

# NEWS

OF THE

# LEPIDOPTERISTS' SOCIETY

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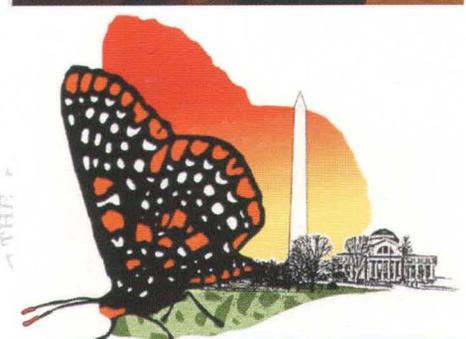
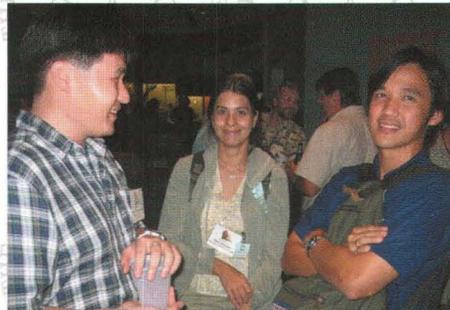
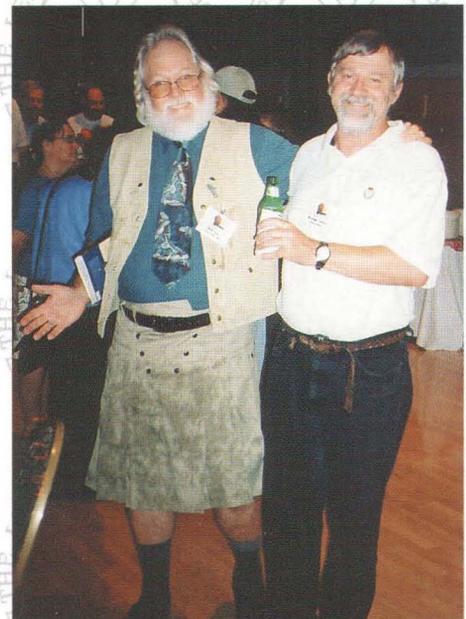
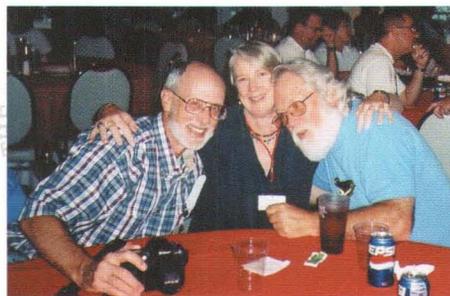
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# NEWS OF THE LEPIDOPTERISTS' SOCIETY



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Volume 46, No. 3 Autumn 2004

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

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## Front Cover: What the Annual Meeting is All About...

Clockwise from bottom left: The Annual Tie Brigade; Smithsonian Reception (Alfred Wong, Edda Martinez, Nanta Pinkaeew); BBQ 1 (Mike Toliver, John Snyder, Jane Ruffin, Bob Robbins); BBQ 2 (Ernest Williams, Deane Bowers, Bob Pyle); Field Trips (Bob Dirig, Dick Smith, Fred Stehr), and the Banquet (Bob "who can resist a man in a kilt?" Pyle and Mike Toliver). Ties, BBQ 2 & Banquet photos by Kit Stanford, others by Steve Mueller.

# A New Swallowtail for the United States: *Papilio glaucus garcia* in West Texas

Nick V. Grishin & Andrew D. Warren

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Chisos Mountains in the Big Bend National Park (BBNP), Brewster County, Texas is a unique ecosystem within the United States with strong floral and faunal affinities with the Mexican Sierra Madre Oriental. Several butterfly species are known to occur in the United States only at BBNP, including *Autochthon cincta* (Plötz, 1882), *Piruna haferniki* H. A. Freeman, 1970, *Agathymus [neumogeni] chisosensis* (H. A. Freeman, 1952) and *Catasticta nimbice* (Boisduval, 1836), among others. Despite the continuing research efforts, BBNP is still not well studied, due to its remote location and arid, largely inaccessible landscape. In some years with above average rainfall, BBNP can be an oasis for butterflies, as it was in May and June of 2004.

On May 30, 2004, the senior author visited BBNP to survey the butterfly fauna at various sites. At around noon, a relatively worn dark form female of a "striped" *Pterourus* Scopoli, 1777 swallowtail was netted while nectaring on *Cirsium* near the upper Green Gulch bridge just west of the road leading to the Chisos Basin (N29°16.644' W103°17.016', 1700 m, 5550 ft). Another apparently fresher female was observed in flight at the same location a couple of hours later. About the same time, a "striped" swallowtail male seemingly different from common *Papilio multicaudata* W. F. Kirby, 1884 briefly stopped at *Cirsium* flowers before disappearing into the mountains. Although "Eastern Tiger Swallowtail" is included in some BBNP butterfly lists (e.g. Wauer & Knudson 2001), neither specimens nor analysis of its phenotype are available.

Upon a more careful examination of the collected female specimen (Figs. 3, 4; see pp. 76-77 for all Figures), it was realized that her phenotype was typical of the Mexican endemic *Papilio glaucus garcia* Rothschild & Jordan, 1906 (Figs. 7, 8; de la Maza 1987: pl. IX, #4; Tyler *et al.* 1994: pl. 94, #2), and not of eastern Texas *P. glaucus glaucus* L., 1758 (Figs. 11, 12). As shown by Tyler *et al.* (1994), differences between dark female *P. g. glaucus* and female *P. g. garcia* are subtle and are mainly reflected in a darker phenotype, smaller light spots and closer to the margin location of the blue hindwing lunules in *garcia* (Figs. 7, 8, 11, 12), so the senior author made a second visit to BBNP to try to obtain a male swallowtail for study. On June 12, 2004, while nectaring on the same *Cirsium* patch as the female, a male was captured at about 9:00am. No other individuals were observed on that day. Once the male specimen (Figs. 1, 2) was spread and compared to typical male *P. g. garcia* from Mexico (Figs. 5, 6; de la Maza 1987: pl. IX, #5; Tyler *et al.* 1994: pl. 94, #3, 4), it became clear that the tiger swallowtail in BBNP is *P. glaucus garcia*, and that these specimens represented a new record for the United States. Accordingly, *P. g. garcia* should be removed from the list of endemic Mexican butterfly taxa presented by Luis *et al.* (2003: 220). The most prominent difference between *garcia* and *glaucus* males is a very wide black hindwing marginal band in *garcia*. This band covers essentially half of the dorsal hindwing surface and almost reaches the cell (Figs. 5, 6). The band is typically much narrower in *glaucus* and stops approximately half way between the

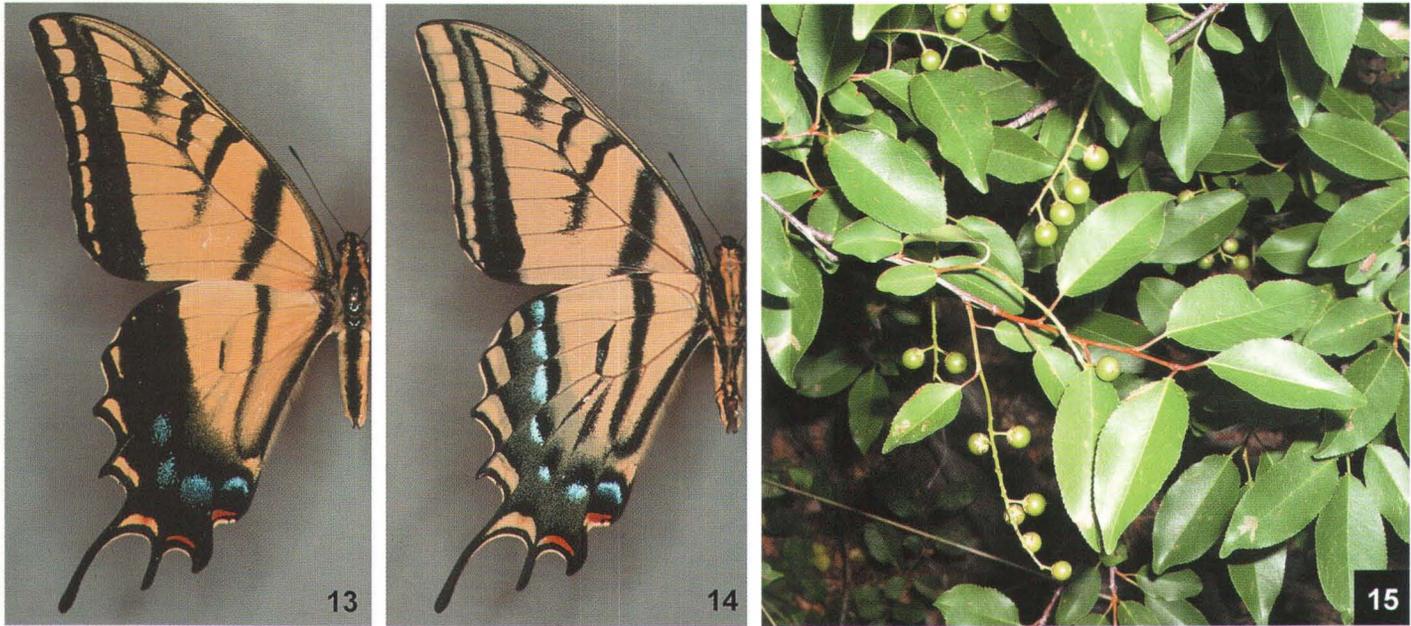
wing margin and the cell (Figs. 9, 10). Just for reference, we show a photo of *P. multicaudata* from the same Green Gulch location (Figs. 13, 14). *P. multicaudata* in principle can be confused with *garcia*, however, *multicaudata* has two prominent tails, more pointed forewing, broader marginal yellow stripe that is not separated into spots on the forewing ventral, and more angular (less lunular) yellow marginal spots on the hindwing ventral, as well as many other prominent differences (compare Figs 1, 2, 5, 6 and 13, 14). The voucher specimens of *garcia* from BBNP will be placed in Texas A & M University collection, College Station, Texas.

Since multiple individuals of *P. g. garcia* were observed at BBNP over a period of two weeks, it is most probable that this taxon is an established (or temporary) resident at the mid-upper elevations in Chisos Mountain of BBNP, making Brewster Co. TX the northern known limit of the taxon's geographical range. In Mexico, *P. g. garcia* is known from the states of San Luis Potosí (western part), Tamaulipas, Nuevo León (many records from Cola de Caballo), extreme NE Durango (Llorente *et al.* 1997), and Coahuila (Hoffmann 1941). The taxon should also be sought in eastern Zacatecas and northern Guanajuato.

Scriber *et al.* (1989) reported black cherry, *Prunus serotina* Ehrh. as an important larval food plant for *garcia* in Nuevo León, Mexico. Southwestern black cherry, *P. serotina* var. *rufula* (Woot. & Standl.) McVaugh, the variety that grows in northeastern Mexico, also

*continued on pp. 83*





## New to US: *Papilio glaucus garcia*...

*Papilio glaucus* specimens. **1-8.** *P. glaucus garcia*, **9-12.** *P. glaucus glaucus*. 1,2,5,6,9,10: males; 3,4,7,8,11,12: females. Odd- and even-numbered images show dorsal and ventral side, respectively. 1, 2: Green Gulch, BBNP, Brewster Co. TX, 12-Jun-04, leg. N.V. Grishin; 3, 4: Green Gulch, BBNP, Brewster Co. TX, 30-May-04, leg. N.V. Grishin; 5, 6: Cola de Caballo, Nuevo León, MX, 24-Jul-86, leg. D. Robacker and W. Warfield, ex. M.H. Evans collection; 7, 8: El Cercado, Nuevo León, MX, 27-Mar-56, leg. D.H. Janzen (UC Berkeley collection); 9, 10: SH43 near Caddo Lake, Marion Co., TX, 6-Apr-97, leg. N.V. Grishin; 11, 12: Murrell Park, Grapevine Lake, Denton Co., TX, 8-Jun-97, e.l. leg. N.V. Grishin. The scale is the same for images from 1 to 14 and is shown in 1. **13-14.** *Papilio multicaudata* male, Green Gulch, BBNP, Brewster Co. TX, 30-May-04, leg. N.V. Grishin, 13: dorsal, 14: ventral. **15.** *Prunus serotina*, a suspected larval foodplant of *Papilio glaucus garcia* in Texas; Green Gulch, BBNP, Brewster Co. TX, 12-Jun-04.



## *Erynnis martialis* in FL...

Left: Male *Erynnis martialis*, Okaloosa County, Florida (photo courtesy of MaryAnn Friedman). See the article by John Calhoun on pp. 78.

## Aberrant Baltimore...

Below Left: A striking aberrant dark Baltimore (*Euphydryas phaeton*) with very reduced spotting from West Bridgewater, Mass. Photo by Don Adams.



## Moth Gynandromorphs...

Top: Worn bilateral gynandromorph (female left, male right) of *Orthonama obstipata* (Geometridae), 13 May 2004, Toronto, Ontario, Canada. Photo by Jeff Crolla. Below: Striking bilateral gynandromorph (left side male, right side female) of sexually dimorphic *Bomolocha bijugalis* (Noctuidae), 31 July 2003, Petroglyphs Provincial Park, Ontario. Photo by David Bree. See the article by Jeff Crolla on pp. 79.



# First Confirmed Record of *Erynnis martialis* (Scudder) in Florida

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The Mottled Duskywing, *Erynnis martialis* (Scudder), has been reported from Florida for over a century. French (1885), Maynard (1891), and Skinner (1914) gave the distribution of the species as "Atlantic states to Florida," but did not provide specific Florida records. Although Scudder (1888-1889) stated that *E. martialis* occurred "as far south as South Carolina...and Georgia," his distribution map showed this species ranging southward into northern Florida. There are two old undated male specimens of *E. martialis*, deposited in the Illinois Natural History Survey collection, labeled simply "P. Orange Fla." Port Orange is in Volusia County of central Florida. Because nothing else is known about these specimens, their validity is questionable. Robertson (1927) listed six records of *E. martialis* from Citrus County in central Florida. I examined all of Robertson's surviving Florida specimens, also deposited in the Illinois Natural History Survey. No *E. martialis* were found, but one female *Erynnis juvenalis* (Fabricius) was labeled as *E. martialis*, strongly suggesting that he consistently misidentified this species.

Shirley M. Hills reportedly collected *E. martialis* on 1 July and 15 August 1962 in Escambia County at the western edge of the Florida panhandle (Mather 1963, Kimball 1965). It is unclear if Kimball personally examined these specimens and their true identity remains uncertain. Kimball (1965) mentioned another specimen from Warrington, Escambia County, and remarked that it

was "probably this, but it is not fresh enough to be sure." In an unpublished 1967 list of corrections and additions to Kimball (1965), Kimball listed two more records of *E. martialis*; "Ocean City: June, Oct., HOH," and "Shalimar: March, HOH." Ocean City and Shalimar are located in extreme southern Okaloosa County in the western Florida panhandle. Harry O. Hilton ("HOH") provided these records to Kimball, but his purported specimens have not been located.

Burns (1964) failed to find any valid Florida specimens of *E. martialis* and wrote, "Unrecorded from Florida: probably occurring in the western panhandle, but not in the peninsula." An unpublished distribution map for this species created by H. David Baggett (ca. 1985) indicated records for Liberty and Leon Counties of the panhandle, but the source of these reports is obscure. Gerberg & Arnett (1989) listed *E. martialis* from "Northern Florida," undoubtedly following Kimball (1965) and Baggett, who provided distribution data for this book. Baggett data also contributed to the map in Opler (1995). Based on its tenuous status, I treated *E. martialis* in Calhoun (1997) as a questionable Florida species. In Glassberg *et al.* (2000) we were more optimistic, considering the species to be very rare or possibly extirpated. Most recently, Heppner (2003) listed the species from northern Florida without reference to its status.

While exploring Blackwater River State Forest in northwestern Okaloosa County on 20 June 2004, MaryAnn Friedman photographed a fresh male *Erynnis* that was inconsistent with any of the species she had encountered in the region. Upon receiving these digital

photos, I was delighted to recognize them as *E. martialis* (see photo on pp. 77). MaryAnn returned to the site on 23 June with Lyn Atherton and Linda and Buck Cooper. They were successful in finding two individuals of the species and took additional photographs. The skippers were encountered as they visited damp soil and flowers along an unpaved road where it intersects with a clear-cut firebreak. The surrounding habitat is primarily pine flatwoods. The hostplant, *Ceanothus americanus* L. (New Jersey tea), grows nearby. These records finally confirm the occurrence of *E. martialis* in Florida. *Ceanothus americanus* is distributed across northern Florida, southward into the central peninsula (Wunderlin & Hanson 2003). It is likely that *E. martialis* occurs in other areas, but it is easily overlooked due to the local nature of its populations and superficial similarity to other *Erynnis* species.

I would like to thank MaryAnn Friedman, Lyn Atherton, and Linda and Buck Cooper for generously sharing their observations and photographs. Thanks especially to MaryAnn who granted permission to reproduce one of these magnificent photos.

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# Bilateral Gynandromorphs of *Orthonama obstipata* (Geometridae) and *Bomolocha bijugalis* (Noctuidae)

Jeffrey P. Crolla

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On 13 May 2004 I collected my first *Orthonama obstipata* (F.) of the season at light at my home in downtown Toronto, Ontario, and, after bottling the moth, was very surprised to find that it was a worn bilateral gynandromorph (left side female, right side male; see photo on pp. 77). This small geometrid is a widespread migrant in both the northern and southern hemispheres from tropical/subtropical regions (Ferguson *et al.* 1991), and occurs annually in Canada, with the first migrants usually reaching southern Ontario by late April or early May. It is remarkable that the impulse and ability of this moth to migrate were apparently unaffected despite its being something of a genetic and morphological katzenjammer!

Another striking bilateral gynandromorph noted recently in Ontario was a fresh *Bomolocha bijugalis* (Wlk.) (left side male, right side female; see photo on pp. 77) photographed at Petroglyphs Provincial Park on 31 July 2003 by park

naturalist David Bree. A specimen like this one would certainly have helped to avoid some early taxonomic confusion associated with this species. The very different-looking male of *bijugalis* was originally described as a separate species, *toreuta* (Grote, 1872). They were retained as separate species by Smith (1895), who noted in his revision of the deltoid noctuids that he had no male specimens of *bijugalis* available for study, but he also mistook minor variation in "*toreuta*" as indicative of two sexes. It was not until the mid-twentieth century that the confusion was cleared up. Ferguson (1954) noted in his account for *toreuta* that "this is possibly only the male of *B. bijugalis*, since only females of the latter are known, and no one has ever seen a female *toreuta*." This was confirmed by Forbes (1954) that same year, when he treated both forms as belonging to *bijugalis*. Covell (1984) appropriately gave this species the common name Dimorphic Bomolocha.

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Announcement...

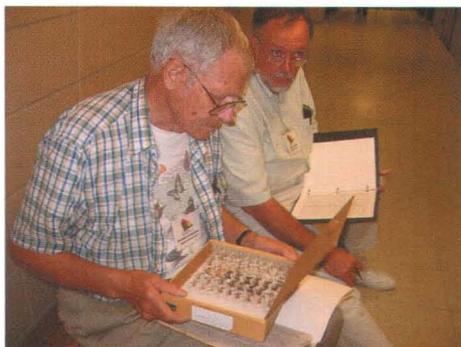
## New Membership Directory: Will Your Information be Correct?

Have you moved and have a new telephone number? New area code? New e-mail address? New interests? October 22, 2004, is the deadline to make any changes to your current listing. What is your current listing? Call, e-mail, or write me for a "screen shot" of your membership record. Julian Donahue, 735 Rome Dr., Los Angeles, CA 90065-4040, phone (323) 227-1285, [Bugbooks@aol.com](mailto:Bugbooks@aol.com).

finding, and gardening guide to butterflies of Florida. Oxford University Press, New York. 242 pp.

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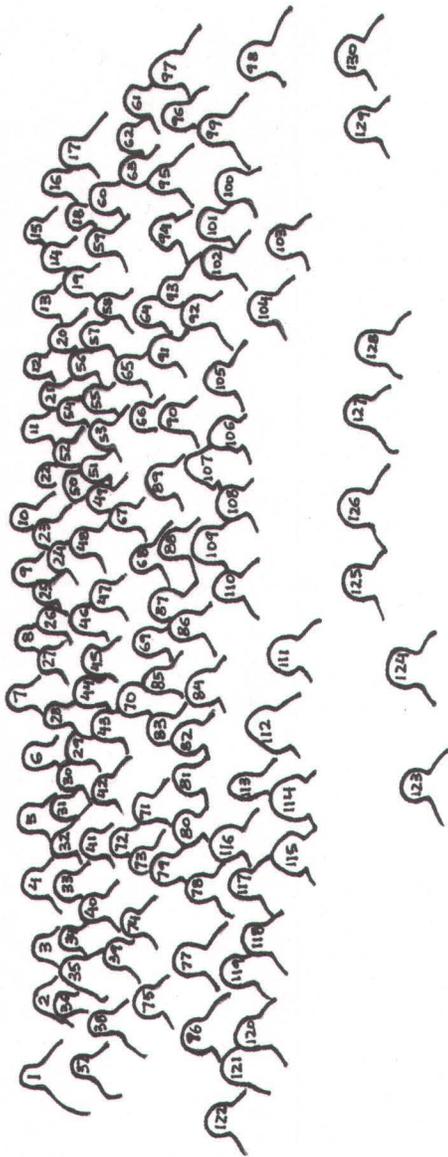
Top Down: Outgoing (and outgoing!) Prez Sue Weller with the Clench Award winner Sibyl Rae Bucheli; Prez Weller with (new) Klots Award winner Jadranka Rota; Don Lafontaine accepts Jordan Medal on behalf of Eugene Monroe from Alma Solis; Ron Leuschner & Leroy Koehn with the ubiquitous specimen box. All photos by Steve Mueller. More photos next issue!



55<sup>th</sup> Annual Meeting, 15-18 July 2004, College Park, MD

The Lepidopterists' Society

# Minutes of the 2004 Annual Business Meeting



## Group Photo Key:

1. John Shuey, 2. unknown, 3. Barbara Laudan, 4. John Lane, 5. Eric Lind, 6. Ray Stanford, 7. Ron Leuschner, 8. Bob Platt, 9. Bob Robbins, 10. Rich Brown, 11. Paul Goldstein, 12. Dick Smith, 13. Giovanni Fagua, 14. Bob Dirig, 15. Phil Schappert, 16. David Lohman, 17. Wayne Wehling, 18. Brian Scholten, 19. Mark Garland (?), 20. John Brown, 21. Mike Pogue, 22. Jennifer Zaspel, 23. Don Lafontaine, 24. George Balogh, 25. Jim Danzenbaker, 26. Steve Roble, 27. Lincoln Brower, 28. Dave Wagner, 29. Bill Connor, 30. Becky Simmons, 31. Kit Stanford, 32. Bart Brinkman, 33. Betty Brinkman, 34. unknown, 35. Amanda Roe, 36. Jane Ruffin, 37. Michelle DaCosta, 38. Erik Runquist, 39. unknown, 40. Reed Watkins, 41. Douglas Blackiston, 42. Karl Gardner, 43. Tor Hansen, 44. Mindy Connor, 45. John Beck Jr., 46. David Bettman, 47. Jason Hall, 48. Bill Miller, 49. Mark Cornwall, 50. Sarah Burns, 51. John Lill, 52. John

1. The annual membership meeting of the Lepidopterists' Society was called to order by President Susan Weller at 10:26 a.m. in Room 0220, Jimenez Hall, University of Maryland, College Park, Maryland, on Sunday, July 18, 2004.

2. President Weller welcomed everyone to the meeting and said, to much applause, that this meeting of the Society had been fantastic. She then thanked all the volunteers who had helped in her time as president, and she spoke about the magnificent bequest the Society had received from the estate of Bryant Mather. She noted that two gatherings would follow this morning's general membership meeting: a meeting of the Pacific Slope section and an organizational meeting of the Research Coordination Network.

3. She then asked for a moment of silence to remember members of the Society who have passed on recently, including John Franclemont, Doug Ferguson, and Bryant Mather.

4. Next, Secretary Ernest Williams gave the highlights of Thursday's meeting of the Executive Council.

Less time than usual was spent discussing the Society's publications because both the *News* and the *Journal* are fluttering along in fine shape. The only forthcoming change in publications is that we have applied for Periodicals Post delivery of the *News*, a designation that will save us money and expand the range of advertisements we may accept. The EC also spent less time than usual on the financial state of the Society because we are currently strong and have been in the black for the past year. We did receive and discuss a report about investment strategies for the Mather bequest, however. Our investments will be divided into short, medium, and long-term components but in financial instruments that guarantee maintenance of the principle. The EC requested a more detailed report of options, which will be provided in the next couple of months. We thanked Kelly Richers for his time spent researching investment options for our Society.

The EC has approved the sites for the next two annual meetings of the Society,

Burns, 53. Jim Taylor, 54. Bo Sullivan, 55. Michael S. Singer, 56. Marc Epstein, 57. John Snyder, 58. unknown, 59. Joaquin Baixeras, 60. Suzanne Hamilton, 61. Steve Fratello, 62. Michael Sabourin, 63. Keith Willmott, 64. Jackie Miller, 65. unknown, 66. unknown, 67. Rod Eastwood, 68. Mike Toliver, 69. John Nelson, 70. Charlie Covell, 71. Mandy Heddle, 72. unknown, 73. unknown, 74. Steven Davis, 75. Don Davis, 76. Suzette Slocomb, 77. Manuel Balcázar-Lara, 78. Gwen Shlichta, 79. Dave Adamski, 80. unknown, 81. Shelly Grow, 82. Ed Burrows, 83. Carolyn Klass, 84. Rudi Mattoni, 85. Dan Rubinoff, 86. Kelly Richers, 87. Ken Bliss, 88. Deane Bowers, 89. Ranger Steve Mueller, 90. Thiago Quental, 91. Marcelo Duarte, 92. Natansek Pinkaew, 93. Lee Miller, 94. Jadranka Rota, 95. Paul Opler, 96. Martha Weiss, 97. Bob Pyle, 98. Gary Anweiler, 99. Michael Canfield (?), 100. Alfred Wong, 101. Kathy Wildman, 102. Ernest Williams, 103.

Deborah Lott, 104. Dolores Savignano, 105. Alan Heath, 106. Anne Dushanko Dobek, 107. Alma Solis, 108. Eleanor Adams, 109. Stephanie Kelley, 110. Susan Kelley, 111. Pat Durkin, 112. Vonnie Shields, 113. Susan Weller, 114. Sangmi Lee, 115. Sibyl Bucheli, 116. Louise Fall, 117. Edda Martinez, 118. Alex Jordan, 119. Naomi Pierce, 120. Akito Kawahara, 121. Joy Cohen, 122. Edgar Cohen, 123. Jon "Buck" Lewis, 124. Astrid Caldas, 125. Scot Kelley, 126. James Adams, 127. Eric Metzler, 128. Ms. Alfred Wong, 129. Chris Schmidt

**Names with no faces:** Michael Holy, Steven Johnson, Chuck Harp, James Hayden, Denise Gibbs, William Haines, Catherine McCall, Derek Phillips, Alan Pultyniewicz. Note: if you can put any of these names to the unknown faces in the photo, or can otherwise identify anyone not named above, then please notify Astrid Caldas at [acaldas@umd.edu](mailto:acaldas@umd.edu)

both of which will be in wonderful locations: 2005 (August 2-7) in Sierra Vista, Arizona, and 2006 at the McGuire Center, Gainesville, Florida. Membership in the Society is currently holding steady at over 1300 individuals after a decline over the past several years (a similar drop in numbers has been seen in other societies). The EC discussed the results of two membership surveys, one by John Masters and one by Floyd Preston, and their findings are enlightening and helpful. One improved membership service, instituted this past year at the encouragement of President Weller, is our acceptance of credit card payments for annual dues. Members who haven't looked at the Society's web site ([www.lepsoc.org](http://www.lepsoc.org)) recently should do so; we are adding more and more information to it. A significant finding is that 70% of our new members download the membership form from the web site.

In other actions, the EC instituted the Klots Memorial poster award, which was first awarded at this meeting. President Weller also established an ad hoc committee to offer options and recommendations on nomenclature for the Season Summary. The Education Committee had an active year and

suggested several ideas to encourage Lepidopterology; they will continue to refine these into actions for the Society. After meeting for nearly six hours, the Executive Council then adjourned.

5. President Weller opened the floor for discussion. Some comments referred to our seven standing committees, which are Budget and Publications, Membership, Education, Meetings, Awards, Web and Technology, and Records. John Lane asked for clarification about the Season Summary issue; the question is what nomenclature to follow in publishing these reports. Dave Wagner suggested that we have a silent auction to raise funds for student travel, etc. Jerry Powell noted that the Pacific Slope section helps students financially for participating in annual meetings.

Lincoln Brower stated that the Society should add a Conservation Committee, and Secretary Ernest Williams added that the constitution does refer to conservation: "It shall be the purpose of the Society....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 tending to that end." Bob Pyle said there once had

been a conservation committee, under Dave McCorkle, though that effort had probably moved to the Xerces Society.

Bob Dirig suggested dedicating an issue of the *Journal* to John Franclemont, and Bob Platt mentioned adding Doug Ferguson for equivalent recognition. Jackie Miller noted that we haven't typically made such efforts for individuals who weren't founding members of the Society. Paul Goldstein warned of the complexities of putting together a dedicated *Journal* issue, and this idea was held for further investigation.

Charlie Covell displayed the cover for the reprint of his moth field guide. Tor Hansen then suggested showing slides and videos at other times during the meeting rather than just following the barbecue. Susan Weller said she would take note of this suggestion for the Meetings Committee. Comments were added later in the meeting about the usefulness of searchable on-line databases for the Society.

6. The Resolutions Committee (Erik Runquist, Amanda Roe, Chris Schmidt, Akito Kawahara, and James Heydon) came on stage for their long-awaited

*continued on pp. 85*

*Report of the Resolutions Committee...*

## The Lepper

*Performed by The Resolutions Committee (Erik Runquist, Amanda Roe, Chris Schmidt, Akito Kawahara and James Heydon) to the tune of "The Gambler" at the Annual Business Meeting of the 2004 meeting of The Lepidopterists' Society, University of Maryland/Smithsonian Institution.*

On a warm and muggy evenin' on a train bound for DC  
I met up with a lepper and we were both too drunk to sweep.  
Then Goldstein kept a tripping on the cord to the moth light  
And as the light was cooling we began to speak.

We spoke to the sounds of bats, and a tiger moth love fest.  
Of frass-flinging skippers and Choreutid spider stance.  
We honored Munroe's lifework and toasted Mather's bequest  
And somewhere in the Smokies, they'll be racking up the bugs.

*Chorus:* You gotta know when to net 'em  
Know when to watch 'em  
Know when to walk away  
Know when to run.

You never count your tigers  
When you're drinking at the UV.  
There'll be time enough for pinning  
When the catchin's done.

And every lepper knows that the secret to a good time  
Is meeting up with old friends and winning mini socks  
'Cause every talk's a winner and one thing is for certain  
The worst that could happen is to die on Jerry's rock.

Astrid planned the meeting and made sure we'd be eating  
Bob and John did their best to get us through the gate.  
So Seahorse asked the Shark "Where are we going next year?"  
"To Sierra Vista; just don't forget the date."

*Chorus*

**Papilio...continued from pp. 75**

grows in the BBNP area (Little 1979, Powell 1988), and several plants are present in the immediate vicinity of *garcia*'s capture (Fig. 15). In the park, *P. serotina* is used by *P. multicaudata* and is a suspected larval food plant for *garcia*, though other local *Prunus* or *Fraxinus* L. species that occur in BBNP should not yet be ruled out as possible food plants.

The taxonomic status of *P. g. garcia* is unsettled. It has often been treated as a subspecies of *Papilio alexiarses* (Hopffer, 1865), an east-central Mexican endemic (Hoffmann 1941, Beutelspacher & Howe 1984, de la Maza *et al.* 1989, Scriber *et al.* 1989). *Papilio alexiarses* differs from *garcia*, most dramatically, in that females of *alexiarses* are predominantly of the yellow tiger-striped form, while females of *garcia* are predominantly dark forms; other differences include variably expanded orangish post-discal suffusion on the ventral hindwings of *garcia* (Beutelspacher & Howe 1984). According to Brower (1959), the male genitalia of *alexiarses* and *garcia* are more similar to *P. rutulus* Lucas, 1852, *P. eurymedon* Lucas, 1852 and *P. multicaudata*, than they are to eastern North American *P. glaucus* L.; however, the illustrations of male valvae of these taxa presented by Beutelspacher & Howe (1984: 56) and Tyler *et al.* (1994: 321) show the valvae of *glaucus*, *garcia* and *alexiarses* to be rather similar. *Papilio alexiarses* and *garcia* have recently been treated as subspecies of the North American *P. glaucus* (Tyler *et al.* 1994, Llorente *et al.* 1997, Luis *et al.* 2003). Much additional research on the status of these various swallowtail taxa is needed. For now, we have followed Tyler *et al.* (1994) and Llorente *et al.* (1997), and treat *garcia* as a subspecies of *glaucus*, but acknowledge that future research may justify the species-level status of *alexiarses*, probably including *garcia*. A careful study of the *garcia* population at BBNP may reveal information that could shed further light on the taxonomic status of this butterfly. To clarify the swallowtail

abundance and habitat in BBNP, we encourage visitors and researchers to look for *garcia* among common *Battus philenor* and *Papilio multicaudata*.

**Acknowledgments**

We thank the personnel of the Big Bend National Park, in particular, Wildlife Biologist Raymond Skiles for assistance and granting permit for the authors (BIBE-2004-SCI-0011) to study and document the lepidofauna of the Park in 2004; we are grateful to Edward C. Knudson and Charles Bordelon for discussions. We also thank E. Richard Hoebeke (Curator, Cornell University Insect Collection, Ithaca, New York) and Jerry A. Powell (Professor, Division of Insect Biology, Department of Environmental Science, Policy & Management, University of California, Berkeley) for providing the specimens illustrated in Figs. 5-8.

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**New Publications:****Contributions of the C.P. Gillette Museum of Arthropod Diversity**

*Lepidoptera of North America. 5. Contributions to the Knowledge of Southern West Virginia Lepidoptera. 86 pp. (\$14.00, \$11.00 to book dealers). Valeriu Albu and Eric Metzler.*

A discussion and complete listing of Lepidoptera, including butterflies, found in several southern West Virginia counties. This is the first treatment of the moth fauna of this rich area in the Appalachian region.

*Insects of North America. 3. Survey of Selected Insect Taxa of Fort Sill, Comanche County, Oklahoma. Part 2. Dragonflies (Odonata), Stoneflies (Plecoptera) and selected Moths (Lepidoptera). 92 pp., 10 color plates. (\$27.00, \$24.00 to book dealers). Kondratieff, Opler, Schmidt and Garhart.*

A complete listing and discussion of dragonflies, damselflies, stoneflies, and selected moth families (Arctiidae, Notodontidae, Saturniidae, Sphingidae, *Catocala* and *Schinia*) collected during intensive surveys on Fort Sill, Comanche County, Oklahoma. Many new county and state records are reported. Complete literature coverage. Fort Sill lies in the Wichita Mountains, rich in topography and habitat diversity.

*News Editor Search...*

## Associate/Future Editor Needed for News

The current Editor of the **News of the Lepidopterists' Society** is in the middle of his third three year term as Editor and feels that it is about time to pass the torch to some new blood. The Society is seeking a volunteer Associate Editor to assist the current Editor for the remainder of Volume 46 and for Volume 47—with the intent that the Associate assume the Editorship for Volumes 48-50, a three year term—as a means of easing the transfer of duties from one Editor to another.

Needed skills include the ability to communicate effectively, knowledge of computers, graphics, DTP, and word processing software, and willingness to learn. You will need to own a recent good quality (fast) computer (a 19" or larger monitor is recommended and you will also need a decent color printer and access to flatbed and slide scanners) and have access to a fast internet connection. Needed software includes typical word processing (e.g. Word),

high-end graphics (e.g. PhotoShop), scanning engines (e.g. OCR, slide or photo), additional output options (e.g. Acrobat), and email/FTP applications. Typical work-flow has submissions (arriving on disk, via email, or written submissions needing scanning or key-boarding) being edited and formatted in Word, photos or graphics being scanned and/or processed in Photoshop, and then the component parts are assembled in PageMaker (any high-end DTP program will work). Final resizing and color conversions of photos are done in PhotoShop. The finished publication file, together with all necessary source files and fonts, is then sent to the commercial printer.

Time commitments vary from issue to issue but each issue generally takes 5-10 days to complete. The Editor is responsible for 4 issues per year, plus a cover for the SS supplement. The Supplements (SS each year and MD in

even-numbered years) are edited by others. Actual "real" editing is minimal, mostly correcting spelling/language use and ascertaining that submissions are suitable for the News. Most of the time involvement derives from the use of color and photo/graphic elements, reformatting submissions (which invariably arrive overformatted), and correspondence. Some software (e.g. PageMaker) may be provided by the Society.

Editing the News is an excellent way to become active in your Society. Suitable candidates might include graduate students (the current editor suggests that doing the News is a great way to get to know the "deans" of lepidopterology), motivated amateurs with an interest in computers, or professionals that need to "get back in the trenches."

Interested applicants should contact the current Editor or President to volunteer.

*Announcement:*

## Call for Season Summary Records

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

recent Season Summary for the scope of the zones.

There are a number of factors that make it necessary for the Zone Coordinators to meet a reporting deadline each year. As a result, you should have your data to the Zone Coordinator(s) no later than December 15, 2004. In most of our Nearctic zones, you have long since put away your cameras, nets, bait traps, and/or lighting equipment by that time anyway.

### Important Reminder to MAC Users...

PC operating systems save dates based upon a 1900 format, whereas MAC operating systems save dates based upon a 1904 *default* format. The Lepidopterists' Society master database is maintained in PC format. As a result,

if you submit your season summary records on an Excel spreadsheet generated on a MAC to a Zone Coordinator who operates a PC system, without first disabling the default date setting, the dates will be off by 4 years and 1 day. If you submit your season summary records on an EXCEL spreadsheet generated on a MAC to a Zone Coordinator who operates a MAC system, without first disabling the default date setting, the dates will appear proper to the Zone Coordinator but the dates will be off by 4 years and 1 day when they are incorporated into the master data base. In some cases, MAC system dates sent to a Zone Coordinator operating a MAC system are

*continued on pp. 85*



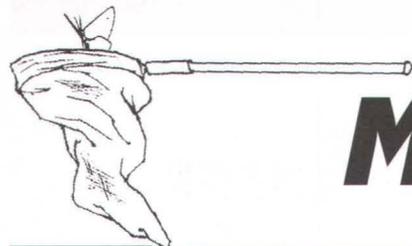
## Metamorphosis...

The Society has learned of the death of the following member. Our condolences to his family.

### John G. Franclemont

Prof. Emeritus John G. Franclemont, Ithaca, New York, on 26 May 2004 at the age of 92, from bone cancer. Dr. Franclemont's legacy of students at Cornell University includes a large proportion of North America's leading lepidopterists. He was a Charter Member of the Society, and was elected an Honorary Life Member of the Society

in 1988. Dr. Franclemont was one of the founding board members of the Moths of America North of Mexico project. No memorial service was held, as he wished. Memorial contributions may be made to the Dept. of Entomology at Cornell University, the Smithsonian Institution, or the American Cancer Society. A future memorial issue of the News is planned.



## Mailbag...

Dear Editor,

On 31 May 2004 a female *A. polyphemus* emerged from a cocoon I had collected near my home in the suburbs of Washington, D.C. As darkness fell, I put the moth inside my "bug dorm" on the back balcony of my condo, and left it there. At 3:30am I awoke and went downstairs to check whether any male moths had been attracted. Sure enough, no less than 8 male *A. polyphemus* were flying above, below and around my balcony!

My neighbor below—who thinks he still lives in a college dorm and often parties with his friends until 6am inside and outside of his condo—was at it again. One of his lot apparently took notice of

one of my "guests", for as I sat counting the moths swarming around the bug-dorm, I heard someone exclaim: "Dude, it's a baby pterodactyl, Dude!"

John Schwartz  
*varklord@comcast.net*

Dear Editor,

Many thanks for printing so many of my photos from my recent trip to Ecuador. I hope they were enjoyed by the membership, however, I was remiss in not giving credit to Ron Leuschner for identifying most of the moths for me. Thanks Ron!

Leroy Simon  
5975 SE 122 PL,  
Bellevue, FL 34420

### Records...continued from pp. 84

off 8 years and 2 days (we haven't figured that one out). The following are instructions so that this problem will never rear its ugly head again.

#### Instructions

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

By following these few steps, it is a simple matter to accommodate MAC records. However, you, as the original contributor, must ensure that those steps are taken. Improperly dated records will be rejected and important records will not get into the database.

### Minutes...continued from pp. 82

presentation (printed in a separate column).

7. Outgoing President Susan Weller then called President-elect James Adams forward, and she bestowed the gavel and antennae of office on him. She also gave him a gift of an over-stuffed toy larva.

8. New President James Adams made brief remarks, noting particularly the family atmosphere of the Society and the enjoyable times we have together at the annual meeting. He ended by saying that we'll see you all next year in Sierra Vista!

9. The meeting was adjourned at 11:00 a.m. sharp.

*Ernest H. Williams, Secretary*

# New Butterfly Records from Big Bend National Park

Nick V. Grishin & Andrew D. Warren

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Big Bend National Park (BBNP) is a significant natural landmark within the United States of America, being a region where eastern ecosystems meet western ones, and where northern ecosystems meet southern ones, supporting a unique and diverse flora and fauna. Because of the uniqueness of BBNP among USA habitats and ecosystems, and its proximity to poorly researched parts of northern Mexico, we feel it is important to have a good knowledge of the Lepidoptera fauna of the park.

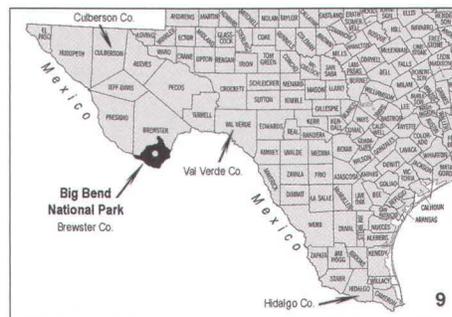
Here we document three species new for the BBNP and Brewster County (Figs. 1-8, see pp. 100-101). All three species can be common in appropriate habitats outside of BBNP, and are known from other sites in the region, including Val Verde County (for all three species). The voucher specimens from BBNP will be placed in the Texas A & M University collection, College Station, Texas. Perhaps not surprisingly, these new records are from two families: *Lycaenidae*, and *Hesperiidae*, whose members tend not to be large and showy, are often difficult to identify and thus are frequently overlooked. More new BBNP records are expected from these two families with further search.

Two of the records reported herein are from the same location, and were found within 91 m (100 yards) from each other: near the upper Green Gulch bridge just west of the paved road leading to the Chisos Basin below Panther Pass, elevation about 1675 m (5500'). Due to easy access, this is a very convenient research spot for the moist pine-oak canyons and many species that are known to occur in the United States only at BBNP, such as *Autochton cincta*

(Plötz, 1882), *Piruna haferniki* H. A. Freeman, 1970, *Agathymus [neumogeni] chisosensis* (H. A. Freeman, 1952), and *Adhemarius blanchardorum* (Hodges, 1985) are recorded from this exact location. While this is arguably the best-known part of BBNP, as far as the Lepidoptera fauna is concerned, the fact that we have encountered two new species for the county (and park) at this site on a few short visits, demonstrates the need for continued study of the butterfly fauna of this site, and indeed, the entire National Park.

## ***Achalarus toxeus* (Plötz, 1882):**

On June 13<sup>th</sup>, 2004, at around 11:00 am, a relatively fresh male of this species was collected while perched on stones of the mountain slope near the upper Green Gulch bridge (Figs. 1-2, see pp. 100-101 for figures). The location is just west of the road leading to the Chisos Basin, at 1675 m (5550') elevation (N29° 16.632' W103° 17.018'). This is the first report of this species from BBNP and Brewster County, and the first Texas record of this species west of Val Verde County (see map below).



Map of southwestern Texas, showing BBNP (blackened, at southern end of Brewster County, white dot indicates upper Green Gulch-Chisos Basin region), and counties mentioned in the text (Brewster, Val Verde, Hidalgo and Culberson).

Specimen documentation is required for many members of this and similar genera, since they are not easy to identify and inspection of genitalia is frequently necessary for positive determinations. We show the right valva (in left lateral view) of the BBNP specimen (Fig. 2, inset). Prior to this record, the westernmost Texas county this species was known from was Val Verde County. Arizona records reported by Stanford & Opler (1993) require verification and formal documentation (Bailowitz & Brock 1991; Jim Brock, Richard Bailowitz, pers. comm. 2004). However, this species is common to the south in MX, and has been recorded from all Mexican states bordering the USA, except Baja California Norte. While not unexpected in the region, our report of this species from BBNP represents the westernmost confirmed record from the United States. A reported foodplant for this species, *Pithecellobium flexicaule* (Benth.) Coulter (Kendall 1965), grows in BBNP (Powell 1988).

## ***Ziegleria guzanta* (Schaus, 1902):**

A fresh female (Figs. 3-4) was captured on May 29<sup>th</sup>, 2004, at about 4:00 pm, while nectaring on yellow composite flowers at Kibbe Spring, at the side of the paved road leading to the Chisos Basin (N29° 16.540' W103° 17.417', elevation 1675 m, 5500'). This species has apparently been previously seen within BBNP, and was photographed by Roland H. Wauer (pers. comm. 2004) on Sept 9<sup>th</sup>, 1999 just below Panther Pass; however, this species is not currently included in any BBNP butterfly lists (e.g. Wauer & Knudson 2001).

The US records for this species have recently come to light, with the capture of a female specimen in the lower Rio Grande Valley of Texas, by Dave Hanson, in January 2004 (Warren et al. 2004). The Texas (and total USA) range of this butterfly currently includes Hidalgo, Val Verde, and Brewster Counties, where it is probably a resident species, or temporary colonist. It may be found in other southern and western Texas counties with further search. In Mexico, *Z. guzanta* is extensively distributed in seasonally dry to humid montane habitats, usually above 900 m (2950'), but sometimes much lower (see Warren et al. 2004 for a review). Careful study of this species at BBNP may elucidate life history and larval food plant information. No details of the species' biology are currently known, though Warren et al. (2004) speculated that a species of *Quercus*, perhaps *Quercus vaseyana* Buckley, may serve as a larval food plant in Texas and adjacent parts of Mexico. Incidentally, this species is superficially similar to the next species, in ventral view, and great care must be taken in the field when making tentative determinations on any small hair-streaks.

### ***Calycopis isobeon* (Butler & H. Druce, 1872):**

A brief sighting of this species was made west of the upper Green Gulch bridge on May 30, 2004, but the individual escaped capture. A male and a female netted at the same location around noon on June 12, 2004 (male N29° 16.632' W103° 17.018', female N29° 16.644' W103° 17.016' elevation 1675 m, 5550'), confirm the original sighting (Figs. 5-8). The adults were found flying in shady areas close to the ground, periodically stopping to perch on low vegetation.

While this species is common in east and east-central Texas (Stanford & Opler 2003, Tveten & Tveten 1996), and throughout much of northern Mexico (Warren, unpublished), the only other western Texas record (the westernmost USA record) is from Culberson County

(Stanford & Opler 1993). We fully expect that this species will be found in other humid habitats within BBNP, upon further search. Since several individuals were encountered, both males and females, this species is probably a resident at BBNP. Larvae feed on detritus and dead leaves, frequently under sumacs (Tveten & Tveten 1996).

We anticipate many more new records to come from the BBNP, and thus encourage visitors to pay attention to less showy species, photograph anything that looks different from the usual, and to "expect the unexpected" at all times.

### **Acknowledgments**

We thank the personnel of the Big Bend National Park, in particular, Wildlife Biologist Raymond Skiles for assistance and granting permit for the authors (BIBE-2004-SCI-0011) to study and document the lepidofauna of the Park in 2004. Thanks to Jim Brock and Richard Bailowitz for information on Arizona *A. toxeus* records; we are grateful to Edward C. Knudson, Charles Bordelon and Roland H. Wauer for discussions.

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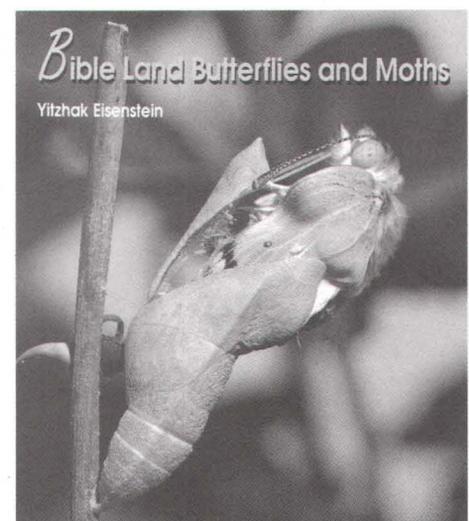
### ***New Book...***

## **Bible Land Butterflies and Moths**

by Yitzhak Eisenstein, 2000. ISBN 965-90339-0-7, hardcover, 324 pp., color throughout, 8.5 × 10 (22 × 24.5 cm), privately published, translated from Hebrew. Available from Tsipy Geva, Miami, FL, [zippy@mindspring.com](mailto:zippy@mindspring.com), \$20 USD (includes domestic postage and packaging).

This book, a translation of a Hebrew edition previously published in Israel, by Prof. Eisenstein was his last—he passed away on July 27<sup>th</sup> of this year while in his 90<sup>th</sup> year. His daughter has some 600 copies of the book and wishes it to be appreciated as much as it should be—it is quite an achievement.

The book is divided into two major parts: the first 110 pages cover ecological subjects with unique insight into the behavior and ecology of the butterflies and moths that the author knew best. The second part provides species treatments, many of which are entire photographic life histories, of some 57 sp. of butterflies and skippers with a further 27 sp. of moths from 12 families. The photographs are quite well done, many of living butterflies although specimens of freshly killed adults spread on flowers are common. Nonetheless, the book is a remarkable achievement and well worth the low cost (even if you never visit Israel).





# The Lepidopterists' Bookshelf

Phil Schappert

## Butterflies of Oklahoma, Kansas and North Texas

by John M. Dole, Walter B. Gerard and John M. Nelson. 2004. ISBN 0-8061-3554-9 (pbk.; alk. paper), 13 x 18 cm (5 x 7), color throughout, University of Oklahoma Press, Norman, OK.

Anyone knowing of the publication of new titles of books, video, or audio tapes of interest to lepidopterists, and especially of books published outside the United States, are requested to send full particulars to The Lepidopterists' Society, both for announcement in this column and to allow for timely review in either the **Journal** or **News** of Society.

Publishers are invited to send review copies directly to either the **Journal** Book Review Editor or the Editor of the **News** (see below) for consideration for review in the **News** or the **Journal**. Members interested in reviewing books for the **News** or the **Journal** should send their requests or interests to:

Phil Schappert  
(for the **News**)  
[philjs@mail.  
utexas.edu](mailto:philjs@mail.utexas.edu)

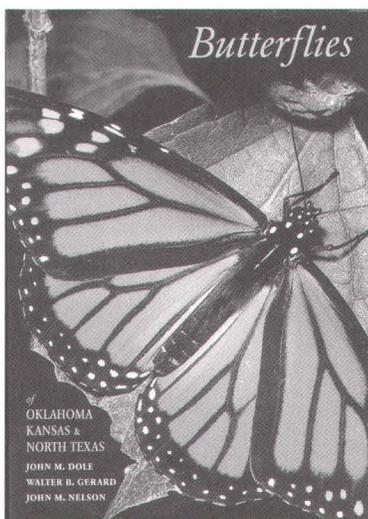
Phil DeVries  
(for the **Journal**)  
[pdevries@uno.edu](mailto:pdevries@uno.edu)

See the backpages of this issue for complete addresses.

This book is intended as an introductory text and as a first simplified guide to butterflies of the southern plains. The most impressive feature of this almost pocket-sized book is the quality of the photo reproduction. The photographs are small, but extremely sharp and are color-balanced almost perfectly. I wish all butterfly books had such excellent photos. The sharpness of photographs is crucial to aid in identification, especially for beginners.

After a short introduction dealing with the geographic region and its habitats, the main part of the book provides descriptions accompanied with photos and distribution maps for 100 selected species. This constitutes less than a half of recorded species from the region, but such a compromise is likely caused by the desire to keep the book small. The species are wisely selected for the illustrations, so all major groups and a large fraction of common species are represented. A few local, but very showy species such as Diana and Baltimore are discussed as well. The species accounts are rather standard and include sections on similar species, habitat preferences and larval foodplants. "Similar species" section sometimes mentions species not shown in the book, which is very helpful.

Each species account is usually illustrated by at least one live photo in natural conditions, some butterflies are shown as spread specimens. Each photo is accompanied by complete data (at the end of the book) such as location, date and photographer. Maps with county records very similar to those from USGS Butterflies of North America website ([www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm](http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm)) are given as well.



Virtually every book about bugs has misidentifications (If you find one without, please let me know). Naturally, this book could not be an exception. I looked hard to find such mishaps, and I think that a male "A. logan" (page 132) is actually

a male *P. zabulon*. Despite this minor problem, the majority of images are very helpful in showing characteristic fieldmarks of various species, and these fieldmarks are well described in the text.

The second part of the book is devoted to various recreational activities that revolve around butterflies and their conservation: rearing, gardening, photography, etc. I consider the emphasis on rearing, and this section is placed first, to be most important. Observation and photography are profoundly accentuated butterfly-related activities, however only rearing allows someone to get intimately involved with these fascinating creatures and to learn what they are about. Rearing experiments are particularly important for children, who learn by touch and manipulation.

The complete list of butterflies recorded from the region covered by the book is included. This list is very important for two reasons. First, since the book does not describe all the recorded species, the list gives an idea about other species the reader may encounter. Second, many records on the list are made by the authors, in particular by John M. Nelson, so this book is the best place to report such a

*continued on pp. 89...*

**Mesosemia...cont'd from pp. 99**

closely after it is spread at the Field Museum. This mystery *Mesosemia* alone, spurs on a third trip to these sublime Guyanan mountains and hopefully obtaining more specimens including a male.

Andrew took *M. methion* (a male and female) in the Cordillera de la Costa (ca.1400m) south of Caracas. Andrew relates that all the *M. methion* at the BMNH are from Venezuela and the only specific localities are from this same mountain range. This led to Andrew's supposition that *M. methion* is a pre-montane/lower montane species. The same is true of the three Venezuelan specimens at the NMNH. All males, two were taken at Rancho Grande (ca.1100m), a locality again in the Cordillera de la Costa; the third specimen is from Cuenta, a locality I have not been able to place yet. It will be very interesting to see if *M. methion* occurs in the Sierra de Turimiquire, which are approximately 250km east of the Cordillera de la Costa and separated by intervening coastal lowlands. If found there, *M. methion* would be sympatric with the recently discovered populations of coastal mountain *M. phace*. My guess is that these two species are allopatric with the east/west divide being these two Venezuelan coastal ranges. Obviously, more exploration of S. America's northern mountains is needed before these interesting species biogeography is known more conclusively.

From my hundreds of days of field work in Guyana and Andrew's Venezuelan field work, museum study and analysis, it is likely that *M. methion* does not occur in Guyana and probably not in the Venezuelan Pantepui. What does occur in Guyana and what I have captured along with *M. phace* in Kaieteur Gorge is the taxon *Mesosemia maera* Hewitson (or nr. *maera*). Though it is classified as a subspecies of *M. methion* at the AMNH and NMNH, I believe *M. maera* will prove a distinct species. It is figured in D'Abrera's riodinid volume (pp. 908,

where it is also considered distinct) right below *M. methion*; from these figures alone it can be seen that it is a smaller taxon with facies, that though similar, are quite distinct. At the AMNH, specimens of *M. maera* (or nr. *maera*) from Guyana and Brazil are mistakenly labeled *M. methion methion*; Trinidadian *M. maera* are incorrectly labeled as *M. methion maera* (there are no *M. methion* at the AMNH). In the AMNH collection there is also a specimen nr. *M. maera* (again incorrectly labeled as *M. methion methion*) from Peru—*M. maera* and its closest relatives have an Amazonian distribution, not restricted to northern S. America like *M. methion* seems to be. Following from this analysis, at the NMNH, a Columbian *M. maera* is incorrectly classified as *M. methion maera*. Having said this, there is the possibility that after systematic analysis, *M. methion* will prove a strongly differentiated local race of the much more widespread *M. maera*, with the older name *M. methion* taking priority. But as stated above, I believe these two taxa are quite distinct species.

From the little I have written on a few species in this vast and wonderful genus, it is blatantly obvious that *Mesosemia* cries out for monographic review from some very bright and determined taxonomist! And beyond that very difficult task is the discovery of their life histories and other aspects of their field biology!

**Acknowledgements**

Andrew Neild, author of the superb *The Butterflies of Venezuela. Part 1: (Limenitidinae, Apaturinae, Charaxinae)* (1996), gave information and insights that were indispensable for this article. I have great admiration for Andrew's knowledge and enthusiasm concerning northern S. American butterflies. My partners Romeo Williams, Robert Hanner and Waldyke Prince gave a great effort on our Mt. Ayanganna expedition (1999). Their effort along with the help of Pastor Charles Roland and AmerIndians from the small village of Chinowieng accounted for the great success of this expedition. This expedition was funded largely through the Smithsonian's Biodiversity of the Guianas Program. Beyond my desire, Dr. Vickie Funk and Dr. Carol Kelloff, two Smithsonian botanists who administer this program, were

the main impetus behind this expedition. Dr. Robert Robbins, Curator of Butterflies at the Smithsonian, provided some additional funding through the Smithsonian's Entomology Department. On our recent Iwokrama Mts. Expedition, my partners Romeo Williams, Samuel Hendricks and Ron Allicock, all Guyanese nationals, gave a superb effort to a tremendous trip. Ron and other staff at the Iwokrama Rainforest Reserve greatly facilitated this expedition. The Field Museum largely funded this trip, with Dr. Paul Goldstein, Curator of Lepidoptera, working diligently to obtain this funding. The *Mesosemia* photographed are part of the USNM collection. Dr. Scott Miller, then Director of the Entomology Department at the Smithsonian, generously allowed Smithsonian equipment and staff time to be used to take these photos. Dr. Patricia Gentili-Poole, Museum Specialist, took the excellent digital photos of the specimens. Beyond the human dimension, I give Great Thanks to our Everlasting Creator for the privilege of enjoying and studying these exquisite creatures.

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**Book...continued from pp. 88**

list. Information about butterfly hotspots in the region, organizations involved with butterflies and quite an extensive glossary of terms are also provided. Bibliography of about 70 references is given, and quite a few of them are for the journal articles, which scores a few points for the book.

Overall, I think this is a very neat book written by a team with many years of field experience in the region, and is an excellent introduction to butterflies of Oklahoma and its surroundings.

Nick V. Grishin

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 Texas Southwestern Medical Center,  
 Dallas, TX, 75390,  
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# Membership Update...

Julian Donahue

This update includes all changes received by 25 August 2004.

## "Lost" Member

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

**Mitsuru Hosaka** (Life Member, Tokyo, Japan)

## New and Reinstated Members:

members who have joined/renewed/ been found/or rescinded their request to be omitted since publication of the 2002 Membership Directory (not included in the 2000 Membership Directory; all in U.S.A. unless noted otherwise)

**Adams, Gary G.:** 7 Peaceful Canyon Court, The Woodlands, TX 77381-4448.

**Allen, Cheryl:** [address omitted by request]

**Allen, Ethan:** [address omitted by request]

**Axmacher, Jan C.** (Ph.D.): Wolfschlugener Strasse 41, D-70597 Stuttgart, Baden-Württemberg, Germany.

**Biro, Robert D.:** 8 Jamaica Run Drive, Savannah, GA 31410-2906.

**Cornwall, Mark:** [address omitted by request]

**Danzenbaker, Jim:** Naturalist Manager, 620 East Monroe Avenue, Riverton, WY 82501-4997.

**Dell'Erba, Rafael:** Rua Weber Machado 240 - Jd. Alvorada, Caixa Postal 52, Nova Xavantina 78690-000, Mato Grosso, Brazil.

**Dieck, Martin:** 1390 Willow Road, Menlo Park, CA 94025-1516.

**Dushanko-Dober, Anne:** 1098 Springfield Avenue, New Providence, NJ 07974-2239.

**Falk, Diane** (Ms.): 18863 West State Line Road, Antioch, IL 60002-7217.

**Jumblatt, Marcia M.** (Ph.D.): 7000

Hadley Court, Louisville, KY 40241-6250.

**Myers, Karie:** 4845 Salt Road, Medina, NY 14103-9520.

**Newberry, Donna:** 508 Fulton Street, Fredericksburg, TX 78624-3607.

**Quental, Tiago Bosisio:** MCZ Labs, 4<sup>th</sup> Floor, Harvard University, 26 Oxford Street, Cambridge, MA 02138-2902.

**Wilson, Andrea:** 332 Mallard Way, Sevierville, TN 37876-9135.

**Zink, Janet:** 5 Bryant Street, Bethpage, NY 11714-4101.

## Address Changes

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

**Arnaud, Paul H., Jr. (Dr.):** Department of Entomology, California Academy of Sciences, 875 Howard Street, San Francisco, CA 94103-3009.

**Austin, George T.:** McGuire Center, P.O. Box 112710, Gainesville, FL 32611-2710.

**Borth, Robert J.:** 8220 North Poplar Drive, Fox Point, WI 53217-2824.

**Dunford, James C.:** 5400 NW 39<sup>th</sup> Avenue, Apt. X220, Gainesville, FL 32606-6955.

**Eisele, Robert C.** (Rev.): 10620 SW 27<sup>th</sup> Avenue, Lot 9J, Ocala, FL 34476-8009.

**Everson, Larry:** 14970 SE Brightwood Avenue, Milwaukie, OR 97267-3283.

**Gonzalez, Jorge M.** (Ph.D.): Department of Entomology, University of Georgia, Athens, GA 30602-0002,

**Grinter, Chris:** 6364 Old Oak Road, Libertyville, IL 60048-9446.

**Hall, J.R.:** 7612 176<sup>th</sup> Street SE, Snohomish, WA 98296-5359.

**Hanafusa, Hiroto:** 688-2, Tajima, Tottori-shi, Tottori 680-0804, Japan.

**Heddle, Mandy L.:** 405 South Church Street, Bowling Green, OH 43402-3722.

**Heffernan, Emily:** 211 Canova Drive, New Smyrna Beach, FL 32169-2615.

**Heinz, Cheryl Ann:** Benedictine University, 5700 College Road, Suite 348, Lisle, IL 60532-2851.

**Iftner, David C. (Dr.):** 5 Teal Lane, Pittsfield, IL 62363-1971.

**Kopp, Larry J.:** 143 Kopp Road, Klingerstown, PA 17941-9759.

**Lawrie, David D.:** 914 Ridge Road SW, Calgary, Alberta T2T 3E5, Canada.

**Lutman, Richard:** 3 French Hill Road, Underhill, VT 05489-9446.

**MacNeill, C. Don** (Dr.): Department of Entomology, California Academy of Sciences, 875 Howard Street, San Francisco, CA 94103-3009.

**Paris, Thomson:** 1004 Golf Club Lane East, Hendersonville, TN 37075.

**Powell, David J.:** 9616 Heron Drive, Fort Worth, TX 76108-9762.

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**Rhodes, Bill:** 1167 Nevada Avenue, San Jose, CA 95125-3328.

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**Romer, James C.:** 13984 East Grand Avenue, Aurora, CO 80015-1152.

**Selfridge, Jennifer:** 318 North 3<sup>rd</sup> Street, Livingston, MT 59047-1900.

**Tuttle, James P.:** 1640 NE 40<sup>th</sup> Avenue, Apt. 207, Ocala, FL 34470-5024.

**Wood, Graham S.:** P.O. Box 622, Herberton, Queensland 4887, Australia.

**Wu, Nan Xing:** 7863 115<sup>th</sup> Street, Delta, B.C. V4C 5R4, Canada.



# The Marketplace

**IMPORTANT NOTICE TO ADVERTISERS:** If the number following your advertisement is "461" then you must renew your advertisement before the next issue! Remember that all revisions are required in writing.

## Books/Videos

For Sale: **Moths of North America North of Mexico**. 20 uniformly well-bound volumes: Checklist; fasc. 5.1; 6.1; 6.2; 7.1; 13.1A,B; 13.1C; 13.2A,B; 15.2; 15.3; 15.4; 18.1; 20.1; 20.2; 21; 22.2; 25.1; 26.1; 27.2; 27.3. Available only as set. \$2000 (surface shipping included). Paul R. Ehrlich, Center for Conservation Biology, Department of Biological Sciences, Stanford University, Stanford, CA 94305-5020, Ph 650-723-3171, Fx 650-723-5920, [pre@stanford.edu](mailto:pre@stanford.edu) 463

For Sale: **Butterflies** by D'Abrera. All mint condition. Neotropical Region Vol 3 part I (near mint), Vol 3 part III, also Vol 3 part IV and Vol 3 part V \$ 120.00 each. Claude Lemaire: **Attacidae of America** Vol 1, 2, and 3, mint condition, \$50.00 each. Haugum, J. and A. M. Low: **Monograph of the Birdwing Butterflies**, Vol 1 Part I, II, and III, all mint condition. \$175.00 for the

set. Vol 2 part I, II and III, all mint condition. \$175.00 for the set. John G. Filiatrault, 4600 De La Fabrique, Laval, Quebec, H7C 1C8, Canada, 450-975-8169, [beaufil37@aol.com](mailto:beaufil37@aol.com) 462

**Lepidoptera of the Pacific Northwest: Caterpillars and Adults**. Jeffrey C. Miller and Paul C. Hammond, 2003. FHTET 2003-03, USDA, Forest Service, National Center of Forest Health Department, Morgantown, WV., 324 pp. This book is a photographic guide illustrating both the caterpillars and adults of 239 sp. of macrolepidoptera from the Pacific Northwest, from northern CA to BC and western MT. Species selected to show major taxonomic groups found in this region. Ecological information on abundance, foodplants, seasonality, flight, and biogeography is presented. This work supplements **Macromoths of Northwest Forests and Woodlands** by J. C. Miller and P. C. Ham-

mond, 2000. Available free of charge by contacting: Richard C. Reardon, USDA Forest Service, 180 Canfield St., Morgantown, WV 26505, 304-285-1563, [rreardona@fs.fed.us](mailto:rreardona@fs.fed.us) 461

**Butterflies in Close-Up**. Video by Luis R. Hernandez, 45 min in length, shows more than 60 species under natural conditions in the Lower Rio Grande Valley of south Texas during late summer. PAL (UK/Europe) and NTSC (US) versions are available. Contact Luis R. Hernandez, Darlington Building 607, Mayaguez, Puerto Rico 00682, 787-851-0409, [luisrob@centennialpr.net](mailto:luisrob@centennialpr.net) 461

## Livestock

For Sale: Captive-bred Philippine butterfly pupae, year round. Imogene Rillo, P.O. Box 2226, Manila 1099, Philippines, (fax ) 63 2 824-02-22, [clasinse@mindgate.net](mailto:clasinse@mindgate.net) 463

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 worker 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.

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**. Advertisements for credit, debit, charge cards or similar financial instruments or accounts, insurance policies and those for travel or travel arrangements cannot be accepted because they jeopardize our nonprofit status.

Only members in good standing may place ads. All advertisements are accepted, in writing, for two (2) issues unless a single issue is specifically requested and must be renewed before the deadline of the following issue to remain in place. All ads contain a code in the lower right corner (eg. 386, 391) which denote the volume and number of the **News** in which the ad. first appeared.

Advertisements must be under 100 words in length, or **they will be returned for editing**. Ads for Lepidoptera or plants must include full latin binomials for all taxa listed in your advertisement.

**Send all advertisements to the Editor of the News.**

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 re-

solved by the parties involved, outside of the structure of The Lepidopterists' Society. Aggrieved members may request information from the Secretary regarding steps which they may take in the event of alleged unsatisfactory business transactions. A member may be expelled from The Lepidopterists' Society, given adequate indication of dishonest activity.

Buyers, sellers, and traders are advised to contact your 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.

For Sale (USA only): Cocoons of *Antheraea polyphemus*, *Callosamia promethea* and *Hyalophora cecropia*. Ova available in spring. Send SASE to Karl Ploran, 110 Route 20, Chester, MA 01011-9642 or call (413) 354-7852 any evening, 6-9pm Eastern time. <sup>463</sup>

### Specimens

For Sale: Wide selection of insects from the whole world. Low prices for hard to obtain species. More than 6000 species in the price list. Great information database for butterflies of Europe and Asia. All information at: [www.rus-insects.com](http://www.rus-insects.com). Dr. Ilya N. Osipov, 301 Heights La., Apt. 51C, Feasterville, PA 19053, Tel/Fax: (215)-354-9287, [insects@osipov.org](mailto:insects@osipov.org) <sup>463</sup>

For Sale or Exchange: Many species from Iran. *Parnassius*, *Allancastrina louristana*, *Allancastrina deyollei*, *Hypermnestra helios*, *Archon apollinaris*, *Anthocharis*, *Euchloe*, *Zegris*, *Colotis*, *Colias*, *Melitaea cast*, *Melitaea consulis*, *Melitaea arduinna*, *Coenonympha*, *Hypolephele*, *Erebia*, *Melanagia*, *Satyrus*, *Agrodiaetus* and others. Offered for sale or exchange with south American and Africa species. Ahmad Karbalaye P.O.Box:11495-175, Tehran, Iran, Tel/Fax: 0098-21-7635025, [karbalaye@yahoo.com](mailto:karbalaye@yahoo.com) <sup>463</sup>

Wanted: the following subspecies of *Heliconius*, *Naruda* and *Eueides*: *H. elevatus aquilina*, *H. ethilla jaruensis*, *H. ethilla eucoma*, *Naruda aede lucretius*, *N. metharme metharme* and *Eueides lampeto lampeto*. People who have collected in Rondonia, Brazil, e.g. Tom Emmel trips, might have any or all of these forms. I am willing to trade or purchase. Ronald Flaspohler, 504 Glendale, Parchment, MI 49004, (269) 345-4653, [flaspohler@wmich.edu](mailto:flaspohler@wmich.edu) <sup>463</sup>

For sale/exchange. *Teinopalpus aureus* (China), *Acanthoporus serraticornis* (India), *Macrodonia cervicornis* (Peru), *Troides minos* (India). Yoshiaki Furumi, 97-71 Komizo, Iwatsuki-Shi, Saitama-Ken, 339-0003, Japan. <sup>461</sup>

Rich variety of Nymphalidae and Papilionidae from Africa available. List on request. Wanted: *Prepona*, South

America. Giancarlo Veronese, Viale Venezia 138-33100 Udine, Italy [gc.veronese@virgilio.it](mailto:gc.veronese@virgilio.it) <sup>461</sup>

### Equipment

Light Traps, 12 volt DC or 110 volt AC with 18 inch length (15 & 25 Watt) and 24 inch length (20 & 40 Watt). All with 365 Quantum black light bulbs. Also available with ballast enclosed in weather tight cast aluminum enclosure and fluorescent bulbs in clear shatter proof tube. Rigid vane assembly of stainless steel, aluminum or plexiglass. Portable, easy to use, with rain drains and beetle screens to protect specimens. For info contact; Leroy C. Koehn, 202 Redding Road, Georgetown, KY 40324-2622; Tel: 502-570-9123; [Leptraps@aol.com](mailto:Leptraps@aol.com) <sup>461</sup>

Bait Traps, 15" Diameter, 36" tall collapsible traps with cloth top and plastic coated nylon screen and supported with 3/16 steel rings. A plywood platform is suspended with eye bolts and S-hooks. The bait container is held in place by a retainer. Three types are available: Flat Bottom, Invert funnel and Tropical. For info contact; Leroy C. Koehn, 202 Redding Road, Georgetown, KY 40324-2622; Tel: 502-570-9123; [Leptraps@aol.com](mailto:Leptraps@aol.com) <sup>461</sup>

### Miscellaneous

Lepidoptera books and supplies (nets, spreading boards, envelopes, Cal Academy unit trays, pins, etc.). Send SASE to Dr. Eugene J. Gerberg, 5819 NW 57<sup>th</sup> Way, Gainesville, FL 32653, [genejg2@aol.com](mailto:genejg2@aol.com) <sup>461</sup>

I am trying to contact Ray Murphy in Malawi. If you read this, Ray, please contact me. If anyone else knows where I can contact him, please advise. Rick Rozycki, 5830 S. McVicker Ave., Chicago, IL 60638. <sup>461</sup>

### Help Wanted

Research Request. I am a grad student conducting a higher-level molecular phylogenetic analysis of the world sphingid moths under the supervision of Drs. C. Mitter, J. Regier and I. Kitching. I need selected New World genera, and numerous Old World

genera, especially from Africa and the Australasian and Oriental Regions to complete my studies. I will gratefully provide the necessary supplies and instructions, a list of needed genera, and cover the shipping costs for anyone willing to help. It is possible that further assistance with expenses could be arranged in special cases. Akito Kawahara, Maryland Center for Systematic Entomology, University of Maryland, 4112 Plant Sciences, College Park, MD 20742-4454 USA, (301) 405-2089, [kawahara@umd.edu](mailto:kawahara@umd.edu) <sup>461</sup>

### Hostplants of the Moth and Butterfly Caterpillars of America North of Mexico

by  
Gaden Robinson, Phillip Ackery, Ian Kitching, George Beccaloni, and Luis Hernández

**Memoirs of the American Entomological Institute 69 [2002; 824 pp.; ISBN 1-887988-13-0]; \$58 (+\$5 s&h w/in USA)**

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### New Book...

## Flying Flowers

by Rick Sammon, 2004. ISBN 1-932183-27-2, hardcover, 96 pp., 60 color photos, 9 × 14 (23 × 35.5 cm), Welcome Books, 6 West 18th St., New York, NY 10011, [www.welcomebooks.com](http://www.welcomebooks.com). \$40, available September 2004.

The author is a well-known professional photographer and is the author of Rick Sammon's Complete Guide to Digital Photography (see [www.ricksammon.com](http://www.ricksammon.com) for further info). This book is a collection of intimate and up-close images of living butterflies taken with a Canon EOS 1Ds digital SLR (11 megapixel sensor) using 50 and 100mm macro lenses and ring flash.

The color and phenomenal detail, while offering obvious tribute to the advancements that have been made in digital photography, also offer outstanding glimpses of the subject at hand—living butterflies, up close and personal. The text is written by Alan Chin Lee, formerly chief butterfly breeder and lab manager at Butterfly World near Ft. Lauderdale, FL, who has just joined the McGuire Center in Gainesville as the Vivarium Manager.



# Interesting Color Aberrations of *Papilio glaucus*

Rick Rozycki

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In 1993, I visited an insect dealer's collection to view his stock specimens. He had four *Papilio glaucus*, two males and two females, which were quite different from normal. All four specimens had been reared from the same dark adult female collected at Fishing Creek, six miles east of Harrisburg, PA by William Houtz and subsequently reared by him. He stated that there were actually eleven nice aberrants, however I only saw four.

The nicest male has the forewing band on the upper and under surfaces lacking many of the black scales, they being mainly yellowish (see photos on pp. 97). The hindwing on both surfaces is not black but is mostly light orange with black only at the veins. The dark morph female appears to be a transitional specimen that is also pervaded

with orange scaling on the upper and under surfaces of the hindwings (see photos on pp. 97). The additional male and female were not nearly as pronounced as these two.

The male has only a few orange spots in the hindwing band, however, the other female, a typical male-like yellow tiger female, also has quite a bit of the orange flush on the upper side with only minimal amounts of orange on the under side. I was fortunate to secure all four specimens, the two most intriguing of which are illustrated here. Interestingly, the specimen locality is very close to Three Mile Island where the nuclear disaster occurred in 1979. I wonder if there is any correlation...



### Announcement...

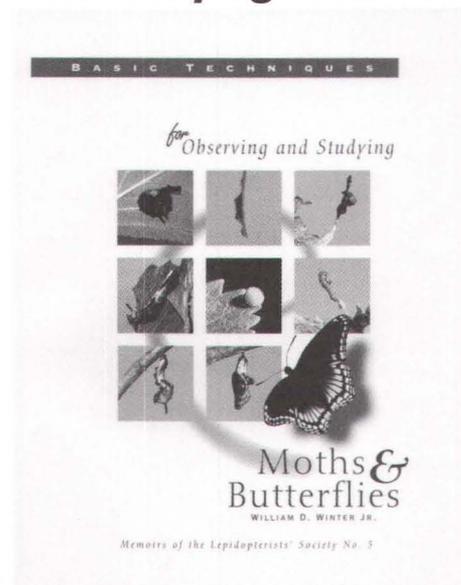
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# Attraction of Male Queen Butterflies to Cardenolide- and Alkaloid-Containing Plants During Fall Migrations

Gerald E. Einem

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During many fall seasons in the Lower Rio Grande Valley of Texas and northern Mexico large, often tremendous, numbers of Queen butterflies, *Danaus gilippus strigosus* (Bates), migrate southward. The density, breadth and direction of this migration have been reported previously (Einem 2002). In this report I provide new observations of the feeding habits of migrating male Queen butterflies. The adult butterflies I observed fed exclusively at the flowers of plants—or at injuries to plants—in genera known to contain substances sequestered by certain Lepidoptera (Danainae, Ithomiinae and Arctiidae) for chemical defense and/or as precursors for pheromone synthesis.

Many butterflies in the subfamily Danainae, including *D. gilippus* are aposematic, serve as models for mimics and feed as larvae on toxic plants from which the adults obtain chemical defenses (Brower & Brower 1964, Brower 1984, Ackery & Vane-Wright 1984, Boppré 1990, Ritland & Brower 2000). Queen caterpillars feed on milkweeds (Asclepiadaceae), including *Asclepias curassavica* L. (Scott 1986) that has been shown by Reichstein *et al.* (1968) to contain several toxic cardenolides in its latex. Research into the chemical basis of Danaine unpalatability has been largely centered on this group of compounds (Ackery & Vane-Wright 1984, see Brower 1984 for review).

Other plant compounds, the pyrrolizidine alkaloids (hereafter called PAs), may also be used by Danaines for chemical defense (Ackery & Vane-Wright 1984, Kelley *et al.* 1987, Stelljes & Seiber 1990). Moreover, PAs are precursors for the synthesis of Danaine

pheromones (Ackery & Vane-Wright 1984, Boppré 1984, Boppré 1990). The male Queen uses PA-derived pheromones, particularly danaidone, to “seduce” the female during courtship (Pliske & Eisner 1969, Boppre 1984) and, during mating, transfers PAs to the female for incorporation into the eggs. (Dussourd *et al.* 1989). Adult male Danaines acquire PAs by imbibing them from injured or withered plants, flowers, pods, seeds and scars from detached seeds from genera of plants including *Heliotropium*, *Tournefortia* (Boraginaceae), *Chromolaena*, *Eupatorium*, *Ageratum*, *Senecio*, (Asteraceae) and *Crotalaria* (Fabaceae) (Hartmann & Witte 1995).

There are no previous reports of male-biased feeding by *D. g. strigosus* on PA-containing plants, however, Pliske (1975a) reported that Florida male *D. g. berenice* (Cramer) fed at the pods of a *Crotalaria*, the dead stems, leaves and flowers of three species of *Eupatorium*, and dead inflorescences of *Heliotropium* and *Senecio*. In Venezuela, Pliske (1975b) found that the fresh flowers of a living *Heliotropium* attracted only male *D. g. xanthippus* (Cramer). Chemical analysis of *Chromolaena*, *Eupatorium* and *Heliotropium* show that the inflorescences and seeds are a rich source of PAs, although PAs are generally found in all plant parts (Brown 1984, Biller *et al.* 1994, Hartman & Witte 1995).

Here I provide the first report of adult male Queen butterflies feeding at insect-caused injuries to cardenolide and PA-containing plants. The males fed on the latex exudates of a cardenolide-containing milkweed species suggesting a heretofore-unknown alternate route

for cardenolide sequestration thereby augmenting cardenolides obtained by larval feeding on host plants. Moreover, my observations of male-biased feeding at termite caused injuries to a *Heliotropium* species and the fresh flowers of certain *Eupatorium* and *Heliotropium* species suggest that injuries to PA-containing plants by insects and floral nectar may be important sources of these alkaloids during the fall migration in Texas.

## Observations

Observations were made in the lower Rio Grande Valley of Texas at three sites in three separate years. At each site dense aggregations of male Queens fed exclusively at PA or cardenolide containing plants although other flowering plants were often blooming nearby. Around these plants the Queens fed or flew short distances from one flower or plant to another; however in the surrounding area, where PA and *Asclepias* plants were not seen, all Queens flew rapidly in a southerly direction. At each site I visually followed Queens coming from the north for 10-40 meters as they approached groups of feeding males. Some of these butterflies, almost entirely males, mingled or fed with the Queens already present.

### Site 1, Chihuahua Woods Preserve near Mission, Hidalgo Co. (25 Oct. 1998, 14:30-17:30 h CDT)

*Heliotropium curassavicum* L., a small succulent forb that grew in a patch about 3m<sup>2</sup>, had been severely damaged by the desert termite, *Gnathamitermes tubiformans* (Buckley). The termites had enclosed the basal portions of the plants in carton tubes with the distal ends of the stems, often withered and

black, protruding above the tubes. Here up to twelve adult male *D. g. strigosus* and two male Soldier butterflies, *Danaus eresimus* (Cramer), were flying upwind searching, vigorously probing or feeding (Fig. 1–4, see pp. 97). Some butterflies fed at the top of the black stems where they joined a few terminal leaves (Fig. 2) and others at the bottom of the black stems where they joined green stems with leaves just above the carton tubes (Fig. 4).

**Site 2, Brownsville, Cameron Co. (17 Oct. 2000, 12:00-12:20 h CDT)**

Twelve male Queens and one female fed at the fresh blue flowers of *Chromolaena odorata* (L.) King and Robinson. Additionally, a pair in copula flew about the plant and fed at its flowers. The adults did not feed at withered flowers or at leaves which had been damaged by moth larvae.

**Site 3, Sabal Palm Audubon Sanctuary nr. Brownsville, Cameron Co. (20 Oct. 2002, 15:00-16:30 h CDT)**

This sanctuary has a large native plant butterfly garden where ca. 150 male *D. g. strigosus* fed on plants containing PAs or cardenolides. The PA plants were *Eupatorium betonicifolium* Mill. and *Heliotropium angiospermum* Murr. The *Eupatorium*, the most abundant plant, was visited by many male Queens that fed at the fresh flowers; however a few Queens fed at injured parts of a rooted *Eupatorium* stump. Five *Heliotropium* plants attracted males to the inflorescence, which had fresh flowers.

Male Queens fed at the flowers of a milkweed (*A. curassavica*) but more frequently at parts of plants that had been damaged by Queen larvae. Remarkably two larvae, one mature and the other first instar, found on separate plants, fed alongside adult males which had their proboscises extended into the fresh latex exudate resulting from the larval feeding. Further, Queens feeding on the milkweeds spent long periods vigorously probing and feeding at leaf axils, and beneath the inflorescence including the buds where injuries to the plant were not apparent. Many of the plants were

infested with lygaeid milkweed bugs, *Onchopeltus fasciatus* (Dallas), and aphids (Aphididae), which fed in the same general area as the Queens. Both of these insects have piercing mouthparts and inflict puncture wounds. There was no evidence that the Queens were attracted to “honeydew” secreted by the aphids. A few Queens landed on the flowers of *Lantana horrida* (Verbenaceae) but quickly flew away without feeding, while a yellow flowered lantana cultivar was unattractive. A pair of Queens in copula flew about the garden but they were not seen feeding.

## Discussion

### Migration

During fall migration in Texas, I observed that male *D. g. strigosus* aggregated around plants containing PAs or cardenolides, often in dense relatively sedentary groups, while other Queens in the surrounding area moved rapidly and very directionally southward. Pliske (1975 a) reported that in south Florida male *D. g. berenice* form dense sedentary aggregations around PA plants and other Queens as nomadic individuals and as low density groups in areas abundant with asclepiads but without PA plants. Pliske did not mention directional migrants, although Queen migrations do occur in Florida (Scott 1986).

### Feeding at Flowers

The male Queens I observed (Site 2 and 3) were notable for their large numbers which, when feeding at flowers, fed exclusively at the fresh flowers of cardenolide or PA-containing plants, usually in the absence of feeding females. Chemical analysis of *Heliotropium* species has shown that the greatest concentration of PAs is in the inflorescence, young leaves and roots (the place of synthesis); however in *Chromolaena odorata* the leaves are almost devoid of PAs while the flowers are a rich source of PAs (Hartman & Witte 1995). This is consistent with my observation (site #2) that the flowers of *C. odorata* attracted male Queens but the damaged leaves were unattractive.

Pliske *et al.* (1976) found that the compounds attracting butterflies were not the PAs themselves, but rather volatile components of PA molecules (esterfying acids) liberated from damaged or withered plants. Pliske (1975b) suggested that these same or similar components were in the floral fragrance of a Venezuelan *Eupatorium* species that attracted many male ithomiines and arctiids to the flowers. I propose that the male-biased feeding of Queens at the *Heliotropium*, *Chromolaena* and *Eupatorium* flowers I observed resulted from an attraction of the butterflies to volatile PA components produced by the inflorescence during its period of blooming. The function of this feeding is the acquisition of alkaloids for pheromone synthesis and to protect adult Queens and their eggs from predation (see Pliske & Einser 1969, Dussourd *et al.* 1989).

The absence of Queens feeding at *Lantana* spp. (which lack PA's) is interesting since with the possible exception of the Asteraceae the Verbenaceae, including lantanas, are the most frequent nectar sources for Danainae (Ackery & Vane-Wright 1984). Male-biased feeding at the flowers of milkweed plants suggests that the nectar may contain cardenolides, however chemical analysis is needed.

### Feeding at Termite Injuries

My observations (Site 1) show that plants containing PAs that are injured by termites are attractive to migrating male Queen butterflies. Herbivore damage to PA plants, making them attractive to PA-seeking Lepidoptera, may be more common than generally realized. Owen (1971) observed that damage caused by browsing grasshoppers attracted large numbers of *Danaus chrysippus* L. to *Heliotropium* and Ackery & Vane-Wright (1984) described a variety of tropical danaines attracted to non-flowering *Ageratum* plants damaged by aphids. Further, Pliske (1975b) found that a *Tournefortia*, with leaves “skeletonized” by moth larvae (*Diopitidae*), was attractive to PA-seeking Lepidoptera; however,

excised parts of the same plant, including damaged leaves used as butterfly baits, failed to attract them. The moth larvae had severely damaged the leaves but the vascular system was intact and apparently functional. The termite injured *H. curassavicum* I observed may have had a functional vascular system, providing exudate where the Queens and Soldiers fed.

In Texas PA-containing plants damaged by the termite *G. tubiformans* may be an important source of alkaloids for migrating male Queens. This termite, a common species in southern and western Texas in May through September, is still active in the Lower Rio Grande Valley when Queens are migrating in October. Areas with low-growing plant cover may have as much as six percent of the ground occupied by the carton tubes of this termite (Drees & Jackmann 1998).

#### Feeding on Latex

My observations of male Queens (Site 3) with their proboscises extended into the latex exudate of an asclepiad suggests that they may be able to imbibe and sequester cardenolides from the latex. If, for example, the latex is too viscous to imbibe Queens may, like their cogener *D. chrysippus* and many other PA-seeking Lepidoptera (feeding at a PA source), apply droplets of fluid from the proboscis and then re-imbibe it (Pliske 1975a, Boppre 1981). If Queens engage in this behavior when feeding on latex, they may first dilute the latex and then ingest it. Other insects that feed on vegetative parts of milkweeds contain cardenolides, including two species of lygaeid bugs (von Euw *et al.* 1971) and aphids (Rothschild *et al.* 1970), suggest that male Queens may also obtain cardenolides by feeding on milkweeds. My observation of male Queens that fed in areas where the lygaeid bugs and aphids had fed, suggests that lesions caused by these insects may be a source of cardenolides.

The absence of female Queens feeding at milkweed latex is puzzling since, like the males, females should also benefit from augmenting their cardenolides and

thereby enhance their chemical defenses. Perhaps some females were overlooked but if so, they were uncommon or rare since I systematically searched an aggregation of ca 150 Queens for one and one-half hours and saw only one female, which was in copula and not feeding. When mating, female Monarchs (*D. plexippus* L.) may obtain cardenolides transferred from males (Archev 1979). If, like PA's, a nuptial transfer of cardenolides occurs in Queens, it may reduce the females' need to obtain these compounds by adult feeding at plant sources.

#### Acknowledgements:

I thank L. P. Brower, C. M. Penz and two anonymous reviewers for their valuable insights and suggestions in reviewing an earlier form of this manuscript, H. Robinson of the NMNH for his review of the plant nomenclature, and personnel at The Sabal Palm Audubon Sanctuary and the Nature Conservancy Chihuahua Woods Preserve for helpful information.

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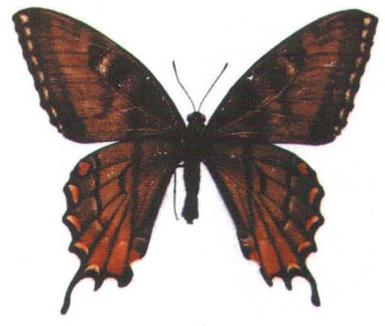
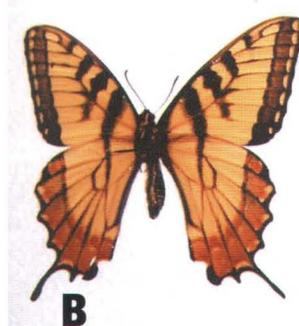
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## Male Queens & Soldiers Attracted to Termite Damaged Alkaloid-Producing Plants During Fall Migration

1. A male Queen (*Danaus gilippus strigosus*) flying upwind searching an area with remnants of termite damaged *Heliotropium curassavicum*, a plant known to contain pyrrolizidine alkaloids, substances required by males for pheromone synthesis. 2. A Queen, same individual as 1, ca. 30 sec. later, feeding at a termite damaged *Heliotropium* where it emerges from the top of a carton tube constructed by termites. 3. A male Soldier (*Danaus eresimus*), landing upwind with its proboscis partly extended, on the top of a *Heliotropium* damaged by termites. 4. A Soldier, same individual as 3, at the same plant ca 20 sec. later, with its proboscis fully extended feeding at the interface between the green terminus of the *Heliotropium* and the black stem beneath. Photos by Gerald Einem.



## Interesting Color Aberrants in *P. glaucus*

A. (left) male, upper side; (right) female, upper side. B. (left) male, under side; (right) female, under side.

Photos by Rick Rozycki. See his comments on the specimens on pp. 93.

# The Female of *Mesosemia phace*, *M. methion* and other *Mesosemia* Mysteries

Steve Fratello

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The genus *Mesosemia* Hubner is a very speciose riodinid genus. With more exploration of remote Neotropical regions and subsequent taxonomic work, I have little doubt there will be well over 100 valid species in the genus. As presently understood, only *Euselasia* Hubner has more species among riodinid genera with approximately 152 described species (Hall and Willmott, unpubl. data). *Mesosemia* is one of the most conspicuous of riodinid genera in Neotropical rainforests. Any butterfly enthusiast spending some time in these forests soon becomes familiar with these enchanting denizens of the forest understory. And they will also become familiar with their interesting perching posture—with their wings half open—either on the top or under leaves. This unique perching behavior is shared with other genera in the tribe Mesosemiini Bates.

Most species in *Mesosemia* show strong sexual dimorphism. This is especially true in the numerous species where the males have some blue on the upperside. Most of these species, from various species groups, have brown females. This fact, plus the rareness of a number of species in museum collections, has led to difficulty in pairing some males with their respective females. In the case of *Mesosemia phace* Godman (fig. 1-4, see pp. 100 for all figures), this is compounded by the fact that the brown female looks extremely similar to another species—the non-dimorphic *M. methion* Hewitson (fig. 5, 6). In the Natural History Museum, London, England (BMNH) collection a few *M. phace* females are incorrectly placed as *M. methion* females; and partly because of this the female of *M. phace* was considered unknown for a long time.

My study of *M. phace* and *M. methion* at the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (USNM) collection this past year plus correspondence with my friend/colleague Andrew Neild led us to an almost simultaneous conclusion: the butterfly figured as an *M. methion* female in Bernard D'Abrera's riodinid volume (pg. 908) is in actuality a female *M. phace*. Of course Andrew is the one who corroborated this since he lives in England! Andrew also observed that the male *M. methion* in D'Abrera's book is a Venezuelan specimen and not from Br. Guiana, Roraima as stated by D'Abrera—the occurrence or absence of this species in Guyana (British Guiana before independence) is discussed later in this manuscript.

My experience with *M. phace* is predominantly in the breathtaking Kaieteur Gorge (fig. 7). In approximately 50 days in the gorge, spread over 5 field trips, I have been fortunate to catch a few each of both males and females and also see a few others. A large *Mesosemia*, the aqua and black banded male has to be considered one of the most beautiful of this genus and to me one of the most gorgeous Neotropical butterflies. The males were seen/caught from late morning to early afternoon. Their flight was of short duration within one meter of the forest floor after which they perched under leaves within a half meter of the ground. I never saw any perch on top of leaves. My vague memory of the females recalls basically the same flight activity time but a different perching behavior—I remember them perching on top of leaves within one meter of the forest floor.

I believe I saw a male in plateau forest (ca. 800m) at the base of Mt. Ayanganna but was not successful with the

capture. On that Guyana montane expedition, my friend/partner Romeo Williams caught a couple of males at ca. 900m on Mt. Ayanganna's low slope and Bob Hanner, another friend and partner on that expedition, caught a female at ca. 800m in plateau forest at Mt. Ayanganna's base. Prior to these captures, I had looked closely at the Kaieteur *Mesosemia* material at the USNM and had determined that those large brown females must be the females of *M. phace*. Their similar size (large *Mesosemia*), the pattern of thin dark bands just distal of the ventral FW eyespot, the ventral submarginal band (and its associated spots) on both FW and HW, the HW bulge at veins M3 and Cu1 all pointed to the conspecific relationship of these males and females, especially when coupled with the fact that there were no other *Mesosemias* from a few Kaieteur trips that could be paired with either. When this happened again at another locality, Mt. Ayanganna, with no other females that could be considered a match for the males and likewise, no other males that could be considered a match for the female: these females are undoubtedly the females of *M. phace*.

Kaieteur Gorge, Mt. Ayanganna, and Mt. Roraima (type locality for *M. phace*); these localities in Guyana are associated with the Pantepui region—the extensive Guiana Highlands of southeastern Venezuela and adjoining areas in Brazil and Guyana dominated by sheer-sided table-topped mountains, the tepuis, that are composed largely of sandstone layers. In hundreds of days of exploration of Guyana's northern lowland forests (apart from Kaieteur Gorge) and southern mountains, I have never encountered *M. phace*. At Kaieteur Gorge, *M. phace* can be found as

low as 100m elevation. Its occurrence at this low elevation is certainly to be associated with the forest of the gorge escarpments, outliers of Guyana's Pakaraima Mts., a region of the Guiana Highlands in northwestern Guyana. Its supposed host plant(s), from the Rubiaceae (DeVries, 1997), may be restricted to areas of topographic relief (or restricted by a combination of factors), a reason it would be found at Kaieteur Gorge and not other lowland localities in northern Guyana not associated with the Guiana Highlands.

In my knowledge of its Guyana distribution, apart from its occurrence at Kaieteur Gorge, *M. phace* seems to be most associated with upper lowland/lower montane forest such as its occurrence at Mts. Ayanganna and Roraima. In the Pantepui region of southeastern Venezuela, my friend Andrew relates *M. phace* "seems local and restricted to upper tropical and lower premontane forest (approx. 850-1000m)." From my knowledge of the butterfly in the field, what I knew of museum specimens and conversations/correspondence with Andrew, I thought *M. phace* was restricted to the Pantepui region. Then just recently, Andrew related his exciting discovery of this species in 2002 while collecting with a friend in the Sierra de Turimiquire (ca. 1100m), a coastal range in northeastern Venezuela. Photos sent along with his account showed subtle differences in facies between these specimens and Guyana specimens. Separated from the Pantepui by the intervening extensive Orinoco lowlands, it would be no surprise if further study showed a distinct difference between the coastal range populations and the Pantepui populations.

And it was no surprise that the 7 males and 3 females Andrew and his friend took in the Sierra at that one locality cemented unequivocally what we jointly knew (I had related previously to Andrew how *M. phace* females look very much like *M. methion*). Besides Guyana and Venezuela, *M. phace* is certain to be found in the Brazilian

Pantepui region and most probably on the Brazilian side of Mt. Roraima. Since its discovery in the Sierra de Turimiquire outside the Pantepui region, I assume there is a good chance *M. phace* could be found in some of Surinam's mountainous areas (which I believe contain some outliers of the Pantepui) but would be surprised if its distribution includes French Guiana.

The extremely similar appearance of *M. phace* females and both sexes of *M. methion* coupled with the males being so different, begs the question: what is their relationship within this vast genus? Without a monographic review of the genus or at least a systematic study of them and a few other species, one can only guess at this interesting question. My guess is that they are in closely related (or even the same) species groups. Having seen the majority of the known *Mesosemia* phenotypes (from D'Abbrera's riordinid volume, the USNM collection and American Museum of Natural History, New York, NY, USA (AMNH) collection), which not surprisingly vary greatly in such a large genus, I don't believe such a close similarity of *M. phace* females and *M. methion* is a coincidence. From the museum specimens I have seen and photos Andrew has sent me of both BMNH material and specimens he has captured, though they are very similar, there are subtle differences between female *M. phace* and *M. methion*.

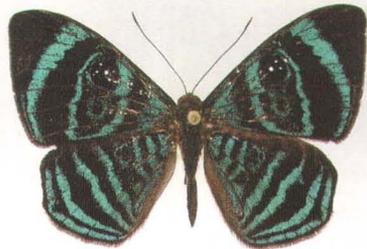
Obviously, male *M. methion* can be immediately separated by their reduced forelegs. The very different forelegs of male and female riordinids are a very useful characteristic for separating the sexes. From Andrew's discerning eye, the best distinguishing characteristic for separating the females seems to be that the HW bulge is slightly more prominent on female *M. phace* and consequently the excavation or concavity of the HW margin above this bulge is slightly greater. The wide postmedian gray-brown band on the dorsal HW seems to average wider on female *M. phace* than on female *M. methion*, but

I would need to see more *M. methion* females to say this conclusively. There are other subtle differences among their markings, yet it is so striking with females so alike and *M. methion* being non-dimorphic, that the males could be so different! Returning to male *M. methion*, since it and the female are not dimorphic, apart from separating it by leg structure—the above subtle facies differences also apply to it. Male *M. methion* also average somewhat smaller than both their females and *M. phace* females (and males) and their dorsal HW postmedian gray-brown band is definitely narrower.

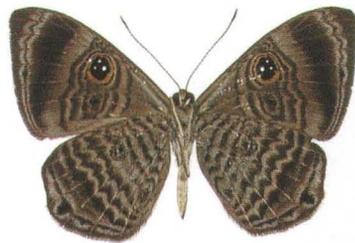
With the mystery of the *M. phace* female solved, the relationship of this species with *M. methion* unsolved, another mystery has presented itself. During a recent expedition to Guyana's Iwokrama Mts. (Oct/Nov 2003), one of my partners caught a *Mesosemia* on a high ridge (ca. 900m) that I assumed might be my/our first Guyana record of *M. methion*—it seemed smaller and I thought its general facies was somewhat different than the females of *M. phace* that I was familiar with. Again, correspondence with Andrew concerning these enigmatic butterflies was most helpful. Andrew, having discovered that there were no Guyana *M. methion* at the BMNH (a couple of females so placed are *M. phace* females and D'Abbrera's Br. Guiana male is actually from Venezuela, as previously related) and the fact that I/we had not taken the species previously in Guyana, led Andrew to the presumption that *M. methion* might not occur in Guyana. Andrew suggested I look at the situation more closely, which I subsequently did with the papered specimen. Andrew's instincts were right, this butterfly is definitely not *M. methion*! And I don't think it is *M. phace* either! Though it has the HW bulge and associated concavity of female *M. phace*, this Iwokrama Mt. female is quite a bit smaller than the four USNM female *M. phace* I compared it with and also significantly lighter in ground color. It also has some slight differences in its markings. It will be examined more

*continued on pp. 89*

# Mesosemia phace and other Mysteries



1



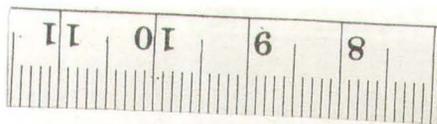
2



3



4

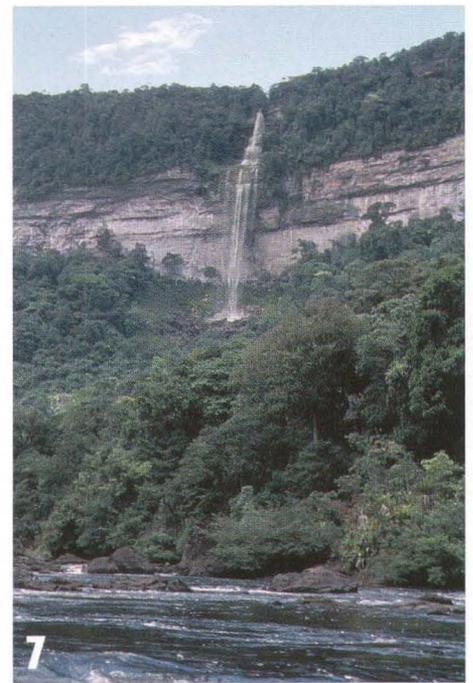


5



6

1. *Mesosemia phace*, Male, upperside, Kaieteur Gorge, Guyana; 2. Underside of 1.; 3. *Mesosemia phace*, Female, upperside, Kaieteur Gorge, Guyana; 4. Underside of 3.; 5. *Mesosemia methion*, Male, upperside, Cuenta, Venezuela; 6. Underside of 5.; 7. The sublime Kaieteur Gorge, abode of the incomparable *M. phace* and cousins: *M. philocles*, *M. nina*, *M. ulrica*, *M. machaera*, *M. melaene*, *M. magete*, *M. ibycus*, *M. maera* and a few others. 1-6 photographed by Dr. Patricia Gentili-Poole, 7 photographed by Dr. Robert Hanner. See the article by Steve Fratello beginning on pp. 98.



7

## New Butterfly Records from Big Bend NP

Top right, pp. 101. Figures 1-8: Recent records from BBNP. 1, 2: *Achalarus toxeus* male, Green Gulch, BBNP, Brewster Co. TX, 13-Jun-04; inset shows the tip of the valva, the valva is magnified 4-fold compared to the specimen photo. 3, 4: *Ziegleria guzanta* female, Kibbe Spring near Chisos Basin, BBNP, Brewster Co. TX, 29-May-04. 5-8: *Calycopis isobeon*, Green Gulch, BBNP, Brewster Co. TX, 12-Jun-04; 5, 6: male; 7, 8: female. Odd- and even-numbered images show dorsal and ventral view, respectively. All specimens leg. N.V. Grishin. See the Grishin & Warren report beginning on pp. 86.



### Odd Couples:

A strange pairing shot of a *Strymon melinus* and a *Fixsenia favonius*. Photo by Dale Clark (1732 S. Hampton Road, Glenn Heights, TX 75154, [nardo@earthlink.net](mailto:nardo@earthlink.net)).

### Aberrant *Fixsenia favonius*...

LBJ Grasslands, Wise County, TX. Specimen was photographed and then captured. Another collector captured another aberrant *F. favonius* around the same time at the same location with almost exactly the same markings. Photo by Dale Clark.



## 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 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:

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

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*Send book reviews or new book releases for the News to the News Editor.*

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## Submission Guidelines for the News

Submissions are always welcome! Preference is given to articles written for a non-technical but knowledgeable audience, illustrated and succinct (under 1,000 words). 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 Zip disk 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, a copy of the article file in ASCII or RTF (just in case), and alternate graphics formats. Media will be returned on request.

3. Color and B+W graphics should be good quality photos or slides 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. Photos or slides will be returned.

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 **46** must reach the Editor by the following dates:

| Issue           | Date Due             |
|-----------------|----------------------|
| 1 Spring        | You missed it!       |
| 2 Summer        | Gone by!             |
| 3 Autumn        | Forget about it!     |
| <b>4 Winter</b> | <b>Oct. 29, 2004</b> |

Reports for Supplement S1, the Season Summary, must reach the respective Zone Coordinator (see most recent Season Summary for your Zone) by Dec. 15. See inside back cover for Zone Coordinator information.

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Ruffin, Erik B. Runquist (2006);  
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Refer to Season Summary for Zone coverage details.

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# Pacific Slope Meets in Sierra Co., CA

Ron Leuschner

1900 John St. Manhattan Beach, CA 90266



The 51<sup>st</sup> Annual Meeting of the Pacific Slope Section of the Lepidopterists' Society was held June 25-27, 2004 at the Field Campus of San Francisco State University. The location is 5 miles west of Yuba Pass (6700 feet) near the small town of Bassetts in excellent medium altitude collecting country. Evi Buckner and Paul Opler hosted the event to the delight of the four dozen attendees. Meals were served in the upstairs dining room which also doubled as the lecture hall, but the best part of the meeting was downstairs in a long room with tables and chairs where people prepared and discussed what was flying.

Talks were given on Saturday morning by Ray Stanford, Peter Jump, Jerry Powell, Kelly Richers and John Lane. After lunch, everyone headed into the field where butterflies and day-flying moths (like *Annaphila miona*) were plentiful. All returned for a good banquet dinner and talk by Robert Michael Pyle, the John Adams Comstock honoree. Bob's achievements over 40 years have included founding the Xerces Society, writing 10 books, and being a delightful presence at many of our meetings. His talk was illustrated with slides of people and places that influenced him—and showed the startling evolution of his hair styles—over the years.

At the Sunday business meeting, Paul Opler previewed the August 2005 Annual Meeting of the Lepidopterists' Society at Sierra Vista, AZ. The meeting will be jointly sponsored by the Society, the Pacific Slope Section and the SE AZ Chapter of NABA. All present gave a round of applause for Paul and Evi for this successful meeting and their plans for the coming year.

## Group Photo Key:

1. Kristi Robinson; 2. Joe Smith; 3. Liam O'Brien; 4. Jerry Powell; 5. Andrew Baier; 6. Ron Leuschner; 7. Bob Langston; 8. Cynthia Robinson; 9. Evy Langston; 10. Martha Robinson; 11. Jack Levy; 12. Jeff Baier; 13. Paul Johnson; 14. June Preston; 15. Joseph Epstein; 16. Dave Bettman; 17. Bob Pyle; 18. Greg Kareofelas; 19. Thea Pyle; 20. Judy Robertson; 21. Marc Epstein; 22. Mike Collins; 23. Floyd Preston; 24. Pat Hamilton; 25. Peter Jump; 26. Kelly Richers; 27. John Lane; 28. Paul Opler; 29. Doris Kretschmer; 30. Ron Robertson; 31. Magda Albu; 32. Val Albu; 33. Alex Albu; 34. Chuck Brandau; 35. Ray Stanford; 36. John De Benedictis; 37. Kathy Schick; 38. Doug Vaughan; 39. Bruce Webb; 40. Mrs Crabtree; 41. Laurence Crabtree; 42. John Schick. Photo by Evi Buckner.

