

# NEWS

OF THE

# LEPIDOPTERISTS' SOCIETY



[www.lepsoc.org](http://www.lepsoc.org)

## **Inside:**

**Caterpillars, crypsis,  
and context**

**Digital Collecting:  
Panama -- part 2**

***Polygonia haroldii*, new  
for the United States**

**Changes in HW traits  
of *Actinote* during  
pupal development**

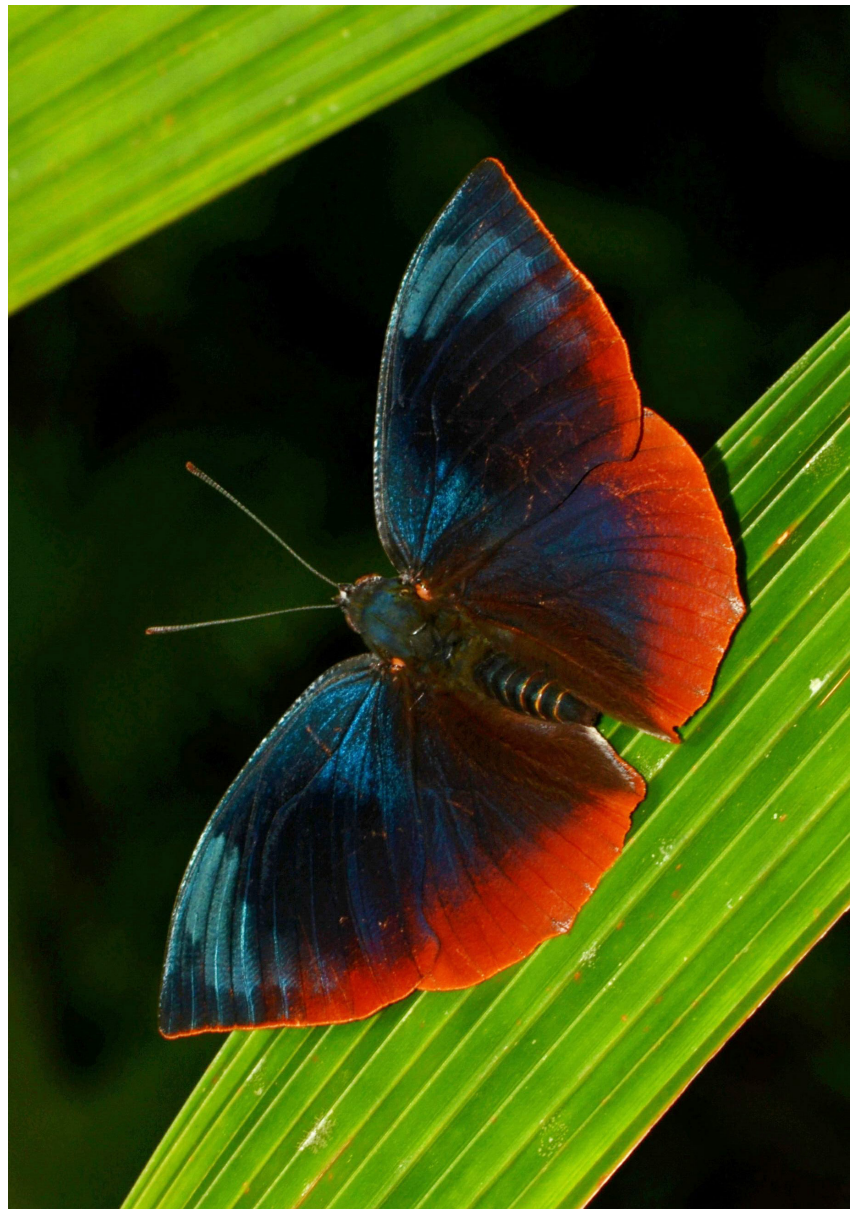
**The Sinlahekin -- b'fly  
paradise in Pacific NW**

**Early Eastern U.S. b'fly  
field guide by George  
H. French**

**Powerline right-of-ways  
b'fly habitat in Maine**

**Membership Updates,  
Marketplace, Mailbag,  
Formative Experiences,  
Metamorphosis, ...**

**... and more!**



# NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 56, Number 1  
Spring 2014

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

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.

Copyright © 2014 by The Lepidopterists' Society. All rights reserved. The statements of contributors do not necessarily represent the views of the Society or the editor and the Society does not warrant or endorse products or services of advertisers.



www.lepsoc.org

# Contents

<b>Caterpillars, crypsis and context: Interpreting the adaptive significance of larval patterns requires viewing at appropriate distance in natural lighting and against natural background</b> <i>Michael M. Collins and David L. Wagner.</i> .....	3
<b>Blue-green caterpillars of <i>Pieris rapae</i> L. (Pieridae)</b> <i>Francie Chew.</i> .....	9
<b>From the Editor's Desk.</b> .....	9
<b>Changes in hindwing traits of <i>Actinote</i> (Lepidoptera: Nymphalidae) during pupal development</b> <i>Thadeu S. Souza and Ronaldo B. Francini.</i> .....	10
<b>The Mailbag.</b> .....	13
<b>Results of the 2014 Election, The Lepidopterists' Society.</b> .....	13
<b>The Spotless Comma (<i>Polygonia haroldii</i>): a new species for the United States</b> <i>Cathryn A. Hoyt.</i> .....	14
<b>Announcements:</b> .....	16
63rd Annual Meeting of the Lepidopterists' Society; Announcing the sixth annual Lep course, 14-23 August, 2014; Societas Europaea Lepidopterologica invites members from the US; Corrections/Addenda to articles in the Winter 2013 News; 2014 Lepidoptera classes in California and Colorado; Pay Pal; Book Reviews now only published in News; Third annual National Moth Week - July 19-27, 2014; 2014 Ballot -- Lep Soc Constitutional Amendments	
<b>Exploring the Sinlahekin: a butterfly paradise in the Pacific Northwest</b> <i>Caitlin LaBar.</i> .....	18
<b>The importance of power transmission line right-of-ways as habitat for butterflies in Maine</b> <i>Robert E. Gobeil and Rose Marie F. Gobeil</i> .....	24
<b>Digital Collecting: The thrill of Panama -- part 2</b> <i>Kim Garwood.</i> .....	28
<b>The Marketplace.</b> .....	34
<b>Membership Updates</b> <i>Julian Donahue.</i> .....	35
<b>A fledgling field guide: <i>The Butterflies of the Eastern United States</i> by George H. French</b> <i>John V. Calhoun.</i> .....	36
<b>Formative Experiences:</b> <i>Jordan W. Finkelstein</i> .....	42
<b>Metamorphosis.</b> .....	43
Membership Information, Dues Rates, Journal of the Lepidopterists' Society, Change of Address, Our Mailing List, Missed or Defective Issues, Submission Guidelines and Deadlines for the News. ....	46
<b>Executive Council/Season Summary Zone Coordinators.</b> .....	47

Issue Date: March 1, 2014

ISSN 0091-1348  
Editor: James K. Adams

## Front Cover:

Dorsal picture of *Memphis laura balboa* by Ken Kertrell, from Colombia. See the associated article on page 28, and an underside photo of *M. laura balboa* on page 31.

# Caterpillars, crypsis and context: Interpreting the adaptive significance of larval patterns requires viewing at appropriate distance in natural lighting and against natural background

Michael M. Collins<sup>1</sup> and David L. Wagner<sup>2</sup>

<sup>1</sup>Associate, Carnegie Mus. Nat. History, Invertebrate Section, Pitts. PA; 215 Prospect St., Nevada City, CA 95959  
[michaelmerlecollins@comcast.net](mailto:michaelmerlecollins@comcast.net)

<sup>2</sup>Ecol. & Evol. Biol., Univ. of Connecticut, 75 N. Eagleville Rd., Storrs, CT 06268-3043 [david.wagner@uconn.edu](mailto:david.wagner@uconn.edu)

*We cannot appreciate the meaning of the colours of many animals apart from their surroundings - - - Poulton, 1890.*

Most young lepidopterists are as smitten by larvae as by the adults they eventually transform into. The literature has traditionally illustrated adults and included larvae in only one or a few color plates (e.g. Holland 1920, 1955; Klots 1951; Lutz 1948). Fortunately more books are now being published that feature immature stages, such as Allen et al. 2005, James and Nunnallee, 2011; Miller & Hammond, 2003; Minno et al. 2005; Wagner 2005; Wagner et al. 2011.

Yet, too often larvae are depicted against a plain background, often white, black or neutral pastel, so as to highlight the detail of their coloration and pattern. This practice may inadvertently constrain our understanding of the adaptive nature of color, pattern, and position on the host.

The illustrator or photographer faces a conundrum – either present the caterpillar against a featureless background in uniform lighting to accent its color and markings, or, if the goal is to understand the possible adaptive significance of its appearance, hide it among its host foliage in natural lighting and risk making the image too obscure to be easily interpreted or used for identification. Variable lighting, shadows, and complex, distracting backgrounds are anathema to the good nature photographer, yet such a context is what we often find in nature, and more closely represents the environment within which the larval phenotype probably evolved.

In general, the more colorful or boldly marked the caterpillar, the more likely it is to be illuminated and photographed in an artificial setting to accent these features.

These remarks apply particularly to larger larvae; smaller larvae are easier to photograph surrounded by a natural background - bark, a twig or leaf - so that those with cryptic patterns are more realistically represented. These days, lepidopterists, both amateur and professional, use digital photography to produce high-resolution, close-up images of larvae, but often the close range and uniform lighting or flash used to image the subject greatly affects our interpretation of cryptic, mimetic, or aposematic coloration.

An additional artifact is that produced by a shallow depth of field, in which only the larva is in focus and the background is blurred, reducing the full effect of background matching and other properties of larval patterns.

The paper by Janzen et al. (2010) is exceptional by depicting larvae in natural surroundings and thereby showing how false eyes on tropical larvae and pupae fully express their startle value only when discovered in poorly lit conditions and when hiding in a folded leaf or other shelter. (Fig 1).



Figure 1. Pupa of the skipper *Cephise nuspesez* hiding in its shelter. Dim lighting and concealment enhances the startling effect of the eye spots. (From the ACG preserve in Costa Rica, courtesy Dan Janzen ex web site: <http://janzen.bio.upenn.edu/caterpillars/database.lasso>).

Just as is true of the adult, the larvae of Lepidoptera have served as examples of mimicry, crypsis, and aposematism (Wicker 1968, Lederhouse 1990, Schmidt 1990, Janzen et al. 2010). The term “crypsis” refers to background matching – resemblance to a twig or leaf, for example. Other examples of crypsis are countershading and disruptive patterns that break up the form of a caterpillar. “Mimicry” refers to resemblance to a dangerous or unpalatable object. False eyes suggest snake mimicry, and the larvae of species in several families are obvious mimics of bird droppings. “Aposematic” color and pattern may advertise chemical protection – as we propose below for the saturniid

*Eupackardia calleta*. Lederhouse (1990) gives a detailed review of this terminology. (See also Forbes (2009) for a fascinating history of the concepts of protective color and pattern, both in biology and as applied during warfare.)

Our purpose in this article is not to review the concepts and literature covering these adaptations, but rather to present images of caterpillars in ways that enhance interpretation of larval structures, coloration, and postures in natural environments.

**The eye of the predator vs. the human eye.**

Historically, naturalists have relied on human perception of color and pattern to interpret the putative adaptive significance of patterns in nature, such as those on Lepidoptera wings, as well as their larvae. Only recently have we gained a better understanding of the differences in the physiology of our vision vs. that of birds - probably the chief vertebrate predator of caterpillars (see Stevens (2005) and Guilford & Dawkins (1991) for reviews of human vs. bird vision). Birds have four types of light-sensitive cone cells in their eyes, compared to three in most vertebrates, and have acute ultraviolet vision (Cuthill et al. 2000). While ultraviolet reflectance is known to be a property of wing patterns in Lepidoptera, larval patterns seem not to have been studied in this regard. For practical reasons we must interpret larval color and pattern with our human vision, keeping in mind that extrapolation to bird vision is problematic. Experimentally testing pattern elements, to better understand predator perception, can be done in controlled presentations of specimens to predators in nature or in the lab, or through manipulation of pattern and color of prey and observations of predator response. Inherent in all such experiments and observations is the risk of affecting the very behavior of both prey and predator that we wish to study.

Another important difference between visual perception in humans vs. birds is our unparalleled creative ability to interpret the significance of color and pattern: matching a pattern image to what we believe it evolved to resemble, hypothesizing presumed responses by predators to various images and displays, and in general seeing examples in nature of our preconceived ideas of protective pattern and coloration (for example, the discussion, intended to stimulate research, of saturniid wing patterns in the beautifully illustrated work by Howse & Wolfe (2011) ).

A given predator species may perceive certain elements of disruptive patterns or other specialized features such as eye spots, not as part of an overall pattern, but as a distinctive 'gestalt' image, triggering an instinctive response (Stevens 2005, Guilford & Dawkins 1991). A 'startle and flee' response is a proven adaptive strategy - better to flee from a false threat than to pause to evaluate a real one. Regarding the evolution of anti-predator mechanisms, over the eons of evolutionary time it seems likely that many patterns, such as eye spots, represent

a 'general purpose phenotype', one that intimidates the greatest number of predators, reflecting the evolution of adaptive patterns through a long sequence of selective regimes (Janzen et al. 2010) (Fig. 2).

Certainly, when we perceive a close resemblance between a caterpillar and bark or a leaf or twig we are justified in concluding that these patterns serve as camouflage, having evolved as a defense against bird predation (Fig. 3). Other, seemingly more abstract patterns, require more interpretation. We offer the above remarks as a caveat that our human interpretation of larval traits presented here is unavoidably subjective.



Figure 2. False eyespots resemble a potentially threatening vertebrate predator and are found among larvae (and pupae) of many Lepidoptera families, especially those with larger caterpillars. The thoracic spots on this *Papilio troilus* larva may represent "general purpose" images, the result of evolution in many natural selection regimes over time, and not resembling any specific snake or other predator (Janzen et al. 2010, and see text above).



Figure 3. *Acronicta grisea* preparing to molt. The larva's coloration closely parallels leaf blemishing common on its alder host. The silken scaffolding visible above, spun prior to each molt, is much accentuated here by the use of flashes. Under natural lighting conditions, the silk network would be much less apparent.



Figure 4. *Eupackardia calleta*, mature larva, as found on trumpet bush (*Tecoma stans*) near Pena Blanca Lake, Santa Cruz Co., AZ. Inconspicuous at a distance (LEFT, arrow); viewed increasingly closer (MIDDLE) the orange-red, apparently aposematic, coloration is not clearly visible until at close range (RIGHT).

### Defense in depth – how pattern apparency can change with distance.

In general, body color and overall pattern can be perceived at a distance, while smaller details of larval adornment only become apparent at close range. The mode of adaptive coloration frequently changes over distance. An example would be larvae of the saturniid *Eupackardia calleta*. At a distance the grey-green body color makes the caterpillar difficult to detect (Fig. 4), but at close range the vivid blue scoli and surrounding red markings render the larva conspicuous and, to a human observer, quite beautiful (Fig. 5). Scoli secretions of this species are known to be toxic; our interpretation is that the larva of *calleta* is both cryptic and aposematic (Tuskes, et al. 1996; Collins 2007). Other caterpillars, which appear conspicuous at close range, should be evaluated for this phenomenon of a qualitative change in adaptive mode over distance.

### Countershading.

Countershading in nature is the pattern of a lighter surface on that part of the organism that is normally away from a light source and would therefore otherwise be in shadow. The effect produces a more even reflectance over the entire body, tending to eliminate the effect of shadow, or to produce a more 2-dimensional image. For caterpillars that hang down from the host, countershading occurs when the ventral surface is darker than the dorsal.

Controlled experiments using models of larvae made from pastry, and dyed to produce countershading, have confirmed from scoring bird strikes that countershading does confer an advantage over controls (Rowland et al. 2008; Hossie & Sherrat 2012), although the concept remains controversial (Ruxton et al. 2004). Photographing countershading is difficult because the differences in



Figure 5. At close range the brilliant blue and orange-red coloration make *Eupackardia calleta* conspicuous and probably aposematic; scoli secretions are toxic.

contrast are subtle and the effect is best seen when the lighting is from above and somewhat diffuse.

In some larvae, especially those feeding on hosts with large leaves that are lighter in tone on the underside, the dorsal larval surface may be lighter to match the lighter color of the foliage undersurface when viewed from below. An example would be the saturniid genus *Callosamia* (Fig. 6). In these species larval coloration could be interpreted either as cryptic coloration (matching the leaf undersurface) or as countershading. The same larval phenotype could play either adaptive role depending on the background.

### Disruptive coloration is best viewed in natural conditions.

Many larvae with bold, sharply defined markings appear conspicuous when seen against neutral backgrounds in bright, even lighting, but are inconspicuous in natural surroundings, where the markings tend to break up the outline of the caterpillar. A predator may confuse



Figure 6. *Callosamia angulifera* on tulip tree (*Liriodendron tulipifera*). Lighter dorsal/darker ventral surfaces could be interpreted either as crypsis against the lighter underside of host leaves, or as countershading, depending on orientation of larva and viewer. These larvae typically feed while grasping the underside of host leaf. The larva of *C. securifera* is very similar in appearance and habit, on the large leaves of *Magnolia virginiana*.



Figure 7. TOP: The host-induced morph of *Hyalophora euryalus* on Douglas fir (*Pseudotsuga menziesii*) has extremely elongated scoli, and so appears cryptic against a background of twigs, needles and mottled lighting. Siblings reared on madrone (*Arbutus*) or manzanita (*Arctostaphylos*) have greatly reduced scoli (Collins 1999). BOTTOM: The mature larva of *Automeris cecrops pamina* is boldly marked when illustrated in the studio, but appears cryptic as found in nature, here on 'wait a minute' bush, *Mimosa biuncifera*, near Patagonia, Sta. Cruz Co. AZ.

elements of the pattern with the surrounding background, as in for example the saturniids *Hyalophora euryalus* and *Automeris cecrops pamina* (Fig. 7). In the case of *H. euryalus*, the larval phenotype in the last instar is subject to a host-induced polyphenism (Collins 1999). When broods are reared on the natural host Douglas fir (*Pseudotsuga menziesii*) the abdominal scoli are large, prominent, and light colored, and in this regard convergent to the appearance of many Lepidoptera larvae that are specialists on conifers: the color of needles but with light colored dots or stripes repeated on each segment. See examples in Miller 1995, p. 44, *Lithophane longior* (Noctuidae); Tuttle 2007, Pl. 19, *Sphinx sequoiae*, *S. dolii* (Sphingidae); and Wagner 2005, p. 394 *Feralia major* (Noctuidae). When sibs of the same *H. euryalus* brood are reared on madrone (*Arbutus*) or manzanita (*Arctostaphylos*) the abdominal scoli are absent or much reduced, making the larva cryptic against the large leaves of these hosts.

The final instar of *Rothschildia lebeau forbesi* and *R. cincta* are very similar with reduced scoli and bold intersegmental dark and light stripes (Fig. 8). When viewed in natural foliage these markings lose their conspicuous appearance and break up the outline of the larva, and in dense foliage resemble leaf veins and twigs (Collins and Weast 1961).

**Convergent patterns suggest shared adaptive function.**

Every textbook on evolution cites familiar examples of convergent evolution, such as the resemblance between certain North American placental mammals and their counterpart among Australian marsupials. The resemblance is presumed to represent independent adaptations to similar ecological niches. Another dramatic



Figure 8. Dark, bold black-and-white intersegmental stripes may interfere with a bird's ability to recognize the shape of a caterpillar among foliage. Larva reared on lilac; photo was taken in a cage. *Rothschildia cincta*, ex stock from Sta. Cruz Co., AZ, nr Ruby 4000ft.

but little-known case of convergent evolution is seen in the close resemblance between larvae of North American *Sphingicampa* spp. (Saturniidae, Ceratocampinae) and the African saturniid genera *Heniocha*, *Gynanisa*, and

*Aurivillius* (Saturniidae, Saturniinae). Although in different subfamilies, these two groups both feed largely on woody legumes, with relatively small compound leaves, in arid regions, and all share enlarged, silvery or whitish scoli (Fig 9; Oberprieler 1995; Tuskes et al. 1996). With these adornments, the larvae are strikingly handsome and prized by caterpillar breeders, but can be surprisingly difficult to locate on the foliage of their host plants. All have longitudinal markings that separate different shades of green, dorsal vs. ventral. The blade-like scoli may resemble points of light between leaflets on the host, or even dew drops. In any case, the convergence between New- and Old World fauna suggests that the enlarged, silvery scoli are adaptive. Photographs of larvae in the wild with natural lighting and background may help understand these convergent patterns. The comparative micro-structure of the scoli also would be interesting to investigate.

Another example of this convergent larval phenotype is seen among the three legume-feeding *Afilia* (Notodontidae); these species occur sympatrically in the American Southwest with several *Sphingicampa* species (Fig. 10).

In *Afilia* a silvery white stripe extends upward from each abdominal spiracle to a raised dorsal pinaculum; on A8 the dorsum is drawn into a blade-like projection that resembles the dorsal scoli of the saturniids shown.



Figure 10. *Afilia oslari* (Notodontidae) on Graham's Mimosa (*Mimosa grahamii*) from Copper Canyon, Huachuca Mts., Cochise Co., Arizona. Convergent in larval phenotype and sympatric with *Sphingicampa* species.



*Aurivillius fuscus* (Saturniidae). South Africa, Montrose Falls, on *Peltophorum africanum*. Photo by R. Oberprieler.©



*Heniocha apollonia* (Saturniidae). South Africa, St. Lucia, on *Vachellia karroo*. Photo by R. Oberprieler.©



*Gyanisa maja* (Saturniidae). South Africa, Nylsvley, on *Schotia brachypetala*. Photo by R. Oberprieler.©



*Sphingicampa hubbardi* on mesquite (*Prosopis*), Patagonia Mts., Santa Cruz Co., AZ. Silvery scoli may occur on all abdominal segments.

Figure 9. The three African genera of saturniids - *Aurivillius*, *Heniocha*, and *Gyanisa* – are convergent in appearance to North American *Sphingicampa* species, which are in a different subfamily; all share as larval hosts woody legumes in arid regions.

**Summary.** The colors and patterns displayed by caterpillars have long been interpreted as adaptations to avoid predation by means of camouflage, mimicry, or warning coloration. The agents of natural selection maintaining these traits are probably most often birds, whose vision differs from ours in both physiology and pattern interpretation. Larval protective patterns evolved against the background of host plants within specific plant communities, and it is under these conditions that we should view and photograph larvae if we are to fully appreciate their color and markings. We offer the following tips for such photography, which can supplement other images made for identification and documentation under well-lit conditions with uniform backgrounds.

1. Try to locate larvae on their native hosts in relatively undisturbed habitat. Compared to non-native hosts, the natural host may differ greatly in growth form and plant community association, and therefore also in background and lighting conditions.
2. Use natural lighting without flash or reflectors. Photograph larvae at different light levels and at different times of the day.
3. Maximize depth of field to incorporate the natural background.
4. Many species have characteristic diurnal feeding rhythms and resting postures. Try to photograph larvae at different times throughout their activity cycles. In general try to photograph larvae both at rest and while feeding, as well as when disturbed, so as to reveal defensive postures, etc.
5. Larval illustrations conventionally present a lateral view. Larvae should also be photographed from both dorsal and ventral viewpoints.
6. Be aware that some larvae may be polymorphic – different color forms matching different leaf colors or parts of the host plant – while other species may exhibit host-induced polyphenisms.
7. Photograph larvae through a range of distance to determine if various pattern elements are more apparent at different distances.
8. For larvae that appear to show countershading, experiment with light sources placed at various angles to test the premise that countershading suppresses shadow and outline. Use differing light levels.

## Acknowledgments

Thanks to Dan Janzen for providing digital images of skipper pupae displaying false eyes markings. Stan Malcolm made helpful suggestions on a draft of this article, and provided many of the suggested photographic measures. Ric Peigler first pointed out to MMC the convergence between the larvae of certain African and North American saturniids. R. Oberprieler kindly

supplied images of these African species. Daniel Janzen's article on larval and pupal eyespots inspired much of our thinking about the adaptive nature of many caterpillar patterns, and how such are inadequately rendered in most macro-photographic images. *Earthwatch* supported DLW's caterpillar studies in Arizona.

## Literature Cited

- Allen, T, J. Brock, & J. Glassberg. 2005. Caterpillars in the Field and Garden, a Field Guide to the Butterfly *Caterpillars* of North America, Oxford University Press, NY.
- Collins, M.M. 1999. A host-induced larval polyphenism in *Hyalophora euryalus*. *J. Lepid. Soc.* 53:22-28.
- \_\_\_\_\_. 2007. Mothcatcher: An Evolutionist's Journey Through Canyon and Pass. Univ. Nevada Press, Reno.
- Collins, M.M. and R.D. Weast. 1961. Wild Silk Moths of the United States. Privately published.
- Cuthill, I.C., J.C. Partridge, A.T.D. Bennett, S.C. Church, N.S. Hart, & S. Hunt.. 2000. Ultraviolet vision in birds. *Adv. Study Behav.* 29:159-214.
- Forbes, P. 2009. Dazzled and Deceived: Mimicry and Camouflage. Yale University Press, New Haven, CT.
- Guilford, T. & M.S. Dawkins. 1991. Receiver psychology and the evolution of animal signals. *Animal Behav.* 42:1-14.
- Holland, W.J. 1920. The Moth Book. Double Day, Garden City, NY.
- \_\_\_\_\_. 1955. The Butterfly Book, rev. ed. Double Day, Garden City, NY.
- Hossie, T.J. & T.N. Sherratt. 2012. Eyespots interact with body color to protect caterpillar-like prey from avian predators. *Animal Behav.* 84:167-173.
- Howse, P. & K. Wolfe. 2011. Giant Silkmths: Colour, Mimicry & Camouflage. Papadakis, Berkshire, UK.
- James, D.G. & D. Nunnallee. 2011. Life Histories of Cascadia Butterflies. Oregon State University Press, Corvallis, OR.
- Janzen, D.H., W. Holwachs, & J.M. Burns. 2010. A tropical horde of counterfeit predator eyes. *Proc. Natl. Acad. Sci. on line: [www.pnas.org/cgi/doi/10.1037/pnas.09.12122107](http://www.pnas.org/cgi/doi/10.1037/pnas.09.12122107)*
- Klots, A.B. 1951. A Field Guide to the Butterflies. Houghton Mifflin, Boston, MA.
- Lederhouse, R.C. 1990. Avoiding the Hunt: Primary Defenses of Lepidoptera Caterpillars. Ch. 7 *In* Evans, D.L. & J.O. Schmidt, eds. Insect Defenses. State University New York Press, Albany, NY.
- Lutz, F.E. 1948. Field Guide of Insects, 3rd ed. Putnam & Sons, NY.
- Miller, J.C. 1995. Caterpillars of Pacific Northwest Forests and Woodlands. U.S.D.A., Forest Service. FHM-NC-06-95.
- Miller, J.C. & P.C. Hammond. 2003. Lepidoptera of the Pacific Northwest: Caterpillars and Adults. U.S. Dept. Agric. FHTET-2003-03, Morgantown, WV.
- Minno, M. C., Butler, J. F. & D. W. Hall. 2005. Florida Butterfly Caterpillars and Their Host Plants. Univ. Press Florida, Gainesville, FL.
- Oberprieler, R. 1995. The Emperor Moths of Namibia. Ekogilde. Hartbeespoort, South Africa.
- Poulton, E.B. 1890. The Colors of Animals: Their Meaning and Use. Especially Considered in the Case of Insects. 2<sup>nd</sup> Ed. The International Scientific Series. Vol. LXVII. Paul, Trench & Trübner Ltd. London.
- Rowland, H.M., I.C. Cuthill, I.F. Harvey, M.P. Speed, & G.D. Ruxton. 2008. Can't tell the caterpillar from the trees: Countershading enhances survival in a woodland. *Proc. Biol. Sci.* 275:2539-2545.

*Continued on p. 9*



# Blue-green caterpillars of *Pieris rapae* L. (Pieridae)

Francie Chew

Department of Biology, Tufts University, Medford, MA 02155 [fc Chew@tufts.edu](mailto:fc Chew@tufts.edu)

In July 1994, I was rearing *Pieris rapae* larvae on radish leaves (*Raphanus sativus*) when several blue-green caterpillars appeared (Fig. 1). The several included male and female larvae, which produced (to me) normal-appearing adults. The adults were reluctant to mate, and I did not succeed in getting either males or females to copulate. I suspect these blue-green caterpillars may be a *P. rapae* version of the autosomal recessive blue-green mutant in *Colias philodice* (Gerould 1921, 1926) and perhaps similar to the "blue-type" larvae described by Hiroko and Kato in *Eurema hecabe* (1998). Later, I reared *P. rapae* on semi-synthetic wheat-germ-based diet containing no leaf material, and produced a similar larval phenotype (similar to that recently reported by Ross for *Manduca sexta* (2013)). This phenotype perhaps results from lack of dietary carotenoids or poor carotenoid assimilation (Mummery et al. 1976). Since 1994 I have reared *P. rapae* larvae from perhaps 100 females, but not yet observed this phenotype again. Perhaps the apparent rarity is a sampling issue, but Gerould (1921) reported that the blue-green *C. philodice* larvae were more easily found (and eaten) by sparrows.

## Literature Cited

Gerould JH 1921. Blue-green caterpillars: the origin and ecology of a mutation in hemolymph color in *Colias* (*Erymus*) *philodice*. *J. Exp. Zool.* 34:385-412.

----- 1926. Inheritance of olive-green and blue-green variations appearing in the life-cycle of a butterfly *Colias philodice*. *J. Exp. Zool.* 43:413-425.

Hiroko M, Kato Y. 1998. Blue-type larvae of the pierid butterfly *Eurema hecabe* (L.). *Butterflies* 19:60-61.

Mummery R, Valadon LRG, Rothschild M. 1976. Carotenoids in larvae and foodplant of *Manduca sexta* and in green and blue larval forms of *Hyalophora cecropia*. *Physiol. Entomol.* 1:51-54.

Ross GN. 2013. Makeover of the tobacco hornworm. *News Lepid. Soc.* 55: 110-114.



Figure 1. (L) Blue-green fifth instar larva of *Pieris rapae*; (R) normal green *P. rapae* caterpillar. Both are males (paired white testes at dorsal midline more visible on the blue-green larva; testes color varies).

## Caterpillars, crypsis and context

*Continued from p. 8*

Ruxton, G.D., M.P. Speed, and D.J. Kelly. 2004. What, if anything, is the adaptive function of countershading? *Animal Behav.* 68:445-451.

Schmidt, J.O. 1990. A kaleidoscope of cryptic colors: polymorphic caterpillars and camouflaged adults on a multi-colored host plant. Pp. 61-67 *In* M. Wicksten (ed.), *Adaptive Coloration in Invertebrates*, Texas A&M Press, Austin, TX.

Stevens, M. 2005. The role of eyespots as anti-predator mechanisms, principally demonstrated in the Lepidoptera. *Biol. Rev.* 80:573-588

Tuskes, P.M., J.P. Tuttle, and M.M. Collins. 1996. *The Wild Silk Moths of North America*. Cornell University Press, Ithaca, NY.

Tuttle, J.P. 2007. *The Hawk Moths of North America*. The Wedge Entomological Research Foundation, Washington, D.C.

Wagner, D.L. 2005. *Caterpillars of Eastern North America*. Princeton University Press, Princeton, NJ.

Wagner, D.L., D.F. Schweitzer, J. Bolling Sullivan, & R. C. Reardon. 2011. *Owlet Caterpillars of Eastern North America*. Princeton University Press, Princeton, NJ.

Wicker, W. 1968. *Mimicry: In Plants and Animals*. McGraw-Hill, NY.



## From the Editor's Desk

James K. Adams

Dear members,

The "Formative Experiences" column (advertised as "In the Beginning" previously) has been initiated with this issue (see page 42). I have enough submitted articles for the several issues, so if you contributed one and you do not see it immediately, please know that I haven't forgotten you!

There is a **separate single page insert** for you to vote on Constitutional amendments (see reasoning on page 45). **Please vote** and return your ballots quickly.

# Changes in hindwing traits of *Actinote* (Lepidoptera: Nymphalidae) during pupal development

Thadeu Sobral Souza<sup>1</sup> & Ronaldo Bastos Francini<sup>2</sup>

<sup>1</sup>Programa de Pós Graduação em Ecologia, Instituto de Biologia, Universidade Estadual de Campinas, Box 6109, CEP 13083-970, Campinas, SP, Brazil francini@unisantos.br

<sup>2</sup>Laboratório de Biologia da Conservação, Curso de Ciências Biológicas, Universidade Católica de Santos, Campus Dom Idílio José Soares, CEP 11015-220, Santos, SP, Brazil

Some specific morphological characters have been lost along evolutionary time, but may be evidenced throughout embryonic or ontogenic processes. These ontogenetic characters are not detected in adults but found during the embryonic stages (Gould 1977; Minelli 2003). In insects, one of the best ways to investigate lost characters is studying morphological changes occurring in the pupa, such as the emergence of the wing characters and differentiation of mouthparts, among others (Kukalova-Peck 1978; Chapman 1998; Wootton 2002).

In butterflies (Lepidoptera: Hesperioidea and Papilionoidea) wing formation occurs in the pupal stage (McMillan *et al.* 2002) and during wing development, some idiosyncratic characters can become visible, only to be lost later during pupal development.

In this note, we aim to (1) report the presence of ontogenetic characters in the pupal wings of *Actinote* species, and (2) compare the relative length of the vein 1A of *Actinote* species with the andean *Altinote*. The genus *Actinote* (Nymphalidae, Nymphalidae, Heliconiinae, Acraeini) is exclusively Neotropical with relatives (mainly *Acraea*) in Afrotropical and Oriental regions (Pierre 1983).

## METHODS

LAST INSTAR LARVAE OF FOUR *Actinote* species (*Actinote melanisans*; *Actinote pellenae pellenae*; *Actinote carycina* and *Actinote parapheles*) were collected in three localities in Southeastern Brazil: Alto da Serra do Mar, São Bernardo do Campo, São Paulo, Brazil (-046.51 and -23.81); Vale do Rio

Quilombo, Santos, São Paulo, Brazil (-046.34 and -23.85) and Passa Quatro, Minas Gerais, Brazil (-044.95 and -22.39) and reared in the laboratory. The developmental time of *Actinote* pupae ranges from five to 15 days with wings and testes appearing in males just after two thirds development (Francini 1989). In order to study pupal wings, three pupae of *Actinote carycina*, two of *Actinote melanisans*, one of *Actinote pellenae pellenae*, and one of *Actinote parapheles* were dissected at six and 11 days after pupation. Dissections were made by immersing pupae in water following Emsley (1963), and then the removed wings being sequentially soaked in solutions of ethanol, NaCl + HCl (0.1 M) and NaClO aq (10%) to increase the visibility of veins. All scales were removed during this process,

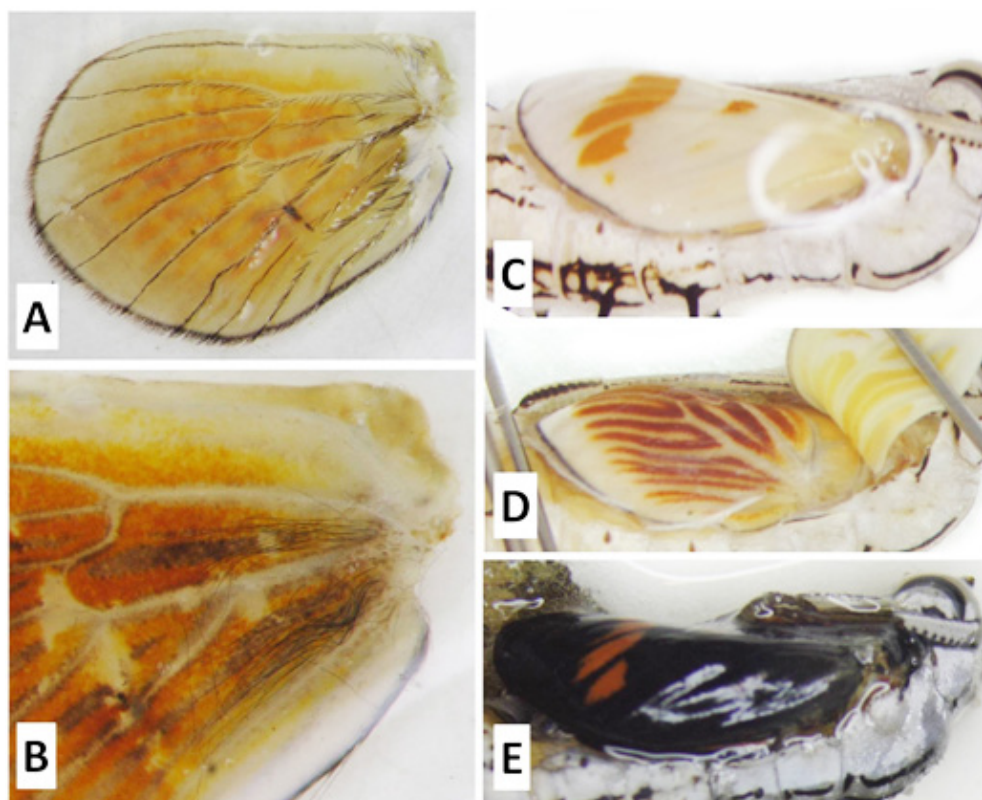


Figure 1. Hindwing venation of an eleven-day-old pupa of *A. melanisans* showing the (A) presence of bristles along all veins and (B) bristles at the base of the wing; eleven-day-old pupa of *A. melanisans* dissected showing the forewing (C) and hindwing (D); another eleven-day-old pupa showing a totally developed forewing (E).

and the veins become totally visible. Cleared wings were mounted on microscope slides, and observed and photographed with a Leica M3B stereomicroscope. The wings of imagines were subjected to the same process and drawings made of wing venation based in the at least three specimens (except for *A. eberti*, *A. catarina* and *Altinote neleus*).

## RESULTS AND DISCUSSION

All six-day-old pupae showed the same development pattern with no sign of wing development. All eleven-day-old pupae showed the presence of dark wings with a light orange area at the apex of the forewing (Figure 1C). In addition, we found the beginning of the generalized dispersal of this pigmentation in the hindwing (Figure 1D) or the complete development of scales and color pattern (Figure 1E). At this age, antennae, eyes, legs and mouth parts were developed. The pupal wings are different from adult wings; although the same 10 veins are observed in the hindwings

of both pupae and adults, vein 1A is reduced and incomplete in adults (Figure 2A) and fully developed in pupae (Figure 2B). In all pupal wings we observed the presence of bristles attached to the base of the wings (Figure 1B) and along all wing veins (Figure 1A); these characters were not found in adults.

Similar changes in wing venation through ontogeny have been observed by Emsley (1963) for *Dryas* and *Heliconius*. For example, in *Dryas*, ten veins are present in the pupa, but only nine in adults, due to the fusion of Sc with R1 forming the vein Sc+R1. In *Heliconius* the changes between pupa and adults are more dramatic, and only 9 veins out of 11 pupal veins are present in the adult, due to the complete loss of a vestigial vein between Cu2 and 1A, and also by the fusion of Sc+R1 (as described for *Dryas*). Also the venation of *Heliconius* pupa shows a vein separating the discal cell linked to M3, different from that of *Actinote*, which is linked to M2 (Figure 2B).

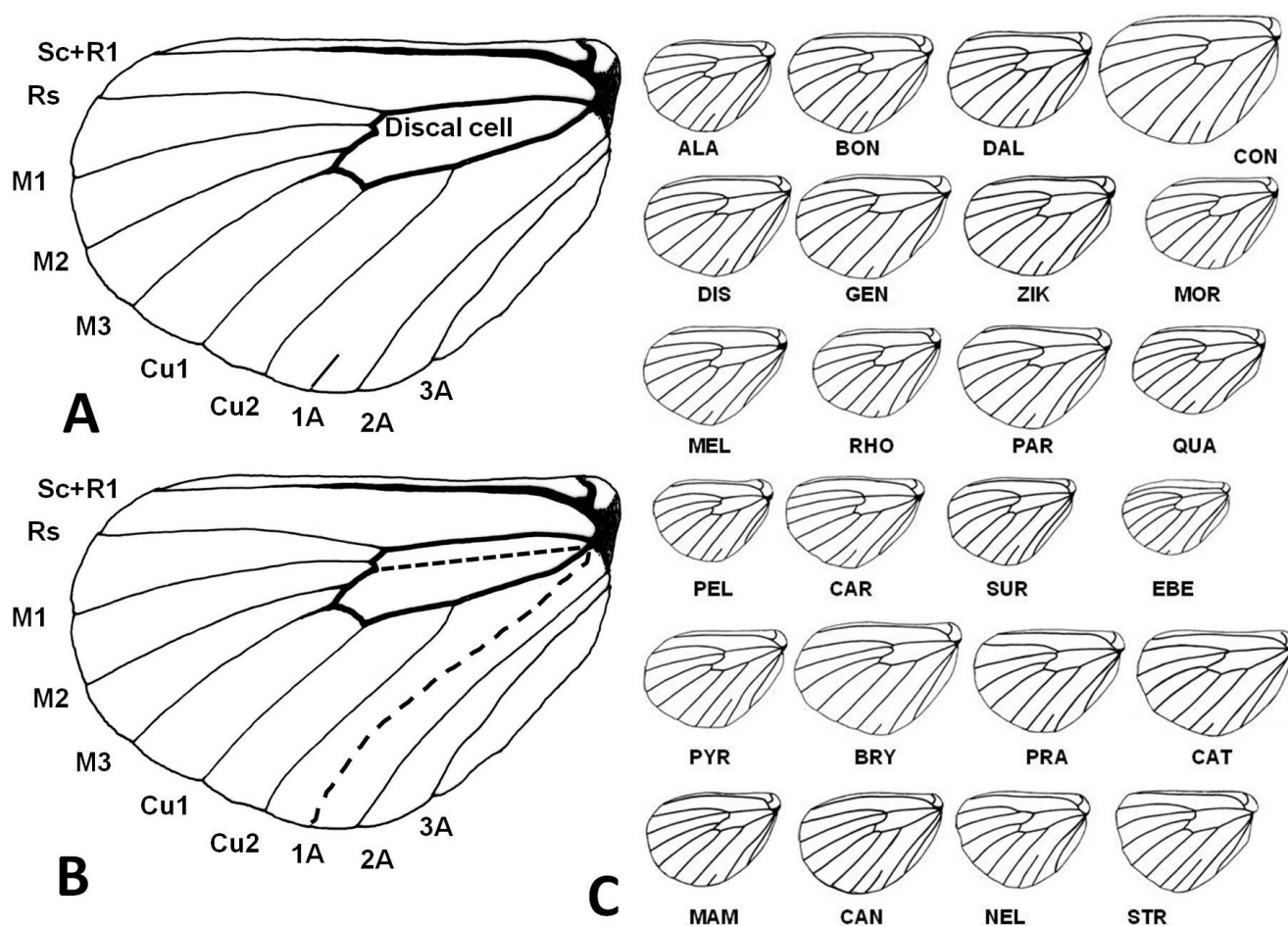


Figure 2. (A) Basic venation of *Actinote* showing the vestigial 1A; (B) The venation of a pupa showing a vein cutting the discal area and a totally developed 1A vein, characters not found in adult hindwing; (C) Hindwing venation of specimens of imagines of 22 *Actinote* and two *Altinote* species showing the differences in the size of vestigial vein 1A. ALA: *A. alalia*; BON: *A. bonita*; DAL: *A. dalmeidai*; CON: *A. conspicua*; DIS: *A. discrepans*; GEN: *A. genitrix*; ZIK: *A. zikani*; MOR: *A. morio*; MEL: *A. melanisans*; RHO: *A. rhodope*; PAR: *A. parapheles*; QUA: *A. quadra*; PEL: *A. pellenea*; CAR: *A. carycina*; SUR: *A. surima surima*; EBE: *A. eberti*; PYR: *A. pyrha*; BRY: *A. brylla*; PRA: *A. pratensis*; CAT: *A. catarina*; MAM: *A. mamita*; CAN: *A. canutia*; NEL: *Altinote neleus*; STR: *Altinote stratonice*. Scale bar = 10 mm. Except for *A. eberti*, *A. catarina* and *Altinote neleus* the drawings are based on at least three specimens.

Hindwing venation of adults of *Actinote pyrrha* has the length of vestigial 1A relatively longer than other *Actinote* species but similar to the two species of *Altinote* (Figure 2C). Since *A. pyrrha* and *A. pellenae* are closely related (Silva-Brandão *et al.* 2008) we may infer that changes in this trait appeared more than once in the evolution of this group. Future studies could test the condition of the HW venation in the ancestral Afrotropical branch (*Acraea* and *Bematistes*), which may exhibit a longer 1A vein than *Actinote* or at least similar to other species of *Altinote*.

In this work we found pupal wing characters that are not found in adults. These represent possible ontogenetically "lost characters". The study of this character in other genera of the tribe Acraeini could give us a better understanding the evolutionary history of this taxonomic group.

## Acknowledgments

TSS thanks the Programa de Pós Graduação em Ecologia da Universidade Estadual de Campinas and CAPES. RBF thanks to the Universidade Católica de Santos and FAPESP (Biota grant #98/05101-8). André V. L. Freitas, Leila T. Shirai and Thiago Gonçalves Souza made comments in the manuscript.

## Literature Cited

- Chapman, R. F. 1998. *The Insects: Structure and Function* Cambridge University Press, Cambridge.
- Emsley, M. G. 1963. A morphological study of imagine Heliconiinae (Lepidoptera: Nymphalidae) with a consideration of the evolutionary relationships within the group. *Zoologica* 48:85-130.
- Francini, R. B. 1989. Biologia e ecologia das borboletas *Actinote* (Lepidoptera, Nymphalidae, Acraeinae) na transição subtropical no sudeste do Brasil. *Dissertação de mestrado*, Universidade Estadual de Campinas, Campinas.
- Gould, S. J. 1977. *Ontogeny and phylogeny*. Belknap Press of the Harvard University Press, Harvard.
- Kukalova-Peck, J. 1978. Origin and evolution of insect wing and their relation to metamorphosis, as documented by the fossil record. *Journal of Morphology* 156:53-126.
- Mcmillan, W. O., Monteiro, A. D. & D. Kapan. 2002. Development and evolution on the wing. *Trends in Ecology & Evolution* 17:125-133.
- Minelli, A. 2003. *The development of animal form: Ontogeny, morphology and evolution*. Cambridge University Press, Cambridge.
- Pierre, J. 1983. *Systématique évolutive, cladistique et mimétisme chez les lépidoptères du genre Acraea* (Nymphalides). Doctoral Thesis, Universidade de Paris, Paris.
- Silva-Brandão, K. L., Wahlberg, N., Francini, R. B., Azeredo-Espin, A. M. L., Brown Jr, K. S., Paluch, M., Lees, C. L. & A.V. L. Freitas. 2008. Phylogenetic relationship of butterflies of the tribe Acraeini (Lepidoptera, Nymphalidae, Heliconiinae) and the evolution of host plant use. *Molecular Phylogenetics and Evolution* 46:515-531.
- Wootton, R. J. 2002. Design, function and evolution in the wings of holometabolous insects. *Zoologica* 31:31-40.
- Central Maine Power-Transmission System, n.d. (Online) <http://www.cmpco.com/UsageAndSafety/LandUse/RightOfWay/transmissionsystem.html> [Accessed 13 March 2013].
- deMaynadier, P., R. Webster, R. Butler & H. Wilson. 2013. (MBS Coordinators) Maine Butterfly Species List (Online) Available: <http://mbs.umf.maine.edu/Butterfly%20Species%20List%207.htm> [Accessed 15 October 2013].
- Forrester, J.A., D. J. Leopold & S. D. Hafner. 2005. Maintaining critical habitat in a heavily managed landscape: effects of power line corridor management on Karner blue butterfly (*Lycaeides melissa samuelis*) habitat. *Restor. Ecol.* 13 (3):488-498.
- Gobeil, R. E. & R. M. F. Gobeil. 2012. Status of the Common Buckeye in Maine. *Limenitis*, The MBS Newsletter V: 6-8 (Online) <http://mbs.umf.maine.edu/Limenitis%20V%20June%202012.pdf> [Accessed 23 September 2013].
- \_\_\_\_\_. 2013. Notes on the Habitat and Behavior of the Dusted Skipper, *Atrytonopsis hianna*, in York County, Maine. *The Maine Entomologist* 17 (2):2-3.
- Haddad, N.M. & K. A. Baum. 1999. An experimental test of corridor effects on butterfly densities. *Ecological Applicat.* 9: 623-633.
- Haddad, N.M. & J. J. Tewksbury 2005. Low-quality habitat corridors as movement conduits for two butterfly species. *Ecological Applications* 15:250-257.
- Holt, H. & J. Orr. (n.d.). *The Legacy of Bramble and Byrnes*(Online) <http://www.arborchem.com/library/Legacy%20of%20Bramble%20and%20Byrnes.pdf> [Accessed 29 March 2013].
- Irland, L. C. 1998. Maine's Forest Area, 1600-1995: Review of Available Estimates. Misc. Publication 736. Maine Agricultural and Forest Experiment Station. Univ. of Maine.
- Komonen, A., T. Lensu & J. S. Kotiaho. 2012. Optimal timing of power line rights-of-ways management for the conservation of butterflies. *Insect Conservation and Diversity*. doi:10.1111/icad.12009.
- Lanham, J. D. & M. J. Nichols. 2000. Butterflies and Skippers in Utility Rights-of-Way in the Upper Piedmont of South Carolina. 7th International Symposium on Environmental Concerns in Rights-of-way Management. (Online) [http://www.rights-of-way.org/abstracts\\_7/Section%206%20-%202005.htm](http://www.rights-of-way.org/abstracts_7/Section%206%20-%202005.htm) [Accessed 13 October 2013].
- Lehtomäki, J. 2006. The effect of landscape structure on butterfly movement in power line rights-of-ways. Unpublished Master's Thesis. University of Helsinki. (Online) [https://tuhat.halvi.helsinki.fi/portal/files/28035792/MScThesis\\_Lehtom\\_ki.pdf](https://tuhat.halvi.helsinki.fi/portal/files/28035792/MScThesis_Lehtom_ki.pdf) [Accessed 9 October 2013].
- Lensu, T., A. Komonen, O. Hiltula, J. Päivinen, V. Saari & J. S. Kotiaho 2011. The role of power line rights-of-way as an alternative habitat for declined mire butterflies. *J Environ Manage.* 92: 2539-2546. doi: 10.1016/j.jenvman.2011.05.019.
- Royer, R. A., J. E. Austin & W. E. Newton. 1998. Checklist and "Pollard Walk" butterfly survey methods on public lands. *Am. Midl. Nat.* 140:358-371.
- Smallidge, P. J., D. J. Leopold & C. M. Allen. 1996. Community characteristics and vegetation management of Karner blue butterfly (*Lycaeides melissa samuelis*) habitats on rights-of-way in east-central New York, USA. *J. Appl. Ecol.* 33: 1405-1419.
- Wagner, D. L. & K. Metzler. 2011. Final report: Insect survey for the interstate reliability project. 63 pages. (Online) <http://www.transmission-nu.com/residential/projects/IRP/Supplemental%20MCF/Volume%204%20-%20Environmental%20EX%202.PDF> [Accessed 14 October 2013].

# The Mailbag . . .

Dear Editor—

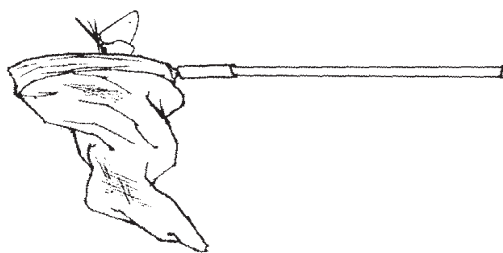
I'd like to thank Dr. Art Shapiro for raising several important points regarding the role of impact factor (IF) in determining how decisions will be made on submissions to the Journal. While the Society business update (Fall 2013, p. 120), correctly indicates that a portion of the last Executive Council meeting (in Gainesville, FL) did emphasize discussion on how projected rejection rates (based simply on page count) might affect IF and how impact factors are / are not being used by potential authors to make decisions about where to submit manuscripts, the statement that "it was important to increase the impact factor of the Journal, which will entail increasing the rejection rate for papers submitted to around 40%" was somewhat misleading. The Executive Council did not pass a motion calling for the Editor of the Journal to make acceptance / rejection decisions with the goal being to raise the Journal's impact factor. Indeed, the only decision that was made with regards to the Journal was to allow the Editor to publish additional pages per issue. Furthermore, strategic decisions regarding how to position the Journal relative to the mission of the Society cannot be made unilaterally by the Editor. I serve at the pleasure of the membership and I follow our established governance procedures for decision-making.

The Journal does, however, face what appears to be a trend that will require some Society deliberation regarding how we balance the constraints of our budget against our collective vision for the Journal. Consider the following four years data: 2011: 32 total submissions; 2012: 44 total submissions; 2013: 50 total submissions; 2014: for the month of January alone, 10 total submissions. I doubt each additional month in 2014 will see 10 submissions each, but I am confident that the Journal will see 60-65 submissions by the end of this year. In 2012, the Journal published 4 issues at 60 pages per issue. As it stands now, the Executive Committee has permitted me to publish four issues at 72 pages per issue. The exception to this 'new normal' is the third issue of 2013, in which the Society published 94 pages. Continually increasing the number of pages published costs the Society funds that are only partially offset by the Society's current page charge structure – this is not a sustainable practice. I already have formatted enough manuscripts to publish the first three issues of 2014. I've cut time in review down to an average of 3.5 weeks. To put it simply, the increasing submissions to the Journal, within the constraints of the number of pages we can publish and the desire to reduce the time between submission and publication, will necessitate increasing the rejection rate for the Journal. This will have a direct effect on the Journal's impact factor, presuming I and future editors reject submissions based on reviewer determination of merit. The papers that might have been

published in the past despite requiring major / significant revisions might not be so fortunate in the future. Rejection decisions, however, are not predicated on an effort to raise the Journal's IF to a certain level. Rather, a higher IF could be an incidental consequence of higher submission rates, the desire for short times to press, and fixed page counts per issue.

Post-script: While I take responsibility for whatever member frustration exists with the Journal today, considerable praise should be shared with editors of past issues. Without their labors, the Journal would not be where it is today. Thanks all!

Keith S. Summerville, Editor, Journal of the Lepidopterists' Society, Des Moines, Iowa. ksummerville@drake.edu



## Results of the 2014 Election The Lepidopterists' Society

(President, continuing -- Todd Gilligan)

Vice-Presidents:

	Joaquin Baixeras	199
	Mirna Casagrande*	277
	Delano Lewis*	224
	Todd Stout*	312
(write in)	Dave Wagner	1

Executive Council At Large:

	Megan McCarty*	257
	Kathleen Prudic*	263
	Mark Walker*	255
	Karen Wilson	239
(write in)	Jeff Slotten	1

\* - denotes winner.

There were a total of 373 ballots included in these results. A substantial number of members returned blank ballots. There was one write-in vote for President - Bill Patterson.

Note that Constitutional Amendments were not included on the ballot, for reasons detailed in another article in this issue (see page 45).

# The Spotless Comma (*Polygonia haroldii*): a new species for the United States

Cathryn A. Hoyt

P.O. Box 215, Fort Davis, Texas 79734      [cawhoyt@gmail.com](mailto:cawhoyt@gmail.com)

## Introduction

In west Texas, the Davis Mountains tower above the desert floor, creosote and prickly pear giving way to luxurious grasslands in the foothills, and conifer and oak woodlands at the higher elevations. The mountains are cut by lush canyons that shelter biological treasures. One of these treasures, the Spotless Comma butterfly, was discovered in the summer of 2013. A new species for the United States, the Spotless Comma, is an anglewing butterfly with cryptic brown color and pattern on the ventral side of its wings, a white comma on the ventral hind wing, and golden orange upper wings.

## *Haroldi* or *haroldii*?

The scientific name of the spotless comma is spelled both *Polygonia haroldi* (for example, see Krogen, 2000; Miller and Miller 1970; Weingartner et al. 2006) and *P. haroldii* in the literature (for example, see Glassberg 2007; Lamas, 1989; Warren et al. 2013). The Global Lepidoptera Names Index cites the “preferred name” as *Polygonia haroldi* based on the unique index card archive to the scientific names of moths and butterflies that is curated at the Natural History Museum in London (Beccaloni et al. 2012).

The species was first described by H. Dewitz in 1877 in a paper titled “Neue Schmetterlinge des Berliner Museums.” The original name for the species was *Grapta haroldii*. In the early 1930s, the genus name was changed to *Polygonia* in recognition of a clear case of priority (Ehrlich and Murphy 1981); however, the specific epithet should remain *haroldii* in order to conform to the mandatory provisions of the International Code of Zoological Nomenclature (ICZN 1999; J. Belicek, pers. comm. 6-2013; J. Pelham, pers. comm. 12-2013).

## Habitat and Distribution

In Mexico, the Spotless Comma is most frequently encountered in the pine-oak woodlands of the Trans-Mexican Volcanic belt—a 900 km long igneous mountain range

that extends west to east across central-southern Mexico (Fig. 1). Less often, the Spotless Comma is found in the mesic forests of the Sierra Oriental and an apparently disjunct population is located in southern Sonora, at the northern extension of the Sierra Madre Occidental (Brock pers. comm. June 26, 2013; Krogen 2000). Krogen (2000) suggests that the butterfly may have a broader distribution, but that knowledge of the species is limited by the inaccessibility of the mid- to high- elevation, wooded canyons that are the butterflies preferred habitat.

Little is known about the natural history of the Spotless Comma. As with most *Polygonia*, it is believed to overwinter as an adult (Belicek, pers. comm. 6 2013). Adults are most frequently seen perching on low vegetation in shaded canyon bottoms, often with live water such as a creek or spring nearby (Krogen 2000; Miller and Miller 1970).

John Emmel (pers. comm. September 9, 2013) notes that he collected larvae of *Polygonia haroldii* “in late August or early September, 1966, on *Ribes ciliatum*, on Popocatepetl near Mexico City at about the 10,000 ft. level.” James Brock (pers. comm. June 26, 2013) and Krogen (2000) also report an association with *Ribes* in the Sonoran populations.

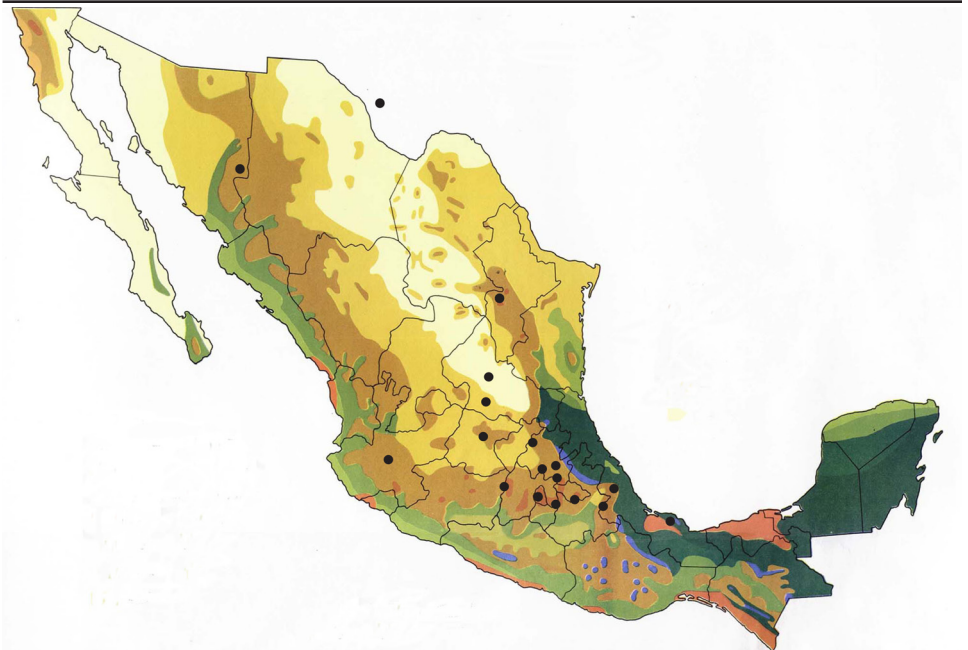


Figure 1. Current known distribution of *Polygonia haroldii*, the Spotless Comma. Locations collected from J. Brock (pers. comm.); Godman and Salvin (1887-1901), Krogen (2000), Lamas (1989), Luis-Martínez et al (2010), Maza Ramírez (1987); Peña and Malm (2012); and Warren et al. (2013).

## Texas Population

In late May, 2013, a bright orange angle-wing butterfly was observed basking on a twig stuck in the muck of a seep spring high in the Davis Mountains of west Texas. At 7,040 ft. in elevation, the canyon is heavily wooded with an overstory of ponderosa pine (*Pinus ponderosa*), Chihuahuan white pine (*P. strobiformis*), gambel oak (*Quercus gambelii*), silverleaf oak (*Quercus hypoleucoides*), and alligator juniper (*Juniperus deppeana*). At first, I assumed that the butterfly was a Question Mark (*Polygonia interrogationis*) a butterfly seen frequently in wooded canyons of the northern Chihuahuan Desert.

After a few days, I took a few photographs of the butterfly. It may have superficially looked like a Question Mark, but it wasn't behaving like one. It repeatedly flew down to the spring to bask for several minutes at a time and the upper wings—which you rarely see on a Question Mark—seemed too bright. After processing the photographs, I realized that the butterfly couldn't be a Question Mark, but it didn't look like any of the other *Polygonia* illustrated in various field guides.

Because we are so close to the Mexican border, Mexican butterflies are always a possibility. A Google search revealed a potential match: *Polygonia haroldii* or the Spotless Comma (Fig. 2). This was quickly confirmed by Dale Clark of Dallas and several other lepidopterists on the TX-Butterfly listserv. Not only was it a Mexican species, it was the first time that the Spotless Comma had been documented in the United States.

Initially, I only saw one butterfly at a time basking at the spring but after about 10 days, it disappeared. The consensus was that the Spotless Comma was most likely a vagrant that somehow had ended up in the Davis Mountains, hundreds of miles from its closest documented population.



But in late June, Dr. Rich Koestecke of The Nature Conservancy visited the site and photographed a very fresh looking individual. He also saw a possible second Spotless Comma “booking it down the canyon.” The next day, I observed two Spotless Commas basking on low vegetation surrounding the spring. Occasionally, they would spiral upwards through the trees in a courtship flight. Instead of a single vagrant, it appears that there may be a breeding population.

Of course, to have a breeding population, there must be a host plant. According to botanist A. Michael Powell (1998) *Ribes leptanthum*, the trumpet currant, grows on the slopes of Mount Livermore where the butterfly was observed. Kelly Bryan (pers. comm.) noted that “thickets” of currants occur at the base of the cliffs that form the head of the canyon.

The goals for 2014 are to locate the host plant, document breeding behavior and immature stages of the butterfly, and collect voucher specimens of the adults.

## Acknowledgements

I would like to thank the staff of The Nature Conservancy for allowing me access to the Davis Mountains Preserve and John Karges and Rich Koestecke for their support and help. Many people provided information and encouragement for this article including: Joe Belicek, Charles Bordelon, Jim Brock, John Emmel, Jeffrey Glassberg, Norbert Kondla, Eric Metzler, and Guy Van de Poel.

*Continued on p. 33*



Figure 2. *Polygonia haroldii*, upperside and underside, from the Davis Mountains, Jeff Davis Co., Texas.

Announcements:**63<sup>rd</sup> 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](http://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. Topics to be covered include an extensive introduction into adult and larval morphology with a focus on taxonomically-important traits, extensive field work on both adults and larvae, collecting and curatorial techniques, genitalic dissection and preparation, larval classification, use (and abuse) of DNA bar coding, and general issues in lepidoptera systematics, ecology, and evolution.

**THE LOCATION:** 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).

A partial list of Invited instructors (subject to change): John Brown (Smithsonian), Rich Brown (Mississippi Entomological Museum), Marc Epstein (CDFA), Chris Grinter (Denver Museum of Nature & Science), John Rawlins (Carnegie), Chris Schmidt (Canadian National Collection), Bruce Walsh (University of Arizona), Dave Wagner (University of Connecticut) and Ray Nagle (University of Arizona).

For more information, see [www.lepcourse.org](http://www.lepcourse.org) or contact Bruce Walsh at [jbwalsh@u.arizona.edu](mailto:jbwalsh@u.arizona.edu).

**Societas Europaea Lepidopterologica (SEL) invites members from the US**

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

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

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

**Corrections/Addenda to articles in the Winter 2013 News (Vol. 55: #4)****Notes on the Bionomics . . . of *Chlosyne lacinia*, pages 142 - 148, by Stan Gorodenski**

For Figures 4 and 5 on page 143, the images are of the ventral aspects of the indicated larval segments, not the dorsal aspect. The Editor apologizes for the mislabelling!

**. . . and now Panama – part 1, pages 158 - 163, by Kim Garwood**

Kim indicates that she omitted a photo credit for the image of *Dircenna dero euchytmia* on the top of page 159. The image was taken by Bob Yukich.

***Dinumma deponens* is here to stay, pages 176 - 177, by Adams, Van Zandt and Neal**

Since the article went to print, records for *Dinumma deponens* have been discovered for Conyers, Rockdale Co., Georgia and Gatlinburg, Sevier Co., Tennessee, where it was reported common on several nights around August 8, 2013 (see Bugguide link at <http://bugguide.net/node/view/819821#1453487>). Van Zandt also uncovered another 2012 (July 10) specimen from the Ruffner Mountain site near Birmingham, Alabama. And most recently, Adams collected a specimen on his back porch in Calhoun, Gordon Co., Georgia on February 20, 2014.



## 2014 Lepidoptera Classes in California and Colorado

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. The campus provides room and board including tent platforms, hot showers, and excellent food. Please register through the web site [www.sfsu.edu/~sierra](http://www.sfsu.edu/~sierra). J.R. Blair is the camp director and principal contact.

We will study the ecology, behavior, life zones, flower visitation, and life history of the area's butterflies in several elevations. The instructor will use non-lethal means to study the butterflies, including netting, placing live butterflies in small containers, followed by their release; observation with close-focusing binoculars; and close-up photography. The goal will be for you to familiarize yourself with the butterfly species seen during class trips and to learn about butterflies of different families and to understand their behavior, and ecological place in the environment. You should be able to stalk and study butterflies as well as to take recognizable photos. I-Phone photography will be covered.

Evening or morning slide talks will supplement the course by including topics such as introduction to butterflies, local butterfly identification, western endangered species conservation, Monarch life history and tagging studies, butterfly gardening, and moth diversity and biology. We will take short hikes, but on one or two days they may be a bit rigorous. Many of our trips are on dirt roads, and participants may be asked to drive or car-pool. We usually observe between 70 and 80 butterfly species during the week.

The upper limit on class size is about 16. Young people have taken the class when accompanied by a parent and with permission of the instructors. Request Registration Forms by emailing [sfsu.snfc@gmail.com](mailto:sfsu.snfc@gmail.com), include the keyword "Butterflies" in the subject line. One college credit may be gained for continuing education.

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].

This will be an informal introduction to field techniques for studying and observing moths. Emphasis will be on collecting and processing adult specimens and recording observations based on the techniques described in our book, *Moths of Western North America*. We will also demonstrate collection of larvae, provide some discussion of photography, and observe moths at light sheets. The workshop is recommended for persons interested in moths or those studying insect/plant relationships, or managing biodiversity conservation. We encourage all interest levels

and some of our participants will be interested in non-consumptive methods such as photography, but about half of our participants collect, and this presentation will be mainly about sampling of moth diversity including trapping specimens for study. We will discuss recognition of moth families and some preparation techniques will be included.

Workshop size will be limited to 12. A moderate amount of walking will be involved. There may some driving on dirt roads.

Workshop, Continuing Education Units available. Request Registration Forms by emailing [sfsu.snfc@gmail.com](mailto:sfsu.snfc@gmail.com). Include the keyword "moths" in the subject line. Contact [paulopler@comcast.net](mailto:paulopler@comcast.net) with any questions about the workshop.

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 [to be renamed Rocky Mountain Conservancy] -- July 26 (east slope above Estes Park) and August 15 (west slope along the Colorado River headwaters). This is a rich area for butterflies and nearly 140 species have been recorded in the park. These classes are restricted to observation and photography. Following two hours of introductory illustrated lectures, the class will go on short walks to observe butterflies in the field.

Register Online: [www.rmna.org](http://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.

## 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](http://www.PayPal.com), and navigate to "Send Money", and use this recipient e-mail address: [kerichers@wuesd.org](mailto: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.

## 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](mailto:jadams@daltonstate.edu)

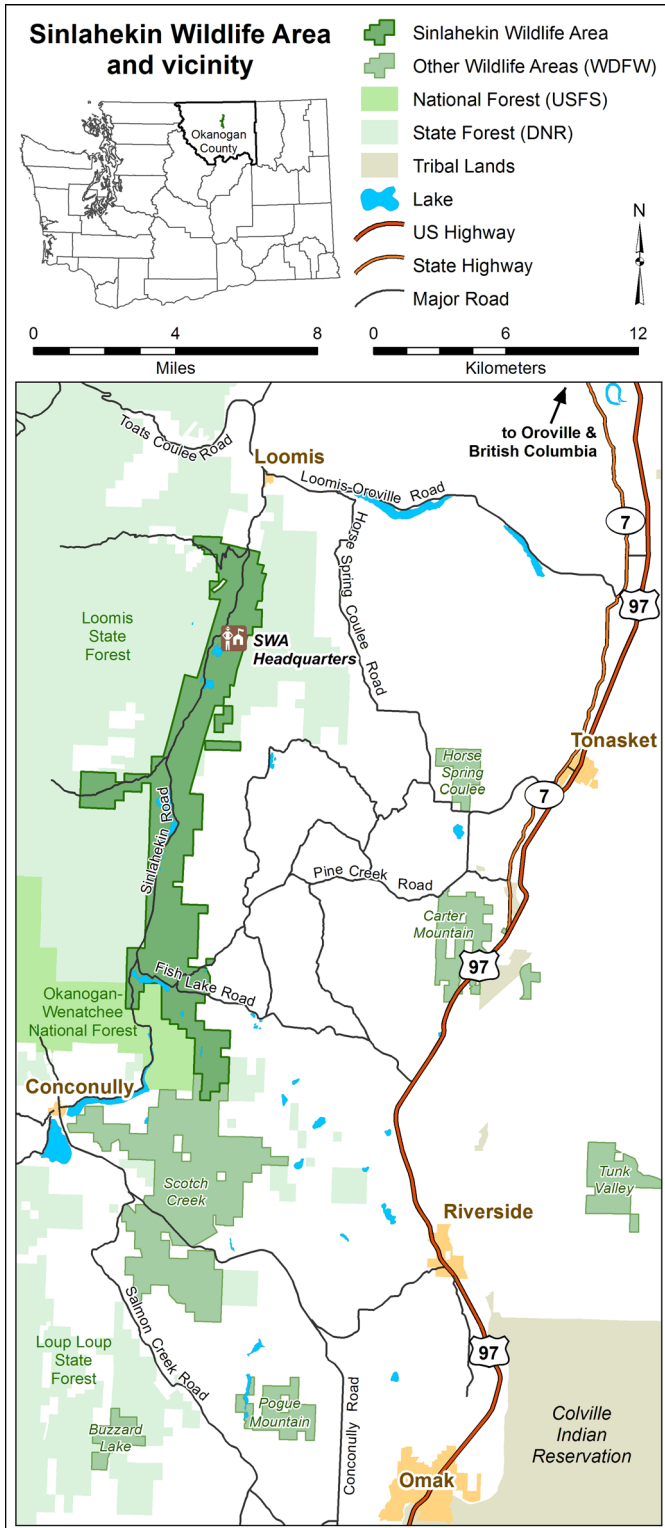
*Continued on p. 45*

# Exploring the Sinlahekin -- a butterfly paradise in the Pacific Northwest

Caitlin LaBar

2700 Allen St. #D103, Kelso, Washington 98626

caitlinlabar@gmail.com



The Sinlahekin Wildlife Area is an incredibly diverse patch of land in north-central Washington State, home to at least 87 butterfly species and many other animals and plants. It is one of six wildlife areas in The Sinlahekin Wildlife Area Complex, the others being the Chilliwist, Driscoll-Eyehott Islands, Horse Spring Coulee, Carter Mountain and Buzzard Lake wildlife areas; all of which are owned by the Washington Department of Fish and Wildlife (WDFW). In this article, use of the words “Sinlahekin” and “SWA” refer only to the Sinlahekin Wildlife Area and not the entire complex.

My first trip to the Sinlahekin was in August 2003 when my sister and I tagged along with my college advisor to visit a GIS (geographic information systems) intern there. In addition to being instantly taken with the beauty of the valley, I was thrilled to see so many butterflies and discover that the manager was interested in surveying them and creating an educational collection of specimens. My sister and I returned the following year as interns and I have continued to visit the Sinlahekin almost every year since. Those two months in 2004 were a turning point in my growth as a lepidopterist, and although I have seen many other butterfly-rich areas in the past ten years, the Sinlahekin remains unparalleled in my eyes.

The SWA covers 13,763 acres of the Sinlahekin Valley between the towns of Loomis and Conconully in northern Okanogan County, Washington. The SWA was established in 1939, the first wildlife area in Washington, and was primarily intended to provide protected winter range for mule deer. Primary habitat types are shrub-steppe, wetland, and dry forest. The shrub-steppe is dominated by Bluebunch Wheatgrass (*Agropyron spicatum*), Big Sage (*Artemesia tridentata*), Bitterbrush (*Purshia tridentata*) and Serviceberry (*Amelanchier alnifolia*). Wetland habitats vary from open grassy marshes to brushy areas, including trees such as Water Birch (*Betula occidentalis*), willows (*Salix* spp.), Quaking Aspen (*Populus tremuloides*) and Mountain Alder (*Alnus incana*). The dry forests primarily consist of Ponderosa Pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*), with some Western Larch (*Larix occidentalis*) at higher elevations. An extensive survey conducted by Dana Visalli in 2003 identified 510 species of vascular plants, 42 species of lichen, and 35 moss and liverwort species in the Sinlahekin. Additional discoveries have brought the list to over 560 species of vascular plants in 2013. At least five plant species are listed as state sensitive, and one, the Yellow Lady’s Slipper (*Cypripedium parviflorum*), is state threatened.



Sinlahekin habitats: Left -- Wetland north of Fish Lake; Right -- Meadow, view from hiking trail between Blue and Forde lakes

The floral diversity contributes to the abundance and diversity of butterflies found on the Sinlahekin, with 87 confirmed species. Most butterflies in the SWA can be found flying in July, with early spring flyers peaking in mid-April to early May, and late summer flyers peaking in early to mid-August. Species that overwinter as adults, such as tortoiseshells (*Nymphalis* spp.) and anglewings (*Polygonia* spp.) are also occasionally seen on exceptionally warm days during the winter months. In early July, I often count 20 to 30 species at my favorite spot on the SWA: an area less than 20 meters square, where a small wetland provides moisture for butterflies traveling up and down the canyon. Nearly 60 species have been recorded from that spot in the past ten years, including our only records of Sonora Skipper (*Polites sonora*) and Nevada Skipper (*Hesperis nevada*). A hiking trail through pine forests, meadows, and around three of the lakes provides an excellent cross-section of habitats for viewing many of the other butterflies found at the Sinlahekin. It is along this trail where I discovered a colony of Northern Cloudywing (*Thorybes pylades*) and observed at least two females ovipositing on American Vetch (*Vicia americana*). Subsequent searches found dozens of eggs on the vetch and two eggs on Cream Pea (*Lathyrus ochroleucus*). Other notable records from the SWA include the only Okanogan County record of a Juniper Hairstreak (*Callophrys gryneus*) and the lowest-elevation record of Arctic Blue (*Agriades glandon*) in Washington State.

A small-scale thinning and prescribed burn program began on the SWA in late 2002, and has grown to a larger scale effort from 2008 to present. It is producing wonderful results, opening up dense stands of Ponderosa Pine and allowing native grasses and wildflowers to flourish, in turn encouraging butterflies and other wildlife to use those areas. Silky Lupine (*Lupinus sericeus*) is thriving in burned areas, and is heavily used by Silvery (*Glaucopsyche lygdamus*), Arrowhead (*G. piasus*), and Boisduval's (*Icaricia icarioides*) blues. Based on my personal observations,



Sinlahekin habitat immediately after mild prescribed burn.



Arrowhead Blue (*Glaucopsyche piasus*)

these blues seem to prefer ovipositing on lupines in recently burned areas, although further study is needed to confirm this. In June 2013, while surveying butterflies in an area that burned the previous day, I counted at least a dozen species inspecting some of the un-burned plants, including a Pale Crescent (*Phyciodes pallida*), Lorquin's Admiral (*Limenitis lorquini*), and several Common Ringlets (*Coenonympha tullia*).



Rockslope habitat, along upper Sinlahekin Creek where the Arctic Blue (*Agriades glandon*) and Pale Crescent (*Phyciodes pallida*; right) were first recorded.

There are 3 unconfirmed species on the SWA: Canadian Tiger Swallowtail (*Papilio canadensis*), Desert Marble (*Euchloe lotta*), and Western Meadow Fritillary (*Boloria epithore*). A single observation each of Desert Marble and Western Meadow Fritillary were made by individuals visiting the Sinlahekin, but no specimens or photos can be found for confirmation, and subsequent surveys have yet to turn up either species. A possible Canadian Tiger Swallowtail was photographed in 2007, and several Western Tiger Swallowtails (*P. rutulus*) have markings characteristic of Canadian Tigers, possibly indicating some hybridization. A survey of these swallowtails is ongoing, although genetic analysis may be needed to determine the existence or extent of any hybridization.

Species I hope to find based on available habitat, host plants, and proximity to known populations, include the Moss' Elfin (*Callophrys mossii*), Mariposa Copper (*Lycaena mariposa*), and Mormon Metalmark (*Apodemia mormo*). Because the elfin flies so early in the year and the metalmark so late, these species may be missed by peak-season surveys. Moss' Elfin has been recorded less than a mile from the SWA and their host stonecrops are found in several locations throughout the Sinlahekin. Until recently, the nearest known records of Mormon Metalmarks were

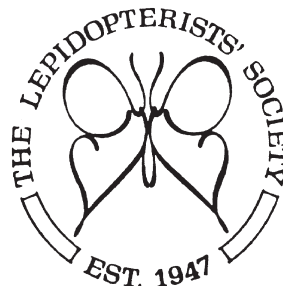


Puddling Lorquin's Admirals (*Limenitis lorquini*)

from an endangered colony 30 miles north of the SWA, near Keremeos, British Columbia along the Similkameen River. In 2008, Mormon Metalmarks were recorded a little over five miles northwest of the SWA in lower Toats Coulee, and another population was discovered approximately 10 miles southeast of the SWA near the town of Riverside. These records, combined with the abundance in the SWA of a common larval host, Snow Buckwheat (*Eriogonum niveum*), and adult nectar sources such as Gray Rabbitbrush (*Chrysothamnus nauseosus*), raise the odds that there are Mormon Metalmarks on the Sinlahekin. Mariposa Coppers are recorded from the mountains just west of the SWA, so I believe that surveys of the more remote, higher elevation portions of the Sinlahekin may yield that species, as they have the Mormon Fritillary (*Argynnis mormonia*) and Pink-edged Sulphur (*Colias interior*).

This year marks the Sinlahekin's 75<sup>th</sup> anniversary. A summer-long celebration is planned, with a kick-off on June 7 and a series of free, public, weekend field activities from June 14 through September 20 on the fauna, flora, geology, management, and history of the area. Everyone is welcome to visit the Sinlahekin and participate in any of these activities, or simply explore the area on your own. The schedule will be posted on the SWA website ([http://wdfw.wa.gov/lands/wildlife\\_areas/sinlahekin](http://wdfw.wa.gov/lands/wildlife_areas/sinlahekin)) in March. I plan to host field trips on July 5 and 6. Maybe with a few extra eyes, nets and cameras, we can finally reach our goal of 90 confirmed butterfly species!

(All photos by Caitlin LaBar.)



[www.lepsoc.org](http://www.lepsoc.org)



Pacuvius Duskywing (*Erynnis pacuvius*)



Blue Copper (*Lycaena heteronea*)



Puddling Swallowtails: Western Tiger (*Papilio rutulus*);  
Two-Tailed Tiger (*Papilio multicaudatus*, center) and Pale  
Tiger (*Papilio eurymedon*, right of center)



Lilac-Bordered Copper (*Lycaena nivalis*)



Queen Alexandra's Sulphur (*Colias alexandra*)



Behr's Hairstreak (*Satyrium behrii*), nectaring on Parsley  
Buckwheat (*Eriogonum heracleoides*)

## Sinlahekin Wildlife Area Checklist

<b>Scientific Name</b>	<b>Common Name</b>		
<i>Thorybes pylades</i>	Northern Cloudywing	<i>Callophrys eryphon</i>	Western Pine Elfin
<i>Erynnis icelus</i>	Dreamy Duskywing	<i>Strymon melinus</i>	Gray Hairstreak
<i>Erynnis pacuvius</i>	Pacuvius Duskywing	<i>Cupido amyntula</i>	Western Tailed Blue
<i>Erynnis persius</i>	Persius Duskywing	<i>Celastrina echo</i>	Echo Azure
<i>Pyrgus ruralis</i>	Two-banded checkered Skipper	<i>Euphilotes "battoides" (on Eriog. heracleoides)</i>	Cascadia Blue
<i>Pholisora catullus</i>	Common Sootywing	<i>Glaucopsyche piasus</i>	Arrowhead Blue
<i>Hesperia juba</i>	Juba Skipper	<i>Glaucopsyche lygdamus</i>	Silvery Blue
<i>Hesperia colorado</i>	Western Branded Skipper	<i>Plebejus idas</i>	Northern Blue
<i>Hesperia nevada</i>	Nevada Skipper	<i>Plebejus anna</i>	Anna's Blue
<i>Polites sonora</i>	Sonora Skipper	<i>Plebejus melissa</i>	Melissa's Blue
<i>Ochlodes sylvanoides</i>	Woodland Skipper	<i>Icaricia saepiolus</i>	Greenish Blue
<i>Amblyscirtes vialis</i>	Common Roadside Skipper	<i>Icaricia icarioides</i>	Boisduval's Blue
<i>Parnassius smintheus</i>	Mountain Parnassian	<i>Icaricia lupini</i>	Lupine Blue
<i>Papilio machaon oregonius</i>	Oregon Swallowtail	<i>Agriades glandon</i>	Arctic Blue
<i>Papilio zelicaon</i>	Anise Swallowtail	<i>Argynnis cybele</i>	Great Spangled Fritillary
<i>Papilio rutulus</i>	Western Tiger Swallowtail	<i>Argynnis zerene</i>	Zerene Fritillary
<i>Papilio multicaudatus</i>	Two-tailed Tiger Swallowtail	<i>Argynnis callippe</i>	Callippe Fritillary
<i>Papilio eurymedon</i>	Pale Tiger Swallowtail	<i>Argynnis hesperis</i>	Northwestern Fritillary
<i>Neophasia menapia</i>	Pine White	<i>Argynnis hydaspe</i>	Hydaspe Fritillary
<i>Pontia beckerii</i>	Becker's White	<i>Argynnis mormonia</i>	Mormon Fritillary
<i>Pontia sisymbrii</i>	Spring White	<i>Boloria selene</i>	Silver-bordered Fritillary
<i>Pontia occidentalis</i>	Western White	<i>Phyciodes cocyta</i>	Northern (Pearl) Crescent
<i>Pieris rapae</i>	Cabbage White	<i>Phyciodes pulchella</i>	Field Crescent
<i>Euchloe ausonides</i>	Large Marble	<i>Phyciodes pallida</i>	Pale Crescent
<i>Anthocharis sara</i>	Sara's Orangetip	<i>Phyciodes mylitta</i>	Mylitta Crescent
<i>Colias philodice</i>	Clouded Sulphur	<i>Euphydryas anicia</i>	Anicia Checkerspot
<i>Colias eurytheme</i>	Orange Sulphur	<i>Polygonia satyrus</i>	Satyr Anglewing
<i>Colias alexandra</i>	Queen Alexandra's Sulphur	<i>Polygonia faunus</i>	Green Anglewing
<i>Colias interior</i>	Pink-edged Sulphur	<i>Polygonia gracilis</i>	Hoary Anglewing
<i>Lycaena heteronea</i>	Blue Copper	<i>Nymphalis l-album</i>	Compton Tortoiseshell
<i>Lycaena helloides</i>	Purplish Copper	<i>Nymphalis californica</i>	California Tortoiseshell
<i>Lycaena nivalis</i>	Lilac-bordered Copper	<i>Nymphalis antiopa</i>	Mourning Cloak
<i>Satyrrium semiluna</i>	Sagebrush Sooty Hairstreak	<i>Aglais milberti</i>	Milbert's Tortoiseshell
<i>Satyrrium behrii</i>	Behr's Hairstreak	<i>Vanessa annabella</i>	West Coast Lady
<i>Satyrrium californica</i>	California Hairstreak	<i>Vanessa cardui</i>	Painted Lady
<i>Satyrrium sylvinus</i>	Sylvan Hairstreak	<i>Vanessa atalanta</i>	Red Admiral
<i>Satyrrium titus</i>	Coral Hairstreak	<i>Limenitis lorquini</i>	Lorquin's Admiral
<i>Satyrrium saepium</i>	Hedgerow Hairstreak	<i>Danaus plexippus</i>	Monarch
<i>Callophrys affinis</i>	Western Green Hairstreak	<i>Coenonympha tullia</i>	Ochre Ringlet
<i>Callophrys sheridanii</i>	Sheridan's Hairstreak	<i>Cercyonis pegala</i>	Common Wood Nymph
<i>Callophrys spinetorum</i>	Thicket Hairstreak	<i>Cercyonis sthenele</i>	Great Basin Wood Nymph
<i>Callophrys gryneus</i>	Cedar Hairstreak	<i>Cercyonis oetus</i>	Dark Wood Nymph
<i>Callophrys augustinus</i>	Brown Elfin	<i>Erebia epipsodea</i>	Butler's (Common) Alpine
		<i>Oeneis chryxus</i>	Chryxus Arctic



Mating pair of Cascadia Blues (*Euphilotes "battoides"*), on dead stalk of larval host Parsley buckwheat (*Eriogonum heracleoides*)



Green Comma (*Polygonia faunus*)



Puddling Lorquin's Admiral (*Limenitis lorquini*), Cascadia Blues (*Euphilotes "battoides"*), Boisduval's Blues (*Icaricia icarioides*), and one Blue Copper (*Lycaena heteronea*)



Anicia Checkerspots (*Euphydryas anicia*); to left is a set of second instar larvae on Chelan Penstemon (*Penstemon pruinosus*)



Multiple instars of Milbert's Tortoiseshell (*Aglais milberti*) larvae on Stinging Nettle (*Urtica dioica*)

# The importance of power transmission line right-of-ways as habitat for butterflies in Maine

Robert E. Gobeil and Rose Marie F. Gobeil

6 Primrose Lane, Saco, ME 04072

[bobbycollects@maine.rr.com](mailto:bobbycollects@maine.rr.com)

We have been surveying butterfly populations since 2007 at various sites in Maine as volunteers with the Maine Butterfly Survey (MBS). These sites included mowed fields, forested tracts, power transmission line right-of-ways (ROWs), or a combination of various types of habitats. Butterflies are an important component of these habitats since they serve as a source of food for many other wildlife groups, especially birds, and also act as pollinators. Pastures and hayfields, especially if mowed twice during the summer season, tended to have low diversity and included mostly common species such as European Skippers, Cabbage Whites, Clouded Sulphurs, Alfalfa Butterflies, and Inornate Ringlets. Forested tracts had few butterflies due to the uniformity of the habitat and the lack of sunlight and nectaring sources (flowers). Many of the butterflies inhabiting forested areas such as the Mourning Cloak and Banded Hairstreak were found in glades or on logging roads (trails) where sunlight penetrated to the ground level allowing nectar plants to grow. After monitoring a variety of different sites for a few years, we noticed that power line ROWs had the greatest diversity of species, including some unusual and rarer species of butterflies which are listed as threatened or of special concern by the state of Maine. In Sweden, Berg et al. (2011) evaluated four different butterfly habitats (pastures, power line corridors, road verges, and clear-cuts) and found more species and individuals on power line ROWs than in the other habitats.

In 2009, we started to concentrate our surveying efforts on power line ROWs mainly in southern Maine (See Figs. 1 & 2). We noticed that ROWs had a tremendous amount of habitat diversity, all maintained in early successional growth due to vegetation management by utility companies. We observed grassy areas, sections with low growth shrubby-woody plants, boggy areas at the bottom of hillsides, and many streams of varying widths crossing the ROWs. We also found a variety of nectaring sources for butterflies including high and low bush blueberry plants, wild blackberry, raspberry and strawberry plants, milkweed plants, cow vetch, thistle plants, and large numbers of wildflowers, especially goldenrod.

While surveying, we found that some sections of ROWs had a higher density of woody plants and were loaded with dense, tightly packed shrubs and smaller trees probably due to less intense vegetation management. These areas of the ROW had fewer butterflies but this type of habitat may



Figure 1. View of power line ROW in Saco, ME (York Co.).

be beneficial for other forms of wildlife. Butterfly diversity and density on ROWs were especially high in areas where new power lines were recently installed. These newly disturbed areas had low growth grasses, few shrubs with increased numbers of wildflowers with an overall lower vegetation height.

In order to have early successional habitat on ROWs, power companies have to utilize various forms of vegetation management techniques. There are numerous studies dealing with vegetation management for different types of wildlife on ROWs but few dealing specifically with habitat management for butterflies. In 1953, W. C. Bramble and W. R. Byrnes started studying species diversity and vegetation management techniques on a ROW as part of the State Game Lands 33 project in Pennsylvania (Holt & Orr n.d.). The majority of their extensive research and numerous publications dealt with wildlife groups other than butterflies, especially bird populations. They did, however, compare the effects of herbicide sprays with mechanical methods of ROW maintenance and concluded that butterflies were more common on areas which had been treated with herbicides (Bramble et al. 1999). Komonen et al. (2012) noted that vegetation management on ROWs helped to increase butterfly abundance. In their study, they found that the highest abundance of butterflies was recorded two to four years after clearing (cutting of shrubs and trees) on a ROW. In Sweden, Berg et al. (2013) compared butterfly populations on semi-natural pastures and power



line ROWs and concluded that more frequent clearing of vegetation on ROWs dominated by taller vegetation combined with selective mowing in certain areas would enhance butterfly populations on power line corridors.

Another feature of ROWs is that most have a dirt access road used by power companies for repairs and maintenance of the transmission lines. The majority of these access roads are open to the general public and many are used as trails by local ATV and snowmobile clubs. With heavy ATV activity, many of the access roads have extensive muddy ruts which fill up with water, especially in the spring or after intense rainstorms during the summer. The Canadian Tiger Swallowtail and Pearl Crescent were often observed puddling in this type of muddy habitat. Juvenal's Duskywings and Wild Indigo Duskywings were also commonly seen on these dirt roads. Wagner and Metzler (2011) found that dirt access roads on ROWs serve as important habitat for some state-listed Connecticut butterflies.

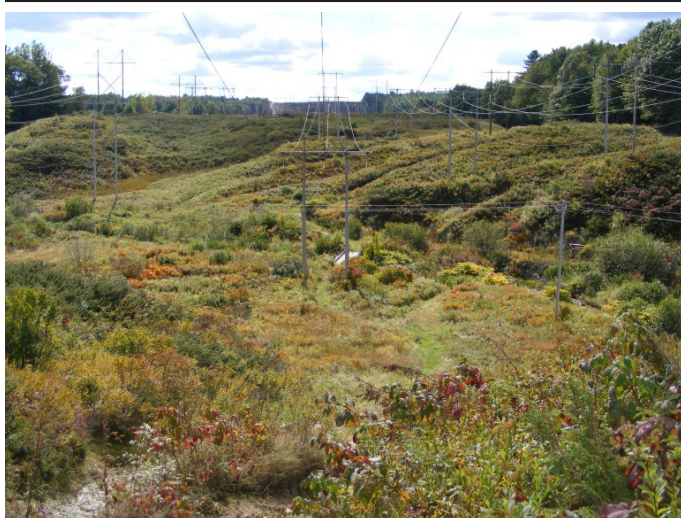


Figure 2. View of rolling hills on Power Line ROW in Westbrook, ME (Cumberland Co.).

Between 2009 and 2012, we surveyed 11 different sites located on power line ROWs in eight Maine townships in three counties: York County: Buxton (1), Lebanon (3), N. Berwick (1), and Saco (2); Cumberland County: Gorham (1), Westbrook (1) and Windham (1), and Oxford County: Sweden (1). Most of the surveyed sites were visited at roughly two week intervals during the entire flying season (usually May 1 to October 1). Some of the sites were sampled more frequently than others over the course of a number of years, especially those in York County. The majority of the surveys were conducted between 10 A.M. and 3 P.M. on sunny days with temperatures above 70°F. We used the Checklist survey method when surveying instead of the Pollard Walk transect method. This type of survey allowed us to search anywhere within the site and not follow a designated transect path. Our main goal was to determine the presence of a species at a specific site. Royer et al. (1998) found that the Checklist survey was the

most efficient method to produce an initial list of species found at a site. We also counted the number of individuals of each species observed when visiting the sites.

A total of 69 species of butterflies were recorded on the 11 different ROW sites that we surveyed (see Table 1). The scientific names of all species recorded during this study are also shown in Table 1. The results are based on a total of 149 site visits which averaged one and a half hours per visit for a total of 207 hours. All of the recorded species were vouchered (photo or actual specimen) and confirmed by MBS and are now part of the MBS collection (MDIFW Wildlife Scientific Collection Permit No. 2013-233). Some of the butterflies we found on the power line ROWs are listed by the State of Maine as threatened: Sleepy Duskywing or of Special Concern: Leonard's Skipper, Dusted Skipper and Bronze Copper (deMaynadier et al. 2013). Single individuals of the Sleepy Duskywing were found on May 11, 2011 and May 17, 2012, on a narrow ROW in Buxton, ME, in a drier, upland type of habitat with low and high bush blueberry plants. On April 30, 2012, a Henry's Elfin, which is uncommon in Maine, was found at this same site. We also observed a small colony of Dusted Skippers on a ROW close to the NH border in Lebanon, ME which we monitored for several years (Gobeil & Gobeil 2013) (See Fig. 3). A total of six Leonard's Skippers were recorded on ROWs on five different site visits in three Maine townships (Lebanon, Buxton and Gorham) while the Bronze Copper, the other state-listed species of special concern, was found on ROWs in two different townships (Windham and Westbrook) on four different site visits.



Figure 3. Dusted Skipper (*Atrytonopsis hianna*), Lebanon, ME (York County), June 1, 2012.

During our surveys, we also counted the number of butterflies observed for a total of 7,050 individuals (see Table 1). Based on our counts, the Inornate Ringlet was the most abundant species with 1313 individuals, followed by the Pearl Crescent (1261), European Skipper (463), Eastern Tailed Blue (446), and Clouded Sulphur (328).

**Table 1. Species and number of individuals recorded on 11 different sites on Power Line ROWs between 2009-2012 in eight Maine townships. The nomenclature sequence follows deMaynadier et al. (2013).**

Common Name	Scientific Name	No. Individuals Seen (2009-2012)
<b>Family HesperIIDae</b>		
Silver-spotted Skipper	<i>Epargyreus clarus</i> (Cramer)	25
Northern Cloudywing	<i>Thorybes pylades</i> (Scudder)	32
Dreamy Duskywing	<i>Erynnis icelus</i> (Scudder & Burgess)	20
Sleepy Duskywing	<i>Erynnis brizo</i> (Bois. & LeCon.)	2
Juvenal's Duskywing	<i>Erynnis juvenalis</i> (Fabricius)	57
Wild Indigo Duskywing	<i>Erynnis baptisiae</i> (Forbes)	41
Arctic Skipper	<i>Carterocephalus palaemon</i> (Pallas)	5
Least Skipper	<i>Ancyloxypha numitor</i> (Fabricius)	33
European Skipper	<i>Thymelicus lineola</i> (Ochsen.)	463
Leonard's Skipper	<i>Hesperia leonardus</i> (Harris)	6
Indian Skipper	<i>Hesperia sassacus</i> (Harris)	17
Peck's Skipper	<i>Polites peckius</i> (W. Kirby)	207
Tawny-edged Skipper	<i>Polites themistocles</i> (Latreille)	18
Crossline Skipper	<i>Polites origenes</i> (Fabricius)	6
Long Dash Skipper	<i>Polites mystic</i> (W. H. Edwards)	163
Northern Broken Dash	<i>Wallengrenia egeremet</i> (Scud.)	18
Little Glassywing Skipper	<i>Pompeius verna</i> (W. H. Edwards)	30
Delaware Skipper	<i>Anatrytone logan</i> (W. H. Edw.)	43
Hobomok Skipper	<i>Poanes hobomok</i> (Harris)	26
Mulberry Wing	<i>Poanes massasoit</i> (Scudder)	1
Black Dash Skipper	<i>Euphyes conspicua</i> (W. H. Edw.)	9
Two-spotted Skipper	<i>Euphyes bimacula</i> (Grote & Robinson)	4
Dun Skipper	<i>Euphyes vestris</i> (Boisduval)	131
Dusted Skipper	<i>Atrytonopsis hianna</i> (Scudder)	14
<b>Family PapilionIDae</b>		
Black Swallowtail	<i>Papilio polyxenes</i> (Fabricius)	8
Eastern Tiger Swallowtail	<i>Papilio glaucus</i> (Linnaeus)	2
Canadian Tiger Swallowtail	<i>Papilio canadensis</i> (Rothschild & Jordan)	44
<b>Family PierIDae</b>		
Cabbage White	<i>Pieris rapae</i> (Linnaeus)	142
Clouded Sulphur	<i>Colias philodice</i> (Godart)	328
Alfalfa Butterfly	<i>Colias eurytheme</i> (Boisduval)	117
Pink-edged Sulphur	<i>Colias interior</i> (Scudder)	1
<b>Family LycaenIDae</b>		
<b>Subfamily Miletinae</b>		
Harvester	<i>Feniseca tarquinius</i> (Fabricius)	3

<b>Subfamily Lycaeninae</b>		
American Copper	<i>Lycaena phlaeas</i> (Linnaeus)	82
Bronze Copper	<i>Lycaena hyllus</i> (Cramer)	5
Bog Copper	<i>Lycaena epixanthe</i> (Bois. & LeC.)	39
Brown Elfin	<i>Callophrys augustinus</i> (Westw.)	7
Henry's Elfin	<i>Callophrys henrici</i> (Gr. & Rob.)	1
Eastern Pine Elfin	<i>Callophrys niphan</i> (Hübner)	26
Banded Hairstreak	<i>Satyrium calanus</i> (Hübner)	1
Striped Hairstreak	<i>Satyrium liparops</i> (LeConte)	1
Grey Hairstreak	<i>Strymon melinus</i> (Hübner)	5
Eastern Tailed Blue	<i>Cupido comyntas</i> (Godart)	446
Cherry Gall Azure	<i>Celastrina serotina</i> (Pav. & Wright)	67
Spring Azure	<i>Celastrina "ladon"</i> (Cramer) (scaled population)	6
Summer Azure	<i>Celastrina neglecta</i> (W. H. Edw.)	11
Silvery Blue	<i>Glaucopsyche lygdamus</i> (Dbldy.)	35
<b>Family NymphalIDae</b>		
<b>Subfamily Danainae</b>		
Monarch	<i>Danaus plexippus</i> (Linnaeus)	127
<b>Subfamily Heliconiinae</b>		
Variiegated Fritillary	<i>Euptoieta claudia</i> (Cramer)	4
Great Spangled Fritillary	<i>Speyeria cybele</i> (Fabricius)	33
Aphrodite Fritillary	<i>Speyeria aphrodite</i> (Fabricius)	42
Silver-bordered Fritillary	<i>Boloria selene</i> (Den. & Schiff.)	96
Meadow Fritillary	<i>Boloria bellona</i> (Fabricius)	22
<b>Subfamily Nymphalinae</b>		
Harris's Checkerspot	<i>Chlosyne harrisii</i> (Scudder)	129
Pearl Crescent	<i>Phyciodes tharos</i> (Drury)	1261
Northern Pearl Crescent	<i>Phyciodes cocyta</i> (Cramer)	124
Baltimore Checkerspot	<i>Euphydryas phaeton</i> (Drury)	30
Common Buckeye	<i>Junonia coenia</i> (Hübner)	76
Question Mark	<i>Polygonia interrogationis</i> (Fab.)	9
Mourning Cloak	<i>Nymphalis antiopa</i> (Linnaeus)	9
Red Admiral	<i>Vanessa atalanta</i> (Linnaeus)	292
Painted Lady	<i>Vanessa cardui</i> (Linnaeus)	17
American Lady	<i>Vanessa virginiensis</i> (Drury)	108
White Admiral	<i>Limenitis arthemis</i> (Drury)	20
Viceroy	<i>Limenitis archippus</i> (Cramer)	278
<b>Subfamily Satyrinae</b>		
Northern Pearly-Eye	<i>Enodia anthedon</i> (A. H. Clark)	3
Eyed Brown	<i>Satyroides eurydice</i> (Linnaeus)	16
Little Wood Satyr	<i>Megisto cymela</i> (Cramer)	29
Inornate Ringlet	<i>Coenonympha tullia</i> (Hübner)	1313
Common Wood Nymph	<i>Cercyonis pegala</i> (Fabricius)	264
<b>TOTALS</b>	<b>69 Species</b>	<b>7050</b>

There are very few studies documenting the types, diversity and abundance of butterflies on power line ROWs. In 1995-6, Bramble et al. (1997) studied butterfly populations on a PECO Energy transmission line in eastern Pennsylvania as part of their work on herbicide use on ROWs. They recorded 32 different species of butterflies and found the Cabbage White (*Pieris rapae*), Little Wood-Satyr (*Megisto cymeia*) and Great Spangled Fritillary (*Speyeria cybele*) to be the three most common species. In the following year, the same researchers did a similar study of butterfly populations on a ROW in central Pennsylvania (Bramble et al. 1999). They found 29 different species of butterflies with the European Skipper (*Thymelicus lineola*), Aphrodite Fritillary (*Speyeria aphrodite*), Little Wood-Satyr (*Megisto cymela*), and Hobomok Skipper (*Poanes hobomok*) being the most common. One of the more extensive studies of butterflies on ROWs was conducted by Lanham and Nichols (2000) in South Carolina. They recorded 101 species (over 24,000 individuals) inhabiting transmission line ROWs during the spring, summer and fall in 1997. They concluded that ROWs may provide vital habitat for butterflies. In 2008, prior to the construction of additional power lines, the University of Connecticut (Center for Conservation and Biodiversity) was commissioned by the Connecticut Light and Power Company (CL&P) to conduct surveys targeting state-listed butterflies and moths on 37 miles of ROWs in Connecticut (Wagner & Metzler 2011). They found three species of butterflies and seven species of moths which were state-listed. The butterflies included: Frosted Elfin (*Callophrys irus*) (Threatened), Sleepy Duskywing (*Erynnis brizo*) (Special Concern) and Persius Duskywing (*Erynnis persius*) (Endangered - verification on ID pending). In New York, the Karner Blue butterfly (*Lycæides melissa samuelis*), a federally endangered species, has been found to utilize power line ROWs as breeding habitat (Forrester et al. 2005; Smallidge et al. 1996). In Sweden, Berg et al. (2013) compared butterfly populations in semi-natural pastures and power line ROWs. They found that 12 of the 26 butterfly species that they studied were more abundant on power line corridors than in semi-natural pastures. Lensu et al. (2011) did research on mire butterflies (species found in boggy, marshy habitats) and concluded that power line ROWs may offer an alternative habitat for declining mire butterflies in Finland.

Besides being important habitat for butterflies, ROWs may also serve as corridors for some migrating species and for species that stray northward in the fall. On May 12, 2012, during a one and a half hour period, we observed over 100 Red Admirals flying just above the shrubby vegetation, heading in a northerly direction on a ROW in Saco, ME. This larger power line ROW located in York County crosses the Maine border into New Hampshire and then continues directly southward into Massachusetts. This wider, main ROW may act as a corridor allowing some southern species direct access to move northward into Maine. Many of the sites that we monitored on this ROW had populations of the Common Buckeye which is considered a rare stray in

Maine (deMaynadier et al. 2013). The Buckeye was very common in southern Maine in 2011 when evidence of the species breeding within the state was found (Gobeil & Gobeil 2012). Other rare southern strays such as the Variegated Fritillary and Eastern Tiger Swallowtail were also recorded on this main ROW. Two studies dealing with the Common Buckeye (*Junonia coenia*) and Variegated Fritillary (*Euptoieta claudia*) found these species reached higher densities in patches connected by corridors than in isolated patches (Haddad & Baum 1999) and that corridors function as movement conduits for both of these species (Haddad & Tewksbury 2005). In Finland, Lehtomaki (2006) studied the Small Pearl-bordered Fritillary (*Boloria selene*), known as the Silver-bordered Fritillary in North America, and concluded that this species "... clearly use the power line rights-of-ways both as their primary habitat as well as a route for dispersal."

Considering that we recorded 69 different species of butterflies on power line ROWs indicates that they serve as important habitat for butterflies including rarer species which are threatened or of special concern in Maine. This is due to vegetation management which keeps the ROWs in an early successional type of habitat. Power line companies have to maintain a delicate balance between keeping their lines clear of trees while at the same time using vegetation management techniques that will not harm wildlife. This combination of early, low growth successional habitat and great diversity of habitats found on ROWs appears to provide ideal conditions for many species of butterflies in Maine. The amount of land in Maine in early successional habitat where many butterflies thrive is declining. Between 1900 and 1995, with the loss of pastures and cropland, forested areas in Maine have increased from 70% to 90% (Irland 1998). Central Maine Power (CMP) maintains 2,292 miles of ROWs in central and southern Maine with widths varying from 75 feet to over 500 feet ("Central Maine Power", n.d.). With such a large network of power line ROWs in Maine comprising thousands of acres of land, all in early, successional growth, their importance becomes even more significant as habitat for butterflies.

## Literature Cited

- Berg, A., K. Ahrné, E. Öckinger, R. Svensson & B. Söderström. 2011. Butterfly distribution and abundance is affected by variation in the Swedish forest-farmland landscape. *Biological Conservation*. 144 (12): 2819-2831.
- Berg, Å., K. Ahrné, E. Öckinger, R. Svensson & J. Wissman. 2013. Butterflies in semi-natural pastures and power-line corridors – effects of flower richness, management, and structural vegetation characteristics. doi: 10.1111/icad.12019.
- Bramble, W.C., R.H. Yahner & W.R. Byrnes. 1997. Effect of herbicides on butterfly populations of an electric transmission right-of-way. *J. Arboric.* 23 (5): 196–206.
- . 1999. Effect of Herbicide Maintenance of an Electric Transmission Line Right-of-Way on Butterfly Populations. *J. Arboric.* 25(6): 302-310.

*Continued on p. 12*

Digital Collecting:

# The thrill of Panama -- part 2

Kim Garwood

721 N Bentsen Palm Dr #40, Mission, TX 78572 [kimgrwd@sbcglobal.net](mailto:kimgrwd@sbcglobal.net)

## Central and Eastern Panama

If you don't want to drive yourself, there are two famous birding ecolodges owned by the same people, Canopy Tower and Canopy Lodge (see [www.canopytower.com](http://www.canopytower.com)). Canopy Lodge is in El Valle, and it is a beautiful place to stay. They have guides and will drive you all over the place, up into the hills looking for birds or butterflies. I don't know how open they are to collectors, as I was just photographing when I was there. They aren't cheap, but excellent gourmet food, great birdwatching and very nice people. Their garden is filled with flowering shrubs that attract many butterflies. When I was at Canopy Lodge I spent a day shooting skippers coming to the porterweed bushes in the garden, then the next day they found an eyelash pit viper coiled up in the same bush I had been sticking my arm and camera into the previous day. Was it there the previous day? I never saw it. This snake hunts as an ambush predator, hidden in a tree and waiting for prey to come close. Maybe it decided I was too big for prey.

Canopy Tower is close to Panama City but feels far away. It is unique, as it is in the old radar dome that protected

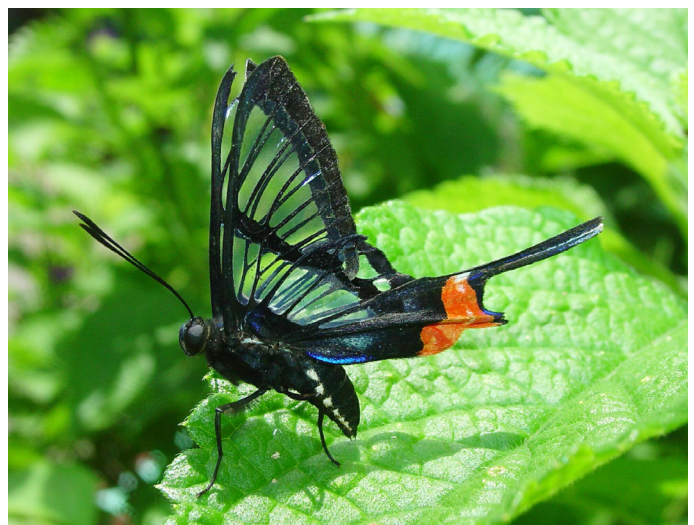
the canal when the US was running it. It is on top of a hill surrounded by forest. There aren't many trails from the tower, just a very steep driveway that heads down to Soberania National Park, but they have a great pile of porterweed, the purple salvia that butterflies love, right in the middle of the circle in their driveway. When I was there I spend every dawn chasing skippers that came to the porterweed. From first light to about 7 a.m. there were some very special crepuscular species, then the day shift took over. They also have a flat roof area where you can oversee the trees, and see the canal. I suspect this could be fabulous for moths. A few of the good bugs I got at the tower are *Mesosemia hesperina*, *Chorinea bogota*, one of



Canopy Tower with radar dome on top.



Riodinidae: *Mesosemia hesperina*



Riodinidae: *Chorinea bogota*

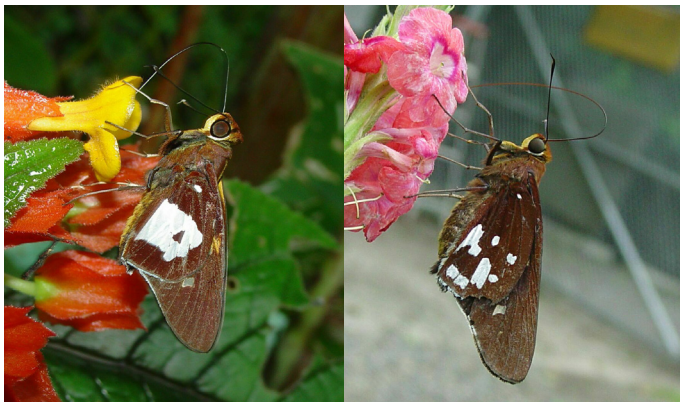
my favorites, *Theritas mavors*, and a female *Hyalothyryus neleus*. The males are all dark brown, which seems backwards to me. There were also several *Aides dysoni* coming to the flowers.



Lycaenidae: *Theritas mavors*



Hesperiidae: *Hyalothyryus neleus*



Hesperiidae: *Aides dysoni*; left - male, right - female

The porterweed, or salvia, flowers were both purple and red, and the *Heliconius hecale melicerta* loved the red ones. It was interesting as the *Heliconius* always went to the red flowers and most of the skippers, except the *Aides*, and smaller butterflies always went to the purple ones. Maybe the red flowers needed a longer tongue?



Nymphalidae (Heliconiinae): *Heliconius hecale melicerta*

Canopy Tower also drives you around to several good birding, and butterfly, places. One famous location is Pipeline Road in Gamboa. Another cheaper B&B in Gamboa is Ivan's, <http://gamboaecotours.com/>. This is a small B&B, only 3 or 4 rooms, in an old canal house, a mile or so from the start of Pipeline Road. Ivan drove me over and dropped me off a couple of times. He is much cheaper than Canopy Tower at \$45/night/person, but you're on your own.

Pipeline Road is famous in the birding world. You can walk in for a couple of miles, and you never know what you will see. I often find an ant swarm with ant follower birds, but I have not seen fabulous butterflies here. I know lots of other people who love it, and it is worth checking out, but it can be very muddy. About a mile or so in there is a tower they have built for birdwatching, which you have to pay to go up. Where the road turns off for the tower is a more open area, and that intersection can be good for butterflies. Lots of *Heliconius* and *Parides* on Pipeline Road. It's a good place for the beautiful *Parides sesostris*, one of the Cattlehearts with green on the dorsal of the male. Back in Gamboa, just walking around the houses I found this stunning *Mesosemia telegone* female posing.



Riodinidae: *Mesosemia telegone*



Papilionidae: *Parides sesostris tarquinius*; left - male, center - female, right - female underside

Staying in Panama City, there are many good places to go as day trips. Al likes to stay at the Canal Inn B&B, [www.canal-inn.com](http://www.canal-inn.com), which is under the bridge of the Americas and simple but nice. It is usually quiet, but you need a car, or taxi, to get to any restaurants. It is not within walking distance of many of the tourist areas, restaurants and shopping. As Panama City is a big city, there are a ton of hotels, some quite expensive in fancy high rise buildings, so there are many choices. Canal Inn is on the west (north) side of town, which makes it easy to get out of town on day trips going that way. I've also stayed at Amador Causeway Ocean View Hotel, when we couldn't get into the Canal Inn, which is a pretty location out on the causeway.

One advantage of staying in Panama City is the food, Panama City has a zillion restaurants of every imaginable type. The favorite of the guys is Jimmy's, a Greek place that has killer steaks, so we eat there frequently. They serve large quantities, which is always a plus for the guys. Another place closer to the Canal Inn is Pencas. Both have excellent ceviche, and I love the fruit shakes. I alternate between mango and passionfruit, or maracuya.

Some of the day trip locations are as follows: Santa Rita Ridge towards Colon on the Atlantic side, this can be good in the dry season as it is wetter over there; Black Tank road by the Gatun locks, across the canal; Cerro Campana to the west about the same elevation as Santa Rita (800m) but much cooler and wetter (more cloud forest); Bayano east of Lake Bayano, on the road to the Darien; and probably my favorite Cerro Jefe about 900-1,000 meters, also east of Panama City.

I was at Cerro Jefe in August 2011 with the collectors and we had a fabulous day. John MacDonald had found an old tree that must have been diseased, as it was oozing sap in many places. Many of the sap sucking *Nymphalidae* were hanging around, including two species of *Agrias*, some *Preponas* and John's first ever sighting in Panama of *Baeotus beotus*, which I had only seen in the Amazon basin. It was impossible to get live photos of many, but the collectors hung several traps, and some folk spent the day

lurking around that tree. Several people caught *Agrias amydon smalli* but no one was able to catch the other one which was zipping around, *Agrias aedon rodriguizi*.



Nymphalidae: *Baeotus beotus* (Photos by Gill Carter)



Nymphalidae: *Agrias amydon smalli*

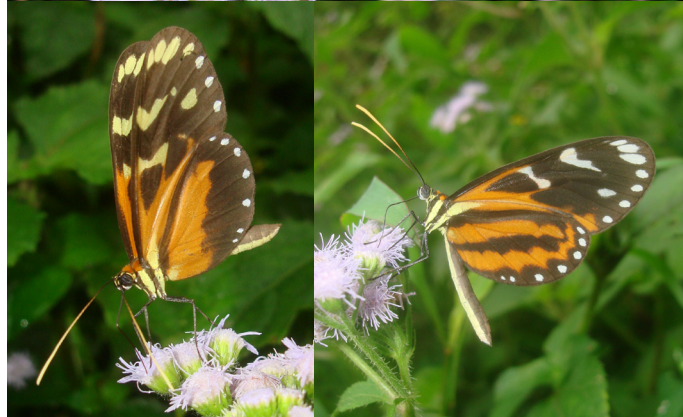
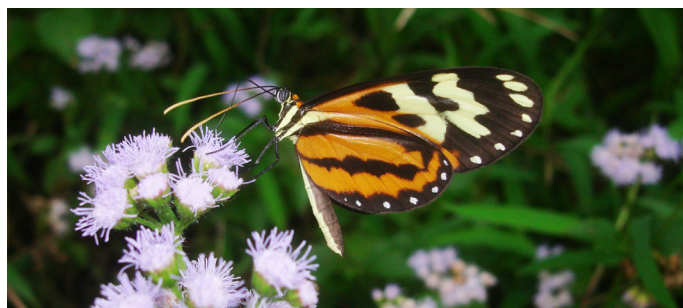
Another collector, Lisa Scheinin, caught a gorgeous *Memphis laura balboa*, with that stunning orange edge on the dorsal (see cover). John had caught one there a couple of weeks earlier as well. That was the first one I had ever seen, though we did get live shots in western Colombia later in both 2011 and 2012. The collectors have had 5 species of *Morpho* up this road, including *M.cypris*.



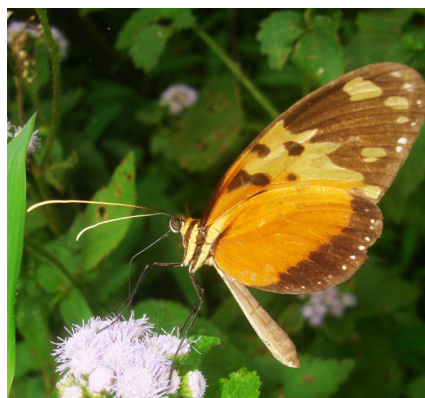
Nymphalidae: *Memphis laura balboa*, venter  
(Photo by Dan Wade, from Colombia)

Driving in, before the old tree with sap, we found a driveway and hillside covered with purple *eupatorium* or blue mist flower, which was a magnet for *Ithomiinae*. We spent one morning tromping up and down the woman's driveway, five or six of us, and saw hundreds of mostly tigerwings. The most common was *Hypothyris euclea*, which seemed quite variable, both in the amount of black and the color of the bands. Some had yellow bands and some had white, perhaps indicative of sexual dimorphism(?).

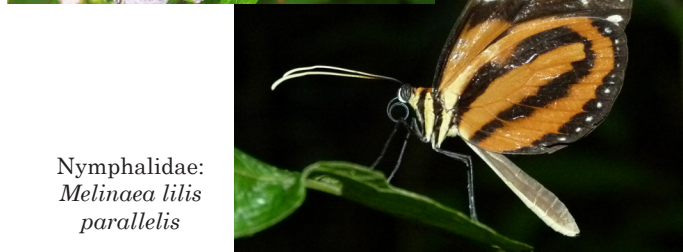
There were several other species mixed in with the clouds of *Hypothyris euclea*. I got *Melinaea idea*, *Melinaea lilies parallelis*, *Hypothyris lycaste lycaste* and *Ithomia iphianassa panamensis*, another species that can be quite variable (see photo of *I. iphianassa panamensis* in first installment of this series "... and now Panama -- part 1", News of the Lepidopterists' Society, Vol. 55:4, page 163).



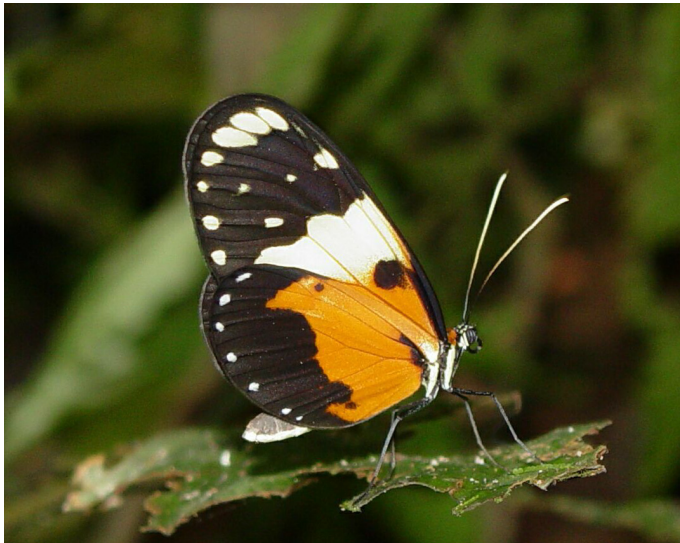
Nymphalidae: *Hypothyris euclea valora*; variants



Nymphalidae:  
*Melinaea idea idea*



Nymphalidae:  
*Melinaea lilies parallelis*



Nymphalidae: *Hypothesis l. lycaste* (Photo by Gill Carter)



Riodinidae: *Chimastrum argentea* (Photo by Dan Wade)

has collected many specimens in the past in February, but not this year. It was very dry, so perhaps it was extreme.

Driving further on up the dirt track, about as far up as you can drive a 4x4, you can see the microwave towers. I hiked on up to the towers and found a nice *Riodinidae* lek, with several species of small metalmarks chasing each other. This is a known spot for collecting; it is interesting looking in DeVries' Costa Rica book how many *Riodinidae* he collected here. There were *Symmachia tricolor* and *Symmachia probetor*. *Mesenopsis melanochlora* and *Panaropsis elegans* were both collected by Ichiro Nakamura. They were moving fast, chasing each other and pausing on leaves only briefly to watch for other intruders, so it was very difficult to get live photos of them.

Heading further to the east, towards Colombia, is the Darien, the Holy Grail of Panama butterflying. Gill Carter got some nice *Napeogenes peridia* and *N.stella*, the only time I've ever seen photos of these species. We used to be able to fly into Cana, an old mining camp. I did this back in the 90's, and some friends went several times in the 2000's, but now it has been closed down. You used to be able to book it through Ancon Expeditions, which was a



Riodinidae: *Panaropsis elegans*

Cerro Azul is very close to Cerro Jefe, and my friend Dan Wade has spent time there at a friend's house. One of the best butterflies he shot there was *Chimastrum argentea*, which I had never seen.

This was in August 2011, in the wet season. I went back in February 2012 during the dry season, and it was very different in that not much was happening. No sap in the magic tree, so no butterflies, and no eupatorium so no *Ithomiinae*. Al



Nymphalidae: Top -- *Napeogenes peridia hemimelana*; Bottom -- *Napeogenes stella* ssp. nov. (Photos by Gill Carter)

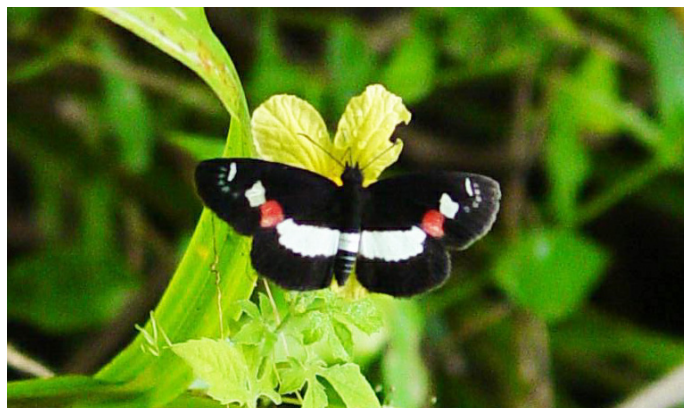


Panamanian government agency. It was quite expensive, as everything was brought in by small planes, but a great place to explore. We're hearing several stories about why you can no longer go there, but we think the government is concerned about possible problems with Colombian armed bad guys. It is very close to the Colombian border, surrounded by fabulous forest and no roads or access except by small single engine aircraft. I can only imagine what butterflies you could find in those forests.

We drove east, or south, to Bayano, over a big bridge, through a military checkpoint (be sure to have your passport, sometimes they require it, sometimes not), and past Lake Bayano. It's about an hour from Panama City to the bridge (can be 2 hours including getting out of the city), then about 10-12 km to some dirt tracks that run off the main road to both sides. These may be logging roads; you can drive in and park off to the side and wander around. Lots of *Heliconius erato* and *melpomene*, with quite a bit of variability, some with yellow stripes and some without. John showed me a spot for *Mesosemia hypermegala*, the only time I've ever seen this species. This also seems to be a good spot for *Paramimus stigma*, as we've seen it a couple of times there, and friends have had it there as well. It is very small and likes to sit on flowers on the top of bushes, which makes it so hard to photograph.



Riodinidae: *Mesosemia hypermegala*



Hesperiidae: *Paramimus stigma* (Photo by Dan Wade)

I've stayed at Burbayar, a lodge a little ways past this area, but wouldn't recommend it. We wandered around good looking forest for 2 days and saw very little. That was in August, so it should have been good, but not much was found by any of us.

I'm going back to Panama in April this year, and we're going to camp at a ranger station at the edge of Darien National Park. Al and John have now been there a couple of times, and they say it is really good, so I'm looking forward to it. We will drive all the way to the end of the road, then cross a river and take horses a couple of hours into the park. Should be exciting, stay tuned!

(All photos by Kim Garwood unless otherwise specified.)

## Spotless Comma, *Polygonia haroldii* in the U.S.

Continued from p. 14

### Literature Cited

- Beccaloni, G., M. Scoble, I. Kitching, T. Simonsen, G. Robinson, B. Pitkin, A. Hine, and C. Lyal. 2012. The Global Lepidoptera Names Index. Natural History Museum, London, UK. <http://www.nhm.ac.uk/research-curation/research/projects/lepindex/>
- Dewitz, H. 1877. Neue Schmetterlinge des Berliner Museums. *Mitteilungen des Münchner Entomologischen Vereins* 1:85-91.
- Ehrlich, P.R., and D.D. Murphy. 1981 (82). Butterfly nomenclature: a critique. *Journal of Research on Lepidoptera* 20(1): 1-11.
- Glassberg, J. 2007. *A Swift Guide to the Butterflies of Mexico and Central America*. Sunstreak Books, Inc.
- Godman, F.D., and O. Salvin. 1887-1901. *Biologia Centrali-Americana. Insecta. Lepidoptera-Rhopalocera*. Vol. II. London: Published for the editors by R.H. Porter.
- ICZN (International Commission on Zoological Nomenclature). 1999. International Code of Zoological Nomenclature, Fourth Edition. The International Trust for Zoological Nomenclature, London.
- Krogn, R. 2000. Records of *Polygonia haroldii* (Dewitz, 1877) in Sonora, Mexico (Lepidoptera, Nymphalidae). *Atalanta* 31(1/2):67-70.8.5
- Miller, L.D. and J. Y. Miller. 1970. Notes on two rare Mexican *Adelpha* and related Central American species (Nymphalidae). *Journal of the Lepidopterists' Society* 24(4):292-297.
- Peña, C. and T. Malm. 2012. VoSeq: A voucher and DNA sequence web application. *PLoS One* 7(6):e39071. [www.nymphalidae.net/VoSeq/](http://www.nymphalidae.net/VoSeq/)
- Warren, A.D., K.J. Davis, E.M. Stangeland, J.P. Pelham, and N.V. Grishin. 2013. Illustrated Lists of American Butterflies [18-X-2013]. <http://www.butterfliesofamerica.com>
- Weingartner, E., N. Wahlberg, and S. Nylin. 2006. Dynamics of host plant use and species diversity in *Polygonia* butterflies (Nymphalidae). *Journal of Evolutionary Biology* 19(2): 483-491.

# The Marketplace

IMPORTANT NOTICE to ADVERTISERS: If the number following your ad is "554" then you must renew your ad before the next issue! **NEW**: Paid advertising; see the "NOTICE" and middle column, below.

## NOTICE: Paid Commercial Advertising now in the News

Any commercial advertisement in the News now requires a fee for space. Companies that are not affiliated with the Lep Soc can also purchase advertising space in the News. The cost to advertisers will be \$40.00 dollars per eighth page per issue, and we would like to limit advertisers to ads of a quarter page (for \$80.00) unless there are good reasons for a larger ad (a lot of text or multiple images, for instance). Advertisers should use Pay Pal (see Announcements) to send money to Kelly Richers BEFORE the ad will run.

## Books/Electronic Images

For Sale: Entomological books from personal library, mostly in excellent condition. Includes such titles as "Butterflies of Costa Rica -- 2 vols." by DeVries; "Pennington's Butterflies -- Africa" by Dickson and "Butterflies of Rhodesia" by Pinhey. Prices are negotiable. Write or e-mail for list. Alan J. Hanks, 34 Seaton Drive, Aurora, Ontario L4G 2K1, Canada or e-mail alan.hanks@sympatico.ca. 554

## Specimens/Collections

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

554

## 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](mailto:kgs@lclark.edu)) for more information on this project. 561

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.**

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

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 mem-

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

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

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

# Membership Updates...

*Julian Donahue*

Includes ALL CHANGES received by 15 February 2014

*"Lost" Members (publications returned: "temporarily away," "moved," "left no address," or "addressee unknown"):*

**Larry N. Brown** (Tallahassee, Florida)  
**Tom Nix** (Ithaca, New York)

*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)*

**Banks, John:** Cinebutterflies, 28 Patshull Road, London NW5 2JY, United Kingdom.

**Berger, Lisa:** Three Rivers Public Library District, 25207 West Channon Drive, Channahon, IL 60410-5028.

**Brown, Sibylla (Mrs.):** 21675 Pony Farm Road, Leon, IA 50144-1399.

**Carr, Thomas W.:** 6626 Weckerly Drive, Whitehouse, OH 43571-9695.

**Chu, Thomas:** 1774 West Nobility Circle, Salt Lake City, UT 84116-4712.

**Chu, Cole:** 1774 West Nobility Circle, Salt Lake City, UT 84116-4712.

**Clark, Ty (Mr.):** 3550 Dotty Court, Huntingtown, MD 20639-4227.

**Clayborn, Jaeson:** 11493 SW 126th Terrace, Miami, FL 33176-4436.

**Donly, John H. "Hal":** 61 Addington Square, Unionville, Ontario L3R 7N2, Canada.

**Doyle, Joseph F., III:** 13310 Bar C Drive, San Antonio, TX 78253-5203.

**Drake, Brian:** P.O. Box 1, Tehachapi, CA 93581-0001.

**Droppers, David:** 1402 211th Place SW, Lynnwood, WA 98036-8625.

**Eiseman, Charles:** 276 Old Wendell Road, Northfield, MA 01360-9674.

**Gilbert, Josiah:** 5760 Forked Horn Place, Paso Robles, CA 93446-8366.

**Giles, Taryn (Ph.D.):** 268 Steele Blvd., Baton Rouge, LA 70806-5127.

**Gorman, Robert E.:** 252 Via Rancho, San Clemente, CA 92672-4539.

**Hair, Christopher:** 367 Medea Creek Lane, Oak Park, CA 91377-3840.

**Kouznetsova, Alexandra (Ms.):** [address omitted by request]

**Kunte, Krushnamegh (Ph.D.):** Nat'l Ctr. for Biological Sciences, Tata Institute of Fundamental Research BKVK, Bellary Road, Bengaluru, Karnataka 560065, India.

**Landry, Diane:** P.O. Box 1952, Guerneville, CA 95446-1952.

**Larrivéé, Maxim:** 4581, rue Sherbrooke East, Montreal, Quebec H1X 2B2, Canada.

**Mason, Stephen:** [address omitted by request]

**McCormick, Gerald:** 902 South 4th Avenue, Virginia, MN 55792-2815.

**Melton, L. Joseph, III (M.D.):** 925 6th Avenue SW, Rochester, MN 55902-3262.

**Miller, Stephen S.:** P.O. Box 297, Penn Valley, CA 95946-0297.

**Morris, Gail (Mrs.):** 6120 West Ivanhoe Street, Chandler, AZ 85226-1750.

**Mullins, Douglas D.:** 2470 East Warwick Vista, Tucson, AZ 85713-2061.

**Piot, John:** [address omitted by request]

**Podlone, Max:** [address omitted by request]

**Priestaf, Richard Carl:** 13 San Dimas Avenue, Santa Barbara, CA 93111-2113.

**Rotter, Michael:** 714 Spruce Street, Apt. F, Marquette, MI 49855-3747.

**Santry, Rob:** 2165 Willow Glen Drive, Anderson, CA 96007-3205.

**Schafersman, Steven (Ph.D.):** 6202 Driftwood Drive, Midland, TX 79707-1603.

**Spear, Stephen:** 9 Livernois Drive, Topsham, ME 04086-6083.

**Staley, David (M.D.):** Marshall University School of Medicine, VAMC, 1540 Spring Valley Drive, Huntington, WV 25704-9399.

**Ungs, Bill:** 7780 Laurel Drive, Gilroy, CA 95020-4721.

**Vidal, Mayra:** 3301 South Washington Street, Apt. 201, Englewood, CO 80113-2742.

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

**Boggs, Carol L. (Ph.D.):** Dept. of Biological Sciences, University of South Carolina, 715 Sumter Street, Columbia, SC 29208-3402.

**Heath, Fred:** 5751 Kolb Road, Unit 40106, Tucson, AZ 85750-3773.

**Hummer, Lawrence R.:** 736 Center Drive, Apt. 133, San Marcos, CA 92069-3588.

**Kempema, Silka L.F. (Mrs.):** 1112 Westwood Drive, Pierre, SD 57501-5232.

**Miller, James S. (Ph.D.):** 6211 South Woodlawn Ave., Apt. C, Chicago, IL 60637-3703.

**Perkins, Edwin M., Jr. (Ph.D.):** 1944 Carlsbad Circle, Apt. 201, Naperville, IL 60563-8860.

**Wolfe, Kirby:** Apartado 213-6000, Santiago, Puriscal, San José 10401-6000, Costa Rica.

# A fledgling field guide: *The Butterflies of the Eastern United States* by George H. French

John V. Calhoun

977 Wicks Drive, Palm Harbor, FL 34684

bretcal1@verizon.net

Many of us are acquainted with the old book *The Butterflies of the Eastern United States* by the Illinois entomologist George H. French (1841-1935) (Fig. 1). Intended for “classes in zoology and private students,” it was designed to be small (14 x 19 cm) and sturdily hardbound to endure many years of use. The book is often cited as the first manual of butterflies of the United States, though it probably should share this distinction with Charles J. Maynard’s *The Butterflies of New England*, which was published nearly simultaneously in 1886. Nonetheless, French’s book set the standard for all subsequent manuals on the butterflies of North America, eventually leading up to modern field guides.

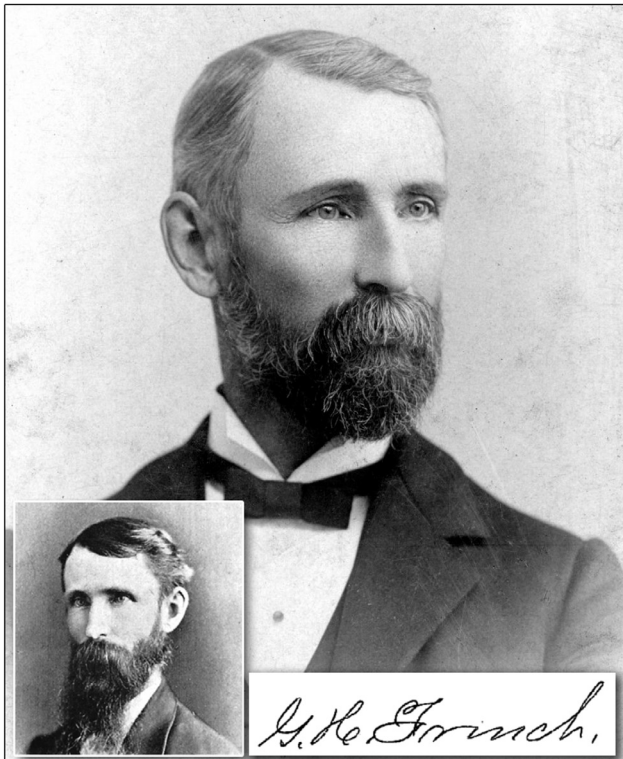


Figure 1. George H. French, c. 1890 (courtesy SIU). Inset is a younger likeness from Osborn (1937). The signature is from an 1883 letter (RC).

Over the years, I noticed differences between copies of French’s book. I discovered that multiple editions were issued over three decades. Most familiar to lepidopterists is the first edition of 1886. It included 93 electrotype (wood-engraved) figures of adults and early stages, which were mostly reproduced from other works (Fig. 2). Least well known is the fourth edition, published in 1914, which incorporated seven photographic halftone plates (Fig. 3).

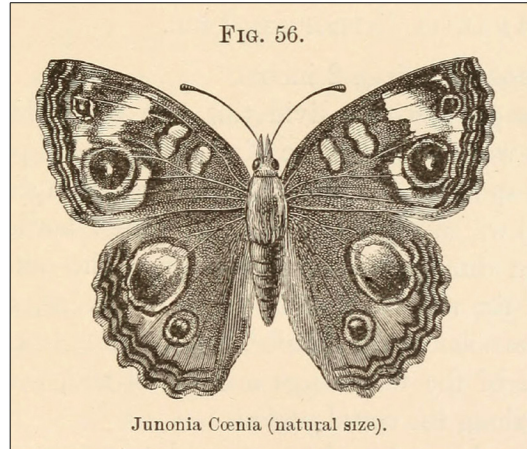
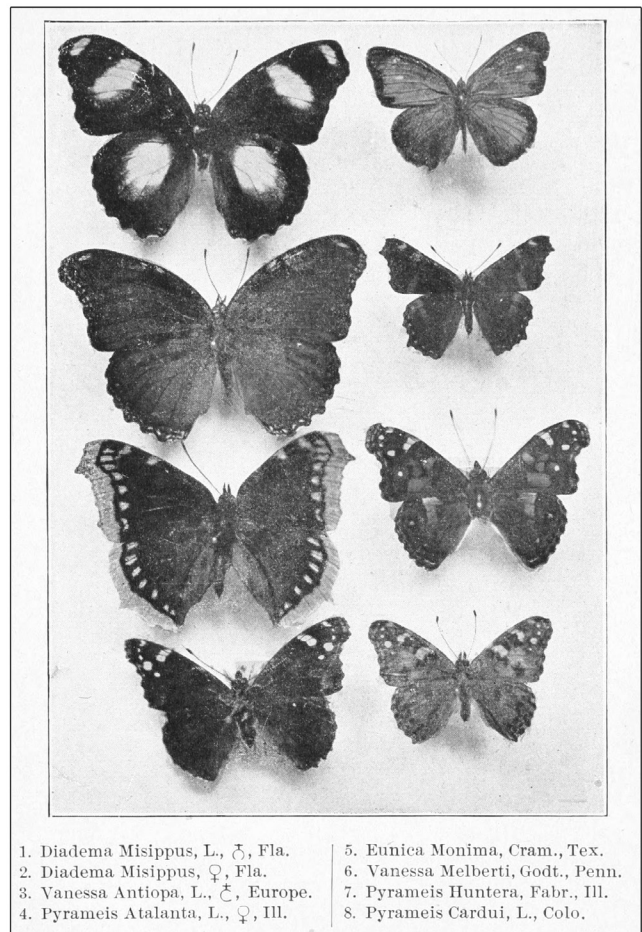


Figure 2. Figure 56 from the first edition (1886).



- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1. Diadema Misippus, L., ♂, Fla.   | 5. Eunica Monima, Cram., Tex.     |
| 2. Diadema Misippus, ♀, Fla.       | 6. Vanessa Melberti, Godt., Penn. |
| 3. Vanessa Antiopa, L., ♂, Europe. | 7. Pyrameis Huntera, Fabr., Ill.  |
| 4. Pyrameis Atalanta, L., ♀, Ill.  | 8. Pyrameis Cardui, L., Colo.     |

Figure 3. Plate 5 from the fourth edition ([1914]), figuring two *Hypolimnas misippus* from Florida.

French became interested in writing his butterfly book after he completed a treatise on the Lepidoptera of Illinois (French 1878), which was issued with a report on insects by Illinois' first state entomologist, Cyrus Thomas. French reminisced about the creation of his book in an obscure autobiography (St. John 1936). The following account was written by French when he was about 90 years of age.

*“Soon after finishing the little manual of Lepidoptera for Dr. Thomas' report, the idea came to me that there was no manual of the butterflies of this region and in my correspondence with W. H. Edwards of West Virginia he urged me to write such a book. He was publishing his new catalogue of the butterflies of the United States and offered me proof sheets of his new catalogue for a basis of classification. I had by this time a pretty complete set of the butterflies of the eastern part of the country, and Mr. Edwards offered to loan me any species I did not have (for making descriptions) and I decided to describe all the species from the insects, and not copy anything, so as to make the descriptions uniform in their style. As the work was done mostly in the evenings at my home, the book was slow but in 1885 the manuscript was ready for publication. I first sent the MSS. to Henry Hold & Co. of New York. After a while the MSS. was returned with a note that the matter was good, but they objected to the arrangement of some of the material. I had an analytical key for the identification of species somewhat after the plan of the keys in the botanies, and a list of all the species with the words syllabicated, the accented syllable marked so as to give the correct pronunciation of the names of the species. These two, the reader thought, ought to be transferred to an adenda [sic]. I thought differently, and sent the MSS. to the J. B. Lippincott Company of Philadelphia and they accepted it without question. I knew from the style of the writing, as I had become familiar with most of the entomological writers, that the Holt critique was written by S. H. Scudder, I think of Boston. When the work finally came out, it was commended all over the United States only one adverse criticism being offered. One man thought the pronunciation of one name was wrong, but he was wrong and I was right. One of the things that was specially commended was the analytical key, comparing it to the work of Gray in his botanical key.*

*Some time later a critique appeared in Science, but the author did not sign his name to the article. I did not see the article till a New Jersey man took it up and went for the writer. In the preface I had a map showing the geographical boundary coinciding with the western boundary of Missouri. Where I could get cuts to illustrate some of the more prominent species they were purchased of the publishers, but I had several new cuts made. This made the book a valuable Manual, and it found sale not only in the United States but in Europe and Asia, and possibly South America.*

*It was not long before the first edition was sold and then a second edition was put out containing an adendum [sic] with new species and varieties that had been found since the first was issued. Later a third was issued and in this, besides another adendum [sic], there were added several plates of species not represented in the cuts. There are now less than a hundred of this edition not sold. It is not a book that the general public wants, but the lepidoterist [sic] needs it and he may be certain that when he identifies a specimen by its key he is not mistaken. This is not true of any other book I know with the exception of Edwards' work on butterflies, which with its coloured plates is the monument of accuracy and beauty. The book contained descriptions, not only of the adult forms, or imagines, but of the development stages and food plants as far as known” (St. John 1936).*

It was the celebrated Massachusetts entomologist Samuel H. Scudder who published the disparaging review of French's book in the journal *Science*. As French suspected, Scudder also penned the publisher's critique for Henry Holt & Company. This is revealed in a letter to Scudder from the prominent West Virginia lepidopterist William H. Edwards, who wrote, “I know . . . that you were the assailant because the language was mostly identical with what you employed in the “Opinion” you gave Holt & Co. on French's Mss” (25 Nov. 1886, Museum of Science, Boston, Massachusetts; BMS). Edwards mentioned that French had sent him a copy of Scudder's critique. In his published review, Scudder denounced French's book as “but the rehabilitation of the dry husks of a past generation” ([Scudder] 1886). He also criticized the book's purpose as merely to enable the reader to “find out the name of a specimen in hand.” The “New Jersey man” who challenged Scudder's review identified himself simply as “A Teacher” (Anonymous 1886a). Scudder (1886a, 1886b) vehemently refuted the teacher's rebuttal, as well as that of a second anonymous challenger identified as “A. Reader” (Anonymous 1886b). Scudder's initial review was published anonymously, but his name was unintentionally revealed with his follow-up responses. The teacher argued that even experts like Scudder experienced “all the necessary preliminary stages” before continuing their studies, the most basic of which was learning the names of their subjects. Edwards felt that the teacher had bested Scudder, who had “waked up a bees nest” (letter to H. Edwards, 6 Dec. 1886, American Museum of Natural History, New York). Joining the fray, Edwards chided Scudder: “I could not help thinking when you spoke so contemptibly of rehabilitating the dry husks of a past generation why you had thought of that when you rehabilitated the kiln dried husks of Hubner's dismal names” (25 Nov. 1886, BMS). Scudder had previously roused controversy when he proposed the resurrection of generic names that were employed nearly a century earlier by the German naturalist Jacob Hübner. In defending French, Edwards continued his fight against Scudder's use of those names, calling them “as silly as husky.”

In another published review of French's book, the naturalist Selim H. Peabody addressed some of Scudder's criticisms even before they appeared in print. In what was apparently a direct response to Scudder's "dry husks of a past generation" comment, Peabody recognized that French "wisely accepted the work which the great body of Entomologists has done before him" (Peabody 1866). Peabody was the president of the University of Illinois and French was a professor at Southern Illinois Normal College (now Southern Illinois University). Both were interested in entomology and lived in the same state. Most likely, French asked Peabody to write a review and sent him a copy of the critique that Scudder had written for Henry Holt & Company. As Edwards had observed, Scudder's critique and his published review were virtually identical.

We can only speculate on Scudder's motives. Leach (2013) suggested that he was confronting his long-time entomological rival, W. H. Edwards, but did so through French, who was one of Edwards' many supporters. However, I believe that Scudder's intentions were less nefarious. For a number of years, Scudder had been working on his own book, which would include a wealth of new information about the butterflies of the eastern United States; the region covered by French's book. Scudder probably feared that French's "little book" offered a less expensive alternative, which Scudder believed lacked the necessary information to properly instruct readers on the topic. Scudder should have realized that he was actually poised to benefit from the publication of French's book. Published two years before Scudder began issuing parts of his *Butterflies of the Eastern United States and Canada*, French's book would introduce butterflies to many budding entomologists, some of whom would doubtless go on to purchase Scudder's expensive volumes. Even French became a subscriber to Scudder's work. French's book sold for \$2, which is equivalent to about \$50 in today's economy. By comparison, Scudder's complete three-volume magnum opus sold for \$75; a whopping \$2,000 today. The book that Scudder championed was beyond the means and comprehension of most novice lepidopterists.

During the early 1890s, Scudder began working on *A Student's Manual of the Butterflies of North America, North of Mexico*, a chapter of which was published (Scudder 1892). He later abandoned the book due to other commitments, but he published a few other sections as separate papers (Scudder 1902a, 1902b, 1902c, 1902d, 1902e, 1902f). If completed, this manual would have included the detailed information that Scudder unrealistically expected of French's book. While working on his ill-fated manual, Scudder finally came to appreciate the need for a book like French's, prompting him to issue in 1893 his *Brief Guide to the Commoner Butterflies of the Northern United States and Canada*, published by none other than Henry Holt & Company. Contradicting his previous review of French's book, Scudder claimed that such a work was needed to "introduce to the young student the names and somewhat of the relationships and lives of our commoner

butterflies." In the end, Scudder became a believer in introductory butterfly books, if for no other reason than to take advantage of this emerging market. French's book was well received and became very popular, as evidenced by its long history and multiple editions. To French, that was surely vindication enough.

In 1886, W. H. Edwards predicted that a book about all the butterflies of the United States would be published "within 10 years probably," noting that French's book included one-third of the species. Only five years later, C. J. Maynard issued his *Manual of North American Butterflies*, but it fell far short of being an authoritative reference. Much more accurate and profusely illustrated was William J. Holland's *The Butterfly Book*, which was published in 1898 and revised in 1931 (it was reprinted until at least 1951). The first conceptual field guide to the butterflies of North America was Holland's *The Butterfly Guide* of 1915, but it mostly treated "commoner" species. It was not until 1951 that we had our first true comprehensive field guide, when Alexander B. Klots authored his *Field Guide to the Butterflies of North America, East of the Great Plains*. French's "little book" helped pave the way for guides that continue to introduce butterflies to eager "private students."

**Editions.** The first edition of French's book was copyrighted in 1885, prompting some authors to cite this as the publication date. However, the title page is dated 1886 and the book was listed as a new publication early that year (Lippincott 1886a, 1886b). The first advertisement for the book in the journal *The Canadian Entomologist* appeared in March of 1886. William H. Edwards first mentioned the book in letters written that same month. Reviews of the book were also published in 1886.

The first edition was revised in 1890 to include an addendum of three new taxa. French did not, however, officially identify this version as a second edition, nor did he include a supplementary preface. Only in a third edition of 1896 did he refer to the previous version as the second edition. The title page of the third edition identified it as "New and Revised." It incorporated a supplementary preface and eleven new taxa in the addendum. This edition was updated in 1900 to include seven new taxa in the addendum.

The third edition mentioned by French in his autobiography is actually the fourth edition, published in 1914. Although the title page of this edition was undated, it was copyrighted in 1914. Records of the copyright office confirm that it was registered on 15 April 1914 and two copies of the finished book were received on 31 December 1914 (LOC 1915) (such a delay explains how the first edition was copyrighted in 1885, yet the book was not published until 1886). The fourth edition was the most distinctive revision, with a newly formatted title page, photographic plates, updated nomenclature, and eight new taxa in the addendum. While the nomenclature of the first edition was based upon the revised catalogue of diurnal Lepidoptera by Edwards ([1885]), that of the fourth edition mostly followed the

checklist by Smith (1903). The addition of plates in the fourth edition partially addressed a long-standing criticism that the book did not figure enough species.

Of special interest in the fourth edition is Plate 5, which figures two specimens of *Hypolimnas misippus* (L.) that were supposedly collected in Florida (Fig. 3). This Old World butterfly is very rare in North America (Wright 2009). French attributed this species only to "Indian River, Florida," thus the figured specimens likely originated from William (Wilhelm) Wittfeld (1828-1913), a German naturalist who collected Lepidoptera in the vicinity of his home at "Indian River, Florida" (Georgiana, Brevard County) (Calhoun 1994). Wittfeld first captured *H. misippus* in 1880 (though he had seen it earlier) and his daughter, Annie M. Wittfeld (1865-1887), reared it in 1887 from eggs obtained from a wild-caught female. The Wittfelds offered Florida specimens to correspondents, most notably Edwards. Although I have been unable to locate French's specimens, they likely came from Edwards.

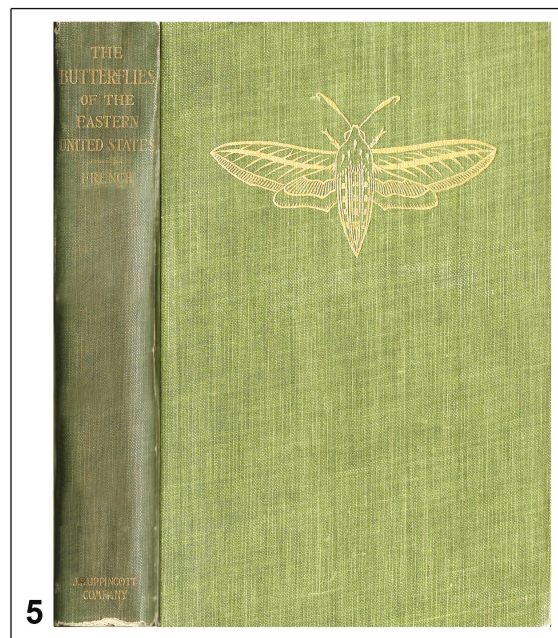
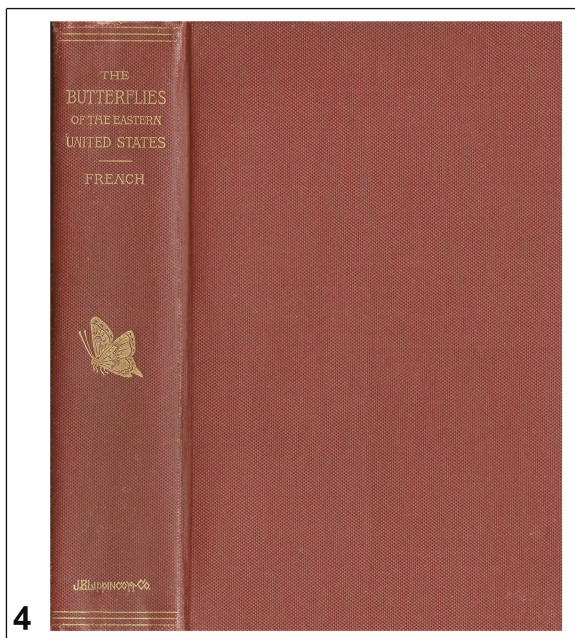
Like the updated third edition of 1900, the fourth edition was bound in green cloth with a gilt image of a white-lined sphinx moth (*Hyles lineata*) on the front cover (Fig. 5). Why the publisher chose to decorate a butterfly book with an image of a moth is anyone's guess. An even greater mystery is why French did not protest in 1900 to prevent its use in 1914. All other editions were bound in brown cloth with a more appropriate gilt butterfly vignette on the spine (Fig. 4). At the foot of the spine of the first edition, the publisher's mark (J. B. Lippincott Co.) appeared in a more simplified font. Copies of the book are still available on the antiquarian book market, ranging in price from \$10 to \$60, depending upon condition. The fourth edition is difficult to find, but digital copies can be found online. In fact, every edition of French's book can be viewed online.

Additional information about the publication of French's book may await discovery among the records of the J. B. Lippincott Company, which are preserved at the Historical Society of Pennsylvania (Philadelphia) (Winship 2007). In addition, many of French's personal manuscripts are deposited in the Special Collections Research Center, Morris Library, Southern Illinois University (Carbondale, IL;

SIU). The portrait of French reproduced for Figure 1 is from the SIU collections. Possibly never before published, it portrays him around the time when the second edition of his book was issued. It is a much more distinguished (and less hirsute!) likeness than that familiar to most entomologists (Fig. 1, inset). By the time French issued the fourth edition of his book, his white hair and beard had become endearing trademarks (Fig. 6).



Figure 6. George H. French, c. 1910 (Karber 1917).



Figures 4 & 5. Bindings used. (4) 1886, 1890, 1896, (5) 1900, 1914.

Following are citations for each edition of *The Butterflies of the Eastern United States* by G. H. French. Taxa included in the addenda are listed using French's original nomenclature and orthography. Current names are given in brackets.

#### French, G. H.

**1886. The butterflies of the eastern United States. For the use of classes in zoology and private students. J. B. Lippincott Co., Philadelphia, Pennsylvania. 402 pp., 93 figs, 1 map.**

**1890. The butterflies of the eastern United States. For the use of classes in zoology and private students. [Second edition]. J. B. Lippincott Co., Philadelphia, Pennsylvania. 408 pp., 93 figs, 1 map.**

"Since the publication of the first edition of Butterflies of the Eastern United States, the following species have been found within the territory that were not known before to occur here" (new addenda):

- a. *Colaenis Delila*, Fabr. [*Dryas iulia largo* Clench and *D. i. moderata* (Riley)]
- b. *Neonympha Mitchellii*, French [*Neonympha m. mitchellii* French]
- c. *Pamphila Aaroni*, Skinner [*Poanes a. aaroni* (Skinner)]

**1896. The butterflies of the eastern United States. For the use of classes in zoology and private students. New and revised [third] edition. J. B. Lippincott Co., Philadelphia, Pennsylvania. 414 pp., 93 figs, 1 map.**

"The descriptions of species and varieties in this edition that were not in former editions are to be found at the close of the volume. . ." (new addenda):

- a. *Callidryas Statira*, Cramer [and] var. *Floridensis*, Neumogen [sic] [*Aphrissa statira floridensis* (Neumoegen)]
- b. *Callidryas Agarithe* var. *Maxima*, Neum. [*Phoebis agarithe maxima* (Neumoegen)]
- c. *Lycaena Lygdamus*, var. *Oro*, Scud. [*Glaucopsyche lygdamus oro* (Scudder)]
- d. *Lycaena Alce*, Edw. [*Echinargus isola* (Reakirt)]
- e. *Pamphila Massasoit*, var. *Suffusa*, Laurent [*Poanes m. massasoit* (Scudder)]
- f. *Pamphila Yehl*, Skinner [*Poanes yehl* (Skinner)]
- g. *Pamphila Slossonae*, Skinner [*Hesperia attalus slossonae* (Skinner)]
- h. *Pamphila Panoquinoides*, Skinner [*Panoquina p. panoquinoides* (Skinner)]
- i. *Pamphila Streckeri*, Skinner [*Choranthus radians* (Lucas)]
- j. *Pamphila Carolina*, Skinner [*Amblyscirtes carolina* (Skinner)]

**1900. The butterflies of the eastern United States. For the use of classes in zoology and private students. New and revised [updated third] edition. J. B. Lippincott Co., Philadelphia, Pennsylvania. 425 pp., 93 figs, 1 map.**

"The descriptions of species and varieties in this edition that were not in former editions are to be found at the close of the volume. . ." (new addenda):

- a. *Papilio Asterias*, Fab. [*Papilio polyxenes asterias* Stoll]
- b. *Argynnis Leto*, Behr [*Speyeria cybele leto* (Behr)]
- c. *Eumenia Atala*, Poey [*Eumaeus atala* (Poey)]
- d. *Ancyloxypha Longleyi*, French [*Ancyloxypha numitor* (F.)]
- e. *Pamphila Howardi*, Skinner [*Poanes aaroni howardi* Skinner]
- f. *Pyrgus Tessellata*, Scud. [*Pyrgus c. communis* (Grote)]
- g. *Castnia Cronis*, var. *Corningi*, Hy. Edw. [*Haemonides c. cronis* (Cramer)] (French believed that castniid moths should be considered butterflies)

**[1914]. The butterflies of the eastern United States. For the use of classes in zoology and private students. Fourth edition. With seven plates and ninety-three text illustrations. J. B. Lippincott Co., Philadelphia, Pennsylvania & London, England. 429 pp., 93 figs., 1 map.**

"In an addenda in the back part of this edition will be found descriptions of such new species and varieties as have been found within the area covered by the volume as were not known to occur here at the time of the last revision" (new addenda):

- a. *Papilio Philenor*, L. var. *Obsoleta*, Ehrmann [*Battus p. philenor* (L.)]
- b. *Papilio Polyxenes*, Fab. var. *Semi-alba*, Ehrmann [*Papilio polyxenes asterius* Stoll]
- c. *Melitaea Streckeri*, Ellsworth [*Euphydryas p. phaeton* (Drury)]
- d. *Phyciodes Hanhami*, Fletcher [*Chlosyne harrisii hanhami* (Fletcher)]
- e. *Vanessa Antiopa*, L. var. *Grandis*, Ehrmann [*Nymphalis a. antiopa* (L.)]
- f. *Limenitis Ursula*, Fab. var. *Cerulea*, Ehrmann [*Limenitis a. arthemis* (Drury)]
- g. *Debis Creola*, Skinner [*Lethe creola* (Skinner)]
- h. *Chionobas Katahdin*, Newcomb [*Oeneis polyxenes katahdin* (Newcomb)]

## Acknowledgments

I express sincere thanks to Aaron M. Lisee (SIU) for providing a scan of French's portrait and answering many questions.



## Literature Cited

- Anonymous. 1886a. The teaching of natural history. *Science* 8:435-436.
- \_\_\_\_\_. 1886b. The teaching of natural history. *Science*. 8:484.
- Calhoun, J. V. 1994. William Wittfeld: the Florida connection. *J. Lepid. Soc.* 48:58-67.
- Edwards, W. H. [1885]. Revised catalogue of the diurnal Lepidoptera of America north of Mexico. *Trans. Entomol. Soc.* 11:245-338.
- French, G. H. 1878. Economic entomology of Illinois. Part II. Lepidoptera, or butterflies and moths, and their larva, or caterpillars. Pp. 135-273. *In* Thomas, C. (ed.), Seventh report of the state entomologist on the noxious and beneficial insects of the State of Illinois. Springfield, Illinois.
- Holland, W. J. 1931. The butterfly book. New and thoroughly revised edition. A popular and scientific manual, describing and depicting all the butterflies of the United States and Canada. Doubleday, Doran & Co., Inc., Garden City, New York. xii+424 pp., 77 pls.
- Karber, J. F. (ed.). 1917. [Dedication to George Hazen French with portrait]. Obelisk 4: frontispiece.
- Leach, W. 2013. Butterfly people. An encounter with the beauty of the world. Pantheon Books, New York, New York. xxvi+388.
- Lippincott, J. B. (firm). 1886a. New publications of J. B. Lippincott Company [advertisement]. *Critic* 5 (117):ii.
- \_\_\_\_\_. 1886b. Some recent publications of J. B. Lippincott Company, Philadelphia [advertisement]. *Publ. Weekly* 29:246.
- LOC (Library of Congress). 1915. Catalogue of copyright entries 11 (n.s.) (144):1292-1300.
- Osborn, H. 1937. Fragments of entomological history: including some personal recollections of men and events. Author, Columbus, Ohio. 394 pp, 47 pls.
- Peabody, S. H. 1886. Book notice. The butterflies of the eastern United States: by G. H. French, A. M. Can. *Entomol.* 18:120.
- [Scudder, S. H.] 1886. A manual of North American butterflies. *Science* 8:378.
- Scudder, S. H. 1886a. Letters to the editor. The teaching of natural history. *Science* 8:454-455.
- \_\_\_\_\_. 1886b. Letters to the editor. The teaching of natural history. *Science* 8:515-516.
- \_\_\_\_\_. 1892. The tropical faunal element of our southern Nymphalinae systematically treated. *Proc. Amer. Acad. Arts Sci.* 27:236-251.
- \_\_\_\_\_. 1902a. Group characteristics of some North American butterflies - I. *Psyche* 9:370-371.
- \_\_\_\_\_. 1902b. Group characteristics of some North American butterflies - II. *Psyche* 9:381-383.
- \_\_\_\_\_. 1902c. Group characteristics of some North American butterflies - III. *Psyche* 9:394-395.
- \_\_\_\_\_. 1902d. Group characteristics of some North American butterflies - IV. *Psyche* 9:405-407.
- \_\_\_\_\_. 1902e. Group characteristics of some North American butterflies - V. *Psyche* 9:413-419.
- \_\_\_\_\_. 1902f. Group characteristics of some North American butterflies - VI. *Psyche* 9:423-427.
- Smith, J. B. 1903. Check list of the Lepidoptera of boreal America. *Amer. Entomol. Soc., Philadelphia, Pennsylvania.* v+136 pp.
- St. John, W. (ed.). 1936. Life retrospect of George Hazen French, including many items of entomological interest. With his illuminating notes on endocrinology. *Amer. Baptist Mission Pr., Rangoon, Burma.* viii+139 pp.
- Winship, M. 2007. J. B. Lippincott Company records. *Hist. Soc. Pennsylvania.* Webpage: [www.hsp.org](http://www.hsp.org).
- Wright, D. M. 2009. A female mimic *Hypolimnas misippus* (Linnaeus, 1764) (Nymphalidae: Nymphalinae) in Key West, Florida, with notes on this same species in the United States. *So. Lepid. News* 31:49-53.

## Metamorphosis

*Continued from p. 44*

**William Burton Preston, Ph.D.**, of Winnipeg, Manitoba, Canada, on 11 October 2013 at the age of 76. Born in Pent- icton, B.C. on 6 March 1937, Bill received his Ph.D. study-



ing water snakes at the University of Oklahoma, Norman, and was cura- tor of reptiles at The Manitoba Museum for 28 years. A passionate amateur entomologist, he amassed an extensive insect collection, and had been a member of the Society since 1976; an avid field naturalist and dedicated conserva-

tionist, he authored *The Reptiles and Amphibians of Mani- toba*, and co-authored *The Butterflies of Manitoba*. He is survived by Willetta, his wife of 50 years, three children, three siblings, and a number of grandchildren and great-grandchildren. [excerpted from an obituary published by the Winnipeg Free Press on 16 Oct. 2013, available at: <http://tinyurl.com/kw36s4f>]

**Owen Adelbert Perkins**, of Royal Oak, Michigan, on 30 November 2009 at the age of 79. Owen had been a sci- ence teacher for 37 years in Royal Oak, Michigan. He was



the Web host of Lepalert. org (specializing in dis- tributing information on Michigan Lepidoptera), an Honorary Life Mem- ber of the Michigan Entomological Society, and had been a continuous member of The Lepidop- terists' Society since 1951. He is survived by Grace Kidder Perkins, his wife of 57 years, five children, and 17 grandchildren.

[excerpted from an obituary published online at: <http://ti- nyurl.com/ms8grjk>]



[www.lepsoc.org](http://www.lepsoc.org)

## Formative Experiences:

**Jordan W. Finkelstein**

50 Toms Lane, Port Matilda, PA 16870 jwf3@psu.edu

I caught my first butterfly, a monarch, on my tenth birthday July 8, 1943, at camp High Lake in the Pocono mountains in eastern Pennsylvania where I was spending eight weeks in summer camp.

My parents, my sister, my maternal grandparents and I lived in an apartment at 310 East 12<sup>th</sup> Street Manhattan. Among other routines, we had a regular practice of going out to dinner every Sunday night. On this particular evening, we went to a Jewish-Romanian restaurant on the corner of First Avenue and Houston street whose name I do not recall. Nor do I recall what I ate that night.

What I do remember is my father paying the bill at the cash register to the owner, Mr. Schwartz, who was a patient of my father's (a general physician), at which point I noticed a case of mounted butterflies on the wall behind the register. I don't recall ever seeing a butterfly up close before, even at the Museum of Natural History where I regularly spent every Saturday during the school year.

As I gazed at the butterflies, Mr. Schwartz came over to me. He asked me if I was interested in butterflies. I said that I was interested in science and that I wanted to become a scientist. (I eventually became a Pediatric Endocrinologist). He told me that collecting butterflies is a scientific pursuit. By this time my father had joined our conversation and asked Mr. Schwartz how he got started collecting. He said that a friend of his father's had got him started and he would be happy to get me started if I would like that.

So for the next several months, every Friday after school, which was only a few blocks away from the restaurant, I would spend the afternoon learning about butterflies. I learned about butterfly anatomy, their life cycle, how to catch them, mount them and store them. At that time there was one butterfly supply shop in Manhattan where I was able to get a spreading board on which I could learn to mount papered specimens that Mr. Schwartz gave to me for practice. My father gave me a small enameled box he used to store sterilized syringes which I converted into a relaxing box. My mother made me a net from a broomstick, a coat hanger and a net bag made from window screening.

On July first, with several hundred other children, we boarded buses and were driven to camp High Lake. My parents decided to send me there because of the epidemic of poliomyelitis that was going on in New York City at that time. My parents had arranged for the camp director to introduce me to the nature counselor who would allow me to spend time collecting butterflies. I remember the excite-

ment I felt being out in a field of wildflowers and snagging my first butterfly with my homemade net. It was incredible. I spent many happy hours in that field and others. In the winter of 1943-44, I spent more happy hours mounting them and placing them in Cornell cases.

As an annual routine, I spent many summers of my youth in summer camps in New York, Pennsylvania and Connecticut collecting butterflies. I did teach other boys and nature counselors about butterflies. Then I would return to the city and skillfully mount the butterflies I had caught.

There was a break in my collecting as my career in medicine progressed. After high school I became a pre-med student at New York University. Then a full medical student at NYU, followed by a pediatric residency at Bellevue Hospital and New York Hospital (Cornell) and a fellowship at Johns Hopkins College of Medicine, where I met my wife (a nurse). During this time my butterfly collection became a wing collection due to my failure to protect it from dermestid beetles. That has not recurred and I now have a collection of 36 Cornell cases of butterflies and moths.

The path of my life and collecting butterflies had a very nice parallel to the four stages of a butterfly life cycle. My interest was laid as an egg in that restaurant, crawled along for a while as a caterpillar in my youth, was put on hold in chrysalis form as career, wife, and sons and daughters were born, and then emerged again later in life as a mature adult.

I started avidly collecting again when my wife and I would take vacations. My three sons and two daughters became adults and developed their lives and careers, left home and started families of their own. I took my nets and collecting equipment to California, Connecticut, Arizona, Texas and New York where our children settled, and captured species from these areas well into my adult life. Traveling for business or pleasure, I would always bring along my nets and collecting equipment. I enjoyed collecting on many Caribbean islands, Brazil, Nigeria and extensively along the Texas coast and lower Rio Grande Valley.

My first son Jordan Jr., took an interest in collecting butterflies in his teenage and young adult years and we would collect and mount together and individually. He developed an interest in capturing larger species, such as *Papilio cresphontes*, and liked capturing large moths at night. He developed a quest that went on for several years, to capture *Actias luna*, and netted his first one while visiting relatives in Connecticut in 1982 when he was 19 years old. I have not been able to interest my other children or grandchildren in collecting or photographing butterflies and moths.

I recently realized that at age 81 I have been collecting for 71 years. I have had two outstanding experiences in my years of collecting. The first occurred in Galveston, Texas where I lived for thirteen years. Galveston is a barrier reef island whose west end is primarily a resort section with beautiful

beaches. One year in the fall, my wife and I were on one of those beaches when the Monarch migration was flying though. The experience of seeing thousands of Monarchs flying, landing on the sand and perching on us was incredible. The second was while collecting in the rainforest of Brazil near Rondonia. Walking alone in the jungle where everywhere I looked I could see butterflies and not see or hear anything else except jungle noises, was an uplifting experience that I never had before and have never had again.



Jordan Finkelstein on the Pacific coast of Costa Rica.

## Metamorphosis

*Julian Donahue*

### Memories of an old friend in Mexico



Left to right, Ranulfo and Mitzi Oven de Mancilla and Lincoln Brower at Mitzi's Motel in Tuxpan, Michoacan Mexico. 21 January 2002. (Photo Copyright L. P. Brower, Sweet Briar College.)

On 19 January 2014 Mitzi Oven de Mancilla died in her 91st year, a sad passing and one of significance to the monarch butterfly community in Mexico. The Mancilla family owned and ran Mitzi's Motel (Motel Quinta Mitzi) on the outskirts of Tuxpan, an hour's drive from

Anganguero, the old mining town in the heart of the monarch butterfly overwintering region. Many visitors to the butterfly colonies were hosted by Mitzi and we all have fond memories of her graciousness.

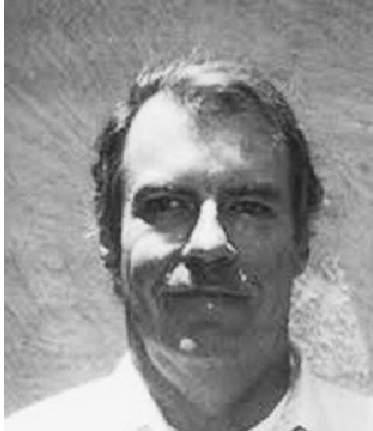
I first met Mitzi, her husband Ranulfo and her mother Mary in about 1979 when Bill Calvert was my postdoctoral associate at Amherst College. Bill had the good fortune of "discovering" the Mancillas when we were heavily involved in research in the Sierra Chincua monarch overwintering area of the monarch butterfly. We were camping in the Llano de los Torros on the southwestern end of the Sierra Chincua and her motel became our refuge from the strenuous, cold and high elevation conditions. Ranulfo was a first class rancher and maintained gardens and a greenhouse that grew most of the food that they served in their restaurant. What a pleasure it was for us to visit, relax, take warm showers, and enjoy sumptuous meals with them. Mitzi's Motel had also hosted Fred and Norah Urquhart and Cathy and Ken Brugger during their early discovery days in the 1970's. Mitzi had fallen in love with Ranulfo at a Mexican ranchers' meeting in the US, and after they married she moved with her parents to Ranulfo's farm near Tuxpan. The area was endowed with archeological treasures, and Mitzi told me that she and her father collected countless artifacts from their surrounding fields.

I learned much from Mitzi and her mother about the local politics surrounding monarch butterfly conservation issues. As time went on, Calvert and I became increasingly concerned about the future of the monarch colonies because of logging. Mitzi and Ranulfo put us in contact with Governor Cuatémoc Cárdenas, then Governor of Michoacan, who was responsible for preserving the first major overwintering area, in the Sierra Chincua. In the winter of 1981, Ranulfo, who had gone to school with Governor Cárdenas, arranged with him for us to fly in a state helicopter over the Sierra Chincua and other colonies. Ranulfo cleared a landing pad for us in the field across from their motel. The mind-boggling flights further opened our eyes to the pressing need for conservation.

Getting to know Mitzi and her family was one of the great pleasures of my many visits to Mexico, and we became very close friends. In May 2001 a Sweet Briar College colleague and I arranged for Mitzi and Ranulfo to visit her original family homestead in Slovenia. Mitzi told me that their trip was a highlight of their lives. On their way home through Holland, Ranulfo purchased hundreds of gladiola and lily bulbs that he shipped back to Tuxpan to fill his specially built, enormous new greenhouse.

I last hugged Mitzi on 19 February 2013. It was clear that she had had a stroke and was failing, and I sensed that this would be our last meeting; she died exactly 11 months later. My students and I have wonderful memories of the Mancilla family, our many sojourns to Mexico and, especially of that sparkling and savvy lady, Mitzi. *[contributed by Lincoln Brower, Sweet Briar College]*

## A REMARKABLE MIND



Dick Holland passed away on October 5, 2013, in the Albuquerque home he had occupied for more than 40 years. Richard Walter Holland was born in Abington, Pa., on October 28, 1940. He chased moths and butterflies as a youth. His brilliant mind, self confidence and willful personality led him to MIT, where he earned B.S., M.S., and

Ph.D. degrees in electrical engineering in 1962, 1964 and 1966 respectively. As an up-and-coming student of an engineer, Richard worked on radar systems and antennas at Raytheon Company and designed waveguide transition sections at Hewlett-Packard Company. In 1964 he came to Sandia National Laboratory in Albuquerque. Four years later he was awarded the Alfred Noble prize for his mathematically innovative description of piezoelectric sound phenomena and sound creation in piezoelectric materials. Dick eventually left the Lab to start a consulting firm, which successfully competed for a variety of defense-related federal contracts. Meanwhile Dick purchased homes in his neighborhood, eventually accumulating several residences that he rented to university students.

While Richard found professional success, he also pursued his passion for butterflies and moths in a part of the U. S. where much remained to be discovered. Until his arrival in Albuquerque, New Mexico had not been home to a resident lepidopterist since T. D. A. Cockerell left Las Vegas for Colorado in 1905. The intervening 60 years witnessed a smattering of hit-and-run collectors who would visit for a few days and then return home with their catch, and their knowledge. Discovery in 1959 of the Sandia Hairstreak in Albuquerque's Northeast Heights startled the Lepidopterist community and perhaps instilled in Dick the notion that New Mexico would be a great place to live and work.

After arriving in Albuquerque and for the next 35 years Dick slew as many butterfly dragons as he could. In his 1960 Toyota Land Cruiser he explored nooks and crannies throughout New Mexico, Baja California, and northern Mexico. He always took extra gas, tools and spare parts, making any needed repairs himself along the way. He collected butterflies all day, then set light traps for moths at night. Over the years Richard accumulated the largest personal collection of New Mexico Lepidoptera that has ever been assembled. He published several important scientific papers on New Mexico Lepidoptera, described several new species and subspecies, and served as a mentor to young upstarts like Mike Toliver and Steve Cary.

Dick sought out and conquered an array of intellectual challenges during his life. His dozens of professional and scientific writings range widely, from engineering text books like *Statistical Electromagnetics* to strict Lepidoptera papers like "Butterflies of Six Central New Mexico Mountains, with notes on *Callophrys (Sandia) mcfarlandi* (Lycaenidae)." He creatively applied statistics to global questions of island biogeography: "Correlation Studies of the Butterfly Fauna of the Arabian Peninsula Oases, the Islands of Northern Japan, the Montane Islands around Albuquerque, and an Expanded Study of the Chihuahuan Desert Refugia." He was intrigued by human behavior, studying the role of male European slaves and their female owners in 19<sup>th</sup> century Timbuktu, and applying quantum thermodynamics to American politics. He single-handedly hosted the 1989 annual meeting of The Lepidopterists' Society. Like a true engineer, Dick thought there was no problem that he could not solve with logical thought and diligent application of tools at hand, even if he had to bore down into the bowels of a piece of software and tune it up so it would obey his commands.

When his health problems began ca. 2000, Dick confronted them head-on, sparing no expense, while making sure his insurance companies fulfilled their commitments. He fought and lived with Parkinson's disease for about a decade. In his last years Dick was on full-time oxygen and housebound except for occasional visits to hospital emergency rooms. Psychological side effects of his medication created additional challenges and took a toll on his personal relationships. Despite having to give up one of his great loves - collecting butterflies and moths in the wilds of the American Southwest - he continued to work from his house to publish as many papers as possible. Dick thus managed to describe several new subspecies, discover prized specimens hidden in museum collections, and blow the minds of biogeographers with far-flung statistical analyses. Many of these final publications were accomplished in collaboration with the C. P. Gillette Museum of Arthropod Diversity at Colorado State University, where his epic butterfly and moth collection will reside permanently.

Dick is survived by a brother in Pennsylvania and a son in Arizona, and will be greatly missed by his many friends and colleagues. *[Contributed by Steve Cary]*

---

**Robert Lee Langston**, of Kensington, California, on 19 October 2013 at the age of 87. Bob, a prominent member of the Pacific Slope Section, had been a member of the Society since 1950. He is survived by Evelyn, his wife of 61 years, three children, and five grandchildren. A more detailed obituary will appear in a later issue of the News.

[www.lepsoc.org](http://www.lepsoc.org)

---

*Continued on p. 41*

***More Announcements:****Continued from p. 17***Third annual National Moth Week - July 19-27, 2014****This Year's Event to Spotlight Silk Moths**

The third annual National Moth Week is being held July 19-27. National Moth Week is a global event and last year there were more than 400 participating locations in all 50 states and 41 countries. 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. Last year, surveys, moth-watching and educational events were held throughout Europe, Asia, Africa, South, Central, and North America.

National Moth Week (NMW) shines a much-needed spotlight on moths and their ecological importance as well as their incredible biodiversity. Through partnerships with major online biological data depositories such as BAMONA, Project Noah, BugGuide, Encyclopedia of Life, Discover Life, Biodiversity Bhutan, DiversityIndia, Moth Photographers Group, LepiMap – Atlas of African Lepidoptera, and iNaturalist, National Moth Week encourages participants to record moth distributions, submit data and photographs, and to provide information on other aspects of their life cycles and habitats.

During the first two National Moth Weeks, participants submitted more than 5,000 moth records and held thousands of moth nights in backyards, inner cities and some of the most remote places on Earth. Many of these were attended by the public and by families and children that have never been exposed to moths or Lepidoptera survey methods.

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. National Moth Week's symbol, the Io moth (*Automeris io*), is a colorful silk moth found in the U.S. and Canada. Silk

moths are found throughout the world, but their populations recently have shown declines offering participants an opportunity to help document their occurrence.

For more information about National Moth Week and to register a location visit [nationalmothweek.org](http://nationalmothweek.org).

**2014 BALLOT - The Lepidopterist's Society Constitutional Amendments**

You will notice in this issue of the News an insert that is your voting ballot for the 2014 amendments to The Lepidopterist's Society Constitution. These amendments were proposed at last year's annual meeting and approved by the Executive Council. You may be wondering why these amendments were not sent out with last year's November voting ballot. The reason is simple – according to Article XII of the current Constitution, any proposed amendments must be “published in one of the Society's periodicals at least three months before the annual ballot is mailed...” Because of the timing of last year's annual meeting and the publication schedule of the News and Journal, it was not possible to publish the proposed amendments three months prior to when the annual ballot was mailed in November. Although this rule was not always followed in the past, the current Executive Council decided to delay voting on the amendments until at least three months had passed since their publication in the News. Because a separate mailing is very costly for the Society, the ballot is included as an insert in this issue of the News. Many thanks to James Adams, editor of the News, for giving us this cost-saving option!

The proposed amendments involve changes to three articles in the Constitution. The exact wording of these proposed changes and an explanation as to why they are proposed is included on the reverse side of your ballot. In summary, the proposed amendments allow a voice on the Executive Council for the editors of the News and Journal, bring the Constitution up to date with current practices regarding the term for President and when newly-elected officers take office, and allows some flexibility to the publication of amendments after the annual meeting so that we do not need to have a separate voting ballot sent out for amendments (such as you are receiving right now!). Please take a minute to vote on each amendment and return your ballot to the address listed at the bottom of the ballot. Thank you for participating as a voting member of The Lepidopterist's Society and I look forward to seeing you in Park City!

Michael E. Toliver  
Secretary, The Lepidopterists' Society

[www.lepsoc.org](http://www.lepsoc.org)

## 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, <b>News</b>	15.00

(\$30.00 outside North America)

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

## 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 knowledgeable audience, illustrated and succinct (under 1,000 words, but will take larger). Please submit in one of the following formats (in order of preference):

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

## Submission Deadlines

Material for Volume 56 must reach the Editor by the following dates:

Issue	Date Due
56 2 Summer	May 20, 2014
3 Fall	Aug. 15, 2014
4 Winter	Nov. 15, 2014

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

## Executive Council

### President

Todd Gilligan  
Colorado State University  
Bioagricultural Sciences  
and Pest Management, 1177  
Campus Delivery, Fort Col-  
lins, CO 80523-1177  
(970)490-4478  
[tgilliga@gmail.com](mailto: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](mailto:andy@butterfliesofamerica.com)

### Vice Presidents

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

Andrew Neild  
8 Old Park Ridings, Grange  
Park, London, Middlesex  
N21 2EU, ENGLAND  
+44 (0) 7941515272  
[andrew.neild@blueyonder.co.uk](mailto: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](mailto: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](mailto: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](mailto:Julian@lepsoc.net)

### Treasurer

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

### 2nd Assistant Treasurer

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

### Publications Manager

Kenneth R. Bliss  
2438 Falcon Drive  
Round Rock, TX 78681-2755  
(732)968-1079  
[krbliss@gmail.com](mailto: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](mailto: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](mailto: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  
[lepstraps@aol.com](mailto:lepstraps@aol.com)

#### Zone 1, The Far North:

Kenelm W. Philip  
Institute of Arctic Biology  
University of Alaska  
P.O. Box 75700  
Fairbanks, AK 99775-7000  
(907) 479-2689  
[kwp.uaf@gmail.com](mailto:kwp.uaf@gmail.com)

#### Zone 2, The Pacific Northwest:

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

#### Zone 3, The Southwest:

Ken Davenport  
8417 Rosewood Avenue  
Bakersfield, CA 93306  
(661) 366-3074 (home)  
[kdavenport93306@yahoo.com](mailto: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](mailto: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](mailto:ron.royer@minotstateu.edu)

#### Zone 6, Texas:

Charles Bordelon  
Texas Lepidoptera Survey  
8517 Burkhardt Road  
Houston, TX 77055  
[texaslepsurvey@sbcglobal.net](mailto:texaslepsurvey@sbcglobal.net)

#### Zone 7, Ontario and Quebec:

Maxim Larrivee  
Collections entomologiques  
et recherche, 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](mailto: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](mailto: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](mailto:scholtensb@cofc.edu)

#### Zone 10, The Northeast:

Mark J. Mello  
c/o Lloyd Center,  
430 Potomska Rd  
Dartmouth, MA 02748  
[markmello@lloydcenter.org](mailto: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](mailto:ivf@ciencias.unam.mx)



Sinlahekin Wildlife Area, landscape north of the WA headquarters (photo by Caitlin LaBar; see associated article on page 18)



**Nov. 1 - 2, 2013: 24<sup>th</sup> Annual High Country Lepidopterists' Meeting (from top row down) -- Top Row:** Sarah Garrett, Boris Kondratieff, Gordon Revey, Scott Ellis, Rich Bray, Larry Crowley, Barbara Bartell, Miriam Broughall; **Next** - Dean Bowers, Venice Kelly, Mike Fisher, Ellen Shannon, Amy Yarger; **Next** - John Sovell, Mary Ann Hamilton, Boyce Drummond, Chuck Harp; **Next** - Kristen Bird, Gene Monroe, Tobin Hammer; **Next** - Chris Grinter, Lynn Monroe, Fran Watson; **Next** - Paul Opler, Pam Piombino, David Bettman, Jan Chu; **Front:** Ron Butler, Evi Buckner-Opler

For abstracts from the meeting, go to [http://www.lepsoc.org/society\\_news.php](http://www.lepsoc.org/society_news.php), and scroll down to the link under the High Country Lep Soc meeting heading.