

# NEWS

OF THE

# LEPIDOPTERISTS' SOCIETY

## **Inside:**

**How to: Extended  
Depth of Field Digital  
Photography...**

**Three New Butterflies  
New to TX and US...**

**Butterflies of Uganda**

**Lepidoptera Biology,  
A Blast From the Past!**

**Future News Editor  
Profile: Dale Clark**

**Butterflies and  
Helicopters...**

**Book Reviews:  
News or Journal?**

**Editorial: The Birth of  
Butterflying**

**Mailbag...**

**Marketplace...**

**New Books...**

**Metamorphosis...**

**Membership Update...  
...and more!**





# NEWS OF THE LEPIDOPTERISTS' SOCIETY

Volume 47, No. 2 Summer 2005



## Contents

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

The **News of the Lepidopterists' Society** (ISSN 0091-1348) is published quarterly by The Lepidopterists' Society, c/o Los Angeles County Museum of Natural History, 900 Exposition Blvd., Los Angeles, CA 90007-4057, USA, and includes one or two supplements each year. The **Season Summary** is published every year as Supplement S1 and is mailed with issue 1 of the News. In even numbered years a complete **Membership Directory** is published as Supplement S2 and is mailed with issue 4 of that volume of the News. Please see the inside back cover for instructions regarding subscriptions, submissions to, and deadline dates for, the News.

Application to mail at Periodicals Postage rates is pending at Los Angeles, CA and at additional mailing office (Lawrence, KS).

POSTMASTER: Please send address changes to **News of the Lepidopterists' Society**, c/o Los Angeles County Museum of Natural History, 900 Exposition Blvd., Los Angeles, CA 90007-4057.

Copyright © 2005 by The Lepidopterists' Society. All rights reserved. The statements of contributors do not necessarily represent the views of the Society or the editor and the Society does not warrant or endorse products or services of advertisers.

<b>An Introduction to Extended Depth of Field Digital Photography.</b> <i>Rik Littlefield</i> .....	47
New Book: <b>Dragonflies of Texas.</b> .....	49
<b>Should Book Reviews/Notices Appear in the Society's Journal or in the News?</b> <i>John Masters</i> .....	50
<b>Mailbag...</b> .....	51
<b>Metamorphosis...</b> .....	53
New Book: <b>Florida Butterfly Caterpillars.</b> .....	53
New Book: <b>Caterpillars of Eastern North America.</b> .....	53
A Biographical Sketch: <b>Future News Editor, Dale Clark.</b> .....	54
A Blast from the Past: <b>Lepidoptera Biology:</b>	
<b>Open for Study.</b> <i>Charles Remington</i> .....	54
<b>Membership Update.</b> <i>Julian Donahue</i> .....	55
<b>The Marketplace.</b> .....	56
From the Editor's Desk... <b>The Birth of Butterflying.</b> <i>Phil Schappert.</i> .....	58
<b>Get in the Swing of Things with a Society T-Shirt!</b> .....	59
Announcement: <b>Basic Techniques Manual (Memoir #5).</b> .....	59
New Book: <b>Caterpillars in the Field &amp; Garden.</b> .....	60
New Book: <b>Butterflies of Colorado.</b> .....	63
<b>Of Butterflies and Helicopters.</b> <i>Igor Kovalev</i> .....	64
<b>Painted Ladies Pay Highway Toll.</b> <i>Liam O'Brien.</i> .....	65
<b>What Is It?</b> <i>Pauline Singleton.</i> .....	65
<b>Butterflies in Uganda, Christmas 2004.</b> <i>David Hudson</i> .....	66
<b>Backpages:</b>	
Membership Information, Dues Rates, Journal of the Lepidopterists' Society, Change of Address?, Our Mailing List?, Missed or Defective Issue?, Book Reviews, Submission Guidelines for the News .....	70
<b>Executive Council.</b> .....	71
<b>Season Summary Zone Coordinators.</b> .....	71

Issue Date: June 15, 2005

ISSN 0091-1348

## Reminder:

**The 2005 Annual Meeting of the Lepidopterists' Society will be held in Sierra Vista, AZ, August 2-7, 2005. Details were published in the Spring issue of the News. Contact Paul Opler ([paulevi@webaccess.net](mailto:paulevi@webaccess.net)) or Hank Brodtkin ([hbrodtkin@cox.net](mailto:hbrodtkin@cox.net)) for late-breaking details...**

### Front Cover: Extended DOF image of unidentified noctuid moth.

This extended depth of field image was constructed by CombineZ5 software from a "stack" of 48 individual pictures stepped in depth by 0.005 inch (0.127 mm), taken by Rik Littlefield. See his article on this subject, and more photos, beginning on pp. 47 of this issue.



# Three New Butterflies New to the United States from South Texas.

<sup>1</sup>Jan & David Dauphin, <sup>2</sup>Ed Knudson, <sup>2</sup>Charles Bordelon

<sup>1</sup>410 Taurus St., Mission, TX. 78572, <sup>2</sup>Texas Lepidoptera Survey, 8517 Burkhardt Rd. Houston, TX 77055

We document the occurrence of three new United States records of the following species: *Melete lycimnia isandra* (Boisduval, 1836), *Itaballia demophile centralis* Joicey & Talbot, 1928 (Pieridae), and *Greta morgane oto* (Hewitson, 1855) (Nymphalidae: Ithomiinae).

During the fall season (Oct-Dec) of 2004, a large influx of tropical butterflies occurred in the lower Rio Grande Valley of extreme southern Texas. Among those, were six species that had not been previously recorded from the United States, three of which (above) are reported here. The other three species—*Antigonus erosus* (Hubner, 1812) (see Knudson *et al.* 2004), *Helio-pyrgus sublinea* (Schaus, 1902) (see Basham *et al.* 2005), and *Tenemis laothoe honduriensis* Fruhstorfer, 1907 (see Grishin 2005)—were previously reported in this publication. Many other unusual species were also reported, including several that had been previously found in the United States only once or twice.

This year continued a 5 year period of relatively warm winter temperatures with rainfall ranging from below normal in 1999 to above normal in 2004. During this period, several other new butterfly records for the United States have been found, including the pyrgine skippers *Phocides belus* (Godman & Salvin, 1893) (see Hanson *et al.* 2003), *Achlyodes pallida* (R. Felder, 1869) (see Warren *et al.* 2003), and *Anastrus semipternus* Butler & Druce, 1872 (see Bordelon & Knudson 2003a).

## ***Melete lycimnia isandra* (Boisduval, 1836)**

On 20 November, 2004, at 1530 CDT, the senior authors found an individual

of *Melete lycimnia isandra* nectaring at *Lantana horrida* H.B.K. (Verbenaceae) in their backyard in Mission, Hidalgo Co., TX. The butterfly appeared to be in distress and soon dropped to the ground, where it appeared to be dying. (The junior authors theorize that it may have been attacked by a predator such as a spider or ambush bug, since it was not badly worn). The specimen was collected and kept in the freezer for a few days after which it was donated to the Texas Lepidoptera Survey Collection, which is maintained by the two junior authors. During the following week at least three other individuals were photographed by the senior authors, David Hanson, and others, at various locations near Mission, including Bentsen-Rio Grande Valley/World Birding Center Butterfly Garden, NABA International Butterfly Park, and Frontera Audubon Butterfly Garden. All the photographs we have seen appear to have been of males, all exhibiting some wing damage.

*Melete lycimnia* (Cramer, 1777), was described from Suriname. The nominate subspecies, which occurs throughout much of the Amazonian region of South America, usually has fairly broad black marginal bands on the hindwing and forewing apex. The subspecies *isandra* occurs in Mexico and Central America. It lacks the broad black marginal bands on the wings. Both subspecies tend to have either yellow or white color morphs, the yellow morphs usually found in females. In Mexico, *Melete lycimnia isandra* tends to inhabit dry (or deciduous) seasonal tropical forest, and regularly occurs as far north as Ciudad Victoria, Tamaulipas (pers. Obs, also see Llorente *et al.* 1997).

Therefore, we had anticipated that this species would eventually be found in extreme south Texas (Bordelon & Knudson, 2003b).

According to DeVries, 1987, the life history of this species has not been published, although apparently one or more species in the genus have been reported as using a member of the Loranthaceae (Mistletoe family) by Ehrlich & Raven 1965. There is a possibility that *Melete lycimnia isandra*, could find a suitable member of this family in southern Texas, on which to breed, but it is likely that all of the individuals seen in Texas during November 2004, were migrants from Mexico.

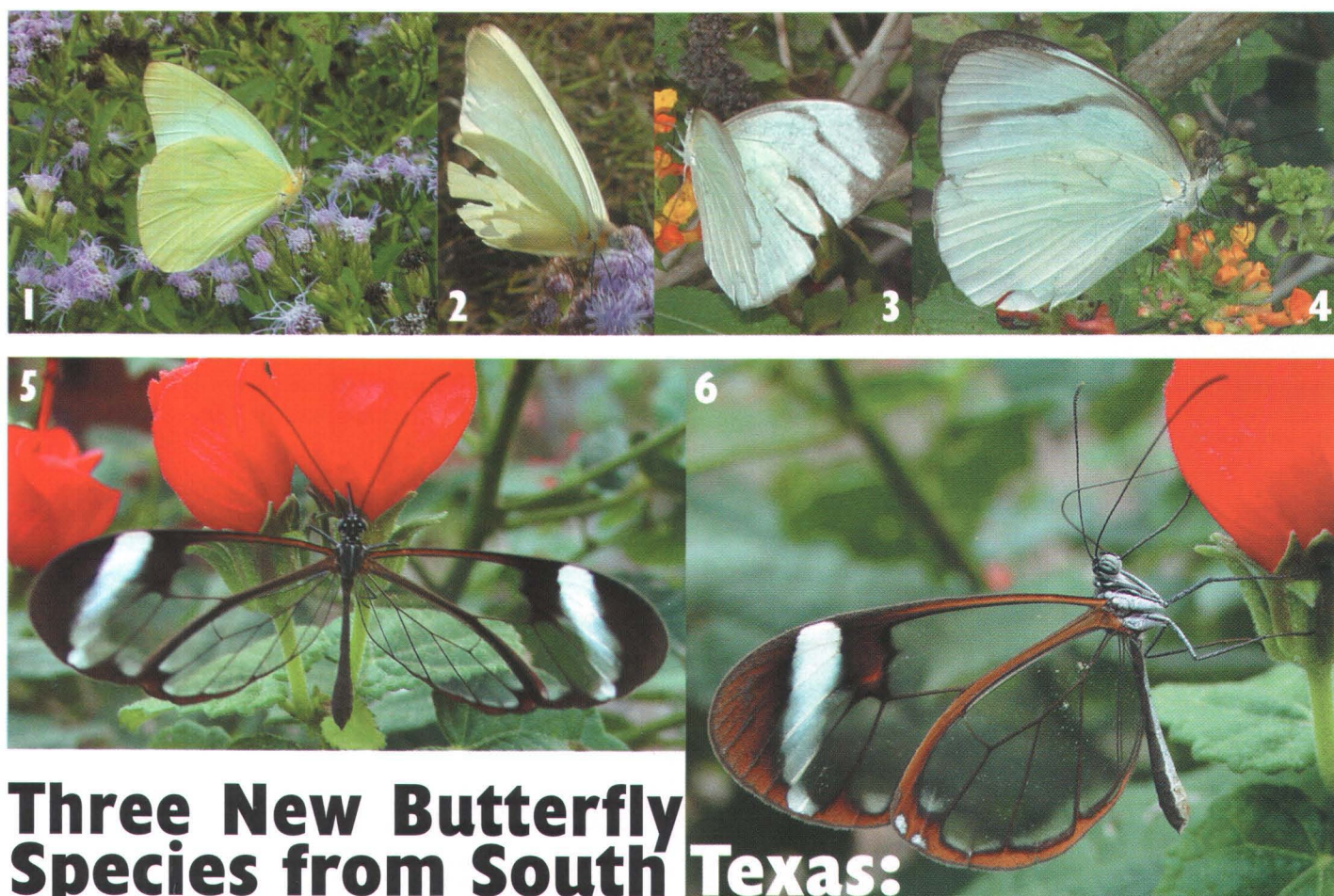
## ***Itaballia demophile centralis* Joicey & Talbot, 1928.**

On 7 Dec. 2004, the senior authors were visiting the NABA International Butterfly Park in Mission, Hidalgo Co., TX, in company with Jeffery Glassberg, David Hanson, and Randy Emmitt. Glassberg spotted a female *Itaballia demophile centralis*, at 1420 CST, and all were able to get photos of the butterfly before it flew away about 30 minutes later. No other examples of this species were seen in the area.

*Itaballia demophile* (Linnaeus, 1763) occurs in South & Central America (see DeVries 1987 and Llorente, *et al.* 1997). The subspecies *centralis* occurs in Mexico and Central America and inhabits mainly evergreen or semi-deciduous tropical forest, as far north as southeastern San Luis Potosi state in Mexico (Salinas-Gutierrez *et al.* 2004). The subspecies *centralis* is somewhat sexually dimorphic, with fe-

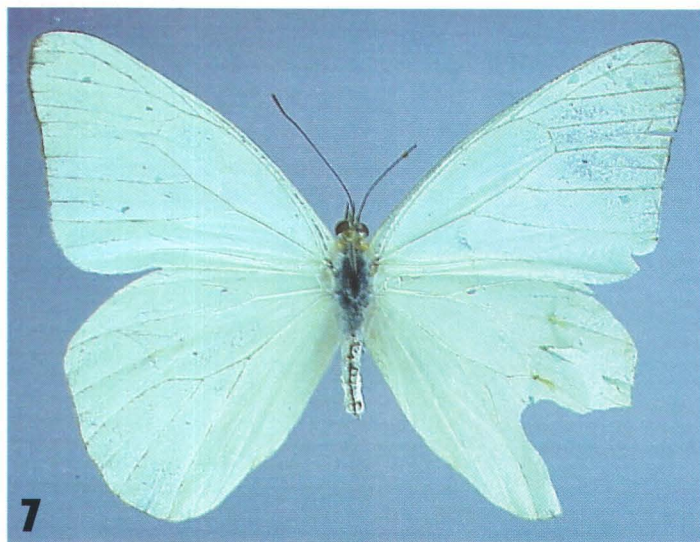
*continued on pp. 46*



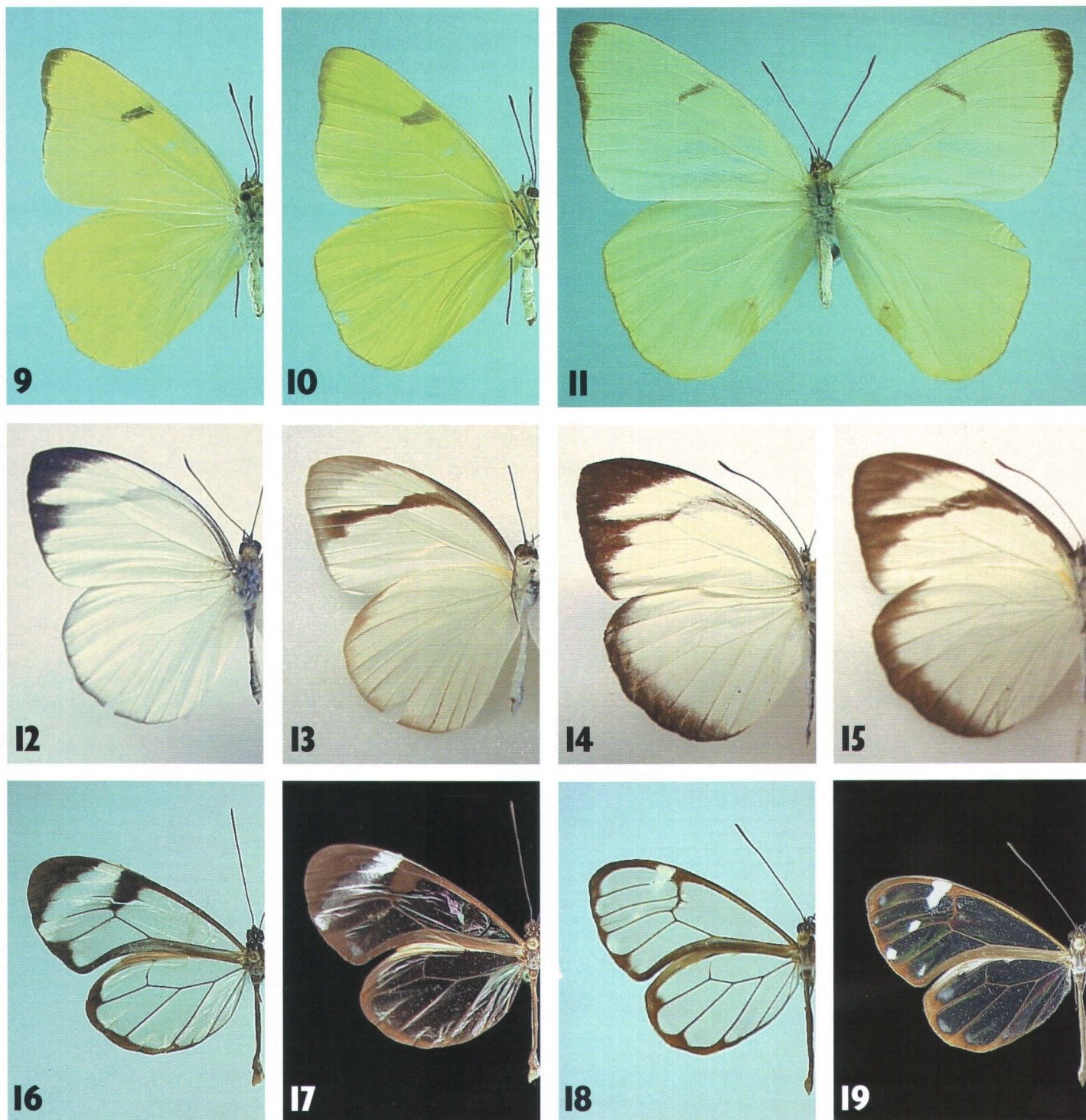


## Three New Butterfly Species from South Texas:

This page, above: **1:** *Melete lycimnia isandra*, male, Hidalgo Co., TX., NABA International Butterfly Park, 21 Nov. 2004, Photo by David Hanson; **2:** *Melete lycimnia isandra*, male, Hidalgo Co., TX, Hidalgo Co., TX, Bentsen Rio Grande Valley State Park, 26 Nov. 2004, photo by Jan Dauphin; **3:** *Itaballia demophile centralis*, female, Hidalgo Co., TX, NABA International Butterfly Park, 7 Dec, 2004, Photo by Jan Dauphin; **4:** same specimen and data as in 3, photo by David Hanson; **5:** *Greta morgane oto*, female, Hidalgo Co., TX, Bentsen-Rio Grande Valley State Park, 8 Dec., 2004, photo by Jan Dauphin; **6:** same specimen, data, and photographer as 5. Below: **7:** *Melete lycimnia isandra*, male, Hidalgo Co., TX., Mission, 20 Nov. 2004, Jan & David Dauphin coll., in Texas Lepidoptera Survey Collection, Houston, TX; **8:** same specimen as 7 (ventral). Specimen photos by Ed Knudson.







**9:** *Melete lycimnia isandra*, female, yellow morph, Mexico, Jalisco, Chinos to Mismaloya, 16 km. W. of Puerto Vallarta, 30 Mar., 1990, A.D. Warren coll.; **10:** same specimen as 9, (ventral); **11:** *Melete lycimnia isandra*, female, white morph, Mexico, Tamaulipas, Cd. Victoria, 22 Oct. 1974, E. Knudson coll.; **12:** *Itaballia demophile centralis*, male, Honduras, Olancho, El Boque Ron, 4 Sep., 1980, W. Jones coll., (in Texas A&M Collection of Arthropods); **13:** same specimen and data as 12, (ventral); **14:** *Itaballia demophile centralis*, female, Venezuela, Miranda, Parque Guatopo, 30 Nov. 1980, T.D. Dixon coll. (in Texas A&M Collection of Arthropods); **15:** same specimen and data as 14, (ventral); **16:** *Greta morgane oto*, male, Mexico, San Luis Potosi, nr. (entrance to) El Salto Falls, 26 Nov. 1977, E. Knudson coll.; **17:** same specimen and data as 16, on black background, to show white pattern elements and iridescence; **18:** *Greta annette annette*, male, Mexico, San Luis Potosi, nr. El Salto Falls, 26- Nov. 1977, E. Knudson coll.; **19:** same specimen and data as 18, on black background. All specimen photos by Ed Knudson.



**Texas...***continued from pp. 43*

males having a more pronounced transverse dark sub-apical band on the forewing. In South America, females of the nominate subspecies, are more dimorphic, with heavy dark bands on the forewing and hindwing anal margin. These females appear to be mimetic, resembling certain Ithomiine species.

According to DeVries 1987, the larval host plants are members of the Capparidaceae (Caper family), including several species of *Capparis*. This genus does not occur naturally in Texas, but other genera do exist, especially *Cleome* (Spider Plants), which include both introduced and native species (Correll & Johnston 1970). The occurrence of *Itaballia demophile centralis* in Texas is unexpected and apparently represents a wind-blown stray. Appropriate habitat does not exist in the region for breeding.

***Greta morgane oto* (Hewitson, 1837)**

A single female specimen of *Greta morgane oto*, was located by Randy Emmitt at the Bentsen Rio Grande State Park/World Birding Center, Hidalgo Co., TX. on 8 Dec. 2004 at 1740 CST. It was nectaring at *Malcaviscus arboreus* Cav. (Turk's Cap). Emmitt contacted the senior authors and David Hanson, and all were able to take excellent photos of the individual. It remained in the area for three days, during which time it was seen and photographed by many others.

*Greta morgane* (Geyer, 1837) was originally described from Mexico. *Greta oto* (Hewitson) was described from Guatemala and is now considered to be a subspecies of *morgane*. It occurs throughout Central America, extending as far north as El Salto Falls and Rio Sabinas, San Luis Potosi, Mexico (pers. obs.). It occurs mainly in deciduous seasonal tropical forest habitats, often in deep shade. According to DeVries 1987, *Greta morgane oto* is capable of long distance flights and can be seen in open, disturbed areas. The host plants are various species of *Cestrum* (Solanaaceae). These plants do not occur natur-

ally in the valley, but are often used as ornamentals and may naturalize to some extent (Kendall & McGuire, 1984).

Two other species of Ithomiinae have been recorded from Texas (see Kendall & McGuire, 1984). These include *Greta polissena umbrana* (Haensch, 1909), which is known from two museum specimens labeled "Texas, Belfrage, 1870" (Gustaf Wilhelm Belfrage was an early Texas collector and naturalist); and *Dircenna klugii* (Geyer, 1837), which is known from as many as 10 museum specimens labeled as being from Texas, mostly recorded from 1877 in Cameron and Hidalgo counties. The validity of the records for *Greta polissena umbrana* have been questioned by various authors including Opler & Warren 2002, chiefly because it is not known to occur in Mexico. However, the very similar *Greta annette annette* (Guerin-Meneville, 1844) does occur in eastern Mexico, as far north as El Salto Falls, San Luis Potosi, where two examples were collected by one of us (Knudson), 26-XI-77. This species is mentioned and illustrated in this paper, so as to avoid possible misidentification as *Greta polissena umbrana*, should *G. annette* also stray to Texas.

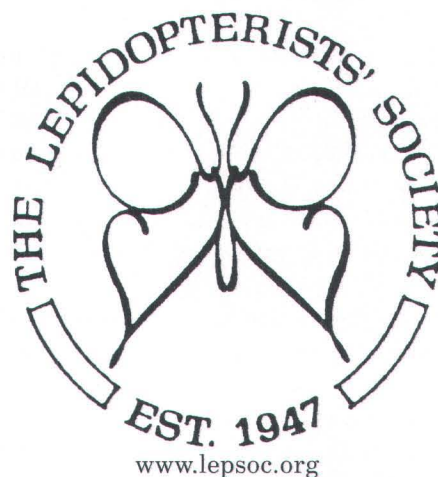
**Acknowledgements**

*The authors wish to thank those who contributed information to this publication, including: David Hanson, Randy Emmitt, Andrew Warren, and John Shuey. We also thank Andrew Warren for reviewing the manuscript and providing a specimen for illustration.*

**Literature cited:**

- Basham B., J. Rathjen, E. Knudson, C. Bordelon and A. Warren. 2005. *Heliopyrgus sublinea* (Hesperiidae, Pyrginae) a new record for Texas and the United States. News of the Lepidopterists' Society 47 (1) 8-11.
- Bordelon, C. & E. Knudson. 2003a. *Anastrus sempiternus* Butler & Druce, a new record for Texas and the USA. News of the Lepidopterists' Society 45 (1) 5, 7.
- Bordelon, C.W. & E. Knudson 2003b, Illustrated Checklist of Lepidoptera of the lower Rio Grande Valley, Pt. 1: Butterflies, Houston (private).
- Correll, D.S. & M.C. Johnston. 1970. Manual of the Vascular Plants of Texas, Texas Research Foundation, Renner, TX.

- DeVries, P.J., 1987. The Butterflies of Costa Rica. Princeton University Press, Oxford.
- Ehrlich P.R. & P.H. Raven 1965. Butterflies and Plants: a study on coevolution. Evolution 18 586-608.
- Grishin N.V. 2005. A new banner for the United States: *Tenemis laothoe* (Nymphalidae : Biblidinae). News of the Lepidopterists' Society 47 (1) 4, 10.
- Hanson D., E. Knudson & C. Bordelon 2003. *Phocides belus* Godman & Salvin (Hesperiidae), new to US and Texas, with a review of *Phocides* and similar species of the USA and northern Mexico. News of the Lepidopterists' Society 45 (2) 41-43.
- Kendall, R.O. & W.W. McGuire 1984. Some new and rare records of Lepidoptera from Texas, Bulletin of the Allyn Museum., 86: 1-50.
- Knudson E., C. Bordelon, & A. Warren 2004. *Antigonus erosus* Hubner (Hesperiidae: Pyrginae), a new US record from south Texas. News of the Lepidopterists' Society 46 (4) 111-113.
- Llorente, J., O. Onate, A. Luis, & I. Vargas 1997. Papilionidae y Pieridae de Mexico: Distribucion Geografica e Ilustracion. Comision Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) y Facultad de Ciencias, Universidad Nacional Autonoma de Mexico. Mexico D.F. viii + 227 pp., 28 pls.
- Opler, P.A. & A. Warren. 2002. Butterflies of North America. 2. Scientific names list for butterfly species of North America, north of Mexico, Contributions of the C.P. Gillette Museum of Arthropod Diversity. Colorado State University, Ft. Collins.
- Salinas-Gutierrez, J.L., A. Luis-Martinez, & J. Llorente-Bousquets 2004. Papilionoidea of the Evergreen Tropical Forests of Mexico, Journal of the Lepidopterists' Society, 58 (3). pp. 125-142.
- Warren A., D. Hanson, E. Knudson, & C. Bordelon 2003. *Achlyodes pallida* (Hesperiidae). A new record for the United States. News of the Lepidopterists' Society 45 (4) 128-131.





# An Introduction to Extended Depth of Field Digital Photography

Rik Littlefield

629 Cherrywood Loop, Richland, WA, 99354, [rj.littlefield@computer.org](mailto:rj.littlefield@computer.org)

## The Basics

Close-up photography is a lot more powerful and exciting than ever before. That's because recent advances in digital photography now make it possible to produce close-up photographs that have both high resolution and large depth of field.

Depth of field has always been a big problem when photographing small things. Stopping down the lens gives more depth of field, but only to a certain point. Stopping down too much just makes the entire image fuzzy because of diffraction effects. When photographing something the size of an entire housefly, the optimum point is typically f/8 or wider, and the useful depth of field ("depth of detail") for a single picture is often 0.1 mm or less. The problem becomes more severe with greater magnifications.

So, when using traditional photographic techniques, the challenge has always been "to determine the optimum lens aperture for effecting the golden mean between stopping down the lens for depth of field and opening it up for good resolution." (1). Recent advances in digital photography greatly relax this tradeoff between resolution and depth of field.

The concept is simple. Instead of shooting one picture with a carefully chosen focus plane, you shoot a "stack" of multiple pictures, sweeping the focus plane through every place where you want to see detail. Some sophisticated but easy to use software then processes the stack, picking out the in-focus portions and combining them into a single picture that has both high resolution and large depth of field.

The technique is effective over a wide range of applications. If you are happy

with your current resolution, and you just want some more depth of field, then you may want to use short stacks, say 2-10 frames. Or if you want to push the technology, it's quite practical using current computers and cameras to stack 100 or more different focus planes. This allows opening up your lens to achieve optimum resolution, while still getting enough depth of field to cover your entire subject. The result can look remarkably like a scanning electron micrograph, but in true color.

The main limitation is that your subject cannot move while the image stack is being shot. The photographs (see front cover and pp. 48) illustrate a fairly wide range of what can be accomplished.

There are currently two software packages that are free or inexpensive and are suitable for this kind of work. CombineZ5 (see [www.hadleyweb.pwp.blueyonder.co.uk/CZ5/combinez5.htm](http://www.hadleyweb.pwp.blueyonder.co.uk/CZ5/combinez5.htm) for latest version) is free and can be used without restrictions. Helicon Focus (version 3.10 or later, [helicon.com.ua](http://helicon.com.ua)) is a commercial product that can be used for free under some restricted conditions. These two packages have complementary capabilities; each is better than the other under some circumstances. I usually run them both and pick the result that I like better. Generally speaking, Helicon Focus is easier to use while CombineZ5 has more options.

To do this kind of photography, you will need the following items: a digital camera with macro-focusing lens or close-up lenses, manual focusing capability, a Windows PC (Sorry, no Mac's), Helicon Focus and/or CombineZ5 software, an appropriate subject and lighting.

The easiest way to get started is to use whatever close-up arrangement you are comfortable with. Set up your macro lens as usual, using a small aperture to maximize depth of field in each frame. Shoot a short stack, say 5 frames, stepping the focus plane by roughly the depth of field in a single frame. Then download and run the software, using the "Do Stack" macro if you have chosen CombineZ5. See that your depth of field has been multiplied by the number of frames, and be encouraged to continue.

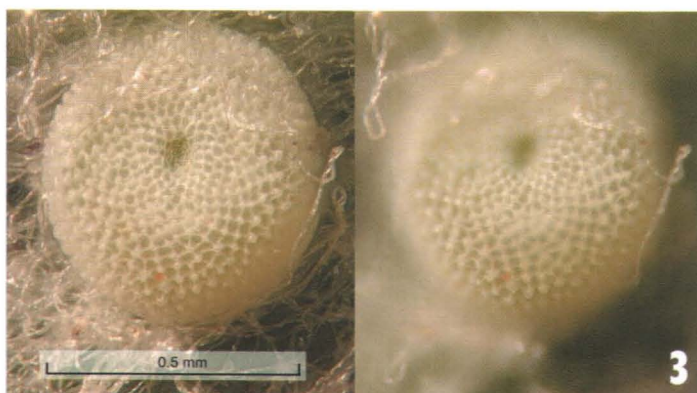
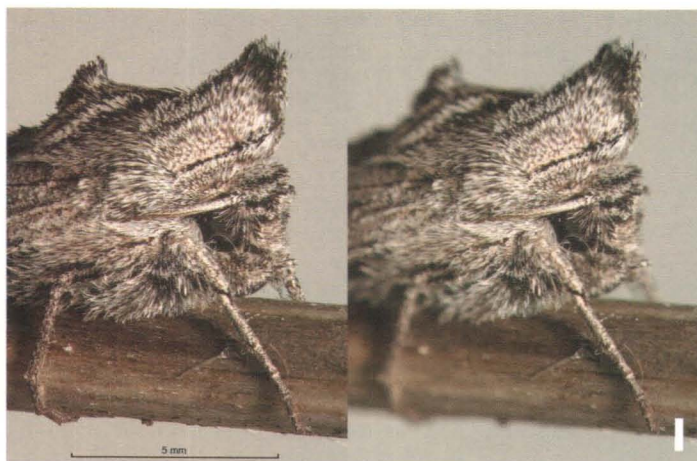
It is easier to get good results if you can adjust focus in uniform steps. My favorite method is to use a screw-driven X-Y positioning table and vise sold for machining (Mill table and vise, e.g. Enco Model #201-2826 and #426-8080, [www.use-enco.com](http://www.use-enco.com)). This device allows precision positioning calibrated down to 0.001 inch, is useful for even smaller increments, and its massive construction minimizes problems with vibration (see setup photo (5) on pp. 48). Other useful alternatives include tick marks on the focus ring of a macro lens, using a macro focusing rack, mounting the subject on the vernier stage of a microscope, or using the built-in focusing mechanism of a microscope, either shooting through the microscope or attaching an extension to its stage to hold the subject for external lenses.

## Advanced Techniques

After you are comfortable with extended depth of field software, you may want to try more aggressive techniques using wider apertures and deeper stacks to achieve higher resolution.

*continued on pp. 49*





## Extending Macro Depth-of-Field...

1. Side-by-side comparison of the extended depth-of-field produced by CombineZ5 and one of the original frames from the stack of 48. The left image (also on front cover) resolves the details of individual scales, over a total depth of more than 6 mm. Canon Digital Rebel camera, 55mm lens on bellows, reversed, at f/8 setting. The moth is an unidentified noctuid in its daylight resting pose. 2. Labial palp and eye of Painted Lady butterfly (*Vanessa cardui*), 92 frames stepped by 0.001 inch. Overall size 3×2×2.3 mm (width×height×depth). The overlapping hairs of this specimen required special treatment, as described at [extendeddof.janrik.net](http://extendeddof.janrik.net). 3. *Icaricia lupini* egg, processed by Helicon Focus from a 59-frame stack. Shot with a 10X, 0.25 N.A. microscope objective on 240 mm tube. Representative single frame shown at right. 4. The setup used for all photographs in this article. The heavy screw-driven X-Y table provides precise positioning and excellent vibration resistance (note extra cross-brace added to support the camera). Illumination is provided by a conventional floodlamp plus fill lighting (not shown). The subject is the *Icaricia lupini* egg shown in 3. 5. *Erynnis propertius* larva, final instar. Assembled by Helicon Focus from 6 frames, just enough to render the entire head capsule in focus at f/8, the aperture producing the highest resolution at this magnification. All photos by Rik Littlefield.





**Photo DOF...cont'd from pp. 47**

I find that the following process works well:

- 1) Choose the magnification. (Depth of field depends strongly on magnification.)
- 2) Shoot a test sequence to determine the aperture that gives highest resolution.
- 3) At that aperture, shoot a test sequence to determine depth of field in a single frame.
- 4) Shoot the stack of images, stepping focus by slightly less than the single-frame depth of field.
- 5) Load the stack into your PC and run the extended depth of field software.
- 6) Look closely at your result to see if it can be improved. Consider changing the software parameters, the lighting, background, etc.
- 7) Make changes, try again. (The more you do, the better you get.)

You may also find the following hints helpful.

Lighting matters. Always position and illuminate your subject to highlight the features that you care about. This topic is discussed at length and beautifully illustrated in the now out-of-print Kodak Publication N-12, *Close-up Photography and Photomacrography*. Fortunately, copies of this publication are still commonly available through used booksellers.

Flash illumination can introduce undesirable variation from frame to frame. Continuous illumination works well. If your camera can tolerate long exposures, ordinary flood lamps may be completely adequate to produce good work. All of the photos in this article were produced with the lighting setup shown in 4 opposite, using a Canon Digital Rebel camera.

With both programs, the most serious problems are caused by overlapping detail in the subject. Where part of the subject passes in front of another part, the software often has difficulty deciding exactly which features should be shown. Most commonly, this shows

up as blurring around sharp transitions in depth. The amount of blurring can be reduced in Helicon Focus by using smaller focus and smoothing windows (R and S parameters). Blurring can be reduced in CombineZ5 by reducing the threshold for depth determination (Find Detail parameter) and by reducing the amount of smoothing in the depth map (larger number of the Create Lowpass Filter command). In really extreme cases, such as the Painted Lady eye shown in 2 opposite, a completely different approach may have to be taken, such as using the CombineZ5 "Do Average and Filter" macro.

Another common problem is "halo", which happens when strong contrast occurs between the subject and any unfocused background. It results from the software detecting the edge of the blur circle in unfocused frames, and incorrectly treating it as detail to be preserved. Halo is most obvious with black backgrounds. It can be minimized by using a less contrasting background color, by using a slightly textured background, or (in some cases, using CombineZ5) by increasing the threshold value for the Find Detail command.

Finally, be cautious about JPEG image compression. Stacks that have been compressed too far can make the software detect "detail" where in fact there was none, causing mistakes in choosing which pixels to put in the final image. What works depends on your camera, subject, and how you use the software, so you'll have to experiment to see what you can get away with. When in doubt, set your camera to produce the highest quality images that you can afford to store and process.

### Closing Comments

Extended depth of field digital photography opens a wide range of possibilities that were previously unavailable because of basic limitations of optics. The processing described in this article, while conceptually straightforward, has become broadly usable only during the last few months due to simultaneous improvements in computing speed,

memory and storage capacity, digital camera technology, and software development. Other complementary techniques are also being developed, such as wavefront coding (Wavefront coding keeps a focus on applications, see [optics.org/articles/ole/8/10/5/1](http://optics.org/articles/ole/8/10/5/1)), that promise further significant improvements in the long term. These are exciting times!

### References

1. *Close-up Photography & Photomacrography*, Kodak Publication N-12, 1977, pg. 78.

### Acknowledgements

Thanks are due to Dr. David James, WSU, for providing some of the livestock used for illustration; to Dr. James, Alan Hadley, Dave Nunnallee, John Hollenberg, and David Sykes for valuable discussions; and of course to all the developers of this great technology.

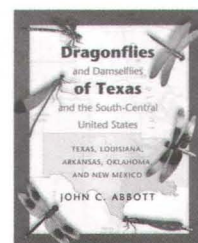
### New Book...

## Dragonflies and Damselflies of Texas and the South-Central United States: Texas, Louisiana, Arkansas, Oklahoma and New Mexico.

by John C. Abbott, June 2005. 424 pp., 384 color photos, 32 illustrations, 6 tables, 263 maps, 7.38 × 9.25 (18.7 × 23.5 cm). ISBN 0-691-11363-7 (cloth, \$79.50), 0-691-11364-5 (paper, \$35.00). Princeton University Press, [www.nathist.princeton.edu](http://www.nathist.princeton.edu)

This is the first guide to the Odonates of the south-central US (and north-eastern Mexico). The book covers 263 species, representing more than half of the North American fauna. Overlap between the area of coverage with adjacent regions makes this book a useful aid in identifying—via keys, photos, line

drawings and detailed descriptions—the dragonflies and damselflies of virtually anywhere in the US, Canada and north-eastern Mexico.





# Should Book Reviews/Notices Appear in the Society's Journal or in the News?

John H. Masters

26503 Hillswall Court, Newhall, CA 9131, [Quest4tl@aol.com](mailto:Quest4tl@aol.com)

We are currently publishing book reviews and notices in both the **Journal** and in the **News**, but there are compelling reasons beyond just consistency that they should be restricted to the **News**.

The Society Constitution (Article VIII, Section 1) provides that "The **Journal** shall be devoted to original papers and other matters of permanent record." Are book reviews matters of permanent record? I really don't think so. The primary purpose of such a publication is to alert members that the book has been published and how it may be obtained. The reviewer typically comments on how he personally receives the book and his opinion on who might benefit from it. This is not material for permanent record and it in fact becomes of little use at all after the book is no longer in print and unavailable to the public. I have never seen a reference to a book review cited in any technical article, although references to books themselves are often cited.

In an e-mail to me, dated 3 May, **Journal** editor, Mike Toliver wrote, "I can see that a really good review belongs in the permanent record—all of us can think of reviews in our field that actually contributed to the advancement of scientific knowledge." My take on this is entirely different, if a published book review does go beyond reviewing the material presented in the book and does contribute *new* material toward the advancement of science, then it is clearly more than a book review and should be treated as such. Papers that aspire to contribute new material toward the advancement of science are treated entirely different when published in the **Journal**. They are given peer review and if they

contradict viewpoints previously presented by another author (such as the book's author) that author should have opportunity to respond. In addition original articles published in the **Journal** have been subjected to page charges, although book reviews are not. Could publication of an author's viewpoint under guise of a book review, be a way to circumvent page charges?

Page charges are another issue. Currently articles published in the **News** and in the **Journal** go to the same readers. The cost of publication in the **Journal** is, however, considerably more expensive, although this cost is somewhat offset by authors page charges. It has been the past policy for the **Journal**, however, not to assess page charges to authors of book reviews. This is fine, book reviews should be a service to the reader, not the author, and exempt from page charges. But a much simpler solution would be to restrict their publication to the **News** in the first place.

Book reviews normally result when a book publisher sends out a complimentary copy of a newly published book to a potential reviewer (or editor) and asks them to review it. The reviewer receives a free copy of the book in exchange for writing the review and when the review is published the publisher receives publicity for the book that he hopes will stimulate sales. The value of the books may range from several dollars to several hundred dollars. For the most part this is a win-win-win situation. The publisher receives publicity, the reviewer receives a complimentary book and the readers learn about a newly published book and have the benefit of the reviewers'

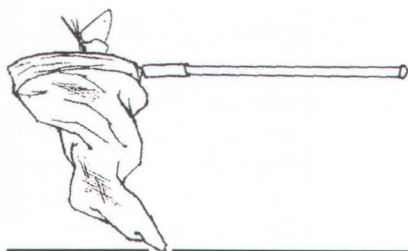
comments on it. The reviewer is under no obligation to write a favorable review, but he knows full well that publishers tend to send complimentary new books to reviewers that have written favorable reviews in the past.

For publication in the **News**, there are two potential paths. The publisher can send out a book for review in the conventional manner or place a paid advertisement. This second alternative can be quite beneficial to the publisher and to the Society. Advertising costs in the **News** are quite inexpensive and if a book "review" is published in this manner the publisher has full control over what is written. The Society benefits because it gets paid for publishing the review instead of strictly paying for the cost of publication. The reader may be at a slight disadvantage, as he does not benefit from the reviewers comments and opinions.

There is a definite cost advantage to publication in the **News**. Based on information that I have obtained from the Society treasurer, Kelly Richers, for the year 2003, I have calculated the publishing charges for pages in both the **Journal** and the **News**. The Society was billed \$37,511.20 for publishing 308 pages in volume 57 (2003) in the **Journal**, and 13,330.98 for publishing 136 pages (not including the Season's Summary), in volume 45 (2003) in the **News**. This amounts to \$128.79 per page for the **Journal** and \$98.02 per page for the **News**. A savings of \$30.27 for pages published in the **News** as opposed to being published in the **Journal**. Since the costs of color pages, as opposed to black and white, were not separated out, it is expected that this difference of \$30.27 would be even greater for strictly text public-

*continued on pp. 52*





# Mailbag...

Dear Editor,

I thought that it would be worthwhile to insert the following information in a future issue of the News:

Those who are concerned with finding relatively stable color names for the leps they describe may be glad to learn that Elibron Classics has made Robert Ridgway's Color Standards and Color Nomenclature (Washington, DC, 1912, printed by the author) available in a downloadable format for \$9.95. A CD version is also available for a nominal surcharge. The copy digitized is, like all Elibron titles, taken from the holdings of the Moscow State Library, and problems of fading and reproduction which I cannot properly assess from the color photocopies I have at hand undoubtedly persist, but having this document in an inexpensive and flexible form will be a definite boon to anyone with ready access to an original copy in good condition. The publisher is on the web at [www.elebron.com](http://www.elebron.com).

Michael A. (Tony) Roberts,

367 Village Road, Steuben, ME  
04680, [maroberts@acadica.net](mailto:maroberts@acadica.net)



Dear Editor,

Having read, in the Spring Issue of the News, your editorial describing your dissatisfaction with the current status of the Association for Tropical Lepidoptera (ATL), I thought I would offer some comments since I, too, am a Charter (and Life) member of ATL (and a longtime member of this Society as well).

All members of ATL are aware of the extraordinary delays in publication of both of the association's journals,

*Tropical Lepidoptera* (TL) and *Holarctic Lepidoptera* (HL) over the past several years. From my understanding, these delays are a result of a seemingly impossible number of responsibilities thrust upon the organization's Executive Director and Editor, John B. Heppner within the last few years. ATL has a small membership (only about 3/4 that of this Society); an impressive international Board of Directors and Advisory Council, which by and large does not take part in the labor intensive and not-so-glamorous duties—secretary, treasurer, webmaster, mail “donkey,” stamp licker, box packer, journal stuffer, label sticker, copy assistant, librarian, photo editor, typist, etc., etc.—required to keep an organization functioning; an Associate Editor, Thomas C. Emmel, who for the past several years has had precious little time to assist the Editor with anything other than proofing manuscripts; a relatively high printing cost for the society's full-color flagship journals; continually escalating costs for mailings; and a large number of members who are in arrears of their dues.

In 2002, Dr. Emmel was honored to oversee the establishment of the McGuire Center for Lepidoptera and Biodiversity, affiliated with the Florida State Museum of Natural History. The facility, now fully functional, is both a state-of-the-art research facility as well as a high-profile tourist attraction. Unfortunately, this commitment by Dr. Emmel necessitated a virtual “24/7” schedule. There are also other mitigating circumstances. For example, ATL periodically publishes *Lepidoptera News* and special supplements besides its two journals, conducts an annual meeting, and organizes periodic collecting trips to exotic lepidoptera-rich

ports at impressively low rates. In summary, in order to hold the organization together, the Executive Director and Editor has had to become a sort of jack-of-all trades—all the while maintaining a full-time curatorial position with the Florida State Collection of Arthropods and who, as of this writing, is supervising the move of 1.6 million lepidoptera from FSCA to the new McGuire Center.

To me, such a multitude of responsibilities is mind-boggling. While one may ask why any one person would continue with such a burden, the answer is clear to anyone who has been in a time-consuming, non-salaried position: Trying to inspire and recruit volunteers for assistance is not only frustrating but most often unsuccessful. So, ATL has indeed not lived up to the expectations of many of its members with its schedule of publishing its journals. Meanwhile, Dr. Heppner has bravely continued his post while continuing to implore members to remain faithful with their dues so that in the near future ATL will accrue sufficient funds to print in its customary elegant style. In truth, Dr. Heppner deserves our kudos.

That said, let me now cite what I consider exceptional virtues of ATL and why I remain dedicated. With the appearance of the first issue of TL in May 1990, lepidopterists were offered a journal that while scientific, had the glitz and show-stopping quality of a popular magazine, *Natural History*. For the first time, we researchers, writers, and photographers had a periodical that gave our subjects, which I often refer to as “paragons of the insect world,” their full due—and at reasonable page costs. Additionally, the journals'



aesthetic appeal had the potential to spark young, budding minds—and God knows we need to be evangelizing to inspire future generations of US! Shortly thereafter, *HL* was launched. Because the decision was an in-house one suggested by several board members—incidentally, a typical procedure for many professional organizations—the general membership was not consulted. With the premiere of *HL*, those researchers and amateurs who reveled in more temperate fauna now had access to a magazine-type format that limelighted their passions. Personally, since much of my work lends itself to lengthy texts supported by generous, full-color illustrations, I was ecstatic! It was obvious to me that this Society and ATL were not going to be competitors but, to the contrary, great allies. But alas, by the turn of the millennium, ATL began to suffer as described above.

But things are turning around—really! During this coming summer, several issues of *TL* and *HL* will be mailed. I know this because two volumes of *HL* are devoted to major manuscripts by yours truly. Each is 30 pages and each contains several dozens of photographs—including 4 covers, frontispiece, and centerfold—many full-page bleeds, and all in full, glossy color. As of mid-May, galleys have been corrected and page proofs are almost finalized. By and large, no other organization—regardless of how large—would have provided me with the creative latitude and financial feasibility as has ATL. So, although I personally have had to endure the long road to seeing my pieces realized, the soon-to-be products will be personally gratifying. Furthermore, I think members of ATL will enjoy these issues and appreciate what their dues have helped produce. And more good news: Dr. Heppner is currently involved with editing (1) a major manuscript on the butterflies of northern Pakistan researched by David L. Smith. This beautifully illustrated piece featuring butterflies from a poorly known and dangerous area of the world that very

few of us will have the opportunity to visit could be mailed before year's end. This publication promises to be another "prize" from ATL; and (2), several issues of *TL* are due back from the printer within the next few weeks.

So, in closing, let me say that although ATL has had its problems, I plead with members of this Society who are also members of ATL: Please remain patient for just a bit longer, and please take care of your back dues (and remember, dues in a professional society are not reserved solely for publishing periodicals). Also, for those readers who are not members of ATL, I solicit your new subscription. Make no mistake, the benefits of ATL are unequaled, and hence, well worth the cost (\$95/year). One additional note: Now that the McGuire Center is operating, the potential exists for ATL to secure new volunteer assistants from faculty, associates, and students. I know that once I relocate to Gainesville, I will be "hands-on."

Gary Noel Ross

6095 Stratford Ave., Baton Rouge, LA 70808, **GNR-butterfly-evangelist@juno.com**

*(The point remains, Gary, that ATL once again changed the rules, this time their subscription/membership rules (which affects members pocketbooks directly), without consulting the players, and will, I'm sure, suffer the consequences of that action. Good luck, and more power to you if you can influence the publication schedule—like many, I'm waiting for my back issues as well—but I won't hold my breath waiting! Ed.)*



## Reviews...continued from pp. 50

ation. Considerably more color pages were published in the **News** in 2003 than in the **Journal**. Thus, even if all else were considered equal, there would be a cost savings for restricting book reviews to publication in the **News**.

Over the past several years, some really strange things have happened with published book review in the **Journal**. Some have gone way beyond the essential purpose of a book review and have been used by the review writer to espouse opinions on topics not even covered in the books. Any author certainly has a right to express his opinions, but there are many other ways such as a letter to the editor in the **News**. If such a thing is to be done in the **Journal**, it should not be under the guise of a book review but should be submitted as an independent article and subject to the same peer review and page charges as other independent articles.

One review in particular, of a photographic guide to European butterflies, is completely bizarre. The reviewer states that he is not fully current on taxonomic matters relating to European butterflies and then he goes on with a discussion including 24 literature references about taxonomy. The book is undoubtedly devoted to photography and scientific names appended, along with common names, strictly for convenience. Yet, the reviewer only briefly mentions the photographic aspects then devotes 3/4 of the review, including the mentioned references, to the taxonomic discussion. He then concludes by stating "These comments are minor and perhaps need not apply to a field guide."

Another issue that has cropped up in the **Journal** in recent years is notice of a "book review editor" on the inside back cover. The Society Constitution (Article IX, Section 2) provides for the appointment of **Journal** and **News** editors and also provides that the editor of the **Journal** shall appoint associate editors. However there is no provision in the Constitution or in the By-Laws



for a "book review editor." It is not clear, to me, how this position came into existence. But notice of the position, as published on the inside back cover of the *Journal*, certainly invites book publishers to send their books to him for review. A better solution might be notify publishers to send their new books to the editor of the *News* for review and that editor make a judgment as to who he thinks might be qualified to review the book for the *News* and send it on to him or, if he feels qualified and has the time, to review it himself.

(Ed. Notes: First, the suggestion—if that's what it is—that book reviews are intentional attempts to avoid page charges is ludicrous and wholly without merit. Second, the further suggestion that reviewers "bias" their reviews in order to obtain further "free books" is, speaking as a frequent book reviewer, abhorrent and also unwarranted. Third, the "cost of color" in the *News* is not inseparable from the cost of the *News* (it amounted to approximately \$2700 in 2003 (and is steadily declining—color will cost less than \$2400 in the current Volume), or an additional \$19.85 per color page (32 of 136 pp.) for 2003) but should not be a consideration (in my opinion) when assessing the financial implications of the motion being made. Suffice it to say that it has been cheaper, regardless of color, to print a page of the *News* than the *Journal*, though this difference may soon be less than that based on 2003. Finally, the "book review editor" IS an associate editor designated by the *Journal* and *News* editors to relieve them of the additional load inherent in receiving, assigning and dealing with books submitted for review. As such, it does not require any constitutional or bylaw provisions other than the aforementioned Article IX, Section 2. Q.E.D. Editor Phil)



# Metamorphosis...

The Society has learned of the deaths of the following member. Our condolences to their family...

## Taggart, Lawrence P.,

of Westbrook, Maine, on 27 February 2005. Mr. Taggart had been a member of the Society from 1967 to 1997, and

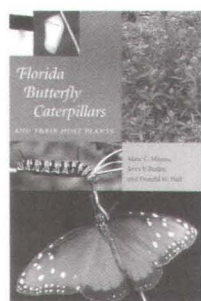
from 2004 until his death. His wife, Louisa, thanks the Society "...for bringing many hours of enjoyment to him."

## New Book...

### Florida Butterfly Caterpillars and their Host Plants

by Marc C. Minno, Jerry F. Butler and Donald W. Hall, April 2005. 352 pp., 475 color photos, 10 illustrations, 6 × 9 (15 × 23 cm). ISBN 0-8130-2789-6 (paper, \$35.00). University Press of Florida, 1-800-226-3822, [www.upf.com](http://www.upf.com)

This is the first illustrated guide to the life histories of the caterpillars found in the southeastern US, and the most complete guide to the plants that they eat. Because of Florida's mild climate and plant diversity, caterpillars of many species—including temperate species from eastern North America, tropical species from the Caribbean, and 11 species of exotics that are now established—thrive in abundance.



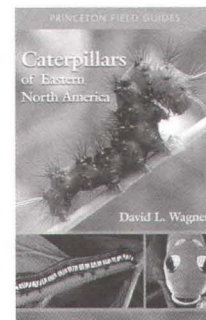
The book expands on the concept of butterfly gardening that took root in the late 1970's and offers hundreds of color photos and concise information in a format that can be easily carried into the field. It promises to be an unprecedented tool for butterfly gardeners, teachers, naturalists, students and scientists in the southern United States.

## New Book...

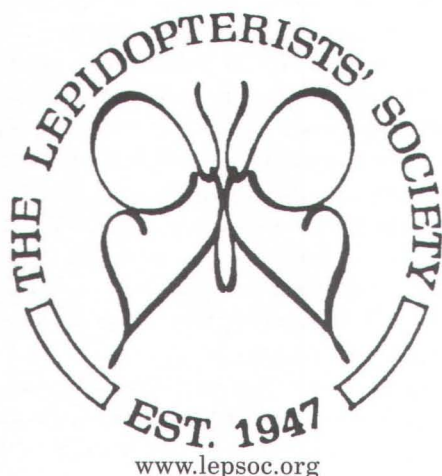
### Caterpillars of Eastern North America A Guide to Identification and Natural History

by David L. Wagner, August 2005. 512 pp., 1,200+ color photos, 24 line illus., 5 × 8 (13 × 20 cm). ISBN 0-691-12143-5 (cloth, \$60.00), 0-691-12144-3 (paper, \$30.00). Princeton University Press, 1-800-777-4726, [www.nathist.princeton.edu](http://www.nathist.princeton.edu)

This illustrated guide covers the caterpillars of nearly 700 butterflies and moths east of the Mississippi with more than 1,200 color photographs. Full-page species accounts cover almost 400 species, with up to six images per species including an image of the adult plus information on distribution, seasonal activity, foodplants, and life history. The accounts are complemented with additional images of earlier instars, closely related species, noteworthy behaviors, and intriguing aspects of caterpillar biology.



Many caterpillars are illustrated here for the first time and dozens of new food-plant records are presented and erroneous records are corrected.



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



*A Biographical Sketch...*

# Future News Editor, Dale Clark

*Dale Clark*1732 South Hampton Road, Glenn Heights, TX 75154, [nardoz@earthlink.net](mailto:nardoz@earthlink.net)

Butterflies have always been a big part of my life. One of my earliest memories, from the age of 4 or 5, is sitting in my parent's backyard holding a butterfly net while staring intently at a Pearl Crescent (*Phyciodes tharos*) as it flew about some daisies. I don't remember asking my parents for the net but that must have been the case as none of my siblings had an interest in the wonders of the natural world. With that net in hand—a powerful tool—an otherwise shy child became a bold adventurer.

My interest in Lepidoptera grew right along with me but the idea of making a living with this “hobby” never occurred to me. Instead of pursuing a career in entomology, I eventually obtained a degree in English literature from North

Texas State University in 1984. Having worked various jobs in banking, social work, and administration, I still never quite knew what I wanted “to be” when I grew up—until I saw my first live butterfly exhibit. They had to get those pupae from somewhere! The idea of turning my passion for butterflies into a living was born and so was Butterflies Unlimited, my butterfly ranching company. That was ten years ago and I now supply live exhibits (no releases) all over the country with over 50 different species of Lepidoptera from Texas. While the days are long it really doesn't seem like work since I get to play with caterpillars and butterflies for 15 hours or more a day. I can't imagine doing anything else for a living.

At the same time that I went into business for myself I co-founded the Dallas County Lepidopterists' Society, thinking that in a city the size of Dallas I certainly couldn't be the only one with an interest in leps. I was definitely not alone. We started out small but our group, a diverse mixture of collectors, watchers, photographers, casual observers and serious researchers, has grown tremendously over the years and we currently have over 200 members.

Butterflies have always been a big part of my life, and I don't see that ever changing. I'm extremely excited about assuming the editorship of the News and look forward to serving the Society in the coming years.

*A Blast from the Past...*

# Lepidoptera Biology: Open for Study

*Charles L. Remington*

reprinted from Vol. 2(4): 37, April 1948, of *The Lepidopterists' News*,  
the precursor to both the *Journal...* and the *News of the Lepidopterists' Society*

Biology is literally the “science of life.” In the present discussion it will be used in the strictest sense, to mean the study of *living* Lepidoptera, as contrasted to the study of dead collection specimens. A large proportion of our Society members are not professional entomologists, and it is these enthusiastic avocationists whose attention the **News** editors have endeavored continually to direct toward the study of Lepidoptera in the field.

What are the aspects that a lepidopterist can study methodically in whatever region they may live? There are seven primary ones: 1) phenology; 2) habitats; 3) habitat; 4) host plants

in each region; 5) enemies; 6) population composition; and 7) overwintering.

## Phenology

The season-to-season trend in Lepidoptera occurrence can be expected to give valuable information for all biologists. Lepidoptera are especially useful as a tool in the study of yearly patterns because they are so well known taxonomically and their appeal to non-professionals has resulted in a large number of widely distributed active field workers. The only region well known phonologically is Great Britain and, to a much lesser degree, western Europe.

The annual Season Summary of the Lep. Soc. is an effort to gather such information for North America, and we hope to expend it to include other parts of the world as organized cooperation develops. Each collector can keep their own records and will find it interesting to compare them year by year. Several Lep. Soc. Members keep field notebooks and record the species taken or seen, their abundance, and their condition after each collecting trip. Some of these Lepidopterists try to get out at least once each week throughout the collecting season, in order to have a continuous record. Unfortunately, most collectors

*continued on pp. 60*



# Membership Update...

Julian Donahue

This update includes all changes received by 25 May 2005.

## "Lost" Members

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

**Mery, Benoit** (Honfleur, France)

**Hosaka, Mitsuru** (Tokyo, Japan):  
**Life Member now lost for one year.**  
**Can anyone provide information?**

## Minor changes/corrections to 2004 Membership Directory:

**Berezhnoi, Yuri**: correct address is 24-4 Fokin Street, Vladivostok 690 091, Russia; new e-mail: butterflies@mail.ru  
**de Mordaigle, Rodolphe C.**: change box # to "4490," and ZIP+4 to "93539-4490."

**Elia, Gail**: now Gail Manning

**Heffernan, Emily**: now Emily Saarinen

**Manning, Gail**: new name for Gail Elia  
**Misquitta, Lisa Vice**: new name for Lisa Vice

**Saarinen, Emily**: new name for Emily Heffernan

**Vice, Lisa**: new name is Lisa Vice Misquitta

## New and Reinstated Members:

*members who have joined/renewed/been found/or rescinded their request to be omitted since publication of the 2004 Membership Directory (not included in the 2004 Membership Directory; all in U.S.A. unless noted otherwise)*

**Boyd, Crystal** (Ms.): 1310 Castle Court, Golden Valley, MN 55427-3810.

**Butler, Carol A.** (Ph.D.): 60 West 13<sup>th</sup> Street, New York, NY 10011-7959.

**Evans, Vernon**: Utah Lepidopterist Society, 1278 West 125 South, Lehi, UT 84043-3768.

**Fredritz, Kim**: P.O. Box 130, Rocky Ridge, OH 43458-0130.

**Garrigan, Dana** (Dr.): Department of Biology, Pacific Lutheran University, 12180 Park Avenue South, Tacoma, WA 98447-0014.

**Heckscher, Christopher M.** (Ms.): Delaware Natural Heritage Program, 4876 Hay Point Landing Road, Smyrna, DE 19977-3345.

**Holden, Dave**: [address omitted by request]

**Kamigaki, Kenji** (Mr.): Hiroyokoro 4-4-32, Kure-shi, Hiroshima 737-0113 **Japan.**

**Horton, Tom**: 11556 West Mountain Lion Court, Surprise, AZ 85374-2574.

**Patterson, Shawn** (Mrs.): 400 Sabine Street, Mission, TX 78572-7435.

**Raguso, Robert A.**: Dept. of Biological Sciences, USC, Coker Life Sciences Building, 700 Sumter Street, Columbia, SC 29208-0001.

**Reasor, Jona**: Tishomingo National Wildlife Refuge, 12000 South Refuge Road, Tishomingo, OK 73460-3507.

**Redhead, Todd**: 4 Lydon Avenue, Toronto, Ontario M6N 4J4, **Canada.**

**Robinson, Pete**: 5341 Bear Creek Road, Garden Valley, CA 95633-9462.

**Saarinen** (was Heffernan), **Emily**: 1515 NE 6<sup>th</sup> Terrace, Gainesville, FL 32601-3754.

**Sano, Hiroshi** (Ph.D.): Nara Institute of Science & Technology, Ikoma 8916-5, Takayama, Nara 630-0101, **Japan.**

**Satterfield, Burr**: 32 Lost Spring Road, HC 68 Box 7, Mimbres, NM 88049-9301.

**Schick, Katherine N.** (Dr.): 5108 North Argonaut Street, Stockton, CA 95203-2112.

**Seidler, Rosemary** (Dr.): 740 Prospect Street, Shreveport, LA 71104-3126.

**Siby, Robert**: [address omitted by request]

**Stillwaugh, Don, Jr.**: 604

Summerhill Court, Apt. D, Safety Harbor, FL 34695-4387.

**Thomas, Anthony W.** (Ph.D.): 595 Douglas Avenue, Fredericton, New Brunswick E3A 5T1, **Canada.**

**Tsakiridis, Angelica Anatolie** (Ms.): [address omitted by request]

**Younk, David E.**: 5209 Kinzie Avenue, Racine, WI 53406-4170.

**Wible, Judith L.** (MD): 8702 Rippling Water Drive, Sugar Land, TX 77479-6975.

## Address Changes

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

**Bettman, David J.**: P.O. Box 17727, Boulder, CO 80308-0727.

**Conlan, Christopher**: 27702 Quiet Hollow Lane, Escondido, CA 92026-7401; conlan1@adnc.com.

**Eichlin, Thomas D.** (Dr.): 1367 East Washington Avenue, Gilbert, AZ 85234-1065.

**Faiella, Vincent**: 15 Red Maple Road, Ridge, NY 11961-2638.

**Hartgroves, William D.**: 1221 Avon Bend Road, Charles Town, WV 25414-4559.

**Hedges, Frank R.**: 402 East Highway 121, Trlr 549, Lewisville, TX 75057-4764.

**Kaufman, Kenn**: P.O. Box 130, Rocky Ridge, OH 43458-0130.

**Laccone, Frank**: 550 South Gum Street, Kingsland, GA 31548-4210.

**Lapsley, Kevin S.**: 218 Foxcroft Road, Broomall, PA 19008-2039.

**Morewood, Wm. Dean** (Ph.D.): [correction to new address reported in last issue] P.O. Box 39005, RPO Billings, 2265 Riverside Drive, Ottawa, Ontario K1H 1A1, **Canada.**

**Nagaoka, Hisato**: Shimorenjaku 2-9-21, Mitaka City, Tokyo Pref., **Japan.**

**Naumann, Stefan** (Dr.): Hochkirchstrasse 11, D-10829 Berlin, **Germany.**

**Shaffer, Jay C.** (Dr.): 5223 Summit Drive, Fairfax, VA 22030-6527.

**Sitter, Mark P.**: 978 South Riparian Avenue, Tucson, AZ 85748-7058.

**Steiner, John**: 1713 Nason Street, Alameda, CA 94501-2219.

**Wachowiak, Kevin**: S3132 County Road M, Fountain City, WI 54629-7400.



# The Marketplace

**IMPORTANT NOTICE TO ADVERTISERS:** If the number following your advertisement is "464" then you must renew your advertisement before the next issue! Remember that all revisions are required in writing.

## Books/Videos

For Sale: Field Guide of Cuban-West Indies Butterflies by L. R. Hernández, 2004. 389 pages. + 31 color plates. Line drawings, maps, checklist. Softcover. \$59. Butterflies of Iran by V. Nazari. 2003. 564 pages incl. 74 color plates. Maps. Text figs. Text in Farsi. Scientific names for all species. Hardback. \$145. Butterflies of West Africa by T. B. Larsen. Publication Oct. 2005. Approx. 900 pages incl. 130 color plates depicting 3905 specimens of nearly 1500 species. 2 hardback volumes. \$225. Color brochure available. Prices are excl. postage. Peder Skou, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark, [apollobooks@vip.cybercity.dk](mailto:apollobooks@vip.cybercity.dk) 472

For Sale: *Bulletin of the American Museum of Natural History*; Vols. 93 through 199, Lepidoptera topics only, in new buckram (5 vols.), 1949-1990. 24 papers, approx 9" shelf space, authors

Rindge, McDunnough, Brown and others; postpaid USA \$ 135.00. Russell Rahn, 972-255-9078, [Russell.Rahn@Verizon.net](mailto:Russell.Rahn@Verizon.net) 472

For Sale: An Index to the Described Life Histories, Early Stages and Hosts of the Macrolepidoptera of the Continental United States and Canada by H. M. Tietz. Vols 1 & 2. New. \$15 + \$4 s&h in USA). Contact: Dr. J. Y. Miller, P. O. Box 142650, Gainesville, FL 32614, [jmiller@flmnh.ufl.edu](mailto:jmiller@flmnh.ufl.edu). Payment should be made to: University of Florida Foundation, Inc. 471

## Livestock

Eggs/Cocoons of northeastern North American Saturniidae, available at various times. *Actias luna*, *Automeris io*, *Antheraea polyphemus*, *Callosamia angulifera*, *Callosamia promethea*, *Citheronia regalis*, *Hyalophora cecropia*, *Hyalophora columbia*, *Samia Cynthia* and various butterflies and Sphing-

idae. Bill Oehlke, Box 476, Mointague, PEI, C0A 1R0, Canada, (902) 835-3455, [oehlke@islandtelecom.com](mailto:oehlke@islandtelecom.com) 471

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) 464

For Sale or Exchange. Many species from Iran. *Parnassius*, *Allanacstria louristana*, *A. deyollei*, *Hypermnestria helios*, *Archon apollinaris*, *Anthocharis*, *Euchloe*, *Zegris*, *Colotis*, *Colas*, *Melitaea cast*, *M. consulis*, *M. arduina*, *Coenonympha*, *Hypolephele*, *Erebia*, *Melanagia*, *Satyrus*, *Agrodiaetus* and others. Want S. Amer. and Afr. sp. Ahmad Karbalaye, P. O. Box 11495-175, Tehran, Iran, Tel&Fax: 0098-21-7635025, [karbalaye@yahoo.com](mailto:karbalaye@yahoo.com) 464

For Sale (US Only). Cocoons and ova of *Hyalophora cecropia*. Send SASE to: Alan M. Vosefski, 3320 Old Kirkwood

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.



French insect's dealer for 40 years look for  
Material from North America  
Buy or exchange  
Don't hesitate to contact me

Richard SOUCIOU  
B.P. 11  
79500 MELLE - FRANCE  
tél/fax : 549.27.16.08  
email : [souciou@club-internet.fr](mailto:souciou@club-internet.fr)

Dr., Virginia Beach, VA 23452, (757)  
498-3168, [alanv@peoplepc.com](mailto:alanv@peoplepc.com) 464

For Sale. Live pupae of *Coloradia pandora lindseyi* B. & Benj. (a one-time offering) and *Hemileuca eglanterina* Bdv. (coastal ssp.), both for 2005 emergence. Frank Sala, 3493 Greenfield Place, Carmel, CA 93923, (831) 624-5677, [fps@redshift.com](mailto:fps@redshift.com) 464

### Specimens

Collection for Sale. About 146,000 butterflies, mostly North American, (about 38,000 mounted, 108,000 papered, including 1000+ paratypes), plus 2864 alcohol vials of immatures, 9000 slides, 414 drawers, 77 cabinets, 2000 pressed plants, etc. Offers wanted. Foreigners welcome. A three-way arrangement would work (rich patron buys collection for wholesale price and donates to museum for tax deduction). James Scott, 60 Estes St., Lakewood, Colorado 80226-1254. 471

Wanted: A-1 papered *Nymphalis antiopa* f. *hygiaea*, *Vanessa cardui* f. *elymi*, *Euphydryas rubicunda* f. *foxi*, and any other semi-melanic "aberrants" of Lepidoptera. Unusual *Papilio* also wanted, esp. "smeary" types, mosaics, etc. Fred Bower, 288 Willow St., Spt. 53, Lockport, NY 14094. 471

Rich variety of Nymphalidae, Papilionidae from Africa available. List on request. Wanted: *Prepona* from South America. Giancarlo Veronese, Viale Venezia 138, 33100 Udine (Italia). [gc.veronese@virgilio.it](mailto:gc.veronese@virgilio.it), FAX: ++39-0432-343654. 471

For Sale or Exchange: Rare Chinese swallowtails such as *Papilio syfanius*, *P. krishna*, *Bhutanitis* sp. List on request. Pan Zhimin, 2-603 Dong Xia Zincun, Quanzhou Fujian, 362000 China, [Coin\\_flyin@sina.com](mailto:Coin_flyin@sina.com). 471

## THE PRINCETON GUIDES

### BUTTERFLIES OF THE EAST COAST

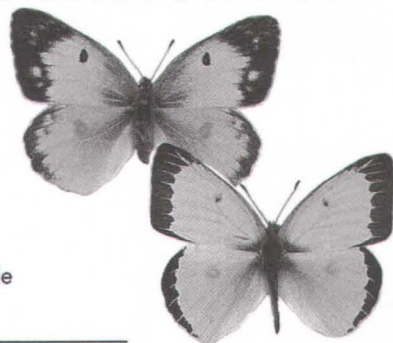
An Observer's Guide

**Rick Cech**

With Guy Tudor

Here is an accessible, informative, and highly illustrated book that offers a fresh view of butterflies in the East Coast states, from the Atlantic seaboard to the Appalachians.

336 pages. 950 color photos. 275 maps. 8 x 11  
Cloth \$49.50 ISBN 0-691-09055-6 Due July



### CATERPILLARS OF EASTERN NORTH AMERICA

A Guide to Identification  
and Natural History

**David L. Wagner**

This lavishly illustrated guide will enable readers to identify the caterpillars of nearly 700 butterflies and moths found east of the Mississippi.

Princeton Field Guides  
512 pages. 1,200+ color photos. 24 line illus. 5 x 8.  
Paper \$29.95 ISBN 0-691-12144-3  
Cloth \$60.00 ISBN 0-691-12143-5  
Due August

Celebrating 100  
Years of Excellence

**PRINCETON**  
University Press

800-777-4726  
Read excerpts online  
[www.pup.princeton.edu](http://www.pup.princeton.edu)

### Equipment

Lepidoptera books and supplies (nets, spreading boards, envelopes, Cal Academy unit trays, pins, etc.). Send SASE to Dr. Eugene J. Gerberg, 5819 NW 57th Way, Gainesville, FL 23653 or email request for list to [genejg2@aol.com](mailto:genejg2@aol.com) 472

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; [Leptrops@aol.com](mailto:Leptrops@aol.com) 471

Bait Traps, 15" Diameter, 36" tall collapsible traps with cloth top and plastic coated nylon screen and sup-

ported 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; [Leptrops@aol.com](mailto:Leptrops@aol.com) 471

### Help Offered

Wish to collect legally in Costa Rica? I can help you obtain your Official Collecting Permit for the time of your stay. You would be allowed to collect anywhere (except National Parks). In Costa Rica you may collect species, in addition to residents, coming from the north (Mexico) and the south (South America). Moth collectors: we can rent you a portable generator. Eduardo Chumptasi P.O.Box 1106-2150 Moravia, San Jose, Costa Rica or phone (506) 268-2768, [echumpi@racsa.co.cr](mailto:echumpi@racsa.co.cr) 471

*continued on pp. 59*





## From the Editor's Desk

Phil Schappert

### The Birth of Butterflying

A recent article with the above title, published in the March/April 2005 issue of **Birding**, has been the subject of much discussion of late. The author, Dr. Jeffrey Glassberg, relates the story of the "birth of butterflying," beginning with the advent of close-focusing binoculars and the New York City Butterfly Club in the mid-80's but blossoming with the publication of his first *"Butterflies through Binoculars"* books, and continuing with the formation of NABA, the publication of **American Butterflies** and his subsequent *"...Binoculars"* books, all seemingly his own doing.

Certainly, you might think, Dr. Glassberg is a supreme egotist to believe that he alone is responsible for the genesis of "non-consumptive" butterfly watching, but let's face facts—he *is*! And while I might agree that his ego is overly large, so is mine (and yours, too, if you're honest with yourself), and I do believe in giving credit where credit is due. I will gladly take credit if it's due me, and will give myself credit for what I do, as Dr. Glassberg does in his article. The truth is that butterfly watching (I have real problems with the term "butterflying" which still, to me, evokes images of food fights) is largely his invention and he rightly, along with a few others whom he does mention, takes credit for its development.

While most of the discussion and rancor has been directed at the ego and evident non-collecting bias of Dr. Glassberg and his casual and irreverent dismissal of those who have come before him (e.g. Klots, Pyle, etc.), the (to me) more obvious conundrum that the article poses has been completely ignored: Glassberg speaks of butterfly watching

*and only of butterfly watching!* My sense is that this should—in no way, shape or form—be equated with lepidopterology, amateur or otherwise. Most significantly, the birth of butterflying does not even come close to meaning the death of amateur lepidoptery!

People who do something "for the love of..." are true "amateurs" but does this describe butterfly watchers? Let's face it, the amateur lepidopterists that I know are consumed with their love of butterflies and moths while the vast majority of butterfly watchers I've met are simply casual observers, weekend warriors of the "lister" variety with more interest in the love of the "hunt" than the quarry they seek (though I must admit, to my chagrin, that this also describes some collectors who are also not, in my view, amateurs at all but simply "living stamp" collectors who should know better by now).

Should we be worried that Dr. Glassberg claims all credit due for the "birth of butterflying?" No, I don't think so. In fact, I wish more power to him because at least some of those who he turns on to butterfly watching WILL become "true" amateur lepidopterists. The spate of recent records from Texas alone shows that at least some butterfly watchers ARE amateur lepidopterists.

Should we be worried that his "anti-collecting" stance will somehow translate into laws against collecting? Again, no, I don't think so because Dr. Glassberg himself admits to knowing better—there is still need for *valid* scientific collecting. Where he will, I'm sure, agree with me is that, at this point in time, "recreational collecting" serves no useful purpose and that such collectors should rightly be ashamed of themselves.

This does not mean, however, that carrying a net is bad. I'm a proponent of the "catch and release" method of intriguing the minds of people, young and old, so that they can "get up close and personal" with butterflies (or moths). Binoculars, no matter how close they focus, still do not do better than an arms length view and it's just not the same as holding a butterfly (or moth) in the hand!

Still, I'm disappointed that Dr. Glassberg pays such disrespect to the many professionals who have done so much to foster the viewpoint that he himself espouses. Charles Remington (see pp. 54 of this issue, for example), Alexander Klots, Dave Winter and Bob Pyle (amongst many others) have done more for the science and perpetuation of lepidopterology by both amateurs and professionals than he cares to acknowledge. Where, I wonder, would Dr. Glassberg, like Roger Peterson before him, be without the legions of collectors that have provided the museum collections that confirm his field marks method of species identification, and the distributional and baseline population data for which much of the future study of butterflies and moths will depend?

The butterfly and moth world is, I suspect, better served by both NABA and this Society than with either one or neither. As the ABA and Audubon Society have amply demonstrated, there is no need for such disagreement within the study of such glorious flying creatures. Why can't we all just get along? The upcoming Annual Meeting, being held jointly with the Southeastern AZ Chapter of NABA, will be a damn fine place to start!

How many of you will I see there?

Phil



**Market...continued from pp. 57****Research Notices**

I am looking for papered specimens with complete collection data for the following species of *Precis* and *Junonia* for an undergraduate project studying the species relationships and color pattern evolution in these genera: *ceryne*, *cuama*, *antelope*, *pelarga*, *rauana*, *tugela*, *milonia*, *coelestina*, *archesia*, *limnoria*, *genoveva*, *evarete* (from localities other than Florida), *nigrosuffusa*, *hadrope*, *artaxia*, *sophia*, *chorimene*, *adulatrix*, *intermedia*, *touhilimasa*, *vestina*, *ansorgei*, *cymodoce* and *goudoti*. Specimens need not be A1 perfect, and we do have some funds available to pay for specimens and shipping. Please contact: Jeffrey Marcus, Department of Biology, Western Kentucky University, Bowling Green KY 42101, USA. (270) 745-2043, [jeffrey.marcus@wku.edu](mailto:jeffrey.marcus@wku.edu) 472

I have been authorized to write the section of the *Lepidopterous Catalogus*, on the Papilionidae. The most comprehensive, analytical, authoritative, detailed text and plates of the birdwings to date is a book by: Onya, Takashi; 1983. *Birdwing Butterflies*. It is **most** important that I find an English translation, either partial or complete. Am willing to pay for single pages or \$200 for a complete copy. Kent H. Wilson, P.O. Box 1097; Edmond OK, USA 73083-1097; 405-341-6696. 471

**Announcement...****Basic Techniques for Observing and Studying Moths & Butterflies**

by William D. Winter.

Lep. Soc. Memoir #5 is a 350-page book (with 82 pages of Appendices) packed with information for study of Lepidoptera. Both beginners and experienced students of Lepidoptera will find this book to be a valuable reference.

To get your copy, send check or Money Order for \$29.00 (Members), \$44.00 (Non-members), postpaid (Canada and Mexico add \$6.00; other countries add \$10.00), made payable to "The Lepidopterists' Society," to:

Ken Bliss, Publications Mgr.  
28 DuPont Ave. Piscataway, NJ 08854

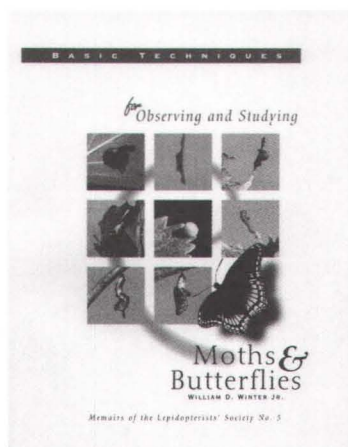
**Get in the Swing of Things with a Society T-Shirt!**

High Quality, 100% cotton, generous length, pre-shrunk, proudly displaying a 7-inch (18cm) diameter Society logo on the front. Have you noticed that the butterfly design of the logo is a pair of mirror-imaged stylized initials ("LS") of our Society?

Available in four adult sizes (small, medium, large and extra large) in either *Papilio glaucus* yellow (with black logo) or *Melanchroia chephise* (navy) blue (with white logo) for only \$10 each, plus postage (\$4 for first shirt, \$2 for each additional shirt within the U.S. or to Canada).

Please indicate quantity, color and size desired and send, along with your check drawn on a U.S. Bank, in U.S. funds, to:

Kelly Richers,  
Treasurer, The Lepidopterists' Society  
9417 Carvalho Court,  
Bakersfield, CA 93311-1846  
U.S.A.





**Remington...cont'd from pp. 54**

fail to keep a record of species which are not collected because of commonness. Phenological records need to be correlated with weather data.

**Habits**

Very little is known of the special habits of different species, especially as they differ from related species. Accurate observations are needed on the manner of flight, sociology (which species "chase" others, which are gregarious, etc.), preferences of food of adults (which flowers are chosen, which species are attracted to dampness, to carrion, to dung, to sap flows, etc.), color preferences, the normal resting position (wings open or closed, head upward or downward), location of night resting for diurnal species and of day resting for nocturnal species, aspects of copulation (type of courtship, duration of coitus, time of day or night, etc.), oviposition habits, and larval feeding habits (whether diurnal or nocturnal, what part of plant eaten, defensive actions, gregariousness, etc.).

**Habitat**

The precise location of the ova, the larva (day and night), the pupa and especially the adults. In all species we need to know just where the adults live. For example, *Erebia theano ethela* is restricted to small sphagnum bogs; *E. magdalena* is in the same area, but frequents only the dry rockslides; *E. tyndarus callias*, flying nearby is only on vegetated, less rocky spots; and *E. episodea* is somewhat lower, usually in tall, lush grass. The precise altitudinal distribution is not well known, and in mountainous regions would make a profitable study.

**Host Plants**

Here is one of the most important and, surprisingly, least accurately known aspects of Lepidoptera biology. Many species feed on quite different plants in different regions. *Euphydryas phaeton* eats *Chelone glabra* in New England, but in Missouri the host is *Aureolaria flava*. The Lep. Soc. Expects eventually to publish a list of known host plants of North American butterflies (and of other groups) as information is assembled.

**Enemies**

It is especially important that all parasites obtained in rearing Lepidoptera be saved and complete data, including the name of the host, kept with them. Insect, birds, lizards and other animals which prey on larvae or adults should be noted.

**Population Composition**

The mathematically inclined Lepidopterist can assemble scientifically valuable data on the percentages of various forms in local populations of each species. In *Catocala lacrymosa*, what part of the population are the striking forms? In *Lycaena hypophleas*, how frequent are the aberrations? In *Papilio glaucus*, what percentage of females are black? and so on.

**Over-Wintering**

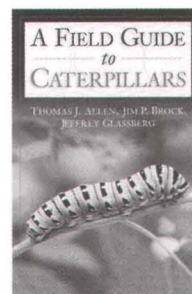
In too few cases we know the life history stage—ovum, larva, pupa, or adult—in which a species passes the winter. But we especially need to know whether *Hemiargus isola*, *Eurema mexicana*, *Agraulis vanillae*, and others survive the winter in any stage in Colorado, Kansas, and Missouri.

**New Book...**

## Caterpillars in the Field and Garden

### A Field Guide to the Butterfly Caterpillars of North America

by Thomas J. Allen, Jim P. Brock and Jeffrey Glassberg, April 2005. 214 pp., 496 color photos, 413 maps, 5.5 × 8.25 (14 × 21 cm). ISBN 0-19-514987-4 (paper, \$30.00). Oxford University Press [www.oup.com](http://www.oup.com)



This book has been a long time coming! The obvious usefulness of a field guide to butterfly caterpillars has been acknowledged for many years but just never happened. Happily, it has finally arrived!

Caterpillars are as varied, fascinating, and often as colorful as the adult butterflies they become. This is the most comprehensive guide to these creatures available. It contains all the information necessary to find and identify the caterpillars of North America—from Two-tailed Swallow-tails, some of the largest butterfly caterpillars at just over two inches when fully grown, to tiny Western Pygmy-Blues. Caterpillar seekers will learn how to distinguish between butterfly caterpillars and moth caterpillars, where and how to find caterpillars, and the visual differences between young and older caterpillars. Each species section describes how to identify the caterpillar, complete with brilliant photos—many published here for the first time. To make for easy field use, each caterpillar's key physical features, abundance, habitat, and major host-plants are listed on the same page as its photo. A special section on butterfly gardening, offering information on how to set up a butterfly garden and raise healthy butterfly caterpillars, and provides a thorough list of the plants butterflies most like to feast on, is included. Highly recommended!





**Helicopter...cont'd from pp. 64**

insects are covered with thousand of tiny scales arranged in highly ordered rows in the same fashion as slate tiles on a roof. When we handle butterflies and moths, the "dust" that comes off is composed of these very small scales. Investigation of the structures, forms and functions of scales began in medieval times. Theodore de Mayerne, physician to Charles 1 (England, 1634) described colors and patterns on the wings of butterflies. The development of the microscope and the subsequent growth of scientific knowledge had a major impact on research of the cuticular appendages of insect when it was shown that the scales created the wonderful colors and patterns observed in butterfly wings.

The wing scales of the *Pyramies* (*Vanessa*) group of butterflies (Figure 2) were among the first to be examined by H. Weber in the early 1930's in Austria. Each scale is a long and flattened extension of cuticle that originates from a single epidermal cell. Close examination of the cross-section of single *Pyramies* (*Vanessa*) *atalanta* (L) butterfly wing scale shows clear evidence of a two-layered structure (2, pp. 65). The scale is comprised of two layers of cuticle and separated by a hollow region filled with air. These layers are held apart by tiny vertical rods of cuticle. The upper layer has grooves and discrete openings. The bottom layer is a thin cuticle film.

Nachtigall (Germany, 1970's) examined butterflies in wind tunnels and showed that the presence of the scales acted as an aid to the aerodynamics of the fixed-wing while Wasserthal (Germany, 1975) examined the influence of the butterfly wing scales on regulation of body temperature. These experiments showed that the scales were also involved in temperature control of the body. Kovalev (Russia & Israel, 1990's) examined moths in wind tunnels and discovered three major effects of the scales. First, they minimize or damp vibration because the energy of the wing loads went into the scales rather than into

body motion. Second, they also decrease the noise produced by the flying insect by absorption of a significant part of the sound energy as well as the turbulent reduction of the wing surface by the scales. Finally, they absorb the ultrasonic squeaks produced by bats. In this way the moths protect themselves against the echo-navigation system bats use to locate prey.

Moreover, nature studies have shown that insect scales increase the aerodynamic force of wing in flapping flight since scale removal limited the air maneuverability of the insect. It follows that the scales are an important factor in insect maneuverability. This property of the scales may also allow butterflies to escape aerial predator attacks. From these studies and observations I suggested the use of a scale-like skin on rotor blades of helicopters. There is no doubt that nature is not a constructor in the sense of an engineer since, in the last resort, she is inimitable. Even so, engineers venturing a glance at the biological structures of the butterfly scale will hardly find a ready-made solution of his own technical problems, but he may expect a variety of interesting hints.

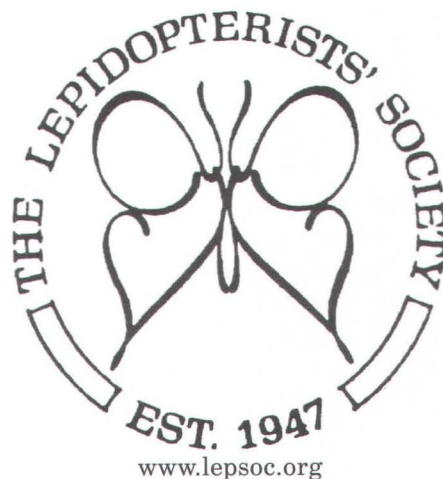
In order to eliminate the problems of rotor blades of helicopter, Kovalev devised a metallic version of butterfly scales, called butterfly skin, or moth skin. This skin is composed of two layers (3, pp. 65). The recess separates the upper wall and the lower wall. The surface facing the flow of the external wall is covered with a large number of grooves aligned with the flow. The ridges are formed between grooves. The grooves are provided with lines of perforations. The lower wall is similar to a thin sheet.

Butterfly skin was attached to the smooth outer surface of model rotor, which was then tested alongside a non-coated model in wind tunnel. The performance of the two models was markedly different. The butterfly skin increased the thrust force of the rotor, reduced the drag, and decreased both noise and vibration. The butterfly

scales become a very effective means of improving performances of wings. The higher performance of main blades with butterfly scale will ensure outstanding flying quality, safety, comfort and maneuverability of aircraft. In addition to helicopters, butterfly skin also could be used on transmission lines, on submarines, sails, parachutes and in jet engines.

**References**

- Johnson W., 1980. Helicopter Theory. Princeton University Press, 1024 pp.  
 Kovalev I. S. Acoustic properties of wing scaling in Noctuid Moth. Entomological Review, 82(2): 270-275.  
 Kovalev I. S., Brodsky A. K. 1996. Of the role that elasticity and scales coating of the wings play in the flight stability of insects. Bulletin of the S. Petersburg University, series 3, issue 3, p. 3-7.  
 Kovalev I. S., 1996. Patent N 2061915, "Air flow coating." Inventions, N 13.  
 Kramer W. O. 1960. Boundary Layer Stabilization by Distributed Damping. Journal Am. Soc. Naval Engineers, 72 pp.  
 Nachtigall W. 1965. Die aerodynamische Funktion der Schmetterlingsschuppen. Naturwissenschaften. Bd 52. H.9. S. 216 - 217.  
 Wasserthal L. 1975. The role of butterfly wings in regulation of body temperature. J. Insect Physiol. 21, pp. 19-21.  
 Weber H., 1933. Lehrbuch der entomologie. Verlag Gustav Fischer., Jena, Germany, 728.





**Uganda...continued from pp. 67**

ranger and two soldiers toting AK47's as well as Livingstone and Silver) found it amusing that we only wanted to walk a few hundred metres into the forest, but couldn't resist crowding round whenever we found something to photograph.

In the following provisional list of species locations are identified according to the location numbering above. All species were photographed in the locations referred to (some were also seen elsewhere, as were a few which we could identify confidently but were not able to photograph). Nomenclature follows Ackery etc. (1996).

**Hesperiidae (25 species)**

1	<i>Celaenorrhinus galenus</i>	3
2	<i>C. bettoni</i>	7
3	<i>Tagiades flesus</i>	2
4	<i>Eagris lucetia</i>	7
5	<i>Eretis lugens</i>	1
6	<i>E. melania</i>	1,5,7,8
7	<i>E. buamba</i>	8
8	<i>Sarangesa laelius</i>	8
9	<i>Spialia spio</i>	1
10	<i>S. ploetzi</i>	3,8
11	<i>Metisella midas</i>	4
12	<i>M. orientalis</i>	4
13	<i>Prosopalpus styla</i>	5
14	<i>Ceratrachia flava semlikensis</i>	8
15	<i>C. brunnea</i>	5
16	<i>Pardaleodes sator</i>	5
17	<i>P. tibullus</i>	3
18	<i>Osmodes minchini</i> (Note 1)	2
19	<i>O. thora</i>	8
20	<i>Paracleros biguttulus</i>	8
21	<i>Acleros mackenii</i>	1
22	<i>Monza punctata crola</i>	3
23	<i>Zenonia zeno</i>	7
24	<i>Pelopidas thrax inconspicua</i>	7
25	<i>P. mathias</i>	1

**Papilionidae (9 species)**

26	<i>Graphium polices</i>	5,7
27	<i>Papilio cynorta</i>	2,3,7
28	<i>P. mackinnoni</i>	8
29	<i>P. nireus lyaeus</i>	2,7
30	<i>P. bromius chrappowskoides</i>	5
31	<i>P. mechowii whitnalli</i>	3
32	<i>P. lormieri neocrocea</i>	3
33	<i>P. phorcas congoanus</i>	3,5,7,8
34	<i>P. dardanus</i>	3,7

**Pieridae (23 species)**

35	<i>Nepheronia argia argolisia</i>	3
36	<i>Colotis aurigineus</i>	6
37	<i>C. hetaera ankolensis</i>	5
38	<i>C. auxo</i>	7
39	<i>C. antevippe zera</i>	6
40	<i>C. euippe complexivus</i>	7
41	<i>C. evagore antigone</i>	6
42	<i>Mylothris continua</i>	7
43	<i>M. schumanni uniformis</i>	8
44	<i>Leptosia wigginsii</i>	2

45	<i>L. nupta</i>	3,5
46	<i>Belenois raffrayi extendens</i>	8
47	<i>B. creona severina</i>	4,6
48	<i>B. calypso minor</i>	7
49	<i>B. thysa meldolae</i>	7
50	<i>B. solilucis loveni</i>	7
51	<i>B. gidica abyssinica</i>	6,7
52	<i>Dixeia doxo costata</i>	7
53	<i>Catopsilia florella</i>	2
54	<i>Eurema hecabe solifera</i>	1
55	<i>E. senegalensis</i>	3,7,8
56	<i>E. desjardinsii marshalli</i>	7
57	<i>E. brigitta</i>	4

**Lycaenidae (32 species)**

58	<i>Falcuna orientalis</i>	3
59	<i>Megalopalpus zymna</i>	3,5
60	<i>Oxylides faunus albata</i>	2,3
61	<i>Axiocerses harpax ugandana</i>	7
62	<i>Hypolycaena antifaunus latimacula</i>	3
63	<i>H. hatita ugandae</i>	8
64	<i>H. nigra</i>	5
65	<i>Anthene schoutedeni</i>	3
66	<i>A. ligures</i>	3,5
67	<i>A. definita</i>	7
68	<i>A. hobleyi kigezi</i>	8
69	<i>A. liodes</i>	3,5
70	<i>A. larydas</i>	3,5,7,8
71	<i>A. kersteni</i> (Note 2)	5,8
72	<i>A. crawshayi</i>	7,8
73	<i>Cupidopsis cissus</i>	4
74	<i>Lampides boeticus</i>	7
75	<i>Uranothauma delatorum</i>	5,7
76	<i>U. falkensteini</i>	7,8
77	<i>Cacyreus linzeus</i>	2,7
78	<i>C. audeoudi</i>	7
79	<i>Leptotes pirithous</i> (Note 3)	1,4,5,7,8
80	<i>Tuxentius margaritaceus</i> (Note 4)	8
81	<i>Zizeeria knysna</i>	6,7
82	<i>Zizina antanossa</i>	6
83	<i>Zizula hylax</i>	7
84	<i>Azanus moriqua</i>	5,7
85	<i>A. natalensis</i>	5,7
86	<i>A. isis</i>	4,5
87	<i>Eicochrysops hippocrates</i>	5
88	<i>Thermoniphas albocaerulea</i>	8
89	<i>Oboronia punctatus</i>	3

**Riodinidae (1 species)**

90	<i>Abisara neavei</i>	5
----	-----------------------	---

**Nymphalidae (118 species)**

91	<i>Libythea labdaca</i>	3
92	<i>Amauris niavius</i>	5
93	<i>A. tartarea</i>	2,5
94	<i>A. albimaculata magnimacula</i>	5
95	<i>Tirumala formosa mercedonia</i>	4,5,7
96	<i>T. petiverana</i>	4,7
97	<i>Danaus chrysippus aegyptius</i>	1,4
98	<i>Acraea macaria hemileuca</i>	3
99	<i>A. quadricolor latifasciata</i>	8
100	<i>A. consanguinea albicolor</i>	2
101	<i>A. humilis</i>	8
102	<i>A. quirinalis</i>	3
103	<i>A. orinata</i>	3
104	<i>A. peneleos pelagius</i>	3,5
105	<i>A. penelope</i>	3,4,5
106	<i>A. ntebiae</i>	5
107	<i>A. perenna</i>	5

A. althoffi neavei	(Note 5)	8
A. bonasia		5,8
A. eponina		5
A. aurivillii		3
A. jodutta		3
A. lycoa entebbia		3
A. lycoa media		5
Phalanta phalantha aethiopica		4,5
P. eurytis		5,7
Vanessula milca latifasciata		5,7,8
Antanartia delius		5
Junonia coelestina		8
J. ceryne		2
J. tugela pyriformis		8
J. orithya madagascariensis		7
J. oenone		1
J. hierta cebrene		6
J. westermanni suffusa		3,5
J. sophia infracta		1,3,5,7
J. stygia gregorii		5,7,8
J. chorimene		1
J. terea tereoides	(Note 6)	4,7
Hypolimnas salmacis magnifica		5
H. dinarcha grandis		2,4,5
H. anthedon		3,7
Salamis temora		8
S. anacardii nebulosa		7
S. parrhasus		7
S. cacta		3,5
Kallimoides rumia raffrayi		5,8
Apaturopsis cleochares		3
Ariadne enotrea suffusa		5,7
Neptidopsis ophione nucleata		5
Eurytela dryope angulata		3,7
H. hiarbas		3,5,7
Sallya occidentalis		4,5,7
Neptis metella		3
N. poultoni		5
N. morosa		4
N. nicomedes		3
N. nicoteles		3
N. melicerta		3,5,8
Harma theobene superna		5
Cymothoe herminia johnstoni		3,5
C. caenis		3
Euptera hirundo		3
Pseudathyma plutonica		3
Euriphene ribensis		2,5
E. butleri		5
Bebearia absolon entebbiae		3
B. oxione squalida		2
B. mardania		5
B. senegalensis katera		5
Euphaedra harpalyce spatiosa		2,3
E. uganda		3
E. medon inaequabilis		3,5
E. viridicaerulea nitidula		3
E. eleus		3,5
E. raffrayi		3
E. ruspina		3
E. hollandi		5
E. margueriteae		5
E. vicina		3
Aterica galene		3,5
Catuna crithea conjuncta		3,5
Pseudoneptis bugandensis		3
Pseudacraea kuenowii hypoxantha		3
P. lucretia protracta		3,5
Cyrestis camillus		3



176	<i>Charaxes fulvescens monitor</i>	5	females (at least twelve different forms have
177	<i>C. candiope</i>	5,7	been described). However our specimen looks
178	<i>C. lucretius maximus</i>	3	nothing like any of the forms illustrated in
179	<i>C. brutus angustus</i>	5,7	Van Someren and Rogers (1925-39), which all
180	<i>C. numenes aequatorialis</i>	7	either have red markings or, if black and white,
181	<i>C. tiridates tiridatinus</i>	3,5	large white bands. This one has no red
182	<i>C. etesipe</i>	5	markings and very narrow white bands.
183	<i>C. eupale latimargo</i>	3	6. <i>Junonia terea</i> : Subspecies <i>tereoides</i> ,
184	<i>C. anticlea adusta</i>	5	described from central Kenya, has broad
185	<i>C. pleione bebra</i>	8	orange bands; subspecies <i>elgiva</i> , described
186	<i>C. paphianus subpallida</i>	5,8	from Zimbabwe, has narrow bands. However,
187	<i>C. zoolina mafugensis</i>	8	we found both broad- and narrow-banded
188	<i>Euxanthe trajanus vansomereni</i>	3	specimens flying together. We also found
189	<i>Melanitis leda helena</i>	1	another with bands which were nearly white.
190	<i>Bicyclus graueri</i>	3	7. <i>Bicyclus jefferyi</i> : Most <i>Bicyclus</i> were fairly
191	<i>B. sambulos cyaneus</i>	5	easy to identify (from D'Abrera (1980)), but
192	<i>B. mandanes</i>	5,8	four small ones, similar but not identical to
193	<i>B. auricruda fulgida</i>	8	each other, have been lumped together as
194	<i>B. jefferyi</i> (Note 7)	2,5,7	<i>jefferyi</i> ; probably at least two species are
195	<i>B. ena</i>	5	involved here.
196	<i>B. istaris</i>	5,8	
197	<i>B. sophrosyne</i>	5	
198	<i>B. mollitia</i>	3,5	
199	<i>B. golo</i>	5	
200	<i>B. dubia</i>	5	
201	<i>B. dentata</i>	8	
202	<i>B. saussurei angustus</i>	2,5	
203	<i>B. safitza</i>	7	
204	<i>B. hyperanthus</i>	8	
205	<i>Henotesia peitho</i>	5	
206	<i>Ypthima doleta</i>	5	
207	<i>Y. albida</i>	5	
208	<i>Y. condamini</i>	1,4	

## Notes:

1. *Osmodes minchini*: Both surfaces of this distinctive skipper matched exactly the description and plate of *minchini* in Evans (1937). If I have identified it correctly, then it may be only the second specimen recorded of this species (see Ackery etc. (1996) page 104). The unique holotype, from "Entebbe", is in the Natural History Museum, London.
2. *Anthene kersteni*: We provisionally identified three closely related taxa, *larydas*, *kersteni* and *crawshayi*. The first two were identically patterned, but *kersteni* is lighter than *larydas*. It has been treated as a subspecies of *larydas*, but we found them flying together. *Crawshayi* is lighter still, with a slightly different pattern. I suspect that our specimens represented at most two different species.
3. *Leptotes*: Four common "Zebra Blues", found in a wide variety of habitats, can only be distinguished by examining the male genitalia (not easy in a photograph). For convenience I have lumped our many specimens under the commonest species, *L. pirithous*, but two or more species may have been involved.
4. *Tuxentius margaritaceus*: Our specimens, photographed at Bwindi, were much more heavily marked than all the illustrations I have seen of this species, the only Ugandan *Tuxentius* which frequents forests.
5. *Acraea althoffi neavei*: I have tentatively identified this *Acraea* as a female *althoffi*, a species with constant males but very variable

5 females (at least twelve different forms have been described). However our specimen looks nothing like any of the forms illustrated in Van Someren and Rogers (1925-39), which all either have red markings or, if black and white, large white bands. This one has no red markings and very narrow white bands.

6. *Junonia terea*: Subspecies *tereoides*, described from central Kenya, has broad orange bands; subspecies *elgiva*, described from Zimbabwe, has narrow bands. However, we found both broad- and narrow-banded specimens flying together. We also found another with bands which were nearly white.

7. *Bicyclus jefferyi*: Most *Bicyclus* were fairly easy to identify (from D'Abrera (1980)), but four small ones, similar but not identical to each other, have been lumped together as *jefferyi*; probably at least two species are involved here.

## References:

- Ackery, P.R., C.R. Smith and Vane-Wright 1996. Carcasson's African Butterflies (An annotated Catalogue of the Papilionoidea and Hesperioidea of the Afrotropical Region). London, Nat. Hist. Mus.
- Aurivillius, P.O.C. 1908-25. Die Afrikanische Tagfalter. In Seitz, Grossschmett. Erde Vol. 13.
- Berger, Lucien A. 1981. Les Papillons du Zaïre. Bruxelles, Weissenbruch.
- Carder, Nanny and Laura Tindimubona 2002. Butterflies of Uganda. Uganda Society.
- Davenport, Tim 1993 (revised 1996). The Butterflies of Uganda, An Annotated Checklist. The Forest Department, Kampala.
- D'Abrera, Bernard 1980. Butterflies of the Afrotropical Region. Melbourne, Landsdowne Editions.
- Evans, W.H. 1937. A Catalogue of the African Hesperioidea. London, British Museum (Nat. Hist.).
- Kielland, Jan 1990. Butterflies of Tanzania. Hill House.
- Larsen, T.B. 1991. The Butterflies of Kenya and their Natural History. London: Oxford Univ. Press.
- Van Someren, V.G.L. and K. Rogers 1925-39. The Butterflies of Kenya and Uganda. J. E. Afr. Ug. Nat. Hist. Soc.

## New Publication...

## The Butterflies of Colorado

by Michael S. Fisher. March 2005. Lepidoptera of North America. 7.1. Nymphalidae. Part 1. The Subfamily Satyrinae: Wood-nymphs, grass-nymphs, satyrs, ringlets, arctics, and alpine. C.P. Contributions of the C.P. Gillette Museum of Arthropod Diversity, Colorado State University. 96 color photographs. 40 pages, 1 map, soft-cover, perfect bound. \$19.00

This is the first part of a series on the butterflies of Colorado. The book is written in the same style and format as the original *Butterflies of Colorado* published by the incomparable F.M. Brown in concert with Donald Eff and Reverend Bernard Rotger in 1957. This is a completely new book, but the author makes comparisons with Brown *et al.* original work, pointing out corrections, additions, and emendations. The book is written in a warm personal style. In the first section 21 species of satyrines are discussed with at least a page dedicated to each species and its described subspecies. Each species' variation within Colorado, and outside where relevant, is discussed and the problems of name application, species definition, and type localities is also discussed.

The author has personally studied and collected butterflies in almost all Colorado counties over a period of more than 50 years and owes his early and lasting enthusiasm to the late Dr. Brown, "Brownie" as he was affectionally called.





# Of Butterflies and Helicopters

Igor Kovalev

*Kibbutz Aficim, D.N. Emek Hayarden, 15148 Israel, Igor@afikim.org.il*

In the course of the historical development of flying animals, flight has been "invented" several times: winged insects (dragonflies and cockroaches) populated the forests of the Carboniferous period 280 to 300 million years ago, butterflies soared into the air about 210 million years ago, and birds have been flying for about 145 million years or so. To Man, flight had remained closed until the recent past but, full of envy, he looked on cabbage butterflies and other insects sailing, ostensibly without effort in their element, while dragonflies arrowed through, chasing victims and remained fettered to the earth's surface.

It is therefore quite understandable that at least in his legends heroes were able to fly with the aid of sophisticated technical devices like Daedalus and his son Icarus in Greek mythology (1, opposite). According to the legend Daedalus made wings for his son and himself out of birds' wings and wax in order to be able to escape from a prison in Crete.

## Helicopters

A history of helicopter development is usually begun with mention of Chinese top and Leonardo da Vinci. The Chinese flying top (c. 400 B.C.) was a stick with a propeller on top, which was spun by the hands and released. Among da Vinci's work (late 15<sup>th</sup> century) were sketches of a machine for vertical flight utilizing a screw-type propeller. Paul Corny (France, 1907) constructed a machine that made the first flight with a pilot (Corny). This helicopter achieved an altitude of about 0.3 m for 20 sec. In the years 1910 to 1912, the Russian Yuryev devised the now generally common helicopter principle with a large horizontally mounted rotor and a small vertically placed after propeller serving to compensate for

torque. In 1942 Igor Sicorsky (Sicorsky Aircraft Co. in the United States) built the R-4 (VS-316). Sicorsky's aircraft is generally considered the first practical, truly operational helicopter, although a possible exception is the work of the German Professor Focke (Focke – Achgelis Fa- 223, 1941). Regardless, the invention of the helicopter may be considered virtually complete by the early 1950's. Helicopter engineering is thus now involved more with research and with development than with invention.

The initial development of rotary-wing aircraft faced three major problems that had to be overcome. The first was to develop a light and strong material for the rotor blades while maintaining good aerodynamic efficiency. The second was to design a quiet helicopter. Aircraft noise is an increasingly important factor in air transportation, as it is the primary form of interaction of the system with a large part of society. Moreover, the acoustic detectability of a helicopter is often determined by rotor noise, unless some effort is made to silence it. The final problem was to minimize vibration. The rotor is a potent source of vibration that increases maintenance costs, passenger discomfort, and pilot fatigue. All of these problems must be overcome to design a successful aircraft.

A progressive orientation in engineering—referred to as bionics—has a main objective to develop, following the example of animate nature, new kinds of highly effective machines for the benefit of Man. To achieve this bionics must prepare the ground by systematically investigating the multiplicity of biological structures, form and processes and ways these are functionally interrelated.

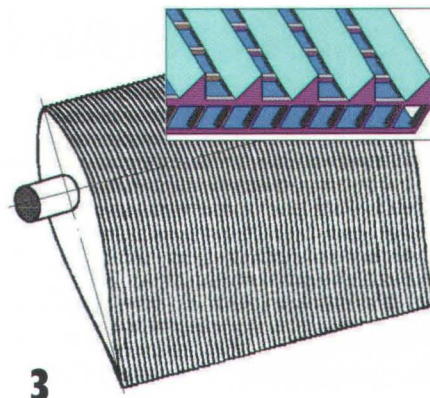
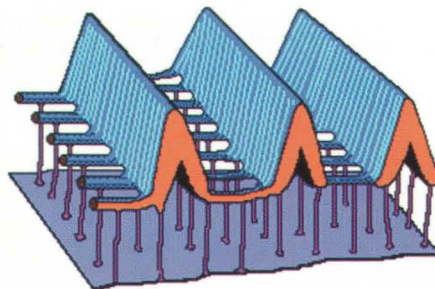
For example, Otto Lilienthal (Germany, 1893), together with his brother Gustav, were the first to scientifically investigate the flight of birds and the airflow past a wing. They came to appreciate the importance of the arched profile. Vasilii Slesarev (Russia, 1914) experimented with insects in a diminutive wing-tunnel and discovered that the high aspect ratio wings of dragonflies were also required for a good aerodynamic efficiency of light and strong planes. He was also the first to use the large propeller disk area of aircraft. After the Second World War, W. O. Kramer carried out extensive research in the US with dolphin skins and designed an artificial two-layer damping skin, similar to that of the dolphins, using rubber and silicon which reduced the drag of test profiles to about 40%. Experimental studies by NASA (United States, 1970's) showed that small grooves ("riblets") aligned with the flow had the property of modifying the near-wall structure of the boundary layer. In flight tests, the film riblets demonstrated drag reduction capability of about 8%, when attached to surface of an A340-300 airliner. Early in riblets research some investigators found confirmation of grooving's effectiveness in clues from nature when it was learned that fast swimming sharks have riblet-like projection on their skins called dermal denticles. These examples of bionical research had a substantial impact on the development of aircraft.

## Butterflies

As readers know, the butterflies and moths belong to the insect order *Lepidoptera*, a name derived from Greek words meaning "scale wing." The surface of the wings of these adult

*continued on pp. 61*





## Flight, Butterfly Scales and Helicopters...

1. A representation of Daedalus and his son Icarus from Greek mythology. An example of bionics? 2. Structure of a typical butterfly wing scale. See text (pp. 61) for explanation. 3. A metallic version of butterfly scales proposed to coat helicopter rotors. See text (pp. 61) for further explanation.

## Painted Ladies Pay Highway Toll...



Below Left: A self-explanatory note from Liam O'Brien's colorful notebook. Wish I could do stuff like this...sigh.



## What Is It?

**Above & Right:** Pauline Singleton, of Baytown, TX, found this parasitized caterpillar on a sedge about 4 miles south of Liberty, TX, very near the Trinity River. Can anyone identify the larva and/or the parasitoids? Contact her at [pcsing@hal-pc.org](mailto:pcsing@hal-pc.org)





# Butterflies in Uganda, Christmas 2004

David Hudson

*The Highlands, Hatches Lane, Great Missenden, Bucks HP16 0JP, UK, david.hudson2@virgin.net*

From 13<sup>th</sup> to 26<sup>th</sup> December 2004 we had a family holiday in Uganda—myself, my wife Carole and our 9-year old son Christopher. The main purpose of our trip was to study and photograph butterflies, me with my Nikon D100 digital camera, Carole with the memory card on her Canon XM2 digital camcorder and Christopher with his Fujifilm Finepix S7000. This is a report on the butterflies we saw, but I am taking the opportunity to also say a little about our experiences of this wonderful country.

## Arrangements

The trip was arranged for us, with impeccable efficiency, by The Far Horizon ([www.thefarhorizons.com](http://www.thefarhorizons.com)), a tour company based in Kampala; I would highly recommend them to anyone thinking of visiting the country. We had a tailor made safari, in a long wheelbase Land Rover, with two delightful companions: Livingstone Kalema, our driver and guide from The Far Horizon, and Silver Kyamukama, the Deputy Head Ranger of Kibale Forest National Park, and one of the very few serious lepidopterists resident in Uganda.

Our itinerary took us in an anticlockwise direction, concentrating on the western forests and staying for two or three nights at most of our stops. These were: Windsor Lake Victoria Hotel, Entebbe; Mantana Tented Camp, Kibale Forest National Park; Mweya Safari Lodge and Jacana Safari Lodge (both in the Queen Elizabeth National Park); Gorilla Forest Camp, Bwindi Impenetrable National Park; and Mantana Tented Camp, Lake Mburo National Park.

The accommodation varied, from lavish luxury at Mweya to basic simplicity at

the tented camps. But everywhere we encountered warm hospitality, friendly service and excellent food. It is difficult to single anywhere out, but particularly memorable were the lakeside beauty at Jacana (but beware of the mosquitoes there, which elsewhere were notable for their absence), and the stunning scenery and accommodation at Bwindi.

My only complaint is that the food was perhaps too good, designed for Ugandan or American appetites, rather than the feebler palates of at least some of us Europeans. In particular, while we had picnic lunch boxes on the move we would have preferred them also while stationary, rather than returning to base each lunchtime for yet another gargantuan cooked meal!

## Uganda as a Tourist Destination

Churchill described Uganda as “the pearl of Africa”, and in the 1960’s it was the most visited country in the continent. That was all spoiled by the civil wars, and Idi Amin has cast a long shadow which still lingers. More recent problems have included the Lords’ Resistance Army in the north, cattle rustling in the north-east, and an incursion from Rwanda in 1999 which killed a few visitors. Efforts to revive the Ugandan tourist industry have not been helped by negative travel advisories from foreign embassies, including the British High Commission.

Despite all this we found a country that, at least in the southern half, was safe and happy. There is still poverty, but 20 years of stable government has brought rapid social improvement; to take one example, Uganda has been more successful than perhaps any other African country in reducing the incidence of AIDS. And as regards security, there were unobtrusive army

camps in all the National Parks; I felt safer than in any of the other African countries I have visited (Nigeria, Kenya and South Africa).

The Ugandans have been busy restocking the wildlife reserves, but it will take a long time to catch up with the other countries of East Africa. For example, large carnivores are few and far between, and, despite driving for 10 hours looking for them, we failed to spot a single lion. On the other hand, we saw many other animals, including the rare giant forest hog and a particularly unfriendly spitting cobra, which was the highlight of Christopher’s trip. Most of all (apart from the butterflies), we recorded more than 100 species of birds, which were very easy to photograph in the lakes and open savannah. Not many people will come to Uganda to look for butterflies, but there is a huge potential market here for ornithologists.

## Butterflies in Uganda

At least 1,257 species of butterflies are recorded from Uganda, which is only a fraction of the size of those African countries which can boast a higher number (DRC, Cameroon and Tanzania). In the east, many species overlap with those of Kenya, while the forests of the far west are one end of the huge rain forest belt which stretches north and west as far as Senegal. We saw relatively few savannah or garden species, and none of the species restricted to the north or east. Nearly all our photographs were taken in or beside closed western forests, surely one of the butterfly “hot spots” of the world. Despite this, lepidopterists are rarely seen; Silver told us that we were only the third such group he had met since 1981! We photographed at least 208 species, details of which are listed later.



## Identification

Some groups are difficult to identify, particularly for photographers. Variations within species and similarities (through mimicry) between disparate groups can be particularly off-putting. Nevertheless the available literature is excellent. Apart from compendious volumes covering the whole continent (Aurivillius in Seitz, 1908-25 and D'Abrera 1980), there are thorough treatments of neighbouring countries: Larsen 1991 on Kenya, Kielland 1990 on Tanzania, and Berger 1981 on the DRC (unfortunately I have never been able to obtain the last—apparently nearly all copies were lost and/or stolen by the Mobutu regime). There are also modern revisions, mostly by French or Belgian authors, of some groups of Lycaenidae and forest-dwelling Nymphalidae.

Two recent publications deal specifically with Uganda. Carder & Tindimubona 2002, produced by the Uganda Society, illustrates some of the commoner species, and is useful for those which are not found in Kenya. Davenport (1996) is an excellent checklist of all the species then recorded from Uganda, compiled both from the literature and from extensive research carried out in the National Parks under the auspices of the Kampala Forest Department.

## Biology

Our trip in December was just after the end of the "short rains" in December. There was a lot of new flower growth in the forests, which may have encouraged emergence; but Silver told us that, in Kibale at least, more butterflies are found in July, after the "long rains". The savannah was dry, and we saw very few butterflies there. In Bwindi, semi-montane forest in the far South West, it rains evenly all the year round, and there is probably not much difference between the seasons.

In the tropics generally butterflies are at their most active between about 0900 and about 1200 each day, but in Uganda they came out much later—between about 1030 and about 1330, and later

still when it was cloudy in the early morning. There were evidently two reasons for this. Uganda is on East African time which stretches east to Mombasa, and sunrise and sunset are at about 7 am. and 7 pm. (we were almost exactly on the equator). Also, we were consistently at relatively high altitudes (from about 900m near Entebbe to about 1,500m at Bwindi), and after cool nights it took longer for the butterflies to warm up in the morning.

As we would have expected the larger aggregations were found at mud puddles, but these were not all that common. Nectaring at flowers happened more frequently than, for example in South America or South East Asia. The large forest Nymphalidae (*Euphaedra* etc.) flopped around in the forest understorey, and their wings quickly became tattered; it was hard to find fresh specimens.

Some groups were particularly abundant, including Polyommatainae, *Acraea*, *Charaxes*, *Euphaedra* and *Bicyclus*. Others were surprisingly rare; we saw very few Leptocircini, Litpeninae or Theclinae, and no Coeliadinae. I suspect a seasonal element in some of this (this is certainly the case in other parts of the world). Also, many of the numerous Theclinae are canopy dwellers (though we saw rare canopy dwellers from other families), while Lipteninae rely on ant associations which may have been absent in the forests we visited.

## List of Locations and Species

We photographed butterflies in the following locations:

1. Entebbe (Botanical Gardens and hotel). A late afternoon visit to the Botanical Gardens on our first day; only a few "weedy" species were seen.
2. Ziika Forest (at Kisubi, just north of Entebbe). A morning visit in hot sun-shine to this small but well kept forest. We saw relatively few butterflies, but they included some interesting marsh species (the forest is beside an extensive swamp).
3. Mpanga Forest (40 kms west of Kampala). This was by far our best site, so good that we paid a second visit on our way back to Entebbe. The Mpanga Forest has been financed as a

reserve by the European Union, with an excellent system of trails and a spacious picnic area, but alas virtually no visitors (no large animals, and a rather high entrance fee for foreigners; entrance for Ugandans is very cheap, but most Ugandans, having grown up near forests, are keener to get away than to return to them).

The resident ranger, Dennis Mubiru, was an excellent guide and eager to show us the butterflies. Although there is a trail called "butterfly loop", the best place was the central trail which runs in a straight line east-west through tall well-spaced trees. The trail is wide enough for sunlight to penetrate and between about 1130 and about 1330 butterflies flew in their thousands, not only puddling by the streams which crossed the path but also sunbathing on low branches at about waist height—a photographer's paradise! *Euphaedra* and *Neptis* were particularly abundant, but we also saw many unusual groups, such as *Pseudathyma*, *Euptera* and *Euxanthe*.

4. Road from Kampala to Fort Portal. A long days' drive to the west. Butterflies were seen mostly in woodland and on the dirt road.

5. Kibale Forest National Park. A large closed forest, home to chimpanzees and 12 other primates. This was a mixed blessing, since when we put banana bait on the ground, they ate it before the butterflies could get near. Butterflies were not particularly numerous within the dense forest, but there were two exceptionally good places. The first was a spot on the trail near the park headquarters where they fed on civet dung (the civets come every night and defecate in exactly the same place). The second, called the elephant wallow, was where forest elephants come to do exactly that. Ground-dwelling Nymphalidae were particularly numerous here.

6. Queen Elizabeth National Park- Mweya Lodge and savannah. Very few butterflies here; I'm sure there would be more during the rains.

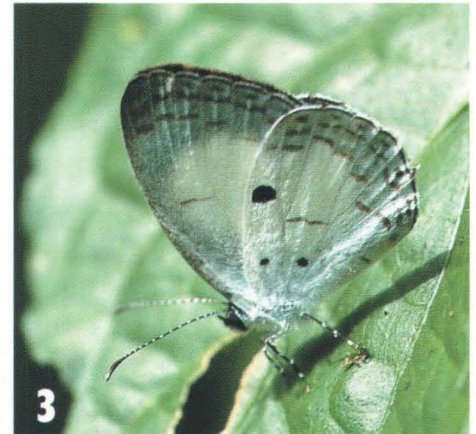
7. Queen Elizabeth National Park- Maramagambo Forest. This closed forest in the south of the park brought us our biggest aggregations of mud-puddling butterflies, and many more feeding on the flowering bushes which lined the road leading to the Jacana Lodge.

8. Bwindi Impenetrable National Park. This is the famous "Impenetrable Forest" of literature, close by the borders with Rwanda and the DRC. Our schedules meant that we missed the best time of day (lunchtime), and on our morning trips (it gets very cold at night here) we saw relatively few butterflies but many interesting species, including Albertine Rift endemics and at least one (Thermoniphas, a small white Polyommataine Lycaenid) recorded only from this forest.

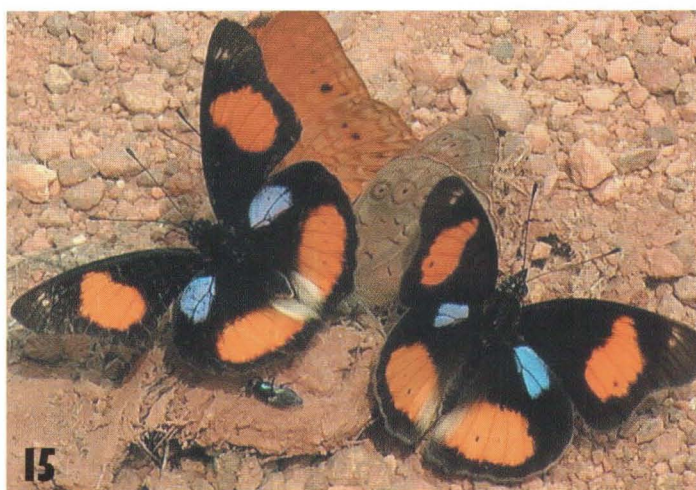
Nearly everyone comes to Bwindi to track gorillas, and our compulsory retinue (a park

continued on pp. 62









## Ugandan Butterflies...

See *List of Species* in text (beginning on pp. 66) for species reference number (given below) and location data.

1. 18, 2. 182, 3. 88, 4. 32, 5. 60, 6. 90, 7. 95 8. 123, 9. 31, 10. 136 (female), 11. 136 (male), 12. 101, 13. 105, 14. 152 (female), 15. 124, 16. 125, 17. 102, 18. 162, 19. 134. Photos by Carole Hudson (7, 8, 10, 14, 15, 17, 18), Christopher Hudson (4) and David Hudson (all others). More photos on back cover...



## 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:

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

## Dues Rate

Active (regular)	\$ 45.00
Affiliate (same address)	10.00
Student	20.00
Sustaining	60.00
Contributor	100.00
Institutional Subscription	60.00
Air Mail Postage for <b>News</b>	15.00

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).

## Change of Address?

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

Julian P. Donahue, Assistant Secretary,  
The Lepidopterists' Society,  
Natural History Museum of Los Angeles County, 900 Exposition Blvd.,  
Los Angeles, CA 90007-4057.  
[Julian@donahue.net](mailto:Julian@donahue.net)

## Our Mailing List?

Contact Julian Donahue for information on mailing list rental.

## Missed or Defective Issue?

Requests for missed or defective issues should be directed to: Ron Leuschner (1900 John Street, Manhattan Beach, CA 90266-2608, (310) 545-9415, [ronleusch@aol.com](mailto:ronleusch@aol.com)). Please be certain that you've really missed an issue by waiting for a subsequent issue to arrive.

## Memoirs

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

**Submissions of potential new Memoirs** should be sent to:

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

## Journal of the Lepidopterists' Society

Send inquiries to:

Michael E. Toliver  
(see address opposite)  
[miketol@eureka.edu](mailto:miketol@eureka.edu)

## Book Reviews

Send book reviews or new book releases for the **Journal** to:

P. J. DeVries,  
Dept. Biological Sciences, University of  
New Orleans, New Orleans, LA 70148,  
[pdevries@uno.edu](mailto:pdevries@uno.edu)

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

## WebMaster

John A. Snyder  
Dept. of Biology, Furman University,  
Greenville, SC 29613-0001, (864) 294-  
3248, [john.snyder@furman.edu](mailto:john.snyder@furman.edu)

## Submission Guidelines for the News

Submissions are always welcome! Preference is given to articles written for a non-technical but knowledgeable audience, illustrated and succinct (under 1,000 words). 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 **47** must reach the Editor by the following dates:

Issue	Date Due
1 Spring	missed it!
2 Summer	gone by!
3 Autumn	<b>Aug. 19, 2005</b>
4 Winter	Oct. 28, 2005

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.



## Executive Council

### President

James K. Adams  
Division of Nat. Science and  
Math, Dalton State College,  
213 N. College Drive, Dalton,  
GA 30720, (706) 272-4427,  
[jadams@em.daltonstate.edu](mailto:jadams@em.daltonstate.edu)

### Past President

Susan J. Weller  
Dept. Entomology, 219 Hodson  
Hall, 1980 Folwell Ave.,  
University of Minnesota, St.  
Paul, MN 55108-6125, [welle008@maroon.tc.umn.edu](mailto:welle008@maroon.tc.umn.edu)

### Vice Presidents

Gary G. Anweiler  
7212 103 Ave. NW, Edmonton,  
Alberta, T6A 0V1, Canada  
[gganweiler@sprint.ca](mailto:gganweiler@sprint.ca)

Marc Epstein  
Dept. of Entomol., MRC 105,  
NMNH, Smithsonian Inst., P.O.  
Box 37012, Washington, DC  
20013  
[epstein.marc@nmnh.si.edu](mailto:epstein.marc@nmnh.si.edu)

Niklas Wahlberg  
Dept. of Zoology, Stockholm  
University, S-106 91 Stockholm,  
Sweden

### Secretary

Ernest H. Williams  
Department of Biology, Hamil-  
ton College, Clinton, NY 13323  
(315) 859-4387  
[ewilliam@hamilton.edu](mailto:ewilliam@hamilton.edu)

### Assistant Secretary

Julian P. Donahue  
Natural History Museum, 900  
Exposition Boulevard, Los  
Angeles, CA 90007-4057,  
(213) 763-3363 (office), (213)  
746-2999 (fax)  
[Julian@donahue.net](mailto:Julian@donahue.net)

### Treasurer

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

### Assistant Treasurer

Ron Leuschner  
1900 John Street, Manhat-  
tan Beach, CA 90266-2608,  
(310) 545-9415  
[ron\\_leusch@aol.com](mailto:ron_leusch@aol.com)

### Publications Manager

Ken Bliss  
28 DuPont Ave., Piscataway, NJ  
08854-2435  
[KBliss0568@aol.com](mailto:KBliss0568@aol.com)

### Editor, News of the Lepidopterists' Society

Phil Schappert  
Integrative Biology, 1 Univer-  
sity Station, C0930, University  
of Texas at Austin, Austin, TX  
78712-0253, (512) 475-6285  
(lab), (512) 471-3878 (fax),  
(512) 237-3864 (home),  
[philjs@mail.utexas.edu](mailto:philjs@mail.utexas.edu)

### Associate Editor, News of the Lepidopterists' Society:

Dale Clark  
1732 South Hampton Rd.,  
Glenn Heights, TX 75154-  
8530, (972) 274-0890,  
[nardoz@earthlink.net](mailto:nardoz@earthlink.net)

### Editor, Journal of the Lepidopterists' Society

Michael E. Toliver  
Division of Math & Science,  
Eureka College, 300 East  
College Ave., Eureka, IL  
61530-1500, (309) 467-3721  
ext. 241, FAX: (309) 467-6386,  
[miketol@eureka.edu](mailto:miketol@eureka.edu)

### Editor, Memoirs of the Lepidopterists' Society

Lawrence F. Gall  
(see *Memoirs* opposite)

### Members-At-Large

William Conner, Rebecca Sim-  
mons, Charles Covell, Jr. (2005);  
Akito Kawahara, Jane M. Ruffin,  
Erik B. Runquist (2006); Robert M.  
Pyle, John A. Shuey, Andrew D.  
Warren (2007).

## Season Summary Zone Coordinators

Refer to Season Summary for Zone coverage details.

### Chief Season Summary Coordinator And Editor

Jim Tuttle  
T.B.A.  
Contact Jim via email c/o  
[jtuttle164@hotmail.net](mailto:jtuttle164@hotmail.net)

### Zone 1, The Far North:

Kenelm W. Philip  
Institute of Arctic Biology  
University of Alaska  
P.O. Box 75700  
Fairbanks, Alaska 99775-7000  
(907) 479-2689  
[fnkwp@aurora.alaska.edu](mailto:fnkwp@aurora.alaska.edu)

### Zone 2, The Pacific Northwest:

Jon H. Shepard  
R.R. #2, S.22, C.44  
Nelson, British Columbia  
V1L 5P5 Canada  
(250) 352-3028  
[shep.lep@netidea.com](mailto:shep.lep@netidea.com)

### Zone 3, The Southwest:

Ken Davenport  
6601 Eucalyptus Dr., #325  
Bakersfield, CA 93306-6856  
(661) 366-3074 (home)  
[flutterflies@juno.com](mailto:flutterflies@juno.com)

### Zone 4, The Rocky Mountains:

Ray E. Stanford  
720 Fairfax Street  
Denver CO 80220-5151  
(303) 377-1332 (home)  
[ray.stanford@stanfordalumni.org](mailto:ray.stanford@stanfordalumni.org)

### Zone 5, The Plains:

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

### Zone 6, Texas:

Charles Bordelon, Jr.,  
Texas Lepidoptera Survey,  
8517 Burkhardt Road, Houston,  
TX 77055, (713) 822-8731 (cell)  
[legitintellexit@earthlink.net](mailto:legitintellexit@earthlink.net)

### Zone 7, Ontario And Quebec:

Jeff Crolla  
2-642 Dovercourt Rd., Toronto,  
Ontario, Canada M6H 2W6,  
(416) 533-2267  
[jeff@primus.ca](mailto:jeff@primus.ca)

### Zone 8, The Midwest:

Leslie A. Ferge  
7119 Hubbard Avenue  
Middleton, Wisconsin 53562-3231  
(608) 836-9438  
[ferge@chorus.net](mailto:ferge@chorus.net)

### Zone 9, The Southeast:

Brian G. Scholtens  
Biology Department  
College of Charleston  
Charleston SC 29424-0001  
(803) 856-0186  
[scholtensb@cofc.edu](mailto:scholtensb@cofc.edu)

### Zone 10, The Northeast:

Mark J. Mello  
c/o Lloyd Center,  
430 Potomska Rd  
Dartmouth, MA 02748  
[m.rogovsky@comcast.net](mailto:m.rogovsky@comcast.net)

### Zone 11, Mexico & the Caribbean:

Isabel Vargas Fernandez  
Museo de Zoología,  
Facultad de Ciencias,  
Univ. Nacional Autónoma, Mexico,  
Apartado Postal 70-399,  
Mexico 04510 D.F., Mexico  
[ivf@hp.fcencias.unam.mx](mailto:ivf@hp.fcencias.unam.mx)

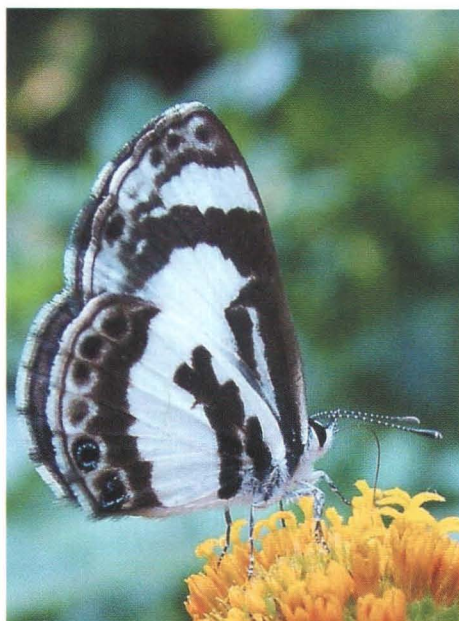
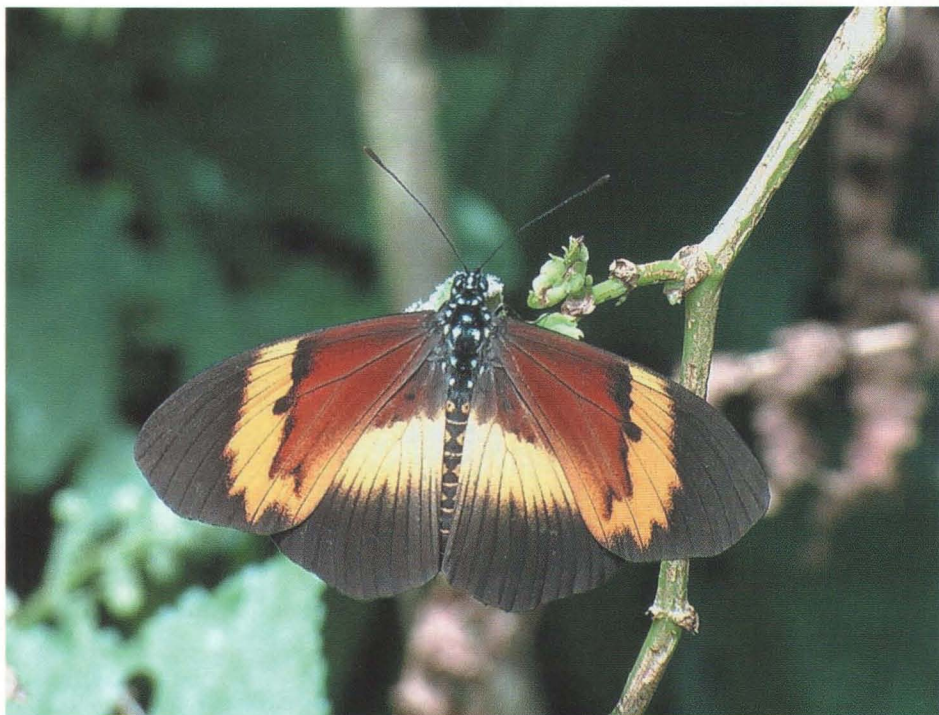




# Ugandan Butterflies...

See the article by David Hudson beginning on pp. 66 with more photos on pp. 68-69.

Right: *Acraea quadricolor*. Quadricolor is perhaps the most colourful representative of this amazing genus (c. 100 species in Uganda alone). Ten metres beyond the spot where we photographed this butterfly we came across a spitting cobra on the path. Carole thought it was an old hosepipe and Christopher nearly trod on it—our Ugandan friends were more circumspect! Photo by Carole Hudson.



Left: *Azanus isis*. This little blue is abundant all over West Africa and quite common in Kibale Forest, where we found it. However this appears to be the easternmost point of its range, and why it gets no further east is a mystery to me. Photo by Christopher Hudson.

Right: *Euphaedra ruspina*. Another amazing genus. Nearly all *Euphaedra* have some green or blue iridescence (e.g. *E. medon*, no. 162, 18 on pp. 69), but this one is perhaps the purest red of the so-called red *Euphaedra*, and the most perfect mimic of the day-flying moth with which it flies. We also got the moth, which is much smaller—it seems that birds are better at recognising pattern than size. Photo by David Hudson.

