Volume 56, Number 2 Summer 2014

NEWS OF THE LEPIDOPTERISTS' SOCIETY

www.lepsoc.org

Inside:

NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 56, Number 2
Summer 2014

The **News of The Lepidopterists' Society** (ISSN 0091-1348) is published quarterly by The Lepidopterists' Society, c/o 735 Rome Drive, Los Angeles, CA 90065-4040, and includes one or two supplements each year. The **Season Summary** is published every year as Supplement S1 and is mailed with issue 1 of the News. In even numbered years a complete **Membership Directory** is published as Supplement S2 and is mailed with issue 4 of that volume of the News. Please see the inside back cover for instructions regarding subscriptions, submissions to, and deadline dates for, the News.

Periodicals Postage paid at Los Angeles, CA and at additional mailing office (Lawrence, KS).

POSTMASTER: Please send address changes to **News of The Lepidopterists' Society,** c/o 735 Rome Drive, Los Angeles, CA 90065-4040.

www.lepsoc.org

Contents

Issue Date: May 27, 2014

ISSN 0091-1348
Editor: James K. Adams

Front Cover:

Pupa of Baltimore Checkerspot (*Euphydryas phaeton*), by George O. Krizek. June 14, 2006, Catoctin Mountains, Maryland. Within an hour after this picture was taken, the pupa had been devoured by some unseen predator. (See the associated article on page 92.)

Methods for fast moth surveys and notes on species encountered in Vietnam

Andrei Sourakov

McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida
Gainesville, FL, 32611 **asourakov@flmnh.ufl.edu**

During a short trip to Vietnam last year, I discovered a couple of things about moth collecting that seem to improve the efficiency of the process, the overall goal of which is to achieve maximum taxonomic coverage in the shortest amount of time and to produce a taxonomic list. Since such objectives are common for a person venturing on a mothing trip, I thought I would share a few of my observations concerning the collecting and processing of material. Simultaneously, I am unable to resist the temptation to figure some of the beautiful and peculiar species encountered during the trip (Plates 1-5) and to share a couple of observations on their biology.

Notes on collecting

When collecting moths with the goal of having them all processed for fast identification and doing so without field assistants, black lighting (vs. light traps) works best. The combination of a mercury vapor bulb and a 12 V tube black light (Plate 1A) seems to maximize the result. The black light, which hangs close to the sheet, keeps the moths from flying away, while the mercury vapor lamp draws moths in from further distances. Collecting should begin before dark and continue into the early hours of the morning: many species come during very specific hours and some favor dawn or dusk. After midnight, I set my alarm every two hours to check the sheets. Having several such set ups facing different directions or placed in different habitats proves very advantageous as the fauna seems to vary depending on the location of the light.

Leave the bulky and heavy glass killing jars at home! In the past, I used to pack 20 of them, using up half of the airline luggage allowance. What you need is about 30-50 of the 15 and 50 mL Corning centrifuge tubes (Plate 1B). Stuff some cotton into each and charge them as needed with ethyl acetate, which can be obtained in most countries. When collecting, do not put more than one moth per tube. Once they stop moving, dump them into one of the stationary jars (the ones that have plaster on their lid – BioQuip sells them, but making your own is easy, and you can use plastic jars which are lighter). It is crucial to keep the stationary jars constantly charged with ethyl acetate: you don't want any moths to wake up and damage all your night's catch. Smaller tubes are especially useful for collecting micros (they less likely to escape from the narrow opening of 15 ml tubes). Besides, having balanced numbers of small and large tubes ensures that you will not neglect collecting micros. Boring as they may seem to some, micros are where it's at in terms of new species.

Notes on processing material

In the morning, moths can be removed with forceps from stationary jars and layered on cotton that has been prepared inside folded paper in advance (Plate 1C). When a layer is filled, place a proportionally-sized sheet of smooth tracing paper on top, to minimize the loss of scales. The layers can be quickly dried (best), or frozen (if conditions allow). My preference is to have layers of manageable size (in Vietnam, I used boxes 6x6x2 inches; you can fit 8-10 layers in each). The reasons for smaller layers: if you change localities, you would not have to mix localities on a single layer. Handling smaller layers is easier, and you can sort night's catch by family, so that you can later process them all at once or send the whole layer to a specialist. Finally, you can take a single photo of high enough resolution, so that, on a computer screen, you can clearly see each moth, including micros (eg. Plate 1C).

This brings us to the next step: photos of the layers should be taken as they are made, and the layers should be marked on the outside with the corresponding image number. Digital cameras assign these numbers as you take photos, and when you download the photos, the numbers will become part of the files' names. Note on each box the numbers of layers it contains: if you return from a trip with a dozen or two of such boxes, you do not want to go searching through them looking for a specific layer.

What follows next is simple: create an image gallery of your photos when you get home (or even earlier), post it on the Internet, and e-mail all your moth friends asking for identifications. If someone wants to borrow a specific moth for further research, they can easily communicate with you using images and file numbers, and the desired moths can be located swiftly, then pinned, delegged for barcoding, dissected, mailed, etc. Several advantages to this method over field pinning: (1) it saves valuable time in the field; (2) moth photographs are much better for identification and it is easier to spread them afterwards because in these layers, their wings are arranged to lie flatter than if they were field-pinned; (3) moths are not as subject to damage during transport, even if they are packed in your suitcase; and (4) they certainly take less space in your luggage. Compared to another common method, stuffing each moth in an envelope,

Plate 1. Moths in Vietnam: (A) Collecting setup with two lights; (B) Killing jars and tubes used in collecting; (B) Layered moths can be photographed right away and then stored dry or frozen. Preliminary identifications can be made by sending these photos to specialists. (See text); (D-G) *Lyssa zampa* (Uraniidae): (F) and (G) point out asymmetrical markings on the wings resulting from difference in temperature during wing development. (photos © Andrei Sourakov).

this method also allows immediate access to the information and images, without having to first spread specimens.

There is one disadvantage to this method that needs to be taken into account: while field-pinned moths will dry in a few days (provided there is air circulation and the humidity is reasonable), the layers must be spread out to dry. Alternatively, especially on short trips, boxes containing layers can be placed in one-gallon Ziploc bags with a chemical conversant (another reason for having many small boxes/layers vs. fewer large ones). Alternatively, Silica gel or a small portable oven can be used to dry specimens more quickly.

The methods described above work best for moths that are smaller than one-two inches in size. Larger moths can be injected with ethanol or ammonia and papered, or simply photographed live. Though the larger moths are better known, collecting voucher specimens of each species is important, as many cryptic species are being discovered with the use of molecular techniques and detailed morphological studies.

Asymmetry of *Lyssa zampa*

In one of the previous issues of the News, I described the biting midges that attacked the swallowtail moth, *Lyssa zampa* (Uraniidae), at the collecting light (Sourakov, 2013). These moths were the largest and most numerous visitors to the collecting sheets. Additionally, it has another peculiar quality – asymmetry - which, I believe, is heretofore unrecorded for this species, even though it is known for its relative, *Chrysiridia madagascariensis*, found in Madagascar (Catala 1940). Note the dark markings on the fore and hind wings of this species Plate 1F, G) and you will see that they are of different shapes and quantities on the opposing sides. Just like in *Chrysiridia madagascariensi*s, this is, no doubt, a result of pupae being naturally subjected to different temperature regimes on the opposing sides during wing development.

Stathmopoda moths mimicking spiders: are these wolves in wolf's clothing?

Spider mimicry has been described in moths before, with mimicry extending not only to pattern but also to behavior. For instance, Rota and Wagner (2009) showed how mimicry works for a metalmark moth, whose pattern, posture, and behavior allow it to escape predation by the jumping spider that it mimics. A crambid moth from Thailand (Solis et al. 2005), bears a pattern on its wings that creates an illusion of spider legs, as can be seen on the color photo of this moth recently taken in China (Horstman 2013).

The *Stathmopoda* moths in the family Oecophoridae have a very distinctive resting posture and heavily bristled legs. When in Vietnam, I noticed one of these moths that came to the collecting light, and, at first, I mistook it for a spider. In its resting position (Plate 4C, D), its metathoracic legs are significantly longer and more bristly than the other two pairs, and extend dorso-laterally. The illusion is aided by a large white patch on the thorax and by splayed antennae and palpi that make it seem as if there are additional pairs of legs.

Acording to Elgar et al (1983), *Stathmopoda* can specialize in preying on spider eggs. The species that was noted to do so, *Stathmopoda arachnophthora*, oviposit on to the egg sac of the spider *Cyrtophora hirta*, and the larvae burrow through the silk and feed on the spider eggs (Austin 1977). Instead of repelling birds and other potential vertebrate predators, as one might suppose when looking at these spider-like moths, perhaps its deceptive coloration and posture are directed at the spiders guarding the egg sacks. This mimicry may have arisen in the Australian region, where there are many spiders of the genus *Arkys* that are similar to *Stathmopoda* in size, posture, and pattern, and where there are many species of both spiders and moths of these genera.

Of course, these are pure speculations on my part, but hopefully someone with access to these moths and spiders and the time for such an investigation can explore these hypotheses.

REFERENCES CITED

Austin, A. D. 1985. The function of spider egg sacs in relation to parasitoids and predators, with special reference to the " Australian fauna, Journal of Natural History. 19(2): 359-376.

Bänziger, H. 1988. The heaviest tear drinkers: ecology and systematics of new and unusual notodontid moths. Natural History Bulletin of the Siam Society. 36: 17-53.

Catala, R. 1940. Variations expérimentales de Chrysiridia madagascariensis Less. Doctoral Thesis, Université de Paris: Mesnil, 262 p.

Elgar, M. A., L. Pope and I. Williamson. 1983, Observations on the spatial distribution and natural history of *Cyrtophora hirta* (L. Koch) (Araneae: Araneidae) in Queensland, Australia. Bulletin of the British Arachnological Society. 6: 83-87.

Horstman, J. 2013. Lygodium Spider Moth (*Siamusotima aranea*, Musotiminae, Crambidae). **http://www.flickr.com/photos/itchydogimages/8537550359** (Last accessed 5-23-2013)

Rota, J. and D. L. Wagner. 2006. Predator mimicry: metalmark moths mimic their jumping spider predators. PLoS One. 1:e45.

Solis, M. A., S-H. Yen, J. H. Goolsby, T. Wright, R. Pemberton, A. Winotai, U. Chattrukul, A. Thagong, and S. Rimbut. 2005. *Siamusotima aranea*, a New Stem-Boring Musotimine (Lepidoptera: Crambidae) from Thailand Feeding on *Lygodium flexuosum* (Schizaeaceae). *Annals of the Entomological Society of America* 98(6): 887-895.

Sourakov, A. 2013. The Tropical Swallowtail Moth, *Lyssa zampa* (Uraniidae) – another victim of lymph-thirsty parasites in Vietnam. News of Lepidopterists' Society 55(3): 106-107.

All photos by Andrei Sourakov.

Plate 2. Moths in Vietnam: (A-B) nr. Hypodoxa sp. (C-D) *Tasta* sp. (Geometridae: Ennominae: Baptini); (E) A possible example of satyric mimicry? *Macrocilix maia* (Drepanidae) exhibiting fly images on its wings; (F) *Agathia* nr. *quinaria* (Geometridae: Geometrinae); (G) nr. *Protuliocnemis* sp. (Geometridae: Geometrinae). (photos © Andrei Sourakov).

Plate 3. Moths in Vietnam: (A-B) *Phyllodes eyndhovii* (Erebidae); (C-D) *Netria* sp. (Notodontidae); (E-F) *Fascellina* nr. *plagiata* (Geometridae: Ennominae). (photos © Andrei Sourakov).

Plate 4. Moths in Vietnam: (A) *Lyxa* nr. *subolivalis* (Pyralidae); (B) Unidentified tortricid; (C-E) Spider-like *Stathmopoda* sp. (Oecophoridae); some members of this genus are predators of spider eggs (see text); (F) Gracillarioidea sp. (G) nr. *Titulcia* sp. (Nolidae: Chloephorinae: Ariolicini); (H) Adelidae sp.; (I) *Tyana* nr. *marina* (Nolidae: Chloephorinae: Chloephorini). (photos © Andrei Sourakov).

Plate 5. Moths in Vietnam: (A) *Amata* sp.; (B) Lymantriine sp. (Erebidae); (C) *Lyclene* sp., (Lithosiini, Nudariina); (D) *Polythlipta* sp., (Crambidae: Spilomelinae); (E) A lithosiine moth (left) resembles a cockroach (right); (F) An erebid moth that in its behavior and appearance resembles a roach; (G) A limacodid larva ; (H) *Paralebeda* sp. (Lasiocampidae); (I-J) *Tarsolepis* sp. (Notodontidae) – the tear-drinking moth exhibits scented hairpencils (more on their fascinating lachryphagous behavior in Bänziger 1988). (photos © Andrei Sourakov).

Uncommon Clearwing Moths (Sesiidae) from southeast Arizona

William H. Taft, Jr.[1] and Ned Schaper[2]

[1]Research Contributor/Albert J. Cook Research/Michigan State University, 1430 W. Locher Road, Dewitt, MI 48820
billandgussie@earthlink.net
[2]PO 1684 Tucson, AZ 85702 **bevel@matbevel.com**

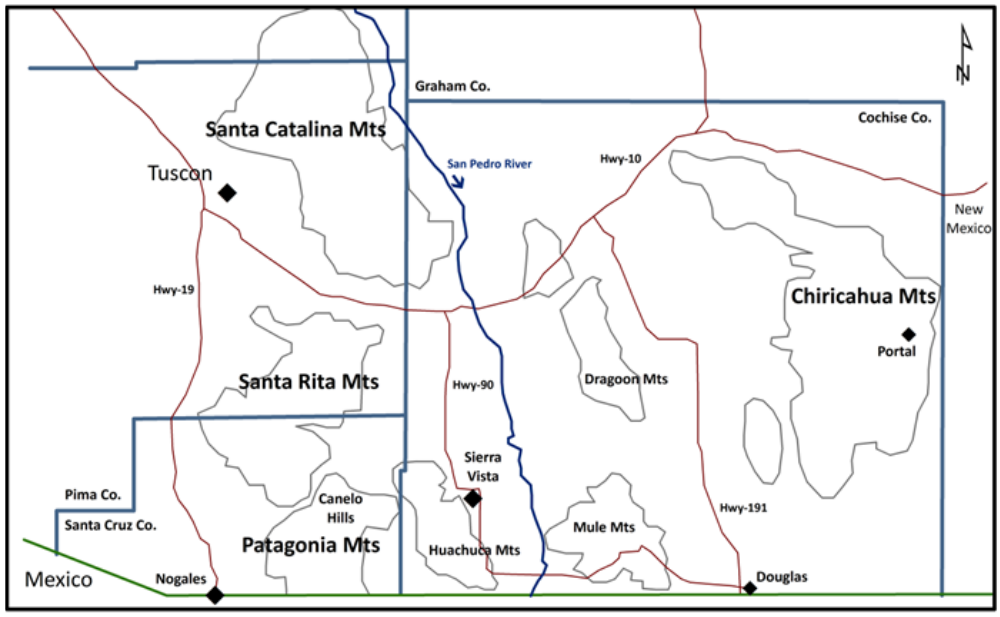


Figure 1. Reference map of Southeastern Arizona Mountain Ranges

Additional Key Words: *Sesiidae*, pheromones, Arizona

Eichlin and Duckworth (1988) noted that adult Sesiid moths are generally poorly represented in collections. Many of the species from the southwestern United States were, until recently, known from very few specimens. Little was known of their natural history and good images of many species were sparse or lacking in the literature. The relatively recent development and use of synthetic sex attractants (Sharp & Eichlin 1979, Szöcs, G. et al 1985, Winter 2000) have markedly facilitated the discovery of new species of sesiids (Duckworth & Eichlin 1977a, 1977b, Nielsen et al. 1975, Snow et al. 1989, Eichlin & Taft 1988) and the determination of species' geographic distribution (Brown & Mizell 1993, Eichlin 1992, Knudson & Bordelon 2002). In an effort to add to our knowledge of these moths, we targeted the uncommon and poorly represented sesiid species of the southwestern United States, using commercial and custom pheromone lures (Alpha scents and Great Lakes IPM in the United States and Pherotech in the Netherlands).

During the 2006 – 2011 (April - November) field seasons we collected sesiids in numerous locations throughout Pima, Santa Cruz, and Cochise Counties of southeastern Arizona. We used Multipher®#1 traps with no-pest® strips (vapona) as our killing agent and a variety of synthetic pheromone baits. Collection took place primarily in six mountain ranges: Canelo Hills, Chiricahua, Huachuca, Patagonia, Santa Catalina, and Santa Rita, at elevations from 1500 to 6500 feet (Figure 1). By concentrating our efforts in these areas we attempted to locate and collect the rarely collected clearwing moths in the genera *Alcathoe, Carmenta, Melittia, Osminia,* and *Sophona*. Most of the captured specimens were deposited in collections throughout the United States and Europe, as well as submitted for sesiid studies using Barcode DNA being conducted by Dr. Franz Pühringer of Austria. In addition, we also submitted images, geographic and natural history information of these rarely collected species to both the Bugguide.net and Moth Photographers websites.

We collected a total of 28 clearwing species in Pima, Santa Cruz, and Cochise counties over the six-year monitoring period (Table 1). Although many of the North American sesi-

Table 1. List of Sesiid species captured during our Arizona monitoring (2006-2011).

Alcathoe pepsioides	*Melittia snowii*
Carmenta auritincta	*Osminia donahueorum*
Carmenta apache	*Osminia rubricornis*
Carmenta englehardti	*Palmia praecedens*
Carmenta mimuli	*Paranthrene dollii*
Carmenta pallene	*Paranthrene fenestrata*
Carmenta prosopis	*Paranthrene robinae*
Carmenta queri	*Penstemonia clarkei*
Carmenta rubricincta	*Penstemonia edwardsii*
Carmenta tecta	*Sophona snellingi*
Carmenta wellerae	*Sophona greenfieldi*
Hymenoclea palmii	*Synanthedon exitiosa*
Melittia gloriosa	*Zenodoxus rubens*
Melittia grandis	*Zenodoxus palmii*

id species in the genera *Alcathoe*, *Carmenta*, *Melittia*, *Osminia,* and *Sophona* were described originally by Beutenmüller (1901), Engelhardt (1949) and Eichlin & Duckworth (1988), they have been poorly represented in museum collections. Life history information including the composition of their sexual pheromones, geographic distribution, flight periods, and host plant use are generally absent.

The following twelve clearwing species are discussed: *Alcathoe pepsioides* Engelhardt, *Carmenta apache* Engelhardt, *C. auritincta* (Engelhardt), *C. engelhardti* Duckworth & Eichlin, *C. pallene* (Druce), *C. prosopis* Duckworth & Eichlin, *C. rubricincta* (Beutenmüller), *C. wellerae* Duckworth & Eichlin, *Melittia gloriosa* Hy. Edwards, *Osminia rubricornis* (Hy. Edwards), *Sophona snellingi* Eichlin, and *S. greenfieldi* Eichlin. The pheromones or pheromone blends found to be most attractive for these twelve species are presented in Table 2.

Alcathoe pepsioides. On August 9, 2007 two males of this species were collected above Silver Creek in the Chiricahua Mountains of extreme southeastern Arizona near Portal using a single trap baited with a combination of Peachtree & Lesser Peachtree borer (equivalent to ZZA/EZA 50:50). The trap was located approximately 200 meters up slope of the edge of the riparian corridor where the larval host plant (*Clematis* sp.) was most likely to be present. Two additional males were collected near a patch of *Clematis ligusticifolia,* adjacent to the Silver Creek channel on August 10, 2007. These are the only specimens collected over the 6-year monitoring period.

***Carmenta apache*.** During 2006-2007 field seasons, 4 specimens of *C. apache* were collected in the Santa Rita Mountains along A-83 highway. These specimens were collected using a general pheromone lure manufactured by Scentry Biologicals-Lure 03 that is primarily composed of

Table 2. Preferred chemical attractant, flight dates of selected Sesiid species, and specific chemical composition of each blend.

Species	Preferred Pheromone Blends	Flight dates
Alcathoe pepsioides	ZZA/EZA 50:50	August 9-10
Carmenta apache	Oak stump borer lure	August 3 - September 9
Carmenta auritincta	Grape root borer lure	August 11 - September 21
Carmenta engelhardti	ZZA/EZA/ZZOH 20:1:3	July 30 - August 22
Carmenta pallene	ZZA	August 21 - October 19
Carmenta prosopis	Holland 3	July 20 [@]
Carmenta rubricincta	P. simulans lure	August 20 [@]
Carmenta wellerae	Osminia lure	August 3 - October 1
Melittia gloriosa	Holland 2	August 3 - October 20
Osminia rubricornis	Osminia lure	August 19 - September 3
Sophona snellingi	EZA, EZA+EZ 3,13 OH	July 25 - August 30
Sophona greenfieldi	Sequoiae Borer - ZZOH	July 26 - September 2

[@]*first pheromone capture*

Peachtree Borer	(Z, Z)-3,13 ODDA
Lesser Peachtree	(E, Z)-3,13 ODDA
Grape Root Borer	(E, Z)-2,13 A/(Z, Z)-3,13 A 99:1
"*simulans*" blend*	(Z, Z)-3,13 A/(E, Z)-2,13 A 50:50
"*asilipennis*" blend	(E, Z)-2,13 ODDA/(Z) -13 ODA 96:4
"*Osminia*" blend*	(E, Z)-2,13 OH/(Z, Z)-3,13 A 99:1
"Holland ZZA" **	(Z, Z)-3,13 ODDA (94%), ZE 3,13A (2.0%), EZ 3,13 A (1.6%), EE 3,13 A (0.6%), EZ 2,13A (1.0%), (Z) -13 ODA (0.8%)
"Holland 2" **	(E, Z)-2,13 OH (94%), (E, Z)-2,13 ODDA (2 %), (Z, Z)-3,13 A (2%), (Z) -13 ODA (2%)
"Holland 3" **	(E, Z)-3,13 ODDA (95%) ZE 3,13A (2.2%), ZZ 3,13 A (1.2%), EE 3,13 A (0.6%), EZ 2,13A (1.0%)
Sequoia borer lure	(Z, Z)-3,13 OH

* Lures provided by Alpha Scents (New York); * *Custom lures made by Pherotech in the Netherlands.

(Z, Z) 3,13 ODDA. In 2008, lures treated with 1 mg/septa of (E, Z)-2,13 ODDA/(Z) -13 ODA 96:4 ("*asilipennis* blend") in the Patagonia Mountains, south of the Harshaw mining location and north of Tucson in Ventana Canyon, routinely captured 1 to 2 specimens per day during the monsoons.

***Carmenta auritincta*.** Engelhardt (1949) reported that most of the known specimens of *C. auritincta* came from the Baboquivari Mountains, Pima County, collected August 15-30, 1923 by O.C. Poling. We found this species to be common in the Patagonia Mountains at elevations of 4500 to 5000 feet. The grape root borer lure (EZ-2,13 ODDA/ZZA 99:1) is the preferred lure for this species. The primary flight period is August and this species is strongly attracted to the pheromone starting at approximately 16:00 hours. Observation indicated that the MultipherÒ pheromone traps (like most passive flight traps) only capture a fraction of the moths that are attracted to the lures. During the peak flight period, it was common to capture 10-15 specimens/trap/day. Engelhardt (1949) strongly suspected that this small species is a root borer of the Compositae (Sunflower family).

***Carmenta engelhardti*.** We targeted this species along Harshaw Creek drainage, south of the town of Patagonia and at the base of Garden Canyon (Fort Huachuca-Sierra Vista) during 2006 and 2007. MultipherÒ #1 and Malaise traps were baited with pheromone blends reported to be effective by Eichlin and Duckworth (1988) near streams that contained stands of *Brickellia* sp. (Asteraceae). Males were collected in small numbers (<4/day) over the reported flight period (Table 1). Use of an aerial net during the mid-morning hours (~09:30-11:00h) proved to be another productive method to collect adults resting on *Brickellia* sp. growing under stands of oaks adjacent to Harshaw Creek.

***Carmenta pallene*.** This rarely collected species was described from Tabasco, Mexico. The only known USA records are several males collected by M.S. Wasbauer using flight traps baited with ZZ 3,13 A at Portal, Arizona in August, 1978 (Eichlin & Duckworth, 1988). We captured this species using in ZZA lures in Patagonia (Santa Cruz Co.- Sept.) and along the Gardner Canyon Road in late September 2010. Although were able to extend the known range of this species in southern Arizona, captures were so sporadic over the 6 year period that little life history information was obtained.

Carmenta prosopis. As the name implies this species is associated with Prosopis spp. (mesquites) and was first described from Fort Grant, Arizona (Eichlin & Duckworth 1988). They indicated that the life cycle of this moth has yet to be properly documented. Most specimens in museums have been reared from small woody galls on stems of mesquite or mimosa species. On July 20, 2010 we collected one male in Cochise County just east of the Coronado National Memorial property line using a "Holland 3" (5 isomer blend). This is the first capture that we are aware of using synthetic pheromones.

***Carmenta rubricincta*.** A female of this rarely collected species was first described from the old Palmerlee mine site in Miller Canyon in the Huachuca Mountains (Cochise Co.) in 1909 (Eichlin & Duckworth, 1988). Tom Eichlin and T. Friedlander captured males of C. *rubricincta* in the Chiricahua Mountains of Cochise County in 1974 (Eichlin & Duckworth, 1988). These individuals were netted while resting on small oaks above the 5400 foot elevation. In the fall of 2010, we captured several males using the "*simulans"* blend (ZZ 3,13 A/EZ 2,13 A 50:50) and Holland ZZA lures in Madera Canyon at elevations between 5000 and 5600 feet along the Coronado National Forest's Super Trail system. Over the 6-year period of collecting in the mountains of southeastern Arizona, we only collected two specimens in passive traps.

***Carmenta wellerae*.** Our experience with *C. wellerae* indicates the flight period starts in late July after the monsoons have commenced. We collected small numbers (≤ 4/ trap/week) using lures baited with EZ 3,13 A and/or EZ 3,13 OH in the Patagonia and Huachuca Mountains. On August 8, 2009, we deployed traps baited with the "*Osminia"* lure along Gardner Canyon Road, north of Sonoita. In one afternoon at ~ 15:30 hours, we collected ≥ 30 male specimens in a single pheromone trap while a small "cloud" of males still circled the trap. Habitat at this site was primarily open U.S. Department of the Interior, Bureau of Land Management, grazing land dominated by large scattered oaks.

***Melittia gloriosa*.** In 2007, we collected *M. gloriosa* in traps baited with grape root borer lures, along with *Melittia snowii* and *M. grandis*. However, only very small numbers of *M. gloriosa* were collected (≤ 3) in a field season. We often observed *M. gloriosa* flying around the traps or lures and then leaving without entering the trap. In 2010, we placed a trap baited with the "Holland 2", lure composed primarily of (E, Z)-2,13 OH (94%) and just 2% of EZ, 2, 13 A along the Gardner Canyon Road and captured 7 individuals over a period of one week. The "Holland 2" lure is apparently more attractive to *M. gloriosa* than is the grape root borer lure.

***Osminia rubricornis*.** In 2007, we obtained a non-commercial blend lure (EZ 2,13 OH/ZZA 99:1) that was reported to be effective for this species (Sharp, J.L. & T.D. Eichlin, 1979). With the aid of this lure blend, we successfully captured *O. rubricornis* in the Patagonia and Santa Rita mountains. This EZ 2,13 OH custom pheromone has also proven effective in enhancing the response and capture of others sesiid species including *M. gloriosa* and *C. wellerae*.

***Sophona snellingi*.** *S. snellingi* was collected in small numbers over the 5-year period using pheromone blends containing EZ 3,13 A and/or EZ 3,13 OH. In August 2008, we were collecting west of Patagonia along the Sonoita Creek bottom, which was dominated by large net-leaf hackberry trees (*Celtis reticulata*). In an hour, we were

Figure 2. Dry wash at the base of Madera Canyon where both *Sophona greenfieldi* and *Sophona snellingi* adults and pupal exuviae were collected by the authors.

able to collected > 60 male specimens using the Lesser Peachtree Borer lure (EZ 3,13 A) attached to our nets made by Scentry Biologicals at between 15:30 and 16:30 hours. In addition, we collected a large number of pupal exuviae among the large rocks around the lateral roots of desert hackberry (Figure 2) along a dry wash at the base of Madera Canyon, Pima County. These exuviae were inspected by T.D. Eichlin and he verified that they were sesiids. We suspect that several *Celtis sp.,* associated with riparian areas, are the likely food plants for this moth genus in northern Mexico and the southern United States; however, observation of actual moth emergence during the late summer monsoons is needed for positive verification.

Sophona greenfieldi. We first collected this previously scarce species at the base of Ventana Canyon in northern Tucson using Sequoia borer lure (ZZ 3,13 OH) in late July of 2008. We also observed very small sesiid pupal exuviae at the base of the desert hackberry shrubs (*Celtis pallida*). In 2008, more than 400 specimens were collected over 4 days along a dry wash at the base of Madera Canyon (Santa Rita Experimental Range-University of Arizona). We also collected small sesiid pupal exuviae underneath many of the desert hackberry plants in this area.

Acknowledgements

I thank the late Mogens C. Nielsen and the late Thomas D. Eichlin for their life-long guidance and support for this passion of Sesiidae. In addition, we thank Paula Schaper and Jack Zittere of Patagonia, Arizona, for their continued support and hospitality of our long-term monitoring endeavor.

Literature Cited

Brown L.N. and R.F.Mizell, III. 1993. The Clearwing Borers of Florida. (Lepidoptera:Sesiidae) 4: Suppl.4, August 1993.

Buetenmüller, W. 1901. Monograph of the Sesiidae of America, north of Mexico. Memoir Amer. Mus. Nat. Hist. 1:217-315.

Duckworth, W.D. & T.D. Eichlin. 1977a. Two new species of clearwing moths (Sesiidae) from eastern North America clarified by sex pheromones. J. Lepid. Soc.31:191-196.

Duckworth, W.D. & T.D. Eichlin. 1977b. A new species of clearwing moth from south-central Texas (Lepidoptera:Sesiidae). Pan-Pac. Entomol. 53:175-178.

Eichlin, T.D. & W.D. Duckworth. 1988. Sesioidea:Sesiidae. In Domonick, R.B. et al., The Moths of America North of Mexico. Fasc. 5.1.

Eichlin, T.D. & W. Taft. 1988. A New Sesia Clearwing Moth from Michigan (Sesiidae). J. Lepid. Soc. 42(3) 231-235.

Eichlin, T.D. 1992. Clearwing Moths of Baja California, Mexico. Trop.Lepid, 3(2): 135-150.

Engelhardt, G.P. 1949. The North American Clearwing Moths of the family Aegeriidae. U.S. Natl. Mus. Bull. 190:146

Knudson, E. and Bordelon, C. 2002. The Texas Lepidoptera Atlas, Vol. VII. SESIOIDEA, Texas Lepidoptera Survey.

Nielsen, D.G., Purrington, F.F., Tumlinson, J.H., Doolittle, R.E., and Yonce, C.E. 1975. Response of male clearwing moths to caged virgin females, female extracts and, synthetic sex attractants. Environ. Entomol. 4:451-454.

Snow, J.W., M. Schwarz & T.D. Eichlin. 1989. Captures of Clearwing Moths (Lepidoptera: Sesiidae) with Various Octadecadienyl Acetates and Alcohols in Central Georgia during 1983-1985. Environ. Entomol. 18 (2) 216-222.

Sharp, J.L. & T.D. Eichlin. 1979. Distribution and seasonal occurrence of Sesiidae (Lepidoptera) attracted to E, Z and Z, Z acetate and alcohol. Proc. Symposium Pheromones of the Sesiidae, USDA, SEA, ARR-NE-6:35-46.

Szöcs, G., Schwarz, M., Sziráki, G., Tóth, M., Klun, J.A., and Leonhardt, B.A. 1985. Sex pheromone of the female currant borer, Synanthedon tipuliformis: identification and field evaluation. Entomol. Exp. Appl. 39:131-133.

Winter, W.D. 2000. Basic techniques for observing and studying moths and butterflies. The Lepidopterists' Society, Memoir # 5. Appendix H. Sesiid pheromones.

www.lepsoc.org and https://www.facebook.com/lepsoc

Announcements:

63rd Annual Meeting of the Lepidopterists' Society, July 16-19, 2014

The Utah Lepidopterists' Society and Utah Butterfly Field Trips would like to invite you to attend the 63rd Annual Meeting of The Lepidopterists' Society, July 16-19, 2014, at the Yarrow Resort Hotel and Conference Center located in historic Park City, Utah. The Lep Soc has contracted with the Yarrow Resort for a price of $89 per night for Wednesday, July 16 through Saturday, July 19.

Meeting registration is available online at **lepsoc2014.com/Registration.html**. Early bird pricing ($80 for students and $115 for regular registration) ends June 1, 2014 where normal pricing kicks in at $115 for students and $150 regular price. Registrations close on June 22, 2014, so that we can get the printed program online by July 7, 2014. For a complete listing of online contact information, the schedule of events, description of field trips, some accomodation alternatives, and a hard copy registration form see the Winter 2013 News of the Lepidopterists' Society (55:4, pgs. 166-172).

Announcing the sixth annual Lep course, 14 - 23 August, 2014.

Held at the South West Research Station (SWRS) in the Chiricahua Mountains in SE Arizona (a 2 1/2 hour drive from Tucson), the focus of the Lep course is to train graduate students, post-docs, faculty, and serious citizen-scientists in the classification and identification of adult lepidoptera and their larvae. With its extensive series of Sky-Island mountain ranges, SE Arizona has the highest lepidoptera diversity in the US. With low desert scrub, oak and mixed oak-pine woodland, lush riparian, juniper, Douglas fir, and mountain meadow habitats all within a 40 minute drive from the station, the SWRS is an ideal location from which to sample this diversity (of both habitats and species). For more information, see **www.lepcourse.org** or contact Bruce Walsh at **jbwalsh@u.arizona.edu**. (See the 2014 Spring News of the Lepidopterists' Society, 56:1, pg. 16 for the complete announcement)

PayPal is the easy way to send money to the Society

For those wishing to send/donate money to the Society; purchase Society publications, t-shirts, and back issues; to pay late fees; or purchase space in the Marketplace for Commercial ads, PayPal is a convenient way to do so. The process is simple: sign on to www.PayPal.com, and navigate to "Send Money", and 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.

2014 Lepidoptera Classes in California and Colorado (For complete announcement, see the Spring 2014 News, Vol. 56:1, pg. 17.)

Paul Opler and Evi Buckner-Opler have taught the Butterflies of the Sierra Nevada for the past 15 years. The 2014 class will be June 22-27 at the Sierra Nevada Field Campus of San Francisco State University on the north fork of the Yuba River just east of Bassetts. Please register through the web site **www.sfsu.edu/~sierra**. J.R. Blair is the camp director and principal contact.

The upper limit on class size is about 16. Request Registration Forms by emailing **sfsu.snfc@gmail.com**, include the keyword "Butterflies" in the subject line.

Jerry Powell and Paul will team up to lead the Moths of California workshop also at the Sierra Nevada Field Campus following the Butterfly class [see above]. The 2014 workshop will be June 27 [afternoon] - June 29 [early afternoon].

Workshop size will be limited to 12. A moderate amount of walking will be involved. There may some driving on dirt roads. Request Registration Forms by emailing **sfsu.snfc@gmail.com.** Include the keyword "moths" in the subject line. Contact **paulopler@comcast.net** with any questions.

We're also teaching two one-day classes Introduction to Butterflies in Rocky Mountain National Park on the Colorado Front Range for the Rocky Mountain National Park Association -- July 26 and August 15. These classes are restricted to observation and photography. Register online: **www.rmna.org**; register by phone: 970-586-3262; or register by mail: Rocky Mountain Field Seminars, 1895 Fall River Road, Estes Park, Colorado 80517. Ask for Rachel Balduzzi with questions. Class size is limited to around 18.

Book Reviews now only 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**

Constitutional Amendment Vote Results

Amendments to:	Yes	No	Comments
Article IV (Officers)	61	0	
Article V (Elections)	59	2	
Art. XII (Amendments)	60	1	No provision for time between pub. and voting

A total of 61 ballots were submitted. The Secretary, with the agreement of the President, counted all ballots received even if they arrived after April 15th.

Third annual National Moth Week July 19-27, 2014

The third annual National Moth Week is being held July 19-27. National Moth Week encourages "moth-ers" of all ages and abilities to learn about, observe, and document moths in their backyards, parks, and neighborhoods. The event is open to anyone, anywhere around the world. National Moth Week (NMW) shines a much-needed spotlight on moths and their ecological importance as well as their incredible biodiversity.

National Moth Week 2014 is designated "The Year of the Silk Moth," to encourage participants to look for and learn about these fascinating moths in the Saturniidae family. For more information about National Moth Week and to register a location visit **nationalmothweek.org**. (See the 2014 Spring News of the Lepidopterists' Society, 56:1, pg. 45 for the complete announcement)

Corrections to items in the Spring 2014 News (vol. 56:1)

The lovely cover picture of *Memphis laura balboa* was taken by Ken Kertell of Tucson, AZ. The editor apologizes profusely for mispelling Ken's last name as Kertrell.

Membership Committee Update -- Carol A. Butler, Membership Committee Chair

Your membership committee has been busy with three initiatives that we hope will bring in new members. Dave Wikle and I did two rounds of an email blast inviting about a thousand potential new members to come to Utah and to join Lepsoc. Todd Stout was very helpful with the design.

Al Thurman drafted a new membership brochure, and we developed it with input from other members until everybody was (more or less) satisfied. We got great cooperation from members whom we asked for dramatic, show-stopping images that would make the brochure irresistibly attractive- thanks to Rick Cech, Dave Wagner, and Kim Garwood, and James Adams. A copy of the brochure is included with this issue of *The News*. We'll have them available in Utah, and if you want copies to distribute to your local group, please get in touch with Julian Donahue who has the cache.

Michael Collins has been very encouraging from the first day I became membership chair. Among his many ideas, he put together a list of 78 lep labs and we designed a special mailing to reach out to them for new members and publications. We sent an e-blast to 72 labs and snail mail to six where we didn't have an email address. The EC cooperated by establishing the following incentives for university/college labs where the major professor is not a member. The incentives are one or the other of the following:

1. Submit a *Journal* article by the end of the year and receive a free one-year membership in the Society for the lab (in the name of the major professor), plus free page charges for up to 10 pages once the article is accepted by the *Journal* Editor.

2. Submit a *News* article by the end of the year and receive a free one-year membership in the Society for the lab (in the name of the major professor) once the article is accepted by our *News* Editor. *News* articles can be anything related to Lepidoptera, but should be 2+ pages long, and we would especially value a "review article" on the work in a particular lab or on a particular topic that the authors study.

I am looking forward to seeing you all in Utah. The meeting for the membership committee is scheduled for Thursday, July 17 at noon- the location will be in the meeting program.

Announcements continued on pg. 82

Adelpha p. phylaca in Mexico:

Continued from p. 67

Literature Cited

Aiello, A. 1984. *Adelpha* (Nymphalidae): Deception on the wing. Psyche 91:1-45.

Aiello, A. 1991. *Adelpha ixia leucas*: immature stages and position within *Adelpha* (Nymphalidae). J. Lepid. Soc. 45(3): 181-187.

Aiello, A. 2006. *Adelpha erotia erotia* form *"lerna"* (Nymphalidae): exploring a corner of the puzzle. J. Lepid. Soc. 60(4): 181-188.

Einem, G. E. and Adkins, W. 2010. Observations of diurnal gregarious roosting in the butterfly *Smyrna blomfildia* Fabricius (Nymphalinae) in Western Mexico. News Lepid. Soc. 52(3): 96-100.

Greeney, H. F., L. A. Dyer and A. M. Smilanich. 2012. Feeding by lepidopteran larval is dangerous: A review of caterpillars' chemical, physiological, morphological and behavioral defenses against natural enemies. Invertebrate Survival Journal 9: 7-34.

Harry, J. L. 1994. *Adelpha bredowi eulalia* in Utah: a photo life history (Lepidoptera: Nymphalidae). Holarctic Lepidoptera, 1, 62-63.

Harry, J. L. 1996. *Adelpha eulalia* in Utah: a photo life history (Lepidoptera: Nymphalidae). Utah Lepidopterists 6:1.

Moss, A. M. 1933. Some generalizations on *Adelpha*, a neotropical genus of nymphalid butterflies of the group Limenitidi. Nov. Zool. 39: 12-20 + pls. 1 & 2.

Müller, W. 1886. Südamerikanische Nymphalidenraupen, versuch eines natürlichen Systems der Nymphaliden. Zool. Jahrb., Zeit. Syst. Geog. Biol. Thiere 1:417-678 + pls. 12-15.

Willmott, K. R. 2003. The Genus *Adelpha*: Its Systematics Biology & Biogeography (Lepidoptera: Nymphalidae: Limenitidini). Scientific Publishers, Gainesville. viii + 322 pp.

Young, A. M. 1974. Notes on the natural history of a rare *Adelpha* butterfly (Lepidoptera: Nymphalidae) in Costa Rica high country. J. N.Y. Entomol. Soc. 82: 235-244.

Adelpha phylaca phylaca (H. W. Bates) (Nymphalidae: Liminitidinae) in Mexico: immature stages, biology and behavior

Gerald E. Einem[1] and William Adkins[2]

[1]180 Vasco de Gama, La Peñita de Jaltemba, Nayarit, 63726, Mexico; 2826 N. W. 16th Ave., Gainesville, FL 32605
mexican.villa@yahoo.com
[2]206 Dellview Drive North, Tallahassee, FL 32303 **metamuse@comcast.com**

KEYWORDS: Defense strategies, larva and pupa, false eyes, camouflage

The genus *Adelpha* is species rich with about 100 described species and subspecies ranging in geographic distribution from western United States to Mexico, some Caribbean Islands, Central America, and South America. Despite a few detailed studies of immatures (Muller, 1886; Moss, 1933; Young, 1974; Aiello, 1984; and Aiello, 2006), for most species and subspecies, including *Adelpha phylaca phylaca* (Cecropia Sister), reports of immature stages are absent or inadequate in the literature. We know of only three published reports of any species illustrating the immature stages in color photography (Harry, 1994; Harry, 1996; and Aiello, 2006) despite the remarkable morphology and colors of the *Adelpha* larvae and pupae and their importance in making taxonomic determinations. Furthermore, a better understanding of immature morphology and behavior may clarify their role in defense against predators and parasites.

This is the first description of the immature stages of a single individual of *A. p. phylaca*, including a color photographic record (by GE) of the penultimate instar, final instar, prepupa, pupa and the adult butterfly reared from them. In addition, some novel behavior and morphology of *A. p. phylaca* immatures suggests different defense strategies for different metamorphic stages.

Materials & Methods

Observations of *A. p. phylaca* were made in my (GE) garden, on a hillside (39 m elevation) on the Pacific Coast of Mexico in La Peñita de Jaltemba, Nayarit. The habitat was anthropogenically transformed (suburban) tropical dry forest with remnants of the historic flora and fauna. For additional information, see Einem and Adkins (2010). There, on 20 November 2012, three *Adelpha* penultimate larvae ("likely" 4th instar) were discovered, each resting on a leaf lobe midrib on different individual saplings (1.0 - 2.0 m tall) of *Cecropia peltata* L. (Urticaceae). Two large, mature *Cecropia* trees grew nearby but no *Adelpha* larvae were found on them. Over the next two days two of the three larvae disappeared; the one larva that survived was reared to adult and identified as *A. p. phylaca*.

Initially, the larvae and *Cecropia* host plants were left mostly undisturbed in order to observe their natural development and behavior. However, to prevent losing the remaining larva, about four days before pupation the *Cecropia* leaf, holding the final instar larva (Fig. 2a & b), was excised near the base of the petiole, placed in a bottle of water, and moved to a large, plastic screened cage. Here the larva pupated and later the adult enclosed; meanwhile, the condition of the leaf deteriorated rapidly, despite provision of water and shade.

Observations -- Penultimate Instar (Fig. 1)

As described by Aiello (1984) and Willmott (2003), many species of *Adelpha*, including *Adelpha phylaca pseudaethalia* Hall, deposit a single egg on the upper surface of a leaf near the tip. Larvae then feed on the leaf, leaving the midrib intact. Moreover, the larvae of many *Adelpha* species extend the midrib using silk and frass. However, *A. p. phylaca* penultimate instars that I (GE) observed rested on a bared midrib without frass (Fig. 1a).

Figure 1a. *Adelpha p. phylaca* penultimate instar (dorsal view) on the bared midrib of a *Cecropia* leaf lobe. The thorax and first two abdominal segments have a pale gray "saddle" with six large scoli.

At the base of the exposed midrib, *Adelpha* larvae construct a large mass of leaf fragments and frass held together with silk (Aiello, 1984; Willmott, 2003). On the *Cecropia* leaves I (GE) observed, the amount of frass in the mass of leaf fragments was sparse (Fig. 1b). Each of the

Figure 1b. The same larva (as in Fig. 1a), after moving into the the leaf fragment mass, assumes a curled "j" shape, displaying the pale "saddle on the dorsum of the thorax and a raised, pale abdominal tip, suggesting an adaptation for crypsis.

three penultimate larvae (one on each sapling) rested on an exposed midrib facing either toward or away from the mass of leaf fragments or they entered the leaf fragment mass. As viewed from above, the leaf fragments were oriented to show either the pale grey-green of the Cecropia leaf undersurface, or the dark green (or brown with age) of the leaf upper surface. From above, the pale fragments appeared more abundant and prominently displayed than fragments oriented to show the dark green or brown of the leaf upper surface.

As reported by Aiello (1984), the fourth and fifth instars of many *Adelpha* species have a dorsal paler patch or "saddle" but *A. p. pseudaethalia* was not included with these. Nevertheless, my observations of *A. p. phylaca*, observed and photographed during the penultimate instar, have a very pale grey-green "saddle" on the dorsum from thoracic segments two and three to abdominal segments one and two. The "saddle" has a small anterior and a larger posterior part, each with a pair of anterior scoli (elongated projections bearing setae or spines) projected forward and somewhat laterally. Besides, the posterior end of the "saddle" has a pair of scoli projected backward (Fig. 1a).

When on the bared midrib facing the mass of *Cecropia* leaf fragments, penultimate larvae were seen moving into the mass where they assumed a curled position ("c" or "j" shape), thereby displaying the pale "saddle," often matching the color, angular shape and approximate size of leaf fragments with the exposed, pale grey-green underside. This likeness of the "saddle" to the pale side of the leaf fragments provided the larvae with excellent camouflage (Fig. 1b).

Final Instar (Fig. 2)

The final instar differed strikingly from the previous one. The larva had three pairs of prominently displayed scoli; these were a pair on each side of the meso- and metathorax, projecting laterally but curved forward, and a pair on the second abdominal segment, projecting posteriorly and somewhat dorsal laterally as seen in Figure 2 a & b. *Adelpha p. phylaca* scoli had radiating spines along their entire length with one or more ascending or radiating spines at the apex. The head capsule of the final instar was very spiny and without a pattern (Fig. 2a). These traits are typical of *Adelpha* Group II, the Mesentina Group (Aiello, 2006).

Figure 2a. *Adelpha p. phylaca* final instar (dorsal view) resting on the bared midrib and the leaf fragment mass constructed during previous instars.

Figure 2b. Prepupa (lateral view, dorsum on the left) hangs head-down from a pad of silk on the screened cage.

The larva was greenish-gray on the dorsum and speckled with small, paired eye-like spots. A pale mid-dorsal stripe ran the length of the thorax and abdomen. The sides of the thorax and the first two abdominal segments were chestnut colored and on each side of the fifth abdominal segment was a brown oval spot (Fig. 2b).

For two days after molting to the final stage, the larva continued to rest on the bare midrib, as in the previous stadium. The body was parallel to the midrib, and the spiny head was exposed. The larva lacked the dorsal pale grey-green "saddle" that matched the pale ventral side of *Cecropia* leaf fragments displayed so prominently on the dorsum of penultimate larvae.

On the second day after molting the final instar moved about 0.5 m to another leaf on the *Cecropia* sapling. Typical of final stage *Adelpha* larvae, it did not bare the midrib or produce a leaf fragment mass. During daylight hours, the larva ate the leaf margin and rested on the leaf upper surface, along a leaf lobe midrib, facing the petiole. When mildly alarmed, the head, true legs and the last few prolegs were raised slightly above the leaf substrate.

When highly disturbed the larva displayed one of two defensive postures: on 27 November the larva raised its head and thorax up and backward with the mouth held upward, expelling a brown fluid; during another display, on 28 November, the same larva raised the last few abdominal segments vertically, at a right angle to the rest of its body. When viewed from behind, the pair of oval brown spots on the fifth abdominal segment (not raised) appeared to be "false eyes." From behind, the larva appeared to have a strange posterior "false head."

On 1 December, three days after the larva was transferred to the screened cage, it transformed to the prepupa. The prepupa was attached to silk on the plastic screened wall of the cage where it hung head down by its cremaster (Fig. 2b).

The Pupa (Fig. 3)

Adelpha pupae have certain characteristics in common, most notably, protruding posterior wing margins and a dorsal projection from the second thoracic and the second abdominal segments (Muller, 1886; Moss, 1933; and Aiello, 1984). The *A. p. phylaca* pupa I (GE) reared and the *A. p. pseudaethalia* reared by Aiello (1984) have a huge laterally flattened, hook-like projection from the dorsum of the second abdominal segment. The projection from the second thoracic segment is also pronounced but much smaller (Fig. 3a).

When viewed from the side, the *A. p. phylaca* pupa is straw-colored with a shimmering silver and gold area between the two dorsal projections (Fig. 3a). When viewed from above, the dorsum of the pupa shows a pair of eye-like spots ("false eyes"), one on each side of the large dorsal projection (Fig. 3b). Similar to several of the other species in *Adelpha* Group II (Aiello, 1984), the *A. p. phylaca* pupa had small, pointed, laterally directed head horns. The maximum length and width of the pupa were 21 mm and 14 mm respectively. When disturbed by touching it with a finger, the pupa wiggled vigorously. It's possible that the combination of "false eyes" (see Fig. 3b) and rapid movement might have a "startle effect" on a would-be predator or parasitoid.

Figure 3a. *Adelpha p. phylaca* pupa (lateral view, dorsum on left) showing the huge hook-like projection of the second abdominal segment characteristic of Adelpha Group II including *A. phylaca*..

Figure 3b. A dorsal view of the same specimen, showing the pair of eye-like spots. The pupa wiggles when touched. (Note laterally projected head horns below.)

The duration of the immature stages observed in Mexico were within the range of those described by Aiello (1984) for the subspecies *A. p. pseudaethalia* in Panama (Table 1).

Table 1. A comparison of the single *A. p. phylaca* larva and pupa observed in this study to *A. p. pseudaethalia* reared by Aiello (1984) in Panama.

Duration (days) of Immature Stages	
Adelpha p. phylaca from this report, n=1 for all	*Adelpha p. pseudaethalia* from Aiello (1984)
Penultimate Instar* Nov. 20-23 (4+ days)	4th Instar (6 days) n=6
Final Instar Nov. 24-Dec. 2 (9 days)	5th Instar (7 - 9 days) n=8
Pupa Dec. 2-Dec. 11 (9 days)	Pupa (8-11 days) n=7

The Adult (Fig. 4)

The adult *A. p. phylaca* eclosed on or about 12 December 2012. The wings were damaged (Figures 4a, 4b) by striking the rough surface of the *Cecropia* leaf petiole. *Adelpha* do not visit flowers but often are seen feeding in the garden on bananas. The adult voucher specimen, reared from this study, is deposited at the McGuire Center for Lepidoptera & Biodiversity at the University of Florida, Gainesville.

Figure 4a. *Adelpha p. phylaca* adult (dorsal view, reared from the larva described herein.

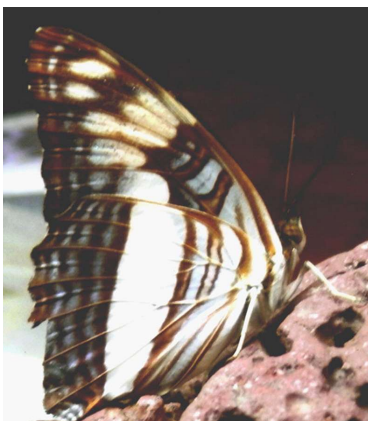


Figure 4b. Lateral view of adult in Fig. 4a.

Discussion

Lepidopteran larvae have a vast array of chemical, physiological, morphological, and behavioral defenses against predators and parasites (Greeney, et al., 2012 for a review). Likewise, each of the three immature stages examined in this study exhibited unique behavior or morphology that suggest an adaptation for defense: *First:* The "saddle" on the dorsum of the penultimate instar matches the color of the underside of *Cecropia* leaf fragments. The "saddle" is also somewhat similar in size and shape to the fragments. When the larva enters the mass of leaf fragments and assumes the curled "j"- or "c"-shaped posture (prominently displaying the dorsal "saddle" among the pale grey-green leaf fragments), it is especially difficult to distinguish from the pale grey-green fragments (Fig. 1b). We suggest that the "saddle" and the leaf fragment mass is an adaptation for camouflage, hiding the larva from predators or parasitoids. *Second:* The final instar had an increased development of the scoli and spines, forming a seemingly impenetrable barrier which may defend the larva. There was no evidence of the dorsal "saddle" or construction of a mass of leaf fragments in which a larva may hide. Nevertheless, the final instar had two postures, assumed when disturbed, which may be defensive. We suggest that these behaviors may be variations of the "Front-Arched-Rear-Up" defensive position of disturbed larvae described by Aiello (1984) and Willmott (2003). *Third:* The pupa had a pair of dorsal eye-spots ("false eyes") which, combined with vigorous wiggling, may reduce predation or parasitism.

Based on larval and pupal characteristics, Aiello (1984, 1986, and 2006) placed six Panamanian *Adelpha* in Group II (the Mesentina-Group), which includes *A. p. pseudaethalia*. In common with *A. p. pseudaethalia* and some other *Adelpha* species assigned to this group, *A. p. phylaca* larvae have a dark patch on each side of the thorax. Besides, the pupae of these species have a huge second abdominal segment, with a dorsal hook that curves anteriorly, nearly touching and forming a circle with the second thoracic projection. Furthermore, the two *phylaca* pupae have small, anterior, outwardly curved "head horns" with acute points; they also have a distinct brown spot on each side of the fifth abdominal segment. Whether or not *phylaca* subspecies immatures have different traits will require more detailed comparative studies of their morphology and behavior.

Acknowledgements

We thank Dr. Keith Willmott (Associate Curator of Lepidoptera, McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida) and Dr. Annette Aiello (Smithsonian Tropical Research Institute, Panama) for reviewing the manuscript and providing valuable suggestions. We also thank Martin Lara Aguirre for field assistance in Mexico.

Continued on p. 63

My "fright" night in the Canadian Arctic

Gary Noel Ross

6095 Stratford Ave., Baton Rouge, LA 70808 **GNRoss40@yahoo.com**

In 1969 I was a nascent Assistant Professor of Biology at Southern University, Baton Rouge, Louisiana. During those salad days, my primary interest was to develop a new course for the department: "Natural History of North America." The entire course would be based on my personal experiences and my collection of 35 mm transparencies. I planned, in addition, to establish a small departmental collection of butterflies characteristic of the major climax ecological zones (biomes) of the continent.

My previous fieldwork had been conducted in temperate and tropical environments of the Western Hemisphere. I, therefore, lacked experience in the frigid and remote polar regions (Arctic and Antarctic). In order to develop my new course there could be only one solution: an expedition to the "Arctic Tundra." [The Arctic is the high latitude of the earth encircling the North Pole north of the Arctic Circle (66° 33' 44" North Latitude). This realm is commonly referred to as the "Frozen North," Polar North," and "Far North." Tundra typically translates from Finnish as "treeless plain." There is, however, another type of tundra: "Alpine Tundra." It exists as a zone above timberline on mountains high enough to experience year-long cold and wind.]

Arctic Tundra in North American occurs in northern Alaska (U.S.) and much of the Canadian territories of Northwest Territories, Nunavut, and Yukon. But Arctic conditions can be found in several Canadian provinces south of the Arctic Circle such as in northern Newfoundland, Labrador, and Quebec. And in Manitoba (north of North Dakota), tundra stretches as a narrow band bordering western Hudson Bay—a body of salt water with a surface area of 470,000 sq. miles (about the size of Texas, New Mexico, Oklahoma, and half of Louisiana combined). Near the southern limit of this Arctic extension is the town of Churchill (N 58 46.10736, W 094 9.89574), a whopping 552 miles south of the Arctic Circle. The small historic settlement is perched on a peninsular between a western cove of Hudson Bay and the estuary of the Churchill River. The unusual cold results from the flow of air over the bay and river, both of which maintain persistent winter ice long into June.

My principal reference for Arctic butterflies was "A Field Guide to the Butterflies of North America, East of the Great Plains" by Alexander B. Klots (1951). There I was surprised to learn that in spite of the icy cold and sparse vegetation, Arctic Tundra is home to a number of butterfly species and subspecies. In fact, the community of Churchill, Manitoba in central Canada is listed as "Type Locality," or "common in Churchill" for a half-dozen varieties of butterflies. Therefore, I flagged Churchill.

Fast forward. Present-day Churchill remains a far-flung outpost in northern Canada. The town is not on the beaten path to anywhere. No roads connect Churchill to the rest of Canada. Access to the small community is via private plane, two small commercial airlines, and two railways from Winnipeg, the capital of Manitoba. In addition, during the brief summer months, ocean-going cargo ships use the port to load grain from the country's interior for transport via Hudson Bay, the North Atlantic Ocean, and then distant ports in Europe.

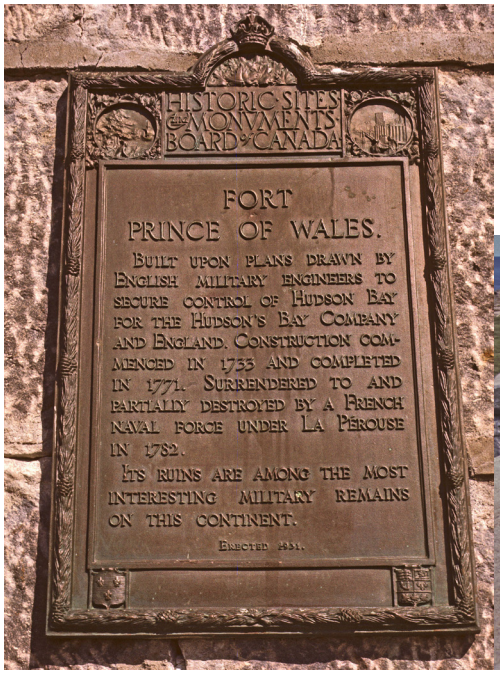
Residential neighborhood in Churchill

Transportation lot from top grain tower following ice-breakup in Churchill River and Hudson Bay

Besides isolation, weather is a problem, too. Cold is relentless, brutal. As is the case throughout the Arctic, in Churchill everything begins and ends with ice. For nearly eight months (October–May) the average high temperature usually does not rise above freezing. For that matter, between mid December and early March, the average high is below 0 degrees F. In January, the coldest month, low temperatures often plummet to 30-38 degrees below zero. This cold severely limits human mobility, usually restricted to dog sleds and gas powered "Ski-Doos" that can navigate on ice. In July, the warmest month, temperatures average between 48-64 degrees F. Open water usually persists for only six weeks.

In 2011 the population of Churchill area was recorded at 813, on a downward spiral from 1,304 in 1981. Native Americans such as Chipewyan, Swampy Cree, Métes, and Inuit (Eskimo) make up a small majority (56 percent); the minority population consists of non-natives, most of whom are employed in the service/sales/shipping and military industries. At its peak, however ('40s and 50s), the population was 15,000 due largely to the presence of Fort Churchill, an active military/research facility located a few miles east-southeast of the town proper. The fort was established in 1941 by the U.S. Air Force to assist in World War I. Later, the facility became part of the Distant Early Warning system or DEW Line. Today the fort serves as a minor research facility and a possible landing site for the U.S. Space Shuttle program. (Earlier in 1731, the English constructed Prince of Wales Fort on the west bank of the Churchill River across from the town. The fort was to safeguard the Hudson's Bay Company's fur trade. In 1920 the fort was designated a Canadian National Historic Site.)

Fort Churchill Military/Research Base



Fort Prince of Wales, established in 1731.

Yet modern-day Churchill is not without an incomparable calling card. Consider: The settlement is located at the junction of three major ecological zones or ecoregions, e.g., Boreal Coniferous Forest (Taiga) to the south, Arctic Tundra to the north, and salt-water Hudson Bay to the east. Thus Churchill is a provocative cache for the modern intrepid ecotourist. Each year (usually during the short northern summer in July and August) 10,000-12,000 tourists travel to what is popularly advertised as the "Polar Bear Capital of the World" and the "Beluga Capital of the World"—two species that have become charismatic symbols of the Arctic. For entomologists, Churchill is the historic destination for professionals and enthusiasts who wish to observe insects (especially butterflies) in the far north. In 1996, the Canadian government established Wapusk National Park, a huge acreage south of Churchill that harbors one of the world's largest maternity wards for polar bears. Recent escalation in ecotourism has sparked the development of a sizable and comfortable infrastructure, including a dozen or so modest hotels and B&Bs, restaurants, convenience stores, car/truck rental companies, and a cultural complex. Tour companies offer specialized vehicles and even mobile lodges to provide tourists with unique and safe access to the region's specialized wildlife.

Flash back to 1969. Erstwhile Churchill was much less developed and much less publicized. With not much descriptive literature available (remember, no Internet in 1969!), planning my trip was not easy. I decided my best approach would be to secure a summer teaching position at the University of Manitoba in Winnipeg. That would provide a base where I could discuss the provinces' northern lands with consummate biologists.

I quickly landed a position of "Visiting Professor" in the Department of Zoology, UM to teach Chordate Zoology. (By today's standards, locating a temporary summer teaching position in 1969 was "a piece of cake."). Because the course didn't begin until early July, I decided to drive my new four-wheel drive Suburban at the beginning of June northward through the heartland of America, crossing into Canada from the North Dakota/Minnesota border at the small community of Emerson (Manitoba).

I arrived in Winnipeg on June 8. Immediately, I checked in at the Department of Zoology, UM. There I was introduced to several faculty and graduate students with experience in the province's northern latitudes. I learned that because of

the lack of roads to Churchill, land travel was restricted to the Winnipeg-Churchill train. This was a single track railway that used first a Canadian National Railway line that later transferred to a Hudson Bay Railway line. The railway provided freight and passenger service twice a week between Winnipeg and Churchill, a distance of 1063 miles (1710 kilometers). The trip required 40-48 hours to complete. As an alternative, I could split the journey. First, I could leisurely drive on a reliable and reasonably direct road for 478 miles (769 kilometers) and nine hours through the ecological zone known as the Boreal Coniferous Forest or Taiga—a bastion of fir and spruce trees, i.e., our traditional "Christmas Trees." Upon reaching Thompson (noted as the "Hub of the North" because of its extensive deposits of valuable metal ores), I could park my vehicle and then board the train that had departed Winnipeg the day before for my final 360 mile (579 kilometers) and 18 hour journey to Churchill. I opted for the combination drive and shorter train ride.

I boarded the Hudson Bay Railway in Thompson about 4:00 pm after a day's layover. The train was composed of both passenger and flatbed freight cars, the later loaded with large crates as well as automobiles and trucks. The interior of the coaches was stark. There were but a few passengers; I was the only discernable tourist.

The train ride—my first—was not pleasant; frankly, a bit rough. Because of icy winters that alternate with only partially thaws each summer due to subsurface permafrost and rock, much of the lands in the north are swampy or bog-like (in Canadian parlance, "muskeg"). This unstable substrate seriously affects roadbeds. For railways, rails become misaligned. Consequently, the train to Churchill was slow and the string of coaches moved along with a halfhearted serpentine sway. There were two other negatives. First, because of the single track, the train on occasion was forced to deviate onto a short spur to accommodate an oncoming freight train. And second, because the majority of the trip was during the "night" with but a modicum of darkness (after all, we were headed into "The Land of the Midnight Sun"), sleep was difficult. But with no one to share my double seat, I could recline and catnap. En route, there was one major stop: the community of Gilliam. The break allowed passengers to disembark, freshen up, and purchase food and beverage. In summary, the trip to Churchill was slow, arduous, and uncomfortable.

June 17, mid-morning. Churchill! The sky was gloomy, onerous. The temperature registered a chilling 42 degrees F. Both the Churchill River and Hudson Bay were still frozen over. A short walk from the train terminal took me to the Hudson Hotel, a two-storied, white-washed cement block structure with a definite rustic flavor. But because a crew of construction workers was in town to repair damage from the previous winter, the hotel was completed booked. The proprietor, however, scribbled a name and address of someone who might possibly have a room to rent for the next two weeks.

The space proved to be a portable wooden building set on cement pillars and reflecting a recent coat of dark green paint. At no more than 6 x 12 feet, the structure seemed to be a mobile shed. A single solid door and two tiny windows accessed the interior where there was no running water or plumbing. However, an electric light bulb hung from ceiling rafters and a small electric heater indicated electricity and the potential for heat. Other amenities included an army cot with linens and blankets, a tin bucket for a toilet and a stack of old newspapers to line the bucket (I will leave this to your imagination!), a roll of toilet paper, a folding card table with a wash basin and bar of soap, a ceramic plate, glass, eating utensils; two five-gallon army metal containers full of fresh water completed the furnishings. There could be no cooking, of course. But I was informed that I could secure simple prepared food and drink from a small store in town. Although initially shocked by the spartan quarters, I was in no position to be selective. After all, had I not packed my thermal underwear and minimal camping gear? Figuring I could cope, I rented the space and unpacked.

Gary's living accommodation -- a converted storage shed -- in downtown Churchill

My landlord was an Anglo woman about thirty-five years of age and named Shirley—the same name as that of my mother. Her husband was working the summer in Winnipeg, leaving her on her own to care for two young girls. Shirley was delighted, therefore, to have me as a short-term tenant. Since I was a newbie to the north, she advised: "Before you venture out, first check in with the ROYAL CANADIAN MOUNTED POLICE or RCMP."

The RCMP are the iconic municipal, provincial, national purveyors of the law in Canada, and who are distinguished by unique debonair uniforms. Upon my visit, I was informed by the dignified gentleman on duty: "The Arctic is a dangerous, very dangerous place--especially during this transition between spring and summer." After a slight pause, the Mounty continued: "Polar bears are at the top of their food chain—a voracious apex predator. The animals are stealthy, and they consider humans fair game." After a brief pause to see how I was reacting, he continued: "The river ice is thinning and could break up at any given moment. When that happens, water and ice will race like a tsunami into the bay." He went on to describe how the ice

fringing the shore of the bay was thinning, also. "This can be perilous. If a person plunges into the water, hypothermia will kill within minutes. Polar bears with their new cubs will quickly locate and scavenge the body for food."

Then the Mounty enumerated what he referred to as "proprietary do's and don't's":

1. Never go onto the tundra alone.
2. Never walk out on the ice covering the river or bay.
3. Never go near the dump to photograph polar bears.
4. Confirm your safe return each day with someone.
5. Dress warmly—and in layers—each day regardless of morning temperature.
6. Carry food and water with you if you are out all day.

The poignant but gruesome dialogue prickled the hairs on the back of my neck. I cast my eyes downward, trying not to appear too rattled. Returning to the short registration form, I listed my parents' address in New Orleans for "emergency home contact."

It was clear that the Arctic was going to be a challenge. With the Mounty's "Rules" still looping through my head, I thought I should spend the rest of the day digesting the information and familiarizing myself with the town. During my visits to several stores I made a point to speak with townsfolk. Everyone expressed a phobia for polar bears. Person after person emphasized that I should avoid the municipal dump since the bears congregate there to scavenge for human refuse. In addition, I was told that the bears often meander through town, and so I should keep a watchful eye at all times. "If you wish to photograph bears," I was advised, "then visit Fort Churchill and solicit assistance from personnel there."

Days Two and Three. With my army satchel stuffed with camera, water, sandwiches, insect repellant and netting for my head, I plunged into my first full days on the tundra. The sky was still troublesome, the wind, still blustery. Ice continued to pack the river and the bay and produced a glare so intense that I was forced to put on my sunglasses. Between the extensive whiteness, the dark phalanxes of rocks abutting the bay and river, the featureless domed gray sky, and the hush that only absence can create, the scene was as unworldly as the edge of space. For me, the Arctic is a place out of time—literally and metaphorically. Even in Churchill, which fudges a bit on latitude, the summer sun retreats for only a few hours each night. Now in late June, the sun took nearly 20 hours to transect the sky, creating protracted twilight in both morning and evening. Full darkness did not set in until approximately 12:30 pm, with daylight returning about 3:30 am. Telling time without a watch was impossible.

A young Gary on the Tundra with Hudson Bay in the background

Midnight on Summer Solstice (June 21, 1969)

For starters, I decided to go solo. My strategy? I would circumscribe my activities so that I did not veer from view of either the town's monolithic granaries or the singular all-weather road that connected Churchill with Fort Churchill. Easy—right? (Today I chuck this to my inexperience in the north and the mindset of a twenty-nine year old with a lot of cockiness to export!) And so, on these first two days, I transgressed the Mounty's cardinal "Rule No. 1."

That said—and with Hudson Bay the juggernaut that overshadowed the town—I began each morning by probing along the land-ice interface of the bay. Ringed seals (*Phoca hispida*) were quite common on the ice barely a hundred feet from shore. The sleek mammals were stretched out as if in anticipation of the beleaguered sun, paying no attention to me. Could they sense that I would not risk an incursion onto the ice? "Dare I approach," I thought? Although the idea was seductive, I decided that diligence outweighed naïve courage.

True to classic definition, the tundra landscape was expansive and elementary: a broad plain, treeless but punctuated with tussocks. Because the land had not awakened from its long winter sleep, the color green was conspicuously absent; the land appeared in anguish, bruised. Rocks and boulders lay strewn everywhere—testimony to the power of prior glaciation, the primary force that shaped this land and sea. (In point of fact, most tundra has been ice-free for only the last 10,000 years or so.) Because permafrost can be found only a few inches below ground level, the soil thaws only partially during the brief summers. As a consequence, the ground is always waterlogged, soggy—similar to muskeg farther south. Fortunately, I had rubber hip boots for the occasion. In many places, the soil and rocks were organized into distinct

symmetrical geometric formations are termed "polygon ground." The uniquely patterned ground is the result of ground upheaval caused by long-term alternations between water freezing and thawing in regions where permafrost persists. Then, too, my prior readings on Arctic ecology described the tundra ecosystem as particularly delicate, vulnerable. Climate, geography, and topography all exert strong forces that slow the land's recovery from damage. With that in mind, I was determined to be a good steward. I stepped cannily. Nonetheless, on more than one occasion I wound up on my gluteus!

A few hundred feet inland, the low tundra segued into a woodland of scattered trees—upright but dwarfed. These demonstrated krummholz or "flagging"—terms describing the scraggy-looking one-sided branching of stunted trees at timberline. The disfigurement is due to persistent, cold winds. Krummholz signifies the interface between true Arctic Tundra and the sub-Arctic coniferous forest (taiga). As in the tundra, boulders and rocks were everywhere. Most were encrusted with bright orange lichens and green mosses—soil makers in cold climates. Grayish-green reindeer moss (*Cladonia rangiferina*), a fruticose lichen that resembles a spongy moss, was in profusion everywhere. Some grasses and sedges were beginning to green. A few wildflowers exhibited buds—several even betrayed a flower or two such as purple saxifrage (*Saxifraga oppositifolia*). As my texts had described, most of the forbs exhibited a low, matted, and rosette growth form—presumed to be adaptations for retaining daytime heat. Prostate and dwarf Arctic or rock willow (*Salix arctica*) were often tucked at the base of large boulders.

Clockwise from top left: glaciated boulder, with lichens; Krummholz (lop-sided tree growth at taiga tundra interface); Arctic Willow with fresh cat-kins; Purple Saxifrage.

Many of the trees bore fresh fuzzy catkins. Patches of snow often persisted in these protected areas, too.

With long daylight hours, I remained on the tundra as long as I could—until about 10:30 pm. Then exhausted, I returned to town. Noting that my landlord's home was silent, I simply retired to my room, cleaned up a bit, scarfed down my unheated can of soup, pulled down the window shades to block the pervasive light, and curled onto my cot (still in my thermals) for an anticipated rest. Not until later did I realize that I violated "Rule No. 4: Confirm your safe return each day."

By day four, I decided it was time to address the polar bears. *Ursus maritimus* is the largest land carnivore in the world, and as such, is often referred to as the "King of the Arctic." Adult males can weigh between 550 and 1700 pounds, and females are not much smaller. Early in the morning, I hitchhiked to the sprawling Fort Churchill. With a population of 3,500 plus military and related personnel, the fort housed the region's major population.. There I was quickly introduced to two graduate students (UM in Winnipeg) who were conducting field research during the summer in Churchill. Their focus was Arctic waterfowl and fish. The students had not observed the bears, however, and so they too were interested in visiting the garbage dump. Because the university had a cooperative agreement with the base, the students had access to heavy-duty vehicles that we believed would protect us.

As heaps of garbage came into view, dozens of black and white gulls speckled the air and ground. Their squawks and bickering disturbed the silence I had come to appreciate. Sure enough, townsfolk were right on point: the dump was indeed a polar bear banquet. About seven adults (no cubs) were systematically pawing the town's refuse. The bears' coats, normally pristine white, were stained from pilfering. Surprisingly, our proximity did not evoke any panic from the bears. But because of the animals' blemished fur and the monochromatic gray sky, I decided to postpone photographing for a better opportunity—an unfortunate decision because I was afforded no other opportunity. We sat riveted about 100 feet from the closest bear savoring the moment. But when one of the bears became curious and began lumbering towards our vehicle, we retreated. No need to push our luck.

Since the day was still young, my companions volunteered to introduce me to one of their research projects in the muskeg of the coniferous forest bordering the tundra. From that adroit tutelage I learned to gill net. In addition, I was afforded the privilege of tasting an Arctic grayling (*Thymallus arcticus*, a member of the salmon family), a freshwater, medium-size fish with a pronounced dorsal fin. The grayling is a delicacy and becoming more and more of a sport fish. (I can attest that the fish is literally "finger-lickin' good," having picked through one—freshly caught, skewered and roasted on an outdoor camp fire with the temperature at 44 degrees.

Arctic Grayling -- a delicacy of Arctic freshwaters

Day Five. June 21. Summer Solstice. During the wee dark hours, my reverie was interrupted by a loud roar in the distance. Should I risk a chill by going out to investigate? I merely turned over and resumed sleep in the semi-comfort of the cot. At daybreak, however, I went outside. The landscape had undergone a metamorphosis! No more heavy clouds. Instead, a clear blue sky was overhead and blue water filled both the river and bay. As I pivoted for a panoramic view, I felt as if I were standing within a gigantic blue bell jar. Reflecting on the roar from just a few hours before, I realized that the sound was the massive breakup of ice as predicted by the Mounty.

To embrace the sunny day, I decided to spend the day photographing and searching for butterflies. As per my routine, I exercised caution with my steps. (At least, here in the Arctic I didn't have to be on the lookout for deadly snakes, my nemesis during past adventures in the tropics.) Because of the delayed warm season, hordes of mosquitoes and black flies—those thread-legged bloodsuckers that are ubiquitous throughout the Arctic—were not bothersome. I was amazed at how the direct rays of the Arctic sun quickly warmed my body. By 10:00 am, for instance, I had to shed my jacket. By 3:00 pm, with my thermometer recording 59 degrees, I was comfortable in only a long-sleeved shirt.

Vegetation seemed to respond to the replenished sun, also. Each day the landscape morphed a shade greener. Wildlife now began to move about. Seagulls (Family Laridae), were virtually everywhere. The first large animal I spotted was an Arctic fox (*Alopex lagopus*). The individual was in the throws of shedding its white winter fur for a brownish coat although it continued to sport a bushy white tail. Other species included: two rock ptarmigans (*Lagopus muta*) with summer plumage; two snowy owls (*Nyctea scandiaca*); and several Arctic lemmings (*Dicrostonyx torquatus*). Live beluga (white whales) (*Delphinapturus levcae*) in the bay eluded me. However, I did stumble upon the partial skeleton of one on the gravely beach. Ringed

Rock Ptargmigan (*Lagopus muta*) in summer plumage

seals, which I had previously observed as they rested on the ice, were now absent. (Oh how often I regretted my timidity in venturing onto the ice!) Small pools of fresh water often harbored ducks and wading birds (which I failed to identify). In the muskeg I stumbled upon the nest of a Canada goose (*Branta canadensis*). But photographing wildlife was difficult. Because of the land's flatness, the animals were easily spooked. And lacking a telephoto lens, my effort with photographing seals was as disappointing as my effort with the polar bears.

Sadly, butterflies were scarce. (I later learned that July, the warmest month in the region, is prime time for insects and flowers; ergo, my visit was about three weeks too early.) I did, nevertheless, identify four species, all seemingly fresh and characteristic of Arctic Tundra: two individuals of the Palaeno Sulphur (*Colias palaeno*), and one individual of each of the following—Frigga Fritillary (*Boloria frigga*), Red-disked Alpine (*Erebia discoidalis*), and Jutta Arctic (*Oeneis jutta*). All except the two sulphurs were flushed during my walks; the sulphurs were flying a few feet above the ground. Although the day was sunny and the temperature "warm" (upper-50s), there was a stiff cold breeze from the bay making insect flight difficult. All butterflies were easily netted, identified, and then released; with populations so low, I hadn't the heart to collect. (With minimal greenery, I, of course, observed no caterpillars.) [NOTE: I have subsequently learned in "The Butterflies of Canada," that among the 293 species recorded from Canada, "Forty-four species of butterflies have been recorded from the Tundra Zone, of which 32 are primarily tundra species." And in "Manitoba Butterflies: A Field Guide," the author, states that "The Arctic Tundra in the northern reaches of our province is home to 47 species, six of which are exclusive to the area." Below are species listed as "common-to-abundant in Churchill":

Old World Swallowtail (*Papilio machaon*)
Canadian Tiger Swallowtail (*Papilio canadensis*)
Mustard White (*Pieris napae*)
Giant Sulphur (*Colias gigantea*)
Spring Azure (*Celastrina ladon*)
Silvery Blue (*Glaucopsyche lygdamus*)
Bog Fritillary (*Boloria eunomia*)
Frigga Fritillary (*Boloria frigga*)
Arctic Fritillary (*Boloria chariclea*)
Mourning Cloak (*Nymphalis antiopa*)
Jutta Arctic (*Oeneis jutta*)
Painted Lady (*Vanessa cardui*)
Grizzled Skipper (*Pyrgus centaureae*)

Albeit discouraging, fate provided a fortuitous and benevolent consolation. During a cloudy day, I visited the Arts & Crafts Shop in Akudlik (the Inuit village) near Fort Churchill. One of the items for sale was an authentic piece of Cree handiwork: a five-inch square sealskin coat patch featuring a beaded yellow, green, and black butterfly design along with the word "Churchill." (Could I have been more lucky?) This memento, along with several Inuit soapstone carvings purchased at the same time, is enshrined in my home gallery of folk arts.

Then it happened. "Fright Night." Exhausted from my ninth full day of exploring, I returned to my room earlier than usual —about 8:30 pm. Upon opening the door, I faltered. The room had been neatly cleared. In the middle of the floor lay my duffle bag, packed with what I presumed were my belongings. On the top of the bag was a pinned note: "Dr. Ross—call this number immediately! The note was signed "RCMP."

Of course I was befuddled, disturbed. After regaining a contemplative frame of mind, I rocketed to the home of my landlord. She reacted as if she were viewing a phantom. After a few seconds, she exclaimed with bubbling sentimentality: "My God, you are alive!" Turns out that because I was departing early each morning and returning late each evening, no one had seen me for two days. To my landlord, my absence was ominous. Her reaction was automatic: A telephone call to the RCMP to report that I was missing.

I quickly dialed the number from my note. A Mounty identified himself: "So good to hear from you," he said in a voice that was about as astounded as that of my landlord. "It's like this," he continued. "Whenever someone has not been seen for at least two days after presumably venturing onto thinning ice, we assume the worst. Lacking information on the person's whereabouts, we institute a default policy: We assume that the person fell through the ice, drowned, and was then either swept out to sea or scavenged by polar bears. And that's that —another casualty of the Arctic and a topic for a future tale during our long winter darkness." Then with a probing stare that hinted of some human compassion, he added: "While this probably seems cruel, past experiences in Churchill have shown that this can be our only position. We simply don't have the man power, equipment, or time to initiate a widespread search when there is virtually no hope for re-

covery." Regarding my personal items, the Mounty stated that my bag had been packed for quick shipment following a phone call that he would have placed to the emergency number I had initially provided. I pressed further: "What would you have said?" Staring into my eyes, and in a matter-of-fact tone, he responded: "Gary is missing and presumed dead. What should we do with his luggage?"

WOW! That call would have devastated my parents. But such was not to be. Having learned a valuable lesson, during each of the five remaining days in Churchill I made it a point to return to town about seven o'clock **and** to check in with my landlord. (As serendipity, my earlier return resulted in invites to dine—a treat considering my noticeable weight loss.)

In retrospect, the summer of '69 turned out to be one of the most memorable periods in my life—and I add, for the world at large. Simply put, who has not heard of the July 20th moon walk of Neil Armstrong? And who has not been influenced by "Woodstock," the August 15-18 musical extravaganza in Bethel, New York? Both are undeniable milestones in human history. But for me, my June adventure in Churchill takes precedent. For it was in that small northern outpost that this whippersnapper learned a profound lesson in field biology and human nature. And that is this: The Arctic is severe and unforgiving. In that vast and exotic world of cold, ice and predatory wildlife, the adage "Out of sight, Out of mind" can prove literal and tragic. And I dare say, even horrific.

In closing, I must note that during the subsequent 20-plus years after my adventure in Churchill, whenever I spoke to my parents of my next impending expedition, my mother insisted on a promise: "Always inform someone of your whereabouts and health. I don't want another 'polar bear scare'."

I have always tried to honor that commitment.

PS: My course in Chordate Zoology at UM went well: 22 students with excellent backgrounds. All seemed to be intrigued with a young American professor who approached the subject from an ecological/evolutionary perspective, shared his personal experiences from the tropics, and who added field trips to the course. For several subsequent years, I received newsy Christmas cards from at least a half-dozen students.

[Image Notes: In 1969 I was a novice with photography. My only camera was a MIRANDA 35 mm camera equipped with only a 50 mm lens. I used both KODACHROME 25 and EXTACHROME 100, slow, fine grain film for transparencies. I carried no tripod (logistic difficulties). Transparencies were cleaned with pressurized air and then digitized with a NIKON SUPER COOLSCAN 5000 ED set at maximum resolution. I made minor adjustments to contrast and color with ADOBE PHOTOSHOP ELEMENTS 4.0; several slides had blemishes removed by a professional.]

Acknowledgments

The following deserve special thanks. **1969**: Dr. Harold E. Welch, Department of Zoology, University of Manitoba (Winnipeg) for providing me with valuable insight into traveling north; Pat Rakowski and Douglas Lamb, UM graduate students working out of Fort Churchill, for sharing time and experiences; Ron Larche, Department of Mines and Natural Resources-Manitoba, for sharing his experiences during my brief layover in Thompson, Manitoba; Dr. Jennifer M. Walker, Department of Botany, UM for hosting me at the university's Delta Field Station; Royal Canadian Mounted Police (RCMP) in Churchill for valuable safety information (some of which I dismissed—almost to my peril!) and for delaying their tragic message to my parents in New Orleans; my gracious landlord "Shirley" in Churchill. **2013**: Dr. Andrew D. Warren, McGuire Center for Lepidoptera and Biodiversity (Gainesville, FL), for assistance in locating publications on Churchill's butterflies; and Paul A. Miller (**www.thedesignsmith.com**), Baton Rouge, for correcting blemishes on several of my original film transparencies.

References

Allard, S.H. 2013. Manitoba Butterflies: A Field Guide. Turnstone Press, Winnipeg, Manitoba, CANADA. 285 pp.

Brock, J.P. and K. Kaufman. 2003. Field Guide to Butterflies of North America. Hillstar Editions L.C. (Houghton Mifflin Company), New York, New York. 392 pp.

Holland, W.J. 1931 (revised edition). The Butterfly Book. Doubleday & Company, Inc., Garden City, New York. 77 plates. 424 pp.

Howe, W.H. 1975. The Butterflies of North America. Doubleday & Company, Inc., Garden City, New York. 633 pp.

Klots, A.B. 1951. A Field Guide to the Butterflies of North America, East of the Great Plains. The Petterson Field Guide Series. Houghton Mifflin Company, Boston, Massachusetts. 349 pp.

Layberry, R.A., P.W. Hall, and J.D. Lafontaine. 1998. The Butterflies of Canada. University of Toronto Press, Toronto, Ontario, CANADA. 280 pp.

Masters, J.H. and W.L. Masters 1971. The Butterflies of Churchill, Manitoba. Mid-continent Lepidoptera Series, Vol. 2, Issue 25, St. Paul, Minnesota. 13 pp.

Pyle, R.M. 1981. The Audubon Society Field Guide to North American Butterflies. Chanticleer Press, Inc., Alfred A. Knopf, Inc. New York, New York. 916 pp.

Pyle, R.M. 1984. The Audubon Society Handbook for Butterfly Watchers. Charles Scribner's Sons, New York, New York. 274 pp.

Ross, G.N. 2010. Flying high: An adventure in the alpine tundra of Colorado. *News of the Lepidopterists' Society*, Autumn (Vol. 52:3), pages 90-92, 104.

Ross, G.N. 2011. Highland fling: Butterfly wrangling on Colorado's Horseshoe Mountain. IN: Naturalist at Large. *Natural History* mag., February (Vol. 119:4), pages 12-15.

Scott, J.A. 1986. The Butterflies of North America: A Natural History and Field Guide. Stanford University Press, Stanford, California. 583 pp.

http://books.google.com/books/about/The_Butterflies_of_Churchill_Manitoba.html?id=yBizQwAACAAJ

http://people.creighton.edu/~shu02225/cr/churchill_story2.html

www.butterfliesofamerica.com

www.weatherspark.com/averages/28442/Churchill-Manitoba-Canada

Internet: Butterflies of Churchill, Manitoba-Image Results

Internet: Churchill, Manitoba, Canada

Membership Updates...

Julian Donahue

Includes ALL CHANGES received by 11 May 2014

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)

Bobier, Cynthia: [address omitted by request]
Brodeur, Diane: 252 Via Rancho, San Clemente, CA 92672-4539.
Bruce, Ian: 1413 Mission Road, Kodiak, AK 99615-6545.
Carpenter, Roger W.: 2703 Maple Avenue, Terre Haute, IN 47804-3733.
Dupo, Aimee Lynn (Ph.D.): c303 Environmental Biology Division, Institute of Biological Sciences UP, Los Banos, Laguna 4031, **Philippines**.
Essens, Tijl Anton (Ph.D.): Calle 43 @ 130 Chuburna de Hidalgo, Mérida, Yucatán 97200, **Mexico**.
Fiscalini, Robert J.: 1961 Green Brook Lane, Paso Robles, CA 93446-4203.
Gage, Edward V.: P.O. Box 742, Tooele, UT 84074-0742.
Maharaj, Gyanpriya (Ms.): 6428 Cates Avenue, Apt. 2E, Saint Louis, MO 63130-3438.
Pedersen, Karen: 460 E. Dayton Yellow Springs Rd., Apt.83, Fairborn, OH 45324-3990.
Reed, Jim: P.O. Box 166, Klickitat, WA 98628-0166.
Schwab, Jennifer: 110 Lynn Lane, Apt. 19C, Starkville, MS 39759-3980.
Smith, Audrey: N3782 Moon Lake Drive, Iron Mountain, MI 49801-9326.
Tangren, Carol: 5892 Cane Ridge Road, Cane Ridge, TN 37013-3907.
Taylor, Kevin A. (M.D.): 1235 Butternut Lane, Waconia, MN 55387-1252
Taylor, Richard D.: 3879 Chain Bridge Road, Fairfax, VA 22030-3903.
Thackaberry, Dan: 38969 Griggs Drive, Lebanon, 97355-9475.
Velat, Tom: 3S580 Naperville Road, Wheaton, IL 60189-8761.
Wagoner, Dwaine: [address omitted by request**]**
Whitebread, Steven: 1449 Quincy Shore Drive, Quincy, MA 02169-2334.

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

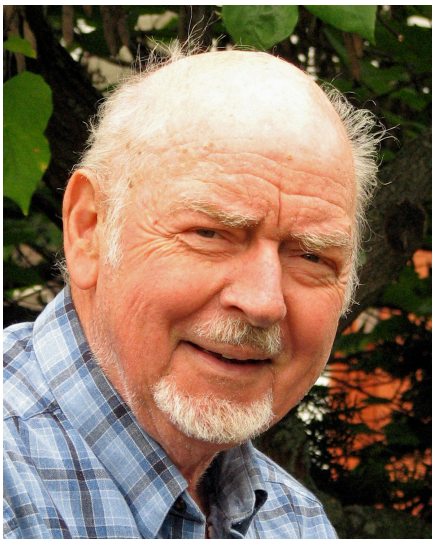
Allen, Robert T. (Ph.D.): 244 Critz Street, Starkville, MS 39759-2308.
Brown, John W. (Ph.D.): Department of Entomology, Smithsonian Institution, NHB Stop 105 (E-514), P.O. Box 37012, Washington, DC 20013-7012.
East, Raymond "Randy" James: 406 Pin Oak Lane, Winchester, VA 22601-3464.
Groothuis, Dennis (M.D.): 2625 Park Place, Evanston, IL 60201-1317.
Jaeger, Christi: Clay Lyle Entomology Building, 100 Old Highway 12, Mississippi State, MS 39762-9775.
Masters, John H.: 18344 Oak Canyon Road, Apt. 341, Canyon Country, CA 91387-6370.
McCaffrey, Joanna: 740 West Fulton Street, Apt. 702, Chicago, IL 60661-1078.
Passoa, Steven C. (Ph.D.): Museum of Biodiversity, 1315 Kinnear Road, Columbus, OH 43212-1157.
Sperling, Felix A.H. (Ph.D.): 9131 118 Street, Edmonton, Alberta T6G 1T6, **Canada**.

Metamorphosis

Julian Donahue

Margaret Koontz-Siebert, Ph.D., of Akron, Ohio, in January 2013. Dr. Koontz-Siebert had been a member of the Society since 1996.

Mogens C. "Mo" Nielsen, of Lansing, Michigan, at the home of his daughter Sandra Casey in Kawkawlin, Michigan, on 25 February 2014, at the age of 87. Mo was born on 9 April 1926 in Dianalund, Denmark, the son of Gunnar and Ingeborg Nielsen; the family moved to Detroit, Michigan when Mo was three. He served in the U.S. Army Air Corps, 1944-46, as a corporal radio/radar technician, and was stationed in the U.S. and in Munich, Germany, during the Army of Occupation. In 1946 he received a degree in forest management from Michigan State University, and worked for the U.S. Forest Service in Michigan and Washington for two years, then became a forester in the Michigan Conservation Department (now Department of Natural Resources). In DNR he progressed to become a land appraiser, then a land buyer, and eventually named head of the Great Lakes Submerged Lands Program.



Mo at his home in Lansing, MI, 14 Sept., 2007. (photo by Julian Donahue)

Mo was a Charter Member of The Lepidopterists' Society (joined in 1947); in 2012 he was one of the five surviving Charter Members granted Honorary Life Membership in the Society. He was very active in the Michigan Entomological Society, of which he served as President (1964-1965), chair of the Editorial Board (1966-1967), Executive Secretary (1968-1991), and Treasurer (1964-2005). He held several important positions in The Lepidopterists' Society: Vice President (1997-1998), three 3-year terms as a Member-at-Large of the Executive Council (1972-1975, 1978-1981, 1988-1991), and twice as a member of the nominating committee (1972, 1991).

Mo was the epitome of everything the Society stands for: an enthusiastic naturalist with an insatiable curiosity, a dedicated "amateur" who delighted in sharing information and techniques, a volunteer adjunct curator of Lepidoptera at the MSU entomology museum, and a fervent promoter of the study of Lepidoptera, especially of Michigan. Although butterflies, especially Lycaenidae and Hesperiidae, were his primary interest, he was keenly interested in moths, particularly *Catocala* and *Papaipema*. Besides authoring a dozen papers on Lepidoptera, his detailed records of Michigan's butterflies and their distribution culminated in the publication of his 1999 book: *Michigan Butterflies and Skippers: A Field Guide and Reference*.

Mo's wife Virginia "Ginny" predeceased him in September 2006. He is survived by his brother Bendt (Lois) Nielsen, daughters Karen Nielsen and Sandra (Rick) Casey, six grandchildren, eight great-grandchildren, and several nieces, cousins, and a nephew.

Memorial contributions may be made to The Gene Townsend Fund, the A.J. Cook Arthropod Research Collection Fund, or The Bug House at Michigan State University (http://www.ent.msu.edu/giving). *[Julian P. Donahue]*

Kenelm W. "Ken" Philip, Ph.D. On 14 March, 2014, Ken Philip was found dead in his home in Fairbanks, Alaska, unexpectedly and suddenly at the age of 82. He was born in Staten Island, New Yorkon Mov. 6, 1931, the third son of Van Ness and Lilian (Davis) Philip. While born and raised in the East, he could be considered as a "nearly sourdough" Alaskan following his move to Fairbanks in October, 1965.

Ken attended Brooks School in North Andover, MA and then entered Yale University. While at Yale, he met Betty Anne Phillips, a doctoral candidate in Chemistry and his future wife. They were married in 1957.

Although his formal training was in physics with B.S. and M.S. degrees, and then a Ph.D. in radio astronomy (all from Yale), Ken had a life-long interest in Lepidoptera. Except for 23 months in the U.S. Army (1956–1958) as a microwave technician, Ken's career was associated with academia. While a graduate student, he served as a research assistant in Astronomy at Yale, and upon completion of

his graduate studies was appointed to the position of Research Staff Astronomer at Yale University Observatory. Following his move to Fairbanks two years later, he joined the Geophysical Institute, University of Alaska as first an Assistant Professor and then Associate Professor of Physics until 1975. From 1967–1985, he was a Research Associate in the Institute of Arctic Biology (IAB), University of Alaska. From 1985 until his death, he was a Senior Research Associate in IAB. In 1971, he became a Research Associate of the University of Alaska Museum, a position he held until his death. In 1977 he was appointed a Research Associate in the Department of Entomology at the Smithsonian.

Ken was active for many years in the Lepidopterists' Society, joining in 1956, serving several terms as Vice-President (1967–1972; 1977–1978), and on the Executive Council (1974–1977). He was a member of the Editorial Committee of the *News* from 1971 until his death, and he served as the Zone 1 (Far North) coordinator of the annual Season Summary. In 1979, he hosted the Annual Meeting of the Lepidopterists' society in Fairbanks, with a related field trip to the North Slope.

Ken's family summered in the Adirondacks in New York and in 1938 at Treetops Camp he was introduced to butterfly collecting, and in his words "it stuck." Following his move to Alaska, Ken established the Alaska Lepidoptera Survey (ALS) in 1970. Since then, over 600 volunteers around the state have collected about 25,000 specimens. With the additional specimens that Ken personally collected, the ALS collection now holds over 83,000 specimens – a formidable effort! The bulk of this collection will go to the Smithsonian, with a lesser portion to the University of Alaska Museum in Fairbanks.

To the end of increasing the ALS collection holdings, Ken traveled widely in Alaska, Northwestern Canada, and eastern Siberia. His trips to the former U.S.S.R. were to Aborigen and Chuan Stations, Magadanskaya Oblast' (1978), Aborigen Station again in 1980, several different areas in Magandanskaya Oblast' (1983), and Providenya and Anadyr' (Magadanskaya Oblast') in 1990. For these trips,

he had logistic support from the U.S. National Science Foundation, the Soviet Academy of Sciences under the NSF Soviet Exchange Program (1978, 1980, 1983), and the Institute of Biological Problems of the North Magadan (1980).

Other trips outside of Alaska include many to the northwestern Yukon Territory along the Dempster Highway, as well as to Coppermine and Victoria Island, Northwest Territories (1975), and Coppermine, Victoria Island, and Bernard Harbour, NWT (1988); the latter two trips with logistic support provided by the Canadian Polar Shelf Project and grants from the National Geographic Society and the Smithsonian.

Annual trips to various Alaskan venues took Ken from Haines and Hyder in extreme southeastern Alaska to the North Slope areas of the Ivotuk Hills, Galbraith and Toolik Lakes, Prudhoe Bay, and west to the vicinity of Cape Thompson, the Seward Peninsula (Nome area and Darby Mts.), thence to the Anchorage area and Kenai Peninsula. Logistic support for some of these trips was provided by the Alaska Dept. of Transportation, Alaska Dept. of Fish & Game, University of Alaska, Smithsonian, National Geographic Society, and other agencies. The National Park Service supported trips to Alaska national parks and preserves including Denali, Gates of the Arctic, Wrangell-St. Elias, and Yukon–Charley. Ken published many reports over the years related to his travel and collecting activities. Several journal articles were also published and are cited below.

On his many trips, Ken was accompanied by other collectors and scientists in related fields. In addition to the 1979 Lepidopterists' Society field trip, the list includes J. F. Gates Clarke, Hans and Mark Epstein, Cliff Ferris, Annette C. Jones, Mathias Lörtscher, Daniel Oosting, Carolyn Parker, Floyd and June Preston, Dave Roseneau, Ron and Margaret Royer and children, Olavi Sotavalta, Jim and Lynda Troubridge, Monty and Grace Wood.

For the last few years of his life, Ken turned from avid field collector to equally avid digital photographer. He was in the process of taking digital photographs of live butterflies in the field – at least of those species "as can be induced to cooperate." He had almost completed his task and had made plans for field trips in 2014 to photograph the few species that had eluded him. He had planned to publish a book about Alaska butterflies.

He was a charter member of the Alaska Entomological Society and was active in their programs. During the past two years Ken volunteered to collect moths as part of National Moth Week. In 2006, he received the John Adams Comstock Award from the the Pacific Slope Section of the Lepidopterists' Society. The meeting was held in Ephram, Utah and Ken and Betty Anne attended. Ken's lifelong activity with the arctic Lepidoptera was recognized by two patronyms: the butterfly *Oeneis philipi* Trounridge, 1988, and the moth *Grammia philipiana* Ferguson, 1985.

Lepidoptera were not Ken's only collecting activity. Many of the walls of his home were lined with bookshelves filled with books, and his lab area had racks of classical music Lp records and CDs that fueled a formidable speaker system. His basement woodworking shop boasted a collection of hand-operated wood planes in a cabinet that he custom made. When bored by other interests, Ken was a proficient cabinet maker, and reader of science fiction and fantasy.

He was also interested in Apple/Macintosh computers and their applications to entomological collection management and data analysis. From 1992–1995, he developed RangeMapper – a sophisticated software geographical mapping application for the Apple/Macintosh platform. He had served as president of the Fairbanks Apple Users' Group (1982–1983), and was a board member since then. His interest in computer graphics led him to delve into fractals and the Mandlebrot set, resulting in several publications jointly authored with his brother Davis and others.

Ken was preceded in death by his only child, Mary (in 1986), as a consequence of severe injuries she sustained in a tragic automobile accident, and Betty Anne in 2010. He is survived by his two older brothers and their respective wives, Davis and Kristina & Peter and Sabina.

Ken was an amiable traveling companion who could brighten up bad weather days in the field with a wealth of stories and anecdotes. Given the opportunity and a receptive audience, he was quite the raconteur and consummate punster. His congenial presence will be sorely missed.

Bibliography (Lepidoptera journal articles only)

Troubridge, J. T., K. W. Philip, J. A. Scott & J. H. Shepard. 1982. A new species of *Oeneis* (Satyridae) from the North American Arctic. Can. Ent. 114: 881–889.

Troubridge, J. T. & K. W. Philip. 1982 (83). A review of the *Erebia dabanensis* complex (Lepidoptera: Satyridae) with descriptions of two new species. J. Res. Lepid. 21(2): 107–146.

Philip, K. W. 1983. Butterflies of the western North Slope and Victoria Island, with special reference to Arctic butterfly zonation. National Geographic Research Reports.15: 513–522.

Philip, K.W. & P. Roos. 1985. Notes on *Erebia occulta* (Lepidoptera: Satyridae). J. Res. Lepid. 24(1): 81–82.

Troubridge, J. T. & K. W. Philip. 1990. A new species of *Colias* (Lepidoptera: Pieridae) from arctic Canada. Can. Ent. 122: 15–20.

Ferris, C. D., J. J. Kruse, J. D. Lafontaine, K.W. Philip, B. C. Schmidt & D. S. Sikes. 2012. A checklist of the moths of Alaska. Zootaxa. 3571: 1–25.

Dubatolov, V. V. & K. W. Philip. 2013. Review of the northern Holarctic *Arctia caja* complex (Lepidoptera: Noctuidae: Arctiinae). Can. Ent. 145 (special issue): 147–154.

Clifford D. Ferris 5405 Bill Nye Avenue, R.R. #3, Laramie, WY 82070. Research Associate: McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, Gainesville, FL; C. P. Gillette Museum of Arthropod Diversity, Colorado State University, Ft. Collins, CO. **cdferris@uwyo.edu.** (with excerpts by *Julian Donhaue*)

Formative Experiences:

The "Mexican Cecropias" -- Paul Manton

34 Universe Dr., Levittown, N.Y. 11756
paulmanton1@aol.com

It's a simple, untechnical, and unsophisticated act, really. Right now, on December 19, 2013, I've entered "pictures of butterflies" into the Google search bar and up arose color photograph after color photograph, row upon row, line after line, of exquisite lepidopterian beauties: *Morpho, Papilio, Heliconius, Hypolimas, Charaxes, Danaus, Acraea, Graphium, Ornothoptera, Basilarchia*…. the list flutters by like a great and elongated flock with nomenclature as ornate and elaborate as the iridescent blues, shimmering greens, brilliant oranges, and darting stabs of tones, textures, and hues. Now I, not the least jaded by the passage of decades where entomological exuberance is concerned, wax poetic and dwell in awe at the magnificence of the Creation and the seemingly audacious whimsy of evolution. Yet the aforesaid Cyber Age act is hardly noteworthy to those unborn long after I picked up my first butterfly net. An entire generation has come-of-age that finds this no more exciting, startling, unexpected, or extraordinary than flipping a light switch and illuminating a darkened room (which doubtless would have amazed my great grandparents in their youth). Consider, however, how incredible this unremarkable and effortless act would have been on December 19, 1973 when I was a twelve year-old amateur entomologist with nobody in my family or within my family's acquaintance involved in any scientific field let alone entomology. No Internet, a shockingly limited selection of books on the topic in my school and local public library, and no museums in my neighborhood – although a tiny one, the Hicksville Gregory Museum where I work – had just opened up a few miles from home. (See my "The Gardiner Gregory Lepidoptera Collection" in the Spring 2004 issue of *News of the Lepidopterist's Society*).

My pre-adolescent conception of science in general bore a striking parallel to the Medieval natural philosophers. Just as a scholar in the 12th Century might rely entirely upon the authority of Aristotle, Galen, or Archimedes, so I had Herbert S. Zim's *Butterflies and Moths* (1962), Edwin Way Teale's *Near Horizons* (1942) and *The Strange Lives of Familiar Insects* (1962). I also had a 1936 edition of Frank Lutz' *Field Book of Insects,* and, the first insect book I ever owned, G. Collins Wheat's *The World of Ants* (1959). All of these books pertained to North American species and even Lutz appreciated a certain northeastern bias. All were valuable guides to those I collected in the vacant lots a few hundred feet behind my family's suburban Levittown, Long Island home; one in particular called the "Old Motor" by local boys was the site of the Grandstand of the 1908-11 Vanderbilt Cup Race whereupon Henry Ford was a regular attendee and employed the extravaganzas to promote the state-of-the-art in horseless carriage technology. On the main, I netted at least twenty-five butterfly species there and by my 12th birthday, had an extremely limited perception of the true diversity that existed and which I was soon to discover. Oh, there were faint intimations and intriguing tidbits here and there to be found in the likes of Teale who had lived on Long Island, a few miles from my home, between 1929 and 1963. (See my "Edwin Way Teale: Long Island Entomologist" in the Autumn 1995 issue of *Long Island Forum Magazine*). He'd mention Henry Walter Bates netting dainty heliconiids here or Alfred Russell Wallace capturing a birdwing there and occasionally an encyclopedia might have a picture of something rather generically dubbed an example of "a tropical butterfly". My familiarity with the Cecropia moth – I'd captured my first in the summer of 1969 on my next door neighbor's hedge – gave me some inkling of bigger and bolder lepidopterian species yet to be discovered. But the true implications and latitude of biodiversity had not sunk in yet. To a twelve year-old from a blue collar background when a rare "nature show" might be on TV and the syndicated *Mark Trail* cartoon (written by Ed Dodd, Teale's editor) was the only science news to be had except when astronauts were walking on the Moon, these exotic lands seemed so fantastic that Teale might as well have been describing Lemule Gulliver's encounters and species described seemed half-mythical like the sea serpents that graced old nautical maps.

I'm frequently shocked today by my level of ignorance and the parochial character of my outlook even thought I was doubtlessly the most scientifically informed kid in the neighborhood save for Matthew whose family lived near the Old Motor before moving away 'round 1976. He was the only other collector I knew and whilst we filled in the gaps in one another's knowledge, much of what we considered was purely speculation and our collecting a lazy summer adventure. I'm also amazed – and no boastfulness in intended here – by how much I was able to teach myself, something that's been the dominant pattern in the life of my intellect ever since. Here, before I turned thirteen, intellectual ontogeny was recapitulating intellectual phylogeny and I had, too, discovered the "forbidden" Book of Darwin.

It was in January of 1974 that my sister Virginia chanced upon an advertisement for "a butterfly catalogue" from the Butterfly Company of East Rockaway, N.Y. and when I opened its glossy full-color pages the day Sal our mailman delivered it to our door, I was utterly awestruck. Like Wallace's famous encounter with the *Troides* birdwing, my heart pounded, my knees buckled, the hair on the back of my neck stood erect for these were not simply whimsical artistic depictions of butterflies and moths but actual species from exotic lands. Somewhere in steamy jungles of Central America, in the grasslands of East Africa, and on distant Pacific islands these butterflies and moths were actually alive and fluttering afield. What to my sister and other family members was only vaguely interesting and not aesthetically unappealing was, to me, the discovery of an entire new world not merely inhabited but absolutely festooned with life and riotous color and beauty escaping calibration. And something

Continued on p. 91

The Marketplace

IMPORTANT NOTICE to ADVERTISERS: If the number following your ad is "561" then you must renew your ad before the next issue! NO MORE paid advertising.

New Advertising Statement: The News of The Lepidopterists' Society accepts advertising related to Lepidoptera and consistent with the purposes of the Society free of charge. Other types of advertising will not be accepted, regardless of the source. Acceptability of advertisements for publication is at the discretion of the News editor.

Books/Electronic Images

For Sale: Lepidoptera books from personal library of over 600 volumes. Books are in excellent condition, mainly hardbound, some with custom bindings. All are out of print and most were published before 1999. I must sell due to lack of space to continue to store them. I do not have a current list of titles available, but am working on one that should be available soon. Available titles do include Jamaica and its butterflies by Brown and Heineman, The butterflies of North America by Howe, The generic names of the butterflies and their type species by Hemming (custom hardbound), Ithomiidae tribe Napeogenini by Fox and Real, Butterflies of Liberia by Fox, A revision of the American Papilios by Rothschild and Jordan (custom hardbound), How to know the butterflies by Ehrlich and Ehrlich, Butterflies of Britain and Europe by Higgins and Riley, In the meantime, before a more complete list of titles is available, I am making the following offer: An assortment of 50 books for $200.00 or 20 books for $100.00 (with a provision to ensure that you won't receive any duplicates to your present library). For more information contact John Masters, **quest4tvl@aol.com.** 562

FLOWER VISITATION BY COLORADO BUTTERFLIES (40,615 RECORDS) WITH A REVIEW OF THE LITERATURE ON POLLINATION OF COLORADO PLANTS AND BUTTERFLY ATTRACTION. By James A. Scott. 190 pages; pdf free at **http://digitool.library.colostate.edu.** This is a scientific book listing all my records of species of butterflies visiting hundreds of flower species, mostly in Colorado, using scientific names. Butterfly preferences are determined. All the ways butterflies are attracted to flowers are explored (including an extensive literature review) including flower color, shape, ultraviolet reflection, nectar quality, floral scents, plus butterfly vision, proboscis length, sense of smell, etc. The second part of the book arranges the records by plants, to determine which flowers are popular, and includes flowers that are shunned (most pretty flower species in nature are actually unpopular). Known pollinators of all these plants are given, the only modern compilation of pollinators of Colorado plants. Pollination by butterflies is completely reviewed with numerous examples worldwide. Visits to other adult foods are included, foods such as sap, fruit, honeydew, dung, mud, etc.), and the chemicals attracting butterflies to these foods are pinpointed with thorough literature search, including simple chemical recipes you can make to attract butterflies that like carrion and dung etc. Learn about butterflies, bees, flies and other insect pollinators —it's all in this well-stuffed book. 562

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. 553, 554) 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.

Advertisements should be under 100 words in length, or **they may 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 members 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.**

Selected issues of the Lepidoptera of North America published in the Contributions of the C.P. Gillette Museum of Arthropod Diversity are now available as downloadable pdf's on the Colorado State University library's ftp site as part of the Colorado Digital Library. There are currently 6 issues containing significant information about Lepidoptera that are already online. These include most recent issues by James A. Scott (see previous page), Ken Davenport's revised annotated list of Kern/Tulare butterflies, Richard's Holland's publications on New Mexico *Glaucopsyche lygdamus* and *Plebejus icarioides* and a biogeographic study of the butterfly faunas of the mountains in the Chihuahuan region [mainly New Mexico], Andy Warren's butterflies of Oregon, and one of the parts of the Fort Sill, Oklahoma survey. You may find these by going to http://digitool.library.colostate.edu and keying in "Contributions of the C.P. Gillette Museum." Most of the other publications in the Moths of Western North America and the Lepidoptera of North America subseries should be served on-line by the end of summer 2014. We also intend to serve pdf's of other publications and metadata of interest to lepidopterists. If one wishes a printed copy of a particular publication it may be downloaded at no cost and printed at a printer of your choice. Hard copies of selected issues may still be ordered from BioQuip.com. 562

50 minute DVD, published December 2013, on the many ways that colours are generated in butterfly wings. "Gilded Butterflies and the Secrets of their Scales" draws on live butterfly footage from 18 countries worldwide and many scanning microscope images of diverse types of butterfly wing scales. See website at www.cinebutterflies.com for details. John Banks FRES, 28 Patshull Road, London NW5 2JY, UK 562

Review from Torben Larsen: "Butterfly colours have been admired and copied ever since the Egyptian painted beautiful pictures of milkweed butterflies (Danaus chrysippus) on the walls in the Valley of Kings more than 3,000 years ago. But there is more to colours than meets the eye. What John Banks does in this video is to give a tour of the many different ways in which the colours are produced, from simple pigmentation to complex structural features only recently revealed by electron microscopy. This is illustrated by excerpts from his excellent butterfly videos from all over the world. The result is an enjoyable and educational experience for anybody watching it – even hardened entomologists."

Research Requests

Wanted: Observations, photos and specimens of larvae and adults of the Spotted Tussock Moth, *Lophocampa maculata*, from all areas of North America, recent or old. Records from far northern Canada, the desert Southwest, the southern Appalachians and the Pacific Coast (Los Angeles, CA to Juneau, AK) are especially useful to define range. Records of early and late season observations, particularly in the Pacific Northwest, are especially useful. Photographs of larval forms, particularly if they show unusual coloration are very useful. Contact Ken Strothkamp, Lewis & Clark College (**kgs@lclark.edu**) for more information on this project. 561

Equipment

FOR SALE: Night collecting sheet. The convenient collapsable and quickly erected apparatus from Bio-Quip. Almost brand new and in excellent condition. Configured as an arch (or semi-circle) 82 inches across and 87 inches high. The frame consists of 10 pieces of 3/8" aluminum tube, 24" long connected with elastic cord. After the frame is constructed and set up (anywhere with moderately level ground) the smooth reflective white sheet is fastened to it with velcro loops. Can be used with either black light or mercury vapor that is suspended from the frame or mounted on tripods. Two-sided operation. Includes carrying case. Weight is 2.2 pounds. $75.00 or best offer. Contact: John Masters, **quest4tvl@aol.com**. 562

FOR SALE: 100 U.S. National Museum System (USNM/ Smithsonian) Drawers with glass tops. 18 in. X 18 in. X 2.5 in. Drawers are in good shape. $8.00 each. Located in Ohio; buyer to arrange for local pickup or shipping. Contact Mike Gilligan (**mtgillig@tds.net**). 562

The Mailbag . . .

Dear Editor:

I was saddened to learn of Dick Holland's death. Dick and I spent many happy hours exploring remote portions of New Mexico together in our efforts to understand the butterfly fauna of that "enchanted" state. I have lots of stories from those trips, including the time Dick tried to power through a snow drift on the top of Mt. Taylor with his Toyota Land Cruiser at dusk. Sadly, the snow drift won, and we walked through the dark for 20 miles on our way back to Grants to get a tow. He thought that Toyota could go through damn near anything – and most of the time it did.

Towards the end of his life, his difficulty in speaking and mine in hearing led to a tapering off of our relationship; plus I didn't live in New Mexico anymore and only rarely made it back to "home". Still, I was glad to see he kept up his work despite his failing health.

There is one correction I would like to make to Steve Cary's otherwise fine remembrance. Dick was not the first resident New Mexican lepidopterist since T.D.A. Cockerell. That distinction doesn't even belong to me, though I started collecting there in 1956 (still have the first butterfly I caught) and joined the Lepidopterists' Society in 1963. In fact, I'm not sure who qualifies, but I do know that when I joined the Society in 1963 there were at least two other names of lepidopterists in the state in the membership directory. Shameless plug – that membership directory is how Dick found out about me, and how I have made connections with a number of lepidopterists over the years. To my mind, that directory is worth more than the annual dues our Society charges!

Mike Toliver

More Announcements:
Continued from pg.63

Wedge Foundation appoints two new board members

Ron Hodges, President of the Wedge Entomological Research Foundation, has announced two new members of the Foundation's Board of Directors. Dr. Sangmi Lee and Dr. Todd Gilligan both accepted appointments to the board. The 5 year term of each member has the option of renewal.

Ron, a founding member, tracks his involvement in the Foundation back to late 1960s. Ron said "What began as a larval organization eclosed into a mature force in the study of moths of the World. Todd and Sangmi will provide continuity for many years to come."

Sangmi Lee was born and raised in South Korea. She started learning about insects insects when she was a young girl who chased grasshoppers so she could eat their fried legs. Her fascination with moths led her to concentrate on micro-lepidoptera during her undergraduate pro-gram at Kangwon Nat'l University. As a graduate student of Dr. Kyu-Tek Park, she received her M.Sc. degree with her thesis entitled "Systematics of Subfamily Gelechiinae in Korea." Sangmi received her Ph.D. under Dr. Richard L. Brown at Mississippi State University with her disser-tation entitled "Systematics of Holarctic genera of Teleiodini (Lepidoptera: Gelechiidae)."

Sangmi has specialized on Gelechiidae for the past 15 years, and has published 25 scientific papers and 6 non-refereed identification aids on Gelechiidae and other microlepidoptera. She also made many presentations at regional, national, and international meetings. Since 2002 she has curated and identified gelechiids in many collections in North America, becoming one of the foremost experts in this difficult group. Sangmi developed the most comprehen-sive website on Gelechiidae which includes a global frame-work for phylogenetics and classification of Gelechioidea. She contributed educational videos on collecting and dissecting microlepidoptera that are available on YouTube. Sangmi is the Collection Manager of the Hasbrouck Insect Collection at Arizona State University, since 2012, and she serves as a referee to the Moth Photographs Group (MPG) site for identifications of gelechiids.

Todd was born and raised in a small town in northern Ohio. He became interested in Lepidoptera at an early age, thanks to his father, who was a high school chemistry teacher. Summers would involve rearing saturniid moths and traveling the state collecting butterflies, moths, and other insects. Todd joined the Ohio Lepidopterists at around age 10, and was very active in that organization for the next 20 years. He began collecting micro moths in the early 1990's during the height of the Ohio Survey of Lepidoptera, and eventually became interested in moths in the family Tortricidae, which remain his specialty. His undergraduate education began at Ohio Northern University and continued at Ohio State University (OSU) where he earned a bachelor's degree in entomology. His original plans to attend graduate school were postponed when his wife moved from Sydney, Australia to Ohio, and he spent the next eight years in the field of computer systems administration. Deciding that studying moths was better than being employed, he left the computer world and returned to OSU to obtain a M.Sc. in entomology. In 2007 he moved with his wife and two dogs to Colorado to pursue a Ph.D. His dissertation at Colorado State University (CSU) focused primarily on the systematics and identification of economically important tortricids.

Todd currently works as a Research Scientist in the Department of Bioagricultural Sciences and Pest Management at CSU. The majority of his research involves producing morphological and molecular identification resources for invasive Lepidoptera in conjunction with the USDA-APHIS-PPQ-S&T Identification Technology Program (ITP) located in Fort Collins. Todd has authored or coauthored more than 20 peer-reviewed publications, including a book on olethreutine moths. He maintains a website dedicated to tortricids and has performed extensive field work across North America, Europe, Australia, and Africa. He received numerous awards for his entomological work, the most notable including CSU's inaugural University Distinguished Professors Scholarship (2012), the Entomological Society of America's John Henry Comstock Award (2011), and the USDA-APHIS-PPQ Deputy Administrator's Safeguarding Award (2011). Todd currently serves as President of the Lepidopterists' Society, and he is webmaster for the Foundation's website.

Everyone is invited to visit the Foundation's website (http://www.wedgefoundation.org). Other board members include: John Brown, Oliver Dominick, Larry Gall, Don Lafontaine, Ron Hodges, Eric Metzler, Jackie Miller, Paul Opler, Kelly Richers, and David Wagner. The Board wel-comes communication from all who are interested in the Foundation's activities.

For further information, contact Eric Metzler, metzlere@msu.edu.

Subtle Satyrs: differentiation and distribution of the newly described *Hermeuptychia intricata* in the Southeastern United States (Lepidoptera: Nymphalidae: Satyrinae)

Andrew D. Warren[1], Keith R. Willmott[1], and Nick V. Grishin[2]

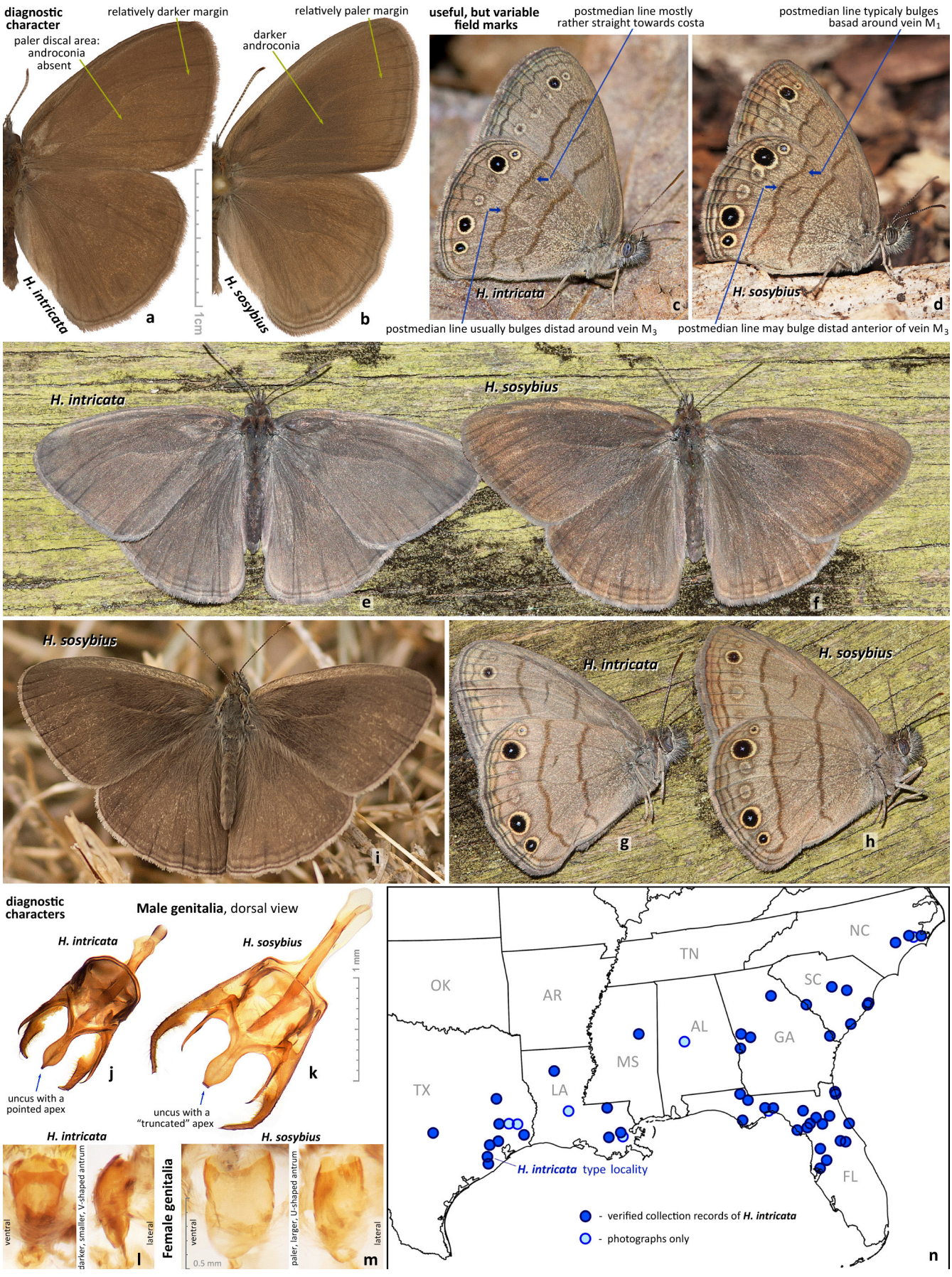
[1]McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, 3215 Hull Rd., UF Cultural Plaza, PO Box 112710, Gainesville, FL, USA 32611-2710
andy@butterfliesofamerica.com, **kwillmott@flmnh.ufl.edu**
[2]Howard Hughes Medical Institute, Department of Biophysics and Biochemistry, University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX, USA 75390-9050 **grishin@chop.swmed.edu**

Hermeuptychia intricata Grishin (Intricate Satyr) was recently described from the southeastern United States (Cong & Grishin 2014), as a new cryptic species formerly overlooked within sympatric *H. sosybius* (Fabricius, 1793) (Carolina Satyr). The new species was diagnosed based on differences in the male and female genitalia between it and *H. sosybius*, as well as differences in the COI DNA 'barcode' between the two species. The most obvious diagnostic character in male genitalia is the shape of the distal part of the uncus. It is pointed in *H. intricata* (Fig. 1j) and looks truncated in *H. sosybius* (Fig. 1k). In female *H. intricata*, the antrum is smaller, darker, and more triangular (V-shaped, Fig. 1l), but is larger, paler, and rounder in *H. sosybius* (U-shaped, Fig. 1m). While these genitalic characters are rather external, and can usually be observed without complete dissection upon brushing the tip of the abdomen, it would be desirable to find characters that allow unambiguous identification of live individuals, including those readily seen in photographs. A discussion of possible diagnostic characters on the ventral side of *H. intricata* was provided in the original description, but the authors concluded that they "were not able to find reliable wing pattern characters to tell the difference between the two species" (Cong & Grishin 2014).

Shortly after the publication of the original description of *H. intricata*, we realized that the dorsal surface of the male wings does, in fact, include a diagnostic character that readily separates that species from *H. sosybius*. The basal two thirds of the forewing (and a region in and near the discal cell of the hindwing) of *H. sosybius* is covered with a layer of dark androconial scales (which under magnification appear markedly more elongate and dense than surrounding scales), leaving the outer third of the forewing distinctly paler than the darker base (Fig. 1b, f, i). Males of *H. intricata*, on the other hand, completely lack the dark androconia above, resulting in a nearly uniformly-colored dorsal surface (Fig. 1a, e). In some cases, the outer margin and cell of the forewing may even be slightly darker than basal areas - essentially the reverse of the pattern seen on *H. sosybius*. While subtle, this difference is easily observed in photos, as well as pinned specimens (Fig. 1a, b) and live individuals (Fig. 1i), as long as they are not too damaged. We haven't yet noticed any diagnostic characters on the dorsal sides of female *Hermeuptychia* that readily separate the two species.

In addition to the presence or absence of dark forewing androconia on males, there are other subtle differences that are sometimes useful in separating *H. intricata* from *H. sosybius*, including females, some of which were discussed (p. 84) in the original description of *H. intricata*. While not always diagnostic, the postmedian line on the ventral hindwing of most specimens of *H. sosybius* bulges basad around vein M1 (basad of the large eyespot near the apex, Fig. 1d, h), while on *H. intricata* this region of the postmedian line is usually straighter (Fig. 1c, g). On *H. intricata*, the ventral hindwing postmedian line frequently bulges distad around vein M3 (basad between the two smaller eyespots, Fig. 1c, g), but it rarely does in *H. sosybius* (Fig. 1d, h). The bend in the ventral forewing postmedian line, discussed in the original description of *H. intricata*, seems too variable between the two species to be very useful in separating them. While difficult to quantify, the forewing of *H. intricata* appears to be slightly longer near the apex than that of *H. sosybius*, which has a somewhat more rounded forewing apex. As a result, some individuals of *H. intricata* have a shallowly concave outer margin to the forewing, a feature rarely seen on *H. sosybius*. Finally, very fresh specimens of *H. intricata* and *H. sosybius* may differ subtly in their overall coloration. As shown in Fig 1e–h, fresh individuals of *H. sosybius* usually have an overall warm brown tone, above and below, while those of *H. intricata* have a colder gray tone. Once the butterflies have flown for a day or two, these color differences are no longer apparent. Both *H. intricata* and *H. sosybius* are seasonally variable; spring adults of both are generally larger, with smaller eyespots below, while summer adults are usually smaller, with larger eyespots below.

Once the presence or absence of dorsal forewing androconia had been identified as a diagnostic character on males, and confirmed through genitalic dissections, males of *H. intricata* were easily found among series of *H. sosybius*


diagnostic character
relatively darker margin
paler discal area: androconia absent
relatively paler margin
darker androconia
H. intricata
a
1cm
H. sosybius
b
useful, but variable field marks
postmedian line mostly rather straight towards costa
postmedian line typicaly bulges basad around vein M1
H. intricata
c
H. sosybius
d
postmedian line usually bulges distad around vein M3
postmedian line may bulge distad anterior of vein M3
H. intricata
H. sosybius
e
f
H. sosybius
i
H. intricata
H. sosybius
g
h
diagnostic characters
Male genitalia, dorsal view
H. intricata
H. sosybius
1 mm
j
k
uncus with a pointed apex
uncus with a "truncated" apex
H. intricata
H. sosybius
Female genitalia
ventral
darker, smaller, V-shaped antrum
lateral
l
ventral
0.5 mm
paler, larger, U-shaped antrum
lateral
m
NC
TN
OK
AR
SC
AL
GA
MS
TX
LA
H. intricata type locality
FL
- verified collection records of H. intricata
- photographs only
n

in the collections at the McGuire Center for Lepidoptera and Biodiversity (MGCL), as well as other collections and online images (to be detailed in another publication), thus providing an opportunity to further refine the overall geographic range of *H. intricata*. The original description cited specimens of *H. intricata* from eastern Texas, Louisiana, Florida and South Carolina, and discussed probable photographic records from Texas and Alabama. Specimens are now also known from Mississippi, Georgia and North Carolina, and we show a distribution map based on all these records in Fig. 1n, including some provisionally identified from photographs of live individuals (e.g., Fig. 1c). Photographs of many specimens are provided by Warren et al. (2014).

The remarkable discovery of *H. intricata*, which is now known from eight US states, is a powerful reminder of the continued need for the scientific study and collection of common, widespread butterflies. This example, together with other recent cases of "common" butterflies in the region containing undetected or undescribed cryptic species (Warren & Calhoun 2011, 2012; Pavulaan & Wright 2002, 2005), clearly demonstrates that the butterfly fauna of the eastern United States remains incompletely understood, and suggests that additional unexpected discoveries may await us.

Acknowledgments

We thank Charles Bordelon, Richard Brown, John Calhoun, Terhune Dickel, Peter Eliazar, Thomas Emmel, Shinichi Nakahara, Harry Pavulaan and Brian Scholtens for providing data and or specimens of *Hermeuptychia* for this study. Thanks to Katrina Lane for preparing various papered *Hermeuptychia* specimens at the McGuire Center for Lepidoptera and Biodiversity, and John Calhoun for his detailed review of the manuscript. We also thank Parker Backstrom, Bill Bouton, Alana Edwards, Greg Lasley, Kathy Malone, Sean McCann, Jeff Pippen, Paul Rebman, Kim Stringer and Barbara Woodmansee for sharing their photos of *Hermeuptychia* and for discussions.

Figure 1. *Hermeuptychia intricata* (a, c, e, g, j, l, n) and *H. sosybius* (b, d, f, h, i, k, m) males in dorsal (**a**, **b**, **e**, **f**, **i**), and ventral (**c**, **d**, **g**, **h**) aspects, genitalia (males: **j**, **k**; females **l**, **m**) and distribution records (**n**). Live individuals are shown in **c**, **d**, and **i**. Some photographs were edited to remove imperfections. **a**. Paratype, LOUISIANA: Jackson Parish, Jonesboro, 4-VI-1920, G. W. Rawson [USNM]; **b**. TEXAS: Brazoria Co., Bar-X Ranch, Rd. 971N, ex ovum, eclosed 18-IV-2000, N. V. Grishin; **c**. TEXAS: Houston Co., Davy Crockett National Forest, Ratcliff Lake Recreation Area, 26-III-2008, © Greg Lasley (image left-right inverted); **d**. FLORIDA: Alachua Co., Gainesville, Kanapaha Pines III, 30-X-2011, A. D. Warren **e**–**h**. FLORIDA: Levy Co., vic. Waccasassa River, Hwy. 24, 6.8-8.8 mi SW Bronson, 6-IV-2014, A. D. Warren **i**. FLORIDA: Jefferson Co., SW of Lloyd, 8-IV-2007, © Paul Rebman. **j**–**m**. TEXAS: Fort Bend Co., Brazos Bend State Park, 17-VIII-2013, N. V. Grishin, dissection numbers: **j**. holotype, NVG130927-14; **k**. NVG130927-03; **l**. paratype, NVG130927-12; **m**. NVG130927-02. **n**. Specimen-based records with unambiguous identifications are shown as dark blue circles and photographic records are indicated as pale-blue circles.

Literature Cited:

Cong, Q. & N. V. Grishin. 2014. A new *Hermeuptychia* (Lepidoptera, Nymphalidae, Satyrinae) is sympatric and synchronic with *H. sosybius* in southeast US coastal plains, while another new *Hermeuptychia* species – not *hermes* – inhabits south Texas and northeast Mexico. ZooKeys 379:43–91.

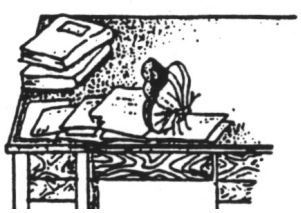
Pavulaan, H. & D. M. Wright. 2002. *Pterourus appalachiensis* (Papilionidae: Papilioninae), a new swallowtail butterfly from the Appalachian region of the United States. Taxonomic Report of the International Lepidoptera Survey 3(7):1–10.

Pavulaan, H. & D. M. Wright. 2005. *Celastrina serotina* (Lycaenidae: Polyommatinae): a new butterfly species from the northeastern United States and eastern Canada. Taxonomic Report of the International Lepidoptera Survey 6(6):1–18.

Warren, A. D., K. J. Davis, E. M. Stangeland, J. P. Pelham & N. V. Grishin. 2014. Illustrated Lists of American Butterflies. http://www.butterfliesofamerica.com

Warren, A. D. & J. V. Calhoun. 2011. Notes on the historical occurrence of *Aphrissa neleis* in southern Florida, USA (Lepidoptera: Pieridae: Coliadinae). News of the Lepidopterists' Society 53(1):3–7.

Warren, A. D. & J. V. Calhoun. 2012. A treasure hidden in plain sight: *Aphrissa neleis* is a resident in southern Florida, USA (Lepidoptera: Pieridae: Coliadinae). News of the Lepidopterists' Society 53(4):133–134.



From the Editor's Desk

James K. Adams

Dear members,

With this issue of the News, you are also receiving the Season Summary for 2013, as well as a copy of a new brochure for the Lepidopterists' Society. This brochure is the work of the Membership Committee and represents a nice way to advertise the society (with a picture of mine included -- shameless self promotion!).

The "Formative Experiences" column is continuing with this issue (see page 79). As indicated previously I have enough articles for the column for a few issues, so don't be upset if yours doesn't show up immediately. Also remember that there is another potential column you can contribute to (First Encounters) which will debut with the next issue. The Conservation Matters column will also make a return with the next issue in the Fall.

The voting on the three Constitutional Ammendments was overwhelmingly "yes" for all three (see tally on page 62).

Enjoy this 52 page issue of the News!!

A visit to Timberhill, a restored oak woodland savanna in Iowa: home to some rare and unusual butterflies

Michael M. Collins

[1]Associate, Carnegie Mus. Nat. History, Invertebrate Section, Pitts., PA; 215 Prospect St., Nevada City, CA 95959
michaelmerlecollins@comcast.net

In a modern house set among meadows and woodland, one picture stood out among fine old paintings and vivid modern artwork. A man with deep set yet gentle eyes, high forehead, and swept back hairline holds a lute in apparent anticipation of playing a baroque piece. Behind him on the wall are two cases of North American moths and butterflies: a polyphemus, a cecropia, a tiger swallowtail and others. Sibylla Lippisch Brown tells me this photograph of her father appeared in a 1946 issue of Life Magazine in an article on German 'rocket scientists' who escaped the advancing Russian army and were brought to the West just after WWII. Dr. Alexander Lippisch was the inventor of the delta wing that allows an aircraft to safely exceed the speed of sound; he was also the designer of the ME 163 rocket plane flown by the *Luftwaffe* toward the end of the war. Alex was a scientist, not a military person, and the mounted Lepidoptera and Lute are symbols of his cultured Continental demeanor, as I knew him in Cedar Rapids, Iowa during my childhood (Collins 2007).

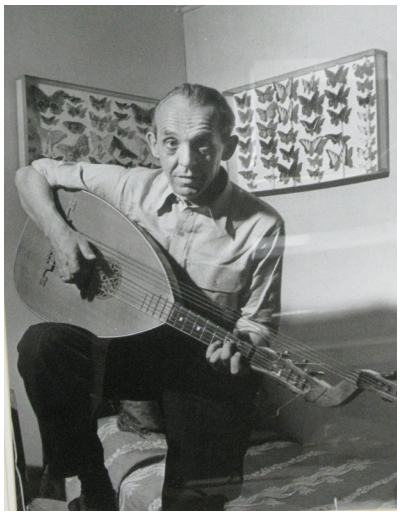


Figure 1. Held in quarantine upon arriving in the US, Lippisch passed time by playing his lute and collecting Lepidoptera on the grounds of the Army base where he was quartered. He went on to work in the aerospace community, first at Northrop and later with Collins Radio Co. in Cedar Rapids, Iowa (Kueter 1976).

From her father Sibylla developed a love of natural history. Alex was a mentor to me in my interest in Lepidoptera, helping me with science fair projects and encouraging me with the gift of an inscribed copy of Lutz's *Field Guide to Insects*. Sibylla and I occasionally collected butterflies together in the mid-1950s in meadows near our respective homes, but hadn't seen each other for more than fifty years. We were brought in touch by a mutual friend, Aaron Brees, who attracted my attention through his article on finding *Hemileuca nevadensis* (or something close to this taxon in this nebulous species group) in the Loess Hills of western Iowa. Sibylla and Bill Brown are famous in these parts for their efforts since 1994 to restore an Oak Woodland Savanna, an extraordinarily diverse, yet scarce, plant community in the Great Plains (Henkes 2011). Intense logging, farming, grazing and fire suppression during post-settlement times have reduced Midwestern oak savanna to about .02% of its original extent (Mutel 2008). Although the oak species change, a mosaic of oak woodland originally extended, virtually uninterrupted, from the upper Midwest to the hill country of Texas, before being broken up by agriculture over the last two centuries (Savage 2004).

I added a visit (Sept. 24-25, 2013) to the Browns' property to a planned business trip, excited and primed after reading Sibylla's book, "*Timberhill: Chronicle of a Restoration*" (2012), in which she records finding many plants and animals (including butterflies) that are either rare, a state record, or widely disjunct from known ranges.

This region, near the border with Missouri in the Southern Iowa Drift Plain, was eroded by melting glaciers into a 'devil's washboard' of gullies and hills, and so was historically protected from the farmer's plow. Invasive trees, shrubs and smaller plants have overwhelmed over the centuries the original mixture of tall grass prairie and open oak woodland savanna. In reading about the ecology of their property the Browns quickly discovered that little was known about the oak savanna community nor was there a consensus among experts on the best restoration plan.

As Sibylla and Bill and I walked through sections of their prairie and woodland I was grateful that I had just read her *Timberhill* book on the flight from California; her detailed written narrative revived a few stored facts and concepts from community ecology classes long ago. Now I could see all around me evidence of succession, the results of their restoration program.

My first impression was of the open understory beneath the mature spreading white oaks (Fig. 2). Sunlight filtered through the canopy, illuminating a sprinkling of color on late-blooming annuals, even in late September. This open structure, and diverse understory, defines the oak wood-

Figure 2. Both thinning and prescribed burning were necessary to produce the open understory of native annuals and perennials. The bark of these fire-resistant white oaks shows no trace of the prescribed burn.

land savanna – a community present only in its elemental potential to re-express itself when the Browns bought the property. Sibylla recalled the anguish she and Bill had about choosing the proper methods to remove invasive trees and weedy plants. Established practice was largely tailored to specific goals: to harvest the trees as commercial timber, or to provide shelter for wildlife, especially to promote recreational hunting. They wound up cautiously learning by trial and error that initial thinning and logging had to be followed by carefully controlled annual burns during dormant seasons. (Herbicides only temporarily controlled unwanted plants, and killed many desirable species.) The oak woodland savanna is a fire-dependent community. With their deep roots and thick bark, the larger oaks are immune to the fire, the fire kills and suppresses competitors for light and water, and acorns sprout and grow best in the newly opened understory, quickly reaching a size unattractive to browsing deer. Before these measures, large isolated "wolf tree" oaks showed the effects of overcrowding with their dead lower branches, the victims of shading from elm, eastern red cedar, and honey locust, which in turn benefitted from a recent history of fire suppression.

From experience, the Browns found that their burning technique produced a patchy pattern ranging from completely burned areas to other sections that escaped the low, fast fires. Repeated over the years, the controlling effect eliminated unwanted growth, but the patchy nature of the burn also allowed even vulnerable overwintering invertebrates to survive, and to subsequently benefit from the increased plant diversity. A census of plants at Timberhill, both the woodland understory and grassland, showed an impressive score: from 100 species in 1994 to 460 by 2011. This is good news for butterflies, and based on studies in other regions in the Midwest, the oaks alone should host hundreds of species of moths.

With support from the USDA Fish and Wildlife Service, in 2003 Sibylla and Bill Brown helped form the Southern Iowa Oak Savanna Alliance. Working through conservation boards in nine counties, and with Federal aid, nearly 100 landowners have signed agreements with FWS or received aid and to date 2771 acres of either prairie or woodland have been restored.

Part of the success of the restoration at Timberhill is due to the emergence of a healthy community of fungi. The Browns left in place downed and dead trees to allow natural decomposition by certain fungi, which in turn release nutrients into the soil. Mycorrhizal fungi, symbionts with plants, pass these nutrients as well as nitrogen to the roots in return for a barter of sugars from the plant. Sibylla has become an accomplished amateur mycologist, identifying an impressive array of fungi on our walk (Fig. 3). Of twenty-five Bolete mushrooms (fleshy topped mushrooms with pores), six are state records and one species was previously known only from a single locale in North Carolina!

Figure 3. Sibylla with a honey mushroom. An entire chapter in 'Timberhill' is devoted to the key role fungi play in a woodland community.

Fungal diversity increases plant species diversity, which in turn supports butterfly diversity. Of special interest to Sibylla are the grassland skippers (Fig. 4-6). With the help of Aaron Brees and others she has identified certain key species. The Dion skipper (*Euphyes dion*), although a county record, is common in the wetland sedge meadow "where we see it nectaring on swamp milkweed each summer". Aaron is familiar with this species, but was surprised by its abundance and did not expect to find the species in this area. The Byssus skipper (*Problema byssus*) and Zabulon skipper (*Poanes zabulon*), considered indicator species for remnant prairie habitat by Schlicht et al. (2007), are common in Timberhill, and in 2013 the Browns collected Horace's duskywing (*Erynnis horatius*), an oak feeder and also a county record.

Figure 4. Dun skipper (*Euphyes vestris*) on rough blazing star, *Liatris aspera*, 25 Sept. 2013.

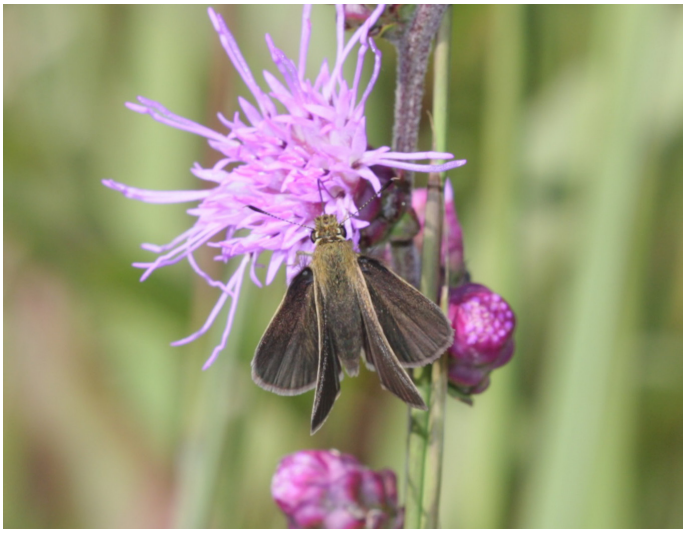


Figure 5. Swarthy skipper *(Nastra iherminier)* 18 Aug. 2013, on rough blazing star, *Liatris aspera.* (Photo by Aaron Brees)

Figure 6. Zabulon skipper (*Poanes zabulon*), Aug. 20, 2011. (Photo by Aaron Brees)

Figure 7. Southern cloudywing skipper (*Thorybes bathyllus*), Aug. 20, 2011. (Photo by Aaron Brees)

Figure 8. Coral hairstreak (*Satyrium titus*) on butterfly weed (*Asclepias tuberosa*), July 5 2013. (Photo by Sibylla Brown)

Figure 9. Regal fritillary (*Speyeria idalia*) on butterfly weed (*Asclepias tuberosa*), June 30, 2013. (Photo by Sibylla Brown)

Figure 10. Monarch caterpillar on swamp milkweed, *Asclepias incarnata*; other Timberhill hosts are *Asclepias tuberosa, A., purpurascens, A. syriaca, A. hirtella*, and *A. sullivantii*. Also present are *A. quadrifolia* and *A. verticillata*, but to date no larvae have been found on these milkweeds. (Photo by Sibylla Brown)

The recent records for the swarthy skipper (*Nastra iherminier*; Fig. 5) are state records for Iowa. Thomas Jantscher of Cedar Rapids kindly outlined its recent history for me. Mark Brown of Des Moines first photographed the species in 2007, although this may have been a stray. Ryan Rasmussen photographed it twice in 2011 in Appanoose Co., Iowa. Aaron Brees recorded it on August 20, 2011 at Timberhill, near Leon, Decatur Co. Iowa, and he and Sibylla photographed two additional specimens August 18, 2013 on the Timberhill property. Numerous others were sighted. This species is not listed by Schlicht et al. (2007) for Iowa, nor could I find Iowa records before 2007 on several websites, nor in the past 20 years of the Season Summary of the Lepidopterists' Society. I would encourage local collectors to send voucher specimens to an institutional collection to establish a permanent record for the swarthy skipper as a resident Iowa species.

"The land has a long memory", writes Sibylla in her Timberhill book. In the Timberhill project the ability of woodland and grassland to recover from extensive damage and alteration was extraordinary. Typically in a disturbed area one plant species tends to dominate. Overgrazing in the late 19th century in southeast Arizona allowed mesquite to invade grasslands. In Timberhill honey locust, also a thorny legume, similarly invaded prairie grassland, forming overgrown thickets (Fig. 11). Once locust and other invasive species were removed, and with the restorative effect of prescribed burns, the grasslands recovered, now home to an abundance of associated annuals and perennials with attendant animal species (Fig. 7-14).

Figure 11. To the right is unrestored habitat with invasive honey locust, eastern red cedar and other species that crowd out native grasses that typify prairie bordering the woodland savanna community. To the left, after restoration there is a diverse prairie community dominated by various grass species, each with a characteristic soil and moisture preference.

Figure 12. **TOP**: Among tall native grasses and abundant flowering plants, Sibylla spies a *Speyeria*; **BOTTOM**: a great-spangled fritillary atop a thistle bloom shows HW damage likely from a bird attack.

Figure 13. No matter that they are common species, a white-lined sphinx and black swallowtail are great fun to watch nectaring on a native thistle.

Figure 14. I didn't expect to see this praying mantis in Iowa. When I told Sibylla it was likely the progeny of an imported egg case, the mantis turned its head and eyed me skeptically. On checking, I find that both the Chinese and Carolina mantis are now established in southern Iowa, probably due to warmer winters. This appears to be the large Chinese mantis, *Tinodera sinensis.*

In highly disturbed environments both plants and animals are reduced in numbers and forced to exist in sub-optimal conditions. The seeds of some plants may lie dormant for long periods. Animals and plants (those with seeds that disperse) may recolonize a restored area, but in the case of the Browns' property no nearby large refugia exist, so we must assume many of the unusual records of Lepidoptera (and other species) are from populations that survived at very low levels. Bill and Sibylla harvested and sowed seeds from stands of select grass species, but otherwise the plant communities on their property developed *in situ.* The natural development of plant communities, through growth and succession over a relatively short period, was phenomenal. The Browns were amazed by the ability of a seed bank to respond to periodic fires to germinate and propagate after decades of dormancy.

Several questions come to mind regarding the population genetics of restored communities, especially regarding Lepidoptera. How many species went through genetic bottlenecks that robbed them of genetic diversity? During their existence at low levels in these disturbed habitats did some butterfly species adapt to new hosts, shift their developmental phenology, or otherwise adapt to the novel natural selection regime of the disturbed habitat? A well-known example of such a niche modification is found in the Darwin's Finches of the Galapagos Islands (Weiner 1994). Here the relative abundance of various woody plants shifts in response to yearly rainfall cycles; those with large, tough seeds are favored by high rainfall, while drought favors smaller plants with small seeds. The variation in beak size among the finches follows suit. The various finch species are polymorphic for this trait and in years of high rainfall the gene frequency for larger bills increases as natural selection favors those birds able to crack open larger seeds. Drought years subsequently will favor birds with small bills, shifting gene frequencies accordingly.

Among North American butterflies, the western black swallowtail (*Papilio zelicaon*) has adapted to fennel ("Anise") as a larval host, an introduced Mediterranean plant that remains green during the hot northern California summer. Normally a spring flyer adapted to ephemeral native umbellifers, the swallowtail has shifted its phenology in historical times to double-brooded flights in areas where fennel is common (Sims 1983). There are probably similar stories hidden in the Timberhill experience.

Ecological succession, and its counterpart in habitat recovery, are obviously extremely complex phenomena, not predictable processes determined by the initial list of species acting out their characteristic roles in a given environment. Genetic adaptations by plants and animals to novel conditions during succession make each succession event a unique and dynamic process. Timberhill offers an extraordinary opportunity for the ecologist to study recovery and succession, and other questions in community ecology.

Just before I left the Browns' Timberhill estate, Sibylla took me to her basement where she is converting a space into a study and lab. She asked me about sources for specimen drawers and cabinets, and for any other useful suggestions. "Try to find a source for good natural lighting to view your specimens," I offered. I had previously sent her a copy of the Dave Winter's "Basic Techniques" manual (Winters 2000). "The book is just what I needed-and I had no idea it existed. How can I thank you? It really is terrific! I've been struggling to find this information elsewhere but it's only available in bits and pieces elsewhere." Now there's a fitting tribute to Dave and his collaborators. Sibylla and Bill also just bought a blacklight and power supply. We can look forward not only to more butterfly records, but also to a wealth of moth discoveries!

Literature Cited

Brown, S. 2012. Timberhill: Chronicle of a Restoration. Published privately. Available online from Amazon books: http://www.amazon.com/Timberhill-Chronicle-Restoration-Sibylla-Brown/dp/1480255912/ref=sr_1_1?s=books&ie=UTF8&qid=1383763376&sr=1-1&keywords=sibylla+brown

_____. 2013. For *Nastra iherminier* : http://www.timberhilloaksavanna.com/fauna/swarthy-skipper-2/

Brown, M. 2007. For *Nastra iherminier* : http://bugguide.net/node/view/381041

Collins, M. 2007. Mothcatcher: An Evolutionist›s Journey into Canyon and Pass. University of Nevada Press. Reno.

Henkes, R. 2011. Timberhill and the education of Sibylla and Bill Brown. Woodlands and Prairies Magazine. 8 (3): 4-9.

Kueter, D. 1976. Alexander Lippisch: Man of the Future (first of a series, July-August). Cedar Rapids Gazette.

Mutel, C.F. 2008. The Emerald Horizon: The History of Nature in Iowa. University of Iowa Press. Iowa City.

Rasmussen, R. 2011. For *Nastra iherminier* : http://www.flickr.com/photos/50846326@N02/6117401327/in/set-72157627602273716 and http://www.flickr.com/photos/50846326@N02/6117401061/in/set-72157627602273716.

Sims, S.R. 1983. Diapause dynamics and host plant suitability of *Papilio zelicaon* (Lepidoptera: Papilionidae). American Midland Naturalist 103:375-384.

Savage, C. 2004. Prairie: A Natural History. Greystone Books, Douglas & McIntyre, Vancouver.

Weiner, J. 1994. The Beak of the Finch. Vintage Books: Random House, New York.

Winter, W.D. 2000. Basic Techniques for Observing and Studying Moths & Butterflies. Memoirs of the Lepidopterists' Society 5, Natural History Museum, Los Angeles CA.

Formative Experiences: *Paul Manton*

Continued from p. 79

about the diversity and origin of species as well. Whole genera of butterflies and moths no more conceived than, as C.S. Lewis mussed about discovering "a new color, a new sex", I would have ever imagined all unfurled before me.

What the pre-adolescent entomologist in a temperate clime, especially in the pre-Internet era, is missing, is a conception of the diversity within a family or genus where it could be manifest in its grandest variety. On any given hour in the Old Motor, on an August afternoon, I might observe a Cabbage, Sulfur, Painted Lady, Monarch, Red Admiral, or a Black or Tiger Swallowtail. Each representing six distinct genera but giving no clue to the true abundance of species. There are, after all, some two hundred species of *Papilio*, scores of *Pieris*, and nearly 300 species of Danainae. Anybody reasonably versed in evolutionary biology, zoogeography, or population ecology will find this self-evident. But it wasn't to a twelve year-old in a non-science environment when a break-in the Watergate Hotel was just beginning to bode ill for Richard Nixon. The catalogue from the Butterfly Company began to change my perception the way Bates' perception changed when he netted eighteen *Papilio* species his first day in Ega, Brazil. It began to change the way Thomas Hunt Morgan, after being shown an extensive butterfly collection by Julian Huxley, with its continuum of form, became convinced that Mendel's either/or expression of genes was not the last word on heredity and that there was, indeed, a gradient of variation required of natural selection and observed in evening primroses by Hugo de Vries. (A discovery comparable, and not philosophically dissimilar, to the discovery that light is both a wave and particulate phenomenon). The Butterfly Company catalogue contained fifteen different members of the genus *Heliconius*, and twenty seven members of *Morpho* alone – genera whose very existence had hitherto been unknown to me.

This was one of the great "Charles Darwin" moments in my life. The *Rothschildia* moths in the catalogue, for instance, reminded me so much of *Samia cynthia* and *Hyalophora cecropia* (which had at one time also been considered "*Samia*") – especially the *Rothschildia orizaba* and *Rothschildia jorulla* which I called "the Mexican Cecropias". Yet, *R. aurota* and *R. speculifer* reminded me of the Atlas moths of Asia. I began to wonder if one of the three (or four) genera in question might not be the "missing link" betwixt the others; their far-flung geographic distribution notwithstanding: Mexico, Long Island, and Asia. But had not the American Indians came from Asia and ended up, albeit generations thereafter, in Mexico and on Long Island? And had not my father once said that the continents look too much like jigsaw puzzle pieces to be a coincidence; that ages ago they were probably connected?

Opening the pages of the Butterfly Company catalogue for the first time was not quite the same as my many other entomological episodes (See my "Encounters" in the Winter 2002 issue of *News of the Lepidopterist's Society*), but it was nonetheless a profound one.

Wingless female of *Phigalia* sp. (Geometridae), San Antonio, Texas, February 2014, collected and photographed by R. S. Peigler, specimen deposited in Texas A&M University collection. Note the green intersegmental membranes.

Butterfly photographic documentation: the importance of background

George O. Krizek

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

How important are the content and composition of the background of a lepidopterological picture? A picture clearly has both scientific and aesthetic value. In the present collection, I show 37 live pictures of primarily Nearctic species (butterflies, skippers and one sphingid; see the covers as well) in an attempt to document these insects in their "Natural habitats." Introduced flowers may in some cases be more attractive as nectar sources when compared with the local flora, but these flowers are not part of the original autochthon milieu present in nature. I try to avoid so called staged or arranged pictures, though in some cases, such as with individuals newly emerged from the chrysalis, such pictures are virtually unavoidable. Still, every lepidopterist, amateur and professional alike, quickly recognize such photos, where a half frozen specimen has been put on a flower or object that it may never select to perch on voluntarily.

Of course, there are many plants in the "natural habitat" that, as indicated above, are incredibly attractive and yet not original components of the habitat. *Asclepias tuberosa,* or Butterfly (Milk)weed, so avidly visited by Coral Hairstreaks, *Speyeria*s, *Papilio*s, *Phyciodes* and others, is no doubt a flower belonging to the original, autochthon Nearctic flora. Contrary to this, *Buddleia davidii*, or Butterfly Bush, is a non-native, yet whenever we find *Buddleia* as a "garden escapee", we do not hesitate to take pictures of everything visiting it. Perhaps only species living high in the mountains, which as you will see often visit quite modest flowers, are uninfluenced by human alterations of the "natural habitats", although swamps, with their satyrs and skippers, may also be an exception to the extensive habitat modifications by humans seen in much of the eastern U.S. Some species do actually thrive in human altered habitat, perhaps better than in "virgin" terrains, but the diversity is typically much less in extensively modified habitat.

If a zoologist wants to photograph, for instance, a giraffe, he may visit the nearest zoo. If the photographer says that a giraffe in the zoo looks the same way as one in Africa does, some may question his/her opinion. Those who do not believe him/her can spend a much bigger sum of money on a trip to Africa, and here may find giraffes in their natural habitat if visiting a park or protected area. However, later he/she may find out that giraffes were transported from other areas to the park to protect them from poachers, and so are the giraffes here truly in their natural habitat? Surely closer to the real thing, but even so the giraffes' circumstances have been altered again by humans.

Some may, correctly of course, argue that humans are a part of nature. Even butterflies "know" and "welcome" this fact in some cases. For example, the Nearctic *Asterocampa celtis*, not really initially looking for human sweat, likes to land on the photographer's hat, shoulder, etc., when he/she comes into its territory and imbibe. In the tropics, this is a frequent occurrence (not just with sweat but with urine and even feces), and we find butterflies making use of human metabolites in these substances: salt, urea, cholesterol, amino acids, lactic acid, sulfates, phosphates, other nitrogen containing substances, and even sugars (especially if the person is a diabetic).

The photos presented here are of "real" Nearctic origin (for instance, the swamp skippers will never be found in butterfly houses). The presentation here tries to accentuate the importance of, and to direct the attention of the viewer to, the secondary, sometimes seemingly unwanted but important, objects in the background. In the majority of pictures, the objects are, of course, flowers, but the background can also be simply the green vegetation (important for species we seldom see on flowers, like satyrs), the ground (which can also offer minerals) and the occasional excrement.

The scientific name of the flowers is used when it is known. Otherwise, the family name is used when the species is not known (apology to the readers). All photos are by George O. Krizek, with the exception of the picture of *Erora laeta*, which was taken by Dr. Harry N. Darrow (May 30, 1975), and is used here with his permission.

Battus polydamas, exploring the ground.
Feb. 28, 1988, Boca Tomatlan, Mexico.

Eurytides marcellus, on mud. June 12, 2000, Great Falls, Virginia.

Papilio troilus, female, relaxing. July 31, 2005, Markham, Virginia.

Papilio multicaudata, on *Buddleia*. Aug. 9, 1999, Bisbee, Arizona.

Eurytides marcellus, summer form, on *Pentas*. Sept. 19, 1998, Naples, Forida.

Euchloe olympia, on shrub. This species rarely rests with wings open. May 1, 1978, Green Ridge Mountains, Maryland.

Colias spp.. **TOP**: *C. meadi*, male, nectaring on *Agoseris aurantiaca*. Aug. 6, 2012, Wolf Creek Pass, CO. **BOTTOM**: C. *eurytheme*, male, nectaring on thistle, Sept. 3, 1998, Seneca, MD.

LEFT: *Anteos maerula*, cryptic against leafy background. July 19, 1978, Trinidad. **CENTER**: *Phoebis sennae*, female, on *Pentas*. Sept. 30, 2003, Winter Haven, Florida. **RIGHT**: *Phoebis philea*, female, on "Magenta" composite. June 12, 1994, Naples, Florida.

Euphydryas phaeton. **RIGHT**: upperside on white composite, June 12, 2007. **LEFT**: underside on grass, June 14, 2006. Both from Catoctin Mountains, Maryland.

Polygonia faunus. **RIGHT**: upperside on undetermined white composite, Aug. 8, 2012. Wolf Creek Pass, Colorado. **LEFT**: underside, July 23, 1996, East Rosebud Lake, Montana.

Speyeria c. cybele, male, on *Carduus nutans*. The contrast with the flowers and the dark background really make this species stand out. June 12, 2007. Catoctin Mountains, Maryland

Speyeria diana, female, nectaring on *Asclepias syriaca*. July 11, Douthat State Park, Virginia.

Limenitis astyanax, on mixed gravel. Aug. 26, 2000, Seneca Maryland. The blue iridescence of the hindwing of this species rivals the intense blue of the Palearctic genus *Apatura*.

Liminitis archippus floridensis, resting. Oct. 19, 2002, Myakka State Forest, Sarasota, Florida. With its chocolate coloration, this subspecies is a mimic of the "brown" *Danaus gilippus* (The Queen Butterfly).

Limenitis weidemeyeri, basking. July 20, 2008, Pagosa Springs, Colorado.

Satyrodes appalachia, resting on leaves. July 22, 2000, "Potomac River Swamp", Seneca, Maryland.

Enodia anthedon. Aug. 2, 1985, "Potomac River Swamp", Seneca, Maryland. The *Enodia* satyrs almost never visit flowers.

Enodia creola, male. Aug. 15, 1997. Great Dismal Swamp, Virginia.

Enodia portlandia. Aug. 15, 1997. Great Dismal Swamp, Virginia.

Lycaena heteronea (Blue Copper), male, nectaring on *Pentaphylloides floribunda*. July 12, 1993, Ashcroft, Aspen, Colorado.

Hemiargus ammon, male, sitting on *Croton linearis*. May 31, 1998, Big Pine Key, Florida. Recorded also from Bahia Honda. Hostplants include *Acacia pinetorum* and *A. farnesiana*.

Strymon acis, on *Croton linearis*. May 31, 1998, Big Pine Key, Florida. This and a few other southern Keys are the last refuge of this species.

Erora laeta. May 30, 1975, Mt. Equinox, Vermont. (Photo by Harry N. Darrow , used with permission)

Emesis zela, nectaring on yellow composite. Aug. 8, 1999, Miller Canyon near Sierra Vista, Arizona.

Amblyscirtes aesculapius, nectaring on white composite. July 8, 1986, Great Dismal Swamp, Virginia.

Poanes massasoit, nectaring on Red Clover. June 23, 1979, New Bridge, Maryland.

Phocides pigmalion, nectaring on *Bidens*. April 13, 2002, Sanibel Island, Florida.

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** ($30.00 outside North America)	15.00

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).

Change of Address?

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.

Memoirs

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:

Lawrence E. Gall
Computer Systems Office
Peabody Museum of Natural History
P. O. Box 208118, Yale University
New Haven, CT 06520-8118
lawrence.gall@yale.edu

Journal of The Lepidopterists' Society

Send inquiries to:
Keith Summerville
(see address opposite)
ksummerville@drake.edu

Book Reviews

Send book reviews or new book releases to the Editor of the News:

James K. Adams
(see address opposite)
jadams@daltonstate.edu

WebMaster

John A. Snyder
Dept. of Biology, Furman University
Greenville, SC 29613-0001
(864)244-7939
john.snyder@furman.edu

Submission Guidelines for the News

Submissions are always welcome! Preference is given to articles written for a non-technical but knowledgable 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 56/57 must reach the Editor by the following dates:

Issue	Date Due
56 3 Fall	Aug. 15, 2014
4 Winter	Nov. 15, 2014
57 1 Spring	Feb. 15, 2015
2 Summer	May 20, 2015

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.

Executive Council

President

Todd Gilligan
Colorado State University
Bioagricultural Sciences
and Pest Management, 1177
Campus Delivery, Fort Collins, CO 80523-1177
(970)490-4478
tgilliga@gmail.com

Past President

Andrew Warren
McGuire Center for
Lepidoptera & Biodiversity
Florida Museum of Natural
History, P.O. Box 112710
Gainesville, FL 32611-2710
(352)273-2015
andy@butterfliesofamerica.com

Vice Presidents

Astrid Caldas (1st VP)
5402 Christy Drive
Bethesda, MD 20816-2013
(240)460-5275
astridcaldas@yahoo.com

Andrew Neild
8 Old Park Ridings, Grange
Park, London, Middlesex
N21 2EU, ENGLAND
+44 (0) 7941515272
andrew.neild@blueyonder.co.uk

Jeff Marcus
Dept.of Biological Sciences
121 Machray Hall
University of Manitoba
Winnipeg, Manitoba R3T
2N2 (204)474-9741
marcus@cc.umanitoba.ca

Secretary

Michael Toliver
Division of Math and Science
Eureka College
300 E. College Avenue
Eureka, IL 61530-1500
miketol@eureka.edu

Assistant Secretary & Assistant Treasurer

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

Treasurer

Kelly M. Richers
9417 Carvalho Court
Bakersfield, CA 93311
(661) 665-1993 (home)
kerichers@wuesd.org

2nd Assistant Treasurer

Ron Leuschner
1900 John Street
Manhattan Beach, CA 90266-2608, (310) 545-9415
ronleusch@aol.com

Publications Manager

Kenneth R. Bliss
2438 Falcon Drive
Round Rock, TX 78681-2755
(512)850-1700
krbliss@gmail.com

Editor, News of The Lepidopterists' Society

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

Editor, Journal of The Lepidopterists' Society

Keith Summerville
Dept. of Environmental
Science and Policy, 131 Olin
Hall, Drake University
Des Moines, IA 50311-4505
(515)271-2265
ksummerville@drake.edu

Editor, Memoirs of The Lepidopterists' Society

Lawrence F. Gall
(see Memoirs opposite)

WebMaster

John A. Snyder
(see WebMaster opposite)

Members-At-Large

Charlie Covell, Harry Pavulaan, David James, John Calhoun, Wayne Wehling, Robert Dirig, Kenelm Philip, Michael Collins, Jennifer Zaspel

Season Summary Zone Coordinators

Refer to Season Summary for Zone coverage details.

Chief Season Summary Coordinator and Editor

Leroy C. Koehn
3000 Fairway Court
Georgetown, KY 40324
(502) 370-4259
leptraps@aol.com

Zone 1, The Far North:

James J. Kruse
Forest Entomologist
USDA FS, Alaska Region 10
State and Private Foresty,
Forest Health Protection
3700 Aiport Way
Fairbanks, AK 99709
(907) 451-2701
jkruse@fs.fed.us

Zone 2, The Pacific Northwest:

Jon H. Shepard
6420 Barabanoff Rd., Nelson, BC, Canada V1L 6Y1
(250) 352-3028
shep.lep@netidea.com

Zone 3, The Southwest:

Ken Davenport
8417 Rosewood Avenue
Bakersfield, CA 93306
(661) 366-3074 (home)
kdavenport93306@yahoo.com
with help on moths from Kelly Richers (see Treasurer, this page)

Zone 4, The Rocky Mountains:

Chuck Harp
8834 W. Quarto Ave.
Littleton, CO 80128-4269
(720) 981-5946
cehmoth@aol.com

Zone 5, The Plains:

Ronald Alan Royer
Division of Science,
Minot State University
Minot, ND 58707-0001
Office: (701)858-3209
FAX: (701)839-6933
ron.royer@minotstateu.edu

Zone 6, Texas:

Charles Bordelon
Texas Lepidoptera Survey
8517 Burkhart Road
Houston, TX 77055
texaslepsurvey@sbcglobal.net

Zone 7, Ontario and Quebec:

Maxim Larrivee
Collections entomologiques et recheche, Insectarium de Montréal/Espace pour la vie
4581, rue Sherbrooke E.
Montréal, Québec
Canada H1X 2B2
(514) 872-0474, ***maxim.larrivee@ville.montreal.qc.ca***

Zone 8, The Midwest:

Leslie A. Ferge
7119 Hubbard Avenue
Middleton, WI 53562-3231
(608) 836-9438
lesferge@gmail.com

Zone 9, The Southeast:

Brian G. Scholtens
Biology Department
College of Charleston
66 College Street
Charleston SC 29424-0001
(803) 856-0186
scholtensb@cofc.edu

Zone 10, The Northeast:

Mark J. Mello
c/o Lloyd Center,
430 Potomska Rd
Dartsmouth, MA 02748
markmello@lloydcenter.org

Zone 11, Mexico & the Caribbean:

Isabel Vargas Fernandez
Museo de Zoologia,
Facultad de Ciencias,
Univ. Nacional Autonoma
Mexico, Apartado Postal 70-399, D.F., Mexico 04510
ivf@ciencias.unam.mx

ABOVE: *Coenonympha haydenii*. July 21, 1996, Jackson Hall, Curtis Canyon, Wyoming. **UPPER RIGHT**: *Aellopos clavipes*, nectaring on *Buddleia*. Aug. 9, 1999, Bisbee, Arizona. **RIGHT**: *Agraulis vanillae*. June 7, 1998, Captiva Island, Florida. (these three photos by George O. Krizek; see associated article, page 92.)

LEFT: Cree handmade sealskin/beaded coat patch from Churchill arts and crafts shop; **RIGHT**: tripod telephone poles to resist strong winds on flat, windswept tundra near Churchill, Manitoba (photos by Gary Noel Ross; see associated article on page 68)