most of the records are post-1980. Opler and Krizek (1984), show western Connecticut, but not any part of Massachusetts, within Broad-winged Skipper's range.

Broad-winged Skipper's move northward through eastern Massachusetts in the 1980's is nicely chronicled in Lepidopterists' Society *Season Summary* records (1984, 1987, 1988, 1991). The first report comes in 1984, when M. Mello found it "common" on July 29 in Acushnet Cedar Swamp in New Bedford (Bristol Co.). That same year H. Pavulaan found it in Fall River (Bristol Co.), and in Wareham and Plymouth (Plymouth Co.). By 1987 the record northern range extension was Medford (Middlesex Co.), reported by D. Schweitzer and R. Godefroi. Schweitzer's three specimens are in Yale Peabody Museum. By 1988 B. Cassie and T. Dodd, working for the Audubon Society Atlas, reported it "flying within many stands of *Phragmites* in eastern Massachusetts." By 1991 it was reported from Wingaershieek Beach in Essex County, north of Boston, but the new northernmost extension that year was R. Godefroi's report on August 3 from Hampton Beach, New Hampshire.

Today, Broad-winged Skipper is common throughout Massachusetts, found in all counties except Nantucket and 90 out of 351 towns as of 2012 (Stichter 2013a, Map 103). The dramatic expansion across the state has been quite recent. The 1986-90 Audubon Atlas had found Broad-winged Skipper only in a circle around Boston, from the southeast north to Essex County and west to eastern Worcester County. There were only two records from the far west. In succeeding years the skipper expanded westward, or perhaps northward from Connecticut, with the spread of *Phragmites*. By 2012 the species had been found and documented throughout the Connecticut River valley, Franklin County, and even Berkshire County, including northern Berkshire County.

Discussion

Conclusions from historical data must be qualified by certain considerations. Museum specimens and the judgments of early lepidopterists are limited evidence, but they are the only data available. Necessarily, ranges have to be deduced from the one or two available specimens, which might represent unusual rarities rather than regularly occurring species. And the lack of specimens from an area does not automatically mean that the species was absent; it may just have been overlooked.

Or, a lack of specimens may be due mainly to a dearth of observers and collectors. For example, for all four species discussed here the earliest reports are from the lower Connecticut River valley in western Massachusetts, and the next reports from the mid-twentieth century come from southeastern Massachusetts. The lack of connecting specimens from central Massachusetts could indicate a disjunct between the eastern and western populations, and two routes of entry into the state from the south; however, the lack of central Massachusetts data may simply result from the fact that there were hardly any collectors in that region.

Continued on p. 107

The Tropical Swallowtail Moth, *Lyssa zampa* (Uraniidae) -- another victim of lymph-thirsty parasites in Vietnam

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The mosquitoes were out at night at Bach Ma National Park, and I was advised to wear repellent to avoid possible diseases (malaria and Japanese encephalitis), though both are highly unlikely in Vietnam. On that evening, I was not the only one who was unwillingly sharing my blood with the biting dipterans at the collecting light. One of the most prevalent species that visited the sheets was the Tropical Swallowtail Moths, *Lyssa zampa* (Butler) (Fig. A). It was the largest moth that I had seen during the two weeks of black-lighting in north-central Vietnam in May, 2013, but

only in Bach Ma, at an elevation of 1,200 meters, did I notice several biting midges feeding on one of them (Fig. B). The midges were amber in color, and about 1 mm in size. I observed four midges on the same moth simultaneously (Fig. B), with their mouthparts clearly at work. It has been suggested previously (Kawahara et al. 2006 and references within), that the observed uniform orientation of these midges (their heads pointed towards the wing base) is not incidental, but is determined by their unique functional morphology. Apparently, the midges have a special spine

and a comb on each of their tarsal claws, which allow them to cling to the Lepidoptera scales. While two of the midges biting *Lyssa zampa* were feeding on the hindwing, in close proximity to the veins surrounding the wing cell (Fig. B), another midge was feeding on the forewing close to hind margin (Fig. C), and the fourth on the abdomen (Fig. D).

Kawahara et al. (2006) reported the midges feeding on 10 different species of Geometridae in Malaysia and Taiwan, and identified them as *Forcipomyia pectinunguis* (de Meijere) (Diptera: Ceratopogonidae). Unlike the midges pictured here, all *F. pectinunguis* were observed feeding close to the forewing base near the veins. According to Bill Grogan at the



Figure 1. *Lyssa zampa* (Uraniidae) attacked by biting midges in Bach Ma National Park, Vietnam. (Photos by Andrei Sourakov)

Florida State Collection of Arthropods (pers. com.), who recently co-authored an article on biting midges attacking butterfly caterpillars in Florida (Koptur et al., 2013), the midges that I observed in Vietnam are most likely of another *Forcipomyia* species in the subgenus *Trichohelea*. Thus, the present report likely expands the recorded host range of *Forcipomyia* to yet another Lepidoptera family.

Lyssa macleayi (closely related to *L. zampa*) sequesters alkaloidal glycosidase inhibitors (AGIs) from its hostplant *Endospermum medullosum* (Euphorbiaceae) (Kite et al. 1991), and it is very likely that *L. zampa* does so as well as it too feeds on *Endospermum* (Yen et al. 1995). If it indeed possesses such biologically active anti-feeding compounds, the biting midges are clearly not repelled by them.

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Range expansions in Massachusetts

Continued from p. 105

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Metamorphosis

Julian Donahue

Charles J. "Jack" Dempwolf, of Cincinnati, Ohio, on 15 May 2013 at the age of 80. Mr. Dempwolf had been a member of the Society since 2004. Jack was born in Philadelphia, Pennsylvania and grew up in Glen Ridge, New Jersey. He earned his Bachelors and Masters degrees



from Rutgers University, where he met his future bride. Jack worked for Proctor and Gamble for 35 years, including overseas assignments to Venezuela and London. Jack had a lifelong interest in butterflies and moths and had been a member of The Lepidopterists' Society since 2004. He served as president of the Society of Kentucky Lepidopterists in 2004, leading the organization

during its transition from Louisville to Lexington, Kentucky. Jack is survived by his wife of 58 years, Bobbie, three children, and seven grandchildren. In lieu of flowers, his family suggests a contribution to the Society of Kentucky Lepidopterists. Checks may be sent to: Les Ferge, Treasurer, 7119 Hubbard Avenue, Middleton, WI 53562-3231. [extracted from an obituary published in The Cincinnati Enquirer on 19 May 2013]

John Richard Heitzman, of Independence, Missouri, on 17 May 2013, three days after his 82nd birthday.



Richard and his wife Joan authored the 1996 book, *Butterflies and Moths of Missouri*. He also authored numerous articles on butterflies and moths (mostly in the Journal of the Lep Soc and Journal of Research on the Lepidoptera). In those works he described several species/subspecies of leps. He in turn had some species described after him (e.g., *Lytrosis heitzmanorum*, *Acrionicta heitzmani*, and *Plagiomimicus heitzmani*).

Richard worked at Standard Oil Refinery before he started his career as a carrier for the U.S. Postal Service, from which he retired. Richard had been a member of the Society from 1953 through 2000, and was the

founder and a member of the Idalia Society. Richard loved gardening and working/playing in his yard. He was especially known for his butterfly gardens. His unparalleled collection of over 70,000 Missouri Lepidoptera has been donated to the McGuire Center in Gainesville, FL. He is survived by Joan, his wife of 62 years, son Robert and daughter Brenda, six grandchildren, and 10 great-grandchildren; a third son, lepidopterist Roger Lynn Heitzman, died in 1997 at the age of 44. [Contributions from Nathan Sheaffer (grandson), Phillip Koenig, and James Adams]



Editor's Note: Richard was, after my mother, THE most important mentor I had in my Lepidoptera life. Here we are with a bit of his garden in the early 2000's. I will miss him.

Jeffrey Stuart Ingraham, on 4 August 2013, at the age of 57. Jeff had been a member of the Society from 1980 through 1986. He began collecting and studying butterflies and moths at a young age at a sleep-away camp in Massachusetts with his long-time friend Larry Gall. Dave Winter acted as



Photo by Matt Kelly

a mentor to both of them during their formative years in all things Lepidoptera. Jeff did not pursue a career in science, but rather went to Pratt Institute in Brooklyn, NY to study art. Jeff was a talented artist and his craftsmanship and aesthetic sensibility are clear in his superbly mounted specimens. His collecting was concentrated in the east,

with a strong affinity for the boreal and alpine fauna of New Hampshire and Maine, but he also managed some

collecting trips to South America and Trinidad. Although he did not publish that much, his field observations and collecting records are acknowledged in a number of books that cover our fauna and photos of his specimens grace the pages of Rick Cech and Guy Tudor's book on the butterflies of the Atlantic Coast.

Most of the Lepidoptera specimens Jeff collected are now part of his good friend Eric Quinter's collection. During the last four years of his life, Jeff spent most months working as a carpenter in Tobago where he was in the process of adding many new butterfly records to the list of species recorded from there. He also was collecting beetles

and adding numerous new records to the relatively poorly known fauna with the help of Dr. Michael C. Thomas of Gainesville. Many of those specimens were deposited in the Florida Collection of Arthropods where they will add much to our knowledge concerning a place he came to love. *[information from Harry Zirlin]*

GianCarlo Veronese, of Udine, Italy, on 8 June 2013. Mr. Veronese, a member of the Society since 1987, was particularly interested in African *Charaxes* and Papilionidae, *Polyura*, and aberrations, mosaics, and gynandromorphs. *[information from his daughter, Cosetta Veronese]*

Membership Updates...

Julian Donahue

Includes ALL CHANGES received by 16 August 2013

New and Reinstated Members: members who have joined/renewed/been found/or rescinded their request to be omitted since publication of the 2012 Membership Directory (not included in the 2008 Membership Directory; all in U.S.A. unless noted otherwise)

Ambler, Jake: 3461 West 6875 South, West Jordan, UT 84084-1723.

Bode, Justin: P.O. Box 75, Rant-en-Dal, Gauteng 1751, South Africa.

Deidesheimer, Joseph A.: 385 Stepping Stone Lane, Waynesville, NC 28786-7406.

deMaynadier, Phillip: Maine Dept. of Inland Fish & Wildlife, Wildlife Resource Assessment Section, 650 State Street, Bangor, ME 04401-5654.

Graupman, Miranda: 1033 West Rooftop Drive, Midvale, UT 84047-4805.

Graupman, Xander: 1033 West Rooftop Drive, Midvale, UT 84047-4805.

Guillory, Kayta: 1941 East Ramona Avenue, Salt Lake City, UT 84108-3113.

Hogue, Isabella: 10631 South Vermeer Way, Sandy, UT 84070-5219.

Keeler, John: 619 Applewood Avenue, Altamonte Springs, FL 32714-7301.

Konar, Easton: 905 Eagle Trail, Newton, NJ 07860-4426.

Larsen, Drake: 12891 South Pheasant Moor Drive, Draper, UT 84020-8969.

Larsen, Talia: 12891 South Pheasant Moor Drive, Draper, UT 84020-8969.

Lima, John H.: 3418 East 18th Street, Oakland, CA 94601-3004.

McDermott, James Ryan (Mr.): 15478 FM 2860, Kaufman, TX 75142-7927.

Moser, Alfred: Av. Wilhelm Rotermund, 1045, São Leopoldo, RS 93030-000, **Brazil.**

Niedermeyer, Mina: 1812 Dale Ridge Avenue, Salt Lake City, UT 84116-4151.

Pence, J. Akers (Ph.D.): 318 SE 71st Street, Gainesville, FL 32641-7798.

Turetzky, Emalia: 502 West 100 South, Springville, UT 84663-4960.

Walls, Jerry G.: 486 Highway 3041, Bunkie, LA 71322-4326.

Weigel, Harper: 232 M Street, Salt Lake City, UT 84103-3544.

Address Changes (all U.S.A. unless noted otherwise)

Beeche C., Marcos A.: Los Tres Antonios No. 191, Depto. 102, Ñuñoa – Santiago, **Chile.**

Bliss, Kenneth: 2438 Falcon Drive, Round Rock, TX 78681-2755.

Borth, Robert J.: 10327 North Westport Circle, Mequon, WI 53092-5738.

Dimock, Thomas E.: 111 Stevens Circle, Ventura, CA 93003-5523.

Fothergill, Kent: 107 Jones Street, Martin, TN 38237-3505.

Manderino, Rea (Ms.): 415 Greenbrier Court, Fredericksburg, VA 22401-5562.

McCaffrey, Joanna: 1320 NW 3rd Avenue, Apt. 314, Gainesville, FL 32603-2303.

Miller, Donald H. (Dr.): 452 Commons Road, Williston, VT 05495-9386.

Roble, Steven: Virginia Department of Conservation and Recreation, Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219-2440.

Watt, Ward B. (Prof.): Department of Biological Sciences, University of South Carolina, 715 Sumter Street, Columbia, SC 29208-3402.

Zirlin, Harry: 25 Dimsdale Road, Scarsdale, NY 10583-4740.

Makeover of the Tobacco Hornworm

Gary Noel Ross

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The tobacco hornworm is the larva of the Carolina Sphinx Moth: *Manduca sexta* (Sphingidae: Sphinginae—sphinx or hawk moths). The caterpillars are cigar-shaped, large, and plump. Their bodies are smooth with a hint of pubescence, green, and accented with seven white oblique lateral lines; there is also a dorsal abdominal red-tipped horn. *M. sexta* has a very close relative, the tomato hornworm, the larval stage of the Five-spotted Hawk Moth: *M. quinquemaculata*. Also green in color but entirely smooth, the tomato hornworm sports eight white L or V-shaped lines that encompass the eight black-ringed spiracles; the posterior horn is green with a black edge. The two species are basically sympatric and common throughout much of temperate North America and Central America. However, *M. sexta*, the tobacco hornworm, is actually the **more common** pest of tomato plants throughout much of this range, particularly in the Great Plains and Southeastern United States. [Vernon Antoine Brou, Jr., a native Louisianan who has devoted much of his life to collecting Lepidoptera (including sphingid moths especially between 1970 and 1999) by net, fermenting bait traps and ultraviolet light traps in his home state, indicates: "During these 30 years I captured 2165 *sexta* and only 40 *quinquemaculata*. So the bottom line is that *sexta* has a far greater population density than the larger in size *quinquemaculata* which is rarely encountered in Louisiana (e.g., from my study: 40 specimens in 30 years)." Brou adds: "Of the four *Manduca* species I reported on for the state, the population density of *quinquemaculata* was less than the other three."]. Because of similar distribution and food source, there is a good bit of confusion about the identity of those large caterpillars that commonly infest homegrown tomato plants. As a result, a significant number of images on the internet labeled as "tomato hornworm" actually depict the tobacco hornworm, *M. sexta*! But whichever the species, the result is always the same: skeletonization of the host plant.

Adults of *Manduca sexta* and *M. quinquemaculata* are similar, too, albeit the later species can be slightly larger. As the name "*sexta*" (six) implies, the Carolina Sphinx Moth has **six** pairs of overt yellow spots on its abdomen whereas "*quinquemaculata*" (five spots) suggests that the Five-spotted Hawk Moth has only **five** such pairs. The wings of both species are elongated, and held in chevron-fashion when at rest (a characteristic of the Sphingidae). Wing color reflects an adaptation to the species' behavior, i.e., active at night, resting during the day. As such, overall color is rather drab—gray with black and white markings—excellent camouflage when viewed against tree trunks or dried vegetation. These hawk moths visit flowers avidly, beginning at dusk, and as such, are important pollinators—particularly for night-blooming species.

Because of an inordinately long proboscis, individuals are able to take advantage of flowers with a deep tubular corolla, e.g., four o'clock (*Mirabilis*), periwinkle (*Vinca*, *Catharanthus*), *Datura*, and *Petunia*.

Hornworms are toxic to many vertebrates. This trait is due to the caterpillars' food sources: leaves of tomato, tobacco, potato, eggplant, bell pepper, and tomatillo (*Physalis*)—all members of the Solanaceae or nightshade family (jimson weed, angel's trumpet, moon flower (*Datura*), and flowering tobacco (*Nicotiana*) are common non-agricultural species). Members of this large, widespread family are noted for producing alkaloid-type phytochemicals. These include phenolic compounds (chlorogenic acid and rutin) and steroidal glycoalkaloids (a-solanine and a-chaconine). All demonstrate strong negative metabolic activity in many animals. As such, hornworms are imbued with an arsenal of plant-based toxins that confer significant protection from potential herbivores and microbes.

In the past, Researchers recognized that hornworms had the potential for becoming prime research subjects in the fields of biology, medicine and education. Consider: these immature insects are quite sizable, docile in nature, and empowered by blood infused with a non-hemoglobin pigment. (The notion that all blood is red is simply incorrect—and a bit "Hollywoodesque." The color of blood is determined by metal-based pigments circulating within the liquid. For example, the blood of vertebrates contains the respiratory iron-rich pigment named hemoglobin, which is contained within red blood cells (erythrocytes). Combined with oxygen, hemoglobin is a bright red color and is responsible for the typical red color of the blood. By contrast, insects, many invertebrates such as crustaceans, and mollusks, are empowered with blood—technically hemolymph—that contains a copper-rich, protein-based respiratory pigment called hemocyanin or insecticyanin. This circulates freely within the liquid hemolymph. When combined with dissolved oxygen brought in through the spiracles and transported throughout the body by tracheal tubes, hemocyanin has a characteristic blue color.)

Be that as it may, two major obstacles had to be overcome: First, the hornworms would have to be mass reared on an artificial diet in a controlled laboratory; and second, the insects' toxins would have to be neutralized.

Formulating an acceptable synthetic food source was not as difficult as one might presume. A palatable artificial diet already had been marketed for another larval lepidopteran, the economically important corn earworm (*Heliothis virescens*). For that matter, artificial diets for the monarch

(*Danaus plexippus*), painted lady (*Vanessa cardui*), Gulf fritillary (*Agraulis vanillae*), and black swallowtail (*Papilio polyxenes*), were rapidly coming to market. Yet simply rubber-stamping an existing artificial diet just could not work. Reason: The conventional paradigm for artificial diets always relied on the incorporation of small amounts of tissue or chemicals (i.e., ground leaves and/or volatile phytochemicals) from the larval host plant. These were deemed essential for the stimulation of the instinctive feeding response. The new diet for the hornworm, by contrast, had to be free of all plant products, specifically those residues from tomato or tobacco plants that were proven to be toxic to small reptiles. Nevertheless, with a bit of behind-closed-doors tweaking of known synthetic lepidopteran larval diets (the template was a wheat-germ base spiked with a rich cocktail of vitamins, minerals, and antibiotics), an innovative recipe was shortly formulated. (To be clear, though, at first only a small percentage of caterpillars acclimated to what must have seemed like an odd tasting diet. Those that did not, died, leaving those individuals that had no problem with the odd-tasting food. Now natural selection came into play: The weak were weeded out—recall Darwin's "survival of the fittest." The result was a population of hornworms in which virtually all individuals fed readily on an artificial diet. And because the synthetic diet was free of the host plants' alkaloids, the laboratory-raised caterpillars were free of toxins, and therefore, suitable for laboratory rearing.)

To summarize: The artificial diet was a success. And one thing more: The caterpillars that thrived were no longer green. They were **blue**; really, a soft **turquoise blue**!

Although downright mutant-like and beguiling, the blue hue is scientifically easy to explain. Because the engineered diet was free of host-plant tissues, the diet was free of pigments such as green chlorophyll and the normally masked, yellow xanthophyll—a type of carotenoid. In truth, chlorophyll cannot be utilized by most larval insects. Consequently, the pigment is not responsible for the green camouflaging color of so many soft-bodied caterpillars. Most chlorophyll ingested by caterpillars, it seems, is concentrated and eliminated in excrement (frass), turning it dark green.

But xanthophyll has another fate. Vis-à-vis chlorophyll, the yellowish xanthophyll has a very important function: The carotenoid is highly reactive with hemocyanin (as mentioned previously, this is the copper-based blue respiratory pigment found in insect blood). And as any school kid knows, if you mix blue with yellow—as, for example, with paint—you wind up with an entirely new color: green. So, in nature, tomato-based hornworms with their thin exoskeletons are green—and toxic. Yet in the laboratory, absent pigment-rich leaves, you wind up with blue—and toxin-free hornworms. Currently, blue hornworms reared under laboratory conditions are considered sterling research subjects in the areas of neurobiology, physiology, endocrinology, and toxicology. In addition, both live and preserved hornworms are used

extensively in school laboratories to demonstrate a typical insect life cycle and insect anatomy.

Not surprisingly, the novel blue hornworms sparked the attention of another commercial market: the increasingly lucrative exotic pet trade. Because the laboratory-reared caterpillars contained no toxic alkaloids, non-traditional pets whose diet consisted of insects would be able to feed with impunity. And because the designer diet could be manipulated to include specific nutrients at specific concentrations for specific pets, blue hornworms seemed to fit the bill as unique power-packs. Turns out, the pets targeted were reptiles, and specifically, bearded dragons.

Affectionately termed "dragons" or "beardies" (technically, *Pogona vitticeps*, family Agamidae: Agaminae), these pint-sized lizards are native to the dry inland habitats of Australia. The reptiles are rather charismatic, displaying changeable pastel coloring, large triangular, bobbing heads, and flattish bodies with pointed ridges on their sides. In addition, beardies are docile and friendly, alert and entertaining during daylight hours, easy to care for, eat both vegetable and animal matter (omnivorous), grow quickly, and breed easily in captivity. Because of so many positive traits, beardies have become the most popular pet lizard for hobbyists (including children) who have limited space but who enjoy interacting with their reptiles. Whereas rank and file animal fare of beardies (for example, crickets and larvae of several beetles, flies, and moths) are relatively small with tough chitinous exoskeletons, blue hornworms are relatively large, meaty, and soft-bodied. Too, according to a leading supplier of blue hornworms, the insects are "high in protein, calcium antioxidants, low in fat and phosphorus, easy to digest, and disease-free." All in all, these modified sphingid moth larvae make excellent meals. And for pet owners who might be a bit squeamish, the wheat-germ based diet guarantees that no unsightly frass or body fluids are expelled from the hornworms.

The Aussie beardies relish the unconventional hornworms, without question. But the designer diet is relatively pricey. Most dragon aficionados, therefore, prefer to offer hornworms to their pets only for occasional power snacks, what I like to refer to as blue-blooded or "royal" delicacies.

Blue hornworms are marketed by a variety of sources. Examples: Pet stores that include food for non-traditional pets; specialty suppliers of bearded dragons; internet sites; and REPTICON—a traveling exhibition since 2003 that advertises as "the national industry leader in exotic reptile and exotic animal expos and shows" since 2003. The expo currently travels to 18 states in 35 cities providing over 100 events each year. However, the major wholesale/retail supplier is GREAT LAKES HORWORM. The company, which advertises as "America's Finest Source For Insects," began marketing blue hornworms in 2004 as "an environmentally controlled Tobacco Hornworm, *Manduca sexta*, mass production facility with capabilities in excess of one million per week."

I initially became acquainted with bearded dragons and blue hornworms during the summer of 2012 in Baton Rouge. A friend, who had a small collection of exotic pets, invited me to accompany him to a REPTICON exposition in town for the weekend. The expansive exposition hall was packed with about 40 vendors and at least 100 visitors—including women and very exuberant children. Booths displayed a variety of slithering and multi-legged animals along with accoutrements needed for maintaining a happy pet and an equally happy pet owner. Reptiles and amphibians dominated, of course. But there were smaller and less common invertebrates, too. These included: scorpions, whip scorpions, centipedes, millipedes, as well as insects such as giant walking sticks, hissing cockroaches, crickets, mealworms (larvae of the darkling beetle, *Tenebrio molitor*), superworms or kingworms (larvae of the darkling beetle, *Zophobas morio*), butterworms (larvae of the moth, *Chilecomadia moorei*), and Phoenix worms (larvae of the black soldier fly, *Hermetia illucnes*). A few vendors featured furry mammals such as chinchillas and sugar gliders (an Australian marsupial possum). One proprietor even specialized in newborn pink mice. All items were being marketed as pets per se or as appropriate food—live or frozen—for any species on display.

I, personally, was electrified by something else: blue hornworms. Now, growing up in New Orleans with a father who was an avid gardener, I was very familiar with hornworms. Each summer a horde of these surly critters would decimate our garden tomato plants. But all of these wild hornworms were green. The commercial blue variety now before me was a surprise. The hornworms were being marketed as modified tomato hornworms—not as alluring small pets but as a food *par excellence* for pet bearded dragons. (I later learned that the caterpillars were not the tomato hornworm, *Manduca quinquemaculata*, save instead, the tobacco hornworm, *M. sexta*.) About a dozen or so of these caterpillars in various stages of development were housed in a clear plastic cup along with a tan-colored cake of artificial food. The self-contained unit was called a “habitat cup.” Intrigued, I purchased one of these to chronicle the development of the larvae.

Here are my observations. The habitat cup was a quart-sized transparent plastic cup-shaped container. Eighteen larvae varying from third to fifth instars were included. The food supply had the consistency of fresh homemade vanilla fudge along with a slight acrid/sweet odor. A nylon mesh positioned along both sides of the cup provided the caterpillars with space for rest and traction for crawling. (The hornworms usually rested side-by-side, sardine fashion.) Instructions indicated that the cup was to be placed upside down (food source on top) in a saucer so that air can enter the holes of the lid (now the bottom). When hungry, the hornworms would crawl to the “top,” line up—reminiscent of pigs at a trough—and feed; all excrement fell to the removable “bottom.” Instructions also indicated that the bottom lid should be opened each day in order to

shake out the frass.

I kept my cup in my home laboratory at 74 degrees F. The “worms” were voracious feeders—just like their wild relatives. They grew quickly, becoming longer and more full bodied (they felt like a ripe grape). Since I wasn’t removing individuals as food for some exotic pet, I slowed development by placing the container in the warmest part of my refrigerator for two days, removing for a day or two, and then repeating. The easily accessed lid provided a convenient means of removing the frass that accumulated each day.

In a mini-experiment, I removed four third-instar larvae and placed them in a large terrarium containing two small tomato plants. At first the larvae crawled along the leaves, but within an hour or so, all larvae began to feed without apparent problem. By the next day small blotches of green color appeared on the bodies of the relocated individuals; by day three the larvae were totally green—just like their wild relatives—and were producing dark green frass. I was amazed at just how quickly the xanthophyll in the leaves reacted with the hemocynain in the larval blood to reverse the color of the caterpillars from blue to green—in spite of the fact that the larvae were hundreds of generations over at least a decade-and-a-half removed from their wild ancestors. (I would very much like to see a comparison of the DNA of laboratory reared specimens with that of individuals secured from the wild.) In another trial, I did a second reversal in food: I relocated the green larvae back to their artificial diet. To my surprise, the caterpillars began to feed immediately as if they preferred the artificial diet. Then within three to four days, all had regressed to their blue guise and had begun to excrete tan-colored frass. (NOTE TO SCIENCE TEACHERS: The switching of larvae between an artificial diet and a natural diet to observe color changes in body and frass should make a dramatic, simple, and fun classroom demonstration.)

Within eight days, a couple of larvae ceased feeding, appearing to be mature (nearly 4 inches in length, 10-12 grams in weight). I removed these and placed them in a terrarium containing approximately six inches of loose pine bark mulch that I occasionally misted. The larvae began wandering about, often burrowing mole-like into the mulch. For the next 2-3 days, this behavior continued, each larva gradually shrinking a bit in size and becoming a lighter color. Eventually each settled at maximum depth in the mulch. By wiggling about, each pre-pupa created a cell for itself. There it remained relatively motionless for another 2-3 days. Once the larval skin was shed, the pupal case—equipped with a striking separate tongue case or “jug handle” that is separated from the main cigar-shaped body—quickly darkened to a mahogany color. The pupal stage lasted 18-19 days. All except one proved viable. The newly eclosed adults were sedentary, preferring to cling to small branches within the terrarium rather than attempting to fly. Adults were killed and kept within my collection in order not to contaminate local wild populations.



Blue tobacco hornworm (*Manduca sexta*) resting on an open cap of a "Habitat cup." Frass is tan-colored due to the lack of green chlorophyll in the synthetic diet (chlorophyll is normally excreted in most larval lepidopterans).



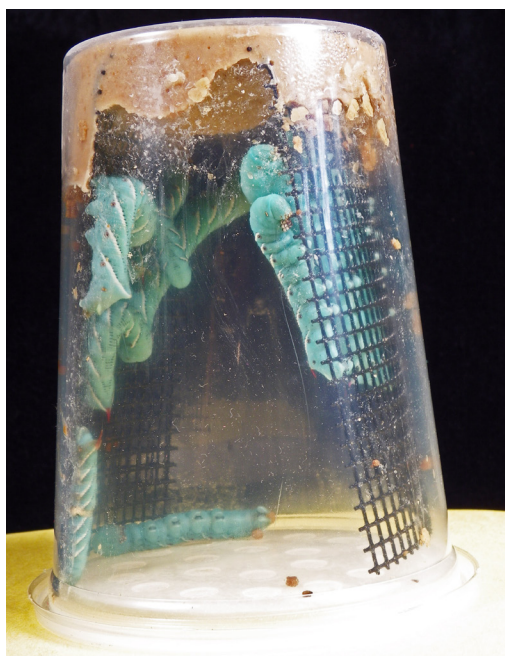
Blue tobacco hornworm relocated to a potted tomato plant, one of the natural solanaceous hosts of the species. The larva's blue color reverted to green after several days of feeding on leaves containing chlorophyll and xanthophyll. The latter is a yellow carotenoid pigment that reacts with the larva's natural blue blood to produce the green color that is characteristic of wild hornworms.



Close up of two hornworms: left, on synthetic diet lacking pigments, and right, on tomato, where after several days of feeding, blue color reverted to green (see caption on picture above).



Pupa in loose soil, with separated proboscis, and adult of Carolina Sphinx Moth (*Manduca sexta*) on lichen-covered tree.



Commercial "Habitat Cup" in inverted position (cap on bottom) to allow frass to fall to cap for easy cleaning.



Australian Bearded Dragon (*Pogona vitticeps*), a popular exotic pet reptile, attacking (above) and feeding (below) on a favorite food, the commercial blue tobacco hornworm. Because the blue larvae lack the tomato's natural toxins, the modified blue-blooded ("royal") specimens are safe food for pets.

During late February, 2013, I spoke with Rob Misiewicz, founder, owner, and manager of GREAT LAKES HORNWORMS (GLH), the premier breeding facility for blue hornworms. I learned that the company is an outgrowth of Rob's passion for breeding bearded dragons dating back to 1997. Then in 2004, after years of experimenting with rearing conditions and diet formulations, GLH was launched to supply hobbyists, commercial breeders, and miscellaneous scientific and educational institutions with bearded dragons and superior packaged food. Today the facility is high tech and highly efficient. It produces roughly 250,000 hornworms per week—with the capacity to increase this to over 1,000,000. GLH operates throughout all seasons, but is closed to visitors.

Two buildings totally approximately 3,000 square feet house all operations. Newly eclosed sphinx moths are placed in a flight chamber 6 x 6 x 8 feet. The chamber is kept at a temperature of approximately 75 degrees F and contains potted tobacco plants along with a unique method of dispersing sugar water for nourishing adults. After mating, females lay between 500 and 1,100 light green eggs on the tobacco leaves usually within two to three days (the moths die usually within seven to eight days, with no adults being released into the environment). Egg fertility is nearly 100 percent. Some of these eggs along with food stock are marketed separately in small batches to suppliers who wish to raise their own larvae. The vast majority of eggs, however, are allowed to hatch so that larvae can be secured and then marketed in habitat cups of three sizes: 12 count (number of larvae), 25 count and 50 count (numbers refer to guaranteed minimum). GLH was instrumental in designing what they tout as the premier synthetic diet for bearded dragons. As proof, the company advertises that bearded dragons raised on GLH diet grow faster and remain healthier than reptiles raised on the diets of competitor companies.

On March 3, 2013, I again purchased a cup of blue hornworms from a return Baton Rouge visit of REPTICON. Most of these 20 specimens were employed to secure photographs of bearded dragons feeding. While I should have expected the response, I still was amazed at how quickly the lizards took to the hornworms. In fact, after an initial "taste," the dragons reacted immediately to the sight of a hornworm—and even after sighting a habitat cup. Quite a testimony to the superior diet provided by the blue-blooded ("royal") larvae of *Manduca sexta*.

As an interesting closing note, I learned that the digestive fluid of dragons is extremely slimy, slippery, and, for that matter, seemingly toxic to insects. These bits of information surfaced during a photographic session of a dragon eating a blue hornworm. In the process of readjusting my camera, the model regurgitated a hornworm (the fourth ingested in barely 15 minutes) that it had swallowed just seconds before. To my surprise the hornworm was dead. Upon close examination, I observed that the larva was covered in a

slime—what I am compelled to believe was heavy saliva or a mixture of saliva and gastric juices. (I suppose the viscosity of the fluid is essential for lubricating living food with chitinous exoskeletons.) Why the caterpillar expired in such short time remains an unknown. Perhaps the hornworm's slime is highly acidic, and therefore lethal upon contact? Perhaps the slime contains a mild unknown toxin? Fertile ground, I think, for future research. Anyone inspired?

Acknowledgments

I would especially like to thank the following: Dr. Rob Misiewicz (GREAT LAKES HORNWORMS, Troy, MI) for graciously providing me with detailed information about his breeding facility and for fact-checking this manuscript; Mr. Vernon Antoine Brou, Jr. (Abita Springs, LA) for providing me with data from his research on the Sphingidae of Louisiana; Mr. René McDonald (Baton Rouge, LA), for first introducing me to REPTICON and the whacky world of bearded dragons and blue hornworms, and for his assistance while I photographed his two pet bearded dragons feeding on blue hornworms.

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www.Greatlakeshornworm.com, www.glhornworm.com
and rob@greatlakeshornworm.com
www.Repticon.com

Book Review

Le GUIDE des PAPILLONS du QUÉBEC, by Louis Handfield, 672 pp., 166 colored plates, Broquet, Saint-Constant, Québec, Canada (info@broquet.qc.ca). Soft cover, \$29.95 Can. + postage, deluxe boxed set of 2 vols., \$124.99 Can. + postage.



Here is a unique publication on the Lepidoptera of North America. It was published in two versions: a soft cover identification guide of 772 text pages and 166 color plates; and a boxed set of two hardbound volumes encompassing 1,352 pages of text and the same plates as the shorter version. The shorter version's title is slightly different from that given above:

Les Papillons du Québec. Here one has a chance to select the economy version or a sumptuous, more detailed first class edition.

This work comes only 12 years after the first "Le Guide des Papillons du Québec" in 1999. Preface author Don Lafontaine enthusiastically endorses the revised version on the basis of additional important records contributed by many users of the first "Le Guide," new digital photographic techniques, clarification of species via DNA barcoding, and recent additions of life history information update impressively the knowledge of Québec macrolepidoptera.

The book covers Québec butterflies, skippers, and macro-moths (Saturniidae, Sphingidae, Geometroidea, Noctuoidea, the smaller macro families macros, plus "macro-micros" Hepialidae and Cossidae). Classification and nomenclature follow the latest revisions, such as Pelham's 2008 butterfly checklist, Ferguson's Macariini fascicle of Moths of North America (2008), and the extensive reordering of the Noctuoidea presented in Lafontaine and Schmidt (2010).

The format is not novel, but includes more detailed sections than most manuals. The front matter includes the most extensive acknowledgement list I have ever seen in a Lepidoptera book; a user's guide in English as well as French; extensive equipment and technique diagrams; an "Introduction to the World of Lepidoptera" by Bernard Landry; "how to use and read" for English speakers; a detailed section on all aspects of rearing; collection, preparation, dissection, and storage techniques

(even advice on later disposition of private collections); maps delimiting five ecoregions of Québec; line drawings of anatomical structures, including genitalia; an index to host-plants; abbreviations key; and several other useful informational tools.

I found the arrangement of figured moths to be excellent, and the images themselves to be sharp and true to color, and the moths perfectly arranged – not too closely packed, and with names under each image. As rarely seen, the name and checklist number is with each specimen figured, and the numbers are shown at the top of each plate in dictionary style (making page numbers unnecessary). This makes for very easy and convenient use. In addition to the plates showing spread Lepidoptera there are 18 more showing various habitats, live Lepidoptera in nature, and Québec lepidopterists, indoors and out. These afford a personal touch lacking in most field guides.

Species treatments include names, authorship and date of description, checklist numbers (MONA numbers, with the new Lafontaine and Schmidt numbers for Noctuoidea additionally), occurrence and date ranges appropriate for each of the "regions" described in the front matter, habitat notes, foodplants, and general notes. The terminal bibliography is one of the most complete I have ever seen in North American Lepidoptera literature, and is divided into convenient categories of subjects and geographic scope.

The longer version features more lovely pictures, a small bibliography under each species, quite longer notes, references under each species as to where it is illustrated in other books, a list of all the localities where the species has been taken (including latitude and longitude for each). In the notes host-plant paragraphs, there is a reference to all information (book, article, personal communication, etc.), a longer (50-page) bibliography, collection data for each specimen figured, and, over each species a reference to the recent Schmidt-Lafontaine checklist number as well as those of MONA (Hodges et al. 1983) and McDunnough (1938). And there is a paragraph for similar species where it is necessary under each species. Like Holland's *Moth Book* there are poems scattered throughout.

My only disappointment is the lack of italics for genus and species names used in text. The identifications I have checked are right on, and everything has been done to make this book authoritative, elegant and user-friendly. I enthusiastically recommend the "regular" edition; it is a bargain at the price. The boxed two-volume limited edition is truly magnificent, with its important and pleasing extra features, durably crafted to please the most discerning and ardent bibliophile.

CHARLES V. COVELL, Jr., McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, P. O. Box 112710, Gainesville, FL 32611.

A strange pair

Steven Johnson¹ and Nathan Boob²

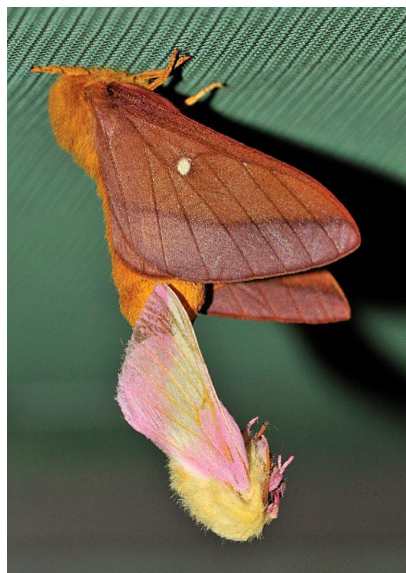
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Around noon on May 31st of this year, I picked up my friend Nathan Boob for a weekend of collecting/photographing/ exploring in the NJ Pine Barrens in Ocean County near the small village of Warren Grove. Nathan is a saturniid rearing nut, and he had with him a freshly emerged female *Anisota senatoria* (Orange-tipped Oakworm Moth) which he had reared from a group of caterpillars found near Laurelton in Union Co., PA. He asked me whether it might be possible for her to call in a male at the Warren Grove area. I said, "It may be possible, but you shouldn't get your hopes up," since I had never noticed the presence of *Anisota senatoria* there but *Anisota stigma* (Spiny Oakworm Moth) could be very common.



The "Strange Pair". (photo by Nathan Boob)

When we arrived at the site in late afternoon he immediately set her out in a cage. She eventually began releasing pheromones to call in a male. Alas, as I had feared, she failed to call in any males and all appeared lost, or so it seemed. She was still calling in early evening after I turned on the lights and the first moths started to arrive, some of which were *Dryocampa rubicunda* (Rosy Maple Moth). Now, Nathan got a crazy idea: "Hey, I wonder if I could hand pair a male *D. rubicunda* with the female *A. senatoria*?" I have often referred to Nathan as "Mr. Magic Fingers", and when it comes to hand pairing I don't know of anyone better. It wasn't long before he had them paired and now we had to wonder, "Could this really work?"

She laid around 200 eggs over the next few days, and all but two developed and hatched. The larvae were sleeved on *Quercus palustris* (Pin Oak) and matured quite nicely. The male caterpillars developed to the final instar quickly and pupated. The females continued to grow and did not pupate until after the first males began to emerge on June 20th.

The adult males (see **cover** of News) display a curious blend of characteristics of the males of the two species. The wings



Last instar larva; from cross between female *Anisota senatoria* and male *Dryocampa rubicunda*. (photo by Nathan Boob)

are not as sharply angular as *A. senatoria*, but much more so than *D. rubicunda*. The PM line is well defined on both forewing and hindwing, and appears to run parallel to the outer edge of the more squared wing. The orbicular spot is present and separated from the AM line, but is not as prominent as in *A. senatoria*. The body and median area color is a burnt orange that is unlike either male of the two parent species.



Top: Male *Dryocampa rubicunda*, male *A. senatoria*.
Bottom: male hybrid. (photo by Steve Johnson)

We also wondered what would happen with the pupae. *Dryocampa rubicunda* is multiple brooded in PA and *A. senatoria* is single brooded. Our answer seems to be that the males behave like the multiple brooded *D. rubicunda*. The

females have not shown signs of development; it appears they need to go through diapause and will emerge next year. We are very curious to see what the females will look like.

Another sidebar to this story: Nathan had another female *Anisota senatoria* emerge after we got home from NJ and it was placed in a cage with fresh *Dryocampa rubicunda*. When one of the female *D. rubicunda* started calling, a male *D. rubicunda* paired up with the female *A. senatoria* which happened to be between him and his intended love interest. This pairing, however, did not result in similar fertility as the pairing with the male from NJ. The ova appeared fertile and began development, but did not hatch. Also, a pairing of one of the hybrid males with a female *D. rubicunda* did not produce any viable caterpillars.

We will leave it to the experts to decipher what this might mean in the scheme of things between *Dryocampa* and *Anisota*, but this was an entertaining experiment!

Acknowledgments

I would like to give a special thanks to Jesse and Barbara Babonis for reviewing and correcting any writing errors. They are a great asset to someone like me with meager grammar and punctuation skills.

And speaking of strange pairs . . .



An unlikely coupling between *Sparganothis sulfureana*, (the Sparganothis Fruitworm Moth, top) and *Platynota idaeusalis* (Tufted Apple Budmoth, bottom). This picture was taken at a blacklight sheet by Ken Childs (kjchilds@yahoo.com) about 8 miles NE of Henderson, TN on August 14, 2013, at 3:45 a.m. The moths were kept; the *Platynota* died, followed by the *Sparganothis*, and they remained stuck together. It is unknown if any spermatophore transfer took place.

Wildland fire potentially catastrophic for three iconic butterflies of the Spring Mountains, Nevada

Bruce M. Boyd

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In early July 2013, a 28,000 acre fire burned some of the most biologically significant and nearly pristine high elevation habitat in the Spring Mountains. At the time of this writing the US Forest Service had released very little information and citing safety concerns the areas affected are closed to the public. The closure order could remain in effect until next year possibly to conceal the extent and severity of impact to the habitat of at risk species until after US Fish and Wildlife Service rules on a petition to list *Plebejus (Icaricia) shasta charlestonensis* as endangered later this year.

The fire appears to have burned critical colony sites of three of the butterflies identified as “priority species of concern” by the US Forest Service; the last remaining viable population of *Plebejus shasta charlestonensis* and the largest populations of two other taxa experiencing sharply declining numbers *Euphydryas anicia morandi* and *Chlosyne acastus robusta*. One of the locations affected is where Frank Morand collected *Plebejus shasta (charlestonensis)* and *Euphydryas anicia (morandi)* in the summer of 1928.

Creating additional uncertainty and concern was the application of chemical retardants from large jet and smaller aircraft to suppress the fire and the planned “rehabilitation” of the burned area with aerial applications of mulch, fertilizer, seed and “sticky tackifier.” Quoting the Spring Mountains National Recreation Area website, “rehabilitation focuses on the lands unlikely to recover naturally from wildland fire damage,” -- that premise is flawed since all lands eventually recover from fire, unfortunately recovering from the planned rehabilitation could be more difficult.



Ken Childs also took this picture near Henderson, TN of a *Hysoropha hormos* and *Halysidota tessellaris*, but they were not actually coupled. That would be a REALLY strange pair!

The Marketplace

IMPORTANT NOTICE to ADVERTISERS: If the number following your ad is "552" then you must renew your ad before the next issue! **NEW:** Paid advertising; see the "NOTICE" and middle column, below.

NOTICE: Paid Commercial Advertising now in the News

Any company, corporation, etc. desiring to commercially advertise in the News will now be required to pay for space. After this issue, any individuals representing companies that have been using "The Marketplace" column for free solicitation will be required to pay. Companies that are not affiliated with the Lep Soc can also now purchase advertising space in the News. The cost to advertisers will be \$40.00 dollars per eighth page per issue, and we would like to limit advertisers to ads of a quarter page (for \$80.00) unless there are good reasons for a larger ad (a lot of text or multiple images, for instance). Advertisers should use Pay Pal (see p 100) to send money to Kelly Richers BEFORE the ad will run.

Books/Electronic Images

For Sale: Entomological books from personal library, mostly in excellent condition. Includes such titles as "Butterflies of Costa Rica -- 2 vols." by DeVries; "Pennington's Butterflies -- Africa" by Dickson and "Butterflies of Rhodesia" by Pinhey. Prices are negotiable. Write or e-mail for list. Alan J. Hanks, 34 Seaton Drive, Aurora, Ontario L4G 2K1, Canada or e-mail alan.hanks@sympatico.ca. 552

For Sale: Butterflies of Central America Vol 3: Hesperidae, The Skippers. 266 color plates, spiral bound, covers Oaxaca to Panama. \$72 plus shipping of \$10 for US and \$27.50 for international orders. www.neotropicalbutterflies.com, click on Books for Sale. 552

THE MONARCH: *Danaus plexippus* (Linnaeus), by J. B. Heppner; \$7.95 paperback. 6x9 in., 42pp. (plus \$3.50 shipping in USA). Full color nature guide to the monarch butterfly in North America. Reviews the life history and migration details of the monarch, including many color photographs of the monarch, its forms, and wintering in Mexico, by nature photographer Dr. Ed S. Ross, lepidopterist Prof. Gary N. Ross, and others. Includes bibliography and list of societies. Scientific Publishers, P. O. Box 15718, Gainesville, FL 32604 scipub@aol.com (352) 373-5630 www.scipub.com (in revision) 552



The aim of the Marketplace in the **News of the Lepidopterists' Society** is to be consistent with the goals of the Society: "to promote the science of lepidopterology...to facilitate the exchange of specimens and ideas by both the professional and the amateur in the field..." Therefore, the Editor will print notices which are deemed to meet the above criteria, without quoting prices, except for those of publications or lists.

Only members in good standing may place ads (but see top of next column). **All advertisements are accepted, in writing, for two (2) issues unless a single issue is specifically requested.**

All ads contain a code in the lower right corner (eg. 552, 553) which denotes the volume and number of the **News** in which the ad. first appeared. **Renew it Now!**

Note: All advertisements must be renewed before the deadline of the third issue following initial placement to remain in place.

Starting with Volume 55: Number 4, the Lep Soc will charge commercial retailers for advertising space in the Marketplace at the rate of \$40.00/per eighth page/issue. (So a quarter page ad would be \$80.00, etc.) Members who are selling items as representatives of a company/corporation will be required to pay for space. Please limit ads to a quarter page. Payment can be made through Pay Pal (see Announcements, p 100) and must be made BEFORE the ad will be placed. Contact Kelly Richers at kerichers@wuesd.org for more info.

Advertisements must be under 100 words in length, or **they will be returned for editing**. Some leeway may be allowed at the editor's discretion. Ads for Lepidoptera or plants must include full latin binomials for all taxa listed in your advertisement.

The Lepidopterists' Society and the Editor take no responsibility whatsoever for the integrity and legality of any advertiser or advertisement. Disputes arising from such notices must be resolved by the parties involved, outside of the structure of The Lepidopterists' Society. Aggrieved mem-

bers may request information from the Secretary regarding steps which they may take in the event of alleged unsatisfactory business transactions. A member may be expelled from the Society, given adequate indication of dishonest activity.

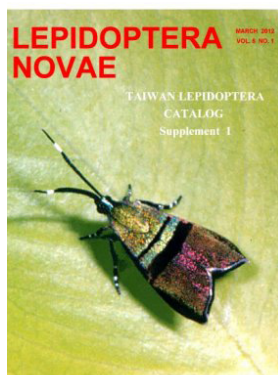
Buyers, sellers, and traders are advised to contact state department of agriculture and/or ppqaphis, Hyattsville, Maryland, regarding US Department of Agriculture or other permits required for transport of live insects or plants. Buyers are responsible for being aware that many countries have laws restricting the possession, collection, import, and export of some insect and plant species. Plant Traders: Check with USDA and local agencies for permits to transport plants. Shipping of agricultural weeds across borders is often restricted.

No mention may be made in any advertisement in the **News** of any species on any federal threatened or endangered species list. For species listed under CITES, advertisers must provide a copy of the export permit from the country of origin to buyers. **Buyers must beware and be aware.**

The Marketplace

FOR SALE: Private collection of more than 500 books on BUTTERFLIES AND MOTHS, including many rare volumes. Several of the books are over 100 years old, and some have hand-colored lithograph illustrations. For a list of books, or if you have other questions, contact Frank Manning at frankmanning@gmail.com, 505-867-9088, or 505-270-7651(cell) or (home). 552

TAIWAN LEPIDOPTERA CATALOG, Supplement 1: Corrections and Additions. 84pp. 8-1/2x11 inches. \$47.50 postpaid (in USA). New updated and revised catalog additions since 1992, by J. B. Hepner. Includes new references and species described since the 1992 Taiwan Lepidoptera catalog. Double issue from Vol. 5, *Lepidoptera Novae*. Orders to: Lepidoptera Novae, P. O. Box 15718, Gainesville, FL 32604. Checks to: Lepidoptera Novae. lepidnovae@aol.com Tel: (352) 373-5630. 552



Equipment

Bait Traps: 15 inch diameter and 36 inches in height with a rain cloth top, nylon coated fiberglass screen, and supported with 3/16 inch steel rings. A plywood platform is suspended with eye bolts and S hooks. Flat bottom has a 3/16 inch thick plastic bottom that will not warp or crack. Bait container is held in place by a retainer. For more information, visit www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454: Tel: 502-542-7091 552

Light Traps: 12 VDC or 120 VAC with 18 inch vanes (15 & 32 Watt) and 24 inch (40 Watt). Rigid vanes of Stainless Steel, Aluminum, or Plexiglass. Rain Drains and beetle screens to protect specimens from damage. For more information visit www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454: Tel: 502-542-7091 552

Collecting Light: Fluorescent UV 15, 32 & 40 Watt. Units are designed with the ballast enclosed in a weather tight cast aluminum enclosure. Mercury Vapor: 160 & 250 Watt self ballast mercury vapor with medium base mounts. 250 & 500 Watt self ballast mercury vapor with mogul base mounts. Light weight and ideal for trips out of the country. For more information, visit www.leptraps.com, or contact Leroy C. Koehn, Leptraps LLC, 3000 Fairway Court, Georgetown, KY 40324-9454: Tel: 502-542-7091 552

Specimens/Collections

FOR SALE: Important collection of European and Exotic butterflies gathered between 1950 - 1970 by a Belgian collector. More than 15,000 specimens including many rare ones, all of them labeled (family group or specimen) and presented in wooden boxes (large or small format) with special glass. Full list of specimens on request. Price: \$12,000. Contact: Magali Maus, mickgo533@msn.com 552



From the Editor's Desk

James K. Adams

For those of you who did not attend the Lep Soc meeting, we were sorry to have missed you. It was a great meeting with a lot of camaraderie.

In the last issue, I included the statement below where I desired a response from the membership. I truly believe that this is your Newsletter and that your articles are the meat of the News. I was hoping to potentially start some new regular/irregular columns of interest, particularly with the aim of getting some more involvement from more members providing articles. I am sorry to say that not ONE person contacted me by e-mail with an opinion on the following, so I thought I'd try again.

ONE SIGNIFICANT REQUEST: PLEASE RESPOND to me by e-mail.

I have discussed briefly with a few people the initiation of new recurring, regular or irregular, columns to which a majority of the membership could conceivably contribute. One such column could be something like "Initiating Experiences" or "In the beginning . . ." Contributed articles would be about formative early life experiences that motivated you toward Lepidoptera or nature in general. Other possible columns could be "First Encounters", which would include articles about your first encounter (imagine that) with a long sought after elusive taxon; or "Dangers of Lepping" which would, of course, include those moments in your life where lepping led to some potential or actual injurious event. If you are interested in any/all of these, and especially if you are willing to contribute an article, please contact me by e-mail (jadams@daltonstate.edu). IF I get some significant interest, then I will start a new column. Also, if you have an idea for a DIFFERENT column, just let me know and I'll investigate further. Thanks!

Lepidopterists' Society business of note

Secretary's Report on the Executive Council meeting at Gainesville -- Mike Toliver

The Executive Council met on June 27, 2013, at the Hilton University of Florida Conference Center. The following **voting** members were present: John Calhoun, Charlie Covell (appointed by President Warren to replace Michelle DaCosta), Todd Gilligan, John Shuey, Mike Toliver, Andy Warren, and Wayne Wehling. Unfortunately, this was insufficient attendance to reach the Constitutionally-mandated quorum. President Warren, with the concurrence of those in attendance, decided that we should go ahead and conduct business and obtain the necessary attendance through late arrivees and/or electronically. Full minutes of the meeting are available from the Secretary: miketol@eureka.edu.

The following motions were passed, with the help of absent EC members who voted either in person after the EC meeting or electronically:

The minutes of the 2012 meeting were approved as submitted, 11 – 0 (5 members not voting).

The Bryant Mather award is funded at the level of \$1000.00. The intent of this award is to provide financial assistance to members, particularly students, who are making a presentation at the annual meeting. No one applied for this award last year, but the award is a valuable source of encouragement for our younger members. Therefore, the EC voted to extend the fund for 5 more years, with a vote of 11 – 0 (5 members not voting). It was noted that this award should be more effectively advertised – perhaps on the Society's Facebook and web pages and via multiple reminders in the News.

The editor of the Journal, Keith Summerville, reported that a backlog of papers is building up, and he wanted to expand the last two issues of the Journal to 96 pages each. The EC voted to provide the resources to do that, 11 – 0 (5 members not voting).

Keith Summerville, in a Skype call to the EC, requested direction from the EC as to the direction of the Journal. The EC agreed that it was important to increase the impact factor of the Journal, which will entail increasing the rejection rate for papers submitted to around 40%. As a part of that strategy, and also to increase membership, the EC voted to increase page charges for non-members who wish to publish in the Journal to \$100.00/page, 11 – 0 (5 members not voting).

Treasurer Kelly Richers was unable to attend the meeting, though he had submitted his reports via email. He noted

that it was vitally important for the President, Treasurer and Secretary to attend the annual meeting, and suggested that the Society provide a stipend to these officers of \$600.00 each to enable them to attend. John Shuey suggested that registration costs for these officers be waived as well. The EC voted to provide \$600.00 each to the President, Treasurer and Secretary, and to waive registration fees for these officers, 11 – 0 (5 members not voting).

The topic of book and dvd reviews was addressed by the following motion: "In order to facilitate the timely appearance of book and dvd reviews, all such reviews will be sent to the *News* editor. Consequently, the position of book review editor for the *Journal* is abolished." 11 – 0 (5 members not voting).

The issue of paid advertising in the News was raised. John Shuey pointed out that federal tax regulations, particular the 501c3 part of the tax code, may actually force us to accept paid advertising so we don't appear to give members an unfair advantage by allowing them to advertise for free in the "Marketplace" section of the News. Therefore, the EC voted to accept paid advertising in the News, not to exceed 2 pages per issue, with the vote being 9 in favor, 1 opposed, and 1 abstention (5 members not voting).

And speaking of the tax code, many non-profits are requiring their executive board members to sign statements that these members have read, understood, and agree to abide by the conflict of interest statement in the constitutions or by-laws of the organization. In our Constitution, the conflict of interest statements may be found in Article XIV. Secretary Toliver prepared a statement for the members of the Executive Council which asks them if they have read, understood and agree to abide by these statements, and obtained signatures of all those present. Absent members will receive the statement by email, so that they may return the signed statement to the Secretary.

A number of amendments to the Constitution were presented by Secretary Toliver, primarily intended to bring the Constitution in line with current practice. Those amendments were unanimously supported by the 11 people who voted. Thus, these amendments will appear in the News in a separate article, and will be voted on by the membership when ballots are distributed in November. A two-thirds majority is required in order to implement these proposed amendments (SEE NEXT SECTION).

The Executive Council meeting ended on time at 16:00, 27 June 2013.

Proposed amendments to the Constitution of the Lepidopterists' Society -- Mike Toliver

At the 2013 annual meeting and in subsequent email discussions the Executive Council proposed several amendments to the Constitution to bring it in line with current practice, to allow the editors of the *News* and the *Journal* to be voting members of the Executive Council, and to expedite presentation of future proposed amendments to the Society.

Taking the amendments as they would appear in the Constitution, the first proposed amendment would change the Officers of the Society and membership in the Executive Council. Article IV, sections 1 and two would be altered to read:

"Section 1. The officers of the Society shall consist of a President, President-elect, three Vice-Presidents (not more than one Vice-President shall reside in one country), a Secretary, and a Treasurer.

Section 2. The business and affairs of the Society, not otherwise provided for, shall be controlled by an Executive Council, consisting of the President, President-elect, the most recent available Past President, three Vice-Presidents, the Secretary, the Treasurer, the editors of the *Journal* and the *News*, and nine other members of the Society. Action on all amendments to the By-Laws and all appointments and elections by the Executive Council shall be obtained by a canvass by the Secretary of all members of the Council."

Section 1 would be altered by removing the Secretary-elect and Treasurer-elect from the officers. The rationale for doing so is that persons serving in those offices tend to have long tenures, and when they are replaced, the newly-elected individuals will be installed at the end of the annual meeting following election (see below) so there is no lapse in representation. The Secretary-elect and Treasurer-elect were included in the original because those individuals (along with the President) were to take office a year after their election and making them officers would allow them to understand their roles better by having them involved in Society affairs before they took office. If we change election procedures as specified in the Constitution to align with current practice, that adjustment period no longer becomes necessary.

Section 2 would be altered by removing the Secretary-elect and Treasurer-elect from the Executive Council and adding the editors of the *News* and the *Journal*. The two editors often attend Executive Council meetings and their

input is often crucial in determining policy.

The major amendments occur in Article V. The altered sentence of Section 1 of Article V is proposed as "The President shall in a timely manner appoint a Nominating Committee who shall nominate no more than two candidates for each elective office to be filled for the ensuing year." This amendment removes a definite time limit ("before the first of July") from the section, allowing the President some flexibility in forming the nominating committee.

Section 2 would be altered to read: "**Section 2.** Election of Officers. All officers shall be elected by ballot. The President shall be elected for the term of two years. The Vice Presidents shall be elected for the term of one year and shall be eligible to succeed themselves once. The Secretary and Treasurer shall be elected for the term of three years and shall be eligible to succeed themselves indefinitely. The nine other elective members of the Executive Council shall be elected for the term of three years; three of them shall be replaced each year; these members shall not be eligible to succeed themselves. For each office, the nominee receiving the highest number of ballots shall be elected. In the Vice Presidential elections, the nominee receiving the highest number of ballots of the three elected Vice Presidents shall be designated the First Vice-President. All newly-elected officers shall take office at the Business Meeting of the Annual Meeting following their election; in the event that no Annual Meeting is held in a given year, these officers shall assume office on the anniversary of the last Annual Meeting." The several important changes in this section would:

1. Formalize the election of our President for a term of two years, which allows the elected candidate to "learn the ropes".
2. Designate the Vice Presidential candidate with the highest number of votes as the First Vice President, which becomes significant if the First Vice President has to take over the Presidential duties as described later in the Constitution.
3. Make consistent the assuming of office across all offices. All officers would now take office at the conclusion of the business meeting, which has been our actual practice for years but has been contrary to the Constitution. This amendment makes our Constitution congruent with our practice.

The final proposed amendment would alter Article XII. Amendments, section 1 to read: "**Section 1.** The Constitution may be altered, amended, or repealed by a two-thirds vote of the members voting by mail ballot. Each proposal for amendment must be signed by not less than five members of the Society and submitted to the Secretary who will promptly transmit it to the Editors of the **Journal** and

the *News*. Each proposed amendment shall be published in the first issue of the *News* following the annual meeting". The change is to designate the first issue of the *News* after the annual meeting as the organ by which members are notified of proposed amendments. The present wording requires a three month gap between publication of proposed amendments in either the *News* or the *Journal* and the mailing of ballots in November. That poses real difficulties in the timely presentation of amendments to the membership, as both the *News* and the *Journal* generally come out in September – two months before ballots and proposed amendments are mailed.

All members will receive a copy of these proposed amendments in their dues notice.

Membership Committee News --

Carol A. Butler, Ph.D. Membership Committee Chair,
cabutler@seetheotherside.com

The membership committee met during the Gainesville meeting, and input was received from many Society members, including Al Thurman, Michael Collins, David Wagner, Michael Tolliver, Wayne Wehling, Julian Donahue, Todd Stout, James Adams, and Jonathan Pelham.

Our mandate is to increase membership because our population has been slowly declining, probably due to changes in the environment regarding collecting. There have been many excellent suggestions and good intentions over the past few years about stimulating membership, but implementation generally did not occur.

We tried to set some attainable goals to attract amateurs and professionals, photographers and watchers, as well as collectors and researchers. We also made some recommendations that may be implemented in the future if people are interested in doing the work.

- We are producing an updated paper brochure that will also be available as a pdf suitable for emailing, printing, and posting. Al Thurman provided an attractive mockup and he is ready to develop it with the committee when he returns from Panama and catches up.
- I have been working with Todd Stout to develop a publicity piece that would be distributed by email to publicize the Utah meeting and to attract new members. It would link to the detailed material that Todd has prepared as well as to a membership application. We are being careful to include the elements legally required to distinguish our mailing from spam. I am compiling an extensive list of email addresses of representatives from organizations, academic departments, and anyone else who might be interested in learning more about the Society. *Please send me contact information for your local organizations so I can add them to our list. Michael Collins has promised to put together a list of Lep labs, and we welcome that information too.*

- David Wagner suggested that we increase our online presence to attract young people, and we will be working on that in the coming months. Volunteers needed!
- Michael Collins is enthusiastic about a science fair-type event focused on Lep research projects by high school and college students. Your support and effort is needed to make it happen, so if this idea interests you please let me know that you are available to work on it with us.
- We need volunteers to expand the Outernet project beyond Utah, where Todd is already successful with it.
- Julian Donahue suggested we reinstate two prior programs that had been successful in inducing some lapsed members to rejoin, and the executive committee seemed amenable to that idea and will presumably implement it.

Please contact me if you have any suggestions, objections, or thoughts- I welcome them all. I especially would be pleased to hear from people who would like to take on a specific task.

2013 Lep Soc Awards -- James Adams

Awards presented at this year's meeting of the Lep Soc included the Harry K. Clench awards for students papers (1st place \$500.00, 2nd place \$250.00) and the Alexander B. Klots awards for students posters (1st place \$350.00 and 2nd place \$175.00). At this year's meeting, the winners were as follows. For the Clench awards, first place went to Sandra Schachat for her presentation "The evolution of serial homology: eyespot number evolution across wing surfaces of nymphalid butterflies." Dale Halbritter was awarded second place for his presentation "Integrating historical biogeography and ecology to explain the distribution patterns of pine butterflies (Lepidoptera: Pieridae)." For the Klots awards, first place went to Chris Johns for his poster "Preliminary molecular phylogeny of the endangered Hawaiian leaf mining moth genus *Philodoria*," and second place went to Francesca Ponce for her poster "Molecular phylogeny of *Eumorphia* hawkmoths." Congratulations to the winners!

At the banquet on Saturday night, Jim Miller was awarded the Karl Jordan medal for his splendid past and ongoing work on the notodontid moths. Charles V. Covell, Jr. was awarded the William D. Winter Service award for lengthy and ongoing service to the society. Congratulations to both Jim and Charlie! The society has been graced by these two gentlemen.

And last but not least, incoming president Todd Gilligan was, of course, awarded the "Regal Antennae" by outgoing president Andy Warren. Congratulations Todd!

Photos of the winners are on the following page (123); Chris Johns was not present at the banquet to receive his first place Klots award.

Award Winners at the 2013 Lepidopterists' Society meeting in Gainesville, FL, June (see page 121 for accompanying text)
(photos by James Adams unless otherwise specified)



Sandra Schachat, Harry K. Clench presentation award first place winner, pictured with President Andy Warren.



Dale Halbritter, Harry K. Clench presentation award second place winner, pictured with President Andy Warren.



Francesca Ponce, Alexander B. Klots poster award second place winner, pictured with President Andy Warren.



Charlie V. Covell, Jr., William D. Winter award winner, pictured with President Andy Warren.



James (Jim) S. Miller, Karl Jordan Medal award winner, pictured with President Andy Warren.



Todd Gilligan, inheriting the presidential Regal Antennae from Andy Warren. (Photo by Mike Tolliver)

Probable rediscovery of *Ethmia monachella* Busck (Gelechioidea) from a photograph on BugGuide.net

Christopher C. Grinter¹ and Matthew S. Van Den Broeke²

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Ethmia monachella Busck, 1910 was described from a single male specimen with a label reading "Boulder, Colorado (S. A. Rohwer), March 7, 1908", now deposited in the National Museum of Natural History (Figure 1). To date, not a single additional specimen has been found. Efforts over the years by Paul Opler and Jerry Powell in the vicinity of Boulder have failed to turn up any individuals (Opler pers. comm; Powell pers. comm.). The apparent disappearance of this moth likely indicates the species is active at a time when most potential observers are not, possibly in the daytime and possibly in the early spring or late fall/winter. Powell (1973) placed *monachella* in the *albitogata* genus-group; moths in the *albitogata*-group fly in the early spring, and so a sighting date of November is unusual given the large differences in genitalia between this and the fall-flying *macelhosiella*-group (Powell pers. comm; male genitalia of *monachella*, *albitogata*, and *macelhosiella* are figured in Barnes and Busck 1920).

Meteorological data from the week prior to the March 1908 sighting indicates a strong low-pressure system tracking across southern Colorado (Garriott 1908). This system was located over southeastern Colorado on the evening of 5 March, then traveled toward the Ohio Valley, where it produced heavy rainfall. March was also noted to be 6° - 8° F warmer than average from the Atlantic coast to the Rocky Mountains (Day 1908), so the collected individual may have been flying earlier than in a year with more normal temperatures.

While browsing BugGuide.net in April of this year, CG stumbled across an image of a moth identified as *Ethmia monachella* by Terry Harrison in 2009. The striking pattern of the moth combined with the odd time of year makes Harrison's identification very likely correct, in which case this photograph would represent the second documented sighting of the species to date. The moth was photographed (Figures 2, 3) at a porch light around 7:30 AM on 20 November 2009 by MVDB in Norman, Oklahoma (35.184444° N, 97.451944° W). Two individuals were observed and one was photographed, but neither was collected. One individual was very flighty, while the other was wedged under a piece of siding. The temperature two mornings prior had dropped into the upper 20's, though on the morning of observation, the low temperature was around 50° F (MVDB pers. obs.).

A specimen needs to be obtained to confirm the identity, and continued existence, of this surprisingly rare moth. With

this note we hope to encourage anyone near grasslands in the west to watch their porch lights or, better still, to sweep-net and place traps over the winter months. We suspect *Ethmia monachella* to be associated with prairie remnants. The exceptional rarity of this moth may be due in part to a relationship with vanishing habitats. Most moths in the genus *Ethmia* are often host-specific on Boraginaceae or Hydrophyllaceae (Powell 1973). Plants in the genera *Lithospermum*, *Hackelia* and *Lappula* may be likely candidates for host plants, and are commonly utilized amongst other *Ethmia* species (Powell 1973). Any trapping or sweep-netting efforts should be concentrated around these plants. MVDB's porch light was a few blocks from high-quality prairie remnants, including potential host plants in the genus *Lithospermum*, and these moths may have strayed from these areas. Powell (1973, p.73) predicts, "...when rediscovered it will prove to be a day flier which has escaped notice owing to an early spring flight at any given locality". The November emergence in Oklahoma may have been due in part to the above-average temperature that week, but with only two data points it is impossible at this point to accurately predict the behavior of this moth.

Acknowledgements

We are grateful to Jerry Powell (UC Berkeley) and Paul Opler (CSU Fort Collins) for notes regarding this species and their attempts to relocate it. This discovery would have been impossible without the spectacular website www.bugguide.net and efforts by volunteers and experts online. And thank you to David Bettman (Denver Museum of Nature & Science) for a very helpful review, comments, and suggestions.

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- Busck, A. 1910. Two new American species of the genus *Ethmia* (Lepidoptera, Ethmiidae). *Proceedings of the Entomological Society of Washington* 12 (1): 53–54.
- Day, P. C., 1908. The weather of the month. *Monthly Weather Review* 36 (3): 74–76.
- Garriott, E. B., 1908. Forecasts and warnings. *Monthly Weather Review* 36 (3): 51–53.
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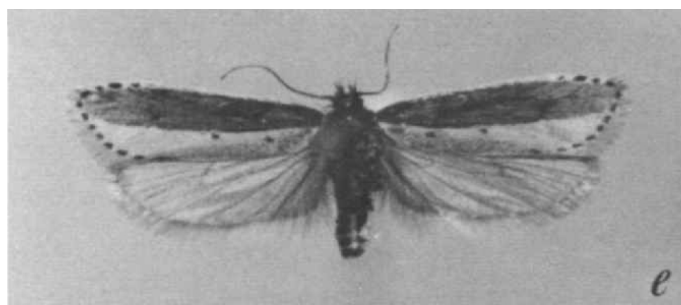


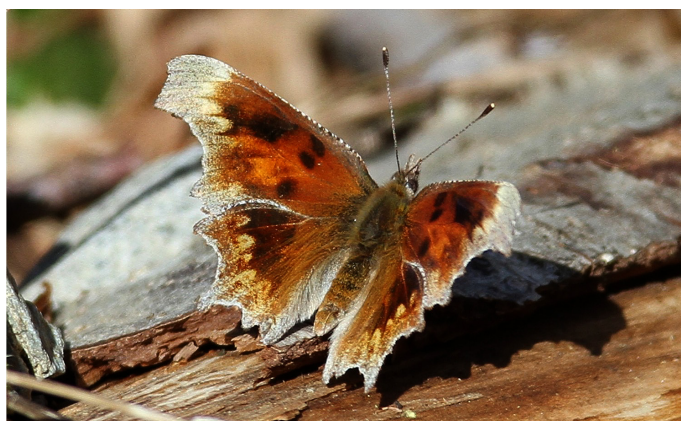
Figure 1. Holotype male, from Powell 1973



Figure 2. Habitus lateral. *Ethmia monachella*, 20 November 2009, MVDB.



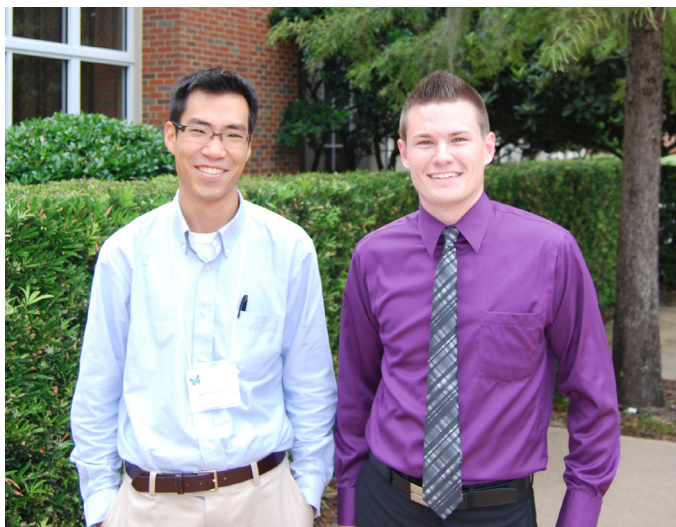
Figure 3. Habitus dorsal. *Ethmia monachella*, 20 November 2009, MVDB.



Polygonia zephyrus aberrant, from King Co., WA, 5 miles up Beckler Rd. off of U.S. 2 along the Beckler River, March 30, 2013. (photo by Nick Dean)

Photos from the 2013 meeting of the Lepidopterists' Society, Southern Lep Soc and Assoc. for Tropical Lep, Gainesville

Photos by James Adams, unless otherwise specified



Akito Kawahara and Craig Segebarth



David Bettman, David Wagner and Mark Scriber



Charlie Mitter and Jim Hayden



Todd Stout and Todd Gilligan



Ed Knudson and Charlie Bordelon



Wayne Whaley and Wayne Wehling (photo by Mike Toliver)



Jim Taylor, Leroy Koehn, and Richard Brown



Sally Warren, Louise Fall, and Debbie Matthews



John Snyder (photo by Mike Toliver)



Jeff Shapiro, Sandy Koi, Bill Russell and Irving Finkelstein



Hugh McGuinness and Jim Miller



Ian Kitching (photo by Charlie Covell, Jr.)



Kirby and Stacie Wolfe



Hemileucalogists: Michael Collins, Rig Peigler, Dan Rubinoff, and Kirby Wolfe (photo by Trevor Steele)



Jon Pelham, Debbie Matthews, Megan and David McCarty, and Greg Pohl



Bill McGuire



Eric and Pat Metzler

A selection of Neotropical skippers and butterflies -- 2

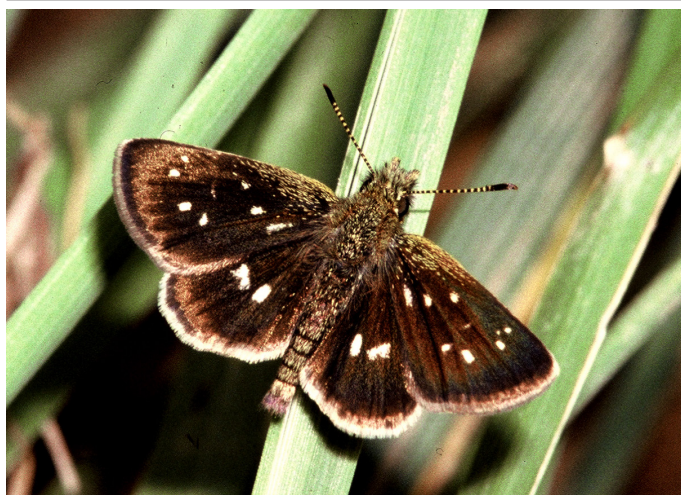
George O. Krizek

2111 Bancroft Place NW, Washington, D.C. 20008

Presented here are 11 photographs of living species of Neotropical butterflies and skippers (and a moth) from various South and Central American areas. This is a follow up to his article of the same name in the Spring 2013 issue of the News (Vol. 53, Number 1, pages 10-15). George indicated to me (the editor) that these additional shots are also of species either rarely pictured alive, or rarely captured in flight. Be looking for another in this series, a much larger set of pictures of lycaenids and riodinids by George in the upcoming winter issue. Enjoy!!



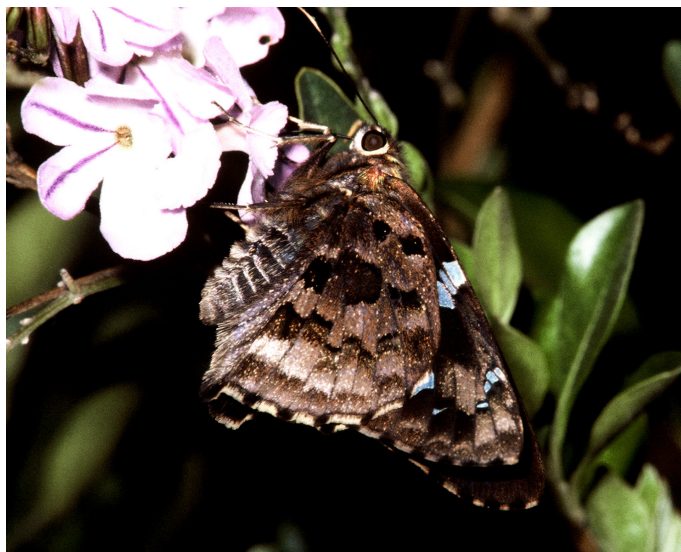
Hesperiidae: *Calliades zeutus*, June 24, 2003
Antigua, Guatemala



Hesperiidae: *Piruna aea*, August 5, 1999
Patagonia, Arizona



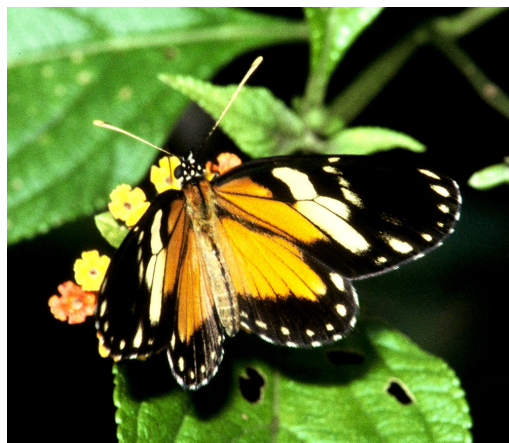
Hesperiidae: *Zariaspes mytheus*, February 18, 1988, Puerto Vallarta, Mexico



Hesperiidae: *Codatractus arizonensis*, August 9, 1999, Bisbee, Arizona



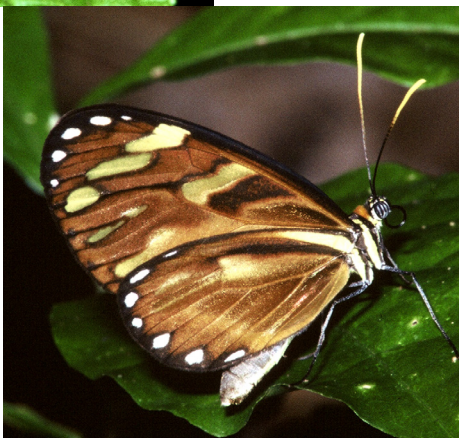
Hesperiidae: *Polites vibex*, October 14, 2002
Winter Haven, Florida



Nymphalidae: *Eresia quintilla*, May 6, 1990
Tinalandia, Ecuador



Nymphalidae: *Pierella rhea*, April 19, 1992
Rondonia, Brasil



Nymphalidae: *Ithomia heraldica*, May 22, 1985
Col dos Rios, Costa Rica



Nymphalidae: *Caligo memnon*, May 11, 2011
Sarchi, Costa Rica



Nymphalidae: *Euptychia labe*,
May 11, 1990
Tinalandia,
Ecuador



Erebidae (Arctiinae): *Hyalurga* sp



Nymphalidae:
Cithaerias menander,
May 19, 1990,
Tinalandia, Ecuador

Membership

The Lepidopterists' Society is open to membership from anyone interested in any aspect of lepidopterology. The only criterion for membership is that you appreciate butterflies and/or moths! To become a member, please send full dues for the current year, together with your current mailing address and a note about your particular areas of interest in Lepidoptera, to:

Kelly Richers, Treasurer
The Lepidopterists' Society
9417 Carvalho Court
Bakersfield, CA 93311

Dues Rate

Active (regular)	\$ 45.00
Affiliate (same address)	10.00
Student	20.00
Sustaining	60.00
(outside U.S., for above add 5\$ for Mexico/Canada, and 10\$ elsewhere)	
Life	1800.00
Institutional Subscription	60.00
Air Mail Postage, News	15.00
(\$30.00 outside North America)	

Students must send proof of enrollment. Please add \$5.00 to your dues if you live in Canada/Mexico, \$10.00 for any other country outside the U.S. to cover additional mailing costs. Remittances must be in U.S. dollars, payable to "The Lepidopterists' Society". All members receive the **Journal** and the **News** (each published quarterly). Supplements included in the **News** are the Membership Directory, published in even-numbered years, and the Season Summary, published annually. Additional information on membership and other aspects of the Society can be obtained from the Secretary (see address inside back cover).

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Please send permanent changes of address, telephone numbers, areas of interest, or e-mail addresses to:

Julian P. Donahue, Assistant Secretary, The Lepidopterists' Society
735 Rome Drive, Los Angeles, CA 90065-4040. Phone (323) 227-1285, FAX (323) 227-0595,
Julian@lepsoc.net

Our Mailing List?

Contact Julian Donahue for information on mailing list rental.

Missed or Defective Issue?

Requests for missed or defective issues should be directed to: Julian Donahue, Asst. Treasurer, 735 Rome Drive, Los Angeles, CA 90065-4040, (323) 227-1285, **julian@lepsoc.net**. Please be certain that you've really missed an issue by waiting for a subsequent issue to arrive.

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Requests for Memoirs of the Society should be sent to Publications Manager, Ken Bliss (address opposite).

Submissions of potential new Memoirs should be sent to:

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Submission Guidelines for the News

Submissions are always welcome! Preference is given to articles written for a non-technical but knowledgeable audience, illustrated and succinct (under 1,000 words, but will take larger). Please submit in one of the following formats (in order of preference):

1. Electronically transmitted file and graphics—in some acceptable format—via e-mail.
2. Article (and graphics) on diskette, CD or thumb drive in any of the popular formats/platforms. Indicate what format(s) your disk/article/graphics are in, and call or email if in doubt. Include printed hardcopies of both articles and graphics. The new InDesign software can handle most common wordprocessing software and numerous photo/graphics software. Media will be returned on request.
3. Color and B+W graphics should be good quality photos suitable for scanning or—preferably—electronic files in TIFF or JPEG format at least 1200 x 1500 pixels for interior use, 1800 x 2100 for covers.
4. Typed copy, double-spaced suitable for scanning and optical character recognition. Original artwork/maps should be line drawings in pen and ink or good, clean photocopies. Color originals are preferred.

Submission Deadlines

Material for Volume 55 must reach the Editor by the following dates:

Issue	Date Due
55 4 Winter	Nov. 15, 2013
56 1 Spring	Feb. 15, 2014
2 Summer	May 20, 2014
3 Fall	Aug. 15, 2014

Reports for Supplement S1, the Season Summary, must reach the respective Zone Coordinator (see most recent Season Summary for your Zone) by Dec. 31. See inside back cover (facing page) for Zone Coordinator information.

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**Attendees at the joint meeting of the Lepidopterists' Society, the Southern Lep Soc and the Association for Tropical Lepidoptera
June 27- 29, 2013, Gainesville, Florida**